# Lake Cathie - Bonny Hills

**URBAN GROWTH STAGE 1A**
**ENVIRONMENTAL STUDY**

**PORT MACQUARIE-HASTINGS COUNCIL**


Architecture Urban Design
Landscape Architecture Community Design

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# 1.0 KEY FINDINGS

Review of all the environmental, social and economic issues in this study have indicated that the subject lands are suitable and appropriate for urbanisation, subject to the imposition of certain conservation and hazard reduction measures being implemented. These are scheduled in the detailed recommendations below:

1. That following issue of a Section 65 Certificate this draft Local Environmental Study be exhibited with a copy of Council's adopted Master Plan prepared for the Lake Cathie – Bonny Hills district to ensure contextual consistency is preserved.
2. That subsequent to relevant zoning amendments, Council amends the Development Control Plan include area based provisions for the Area 14 Urban Growth Area based on the Master Plan and LES.
3. That the DCP include requirements addressing the relevant issues raised in Table 8.2 of this study.

# 2.0 INTRODUCTION

## 2.1 CITATION, AUTHOR, CLIENT, COPYRIGHT

This document is prepared on behalf of Port Macquarie-Hastings Council by Deicke Richards Architects P/L and other attributed consultancies within the document. This document is an update of the previous Lake Cathie – Bonny Hills Draft Local Environmental Study 2003.

It may be cited as the "**Lake Cathie – Bonny Hills draft Local Environmental Study 2010".**



This 2010 version is an update of the previous March 2003 version and represents additional investigations by Council and others into vegetation, water, sewer, stormwater and services. It also takes into consideration changes to legislation applicable to the development area and form of proposed developments. These investigations include identification of two relatively small additional areas to the north-east and north of the 2003 study area including;

1. Part of Crown Road Reserve adjacent to Lot 1 on DP 255923 (approx. 0.7 ha) ; and
2. Northern part of the vegetated corridor on part of Lot 33 on DP 803801.

## 2.2 PREAMBLE

Port Macquarie-Hastings Council has responded to housing demand from both natural population increase and immigration by identifying land within its jurisdiction that is suitable for urban expansion. To achieve this, there is a statutory and regulatory process defined in NSW legislation which must be followed.

Part of that necessary process is the undertaking of a Local Environmental Study – the subject of this report.

## 2.3 THE BRIEF FROM PORT MACQUARIE-HASTINGS COUNCIL

Port Macquarie-Hastings Council commissioned Deicke Richards Architects to prepare this Local Environmental Study. The specific research requirements are nominated in the brief, a full copy of which may be found in Appendix 1. The core requirements of the brief are extracted below:

*ENVIRONMENTAL STUDY*

*Prepare an environmental study for Area 14 Stage 1A, in accordance with specifications of Planning NSW, that covers:*

1. *Liaison with relevant Government Authorities and landowners.*
2. *Collation and assessment of relevant data, including:*
   - *a) flooding,*
   - *b) bush fire,*
   - *c) land slip,*
   - *d) acid sulphate soils,*
   - *e) Aboriginal cultural sites,*
   - *f) sites or buildings of cultural value or heritage significance,*
   - *g) significant stands of vegetation,*
   - *h) significant wildlife habitats and corridors that link such areas,*
   - *i) wetlands and their catchments, and*
   - *j) ground and surface water resources.*
3. *Classification of land in terms of development opportunities and constraints.*
4. *Identification of relevant development control objectives and measures required to protect the environment.*

*Relevant extracts from the above-mentioned requirements of Department of Planning are included in Appendix 3.*

*Note that the Study Requirements provided by the Department of Planning in Appendix 3 also refer to requirements for preparation of the Area 14 Master Plan which was completed and adopted by Council in 2004.*

*General requirements and additional study requirements provided by the Department of Planning on 10 May 2002 relating to Stage 1 of Area 14 at that time also included land at Lakeside Way (north of Lake Cathie) and land to the south off Ocean Drive. These areas are subject to separate rezoning processes and are not included within the Stage 1a study area. The current study for Stage 1a land is limited to approximately 75 hectares of land north of Ocean Drive and generally east of Houston Mitchell Drive.*

This Study will confine itself to responding to relevant site and contextual issues that arise in the course of data collection for part of the Area 14 growth area known as Stage 1A covered by the specifics of the Port Macquarie-Hastings Council brief. Nevertheless, all Department of Planning issues raised will be reviewed for relevance to this Study.

The 2003 Lake Cathie – Bonny Hills Draft LES was exhibited with the Urban Design Master Plan in August – November 2003 at which time submissions were received with respect to the exhibited documents. This document is an update of this previous work which draws on further work by Council, ecologists and others within the study area.

## 2.4 FURTHER GOVERNMENT AGENCY REQUIREMENTS

The Study is also obliged to examine any additional issues identified in the referrals of the proposal to other government agencies as required by Section 62 of the Environmental Planning and Assessment Act 1979.

Government agencies were contacted by Port Macquarie-Hastings Council in accordance with Section 62. Their responses are tabled in **Appendix 2**.

The agency submissions raised the following additional issues summarised below, which are addressed as they arise within this Study –

| AGENCY | ISSUES / REQUIREMENTS |
|---|---|
| NPWS | Buffer to L. Cathie NP of 50m –100m with restricted public access. |
| | Protect old growth tallow-wood stands. |
| | Provide wildlife corridors 250m wide between Queens Lake State Forest and Lake Cathie and the SEPP44 zone. |
| EPA | Refers to former Lake Cathie garbage depot. Not located within study area. |
| NSWCC | Green belt separation between L. Cathie & Bonny Hills. |
| | Habitat linkages lake – forest – coast. |
| NSW RFS | Draft LEP to have regard for Planning for Bushfire Protection, s 117(2) Direction 4.4. |
| NSW Dept of Lands | Crown road reserve abutting northern boundary of Lot 1 DP 255923 should be retained for future urban expansion. May be utilised for future road network or considered for closure. |
| DEPT MIN RESOURCES | NIL |
| NSW DEPT HEALTH | Adequate road linkages to Port Macquarie hospitals. |
| | Community Health centre site in LC-BH. |
| | Medical centre site in LC-BH Master Plan. |
| | Footpaths & Cycleways for public health. |
| | Hygiene controls on re-use of wastewater. |
| | WS&S provision. |
| NSW DET | NIL |

# 3.0 LOCAL ENVIRONMENTAL STUDIES

## 3.1 ENVIRONMENTAL STUDY REQUIREMENTS

### 3.1.1 STATUTES

In NSW, not only is planning practice enforced by statute, but certain planning policies called '**instruments**' are also given the force of law.

The NSW Environmental Planning and Assessment Act 1979 (the **EP&AA**) requires that any land identified by Council for urban use and not presently zoned for that purpose must first undergo a rezoning process - which involves amending a particular planning instrument - the Local Environmental Plan (**LEP**) for the area. Before adoption of any such land use changes, a draft LEP amendment must be prepared for public exhibition.

Section 57 of the EP&AA states:

> *57 Where a council decides to prepare a draft local environmental plan …… it shall prepare an environmental study of the land to which the draft local environmental plan is intended to apply.*

This document is such an Environmental Study. It is generically referred to as a Local Environmental Study. (**LES**). It also contains recommendations for a draft Local Environmental Plan amendment.

#### THE MID NORTH COAST REGIONAL STRATEGY

The Mid North Coast Regional Strategy 2006 – 2031, was released by New South Wales Department of Planning in March 2009. The primary purpose of the regional strategy is to ensure that adequate land is available and appropriately located to accommodate projected housing and employment needs of the region's population over the next 25 years.

The regional strategy is intended to be the pre-eminent planning document for the Mid North Coast and will complement and inform other relevant State planning instruments, including future infrastructure investment priorities.

The aims of the strategy are to:

- Protect high value environments and habitat corridors, cultural and Aboriginal heritage and scenic landscapes.
- Provide up to 58,400 new homes by 2031 to cater for a forecast population increase of 91,000. With smaller households and an ageing population, a more suitable mix of housing will be encouraged, including more multi-unit style dwellings.
- Ensure an adequate supply of land is available to support economic growth and an additional 47,000 jobs.
- Encourage the growth and redevelopment of the Region's four major regional centres (Grafton, Coffs Harbour, Port Macquarie and Taree) and six major towns (Maclean, Woolgoolga, Bellingen, Macksville, Kempsey and Forster–Tuncurry) through urban design and renewal strategies.
- Protect the coast by focusing new settlement in areas identified on local strategy maps. Development in places constrained by coastal processes, flooding, wetlands, important farmland and landscapes of high scenic and conservation value will be limited.

The strategy guides local planning in the eight local government areas of Clarence Valley, Coffs Harbour, Bellingen, Nambucca, Kempsey, Port Macquarie–Hastings, Greater Taree and Great Lakes, and will be reviewed every five years.

Growth in the Port Macquarie-Hastings is to occur in a number of release areas, through infill development and urban consolidation of the existing urban footprint.

#### THE HASTINGS URBAN GROWTH STRATEGY

On 30th August 2001 the NSW Department of Urban Affairs and Planning (now NSW Department of Planning) formally accepted Port Macquarie-Hastings Council's "Hastings Urban Growth Strategy 2001" (**HUGS**), thus enabling the various associated Local Environmental Studies to proceed in accordance with Clause 38 of the **REP**. The adopted HUGS also set out the priorities and preferred sequence for urban land release.

This LES addresses only the Lake Cathie – Bonny Hills release area termed "Area 14" in the **HUGS** document, and is further limited by the brief received from Port Macquarie-Hastings Council to the study area referred to as **Area 14 Stage 1A**.

See Figure 3 for details.

The original Stage 1A LES was prepared by Deicke Richards Architects in conjunction with a community based master planning process for Area 14 Urban Growth Area. The Master Planning process was largely consistent with the requirements in Part 5 of State Environmental Planning Policy No. 71 – Coastal Protection (**SEPP71**), although the Master Plan process commenced prior to the gazettal of SEPP71. The overall Master Plan for the Lake Cathie – Bonny Hills also informs this LES process for Stage 1A land in terms of the likely urban land use.

The proposed urban structure plan for Area 14 provided by Map 3 from the Master Plan has been included as **Figure 6**.

#### THE LOCAL GROWTH MANAGEMENT STRATEGY

The Mid North Coast Regional Strategy requires Council to prepare a Urban Growth Strategy which identifies growth areas and achieves regional outcomes and targets.

In Council's corporate planning framework the urban growth strategy is one of several strategic plans which sit under the overarching Community Strategic Plan.

The urban growth strategy is currently being prepared and is expected to be finalised in 2010. The UGS will consolidate and review the provisions of the existing growth including;

- Hastings Urban Growth Strategy;
- Wauchope Urban Growth Strategy;
- Camden Haven Urban Growth Strategy.

These strategies will be superseded on the adoption of the Port Macquarie-Hastings Urban Growth Strategy.

#### 3.1.2 FORMAT AND CONTENT

There are no specific statutory requirements for the format or content of a Local Environmental Study. Section 26 of the **EP&AA** "Contents" allows that a Local Environmental Plan ***may*** make provision for

*(a) protecting, improving or utilising, to the best advantage, the environment,*
*(b) controlling (whether by the imposing of development standards or otherwise) development,*
*(c) reserving land for use for the purposes of open space, a public place or public reserve within the meaning of the Local Government Act 1993, a national park or other land reserved or dedicated under the National Parks and Wildlife Act 1974, a public cemetery, a public hospital, a public railway, a public school or any other purpose that is prescribed as a public purpose for the purposes of this section,*
*(d) providing, maintaining and retaining, and regulating any matter relating to, affordable housing,*
*(e) protecting or preserving trees or vegetation,*
*(e1) protecting and conserving native animals and plants, including threatened species, populations and ecological communities, and their habitats,*
*(f) controlling any act, matter or thing for or with respect to which provision may be made under paragraph (a) or (e),*
*(g) controlling advertising,*

and any associated LES should presumably explore such matters, where relevant.

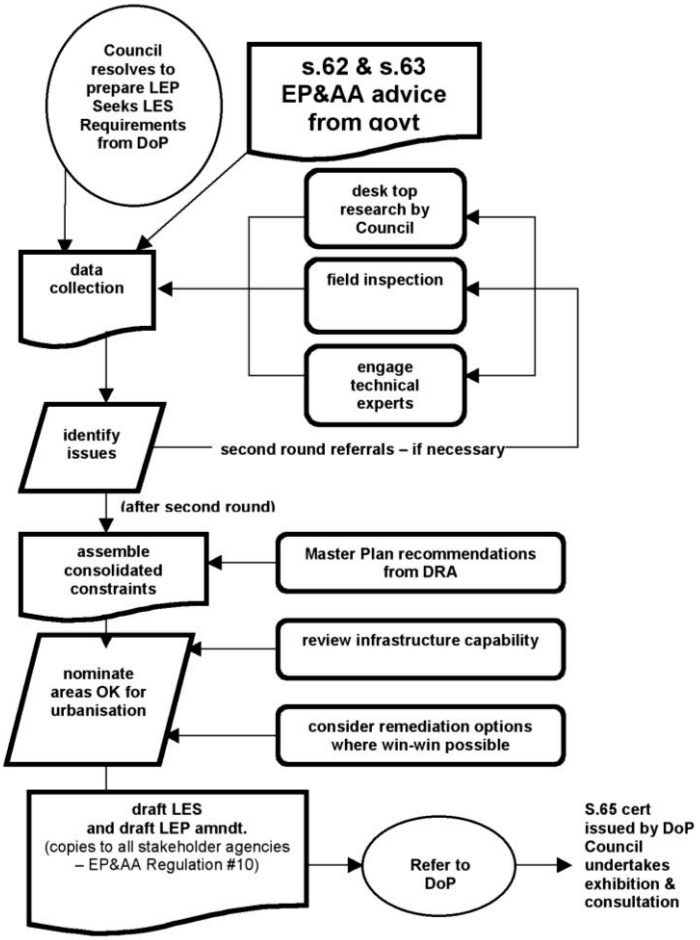
#### 3.1.3 STRUCTURE AND FOCUS

The above discussion clearly indicates that in the absence of Council instructions to the contrary, an LES is not constrained by any mandatory structure and may take whatever form is deemed most appropriate to communicate essential relevant information to stakeholders and decision-makers, so long as the matters mentioned in s.1.3, s.1.4, and s.1.5 are properly addressed.

Therefore, rather than attempting to establish the highest and best land use for the subject lands (the traditional approach), this draft LES simply confines itself to examining whether the subject lands are suitable for urban expansion, or not.

The process leading to this outcome is described in the flowchart below.

### 3.2 THE ENVIRONMENTAL STUDY PROCESS



# 4.0 DATA COLLECTION

Data used in the Study is derived from *desktop research, site investigation*, and community and agency *consultation.*

## 4.1 DESKTOP

### 4.1.1 PORT MACQUARIE-HASTINGS COUNCIL

Port Macquarie-Hastings Council has provided extensive archival material for the Study, including previous environmental and infrastructure reports, and extracts from their spatial database (Hastings Geographic Information System – GIS). This material is incorporated in the Study verbatim.

## 4.2 SITE INVESTIGATION

### 4.2.1 SITE ENVIRONMENTAL INVESTIGATIONS

In preparing for this Study, Deicke Richards' staff inspected, mapped, photographed, and recorded the features of the site. In addition, independent expert sub-consultants were engaged to examine natural and indigenous heritage protection issues, the physical environment (soil, water and landform),the engineering infrastructure capability (transport, drainage, water supply, wastewater disposal and water quality management), and the requirements for future cultural infrastructure (health, education, welfare, emergency services, retail facilities, recreation and public assembly.)

Their reports are incorporated later in the Study text and included in the Appendices where received as a structured document.

## 4.3 CONSULTATION

### 4.3.1 COMMUNITY CONSULTATION

The EP&AA does not require community consultation in the course of preparation of a draft Local Environmental Study. However, during the consultation phase of the concurrent Master Plan preparation, there was public exposure of the general findings of the flora and fauna, archaeological, water quality management and infrastructure investigations on the subject lands. There were no objections of factual disagreement or omission raised at that time, although it was evident that some members of the local community had issues with the already adopted HUGS document.

The EP&AA provides for subsequent public exhibition of any completed draft LES once it has been submitted to the Director General and received Section 65 certification. Where substantial issues are raised in public submissions, it may lead to a public hearing under Section 68 of the EP&AA.

Both the Area 14 Master Plan and the original draft for Stage 1A land were exhibited in 2003.

### 4.3.2 GOVERNMENT AGENCY CONSULTATION

NSW State Government authority consultation is mandatory.

Section 62 of the EP&AA requires the (Hastings) Council to consult with

> *"such public authorities or bodies (including authorities of the Commonwealth or other States) as, in its opinion, will or may be affected by that draft local environmental plan, …"*

Port Macquarie-Hastings Council has written to the authorities it judges may have an interest in rezoning of lands in the Lake Cathie – Bonny Hills district to urban uses. (The full replies may be found in Appendix 2 of this document.) A synopsis of issues raised in those responses is provided above in **s.1.4,** and those issues are treated as components of the brief.

# 5.0 THE SITE

The site information collated here is primarily desktop research of data supplied by Port Macquarie-Hastings Council.

## 5.1 SITE GEOGRAPHY

### 5.1.1 LOCALITY

Lake Cathie – Bonny Hills lies on the NSW north coast approximately midway between the 'resort and retirement' towns of Port Macquarie and Laurieton. It is connected to these two towns by a coastal road corridor named locally as "Ocean Drive" and also connected directly to the Pacific Highway to the west by "Houston Mitchell Drive".

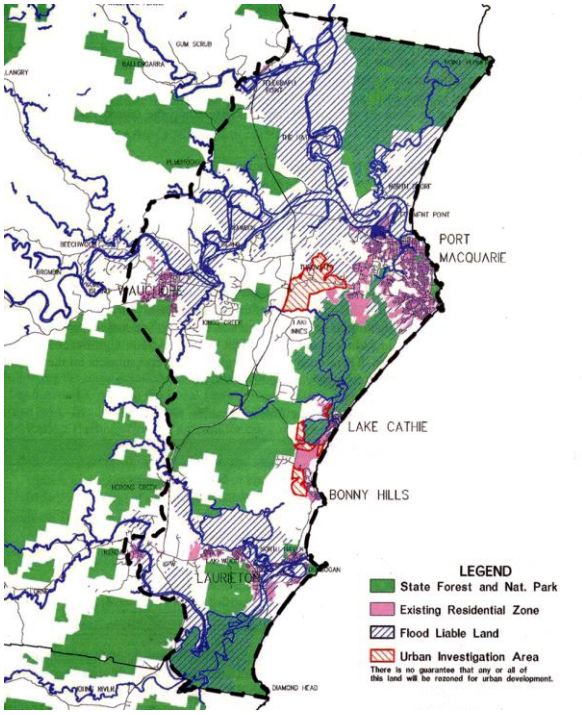
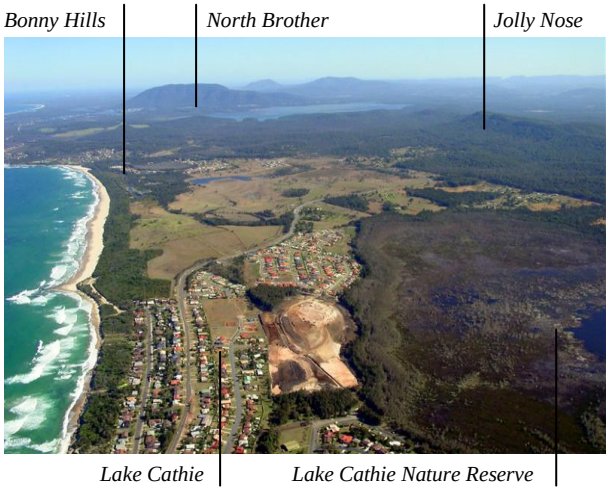



*Figure 1 – Locality*




### 5.1.2 LOCATION

The Study Area comprises vacant or sparsely settled coastal lands in the undulating to flat country between the villages of Lake Cathie and Bonny Hills. Part of the study area is zoned 2(a4) and part 1(a1) Rural under Hastings LEP 2001. The study area includes a section of Crown Road between Lot 4 DP 255923 and Lot 5 DP 594793 and adjoining Lot 1 DP 255923 to the south and the existing residential development of Lake Cathie.

The study area lies to the north of Ocean Drive and part can also be accessed via Houston Mitchell Drive and Forest Park Way.

### 5.1.3 THE URBAN RELEASE AREA

HUGS 2001 identified the urban release opportunities within "Area 14". These areas are shown hatched and edged red on **Figure 2** below and includes land within the Stage 1A study area.

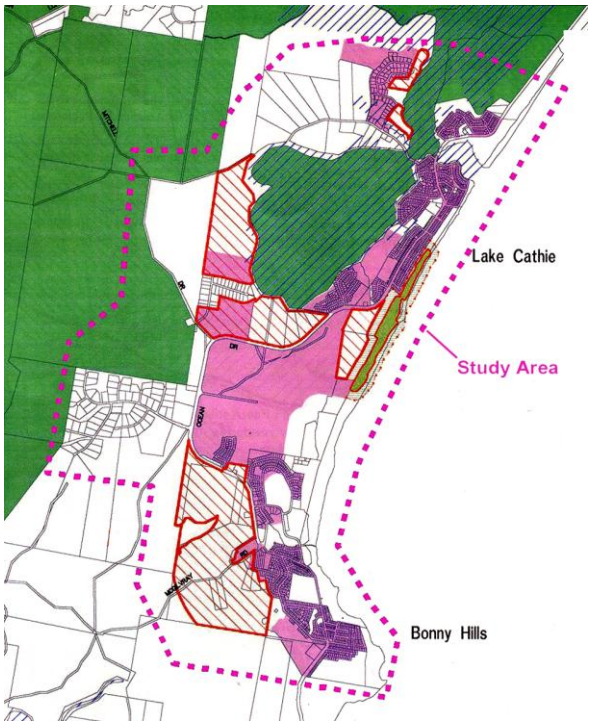



*Figure 2 – Plan of HUGS Urban Investigation Areas for Area 14*

### 5.1.4 SITE MAP

The LES area only constitutes a small percentage of the overall Master Plan area. Figure 3 shows the Stage 1A study area.


*Figure 3 – Stage 1A LES Study Area*

### 5.1.5 LAND PARCELS AND TERRAIN

The cadastral pattern of subdivision and its relation to topography is shown in Figure 4 below.

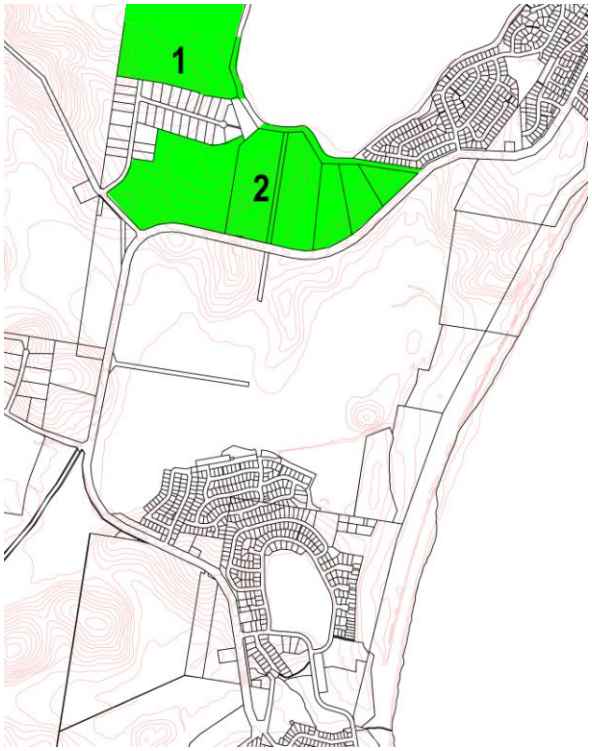



*Figure 4 - Land parcels & Topography (2m contours)*

### 5.1.6 OWNERSHIP, TENURE, FRAGMENTATION

The two segments are private freehold property (excluding Crown Road Reserves). All, but the most northerly (Segment 1), are currently subdivided into medium sized holdings ranging from around 1 hectare to around 20 hectares.

*Segment 1 with Lake Cathie SEPP14 Wetlands backdrop*

*Segment 2 _ Looking North to Lake Cathie from Ocean Drive*

*Motel at Eastern end of Segment 2*

*Rural style residence on Segment 2*

A Development Application for a 257 site SEPP 36 Manufactured Housing estate and associated structures has been lodged with Council for land within Segment 2 (Lot 4 DP 255923, Lot 5 DP 594793 & Crown Road Reserve). The application was accompanied by a Voluntary Planning Agreement which deals with water, sewer, roads and open space and a Koala Plan of Management (KPOM) that has been adopted.

## 5.2 EXISTING PLANNING FRAMEWORK

### 5.2.1 AREA 14 MASTER PLAN LEP

Draft Hastings LEP Amendment No.53 was exhibited during 2005. The draft LEP incorporates the following objectives:

a. to provide for the consideration of key planning objectives, strategies and plans where development is proposed on land to which the plan applies; and

b. to ensure that development within land to which the LEP applies is considered within the context of Council's strategic planning for the area.

The draft LEP seeks to make the Area 14 Master Plan, plus any infrastructure required for the development and any future development control plan, considerations in the assessment of future development applications.

### 5.2.2 SITE LAND USE & ZONING CONTEXT

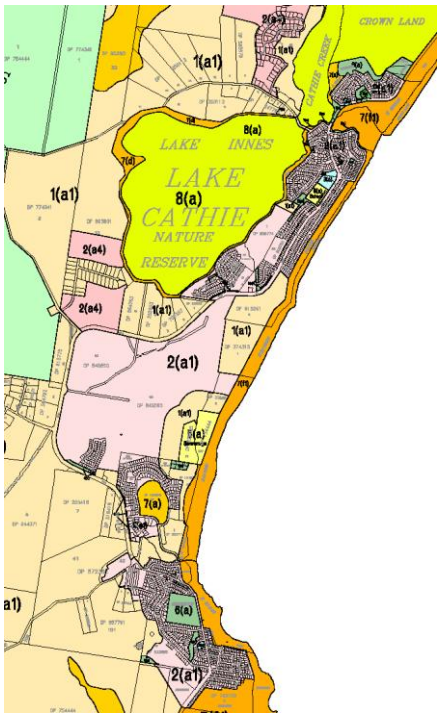



*Figure 5 - 2002 Land Use Zoning (Update extract to 2009)*

From inspection of **Figure 5** it can be seen that the subject lands are currently zoned under Port Macquarie-Hastings Council's LEP 2001 as below:

| SEGMENT | AREA | ZONING | LAND USE |
|---|---|---|---|
| 1 | ~ 15 ha | 2(a4) | Low density residential |
| 2 – east sector | ~ 38 ha | 1(a1) | Rural |
| -- west sector | ~ 20 ha | 2(a4) | Low density residential |
| **TOTAL** | 73 ha | | |

The Hastings LEP 2001 nominates the relevant zone objectives as:

**Zone 1 (a1) Rural**

***Zone objectives***

*To protect and encourage utilisation of the productive potential of agricultural, extractive and mineral resources located in rural areas.*

*To protect the amenity of rural residential subdivision areas.*

*To prevent the unnecessary, premature or sporadic fragmentation of rural land, to protect the agricultural potential of land and also to ensure that development does not create unreasonable or uneconomic demands for the provision or extension of public amenities and services.*

*To enable appropriate development where allowed with consent.*

**Zone 2 (a4) Low Density Residential**

***Zone objectives***

*To identify urban land suitable for low-density residential development that is consistent with the protection of environmental qualities of the site.*

*To enable the provision of services and facilities associated with a residential land use and which are unlikely to adversely affect the residential amenity or environmental qualities in the vicinity.*

*To enable appropriate development where allowed with consent.*

The adopted HUGS report recommends that the above lands be further investigated for potential conversion to allow urban development. Current zone objectives for residential development contained in Hastings LEP 2001 are as follows:

**Zone 2 (a1) Residential**

***Zone objectives***

*(a) To identify land suitable for residential purposes.*

*(b) To ensure the provision of services and facilities associated with residential land uses or which are unlikely to affect residential amenity.*

*(c) To ensure a variety of housing choice.*

*(d) To enable appropriate development where allowed with consent.*

Council is currently preparing a new comprehensive LEP for the Port Macquarie-Hastings local government area. The new LEP will be in the standard template format. A draft LEP for the study area will also be prepared using the standard template zonings.

### 5.2.3 STATUTORY INSTRUMENTS

The impact of statutory instruments whose contents might impinge on the study area is tabled below, with responses.

| Planning Instrument | Comment |
|---|---|
| Hastings LEP 2001 | Discussed in previous section |
| North Coast REP | Discussed in earlier section |
| SEPP 14 - Coastal Wetlands | Affects Lake Cathie water body. Discussed in environmental issues. |
| SEPP 26 - Littoral Rainforests | Not applicable to Study Area |
| SEPP 44 – Koala Habitat Protection | Requires the preparation of a KPoM where Koala Habitat is identified |
| SEPP 71 -Coastal Protection | Discussed in next section |
| Section 117 (2) Directions | Discussed below |

***Section 117 Directions***
Directions under Section 117(2) of the Environmental Planning and Assessment Act allow the Minister for Planning to require Council to prepare a draft LEP (a rezoning proposal) in accordance with the principles specified in the Directions.

If a Council does not comply with the relevant directions, the Director of Planning may refuse to issue the Section 65 certificate required to place the draft LEP on public exhibition, thus preventing the making of the LEP (where the rezoning proposal is made law). Relevant Section 117 Directions are referred to below:

**1.2 Rural Zones**
This Direction applies aims to protect the agricultural production value of rural land and applies when Council prepares a draft LEP that affects land within an existing rural zone. The study area is not considered significant agricultural land.

**1.3 Mining, Petroleum Production & Extractive Industries**
This Direction applies to the preparation of a draft LEP that either introduces a prohibition on mining of coal or other materials, production of petroleum or winning or obtaining of extractive materials.

**2.1 Environmental Protection Zones**
The objective of this direction is to protect and conserve environmentally sensitive areas. Draft LEP provision for the study area will include provisions that facilitate the protection and conservation of environmentally sensitive areas and does not propose to alter any existing environmental protection zones.

**2.2 Coastal Protection**
The objective of this direction is to implement the principles in NSW Coastal Policy and provides that a draft LEP shall include provisions that give effect to and are consistent with NSW Coastal Policy & NSW Coastline Management Manual 1990. Refer to Section 5.0 below.

**2.3 Heritage Conservation**
The Direction aims to conserve items, areas, objectives and places of environmental heritage significant and indigenous heritage significance. No items have been located as part of the planning investigations for the Stage 1A study area.

**3.1 Residential Zones**
The objective is to encourage a variety and choice of housing types, make efficient use of existing infrastructure and services and minimize impact of residential development.

**3.2 Caravan Park & Manufactured Home Estates**
The draft LEP amendment does not affect any existing caravan parks and does not preclude consideration of manufactured housing estates on suitably zoned sites.

**3.3 Home Occupations**
The draft LEP does not propose to alter provisions relating to home occupations carried out in dwelling houses.

**3.4 Integrating Land Use & Transport**
This Direction states that a draft LEP shall locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of *"Improving Transport Choice – Guidelines for Planning and development"* - DUAP 2001 and "*The Right Place for Business & Services"* – DUAP 2001.

**4.1 Acid Sulphate Soils**
Refer to Section 5.7 below.

**4.3 Flood Prone Land**
This Direction requires a draft LEP to be consistent with the provisions of the NSW Flood Prone Land Policy including the *Floodplain Development Manual 2005* and to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land.

Flooding is referred to in Section 5.5.

**4.4 Planning for Bushfire Protection**
The subject land has been identified as bushfire prone and the provisions of Planning for Bushfire Protection 2006 are referred to in Section 6.5.

**5.1 Implementation of Regional Strategies**
The subject land has been identified in the Mid North Coast Regional Strategy.

**6.2 Reserving Land for Public Purpose**
Reservation of land for a public purpose that would require the approval of a public authority is not anticipated for the subject land.

### 5.2.4 NON-STATUTORY PLANS & POLICIES

The impact of non-statutory policies whose contents might impinge on the study area is tabled below, with responses.

| Planning Instrument | Comment |
|---|---|
| NSW Coastal Policy 1997 | Largely superseded by SEPP71, but canvassed below. |
| North Coast Urban Planning Strategy (Dept. Urban Affairs & Planning | Port Macquarie-Hastings Council has observed & incorporated the key |

| | |
|---|---|
| 1995) | premises of this policy in its Hastings Urban Growth Strategy 2001 |

| Planning Instrument | Comment |
|---|---|
| Hastings Urban Growth Strategy 2001 (HUGS) | Approved by Planning NSW as precedent for this LES. |
| Lake Cathie - Lake Innes Estuary Management Plan 1994 | Estuary is well outside Study Area although Lake Shores are proximate. Buffer protection and water quality management will meet Plan requirements. |
| Hastings Effluent Management Strategy 1998 | Discussed in study text. |
| Draft Major Roads and Traffic Study 2001 | Discussed in study text. |
| Hastings District Water Supply Strategy 1999 | Discussed in study text. |
| Hastings Urban Stormwater Management Plan 2000 | Discussed in study text. |
| Draft Vegetation Management Plan (Cooper, and EcoGraph 1999) | Discussed in study text. |
| Coastal Design Guidelines 2003 | The Minister for Planning has issued a Direction under section 117 of the Environmental Planning and Assessment Act 1979 to all local councils in the coastal zone regarding the Coastal Design Guidelines 2003. In preparing a draft local environmental plan, councils are required to include provisions that give effect to and are consistent with the Coastal Design Guidelines, unless the inconsistency is justified by an environmental study or strategy. |

### 5.2.5 THE NSW COASTAL POLICY

The 1997 Coastal Policy is based on the four principles of ESD contained in the Intergovernmental Agreement on the Environment (IGAE) signed in 1992. These principles are:

- Conservation of biological diversity and ecological integrity. This refers to the need to conserve the variety of all life forms, especially the variety of species, and to ensure that the productivity, stability and resilience of ecosystems is maintained.
- Inter-generational equity. This requires that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. Social equity considerations, in terms of equal access opportunities to resources, is inherent in the concept of inter-generational equity.
- Improved valuation, pricing and incentive mechanisms. This requires environmental factors, such as the value of ecosystems, polluter pays principles etc, to be incorporated into the valuation of assets and services and considered in decision making processes.
- The precautionary principle. Requires a risk averse approach to decision making. Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty is not to be used as a reason for postponing measures to prevent environmental degradation.

Being within 1 kilometre of the Pacific Ocean the Study Area is affected by "*The NSW Coastal Policy – A Sustainable Future for the NSW Coast*" re-released in 1997. Shortly afterwards, the Minister for Planning re-issued a Direction under Section 117 of the Environmental Planning and Assessment Act 1979 for all local councils in the coastal zone regarding the Coastal Policy 1997. In preparing a draft Local Environmental Plan (LEP), the Direction requires councils to a) include provisions that give effect to and are consistent with the NSW Coastal Policy 1997; and b) not alter, create or remove existing zonings unless a Local Environmental Study for the draft LEP has been prepared and considered by council.

The planning principles in the Policy have since been embodied more comprehensively in SEPP71, and in the draft Urban Design guidelines released by the Coastal Council in 2001. This LES addresses the principles of Coastal Planning generally as expressed in SEPP71.

### 5.2.6 SEPP 71 SIGNIFICANT COASTAL DEVELOPMENT

Note that the subject lands are within the Coastal Zone as defined in the Coastal Protection Act 1979, and therefore affected by SEPP 71. Clause 8 of SEPP 71 sets out certain environmental matters which must be addressed in the course of preparation of a draft Local Environmental Plan, if relevant, particularly including "*the means to encourage compact towns and cities.*" These matters also must be addressed by this Study.

Furthermore because of the proximity to Lake Cathie, most of the subject land in is also categorised in Schedule 2 of SEPP 71 as a "Sensitive Coastal Location", thus causing any proposed urban subdivision to be deemed "Significant Coastal Development" for which the Minister will be the consent authority.

The full text of SEPP71 may be perused on the Planning NSW website. An abbreviated version of Clause 8 (with irrelevancies and redundancies deleted) is provided below:

**SEPP71**

***8 Matters for consideration (abbreviated)***

*The matters for consideration when processing a draft LEP or development application are the following:*

*(d) the suitability of development given its type, location and design and its relationship with the surrounding area,*

*(e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,*

*(f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities,*

*(g) measures to conserve animals (within the meaning of the* Threatened Species Conservation Act 1995*) and plants (within the meaning of that Act), and their habitats,*

*(i) existing wildlife corridors and the impact of development on these corridors,*

*(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,*

*(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals,*

*(m) likely impacts of development on the water quality of coastal water bodies,*

*(n) the conservation and preservation of items of heritage, archaeological or historic significance, and*

*(o) only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities,*

### 5.2.7 PART 3A EP & A ACT

On 9 June 2005 the NSW Parliament passed the Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) Bill. This contains key elements of the NSW Government's planning system reforms through major changes to both plan-making and major development assessment.

In deciding whether or not to grant a Part 3A Project Approval, the minister must consider:

- any findings or recommendations of the Commission of Inquiry
- the Director-General's report on the project, and
- (if the proponent is a public authority) any advice provided by the minister having portfolio responsibility for the proponent.

A Part 3A Approval may be granted subject to conditions.

Alternatively, the minister may require or permit an applicant to submit an application for a Concept Plan Approval for the development and proceed to grant approval to the development on that basis without the need for further Part 3A approval. It is envisaged that Concept Plan Approvals will be utilised for projects likely to be long term or complex.

Less detail is required in an application for a Concept Plan Approval. The application must, at a minimum:

- outline the scope of the project and any development options
- set out any proposal for the staged implementation of the project, and
- contain any other matter required by the Director-General.

In approving a Concept Plan the approval can specify whether any further environmental assessment is required for the project, or for a particular stage of the project. Any subsequent approvals must generally be consistent with the concept plan and the assessment requirements of the Minister. A Part 3A Concept Plan & Project Applications have been lodged with the Department of Planning for land to the south of the study area.

### 5.2.8 COASTAL DESIGN GUIDELINES

The coastal design guidelines support a place-based planning approach, in line with PlanFirst, the NSW State Government's plan making reform package released in 2002. The guidelines contribute to defining appropriate settlement types and developing place-specific development control plans. Under PlanFirst the coastal design guidelines are able to be incorporated into the part of a locality plan that deals with settlements. In the absence of place-based planning instruments the guideline document is an important resource for testing settlement strategies and development control plans. It may be integrated with master plans and development control plans as they are currently formulated and enacted.

### 5.2.9 DEVELOPMENT ASSESSMENT

The design guidelines support pre-development application discussions between potential applicants and the local council. The emphasis of these meetings should be on understanding the local context in relation to the proposed development site as well as proposed building design. The intent of the discussion is to agree to site and context issues that need to be addressed in the development application submission. The Residential Flat Design Code published by PlanningNSW in 2002 provides a list of suggested documentation items required for pre-DA discussion for residential flat buildings as well as guidance on building design.

### 5.2.10 NORTH COAST SETTLEMENT PLANNING GUIDELINES

These Guidelines have been developed to assist councils in preparing a local growth management strategy to achieve the planning outcomes and actions in the Far North Coast Regional Strategy and the Mid North Coast Regional Strategy.

In particular the guidelines provide:

- detail on environmental criteria and their application;

- planning and urban design principles for residential, rural residential, commercial, industrial and tourism lands; and
- a framework for a new Housing and Land Monitor.

The regional strategies require councils to prepare a local growth management strategy prior to preparing a local environmental plan to zone land for all residential, rural residential, commercial and industrial land uses as well as, in some circumstances, for special purposes like tourism.

The guidelines should be read in conjunction with the regional strategies as the local growth management strategy will need to be consistent with the regional strategies and with these guidelines.

#### 5.2.11 HASTINGS–MACLEAY VALLEY SUBREGION

The draft Strategy makes it clear that new commercial and retail development, employment, professional services and transport logistics will be concentrated in centres such as Port Macquarie, rather than isolated areas, sensitive coastal locations and natural environments.

Growth in this subregion is expected to occur in a number of new release areas such as Thrumster in Port Macquarie, the area between Lake Cathie and Bonny Hills, Camden Haven–Lakewood and South West Rocks (subject to environmental constraints). Kempsey has substantial potential for further growth, including the capacity for infill development within the existing urban area.

Future settlement patterns will be identified and articulated in local growth management strategies developed by the Department of Planning and local councils.

Any development outside that identified in a local growth management strategy will need to satisfy the sustainability criteria listed in the strategy. These criteria cover issues such as environmental protection, natural resources, hazards, infrastructure provision, access, housing diversity and employment.

#### 5.2.12 MID NORTH COAST REGIONAL STRATEGY 2009

The Strategy prepared by the NSW Department of Planning applies to eight north coast local government areas including Port Macquarie-Hastings. The Strategy will guide development over the next 25 years and aims to protect high value environments; cater for additional housing demand; ensure adequate land to support economic growth; encourage growth in the region's 4 major centres (including Port Macquarie); protect the coast by limiting urban sprawl; limit development in places constrained by coastal process, flooding and wetlands; and protect important farmland and areas of high scenic and conservation value and places of cultural and Aboriginal heritage significance.

Growth within the Hastings-Macleay Valley is expected to occur in a number of new release areas including the area between Lake Cathie and Bonny Hills.

The draft growth area map for Port Macquarie- Hastings (Map No.7) identifies Area 14 Stage 1a land within a Future Growth Area. Existing rural zoned land within Stage 1a is identified as "Proposed Future Urban Release Area" with some areas indicative of high level constraints.

#### 5.2.13 MID NORTH COAST FARMLAND MAPPING PROJECT

The Mid North Coast Farmland Mapping Project has been prepared in partnership by NSW Department of Planning, Department of Primary Industries and Department of Environment and Climate Change.

The mapping project identifies regionally significant farmland on the north coast and proposes that new urban or rural residential development zones avoid regionally significant farmland.

Area 14 Stage 1a land has not been identified as regionally significant farmland.

#### 5.2.14 AREA 14 KOALA PLAN OF MANAGEMENT

The Department of Planning has prepared guidelines to assist implementation and assessment for the purposes of SEPP 44, including those relating to the preparation of both comprehensive and individual Koala Plans of Management. According to these guidelines an Individual Plan of Management must, *inter alia*, address such matters as:

- an estimate of population size;
- identification of preferred feed tree species for the locality and the extent of resource available;
- an assessment of the regional distribution of koalas and the extent of alternative habitat available to compensate for that to be affected by the actions;
- identifications of linkages of *Core Koala Habitat* to other adjacent areas of habitat and provision of strategies to enhance and manage these corridors;
- identification of major threatening processes such as disease, clearance of habitat, road kill and dog attack which impact the population;
- provision of detailed proposals for amelioration of impacts on koala populations from any anticipated development within zones of *Core Koala Habitat*;
- identification of any opportunities to increase size or improve condition of existing *Core Koala Habitat*.

The KPoM prepared by Biolink, is comprised of two sections - Part A provides ecological data and addresses relevant issues of koala food tree preferences, population size, Potential and Core Koala Habitat. Part B provides a general discussion and interpretation of the ecological data in order to build the framework upon which management

decisions should ideally be based, prior to promulgation of the KPoM's working provisions.

## 5.3 EXISTING AND TARGET DEMOGRAPHICS

Setting aside private speculative investment motives, the public need to rezone for urban purposes is driven by the need to match forecast immigration to available residential land stock. The Study should confirm that the land supply generated by any rezoning is adequate to meet forecast demand for urban land, whilst not wastefully alienating farmland and habitat by over-supply.

### 5.3.1 EXISTING POPULATION

The current permanent population of the Study Area is around 15 persons, although Segment 2 also includes a tourist facility, a small motel, which adds perhaps a similar transient population.

### 5.3.2 HUGS TARGETS

In Table A3, HUGS identified the expected Lake Cathie – Bonny Hills in-fill rate at 300 persons/annum for the next twenty years, rising from the 2001 population estimate of 3,900 persons to a potential 9,900 persons by 2021. This corresponds to an increase of 2500 dwellings with a related land consumption of around 208 ha.

This Environmental Study covers potential growth area of approximately 73ha, however part of the study area is not suitable for urban development. Around 370 ha has already been zoned for residential purposes in the past 15 years however it should be acknowledged that some of this land is also constrained and not suitable for urban development.

The degree of utilisation of this already zoned land in the adopted Master Plan will affect the need for the further land releases examined in this Study.

**TABLE A3 Housing Balance Sheet: Lake Cathie – Bonny Hills**

| 5 Years Ending | Population | | Persons/ Dwelling | Dwellings | | Dwellings / Hectare | Land (Ha) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Change | | | Change | | Used | Rezoned | Usable Reserves |
| 1971 | na | | | | | | | | |
| 1976 | 710 | na | | | | | | | |
| 1981 | 1,400 | 690 | | 792 | | | | | |
| 1986 | 1,960 | 560 | 3.8 | 939 | 147 | | | 297 | |
| 1991 | 2,600 | 640 | 3.2 | 1.142 | 203 | 12 | 17 | 72 | |
| 1996 | 3,200 | 600 | 2.5 | 1,382 | 240 | 7 | 36 | 5 | 73 |
| 2001 | 3,900 | 700 | 1.8 | 1,767 | 385 | 11 | 34 | 0 | 39 |
| 2006 | 5,400 | 1,500 | 2.4 | 2,392 | 625 | 12 | 52 | 0 | 83 |
| 2011 | 6,900 | 1,500 | 2.4 | 3,017 | 625 | 12 | 52 | 40 | 71 |
| 2016 | 8,400 | 1,500 | 2.4 | 3,642 | 625 | 12 | 52 | 30 | 48 |
| 2021 | 9,900 | 1,500 | 2.4 | 4,267 | 625 | 12 | 52 | 0 | -4 |

NOTES:

1. Refer to the text for limitations regarding timing of development. No further development can be approved or urban rezoning made until increased sewage treatment capacity is available.
2. Land used: net change in land reserves, excluding rezonings, over 5 years.
3. Land rezoned: net change in vacant land with Residential zoning, over 5 years.
4. Land usable reserves: vacant residential-zoned land over 0.4 hectares. To 2001 includes services land only.
5. Assumed that increased wastewater services capacity will be available by 2006.
6. Date for 2001 is projects, not estimated off actual census data.

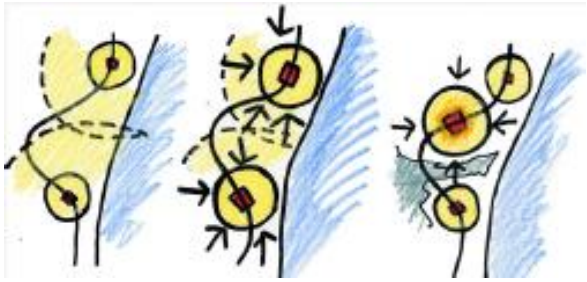
Source: HUGS 2001 Appendix A Housing Balance Sheet

### 5.3.3 THE LAKE CATHIE & BONNY HILLS MASTER PLAN

The Master Plan for Greater Lake Cathie – Bonny Hills was adopted by Council in 2004. Map 3 from the Master Plan has been updated by Deicke Richards to reflect the recent changes to the Master Plan as a result of changes to legislation, constraints such vegetation mapping and the inclusion of additional land within the Stage 1A boundary and has been included as Figure 6 on the following page

### 5.3.4 URBAN DESIGN

In order to conceptualise an appropriate urban form for Area 14, the master planning process identified three alternative future strategies.



**1** **2** **3**

Future one demonstrates unplanned residential expansion of the two existing villages, most probably of low density. The higher order community needs are not integrated and the resultant housing would be sprawling detached housing offering little housing choice. Pockets of medium density housing could be incorporated, but at edges where views are available rather than supporting centres. Trips to Port Macquarie or Laurieton would be needed for higher order activities.

Future Two sees the growth of Area 14 as urban consolidation and extension of both Lake Cathie and Bonny Hills. Development in the potential growth area between the villages will focus towards these settlements. While both settlements have the potential to expand towards the west, on land closer to the existing village centres, this land is on the edges of the villages, within areas of environmentally and visually significant vegetation. Also, existing developments in these locations are of low density and street connections from these areas to existing places within Area 14 are poor. Therefore, it would be unlikely that higher residential densities and housing choice could occur in these locations if developed.

This future would create considerable change and development pressure for each village with the need to incorporate larger shopping uses, community facilities and medium density housing within the current urban pattern. Redevelopment will require consolidation of lots. Without new centres of any size, the growth areas on the edges of the existing villages would remain as sprawling lower density detached housing and offer little housing choice. This future does not reach the development potential of land that is well located for good urban design outcomes and does not provide a sustainable outcome for the new growth areas.

The third possible future sees the new growth areas as the location of the higher order needs for the growing community configured as another village or villages between the two existing settlements. New growth would focus upon these locations. Within new growth areas, there is more potential for the integration of larger scale retail uses, and a variety of housing densities.

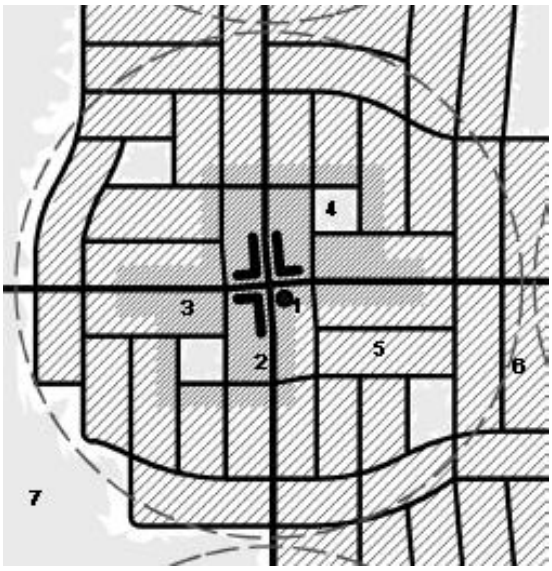
This third possible future is considered to be preferred for the following reasons:

- Lake Cathie and Bonny Hills are separated. There is enough land that is well integrated and connected to the overall urban structure of Area 14 to accommodate new discrete, neighbourhoods or villages between them.
- There are environmental corridors restricting the area of expansion around Lake Cathie and Bonny Hills.
- Larger portions of the site are in single ownerships. This allows appropriate areas of land for large scale uses; supermarkets, community facilities, schools, regional sporting facilities, to the incorporated and their inter relationships will readily achieved.
- The land is undulating and elevated facilitating high quality urban design outcomes.
- The existing settlements will have less pressure and need for major redevelopment, allowing them to easily retain their existing character.
- Street systems can be designed to accommodate a variety of lot sizes and housing types.


*Cluster of neighbourhoods forming a town. Major centre identified. Streets directly connect neighbourhood centres. Large open spaces and bushland frame town. Linear open space corridors through town. Schools located away from centres, on open space corridors*

The Master Plan advocated for the new main centre to be immediately to the south of Area Two (2) across Ocean Drive with higher density residential uses proposed close to

the centre to create a more sustainable urban outcome. Workplaces can be incorporated in mixed use buildings. The Master Plan virtually requires the bulk of Area Two (2) to be housing while acknowledging the environmental qualities of the area.




Legend
**1** Neighbourhood Centre
**2** Main roads linking to adjacent neighbourhoods
**3** Higher density residential
**4** Park
**5** Residential
**6** 400m radius from centre
**7** Environmental Open Space

The Master Plan informs the Study in regards to the desired pattern of urban development as it affects the Study Area.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Oversupply of land releases in HUGS Area 14 | Limit any urban rezoning recommendations to the areas identified in the Area 14 Master Plan 2003 prepared by Deicke Richards Architects and Mid North Coast Regional Strategy. |
| Integration with contextual land use proposals | Maintain consistency with the Area 14 Master Plan 2003 prepared by Deicke Richards Architects. |

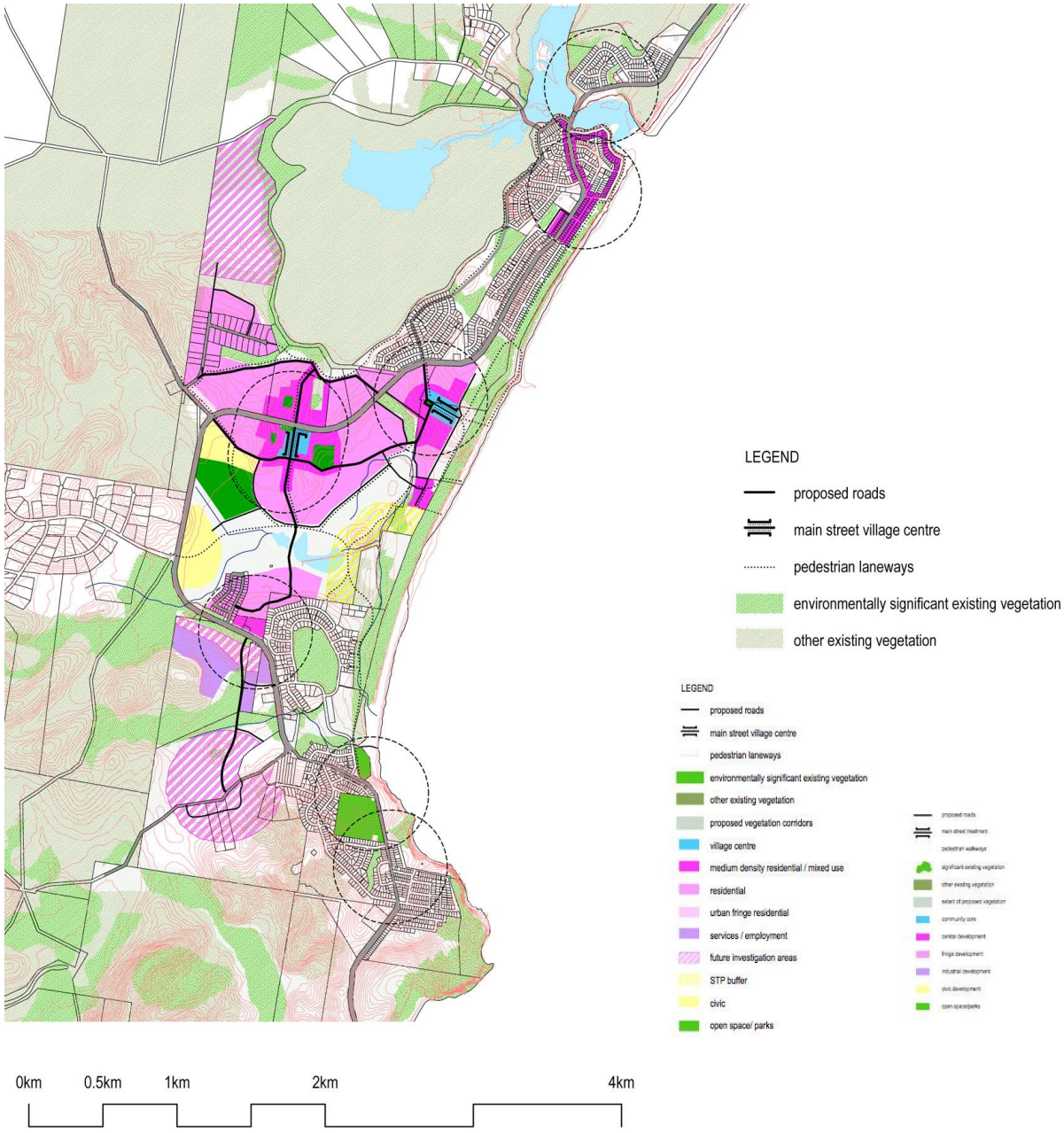



*Figure 6 –Lake Cathie – Bonny Hills Master Plan 2004*

# NATURAL (BIO-PHYSICAL) ENVIRONMENT

## 5.4 AMBIENCE AND AMENITY

### 5.4.1 SETTING

The site nestles in the lower end of a broad ocean front basin in the foothills of the coastal ranges, between the existing holiday/ dormitory/ retirement villages of Lake Cathie and Bonny Hills. The basin splits into two sub-catchments, one falling into Lake Cathie, and the other into Duchess Creek, before draining to the Pacific Ocean. The study area is mostly cleared grassland with scattered remnant native trees, some regrowth and smaller vegetation.

The visual backdrop is of the hills to the west clad with Queens Lake State Forest and some distinctive mountain peaks – Jolly Nose to the south west and Middle Brother and North Brother to the south. The north segments of the site are framed in the northeast by the peripheral wetland vegetation communities fringing the shores of Lake Cathie, and the managed native forest to the west.

*View to Jolly Nose from Ocean Drive*

The values in this setting are largely related to visual access to the regional landscape backdrop, and occasionally the ocean. In the event of rezoning in accordance with the master plan, the foreground views of open pasture are susceptible to change – but these are the lowest rated contributors to the visual amenity of the study area. Access to the background could be affected by insensitive building scale on the former open pasture and therefore this should be protected in any DCP process that succeeds a rezoning approval.

### 5.4.2 ASPECT

Most of the lands in the study area have a northerly aspect (some in Segment 2 being a little more north-westerly.) This site orientation is therefore favourable to maximum solar access for solar hot water and solar electricity generation, as well as for passive solar design of dwellings.

There are pleasant views from the elevated portions of the Study Area, although only isolated opportunities for sea views. Lake Cathie itself will generally remain obscured by the perimeter melaleuca forest and other emergent wetland margin species.

### 5.4.3 CLIMATE

Lake Cathie- Bonny Hills enjoys a pleasant warm temperate climate. Being at latitude 32$^{o}$, it is at the southern extremity of the sub-tropical climate zone with a rainfall of approximately 100cm per annum. Summer temperature peaks range from 23 to 25 degrees Celsius with winter minima in the 6 to 12 degree Celsius range. The area enjoys prevailing summer winds mostly between north easterly and south easterly, afternoon sea breezes, and close proximity to the Pacific Ocean. It therefore offers moderate outdoor conditions in all seasons; thus encouraging sustainable transport (walking and cycling), and requiring minimal energy inputs to dwellings to maintain liveable conditions.

As such the climate is ideal for sustainable human habitation.

### 5.4.4 TOPOGRAPHY

Landform. As can be seen from **Figure 6**, the land is between 5m and 20m above sea level. It is generally undulating with few steep slopes or deep defined gullies. This lends itself to the economical construction of road infrastructure, public utilities and housing.

The gently rolling hills also present design opportunities for allowing terraced rows of dwellings access to sunlight, breezes, and retaining pleasant coastal views, even in the context of a compact suburban structure.

Gentle road grades are also conducive to sustainable self-powered transport and walkable neighbourhoods.

Dominant Features. Study requirements from Planning NSW include the protection of "escarpments and hilltops" from inappropriate development where relevant. There are no escarpments or hilltops within the study area, although a ridge from the hilltop location of the proposed town centre extends north through segment 2. (see **Figure 5**). Because of the forest and mountain backdrop, development on that ridge is unlikely to interrupt the visible horizon for remote observers.

Access to Views. Clause 8(e) of SEPP71 requires "significant overshadowing or significant loss of views from public places" to be avoided in rezoning activities. The only current public places within the study or master plan areas tend to be public roads. The generally low profile of the site and the storey height limitations in the Hastings LEP will adequately ensure against this contingency.

**CONSTRAINTS SUMMARY**

| Issue | Action |
|---|---|
| Visual Access to landscape | Restrict development above 3 storeys |
| Protect 'escarpments and hilltops" from building profiles on | N/A, as none within study area. |

visible horizon

## 5.5 HYDROLOGY

There are no declared streams, named watercourses or permanent surface waters within the study area. Surface stormwater runoff from Segments 1 and 2 flows into Lake Cathie. Ocean Drive forms a ridge watershed to the south of Segment 2.

The seasonal filling of Lake Cathie may however encroach on the fringes of the northern segments of the study area. This has implications for surface water and groundwater protection, as well as for its associated riparian habitat.

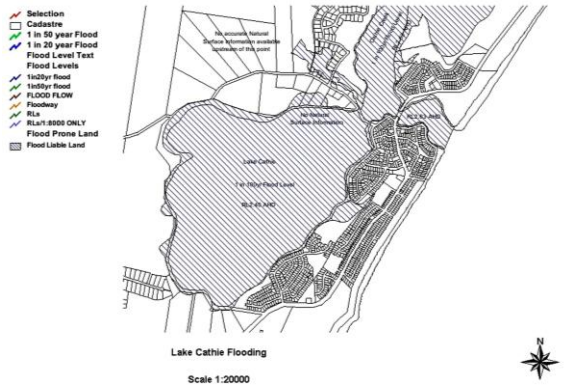



*Figure 7 - Lake Cathie Flooding. (This plan is based on the 1984 Flood Study and does not account for effects of climate change).*

A flood study for Lake Cathie-Lake Innes prepared in 1984 has set existing flood levels for the system. The study does not consider the effect of climate change, associated sea level rise (SLR) and the impacts SLR will have on the interaction with the berm at the lake entrance / ocean interface. In the absence of a comprehensive, updated flood study Council has agreed to an alternative approach to ensuring flood immunity for future development and infrastructure. The alternative assumes a closed lake with a berm height of 2.6mAHD and adds 900mm allowance for SLR in accordance with NSW government policy benchmarks for sea level rise. This results in a 100 flood year level of 3.5mAHD. The addition of 500mm freeboard gives a flood planning level of 4.0mAHD.

Groundwater movement patterns are likely to mirror this surface pattern and the hydraulic gradient intercepting the land surface at Lake Cathie and Duchess Creek is outside the study area.

There would not appear to be any serious implications for urbanisation in this pattern, providing "Best Practice" water sensitive design principles are observed in the development process.

(The potential impact of changed land use on drainage and water quality is discussed later in the document.)

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Flooding encroachment from Lake Cathie into HUGS Area 14 | Provide adequate buffer that addresses SEPP14 wetlands ecological values and flood protection.<br><br>Adopt of a revised 100year flood level of 3.5mAHD.<br>The Flood Planning Area (FPA) is to be 4.0mAHD.<br>Require all infrastructure to be built at the revised 100year flood level of 3.5mAHD.<br>Only consider a variation to the 3.5mAHD flood level where supported by a comprehensive updated Flood Study for the Lake Cathie Lake Innes System. |
| Existing surface and sub-surface drainage patterns. | Protect and enhance existing watercourses (with buffers and riparian planting). Adopt water-sensitive design principles to ensure water tables remain charged after urbanisation |

### 5.5.1 RIPARIAN VALUES, WETLANDS

As stated earlier there is no permanent surface water evident in the study area, but the seasonal high water mark in lake Cathie may encroach onto study area segments 1 and 2.

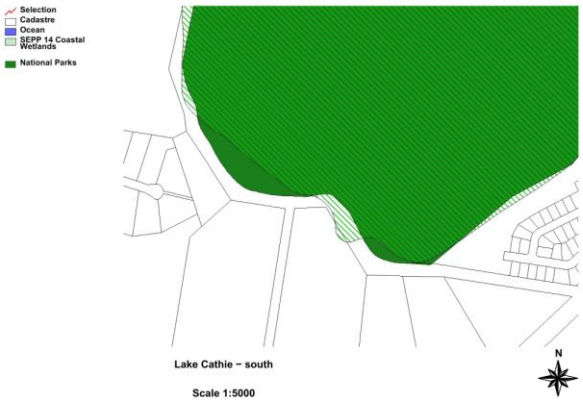



*Figure 8 - SEPP14 and National Park Buffer*

Lake Cathie is a designated wetland under State Environmental Planning Policy No. 14 (SEPP14), although the gazetted boundaries of the wetland do not precisely correspond with the boundaries of the National Park proclamation. (Note that only that small part of the SEPP14 area lying outside the National Park is actually subject to the provisions of SEPP14.)

The NPWS submission places a high environmental value on the peripheral habitat surrounding Lake Cathie and its role as a wetland biological filter, protecting the lake from nutrients and pollutants.

Consequently it would be appropriate for this study to nominate a suitable riparian buffer of at least 50m (preferably 100m) exclusive of any bushfire fuel reduction buffers or other buffers required for bush fire management) to the NPWS estate boundaries of the lake, with appropriate protective zoning to segments 1 and 2.

Negotiations associated with the development consent for a manufactured housing estate on Lot 5 DP594793 and Lot 4 DP255923 supports that an effective buffer between 70-80m can be achieved when the unformed crown road and the perimeter road are combined with a 30m environmental buffer. This approach may be appropriate for application elsewhere in the Stage 1A area.

*Typical Buffer Interface between SEPP14 wetland and HUGS release area Stage 1a*

The wetland protection buffer would preferably be in addition to any bushfire fuel reduction buffer provided to proposed urban development. Environmental Management Plans would be required for any lands transferred to public ownership as a consequence of their buffer status, paying particular regard to the need for excluding domestic and feral cats and dogs from the National Park.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| SEPP14 Wetland Buffer | Provide 100m. buffer to L. Cathie NP where adjacent to urban release areas. |
| Buffer Ownership & Zoning. | Allow retention of current ownership where no other public purpose involved (e.g. WQ management, public open space). Zone as E2 Environmental Conservation and/or E3 Environmental Management. |

## 5.6 SOILS & GEOTECHNICAL INVESTIGATIONS

### 5.6.1 GEOLOGY

Previous broad scale investigations by Port Macquarie-Hastings Council in 1981 indicated that Segments 1 and 2 are underlain by deeply weathered metasediments derived from schist, phyllite and slate. The north-eastern lake margins of Segments 1 and 2 also have a sedimentary layer of material eroded from the upper catchment with organic detritus at the surface. These margins therefore have some Acid Sulphate Soil potential which is separately discussed below.

### 5.6.2 SLOPE STABILITY

Slope does not exceed 1 in 10 (6°) and in consequence there are no issues of slope stability within the study area.

### 5.6.3 SOILS AND GROUND STABILITY

An investigation report prepared by Ardill Payne Associates is presented below:

Soil Landscapes and Geotechnical Assessment

Fig 9.0 details soil landscape zones extracted from draft 1:100,000 mapping of soil landscapes of the Camden Haven currently being prepared by Department of Land and Water Conservation and has yet to be ratified prior to formal publication.

The soil landscapes for Area 14 are described later in this report.

Fig 9.0 also shows a number of individual soil sample assessments recorded within the Department of Land and water Conservation's NSW Soil and Land Information System. Detail reports generated by the Department's Internet database - Soil Profile Attribute Data Environment (SPADE) for 4 samples in generally close proximity to the study area are included in this assessment.

Generally the higher elevations of segments 1 and 2 contain moderately well drained soils of strong structure although they do have the potential to become seasonally waterlogged and are subject to erosion.

Detailed soils investigation should be carried out to determine foundation requirements for future development.

The lower regions of segments 1 and 2, generally following natural gully lines, are characterised by poorly drained soils with high subsoil plasticity, low wet bearing strength and strong acidity. They are also subject to seasonal waterlogging and have the potential to create erosion and foundation hazards.

Whilst the soils in the study area do require further investigation to determine appropriate design parameters for future development construction works associated with building foundation, road pavements and drainage infiltration they are not expected to have any significant limiting factor that would preclude future development from occurring.

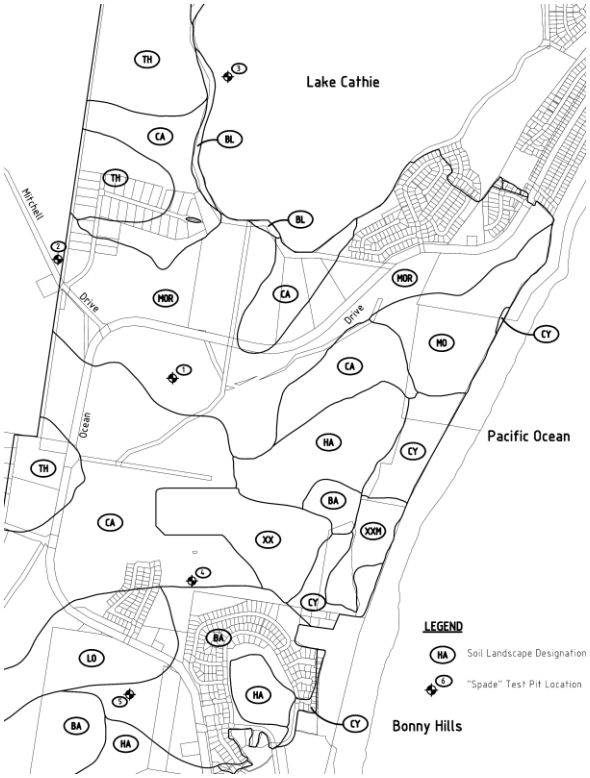



*Figure 9 - Soil Landscapes Mapping Plan*

It is clear from the report that due to the shallow topsoil profiles and extensive removal of vegetation other than grasses, potential for erosion exists. This should be recognised and managed in the course of "Water Sensitive Design" of any future subdivision or other development. This Study also proposes extensive rehabilitation of cleared lands to their former habitat role. Both circumstances would improve the current situation, and urban rezoning therefore would promote remediation of existing erosion potential.

Building foundations may be problematic in instances but are well within normal technical capabilities.

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Topsoil & surface soil potential to erode | Require soil management plans at DA stage incorporating water sensitive design |
| Building Foundation Suitability | Make provisions in subsequent DCP's for mandatory soil suitability analysis prior to subdivision |

## 5.7 ACID SULPHATE SOILS (ASS)

Engineering examination by Ardill Payne Associates indicate that ASS issues within Segments 1 and 2 are likely to be minor and manageable. Their report is as follows:

*Port Macquarie-Hastings Council has previously prepared broad-scale Acid Sulphate Mapping for its LEP in conjunction with its LEP 2010. It indicates that most of the study area is not likely to be influenced by the presence of actual or potential acid sulphate soils. Those areas which may be affected are generally the lower lying areas adjacent to natural gully lines and coastal lowland. Mapping identifies these areas as having Class 2 or 5 acid sulphate soils. In particular, Class 2 soils encroach into Segment 2 around the fringe of Lake Cathie. Category 5 soils are mapped in the northern portion of Segment 1, generally coincident with the swamp oak/paperbark timbered zone fringing an existing gully draining to Lake Cathie. Some low-lying gully areas within segment 2 are also mapped as Class 5 soils.*

*A development application is required for any proposal in mapped Class areas if it involves*

*Class 2 - Works below natural ground surface, works by which the watertable is likely to be lowered.*

*Class 5 - Works by which the watertable is likely to be lowered to below 1 metre AHD in adjacent Class 1, 2, 3 or 4 land.*

*Applications must generally be accompanied with an Acid Sulphate Soil Management Plan.*

*The Class 2 lands are not affected by urbanization as proposed in the master plan, and are recommended as lake edge buffer zones. The Class 5 lands are likely to be retained as public land in any urbanization, and could therefore be partly affected by roads, drainage, and utility construction.*

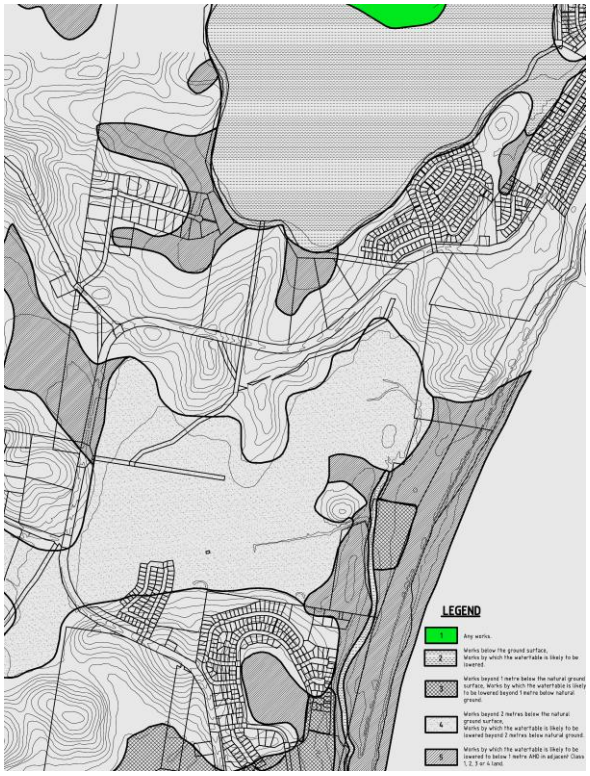



*Figure 10 - Acid Sulphate Mapping Plan*

*A review of natural drainage patterns and contours indicate that stormwater drainage is unlikely to impact acid sulphate soils due to the fact that these works are unlikely to affect ground water levels.*

*Sewerage reticulation works (particularly sewer pumping stations) may require further investigation into acid sulphate soils parameters. Regardless of their presence, proponents of development may accept that there will be a disturbance of acid sulphate soils associated with infrastructure construction and proceed to assess the potential impacts of disturbing these soils prior to developing a management strategy in accordance with ASSMAC guidelines and obtaining development consent.*

*Alternatively, proponents may undertake field and laboratory testing to verify whether acid soils are present or not. If not present, they may proceed with their proposal. If acid sulphate soils are present assessment of impacts and development of a management strategy will be necessary.*

*The above review by Ardill Payne Associates indicates that acid soils may be present in marginal areas, but can be managed within the regimes set up by the LEP and the EPA.*

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Acid Soils | 1. Avoid urbanisation in all Class 2 Acid Soil zones. |
| | 2. Allow public infrastructure development in Class 5 zones subject to compliance with relevant DCP |

## 5.8 NATURAL HERITAGE

### 5.8.1 LEGISLATIVE REQUIREMENTS

Council's in NSW are required by the *Environmental Planning and Assessment Act, 1979,* (EP&AA) to consider, conserve and encourage biodiversity. Section 5 of the Act states:

> *Section 5*
>
> *The objects of this Act are:*
>
> *(a) to encourage:*
>
> *.....*
>
> *(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
>
> *(vii) ecologically sustainable development*

Ecologically Sustainable Development is defined for NSW legislative purposes in the *Protection of the Environment Administration Act* 1991 - *Section 6*. Briefly it is founded on the precautionary principle, inter-generational equity, and conservation of biodiversity and ecological integrity.

In this context, biodiversity means the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes diversity within and between species and the diversity of ecosystems. (Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999.)

Accordingly any proposed alteration to the natural environment must demonstrate due consideration of the above principles.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Biodiversity conservation | Protect and buffer existing native wetlands and woodlands. |
| Ecological Sustainability (w.r.t. the natural environment) | Protect enhance and integrate existing habitat. Protect water quality. Remove exotic species. |

Appendix 5 contains the report commissioned from Biolink Pty Ltd, Natural History & Environmental Consultants on the flora and fauna values obtaining to the site. These are summarised in the following sections:

### 5.8.2 PREVIOUS DISTURBANCE

The study area has been subject to modification through various historical land uses including logging, agriculture, and urban development. As a consequence of these activities, the natural environment has been altered quite dramatically, the end result measurable in terms of cleared areas of land, habitat fragmentation, the disruption of natural ecological processes and an increased frequency in the use of fire as a land management tool.

Nevertheless there are remnants of significant vegetation, some of which constitutes important habitat for native fauna.

### 5.8.3 FLORA

Notwithstanding the fact that the greater proportion of the LES area is cleared, unmapped stands of native vegetation remain. In the south-western corner, a remnant of Dry Sclerophyll Forest persists, the community dominated by Grey Gum *E. propinqua* growing in association with Northern Grey Ironbark *E. siderophloia*, Tallowwood *E. microcorys* and Broad-leaved White Mahogany *E. carnea*. At the south-eastern periphery of the existing residential area, a linear strip of vegetation comprising Forest Red Gum *E. tereticornis*, Broad-leaved paperbark *Melaleuca quinquenervia* and Swamp Oak *Casuarina glauca* also forms a narrow riparian community immediately behind residential dwellings, this community abutting an area of regrowth *C. glauca* forest that extends to the southeast. Some hollow-bearing trees occur in the former area.

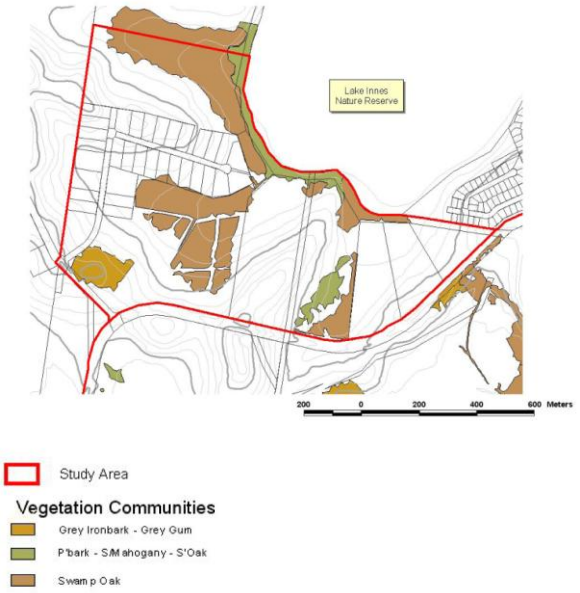



*Figure 11 - Identified Vegetation Communities - Biolink*

Towards the north of the LES area a narrow strip of vegetation buffers a drainage line that links the Queens Lake State Forest in the west to Lake Innes Nature Reserve and associated SEPP 14 Wetland No. 509. Old growth attributes exist here also, specifically in the form of hollow-bearing *E. tereticornis*. The eastern and northern parts of the LES area adjoining Lake Innes Nature Reserve support vegetation communities largely dominated by *Melaleuca quinquenervia*, often growing in association with eucalypts such as Swamp Mahogany *E. robusta*. Elsewhere within the LES area, native vegetation persists in the form of smaller stands and scattered paddock trees, notable amongst which are some large, mature Tallowwoods on Lot 4 DP255923. The floristic structure of this latter community has been embellished by plantings over time, making any categorisation (in terms of native vegetation communities) problematical, as - in contrast - does the small size of some remaining patches of native vegetation by virtue of their simplified floristics and structure. For these reasons, some

generalisations have been inevitable in the vegetation classification process (Fig. 11)

The 'Wildlife Atlas' database search provided records for 9 threatened plant species within the prescribed search area, accounts of which are detailed in the associated report by biolink (2003). No plant species listed on Schedules 1 and 2 of the TSC Act were detected within the LES area during the course of the assessment.

*Endangered Ecological Communities (EECs)*

During 2005, the NSW Scientific Committee made a number of final determinations regarding vegetation communities on coastal floodplains. While there is confusion in some quarters regarding on-ground delineation of these communities, both the literature and the determinations themselves advocate a "weight of evidence" approach rather than reliance upon a single criteria such as the 1:100 flood line (Preston and Adams 2004, 2004a; David Keith pers comm.). Accordingly, the following EECs were deemed to be present within the LES area:

- *Swamp Oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions.*
- *Swamp Sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions.*


*Figure 12 – Endangered Ecological Communities - Biolink*

The locations of these EECs within the LES area are illustrated in Fig. 12 and present a number of issues for consideration, not the least of which is the need for effective buffering to both assist maintenance of essential ecological processes and minimise the potential for exogenous disturbances to negatively impact upon perceived conservation and/or ecological values. Unfortunately, there is little data on the optimal widths of such buffers and because of this they have the potential to become contentious in the context of land use planning studies such as this. In order to avoid this, we have based our recommendations on a number of Australian and overseas studies (Newbold et al 1980; Culp and Davies 1983; Clinnick 1985 and Noel et al 1986) in order to provide a scientific basis for some of the measures we propose. In essence, buffer strips less than 30m in width have been shown to have a deleterious impact on macro-invertebrates; given that this particular taxon serves an important ecological role in terms of both nutrient recycling and food chain structure, they serve as a useful benchmark when striving for an ecologically sustainable development standard.

Notwithstanding the above, there remain a number of small and/or isolated and/or linear fragments of vegetation that arguably conform to the EEC classifications but whose effective conservation and management in the long term is likely to be problematical, simply because of edge effects. For such patches we suggest a merit based approach, advocating retention and embellishment where they are associated with clearly defined hydrological features such as drainage lines. Elsewhere, we consider it unlikely that a Sec. 5A assessment would determine that further modification and/or removal of these communities would likely require an SIS to be prepared.

### 5.8.4 FAUNA

The 'Wildlife Atlas' database search provided records for 17 threatened fauna species within the prescribed search area, details of which have been outlined in the preceding report. The history of land use and largely fragmented vegetation of the LES area render it of diminished importance (at this point in time) to some of the species listed above while key habitat attributes essentially rule out the presence of others. Nonetheless, we did record Glossy Black Cockatoo, Black-necked Stork, Square-tailed Kites and Koalas within the LES area, while habitat attributes such as ephemeral watercourses and hollow bearing trees suggest that the potential presence of other species such as the Wallum froglet, Little Bent-wing Bat and Greater Broad-nosed Bat cannot be readily discounted. Such considerations warrant a precautionary approach for planning purposes, including the adoption of generic measures intended to minimise the potential for negative impacts on threatened species known or otherwise considered likely to utilise the general area.

For purposes of the TSC Act, the LES area does not contain any listed critical fauna habitat or endangered fauna populations.

### 5.8.5 SEPP 44 (KOALA HABITAT PROTECTION)

State Environmental Planning Policy No. 44 (SEPP 44) commenced on the 13th February 1995, its aim to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline by:

- requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat; and
- encouraging the identification of areas of core koala habitat; and

- encouraging the inclusion of areas of core koala habitat in environment protection zones.

The Hastings Local Government Area is listed in Schedule 1 of the policy as lands to which the policy applies. The LES area is larger than one hectare and is thus subject to Part 2 (Development Control of Koala Habitats).

Biolink prepared a Koala Plan of Management for the Area 14 Master Planning Area. An updated KPOM was finalised in November 2009.

The KPOM is available as supporting material to this LES.

### 5.8.6 CONSTRAINTS SUMMARY

A combined constraints map is detailed below.

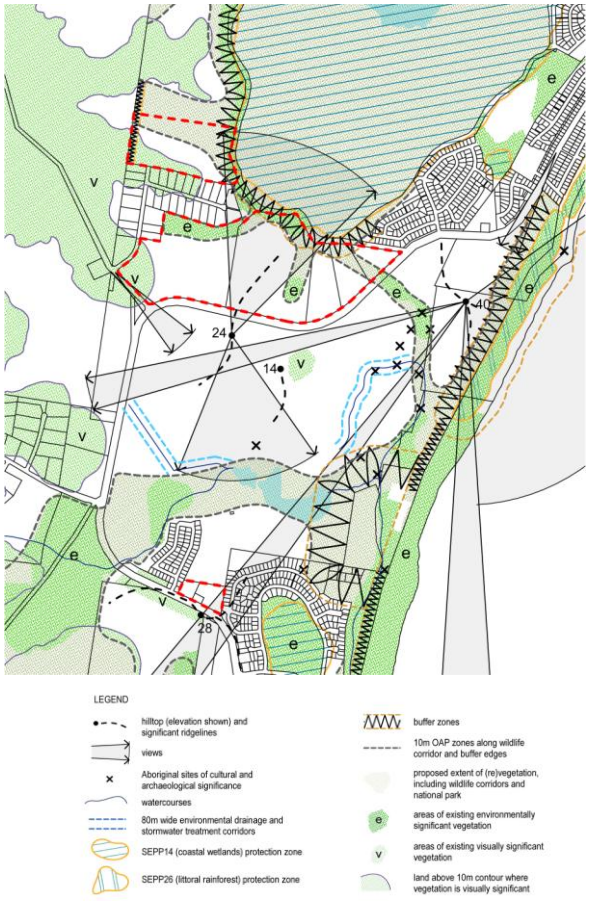



*Figure 13 -Constraints Plan*

It is recommended that the vegetation corridors both within and outside the study area be identified, designated by a protective zoning, and covered by a Plan of Management where vested in the public realm.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Threatened Species | Habitat extension and integration. |
| Wildlife Corridors | Create and protectively zone existing and potential wildlife corridors as per Figure 12. |
| Habitat Integration | Preserve and link native vegetation with wildlife corridors. Provide remnants with 30m min. ecotonal buffers inclusive of any OPA requirements – regenerated & rehabilitated if necessary. |
| SEPP44 – Koalas | A Koala Plan of Management for the Area 14 Master Planning Area has been prepared and is required to be considered in subsequent development applications. |
| Bush Fire | Ensure all wildlife corridors and new urban areas are established with suitable APZ's in accordance with NSW government policy |

# 6.0 URBAN INFRASTRUCTURE REQUIREMENTS

Urban Physical Infrastructure may be defined as the combination of transport movement pathways (in particular those which facilitate public transport and pedestrian movement) and an embedded mosaic of public utility corridors, which deliver and remove water, and channel energy and communications to property. This physical set of engineering facilities is sometimes deemed "*essential*".

In addition there may be a further expectation for Urban Services Infrastructure – human socio-economic activities that address the health, emergency response, cultural, educational and recreational needs of a resident population. Whilst some of the urban services infrastructure also requires major capital investment (e.g. refuse tips, cemeteries, libraries, community centres etc.) their highest proportion of expense is likely to arise from operating costs. This is often because the hard infrastructure for these services is centralised externally to a release area, and its overall cost is amortised into annual charges, which are distributed across beneficiaries. Alternatively, where urban services are to be delivered internally by the public or private sector, there is usually a population viability threshold involved, which precludes '*up-front*' provision. In either case, this category of infrastructure is not considered "*essential*" in the sense that it may be delivered subsequent to human occupation of a development release area.

Consequently capital investment in "*essential*" physical infrastructure will precede the arrival of residents; whereas provision of "*services*" infrastructure can be deferred until demand is evident. Where public sector capital investment in infrastructure is required, developer charges levied under s.94 of the EP&AA may meet or partially offset both essential and services infrastructure costs. Any residual liability will be met through LG rates and charges, supplied by the private sector, or provided by other tiers of government.

In summary, it is clearly imprudent for Council to proceed with urban land releases without, at least, an assurance of availability of essential physical infrastructure. This is formally recognised in the Hastings LEP.

## 6.1 HASTINGS LEP ON INFRASTRUCTURE

The LEP requires that the Council not proceed with urban development in the absence of infrastructure deemed to be "essential services".

*Clause 13. Availability of essential services*

*(1) Objectives:*

*(a) To ensure that development does not occur without adequate measures to protect the environment and the community's health.*

*(b) To ensure that development occurs in a coordinated and efficient manner and that costs attributable to it are borne equitably.*

*(2) Consent must not be granted to the carrying out of development on any land unless:*

*(a) a water supply and facilities for the removal or disposal of sewage and drainage are available to that land, or*

*(b) arrangements satisfactory to the Council have been made for the provision of that supply and those facilities,*

*if the proposed use of the land will, in the opinion of the consent authority, generate a need for such a supply or for those facilities.*

It is mandatory therefore to ensure that drainage, water supply and sewerage are made available in a timely way for any new land releases. Where the current capacity is inadequate for the future population, there should be engineering and financial strategies in place to meet demand, and evidence of town planning approvals, EPA licensing and budgetary commitment to implement the necessary work.

It is axiomatic that sufficient transport infrastructure to guarantee access and mobility is also essential to new land releases. This has been identified by Planning NSW in its directions to Council.

## 6.2 SUSTAINABLE INFRASTRUCTURE WITHIN THE MASTER PLAN

The matters for inclusion in the Environmental Study as raised by Planning NSW (see Appendix 3) strongly emphasise the need for compact walkable neighbourhoods with maximised self-containment of employment, shopping, services, education and recreation. Similar precepts drive the urban design policies issued by the Coastal Council as an adjunct to SEPP71.

Such urban forms optimise ecological sustainability as required by various NSW statutes.

The Master Plan prepared by Deicke Richards for the greater Lake Cathie – Bonny Hills urban release area is founded on the above concepts, targeting both economic and ecological sustainability. It anticipates between 10 and 18 dwellings per hectare in the residential component, which clusters around a commercial and civic centre, yet leaves the balance largely as 'green belt'. The green belt includes key protected habitat, restored area of potential habitat, buffer to sensitive habitat, wildlife corridors, riparian buffers, water quality treatment facilities, low fuel bushfire buffers, and structured and passive open space dedications.

The movement network is a key element of urban form. The street pattern is highly interconnected for efficiency, yet controls traffic speeds and 'rat-run' opportunities sufficiently to deter use of the new neighbourhood streets by Ocean Drive through-traffic. A strong emphasis is placed on provision of attractive bikeways, footpaths, and walking trails having a high level of user amenity and convenience. Where possible, pedestrian links to adjoining neighbourhoods should be provided.

The degree of self-sufficiency and self-containment (which largely underpins eco-sustainability) is dependent both on the urban form and on the economic self-sustainability of the commercial component of the Master Plan. Catchment thresholds for economic viability of key businesses and institutions have therefore been embodied in the recommended design.

The two segments of the Environmental Study area are included within the overall Master Plan. Their proposed urban forms integrate with that plan to realise the benefits described above.

## 6.3 TRANSPORT, ACCESS & MOBILITY

The principles of sustainable transport planning are well accepted based on compact walkable neighbourhoods defined loosely by the 400m/5 minute walk.

Organic growth of transport systems is usually both inefficient and destructive to neighbourhood amenity. The rare opportunity to build new communities around a logical sustainable transport system should not be forgone when presented. The basic concepts and ideas to realise this are built around the following:

| CONCEPT / IDEA | IMPLICATION |
|---|---|
| Strategic Thinking | The transport network responds to the ultimate pattern of land use, not just the interim one. Movements are minimised by clustering related land-uses and maximising local economic self-containment. Public transport is emphasised as the principal form of movement and takes precedence over private vehicle useage. |
| Linkages Connectivity, Nodes, Foci, Desire Lines | The transport network (and hence urban form) is fundamentally structured around the demand for movement of people & goods generated by the various land uses. Pedestrian desire lines drive connectivity to from and within the neighbourhood. |
| Capacity & Congestion Management | The network is planned to accommodate the predicted flows. |
| Modal Integration & Exchange | The various modes of available transport are complementary and integrate with each other at points of exchange. Modal choice is maximised (within the bounds of efficiency). |
| Modal Priority *vs*. Central Proximity | Pedestrian movement within neighbourhoods takes preference over private vehicle usage. |
| Permeability & Legibility | Large block sizes are avoided; self-powered journey lengths are minimised; way-finding is intuitive. |
| Safety & Security | The detailed design protects users from both accidental and criminal threats. Streets and public spaces are overlooked by adjoining development. Keeping eyes on the street. |
| Destination Facilities | The network provides not only for people and goods movement, but for arrival and departure as well i.e. parking, unloading, public transport shelter, lighting, vehicle servicing, transport information, signage, drinking water, toilets & public telephones. |
| Class Distinction in Transport Choice | Users of public and self-powered transport enjoy the same level of amenity and are accorded the same priority and dignity as private vehicle users. |
| Goods Movement | The network recognises and provides for the need for movement of goods as part of regional economic sustainability. |
| Young, Old, Disabled & Impaired | The needs of transport-disadvantaged sectors of the community are catered for in an equitable manner. |

### 6.3.1 VEHICLE TRANSPORT

Vehicle transport may be characterised as

- Through traffic & external connections, or
- Internal traffic

Internal traffic network capability is always manageable at the design phase. The issue is whether existing & proposed arterial and sub-arterial traffic infrastructure is adequate or will constrain future development.

Adequacy depends on structural capability, geometric capability, road space (capacity), and upgrade feasibility.

Structural Capability. The designed pavement service life of the existing arterial road (Ocean Drive) may be reduced by the additional loadings induced by urban development. Council might choose to recover the costs of earlier replacement through Section 94 of the EP&AA.

Geometric Capability refers to maintaining preferred design speeds and access standards for all traffic, and turning circles for large vehicles. Note that the progressive urbanisation of the catchment will preclude retaining the rural road design standards now prevailing in Ocean Drive. Pedestrian safety and access to property will eventually dictate adopting design speeds similar to those already applying in the Lake Cathie and Bonny Hills village areas. Failure to recognize and pursue this principle will fundamentally undermine the "walkable neighbourhoods" requirement and permanently split the east and west of Ocean Drive into two separate communities.

On the other hand, the current geometric design speed of Ocean Drive is quite high, and it therefore remains an adequate alignment for the foreseeable future.

Capacity is created by roadspace (lanes and lane width) and stream conflict reduction. The traffic report prepared by the Snowy Mountains Engineering Corporation indicated that with all the HUGS population outcomes fully in place, a 2-lane Ocean Drive would continue to operate at Level of Service "C" up the 95$^{th}$ percentile event (see Standards Australian Austroads "Guide to Traffic Engineering Practice" HB69.14-1999 and HB69.13-1995) which is the normal design target for traffic planning.

Introduction of new intersections could potentially lower Ocean Drive's capacity and hence the operating Level of Service. Similar impacts would result from allowing frontage development. In an urbanising area such as Lake Cathie/Bonny Hills this is to be expected and encouraged as this level of activity will assist in calming traffic through the neighbourhood centre promoting a walkable place. Additional capacity can be achieved through encouraging public transport and achieving a modal split for movement within the neighbourhood which encourages movement through means other than private car.

Upgrade Feasibility of Ocean Drive is well catered for by its existing width, if augmentation becomes necessary. The corridor width of 40m minimum is sufficient to accommodate 4 lanes of traffic if ever necessary. However as this road is passing through a town centre condition development should be encouraged to front on to Ocean Drive ensuring this road connection does not functionally or physically divide the community in this area and become a barrier to movement.

In summary, there is sufficient present and future traffic capacity, providing future intersection and connection.

### 6.3.2 PUBLIC TRANSPORT

Desirably included at design phase also. Transport exchange points such as 'park & ride', cycle storage, and cab ranks should have land use allocations in a future DCP provisions.

To encourage good commuter habits, public transport should be made available during the first phases of development.

### 6.3.3 DISABLED & IMPAIRED TRANSPORT

This is desirably to be included at design phase.

### 6.3.4 MODAL AVAILABILITY & INTEGRATION

This is to be included in the underpinning principles of the master plan and desirably included at design phase. However this is not an essential zoning issue.

### 6.3.5 NETWORK ISSUES

Ardill Payne & Assoc. have examined the overall regional network as it affects the master plan and therefore the LES Area. Elements of their report are incorporated below:

#### ACCESS AND ROAD NETWORK

Road access to the area is gained from Port Macquarie, to the north, along Ocean Drive through Lake Cathie proper and from Camden Haven area to the south along Ocean Drive through Bonny Hills.

In addition the area is directly accessed via Houston Mitchell Drive from the Pacific Highway to the west. This road is generally narrow and winding in nature and may require improvements to cater for increased traffic demands generated by future development. The siting of the release area on Ocean Drive therefore places it favourably within a regional transport context.

In 2001 SMEC Australia Pty Ltd undertook a roads and traffic study for Council. This study has established a road hierarchy plan for all existing roads. This plan recognises Ocean Drive as being retained as the north-south Arterial Road for the area providing a key link to Port Macquarie and Laurieton. The study also recognises the need for a Bonny Hills By-pass.

In 2009 Council engaged consultants, Roadnet, to undertake an analysis of the Master Plan road network and proposed intersections.

The report made specific recommendations based on traffic modelling for the locality. The modelling showed that Ocean Drive and associated roads within the study area are currently operating well within capacity. However, the roads do not have the capacity to cater for future growth, and the following upgrades and intersection treatments were recommended by 2019 (partial development):

- Ocean Drive requires two lanes northbound between Bonny View Drive and Abel Tasman Drive;
- Houston Mitchell Drive / Ocean Drive requires upgrading to a signalised intersection, which provides two through lanes along Ocean Drive. Pedesrian crossings are recommended across the Houston Mitchell Drive, Primary School Access and the southern approach of Ocean Drive;
- Houston Mitchell Drive requires two lanes eastbound between Forest Parkway and Ocean Drive with a 'Keep Clear' to be line marked at the give way intersection at the Industrial Precinct access;
- a signalised intersection is required on Ocean Drive at the proposed Commercial Precinct;
- Bonny View Drive / Ocean Drive requires upgrading to a roundabout with two lane approaches and circulating lanes;
- Abel Tasman Drive / Ocean Drive intersection requires upgrading to a signalised intersection with two lane approaches.
- a new roundabout intersection is required along Ocean Drive between Abel Tasman Drive and the Commercial Precinct. This roundabout requires two lane approaches and circulating lanes; and
- four lanes (two lanes in each direction) are required along Ocean Drive between the Houston Mitchell Drive and the Commercial Precinct.

By 2029 (full development), the following road network improvements are required:

- Ocean Drive requires four lanes (two lanes in each direction) between Bonny View Drive and Abel Tasman Drive;

- Houston Mitchell Drive / Ocean Drive intersection requires two right turn lanes from Ocean Drive north to Houston Mitchell Drive;
- Houston Mitchell Drive requires four lanes (two lanes in each direction) between Forest Parkway and Ocean Drive;
- The signalised intersection fronting the commercial precinct requires two lane approaches from both the commercial precinct in the south and residential area in the north. The right turn lane from Ocean Drive to the Commercial Precinct requires extension to 165 metres.

In addition to the above collector through roads should provide for bus access and distribution of traffic to lower order connecting roads within the development areas. The alignment and geometry of bus route streets need to be designed to facilitate bus movement without encouraging high traffic speeds.

All intersection and road designs must reflect the volume and size of vehicles expected to utilise the network and have due regard for safety as discussed in the Roadnet Report.

The road network needs to provide a high level of internal accessibility and amenity with good connections for vehicle, pedestrian and cycle movement to urban activity centres. There needs to be appropriate traffic management systems to restrain vehicle speeds where necessary and create safe conditions for all users as expected through any neighbourhood centre.

Modification to design elements of Ocean Drive may be required to ensure continuity of wildlife corridors. This may be achieved by the installation of an appropriate wildlife tunnel or similar structure.

It should be emphasised that Ocean Drive although important to the regional road network, is also important at the local scale, especially where it provides access to, and interfaces with the new commercial centre. In this regard Ocean Drive has a place function as well as a movement function that's needs to be recognised and planned for.

Where Ocean Drive interfaces with the new town centre development should be allowed to front Ocean Drive if not directly accessing it for private vehicle movement. This will allow a more urban condition to prevail facilitating safer [pedestrian connectivity and reinforcing the urban nature of the town centre.

**CONSTRAINTS SUMMARY**

| Issue | Action |
|---|---|
| Sustainable Transport | Master Plan for maximum economic self-containment, and walkable neighbourhoods, facilitate & favour self-powered transport, maintain urban densities. |
| Accessibility | Proximity OK - all segments are highly accessible from the existing road network, and bus transport system. New and larger intersections may be needed. |

**CONSTRAINTS SUMMARY continued**

| Issue | Action |
|---|---|
| Reduced efficiency of Ocean Drive due to contingent development | Encourage modal split and promote alternative movement for local trips such as walking and cycling. |
| Structural Impact on design life of Ocean Drive, and demand-driven need to upgrade Houston-Mitchell Drive | Address through future s.94 Plans at DCP stage if determined as significant. |

## 6.4 DRAINAGE, RIPARIAN BUFFERS AND WATER CYCLE MANAGEMENT

The following advice is from a report prepared by STORM Consulting for the Area 14 study area.

Port Macquarie-Hastings Council (Council) has strongly committed to the implementation of Integrated Water Cycle Management (IWCM) on all new release areas in the LGA. This has involved the development and implementation of a strategic framework for integrated water cycle management in the Mid North Coast, partly funded from Stage 5 Stormwater Trust grants.

In response, Council has applied an IWCM planning approach on Area 14 examining four water cycle management options.

Area 14 is subject to many environmental constraints including those managed by SEPP14, SEPP71 and SEPP26. A major constraint to development is also the fact that there is significant community opposition to a new ocean outfall on Rainbow Beach combined with poor environmental performance associated with the existing dune based infiltration system that services the existing STP.

Objectives for development for stormwater management were suggested by STORM and based on the EPA Council handbook with the governing objective being to remove 45% of the average annual load of nutrients that is likely to be exported from Area 14.

Four options were assessed using numerical models to determine a preferred approach to development of the water cycle in Area 14.

The four options examined include:

1. Current Practice in Port Macquarie - this option involves the use of rainwater tanks to comply with BASIX and the use of constructed wetlands at the end of pipe to treat stormwater flows.

2. Involves the use of recycled water to meet BASIX - for use in the toilets, laundry and garden of each new dwelling in Area 14 and the use of constructed wetlands at the end of the pipe to treat stormwater flows.
3. Involves the use of rainwater tanks to meet BASIX and the use of water sensitive urban design techniques to manage stormwater at its source, within road median areas where possible and in sand filters at the end of the pipe.
4. Involves recycled water to supply toilets and gardens, rainwater tanks to supply laundry and hot water demand and the use of water sensitive urban design techniques to manage stormwater at its source, within road median areas where possible and in sand filters at the end of the pipe.

A life cycle cost analysis was undertaken on each option and presented in this report. Option 3 has the lowest life cycle cost followed by Options 1, 4 with Option 2 being the most expensive. The options that used recycled water were more expensive and the options that used rainwater tanks were cheapest. A WSUD approach was found to have a cheaper life cycle cost than those that considered only end of pipe treatment.

A workshop was conducted with Council to select a preferred Option and based on the constraints to development and the life cycle costs it was agreed that Option 4 was to be the preferred approach. The somewhat poor performance of the existing dune based infiltration system together with the inability to construct an ocean outfall to discharge effluent dictated the need to recycle effluent. Recycling within Area 14 provides a year round demand for recycled water which will significantly reduce the loading on the infiltration system. Option 4 and 2 both considered recycling the effluent (other options did not) and Option 4 had a lower life cycle cost as was therefore selected as the preferred approach.

Moreover Option 4 considers the impacts of the whole water cycle on the receiving waters - it is represents a balance between effluent loads and stormwater loads and if implemented would export the least amount of nutrients from the development but at some additional cost.

From a cost perspective Option 4 will have a capital cost of approximately $3,000 per low or medium density lot greater than the capital cost of Option 0 but on a life cycle basis, i.e. when the cost of lower water bills is considered, the cost difference between Option 1 and Option 4 reduces to about $2,000 per low density lot and $2,800 per medium density lot.

Adoption and construction of this approach will depart from the more traditional approaches to watercycle management and importantly this is in line with Council's adoption of the IWCM Framework.

Adoption of Option 4 on Area 14 also gives Council an opportunity to become a leading proponent of integrated water cycle management in Australia.

Urban Drainage

The LES study areas have the potential to incorporate dual use open space drainage corridors and other water sensitive urban design concepts such as detailed in figure 14 below.

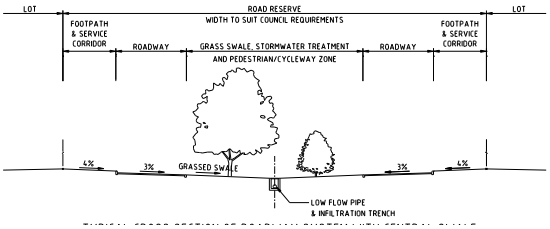



*Figure 14 - Typical Cross Section of roadway system with central swale*

The use of grass swale zones within road corridors is ideally suited to the two gully areas traversing segment 2. These swales would, in addition to providing a medium for nutrient stripping, carry stormwater runoff to the lower areas of the site. The provision of on-site "dry" detention basins in these lower regions would provide for additional nutrient stripping as well as controlling runoff volumes prior to entering Lake Cathie. Appropriately placed gross pollutant traps at the outlet of the swales would assist in pollution removal.

Where the construction of central grass swales is not possible due to topography, such as in segment 1 development area, grass swales and detention basins should be provided within buffer zones and designed in such a way as to capture and treat runoff from the urbanised areas.

Design and construction of detention basins may be influenced by potential acid sulphate soils as evidenced from acid sulphate soil mapping. This may require specific investigations to determine appropriate floor levels for basins.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Water Quality Management from new release area drains to Lake Cathie and Duchess Creek basins. | Provide grassed radial swale drains for filtration and infiltration. Provide GPT's and detention basins between swales and receiving waters, if receiving urban runoff. |
| Accelerated and increased run-off volumes in artificially lined drainage | Retain natural drainage paths as vegetated riparian corridors serving the urbanised areas. |
| Acid Sulphate Soils | Observe DCP34 at DA Stage. |
| Domestic water consumption and Water Table replenishment | Implement option 3 of the STORM report and incorporate Water Sensitive Design generally. |

## 6.5 BUSHFIRE PROTECTION

### 6.5.1 PLANNING FOR BUSHFIRE PROTECTION

*Planning for Bush Fire Protection 2006* published by the Rural Fire Service provides councils and developers with detailed information on bushfire protection from plan-making to development design, development control, construction certificates, and property maintenance. All development on bushfire prone land must satisfy the aim and objectives of Planning for Bush Fire Protection (PBP) 2006.

All development on Bush Fire Prone Land must satisfy the aim and objectives of PBP.

The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

More specifically, the objectives are to:

i. afford occupants of any building adequate protection from exposure to a bush fire;
ii. provide for a defendable space to be located around buildings;
iii. provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
iv. ensure that safe operational access and egress for emergency service personnel and residents is available;
v. provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and
vi. ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).

Bush Fire Protection Measures

In general terms, an acceptable level of protection from bush fires is achieved through a combination of strategies which:

- Control the types of development permissible in bush fire prone areas such as sawmills, junkyards, fuel depots and other uses that may start bush fires;
- Minimise the impact of radiant heat and direct flame contact by separating the development from the bush fire hazard;
- Reduce the rate of heat output (intensity) of a bush fire close to a development through control of fuel levels;
- Minimise the vulnerability of buildings to ignition from radiation and ember attack;
- Enable relatively safe access for the public and facilitate fire-fighting operations;
- Provide adequate water supplies for bush fire suppression operations;
- Implement community education programs, focusing on property preparedness, including emergency planning and property maintenance requirements; and
- Facilitate the maintenance of APZs, fire trails, access for firefighting and on-site equipment for fire suppression.

In a development assessment context, there are six key Bush Fire Protection Measures (BPMs):

a. The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their subsets, inner and outer protection areas and defendable space);
b. Construction standards and design;
c. Appropriate access standards for residents, fire fighters, emergency service workers and those involved in evacuation;
d. Adequate water supply and pressure;
e. Emergency management arrangements for fire protection and/or evacuation; and
f. Suitable landscaping, to limit fire spreading to a building.

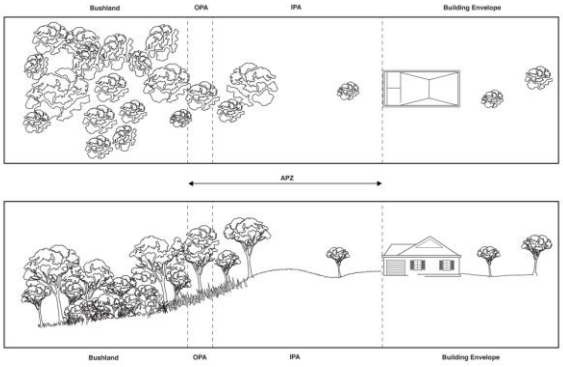



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*Figure 15 – Extract from Planning for Bush Fire Protection 2006 showing the APZ, IPA and OPA*

### 6.5.2 IMPACTS OF BUSHFIRE PROTECTION

Mandatory clearing in the APZ may remove vegetation which is important habitat. It also generates a quasi-public space which will require management to maintain low bushfire fuel levels.

It is therefore desirable that

- urban expansion areas at the bushland margin be defined as much as possible to be framed with existing cleared land that does not require APZ clearing of significant vegetation, and
- the APZ be created by future developers as public road under the Roads Act thus allowing unfettered entry whilst relieving existing owners of liability for management and the attached Occupational Health & Safety issues.

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Avoid the need for clearing native bushland to give bushfire protection to new urban areas | Development does not take place in or near existing vegetated areas. |
| Bush Fire | Development is to be undertaken in |

| | |
|---|---|
| Protection | accordance with *Planning for Bush Fire Protection 2006.* |

## 6.6 WATER SUPPLY

The Lake Cathie/Bonny Hills Area is supplied either directly by the 450 mm diameter Camden Haven trunk main or from reservoirs supplied by the same trunk main. The water source is the Hastings River via the Port Macquarie Off-Creek Storage Dam.

This trunk main in addition to serving the Lake Cathie/Bonny Hills area also provides water to communities south to Camden Haven and inland to Kendall. This 450mm diameter trunk main can supply approximately 15 ML/day under gravity flow conditions from the Transit Hill reservoir in Port Macquarie.

Bonny Hills and the completed early stages of the Area 14 development in the northern part of Bonny Hills including the Ocean Woods estate is serviced from the Grants Head reservoir and no additional water demand from Area 14 can be placed upon this system.

There is limited further capacity in the Camden Haven trunk main. As an interim measure, the existing system [as at March 2009] can supply an additional 400ET and 100ET at locations shown on Figure 15 Area 14 Interim Water Supply Strategy.

Council recently gained an Interest Free Loan from the NSW State Government to construct various trunk mains to enable Area 14, including the Area 14 - Stage 1A area, to be serviced by the new 13 megalitre Bonny Hills reservoir. The works are proposed to be completed by July 2011. Figure 16 shows the Area 14 Long Term Water Supply Strategy.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Water supply availability | Program and funding are in place, and there is no apparent impediment to completion. Individual land releases (subdivision consents) should not be allowed to overtake progressive implementation of the plan unless appropriate agreement in place. |
| Sustainable Water Use | Council has a 'user-pays' program in place and is supporting re-use and rainwater capture. |

## 6.7 SEWERAGE

Council has recently upgraded the Lake Cathie / Bonny Hills STP. The moratorium that was in place was lifted in May 2010.

The upgraded STP improves the quality of the effluent discharged from the treatment plant. The upgrade also includes the construction of two pipelines which will transfer the treated effluent to the Kew/Kendall STP and the Port Macquarie Golf Club rather than discharging to the sand dunes.

The preliminary concept plans for servicing Area 14 have been submitted to council by consultants on behalf of the various land owners. The strategies indicate that a conventional gravity collection system drainage to a pumping station will be appropriate. The sewage will be transferred to a major regional pumping station which in turn will pump to the STP. Council has given in principle support to the preliminary strategies.

The Study's recommendations have been framed accordingly.

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Treatment plant feasibility, capacity, and licensing | Request for issue of a s.65 certificate to exhibit draft LEP to include supporting documentation on progress of upgrading of Lake Cathie/Bonny Hills STP |
| Pumping and Reticulation feasibility and capacity. | Not a constraint. |

## 6.8 ENERGY, COMMUNICATIONS

Ardill Payne Associates advise that:

The existing residential areas and surrounding rural areas are serviced by Country Energy and Telstra for power and telephone services respectively.

Both power and telephone services will require augmentation to cater for an expanded population consistent with normal processes required of any urbanisation of vacant land.

The provision of these services is not deemed to preclude development of the study area.

## 6.9 ACOUSTIC IMPACTS

Heggies Pty Ltd (Heggies) were commissioned by King & Campbell Pty Ltd to conduct a road traffic noise impact assessment for parts of the Area 14 Urban Investigation with frontage along Ocean Drive and specifically Areas 1A and 1B.

The purpose of the assessments were to determine the impact of road traffic noise on Stages 1A and 1B of Area 14, and to identify and recommend ameliorative measures to mitigate noise impacts over those areas.

The findings of the reports note that for residential uses to reduce internal noise levels to below acceptable levels that design and construction considerations should include, but are not limited to, the following:

- Locate dwellings on each allotment as far as possible from the noise source.
- Minimise the size and number of windows facing the noise source.
- Locate noise insensitive areas such as the kitchen, storage areas and laundry toward the noise source.
- Use construction techniques that focus on sealing gaps around windows, doors, ceiling spaces, etc.

- Use thick glass or double glazing.
- Use solid core doors and appropriate door seals.

As a rule-of-thumb it is generally accepted that a noise level reduction of 10 dBA can be achieved (from outside to inside) from "normal", good quality residential construction.

Australian Standard AS 3671-1989 *"Acoustics - Road traffic noise intrusion - Building siting and construction"* is concerned with the reduction of road traffic noise intrusion in buildings in areas near major roads. This standard provides guidelines for determining the type of building construction necessary to achieve acceptable internal noise levels. The table below summarises the recommended building construction categories outlined in AS 3671-1989.

**DEFINITION OF CONSTRUCTION CATEGORIES**

| Category Type | Definition | Approximate Traffic Noise Reduction |
|---|---|---|
| Category 1 | Standard construction; openings, including open windows and doors may comprise up to 10% of the exposed facade. | Up to 10 dBA |
| Category 2 | Standard construction, except for light-weight elements such as fibrous cement or metal cladding or all-glass facades. Windows, doors and other openings must be closed. | > 10 dBA<br>≤ 25 dBA |
| Category 3 | Special construction. Windows, doors and other openings must be closed. | > 25 dBA<br>≤ 35 dBA |
| Category 4 | Specialist acoustic advice should be sought. | > 35 dBA |

### 6.9.1 POTENTIAL NOISE BARRIERS

The land utilisation zones for noise-sensitive developments could potentially be increased in size with the inclusion of noise barriers in the study area.

It should be noted that for a traffic noise barrier to be effective it would be required to interrupt line-of-sight between the source (road) and the receiver, be continuous and contain no gaps.

### 6.9.2 OCEAN DRIVE

For properties adjacent to the Ocean Drive, the report recommends the following mitigation:

- A potential 3m high noise barrier mitigating road traffic noise levels from Ocean Drive. It is recommended that further investigation and barrier optimisation should be conducted at development stage.
- For residences with noise contribution above 50 dBA at night construction Category 2 (refer Table above) is recommended.

The report further notes that mitigation recommendations apply to two storey dwellings. The upper floors of three storey (or higher) dwellings will need further consideration and possibly additional mitigation. These multiple storey dwellings should be assessed on a case by case basis.

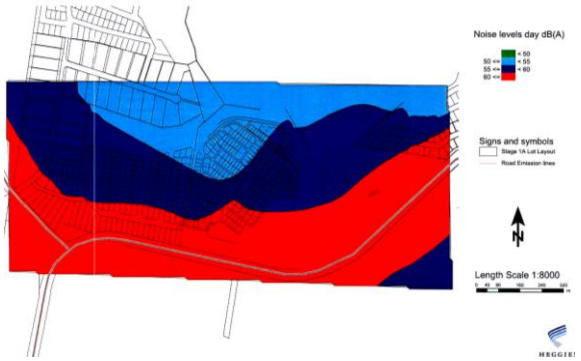


*Figure 16 - 2029 Road Traffic Noise levels (dBA) - Day LAeq (15 hour) @ 1.5m above ground - 2.5dBA facade correction.*

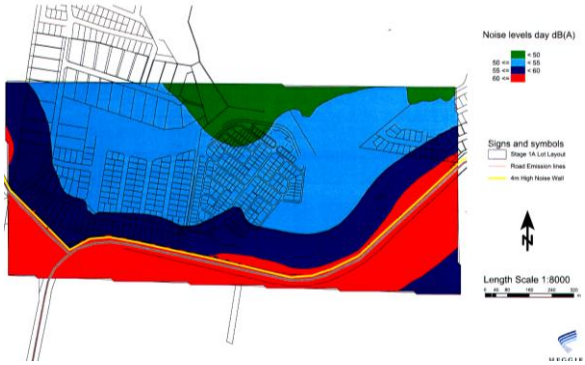


*Figure 17: 2029 Road Traffic Noise Levels (dBA) - Night LAeq(9 hour) @1.5m above ground - 2.5dBA facade correction.*

Any physical response to noise using a wall or mound or the combination of both needs to be made with reference to other aspirations for the corridor such as:

- Maintaining the existing street character of the Lake Cathie and Bonny Hills communities.
- To ensure that the 'tourist route' designation is respected by providing an aesthetic corridor with the view corridors to key geographic features maintained.
- To encourage and provide for a range of other modes of transport such as walking, cycling, mobility scooters and buses services.
- To promote road safety.
- To provide opportunities for the safe crossing of the corridor between the residential estates, the beach and proposed village centres.

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Traffic Noise | Undertake a Corridor Plan to consider noise attenuation options in light of other aspirations for Ocean Drive and the variations in topography along the corridor through Area 14. |

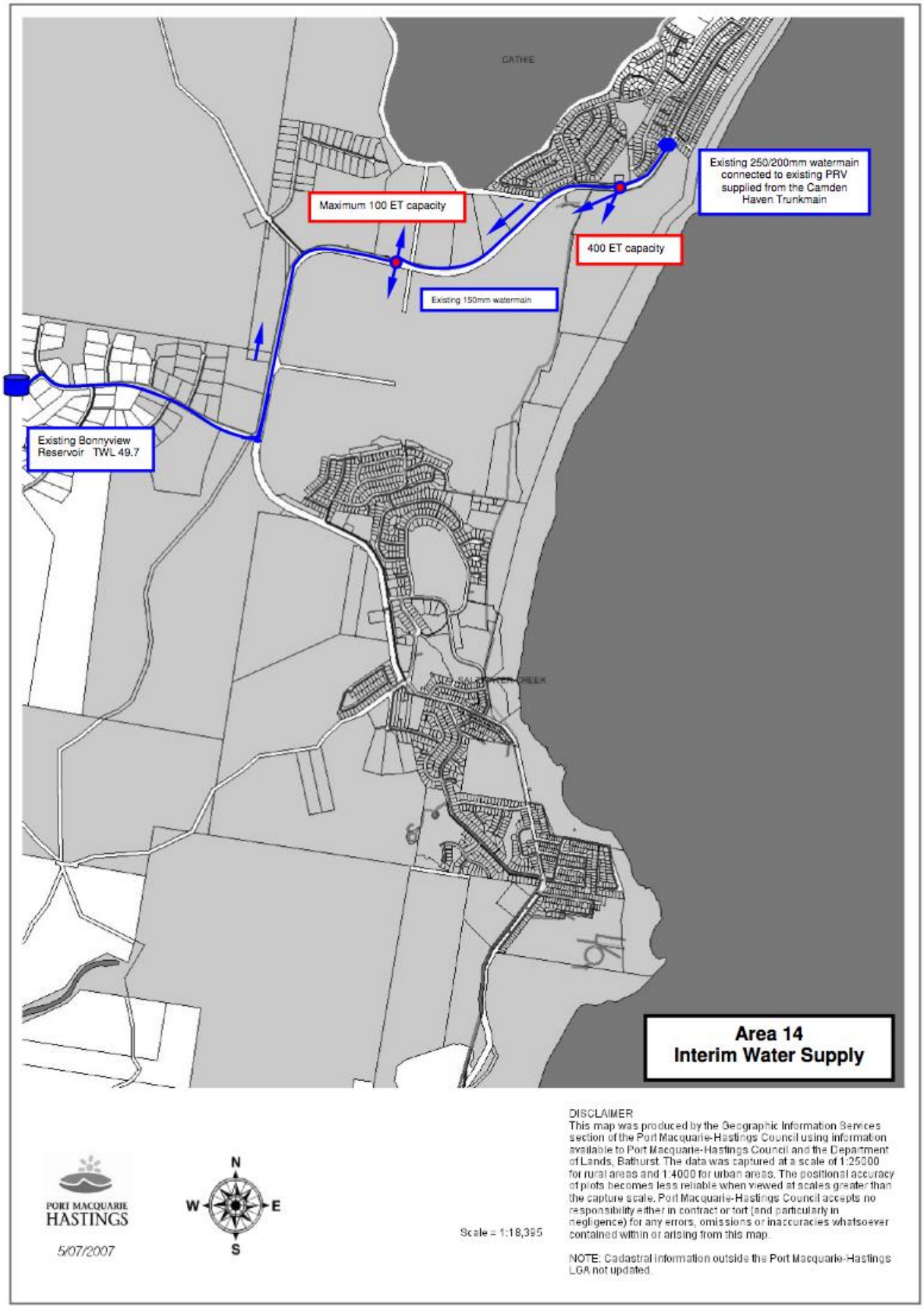


*Figure 15 – Interim Water Supply*

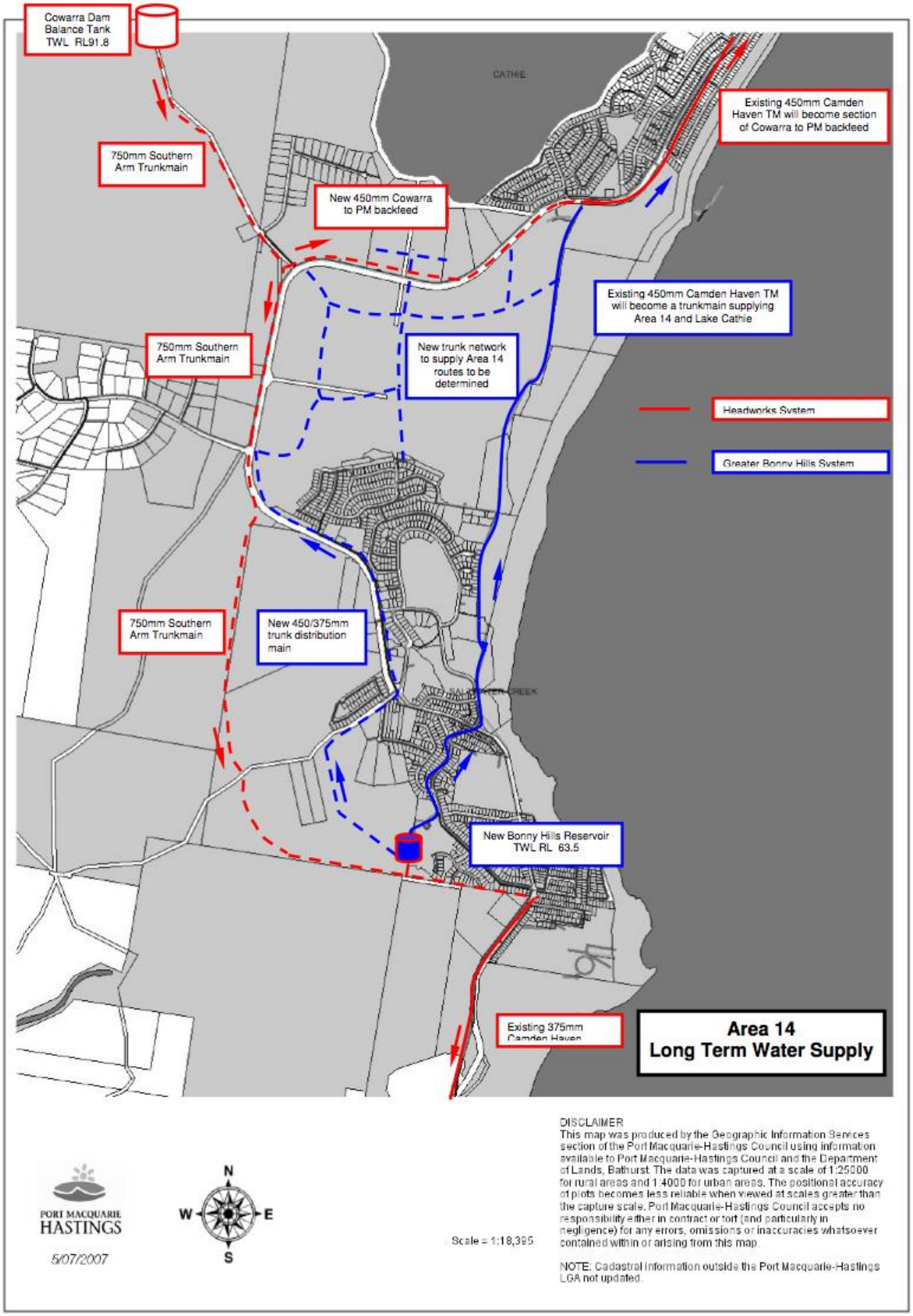


*Figure 16 – Long Term Water Supply*

# 7.0 SOCIO-CULTURAL ENVIRONMENT

## 7.1 EXISTING COMMUNITY & DEMOGRAPHIC CONTEXT

As stated earlier, there are few residents in the LES area. Most would view themselves as attached to one or other of the communities of Lake Cathie or Bonny Hills.

These communities have low levels of full-time employment compared to Australia at large, and their median age is skewed strongly to the "mature" end of the spectrum. The average per capita income is also very low compared to the population at large. This reflects the pattern of immigration to date, which might be summarised as mainly retirees and economic refugees, with a much smaller proportion of middle class and professionals.

Economic development and changes in coastal land affordability could well reverse that pattern in coming years.

## 7.2 INDIGENOUS HERITAGE

A report prepared by local indigenous heritage consultant Jacqui Collins is provided in Appendix 2

Whilst not identifying any particular sites or artefacts of significance within the Study Area, the report nominates appropriate 'Best Practice' principles for pursuing any subsequent disturbance and redevelopment of the Study Area in the event of rezoning.

Generally speaking the Study Area site is not constrained by the need to protect identified indigenous heritage.

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Aboriginal artefacts, undiscovered | Ensure future site specific DCP's and/or Development Consents to include discovery protection requirements. |
| Aboriginal History un-recognised. | Acknowledge traditional owners with art / interpretation in future civic and retail centre. |

## 7.3 BUILT LANDSCAPE – EUROPEAN HERITAGE

The site landscape has been considerably modified since European occupation, primarily by clearing, draining and pasture establishment for the purposes of agriculture.

Generally there are few structures on the Study site. Fencing is common post and wire, with steel droppers, and has little heritage significance.

Segment 1 is vacant, and partly cleared for grazing. There is a motel and several rural residential style dwelling houses of relatively recent vintage in Segment 2 with some sheds. There is a dwelling house on Segment 3, and some limited orchard plantings.

Overall the European cultural heritage is commonly represented elsewhere and not remarkable. The impact of urbanisation on the aesthetics and amenity of the existing built landscape would therefore be minimal.

## 7.4 ECONOMY, COMMERCE, EMPLOYMENT

Whilst the Shire and hence the overall economy is growing steadily through immigration, the level of unemployment remains high, as in other north coast centres. There is an absence of skilled job opportunities, and secondary industry generally – other than perhaps retailing. Tertiary industry in the human services area of education, health, finance, and property is present, but limited to serving the current population catchment. The principal export of the region is probably tourism, and increasingly so.

The prospects for economic improvement are related to creating surpluses – either by increasing efficiency, increasing self-reliance (reduced imports) or increased exports. Council's current economic strategy is to increase economic activity in high value traded goods & services e.g. – tourism, regional head offices, manufacturing and secondary processing; and cultivate new small businesses & support existing industry sectors

The effect of a change in land use in the LES Area on the current and prospective economies is examined below.

### 7.4.1 AGRICULTURE, OTHER INDUSTRY

Conversion of farmland to urban uses reduces agricultural productivity. Some lands are more productive than others – this being largely dependent on soil fertility.

#### MID NORTH COAST FARMLAND MAPPING PROJECT

The Mid North Coast Farmland Mapping Project identifies areas of regionally significant farmland in the six local government areas of Port Macquarie-Hastings, Kempsey, Nambucca, Coffs Harbour, Bellingen and Clarence Valley. The mapped farmland covers a range of agricultural areas (e.g. cane land, basaltic country and improved pastures) mostly located on floodplains, upstream river valleys and volcanic country.

The project aims to protect important farmland, provide greater certainty for farmers' agricultural investments, avert future land use conflicts and aid the region's ability to produce food sustainably. As such, councils will not be able to rezone any of the mapped areas for urban or rural residential use and the land will also be protected from rezonings that would allow potentially incompatible uses on neighbouring land.

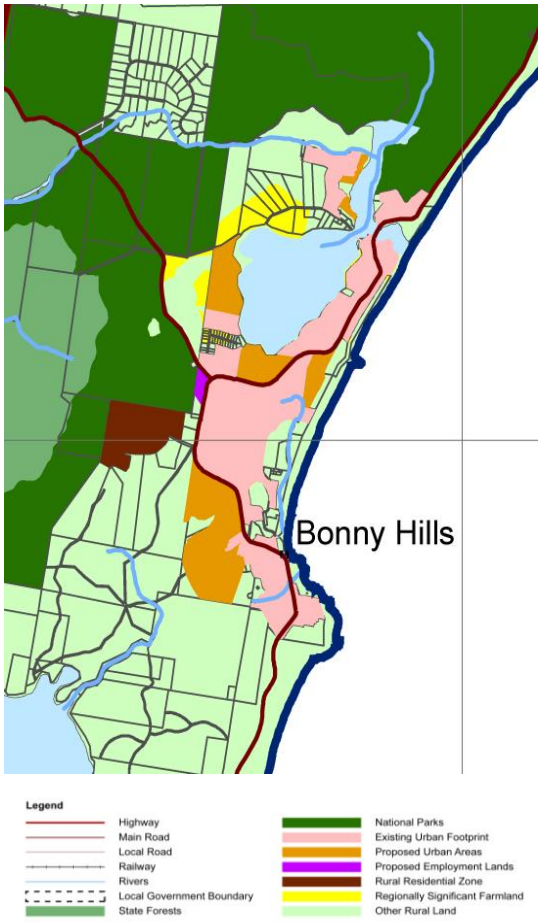


Figure 16 Mid North Coast Farmland Mapping

The mapping identifies the Area 14 – 1A as either existing urban footprint or proposed urban areas. There is a small area of 'regionally significant farmland' and 'other rural area' within the existing residential subdivision.

#### 7.4.2 OTHER INDUSTRIES.

It is possible that businesses related to transport, earthmoving, and other large plant items could be based on rural residential properties in the study area. However the Hastings LEP is inclined to favour location of these industries in appropriately zoned areas that are less likely to generate residential amenity issues

Aside from such possibilities, the LES Area is presently devoted principally to rural residential living.

#### 7.4.3 ECONOMIC IMPACT OF URBAN DEVELOPMENT

Economies of scale are a significant economic benefit of increased population.

Smaller communities frequently suffer from not reaching a population threshold that supports important economic engines – such as supermarkets, banks, secondary schools, hospitals, government offices, etc. The Master Plan for Lake Cathie Bonny Hills is designed to pass a number of such thresholds – enabling local employment in the provision of many services only available externally at present. This assists in economic self-containment (reduced imports) and reduces transport costs. If the town centre proceeds with the facilities indicated in the Master Plan it will become a significant hub or commerce and employment in the district.

Denser forms of subdivision also reduce the asset management costs of public infrastructure per capita, – thus improving the overall ability to deliver a range of public goods and services to ratepayers.

As elsewhere, there is always a short term economic boost in the course of land development and building construction.

In summary, there are measurable economic benefits attached to urbanisation of the LES Area. The loss of economic production from alienated agricultural land has been shown earlier to be insignificant. Hence there appears to be no major economic constraint to urbanisation.

### 7.5 CULTURAL INFRASTRUCTURE

New development will generate immigrants with expectations of cultural infrastructure. These will include surf, sporting, service & recreational clubs, hotels, ordinance services, access to recreational opportunities & tourist facilities, visual arts music & theatre, cultural events, schools, churches, libraries, cemeteries community activities & places of assembly.

Not all of these can be economically provided within every community and may need to be regionally supplied. Nevertheless, some will become available locally as the population rises, and others provided externally will become more viable with increased patronage in the catchment.

Provision of such facilities is not considered an impediment to further urban development within the Stage 1a study area.

Furthermore, the Area 14 Master Plan identifies future community facilities including two future school sites, district sporting fields, village centre and community centre immediately to the south of the Study area on St Vincent's Foundation land. A Part 3A Concept Plan Application has been lodged by St Vincent's Foundation (MP 06_0085) for land to the south and includes provision of these landuses generally in accordance with the Area 14 Master Plan.

### 7.6 SOCIAL SERVICES INFRASTRUCTURE

Similar comments to the above apply to the needs generated for welfare services (GO's & NGO's), public transport, child care, hospitals, police, ambulance, and

other emergency services. Many of these services are supplied by other levels of government or the private sector. Services provided by higher tiers of government routinely follow the patterns of migration and like the private sector, adapt to them.

These presently exist in the Hastings region but are not well represented in the Lake Cathie Bonny Hills area.

A medical centre including general practicitioners and allied health professionals was established to the north-east of the study area during 2008.

The economies of scale provided by a larger more concentrated population in the area will assist in the local generation and viability of other such services.

Their current level of supply is characteristic of any fringe area, which might be developed for urban use. Social services infrastructure will always be a consequence of, rather than a precursor to, urban development. Urban development is therefore not constrained by it.

| CONSTRAINTS SUMMARY | |
|---|---|
| **Issue** | **Action** |
| Loss of agricultural land | Treat as insignificant due to fragmentation by rural residential subdivision, and limited quality soils. |
| Cultural Infrastructure | Utilise existing external – allow to grow organically with community |
| Welfare Infrastructure | Utilise existing external – allow to grow organically with community |

# 8.0 CONSOLIDATED CONSTRAINT REVIEW

## 8.1 ISSUES IDENTIFIED BY OTHER AGENCIES (S.62 OF EP&AA)

| AGENCY | ISSUES / REQUIREMENTS | RESPONSE |
|---|---|---|
| NPWS | Buffer to L. Cathie NP of 50m –100m with restricted public access | Provided |
| | Protect old growth tallow-wood stands | Provided |
| | Provide wildlife corridors 250m wide between Queens Lake forest and Lake Cathie and the SEPP44 zone. | Provided except east of Ocean Drive |
| EPA | Former Lake Cathie garbage depot | Not in Study area. |
| NSWCC | Green belt separation between L. Cathie & Bonny Hills | Provided |
| | Habitat Linkages lake – forest - coast | Provided. |
| NSW RFS | RESPONSE DEFERRED | N/A |
| DEPT MIN RESOURCES | NIL | N/A |
| NSW DEPT HEALTH | Adequate road linkages to Port Macquarie hospitals | Provided. |
| | Community Health centre site in LC-BH | Provided. |
| | Medical centre site in LC-BH Master Plan | New Medical Centre site opened in Lake Cathie 2008. |
| | Footpaths & Cycleways for public health | Provided. |
| | Hygiene controls on re-use of wastewater | Not an LES issue. |
| | WS&S provision | Addressed. |
| NSW DET | NIL | N/A |

## 8.2 CONSTRAINTS IDENTIFIED IN STUDY

| **CONSTRAINTS SUMMARY** | |
|---|---|
| **Issue** | **Action** |
| Oversupply of land releases in HUGS Area 14 | Limit any urban rezoning recommendations to the areas identified in the Area 14 Master Plan 2003 prepared by Deicke Richards Architects and Mid North Coast Regional Strategy. |
| Integration with contextual land use proposals | Maintain consistency with the Area 14 Master Plan 2003 prepared by Deicke Richards Architects. |

| | |
|---|---|
| Visual Access to landscape | Restrict high-rise development |

| Issue | Action |
|---|---|
| Protect 'escarpments and hilltops" from building profiles on visible horizon | N/A, none in study area. |
| Flooding encroachment from Lake Cathie into HUGS Area 14 | In the absence of a comprehensive, updated flood study for the Lake Cathie Lake Innes System that addresses climate change, require the following minimum actions for any new development within Area 14 – 1a:<br>– Development to adopt of a revised 100year flood level of 3.5mAHD.<br>– The Flood Planning Area (FPA) is to be 4.0mAHD.<br>– Require all infrastructure to be built at the revised interim 100year flood level of 3.5mAHD.<br>– Only consider a variation to the 3.5mAHD interim flood level where supported by a comprehensive updated Flood Study for the Lake Cathie Lake Innes System. |
| Existing surface and sub-surface drainage patterns. | Protect and enhance existing watercourses (with buffers and riparian planting). Adopt water-sensitive design principles to ensure water tables remain charged after urbanisation |
| SEPP14 Wetland Buffer | A negotiated buffer has been accepted for development on Lot 4 DP594793 and Lot 5 DP255923. A similar buffer arrangement maybe appropriate for development elsewhere in the 1a Area. |
| Buffer Ownership & Zoning. | Allow retention of current ownership where no other public purpose involved (e.g. WQ management, public open space). Zone as E2 Environmental Conservation and/or E3 Environmental Management. |
| Topsoil & surface soil potential to erode | Require soil management plans at DA stage incorporating water sensitive design. |
| Building Foundation Suitability | Make provisions in subsequent DCP's for mandatory soil suitability analysis prior to subdivision |
| Acid Soils | 1. Avoid urbanisation in all Class 2 Acid Soil zones.<br>2. Allow public infrastructure development in Class 5 zones subject to compliance with DCP34. |
| Biodiversity conservation | Protect and buffer existing native wetlands and woodlands. |
| Ecological | Protect enhance and integrate |

| | |
|---|---|
| Sustainability (w.r.t. the natural environment) | existing habitat. Protect water quality. Remove exotic species. |
| **Issue** | **Action** |
| Threatened Species | Habitat extension and integration. |
| Wildlife Corridors | Create and protectively zone existing and potential wildlife corridors as per Figure 12. |
| SEPP44 – Koalas | A Koala Plan of Management for the Area 14 Master Planning Area has been prepared and is required to be considered in development applications. |
| Bush Fire | Ensure all wildlife corridors and new urban areas are established with suitable APZ's in accordance with NSW government policy |
| Habitat Integration | Preserve and link native vegetation with wildlife corridors. Provide remnants with 30m min. ecotonal buffers – regenerated & rehabilitated if necessary. |
| Sustainable Transport | Master Plan for maximum economic self-containment, and walkable neighbourhoods, facilitate & favour self-powered transport, maintain urban densities |
| Accessibility | Proximity OK - all segments are highly accessible from the existing road network, and bus transport system. New and larger intersections may be needed. |
| Acoustic impact from Traffic | Undertake a Corridor Plan to consider noise attenuation options in light of other aspirations for Ocean Drive and the variations in topography along the corridor through Area 14. |
| Reduced efficiency of Ocean Drive due to contingent development | Add extra carriageway lanes and intersection approach lanes as required. |
| Structural Impact on design life of Ocean Drive, and demand-driven need to upgrade Houston-Mitchell Drive | Address through future s.94 Plans at DCP stage if determined as significant. |
| Water Quality Management from new release area drains to Lake Cathie and Duchess Creek basins. | Provide grassed radial swale drains for filtration and infiltration. Provide GPT's and detention basins between swales and receiving waters, if receiving urban runoff. |
| Accelerated and increased run-off volumes in artificially lined drainage | Retain natural drainage paths as vegetated riparian corridors serving the urbanised areas. |
| Acid Sulphate Soils (if encountered in any | Observe LEP2010 at DA Stage. |

| | |
|---|---|
| LES area rezoned so as to permit disturbance). | |

| Issue | Action |
|---|---|
| Domestic water consumption and Water Table replenishment | Implement option 3 of the STORM report and incorporate Water Sensitive Design generally. |
| Avoid the need for clearing native bushland to give bushfire protection to new urban areas | Development does not take place in or near existing vegetated areas. |
| Bushfire Protection | Development is to be undertaken in accordance with *Planning for Bushfire Protection 2006.* |
| Water supply availability | Program and funding are in place, and there is no apparent impediment to completion. Individual land releases (subdivision consents) should not be allowed to overtake progressive implementation of the plan. |
| Sustainable Water Use | Council has a 'user-pays' program in place and is supporting re-use and rainwater capture. |
| Treatment Plant feasibility, capacity, and licensing | Request for issue of a s.65 certificate to exhibit draft LEP to include supporting documentation on progress of upgrading of Lake Cathie/Bonny Hills STP |
| Pumping and Reticulation feasibility and capacity. | Not a constraint. |
| Aboriginal artefacts, undiscovered | Ensure future site specific DCP's and/or Development Consents include discovery protection requirements. |
| Aboriginal History un-recognised. | Acknowledge traditional owners with art / interpretation in future civic and retail centre. |
| Loss of agricultural land | Treat as insignificant due to fragmentation by rural residential subdivision, and limited quality soils. |
| Cultural Infrastructure | Utilise existing external – allow to grow organically with community |
| Welfare Infrastructure | Utilise existing external – allow to grow organically with community |

Issues identified in the above tables have been addressed and incorporated in the recommended zoning plan where appropriate.

# 9.0 STUDY FINDINGS

## 9.1 RECOMMENDATIONS

Review of all the environmental, social and economic issues in this study have indicated that the subject lands are suitable and appropriate for urbanisation, subject to imposition of certain conservation and hazard reduction measures being implemented. These are schedule in the detailed recommendations below

1. That following issue of Section 65 Certificate this draft Local Environmental Study be exhibited with a copy of Council's adopted Master Plan prepared for the Lake Cathie - Bonny Hills district to ensure contextual consistency is preserved.
2. That subsequent to relevant zoning amendments to the Hastings LEP, Council prepares Development Control Plan provisions for the Area 14 Urban Growth Area based on the Master Plan,
3. That the Area 14 Urban Growth Area DCP provisions identify wildlife corridors beyond the LES brief site to the west and south-east of the site boundaries,
4. That the proposed Area 14 Urban Growth Area DCP include requirements addressing the relevant issues raised in Table 8.2 of this study.

## 9.2 RECOMMENDED ZONING PLAN

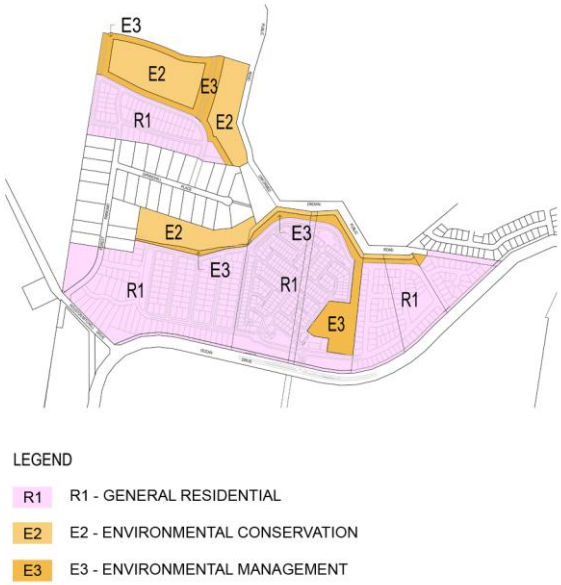


*Figure 18 -Zoning Map*