

# **GREAT LAKES RURAL LIVING STRATEGY**



## **BACKGROUND DATA REPORT**

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I would like to take this opportunity to thank Jai Roberts for his valuable contributions to the work required for the Rural Living Strategy during 2000 and 2001. Jai conducted the landuse survey (see Section 3.1) and produced the majority of the maps for the Strategy.

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I would also like to thank Ian Sinclair for his advice during the writing of this report and his substantial contributions to the Rural Living Strategy process.

Edge Land Planning also provided most of the photographs contained within the Background Data Report.

## EXECUTIVE SUMMARY

The purpose of the Background Data Report (BDR) is to provide data that will enable an assessment of the physical, social and economic characteristics of the Great Lakes rural environment. The data provided in the BDR will be discussed in the Issues Paper and will help Council make decisions on the future of rural areas in Great Lakes. These decisions relate to the location of future rural residential development, whether there is a need to expand villages and whether any are suitable for expansion, whether there are opportunities for new agricultural industries for the area and what forms of tourism are most appropriate for rural areas. These decisions will be dependent upon the constraints of the land and its' social context.

Constraints to further development of the Great Lakes rural areas include:

- Land affected by Acid Sulphate Soils;
- Heavily vegetated areas, areas known to contain threatened species and land identified by NPWS as forming part of a Regional Wildlife Corridor;
- Land with slope in excess of 20%
- Land within the 1 in 100 year flood level (1% AEP);
- Land that may contribute to the deterioration of water quality;
- Land under the control of the NPWS (National Parks & Nature Reserves);
- Land within the following environmental protection zones and areas:
  - 7(a) – Wetlands and Littoral Rainforest
  - 7(b) – Conservation
  - 7(c) – Scenic Protection
  - 7(f1) – Coastal Lands Protection
  - 7(f2) – Coastal Lands Acquisition
  - 8(b) – Proposed National Parks and Wildlife Reserves
  - All land within SEPP 14 Coastal Wetlands
  - All land within SEPP 26 Littoral Rainforests;
- Land classified as Class 2 and 3 by NSW Agriculture (known as Prime Agricultural Land [Great Lakes has no Class 1 land]);
- The location and associated buffers of extractive resources (whether potential or in current use), land within the water supply surface catchment of Tea Gardens/Hawks Nest, and land over the aquifer near Napiac being considered for drinking water extraction by MidCoast Water;
- Land zoned 1(c) – Future Urban Investigation;
- Land within State Forests; and
- Land classified as having a High Fire Danger.

Some of the above constraints will preclude development from certain land/areas, whilst other constraints are likely to be overcome through appropriate management. These constraints are identified and elaborated upon within the BDR.

Consideration also needs to be given to the range of services presently available for villages which are being considered for expansion (and for rural residential development around these villages), as well as the presence of heritage items (both European and Aboriginal) in areas being considered for further development.

Population projections indicate that the total LGA population is expected to experience moderate, though significant, growth. This is expected to occur in the urbanised areas, as the rural population is expected to decline. When this growth is viewed in relation to the age structure of the population, it can be seen that most areas will experience an increase in people in the older age groups (most likely retirees). This will have an impact on the support services needed for these age groups.

Any decisions as to the future of the Great Lakes rural environment needs to be not only based on the capability of the land to support development, but the suitability of doing so.

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# SECTION 1 — INTRODUCTION

## 1.1 BACKGROUND

Rural development has, in recent years, been guided by the Rural Lands Study prepared for Council in 1986 and Great Lakes Local Environmental Plan 1996.

Council has, for some time, recognised the need for the preparation of a new rural strategy.

The decision to prepare a new Strategy has been influenced by Councils recognition of the need for an updated growth management framework and was reinforced by advice in 1998 from the Department of Urban Affairs & Planning, to the effect that any new rural residential rezoning would not be supported in the absence of an up to date strategy for rural development in the Great Lakes LGA.

The Strategy will consider a number of issues including rural residential development (within identified service centre catchments), expansion of village zones and other rural living and tourism opportunities.

## 1.2 PURPOSE OF REPORT

The purpose of the Background Data Report is:

- To provide data that will enable an assessment of the physical, social and economic characteristics of the Great Lakes rural environment.
- To enable an analysis of the rural environment to identify rural issues, future landuse options and the implications of these options. These will be given in the Issues Paper.
- To gain a local perspective on the rural environment, which the Issues Paper will use to place Great Lakes in a Regional and State context.

## 1.3 FORMAT OF REPORT

This report is divided into four main sections, being:

- Physical/Environmental Characteristics;
- Economic Development and Value;
- Social Context; and
- Settlement Profiles.

A number of the features/characteristics described in this report are applicable to more than one category, but have been placed in the category that it most relates to. An example of this would be 'Services Within Villages'. This feature is both social and economic. In a social sense these services, whether a shop (eg chemist) or a service (eg doctor), relate to the wellbeing of the population. At the same time these services provide an economic benefit to the owners of the service (and employees) and also provide a "spin-off" effect to other businesses (through more disposal incomes). For the purposes of this report, this feature has been classified as a social one (see Section 4.1.6).

## 1.4 STUDY AREA

Great Lakes Council's Local Government Area (LGA) is situated to the north of Port Stephens LGA and has an area of approximately 3373 km<sup>2</sup>. Approximately one third of the LGA is either National Park or State Forest, and there are three major lake systems, being Wallis, Smiths and Myall.

The Great Lakes Rural Living Strategy covers all rural areas, both coastal and inland within the Great Lakes LGA. The Strategy does not include the urban areas of Forster/Tuncurry and Tea Gardens/Hawks Nest. Some land will be in more than one Council strategy, for example, land in the Pacific Palms area is also in the Forster/Tuncurry Conservation & Development Strategy and land in the vicinity of Tea Gardens is also in the Tea Gardens/Hawks Nest Conservation & Development Strategy. These other strategies consider the urban expansion of these areas.

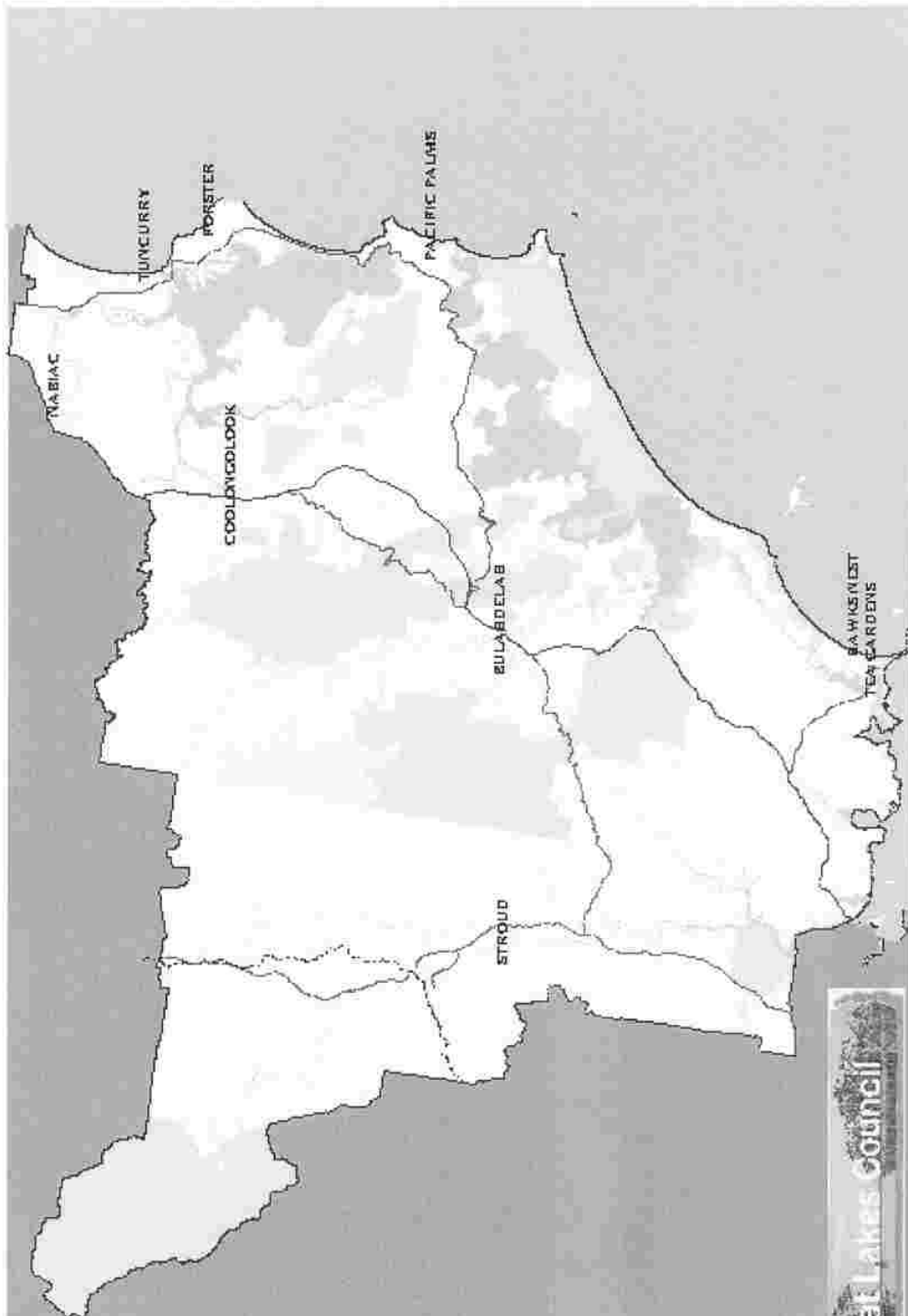
**Map 1 – LGA Photomontage**



The above map has been constructed from a set of aerial photographs of the LGA, hence the “small squares” that can be seen in the map. The bright white colour on the map is a result of the sun's reflection off of the Myall Lakes waterbody. The heavily vegetated areas generally correspond to areas contained within National Parks and State Forests.

Map 2 presents a very simple LGA map showing the location of some urban areas in Great Lakes.

Map 2 – LGA



## **SECTION 2 — PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS**

The physical and environmental characteristics that shape the Great Lakes LGA include Acid Sulphate Soils, vegetation, habitat and wildlife corridors, slope, flooding, water quality, National Parks and environmental protection zones. These characteristics will be used in the Strategy to exclude development from some areas, whilst incorporating appropriate management in other areas, to negate any adverse impacts that development may leave.

Characteristics listed above which can be seen in Photograph 1 include vegetation, wildlife corridors and slope.

**Photograph 1 – Upper Myall Valley**



## 2.1 ACID SULPHATE SOILS

Acid sulphate soils is the common name given to naturally occurring soils containing “iron sulphides” (usually the mineral “iron pyrite”). NSW has around 600,000 hectares of acid sulphate soils along its coastline. They generally cause no harm if left undisturbed.

When these soils are disturbed or exposed to air, oxidation occurs and sulfuric acid is ultimately produced. For every tonne of sulfidic material that completely oxidises, 1.6 tonnes of pure sulphuric acid is produced.

This sulfuric acid can drain into waterways and cause severe short and long term [ $>100$  years] environmental and socio-economic impacts, including:

- Fish kills and fish disease;
- Oyster damage and mortality;
- Adverse effects on aquatic ecosystems;
- Release of heavy metals from contaminated soils;
- Human and animal health impacts from polluted waters;
- Damage to built structures such as bridges and house foundations; and
- Economic impacts on industries such as tourism, fishing, aquaculture and grazing.

The most common activities likely to disturb acid sulphate soils are:

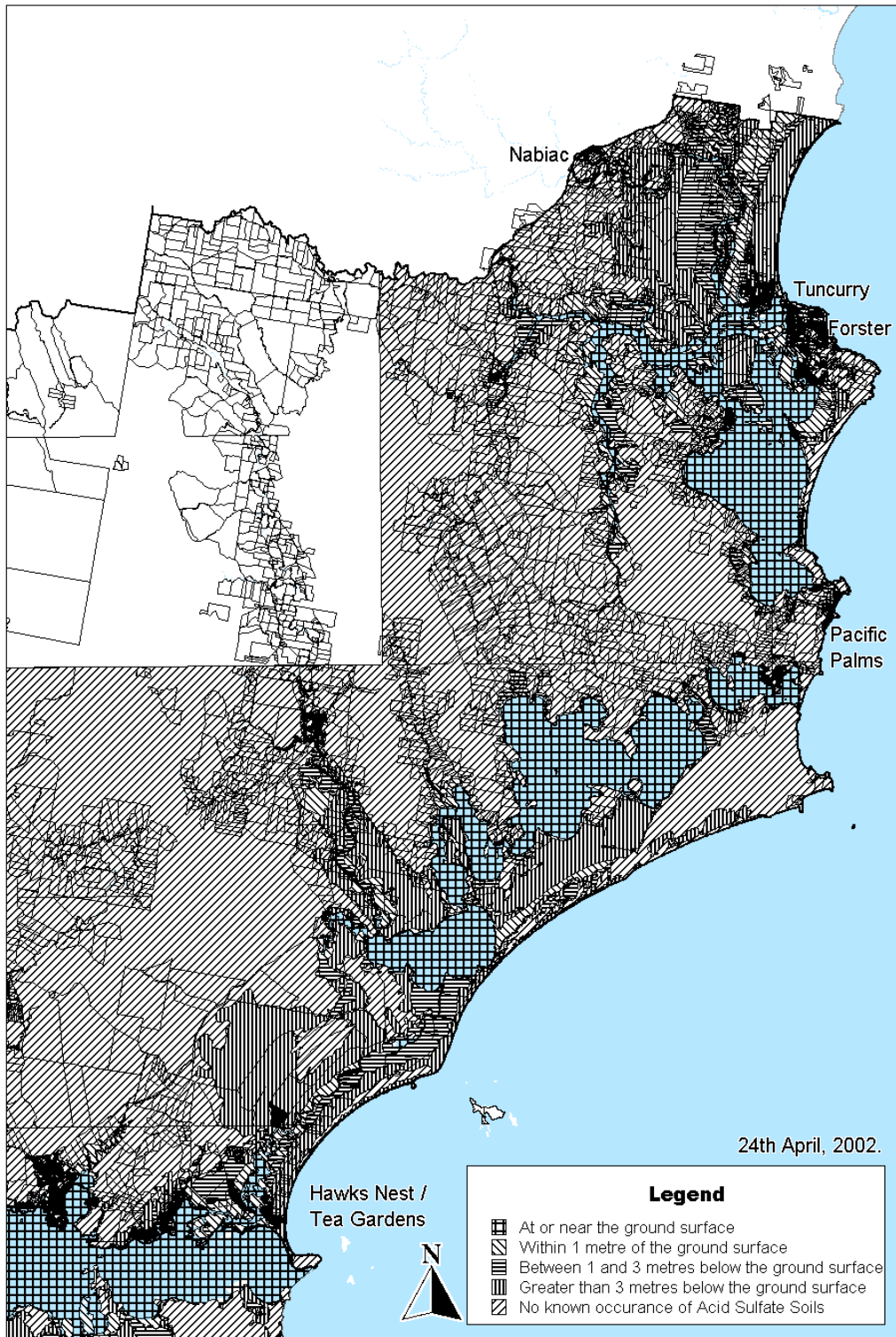
- Agricultural activities that involve land drainage, works to prevent flooding and tidal inundation (levees, drains and floodgates) and the use of groundwater;
- Flood mitigation works;
- Infrastructure – placement of pipes, maintenance dredging, roads, etc.; and
- Urban and tourism development – residential subdivision, marinas, canal estates and drainage.

Most of the areas containing a potentially high risk of acid sulphate soils are within 10km of the coastline, mainly along rivers and floodplains and around lake systems [all of the above is taken from Stone et al 1998]. Although this is a comparatively small area of the LGA, it is also the area subject to most development pressure.

As can be seen from Map 3, Acid Sulphate Soils is a coastal phenomenon, centred around estuaries. The areas with the most risk of exposing acid sulphate soils if development was to occur are actually water bodies (lakes, rivers and creeks). Generally, the further the distance from a water body, the deeper the deposits and hence, the less the risk due to disturbance from development. Elevated areas have a much lesser risk, than low-lying areas.



### Map 3 – Acid Sulphate Soils





The presence of actual acid sulphate soils or the potential of their occurrence, is more a management issue, than a reason why development should be excluded from these areas. If exposure of acid sulphate soils was avoided, or minimised (and exposed soils treated), this phenomenon would not be seen as a reason to restrict future development of an area.

Map 3 is based on the maps produced by the Department of Land & Water Conservation.

## **2.2 SALINITY**

The Department of Land & Water Conservation (DLWC) highlighted this issue in a letter dated 26 February 2003 to Council in response to the exhibition of this Strategy. Specifically, the following was raised:

- DLWC note that the Mammy Johnsons sub-catchment is located primarily within the Great Lakes LGA, with water quality data indicating elevated levels of salinity.
- The Lower North Coast Catchment Blueprint has identified incised watercourses and native woody vegetation in saline sub-catchments (Mammy Johnson & Avon) as priority areas for soil health targets.
- DLWC is presently conducting a resource inventory on the Lower North Coast at a scale of 1:25 000 to identify any lands that may be saline. It is anticipated that the mapping will be completed in 2003.

## **2.3 VEGETATION, HABITAT AND CORRIDORS**

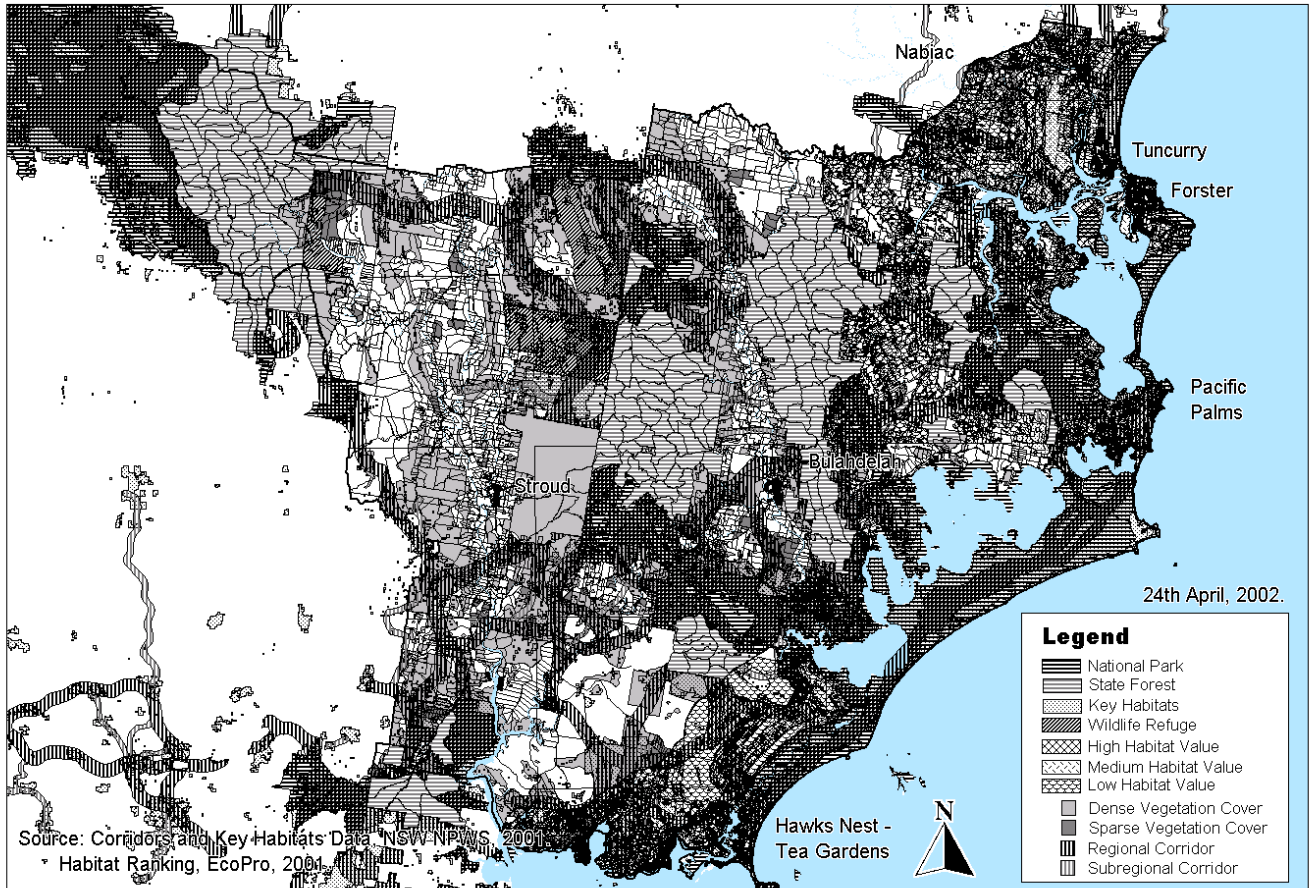
Map 4 shows the vegetated areas of the LGA, as well as the regional and subregional wildlife corridors and key habitats identified by the NSW National Parks & Wildlife Service. Vegetated areas are broken down into areas of dense and sparse vegetation and were identified by Council from aerial photography. National Parks and State Forests are also shown on this map.

Council has engaged a consultant to prepare habitat mapping for the entire LGA. This mapping is divided into low, medium and high habitat value and is currently only available for the coastal parts of the LGA (east of the Pacific Highway). This habitat mapping is also represented in Map 4.

From Map 4 it can be seen that a significant proportion of the LGA is affected by the features shown. Wildlife corridors tend to link areas that are heavily vegetated, (such as National Parks and State Forests), though they pass through cleared agricultural land to do this. Wildlife corridors do not appear on the map through State Forests due to State Government policy. For the purposes of the Strategy, the entire area covered by State Forests will be seen as acting as a wildlife corridor.

It should be noted that the scale of this broad mapping is not necessarily suitable for identification of these constraints on individual properties. It will, however, enable the placement of Great Lakes in a regional perspective, and the highlighting of the importance of biodiversity conservation for the LGA.

## Map 4 – Vegetation/Habitat/Corridors



## 2.4 SLOPE

Slope is not produced as a separate map. Slope in excess of 20% was mapped for the rural residential service centre inner catchments (within 6km by road of the Post Office of an identified Service Centre), and will be used as a constraint for rural residential development.

A number of villages have land in close proximity that have slopes in excess of 20%, including Bulahdelah, Stroud and Wards River. Slope is more of a constraint for land in the west of the LGA, than the east.

Steep land should be avoided in the Strategy when considering urban or rural residential development because it tends to be visually prominent, highly erodable, sometimes subject to “land-slip”, has poor absorption capacity for on-site effluent disposal and is often vegetated. Flat or gently undulating land is more suited to further development, than steep land.

## 2.5 FLOODING

Land within the 1% AEP flood level (1 in 100 year flood) has been mapped for the village zones of Bulahdelah, Green Point, Nahiabac, Nerong, Smiths Lake, Stroud and Tarbuck Bay following flood studies. This data has been used to determine the number of vacant lots within villages that are flood affected (see Section 3.5 [Table 9]).

The mapping is limited in that it only considers areas that are zoned 2 – Village and, as such, is not useful in determining suitable areas for rural residential development. The areas affected by flooding can be seen on the rural residential inner catchment constraint maps (for identified service centres) and other maps produced for the Strategy.

Flooding has been found to be a significant issue for Bulahdelah, Nahiabac and Stroud, with a significant proportion of lots in each village affected.

Much of the low-lying land in coastal areas is flood liable, though generally only highly urbanised (or high risk) areas have had flood studies conducted. The onus will be on persons seeking further development to undertake flood studies to prove to Council that their land is suitable for development, if this is deemed to be a potential issue for their land.

## 2.6 WATER QUALITY

Water quality is a particularly important issue in the Great Lakes LGA due to the number and size of waterbodies. These waterbodies, in particular, Wallis Lake, Smiths Lake, Myall Lakes and Port Stephens are important for both tourism and industry (particularly the oyster and commercial fishing industries).

Concerns over the quality of surface runoff and groundwater entering waterways in the LGA has led to the provision of reticulated sewerage to some villages, with the prioritising of others based on level of risk. MidCoast Water (MCW) advised Council in a letter dated 29 November 2002 in response to the exhibition of this Strategy that it is currently investigating eight “high risk” (on-site systems) small communities consisting of North Arm Cove, Bundabah, Pindimar (Upper and Lower), Nerong, Allworth, Coomba Park and Stroud Road. MCW advise that for other small communities to be considered for a centralised sewerage system, the risk of maintaining a correctly installed on-site system would need to be greater than the risk of a centralised system. MWC further state that the answer to the question of which system has the lower risk (centralised or on-site) has not been resolved.

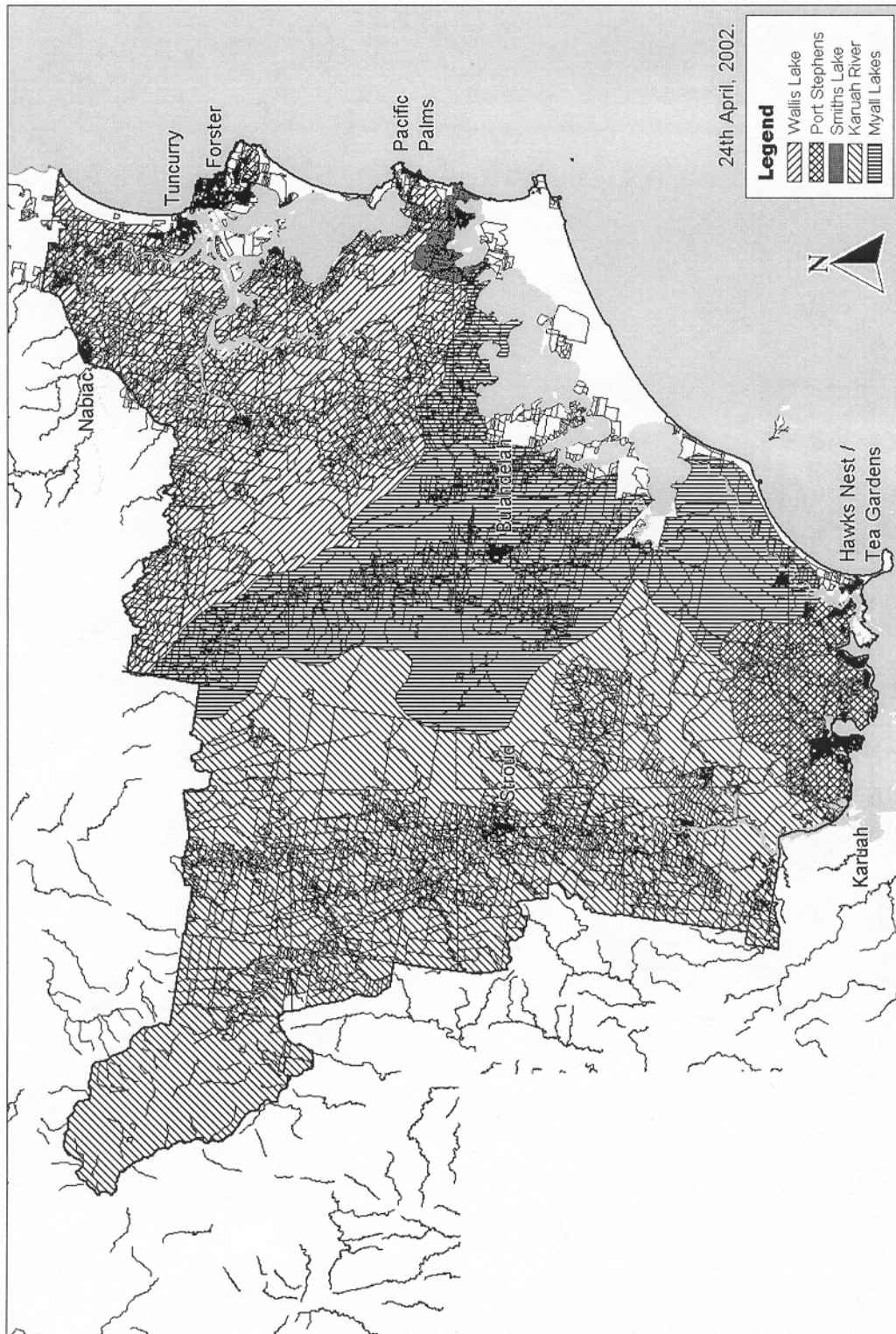
The sewerage of high risk villages, combined with regular inspection of on-site disposal systems (instigated under recent legislation), should reduce any risk of contamination of waterways by human faecal coliforms.

Water quality is affected by pollution from a variety of sources both point and diffuse. Agricultural practices and stock can detrimentally affect water quality. Intensive agriculture, such as piggeries and chicken farms, can produce large amounts of by-products that have potential to enter surrounding waterways. Erosion from unsealed roads and on properties directly affects water quality.

Urban areas also affect water quality, though significant improvements are being made through the use of artificial wetlands, litter baskets and other water quality measures.

There are five main surface water catchments in the LGA, being Wallis Lake, Smiths Lake, Myall River, Karuah River and Port Stephens. These are depicted in Map 5. This map will enable Council to better gauge the effects of development in the separate catchments, as well as the potential risk of future development. The areas shown as white on the map (within the Great Lakes LGA boundary) are either areas with unknown drainage patterns, or land draining directly to the sea.

# Map 5 – Water Catchments



Water quality objectives for the Karuah and Great Lakes Catchments were published in October 1999 by the Environment Protection Authority (EPA) [guidelines were developed by the Guidelines for River, Groundwater and Water Management Committees] in a document titled 'Water Quality and River Flow Interim Environmental Objectives'. The following table presents general water quality objectives outlined in the above document.

**Table 1 – Water Quality Objectives**

<b>WATER QUALITY OBJECTIVES</b>	<b>RIVER FLOW OBJECTIVES</b>
<b>Town Water Supply Catchments</b>	
▪ Aquatic ecosystems	▪ Manage groundwater for ecosystems
▪ Visual amenity	
▪ Drinking water – Groundwater	
<b>Mainly Forested Areas</b>	
▪ Aquatic ecosystems	▪ Protect pools in dry times
▪ Visual amenity	▪ Protect natural low flows
▪ Secondary contact recreation	▪ Maintain wetland and floodplain inundation
▪ Primary contact recreation	▪ Maintain natural flow variability
▪ Drinking water at point of supply – Disinfection only; Clarification and disinfection; Groundwater	▪ Manage groundwater for ecosystems
▪ Aquatic foods	▪ Minimise effects of weirs and other structures
<b>Waterways Affected by Urban Development</b>	
▪ Aquatic ecosystems	▪ Mimic natural drying in temporary waterways
▪ Visual amenity	▪ Maintain natural flow variability
▪ Secondary contact recreation, as a short-term objective, within 5 years	▪ Maintain natural rates of change in water levels
▪ Primary contact recreation: assess opportunities to achieve as a longer term objective, 10 years or more	▪ Manage groundwater for ecosystems
	▪ Minimise effects of weirs and other structures
<b>Uncontrolled Streams</b>	
▪ Aquatic ecosystems	▪ Protect pools in dry times
▪ Visual amenity	▪ Protect natural low flows
▪ Secondary contact recreation	▪ Protect important rises in water levels
▪ Primary contact recreation	▪ Maintain wetland and floodplain inundation
▪ Livestock water supply	▪ Mimic natural drying in temporary waterways
▪ Irrigation water supply	▪ Maintain natural flow variability
▪ Homestead water supply	▪ Manage groundwater for ecosystems
▪ Drinking water at point of supply – Disinfection only; Clarification and disinfection; Groundwater	▪ Minimise effects of weirs and other structures
▪ Aquatic foods (cooked)	
<b>Estuaries</b>	
▪ Aquatic ecosystems	▪ Maintain wetland and floodplain inundation
▪ Visual amenity	▪ Maintain natural flow variability
▪ Secondary contact recreation	▪ Manage groundwater for ecosystems
▪ Primary contact recreation	▪ Minimise effects of weirs and other structures
▪ Aquatic foods (cooked) and commercial shellfish production	▪ Maintain or rehabilitate estuarine processes and habitats

*Source: Guidelines for River, Groundwater and Water Management Committees, 1999.*

The attainment of the above objectives is intended to achieve effective long-term management of water quality. Details of each objective is provided in Table 2.

**Table 2 – Water Quality Objective Details**

<b>Objective</b>	<b>Detail</b>
▪ Visual Amenity	▪ Aesthetic qualities of waters
▪ Secondary Contact Recreation	▪ Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed
▪ Primary Contact Recreation	▪ Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed
▪ Livestock Water Supply	▪ Protecting water quality to maximise the production of healthy livestock
▪ Irrigation Water Supply	▪ Protecting the quality of waters applied to crops and pasture
▪ Homestead Water Supply	▪ Protecting water quality for domestic use in homesteads, including drinking, cooking and bathing
▪ Drinking Water – Disinfection Only; Clarification and disinfection; Groundwater	▪ Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment
▪ Aquatic Foods (cooked)	▪ Refers to protecting water quality for safe consumption of foods taken from natural waterbodies
▪ Protect Pools in Dry Times	▪ Protect natural water levels in pools of creeks and rivers and wetlands during periods of no flows
▪ Protect Natural Low Flows	▪ Protect natural low flows
▪ Protect Important Rises in Water Levels	▪ Protect or restore a proportion of moderate flows (“freshes”) and high flows
▪ Maintain Wetland and Floodplain Inundation	▪ Maintain or restore the natural inundation patterns and distribution of floodwaters supporting natural wetland and floodplain ecosystems
▪ Mimic Natural Drying in Temporary Waterways	▪ Mimic the natural frequency, duration and seasonal nature of drying periods in naturally temporary waterways
▪ Maintain Natural Flow Variability	▪ Maintain or mimic natural flow variability in all streams
▪ Maintain Natural Rates of Change in Water Levels	▪ Maintain rates of rise and fall of river heights within natural bounds
▪ Manage Groundwater for Ecosystems	▪ Maintain groundwater within natural levels and variability, critical to surface flows and ecosystems
▪ Minimise Effects of Weirs and Other Structures	▪ Minimise the impact of in-stream structures
▪ Maintain or Rehabilitate Estuarine Processes and Habitats	▪ Maintain or rehabilitate estuarine processes and habitats

*Source: Guidelines for River, Groundwater and Water Management Committees, 1999.*



Photograph 2 shows an example of land degradation in Great Lakes. Land in the foreground is pasture-improved and is not degraded, but land on the steeper slopes to the left is degraded. Land clearing and over-grazing can lead to a deterioration in water quality.

**Photograph 2 – Land Degradation**



Photograph 3 is of Wallis Lake, with the main body of the lake on the left and the village of Green Point on the centre right.

**Photograph 3 – Wallis Lake**





### **2.6.1 Wallis Lake Catchment**

The following is from a draft discussion paper from Graham Harris (CSIRO Land & Water, Canberra, ACT) titled 'Wallis Lake and its catchments – an overview and synthesis of existing data'. The paper came about as a result of the Wallis Lake Catchment Management Plan process.

*Wallis Lake has a water area of approximately 85 km<sup>2</sup>, with a catchment draining into the waterbody of approximately 1440 km<sup>2</sup>.*

Harris states that a reduction in native forest to 50% of the catchment land area results in rapid increases in nutrient export. The sub-catchments draining into Wallis Lake range from 25% and 44% forest cover in the case of the Wallamba and the Wang Wauk, and about 75% in the case of the Coolongolook and Wallingat catchments. Restorative action to increase forest cover in the Wallamba and Wang Wauk catchments is recommended.

Recent thorough surveys of river health and the condition of riparian vegetation in the catchments point clearly to degraded water quality, the loss of riparian vegetation and erosion problems in the catchment. The catchment assessment programme has revealed that overall stream condition in the northern sub-catchments of Wallis Lake catchment is generally only moderate and that stream condition is poor to very poor in the headwaters of the Wallamba and Wang Wauk catchments.

Forested catchments tend to export their Nitrogen and Phosphorus in dissolved organic forms, which appears largely unavailable for algal growth in receiving waters. Thus forest clearance and conversion to agriculture and urban development not only increase the total concentrations of nutrients in the rivers and increases catchment exports, but also increases the exports of the more available forms of Nitrogen and Phosphorus, increasing the risk of algal bloom development.

The present load of total Nitrogen is altering the lake ecosystem, and in poorly flushed corners and in places adjacent to storm drains etc there is significant risk of algal blooms and seagrass loss. This is already happening in the southern end of the lake at Pacific Palms and in Pipers Creek. Harris states that development in these areas must be managed with great care.

By comparison to many of the smaller coastal lagoons on the east coast of NSW, Wallis Lake is in reasonable condition. The challenge is to ensure the long-term sustainability of the lakes.

It is essential to strive to reduce both the diffuse loads of nutrients from the catchments that drain into the lake, and the urban inputs from the Forster/Tuncurry urban areas. Restoration of native vegetation in the catchment, containment of stormwater flows and elimination of sewer overflows (both from sewerage treatment plants and septic systems) are especially important in reducing nutrient loads. Good agricultural practices like fencing off riparian zones, keeping stock out of creeks and replanting of land set aside for conservation ensures improved water quality.

## 2.6.2 Independent Inquiry into Coastal Lakes

The following information is from the Healthy Rivers Commission Draft Paper, August 2001.

The Healthy Rivers Commission of New South Wales has classified all coastal lakes, in order to develop management strategies for each. Table 3 shows the classification of the three lake systems present in Great Lakes.

**Table 3 – Classification of Lakes in Great Lakes LGA**

Lake	Natural Sensitivity (Risk)	Existing Condition (Stress)		Recognised Conservation Value	Significant Other Factors	Classification for Management Orientation
		Catchment	Lake			
Wallis	High	Modified	Slightly Affected	High	e, g, h	Healthy Modified Conditions
Smiths	High	Largely Unmodified	Slightly Affected	Moderate	f, h	Significant Protection
Myall	Extreme	Largely Unmodified	Considerably Affected	High	b, c, e, g, h	Significant Protection

Source: *Healthy Rivers Commission 2001, Table A1*

b = Material provided in submissions.

c = Existing patterns of regional settlement, natural resources use, recreation and tourism and their sustainability.

e = Critical decisions made by government (federal, state and local), courts and planning Commissions of Inquiry.

f = Potential for restoration of natural ecosystem processes.

g = Potential for rehabilitation of modified ecosystem processes.

h = Potential implications of a classification of a coastal lake with regard to those assigned to nearby lakes, as well as consideration of the likely capability, condition and pressures of other estuaries.

The management orientations classifications mentioned in Table 3 are detailed in Tables 4 and 5.

Table 4 relates to Wallis Lake (see Table 3 for classifications) and shows the outcomes and actions associated with management of the catchment. The 'indicative actions' outlines above are similar to those contained within the Wallis Lake Catchment Management Plan. The on-ground actions of this Plan are expected to commence in 2002.

**Table 4 – Healthy Modified Conditions (Management Orientation)**

INTENDED OUTCOMES		INDICATIVE ACTIONS
Overall Outcome	Possible Outcomes	
Key natural and/or highly valued modified ecosystem processes rehabilitated and retained.	Urban/ village/ rural residential areas maintained and/or expanded within defined limits.	Apply and enforce controls for any new development.
		Adjust entrance intervention to protect critical ecosystem processes.
		Progressively implement an integrated, cost effective program to mitigate the impacts of all existing sources of wastewater.
		Progressively implement a program to rehabilitate natural riverine corridors.
		Enhance management of fishing.
		Encourage use of best farming and forestry practices.
		Control commercial and recreational uses of a lake waterbody.
Protect river flows in tributary streams and waters within a lake.		

Source: *Healthy Rivers Commission 2001, Table 3 [abbreviated]*

Table 5 relates to both Smiths and Myall Lakes, and details the outcomes and actions associated with management of each lake's catchment. It should be noted that the Myall Lakes is a National Park and is under close scrutiny following a number of blue-green algae outbreaks in recent times.

**Table 5 – Significant Protection (Management Orientation)**

INTENDED OUTCOMES		INDICATIVE ACTIONS	
Primary Outcome	Possible Outcomes		
Critical natural ecosystem processes restored and preserved.	Minimal risk for existing oyster growing.	Limit any new development to within the existing boundaries of developed urban or rural residential areas.	
	Existing villages maintained within current boundaries of developed areas.	Implement a program to progressively minimise intervention in natural entrance behaviour.	
		Progressively mitigate (or remove) sewage discharges and overflows from existing sewerage and on-site systems and boats.	
		Sustainable fishing.	Progressively implement rigorous stormwater controls for existing developed areas.
			Implement best practices for forestry and apply stringent controls for other vegetation clearing.
			Mitigate sediment runoff from high-risk sections of unsealed roads.
			Facilitate the use of best farming practices.
			Control commercial and recreational uses of a lake waterbody.
Protect river flows in tributary streams and waters within a lake.			

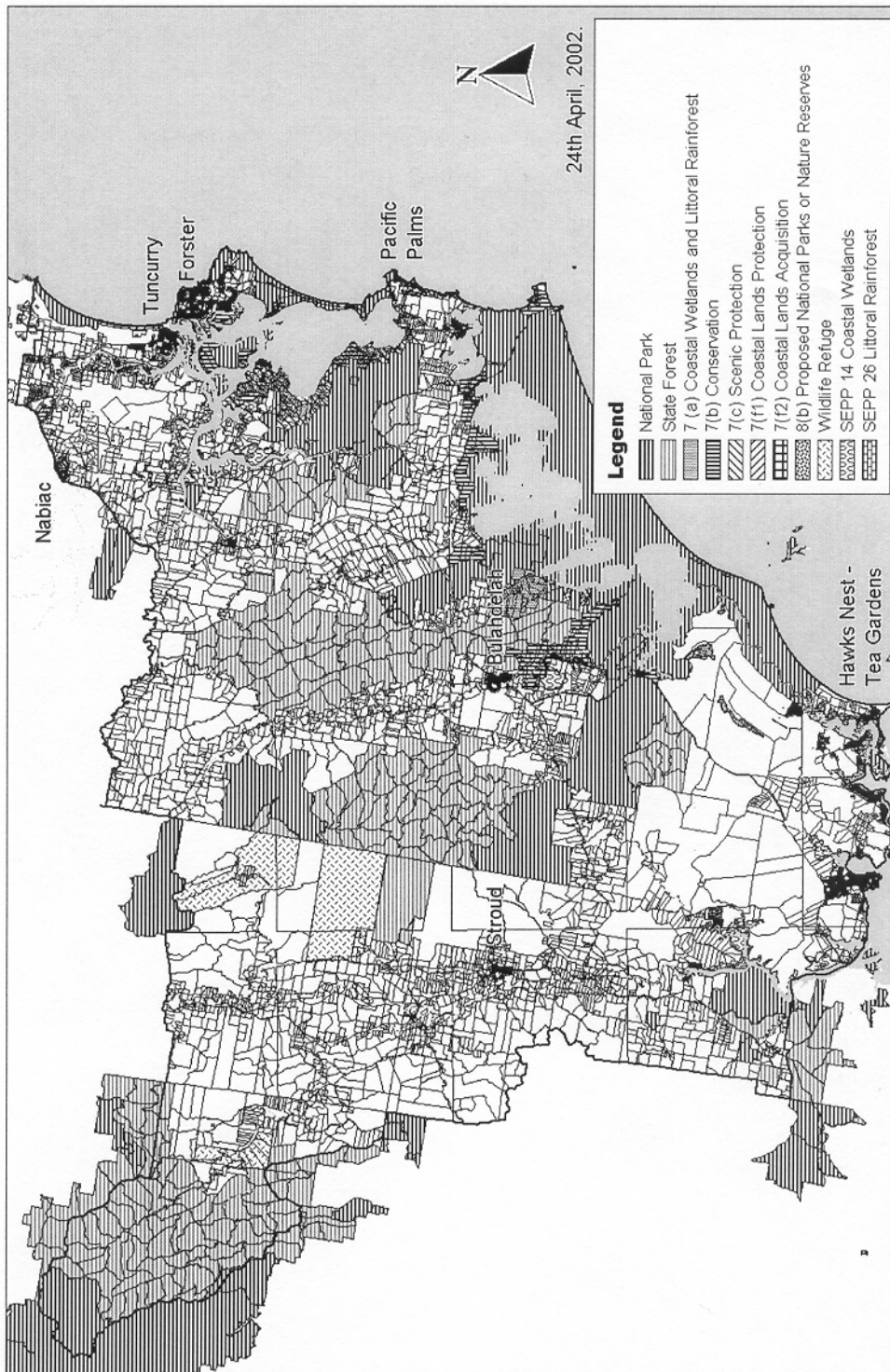
*Source: Healthy Rivers Commission 2001, Table 2 [abbreviated]*

## 2.7 NATIONAL PARKS

Map 6 shows a number of environmental zones and features, including National Parks in the Great Lakes LGA. It should be noted that the Myall Lakes National Park, the largest continuous National Park shown, contains the water bodies that make up the Myall Lakes. Approximately one third of the LGA is either National Park or State Forest.

Table 6, below, gives a breakdown of the National Parks & Wildlife Service Estate in the Great Lakes LGA. There is 58,775 ha of National Parks and 1,353.3 ha of nature reserves, giving a combined total of 60,128.3 ha.

Map 6 – Ecological Sensitivity Constraints



**Table 6 – NPWS Estate Breakdown**

<b>NATIONAL PARKS</b>	<b>Area (ha)</b>
Myall Lakes	44,172
Wallingat	6,557
Ghin-doo-dee	3,699
Booti Booti	1,567
Barrington (in Great Lakes LGA)	2,500
Broughton & Correy Islands & Fame Cove	280
<b>Subtotal</b>	<b>58,775</b>
<b>NATURE RESERVES</b>	
Darawank	575
Bandicoot Island	30
Coolongolook	198
Mills Island	61
Regatta Island	102
Seal Rocks	0.3
Wallis Island	340
Yahoo Island	47
<b>Subtotal</b>	<b>1,353.3</b>
<b>TOTAL</b>	<b>60,128.3</b>

Source: NPWS

## 2.8 ENVIRONMENTAL PROTECTION ZONES

Map 6 shows the environmental protection zones present in the Great Lakes LGA. The following environmental protection zones are present in Great Lakes LEP 1996 and are shown on Map 4:

- 7(a) – Wetlands and Littoral Rainforest
- 7(b) – Conservation
- 7(c) – Scenic Protection
- 7(f1) – Coastal Lands Protection
- 7(f2) – Coastal Lands Acquisition
- 8(b) – Proposed National Parks and Nature Reserves.

The following zones, which are closely related, do not appear in Map 6:

- 1(f) – Forestry
- 8(a) – National Parks and State Recreation Areas

The above two zones do not appear on Map 6 as National Parks and State Forests are shown separately. SEPP 14 Coastal Wetlands and SEPP 26 Littoral Rainforests also appear on Map 4, as not all of these areas are covered by the 7(a) zone.

Most of the environmental protection zones are either along waterways/bodies, or are adjoining a National Park or State Forest. Great Lakes has 15 SEPP 26 Littoral Rainforests and 185 SEPP 14 Coastal Wetlands.

## 2.9 MAIN FINDINGS

The physical and environmental characteristics of the LGA will determine the capability and suitability of rural land for future development.

The main findings of Section 2 are as follows:

- Coastal and estuarine areas close to, or below, sea level are often identified as having potential for acid sulphate soils.
- There are significant areas of the LGA identified as having dense vegetation, high habitat or being part of a regional wildlife corridor.
- There are 6 National Parks within the Great Lakes LGA and 8 Nature Reserves, giving a combined total of 60,128.3 ha of land under the direct control of the National Parks & Wildlife Service. This represents approximately 18% of the total area of Great Lakes LGA (LGA area is 3339 sq. km [333,900 ha]).
- A number of areas in the LGA have slope in excess of 20%, although only the rural residential inner catchments for service centres have been mapped.
- Seven villages have been identified as having flood affected land (other villages are yet to have flood studies conducted to identify affected land).
- Water quality is a particularly important issue for Great Lakes.
- The CSIRO found that there is significant risk of algal blooms and seagrass loss in Wallis Lake, especially in the poorly flushed areas, such as the southern end of the lake at Pacific Palms and in Pipers Creek.
- The Independent Inquiry into Coastal Lakes conducted by the Healthy Rivers Commission of New South Wales has classified Wallis and Smiths Lakes as having a High natural sensitivity risk, whilst the Myall Lakes have been given an Extreme classification.
- Six environmental protection zones, as well as SEPP 14 Coastal Wetlands and SEPP 26 Littoral Rainforests have been mapped as constraints to future development.

## 2.10 DISCUSSION

Great Lakes LGA has many physical and environmental characteristics that are a constraint to further development. These constraints include:

- Land affected by Acid Sulphate Soils (although this may prove to be more of a management issue);
- Heavily vegetated areas, areas known to contain threatened species and land identified by NPWS as forming part of a Regional Wildlife Corridor;
- Land with slope in excess of 20%
- Land within the 1 in 100 year flood level;
- Land that may contribute to the deterioration of water quality;
- Land under the control of the NPWS (National Parks & Nature Reserves); and
- Land within the following environmental protection zones and areas:
  - 7(a) – Wetlands and Littoral Rainforest
  - 7(b) – Conservation
  - 7(c) – Scenic Protection
  - 7(f1) – Coastal Lands Protection
  - 7(f2) – Coastal Lands Acquisition
  - 8(b) – Proposed National Parks and Wildlife Reserves
  - All land within SEPP 14 Coastal Wetlands
  - All land within SEPP 26 Littoral Rainforests.

Land affected by the above constraints will not be considered for rural residential development or village expansion by the Great Lakes Rural Living Strategy, with the possible exception of land affected by Acid Sulphate Soils.

## SECTION 3 — ECONOMIC DEVELOPMENT AND VALUE

Economic features of the Great Lakes LGA include tourism, agriculture, landuse, lot size, vacant land supply, agricultural suitability of land, extraction of mineral resources (current and future), potential urban areas, roads and services, state forest resources and groundwater (condition and extraction). As can be seen from the above list, economic development and value not only involve monetary amounts for different industries, but landuse and land supply.

### 3.1 TOURISM

Tourism is a major industry in Great Lakes, with the area's economy particularly reliant on this sector (especially Forster/Tuncurry and Tea Gardens/Hawks Nest). According to data collected by Tourism NSW, approximately 673,000 people visited the Great Lakes for the period 1996/97, spending on average, approximately 3 nights per person in the area. As a result, it is estimated that tourism contributed approximately M\$124 to the regional economy for the period 1996/97 (Great Lakes Community Profile, 2000). This represented an increase of 7% since 1995/96. These are the most up to date statistics on the value of tourism as Tourism NSW and the ABS no longer collect this data.

The main industries (categorised by the number of persons employed) in Great Lakes in 1996 were the retail trade (18.7%); accommodation, cafes and restaurants (9.5%); health and community services (8.7%); construction (8.5%); agriculture, forestry and fishing (8.4%); manufacturing (7.7%); property and business services (6.6%); and education (6.2%). Tourism has been largely responsible for the growth of the towns and villages and consequently the growth of industries and services in Great Lakes (Great Lakes Community Profile, 2000).

It is estimated that there are approximately 21,540 holiday beds within the Great Lakes, with the majority located in the Forster/Tuncurry wider area (ABS, 2000). This includes:

Holiday flats, units and houses	5,722
Motels	1,572
Caravan Parks	12,115
Houseboats, houseguests, bed & breakfast, other camping	2,131

At peak periods, it is estimated that there would be a 95% occupancy rate, which equates to an additional 20,235 people in Great Lakes. It is also likely that the peak population would be substantially increased as a result of visitors staying in other forms of accommodation which are difficult to gauge, such as with family (Martin, 2001).



## **3.2 AGRICULTURE**

The following information was provided by NSW Agriculture (referenced as Briggs 24/4/01).

The Department states that the figures provided by the Australian Bureau of Statistics (ABS) should be used with caution as they contain significant inherent limitations that result in a gross under-estimate of the true value and significance of agricultural production. The main limitation of the data is that 'only those properties with an estimated gross production of more than \$5,000/yr (valued as unprocessed product leaving the farm) were included in ABS surveys' (Briggs 24/4/01).

NSW Agriculture assert that there are substantial numbers of individually less productive farms (mainly beef cattle enterprises) that have been excluded from ABS surveys. Other limitations involve the valuing of products based on an unprocessed value (which does not take into account on-farm value adding and premium market prices for some products, eg. free range eggs). Omissions and errors (survey errors) that occurred due to misrepresentation of production/farm size, as well as there being no verification, also limit the accuracy of data (Briggs 24/4/01).

Agricultural Census statistics for the 2000/2001 period were obtained in June 2003 and are given as a comparison in the following sections.

### **3.2.1 Agricultural Value**

ABS farm surveys for 1996/97 state that 78,500ha (00/01 = 49,053ha), or 24% (00/01 = 15%) of the LGA, is used for agriculture. NSW Agriculture's estimate of agricultural land is 337,400ha (it should be noted that the total land area of the LGA is 333,900ha). The ABS survey gave a total of 228 rural holdings (00/01 = 217), indicating an average farm size of 340ha (00/01 = 226ha).

The ABS estimate the farm gate value of agriculture to be M\$37.4 (00/01 = M\$35.9), whereas NSW Agriculture's estimate is M\$45. Agricultural related activities comprised 5.2% of total employment in Great Lakes LGA. NSW Agriculture estimate that when flow-on effects are added (using a multiplier of 1.7), the economic value of agriculture is approximately M\$77/year for Great Lakes. Farmers in Great Lakes contribute 10% of the estimated gross value of agricultural production in the region. Comparison of ABS data indicates a greater predominance of smaller size agricultural holdings within Great Lakes compared to other LGA's in the region and state.

NSW Agriculture note that agriculture integrates with tourism via farm stay options and provides the practical means to maintain the attractive rural landscapes and buffers between urban settlements.

ABS surveys indicate that poultry (meat production), dairying and beef cattle contribute 98.5% of the total value of agriculture in Great Lakes LGA.

### **3.2.2 Poultry**

Great Lakes is seen by NSW Agriculture as an important poultry meat centre within NSW and the Hunter, with 35 growers focused in the Booral/Stroud area (37 growers in the LGA in 00/01), and an estimated value of agricultural output at the farm gate of approximately M\$30/yr (00/01 = M\$26). Processing of the birds occurs outside the LGA (Beresfield), though when flow-on effects are added, the economic value of poultry still amounts to M\$50/yr to the Great Lakes economy.

Great Lakes currently supports approximately 1/3 of all poultry meat production sheds within the Hunter region, and 5% of the estimated gross value of poultry production in the State.

The poultry industry is highly competitive and margins are relatively small. Growers own the facilities (not the birds) and operate on contract to larger poultry processing firms such as Bartters (formerly Steggles). Proposed deregulation of the fixed price per bird currently paid to growers and increasing competition adds considerable uncertainty and economic pressure. Bartters have “flagged” that contracts will only be renewed in 2004 for growers with highly efficient, larger scale production based on tunnel ventilated sheds. Many of the broiler operations within Great Lakes are relatively old and small in comparison to current industry standards. Discussions with poultry farmers indicate that approximately 1/3 of contracts in Great Lakes are unlikely to be renewed.

Photograph 4 shows a group of chicken sheds on a farm on the outskirts of Stroud.

**Photograph 4 – Chicken Sheds at Stroud**



### **3.2.3 Dairy**

In 1996/97 ABS surveys identified 26 dairy farms in Great Lakes (00/01 = 23), contributing 4.4% of the total value of milk produced in the region. Despite drastically reduced margins, only 2-3 smaller producers within Great Lakes have left the industry since deregulation. Additional industry specific ABS statistics for 1993/94 suggest an average of 347 ha/dairy farm in Great Lakes. NSW Agriculture believe that dairy farmers with limited potential to improve production may exit the industry. Some dairy farmers are investigating the purchase of additional suitable land and cows to alleviate the effects of deregulation.

Dairies within Great Lakes are predominantly located in clusters on highly productive land, consequently the overall production and net area of dairy farms may not change significantly. The total value of milk for the 2000/2001 period was M\$3.7.

### **3.2.4 Beef**

The majority of North Coast beef cattle properties provide a means of controlling pasture growth and generating some return in association with a desired lifestyle, rather than as a sole business. Although coastal grazing lands have high rainfall, production is limited by soils with low soil phosphate, poor water holding capacity and shallow depths.

In 1996/97 ABS surveys identified 170 beef cattle producers in Great Lakes (00/01 = 184) with an average herd size of 208 cattle (00/01 = 110) and an annual average production of \$25,900 (00/01 = \$25,240). Beef properties in Great Lakes have an average size of 314ha. ABS statistics show that cattle from Great Lakes comprised 6% of the total value of cattle slaughtered in the region in 1996/97. The total value of cattle and calves slaughtered in 00/01 was M\$4.6.

NSW Agriculture state that 'although poorly managed operations can cause or contribute to environmental degradation, beef enterprises are an important means of maintaining rural landscapes and controlling fire hazards in coastal shires such as Great Lakes (with associated tourism and social values). Beef enterprises provide financial returns and encourage regular inspection vital for weed and feral animal control, the maintenance of boundary fencing etc. They are also significant employers of contract farm managers' (Briggs 24/4/01, 10).

### **3.2.5 Horticulture**

ABS statistics valued the production of fruit and vegetables in 1996/97 at \$211,000 (total value of fruit in 00/01 = \$83,363). Whilst considered relatively insignificant compared to the production value of poultry, beef cattle or dairying, it comprised 4% of the recorded value of fruit and vegetable production (excluding grapes) in the greater Hunter region.

Great Lakes has reasonable potential for further expansion of horticulture ventures (including organic production) due to generally favourable climatic conditions, a diversity of agricultural land and good proximity to markets.

### **3.2.6 Farm Size and Agricultural Values**

Farm size has a direct correlation to productivity and sustainability. For a given standard of management and quality of land, larger grazing properties enable better economies of scale and return on capital. Even for more intensive enterprises, larger holdings have larger buffer capacity and greater opportunity to protect environmental values.

Additional industry specific ABS data for 1993/94 shows that 65% of the total number of holdings surveyed in Great Lakes had a gross annual production of \$40,000 or less and occupied 37% of the total area. In stark contrast, 3 properties comprised 20% of the total area (average farm size of 5,124ha) and each produced more than \$600,000/yr. The most predominant category of agricultural production in Great Lakes in 1993/94 was \$40,001 - \$80,000/yr, which comprised 26% of the total area and 11% of all holdings surveyed. The average size of farms in this category was 869ha.

### **3.2.7 Aquaculture**

The figures for aquaculture are supplied by NSW Fisheries and, hence, are not part of the figures mentioned above for agriculture.

The value for the commercial fish catch for Wallis Lake in 1999/2000 was M\$2.1, whilst Sydney Rock Oyster production for Wallis Lake amounted to M\$8.4. Sydney Rock Oyster Production for Port Stephens (within the Great Lakes LGA boundary) for the 1999/2000 period was M\$2.2, whilst Pacific Oyster production for this area was M\$1.7. Therefore, the total aquaculture (oyster farming and Wallis Lake commercial fish catch) production for Great Lakes amounted to M\$14.4 in the 1999/2000 period. This figure, however, does not include the commercial catch value for Smiths Lake, Myall Lakes and the port of Tuncurry (Pamplin 2001).

Photograph 5 shows aquaculture ponds in the Nerong area. The picture represents one of the larger aquaculture enterprises in the Great Lakes area.

**Photograph 5 – Aquaculture Ponds at Nerong**



Figures on land based aquaculture from NSW Fisheries are only available on a state-wide basis. Due to the fact that there are known yabby farms in Great Lakes, the following information is provided. There are 59 commercial yabby farms in NSW, with the industry having a total value in 1999/2000 of \$550,173.00, equating to an average price per kilogram of \$13.15.

### **3.3 LANDUSE SURVEY**

#### **3.3.1 Purpose**

The Landuse Survey was undertaken to obtain information on the types and distribution of landuses within the Great Lakes rural environment. The information represents a “snap-shot” of activities carried out in the LGA, completed February 2001. It will be used by the Strategy to better plan our rural areas for the benefit of the wider community.

#### **3.3.2 Components**

There were two components of the Landuse Survey:

- Inventory of activities within rural areas – information on the types and distribution of landuses within the Great Lakes rural environment (see Map 7).
- Survey of villages — services available (see Section 4.1.6)  
— vacant land supply (see Section 3.5).

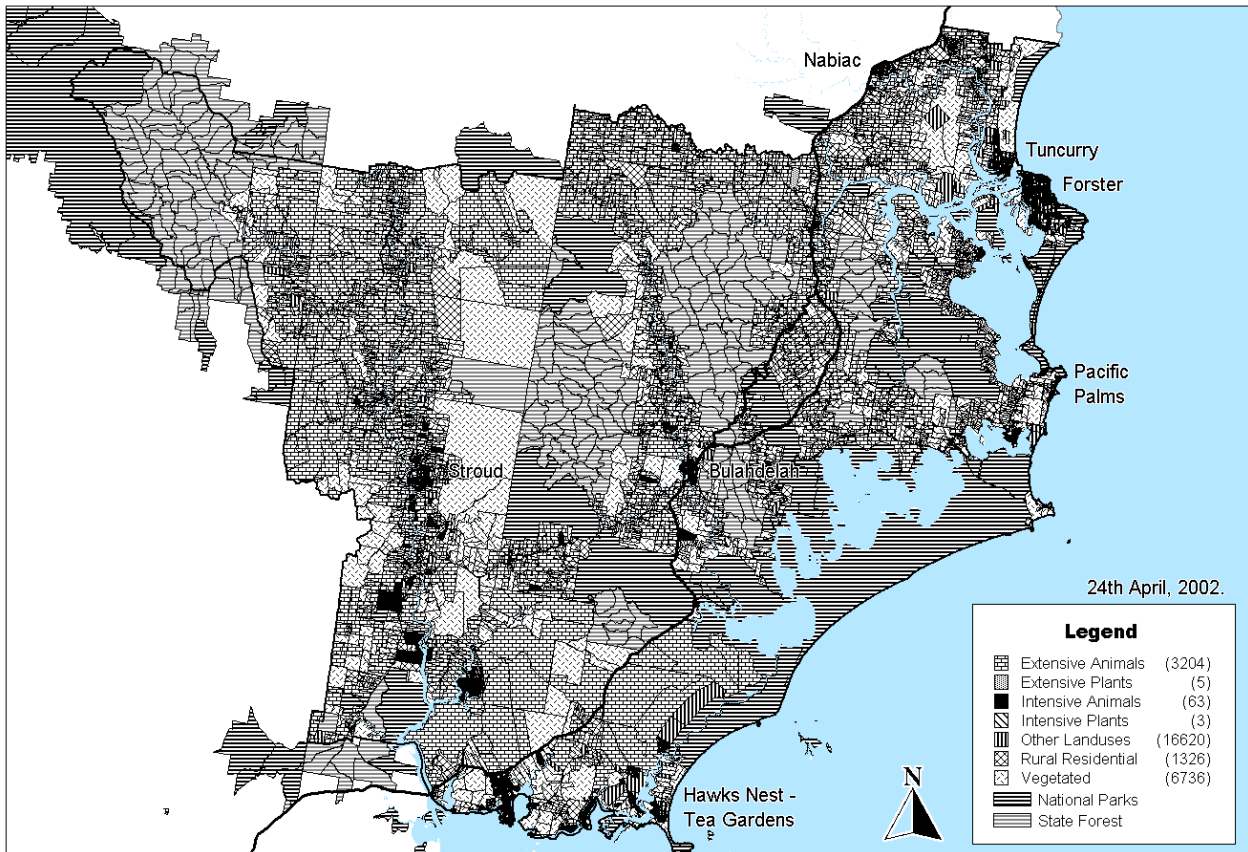
#### **3.3.3 Method**

The different landuses that are present in the LGA were categorised into major or primary use types, which were then further divided into Secondary Categories, for example ‘Intensive Plants – Hydroponics’. These categories were consolidated for the purposes of this report and can be seen in Map 7, Table 7 and Figure 1.

It should be noted that the ‘Other Landuses’ category in Map 7 contains urban/village zoned lots, whereas these have been removed (so as not to “skew” data on rural areas) for Table 7 and Figure



## Map 7 – Landuse Survey



### 3.3.4 Main Findings

Table 7 outlines the landuses present in the LGA at the time of survey (completed February 2001). The table is based on a combination of the 28 landuses initially determined for the LGA. Table 7 excludes urban/village zoned lots.

There are two landuses that, when combined, represent approximately 84% of the rural lots in the LGA, these being Vegetated and Extensive Animals. The Vegetated landuse category is self explanatory and does not include National Parks and State Forests, whilst the Extensive Animals category mainly represents the grazing of beef cattle.

The next most significant landuse category is Rural Residential, representing approximately 11% of the total rural lots. Rural Residential as a landuse is not restricted by the size of the lot. For example, if a 200ha lot has a dwelling, is mostly vegetated and is not being used for any obvious business/agriculture, then its' landuse is defined as Rural Residential.

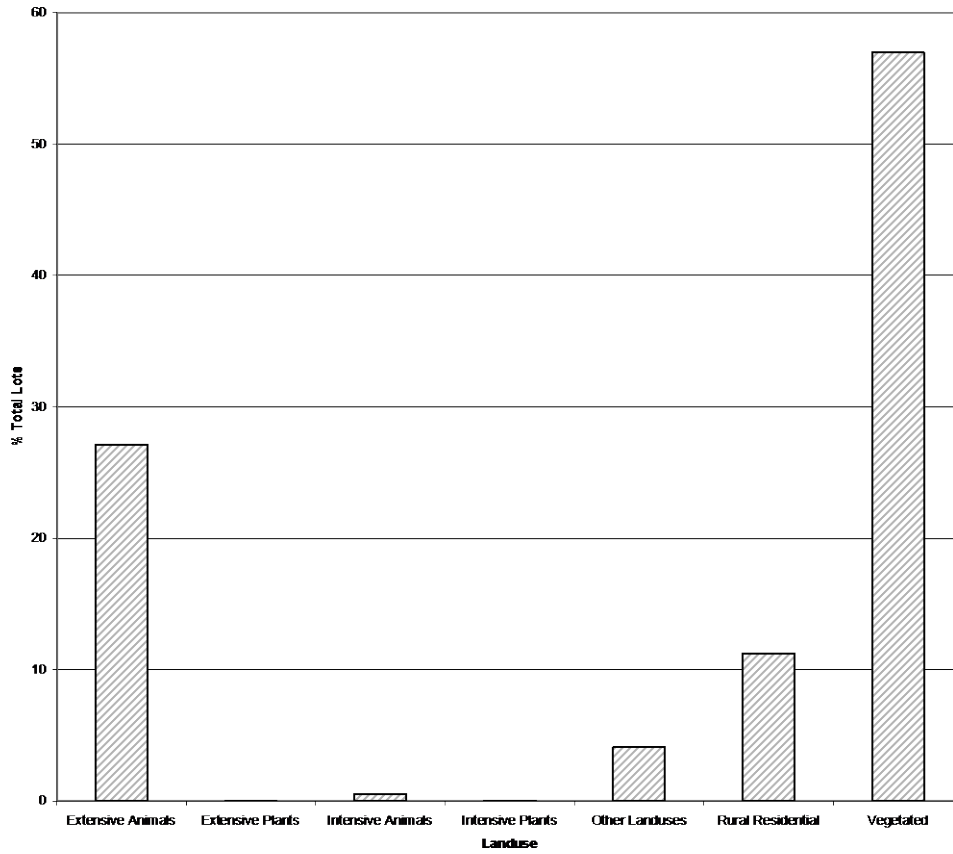
**Table 7 – Landuses**

<b>Category</b>	<b>Number of Lots</b>	<b>% Total Lots</b>
Extensive Animals	3,204	27.10
Extensive Plants	5	0.04
Intensive Animals	63	0.53
Intensive Plants	3	0.03
Other Landuses	485	4.10
Rural Residential	1,326	11.22
Vegetated	6,736	56.98
TOTAL	11,822	100

It should be noted that the number of lots shown for a particular landuse does not indicate the number of farms, as often one “holding” is made up of more than one lot.

The results from the % Total Lots column of Table 7 are shown in Figure 1. From this figure, it can clearly be seen that the major rural landuses in the LGA are Vegetated and Extensive Animals. Hence, agriculture is the second major rural landuse in the Great Lakes LGA.

**Figure 1 – Landuse Survey**





### 3.4 LOT SIZE ANALYSIS

A lot size analysis of the entire LGA was carried out as part of the Strategy. To make the analysis useful, lot size was divided into a number of “ranges”. These can be seen in Table 8 and Map 8. Table 8 has been adjusted from Map 8 to remove urban and village zoned lots that would otherwise “skew” the results obtained from the analysis.

The rural lots (zoned 1(a)) adjoining the village zone of North Arm Cove have also been removed from the lot size range of 0-0.8 (3,600 lots) to enable Table 8 to more accurately portray the rural situation [North Arm Cove being more of an anomaly, whereby there is a large number of small lots that are unable to have dwellings built upon them].

**Table 8 – Lot Size Analysis**

<b>Lots Size Range (ha)</b>	<b>Number of Rural Lots</b>	<b>% Total Lots</b>
Greater than 42.01	1,084	14.12
38.01 – 42	266	3.47
18.01 – 38	864	11.26
8.01 – 18	1,303	16.98
3.01 – 8	786	10.24
0.81 – 3	853	11.12
0 – 0.8	2,518	32.81
<b>TOTAL LOTS</b>	<b>7,674</b>	<b>100</b>

From Map 8, it can be seen that the lots in the largest range (greater than 42.01 ha) are evenly distributed throughout the LGA. Lots in the smaller ranges are generally either located in urban/village areas or along major roads.

## Map 8 – Lot Size Analysis

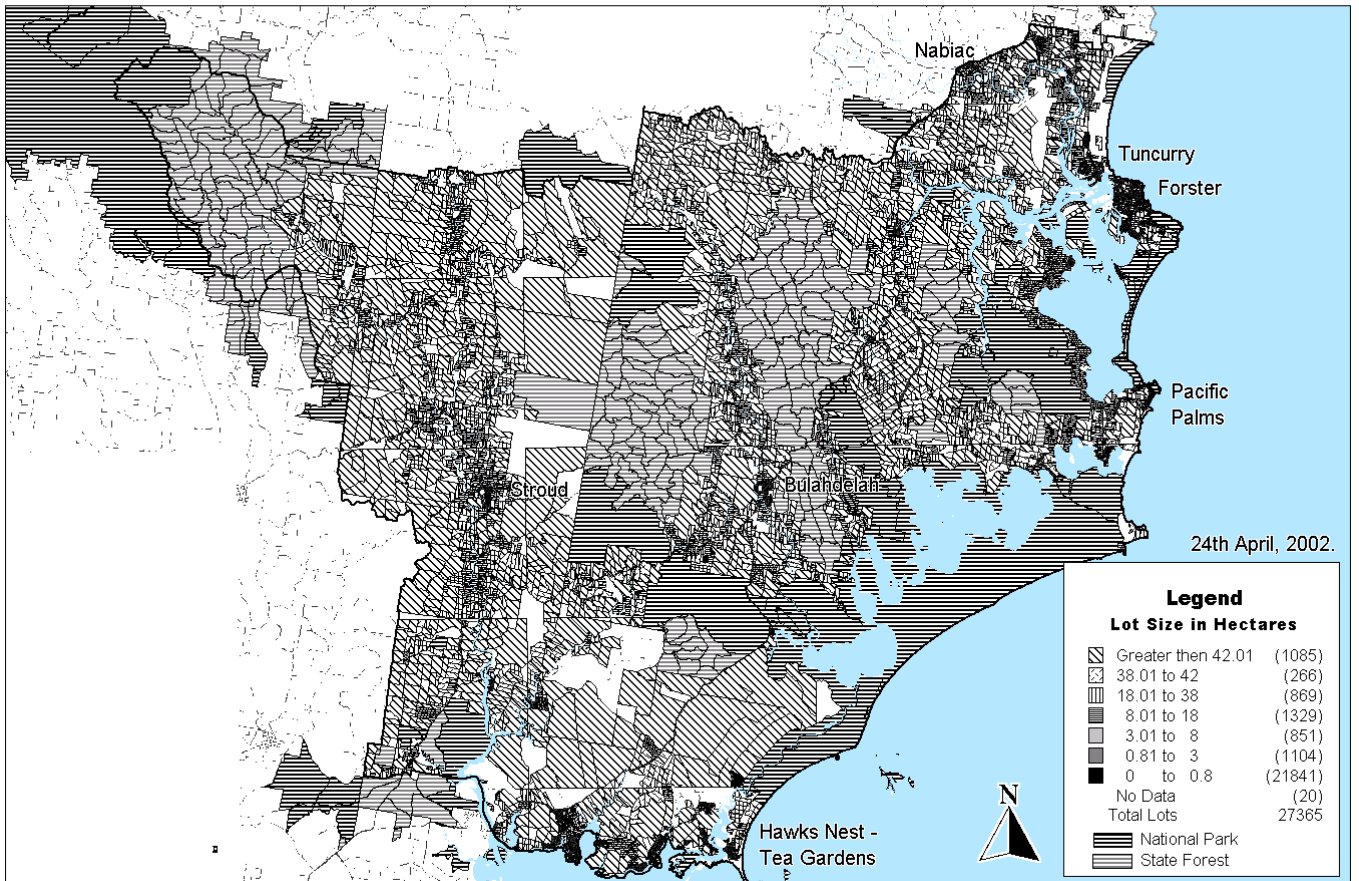
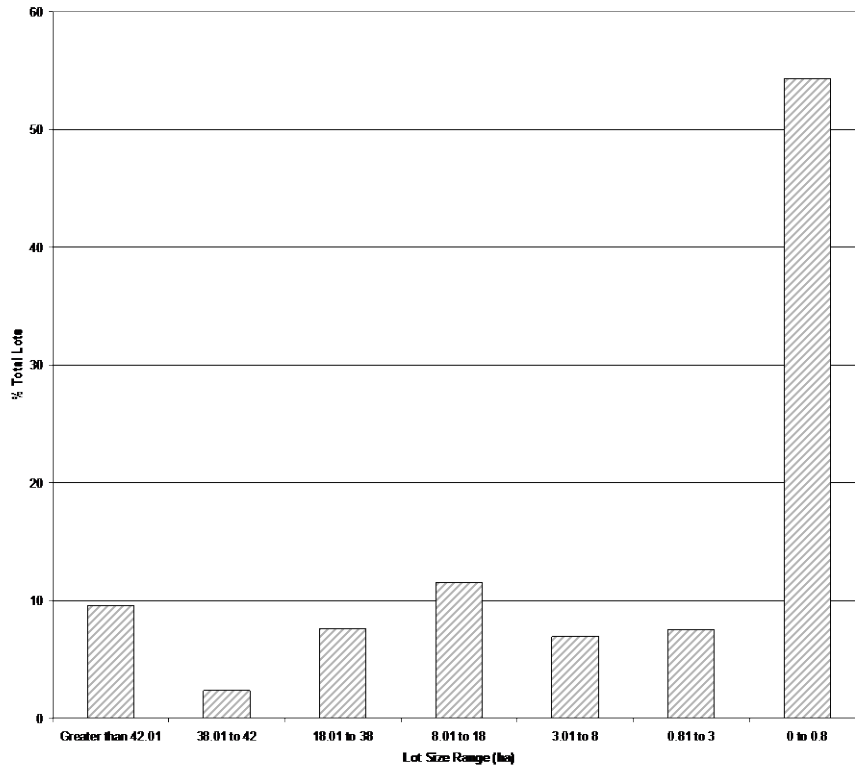


Figure 2 presents the information from Table 8 in the form of a graph. From Figure 2 it can be seen that the greatest number of lots are in the range of 0 to 0.8ha. The majority of lots within this range are likely to be within areas zoned 1(a) – Rural, where the lots are too small to allow a dwelling to be erected under the LEP, for example, North Arm Cove.

**Figure 2 – Lot Size Analysis**



The landuse categories in Table 9 are taken from the landuse survey shown in Map 7, except that lots classed as “urban” from the original landuse survey have been removed from the “Other Landuses” category. This prevents unnecessary data from “skewing” the results of the landuse by lot size analysis. Table 9 combines the data obtained from the lot size and landuse surveys.

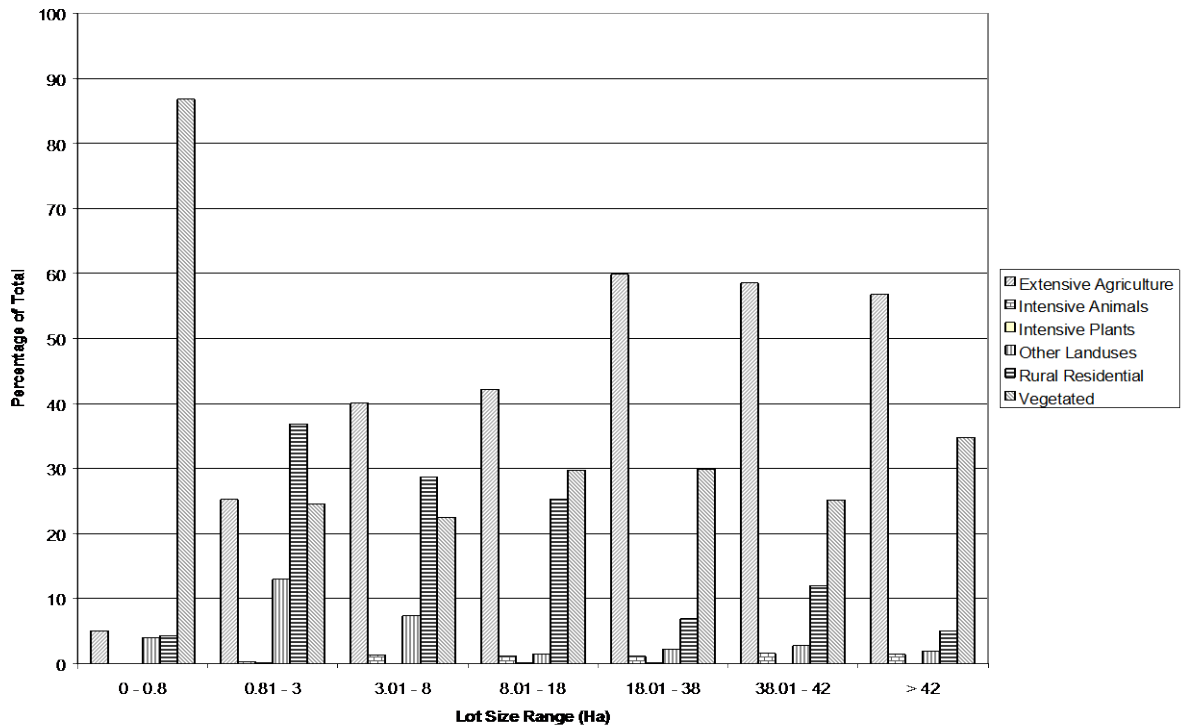
From Table 9 it can clearly be seen that there are very few lots in the LGA, as can be seen through the low percentages throughout the lot ranges, classified as Intensive Animals or Intensive Plants. Extensive Agriculture is conducted to a significant degree in all but one lot size range, being the 0-0.8ha range. Rural Residential is most common between the 0.81 and 18 ha ranges, whilst Vegetated is a significant landuse in all lot size ranges, with it being an especially predominant landuse in the 0-0.8 ha range.

**Table 9 – Lot Size by Land Use (%'s)**

Landuse	Lot Size Range (Ha)						
	0 - 0.8	0.81 - 3	3.01 - 8	8.01 - 18	18.01 - 38	38.01 - 42	> 42
Extensive Agriculture	4.98	25.23	40.08	42.21	59.88	58.53	56.78
Intensive Animals	0	0.27	1.35	1.2	1.08	1.55	1.37
Intensive Plants	0	0.13	0	0.08	0.12	0	0
Other Landuses	3.96	12.95	7.29	1.44	2.17	2.71	1.95
Rural Residential	4.27	36.85	28.74	25.34	6.87	12.02	5.07
Vegetated	86.8	24.57	22.54	29.74	29.88	25.19	34.83
TOTAL	100	100	100	100	100	100	100

The data from Table 9 can graphically be seen in Figure 3. From Figure 3 it can be seen that the 0-0.8 ha lot range has vegetated as its' main landuse which, as previously mentioned, is mainly due to small rural lots with no dwelling entitlements. The next most dominant landuse is the Extensive Agriculture in the 3.01-8, 8.01-18, 18.01-38, 38.01-42 and >42 lot ranges. Rural Residential is the most predominant landuse in the 0.81-3 ha range.

**Figure 3 – Lot Size by Landuse**



### 3.5 VACANT LAND SUPPLY

Every village and rural residential allotment in the LGA was surveyed as part of the Strategy. The survey consisted of a physical assessment of the land to establish its status (see Tables 10 & 11). Village lots tend to be small (<2,000m<sup>2</sup>), whilst lots zoned for a rural residential use tend to range from 4,000m<sup>2</sup> to 50,000m<sup>2</sup> (0.4ha-5ha).

Each lot zoned 2 – Village under Great Lakes LEP 1996 (in the 26 separate villages) was surveyed to find out whether there was a house on it, whether it was vacant and whether it is flood affected (this was only carried out for vacant lots). The results of this survey are shown in Table 10.

From Table 10, it can be seen that all villages have vacant lots. The most significant number of vacant lots is within the villages of Coomba Park and Smiths Lake.

Table 10 shows that Stroud has the most significant number of vacant lots affected by flooding of any village (approximately 42%). It should be noted that many of the villages that have not had flood studies conducted are in fact, flood-free (the villages at most risk having had flood studies conducted first).

**Table 10 – Village Vacant Lot Survey**

VILLAGE	NUMBER OF LOTS WITH DWELLINGS	VACANT LOTS	TOTAL LOTS	FLOOD AFFECTED VACANT LOTS	USEABLE VACANT LOTS
<b>Allworth</b>	69	44	113	Unknown	44
<b>Booral</b>	19	9	28	Unknown	9
<b>Bulahdelah</b>	565	99	664	37	62
<i>Bulahdelah April 03</i>	<i>510</i>	<i>115</i>	<i>625</i>	<i>55</i>	<i>60</i>
<b>Bundabah</b>	62	55	117	Unknown	55
<b>Bungwahl</b>	31	7	38	Unknown	7
<b>Bunyah</b>	6	3	9	Unknown	3
<b>Carrington</b>	23	17	40	Unknown	17
<b>Coolongolook</b>	41	23	64	Unknown	23
<b>Coomba Park</b>	247	422	669	Unknown	422
<b>Green Point</b>	239	73	312	2	71
<b>Karuah (North)</b>	22	14	36	Unknown	14
<i>Karuah (Nth) Apr 03</i>	<i>26</i>	<i>10</i>	<i>36</i>	<i>0</i>	<i>10</i>
<b>Limeburners Creek</b>	41	10	51	Unknown	10
<b>Markwell</b>	7	6	13	Unknown	6
<b>Nabiac</b>	217	63	280	3	60
<i>Nabiac April 03</i>	<i>207</i>	<i>60</i>	<i>267</i>	<i>0</i>	<i>60</i>
<b>Nerong</b>	67	93	160	21	72
<b>Newells Creek</b>	10	2	12	Unknown	2
<b>North Arm Cove</b>	291	116	407	Unknown	116
<b>Pacific Palms</b>	568	135	703	Unknown	135
<b>Pindimar</b>	139	59	198	Unknown	59
<b>Seal Rocks</b>	54	12	66	Unknown	12
<b>Smiths Lake</b>	558	365	923	3	362
<b>Stroud</b>	301	118	419	50	68
<i>Stroud April 03</i>	<i>286</i>	<i>103</i>	<i>388</i>	<i>33</i>	<i>70</i>
<b>Stroud Road</b>	67	11	78	Unknown	11
<b>Tarbuck Bay</b>	74	32	106	0	32
<b>Wards River</b>	34	18	52	Unknown	18
<b>Wootton</b>	13	4	17	Unknown	4
<b>TOTAL</b>	<b>3765</b>	<b>1810</b>	<b>5575</b>	<b>116</b>	<b>1694</b>

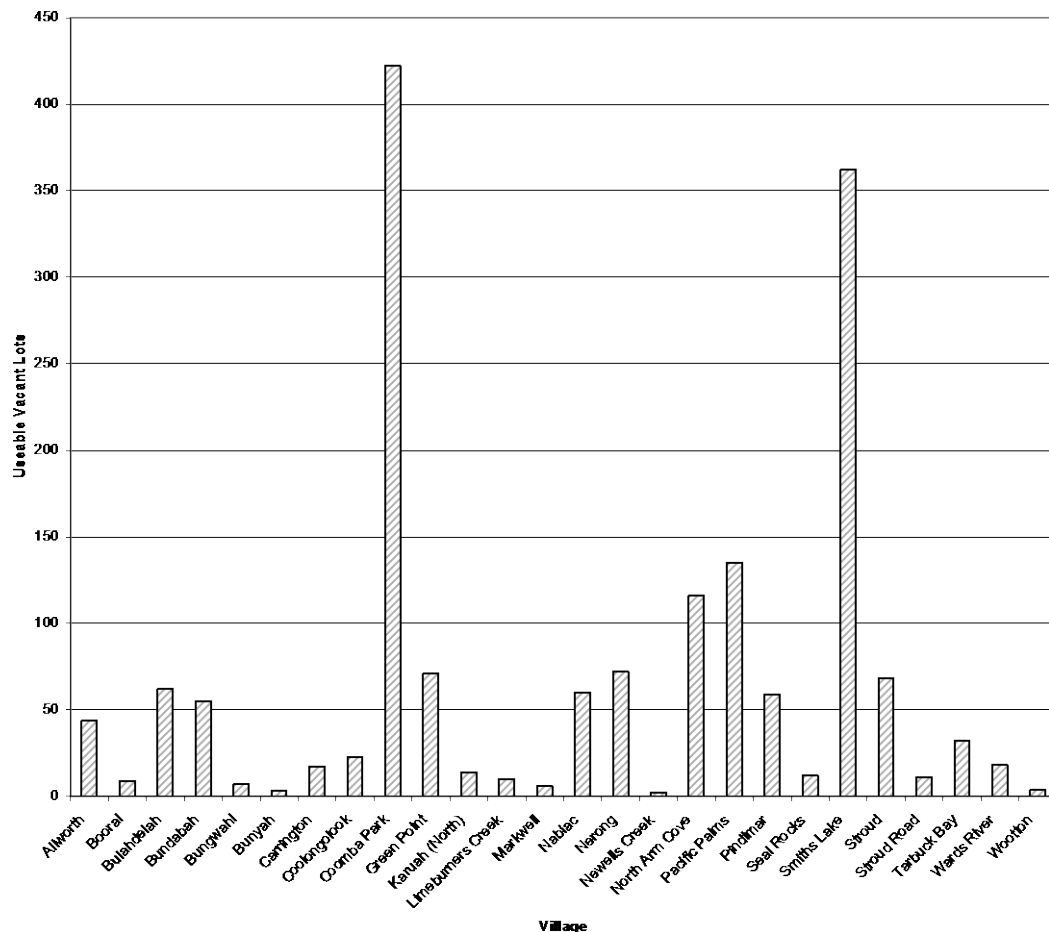
*NB. Pacific Palms includes the village areas of Blueys Beach, Boomerang Beach, Charlotte Bay and Elizabeth Beach.*

Villages are based on the land being zoned 2 – Village under Great Lakes LEP 1996. The first survey was completed in January 2001, whilst the second partial survey was completed in April 2003. The main change between the two surveys is that not only is the latest one more recent, but it does not include lots such as public utilities (which were previously included in the dwelling category as there is a building on the lot) and vacant land that cannot be used for housing (eg. Stroud Common and Silo Hill). These updated figures have not been included in the following comparisons as they are not directly comparable to other village zones as they were taken at a different time and they do not include lots which do not or cannot have a dwelling located on them.

The flood affected vacant lot column is based on village zones which have the 1% AEP flood height mapped on Council’s GIS. Flood studies have not been conducted for most villages, and these are indicated as “unknown”.

The results from the Useable Vacant Lots column in Table 10 appear in Figure 4, and clearly show that the villages of Coomba Park and Smiths Lake have, by far, the greatest number of useable vacant lots of all village zones.

**Figure 4 – Village Vacant Lot Survey**



Each lot zoned either 1(d) – Small Holdings or 1(d1) – Rural Residential under Great Lakes LEP 1996 (in the 18 separate “estates”) were surveyed to establish whether it has a house erected on it or whether it was vacant. Whether or not these “estates” are flood affected was not included as Council has only conducted flood studies for two of the estates. The results of this survey are shown in Table 11.

Table 11 contains a lot analysis of all land zoned for rural residential development. This includes three recent rezonings, which had not been subdivided at the time the analysis was conducted. Potential lot yield was obtained from Development Applications for subdivision that were being assessed at the time or had previously been approved.

From Table 11, it can be seen that all but one rural residential zone (that has been subdivided) have vacant lots, the exception being Nabiab (Robertson Street). Approximately 17% of rural residential lots were vacant at the time the survey was undertaken.

**Table 11 – Rural Residential Lot Analysis**

AREA	NUMBER OF LOTS WITH DWELLINGS	VACANT LOTS	TOTAL LOTS
Smiths Lake (Paradise Drive)	11	14	25
Coomba Park (Attunga Place)	3	1	4
Coomba Road (Intersection with Lakes Way)	19	4	23
South Forster (Panorama Crescent)	76	13	89
North Tuncurry (Tulloch Road)	62	11	73
Failford (Riverview Road)	10	2	12
Failford (Aquatic Road/Lakes Way)	N/A	N/A	34 lots proposed
Failford (Timbertops Road)	27	2	29
Failford (Wards Road)	3	1	4
Failford (Bullocky Way)	59	5	64
Failford (Bullocky Way – Tiptons)	N/A	N/A	70 lots proposed
Nabiac (Robertson Street)	20	0	20
Nabiac (Glen Ora Road)	9	4	13
Minimbah (Minimbah Road)	N/A	N/A	24 lots proposed
Bulahdelah (Markwell Back Road)	4	4	8
Stroud (Mitchell Street)	1	2	3
Stroud <sup>1</sup> (Private Rd- “Listening Hill”)	6	10	16
Tea Gardens (Shearwater Estate)	74	8	82
<b>TOTAL</b>	<b>384</b>	<b>81</b> (209 if proposed lots included)	<b>465</b> (593 if proposed lots included)

N/A = Not Applicable

Analysis conducted in June & September 2000.

<sup>1</sup> Vacant Lot Analysis for Stroud (Private Road – “Listening Hill”) was taken from a 1996 aerial photograph. The area consists of a 16 lot community title subdivision, where one of the lots is the common area.

### 3.6 AGRICULTURAL SUITABILITY CLASSES

Map 9 shows the Agriculture Capability Classes for the Great Lakes LGA. This diagram is based on the maps produced by NSW Agriculture. From Map 9, it can be seen that Great Lakes has no Class 1 agricultural land, a small amount of Class 2 land, and large tracts of land classed as 3, 4 and 5. There is also a small amount of land shown as undetermined.

In respect to Agricultural Classes, it should be noted that Class 1 is the best agricultural land, whilst class 5 is the poorest. Classes 1-3 are classified by NSW Agriculture as Prime Agricultural Land. Although there are large tracts of Class 3 land in Great Lakes, it should be pointed out that some of it is heavily fragmented and hence not necessarily used for agriculture. Some landowners also contend that their land has been inaccurately classified by NSW Agriculture.

### 3.7 MINERAL RESOURCES

Map 10 shows the extractive resources and their associated buffers as depicted on the maps produced by the Department of Mineral Resources. Map 10 also shows the water supply surface catchment of Tea Gardens/Hawks Nest, and the Aquifer near Nabiac being considered for drinking water extraction by MidCoast Water.

Apart from the water catchment and aquifer, the other most noticeable feature is the elongated underground coal seam along the Bucketts Way at Wards River (which is likely to be mined in the not too distant future). Advice received from the NSW Department of Mineral Resources in a letter dated 24 January 2003 in response to the exhibition of this Strategy indicates that the Weismantel Seam contains 10 million tonnes of recoverable coal. Road material sites and their respective buffers are generally located along main roads and are well separated, enabling them to be used locally for road building.

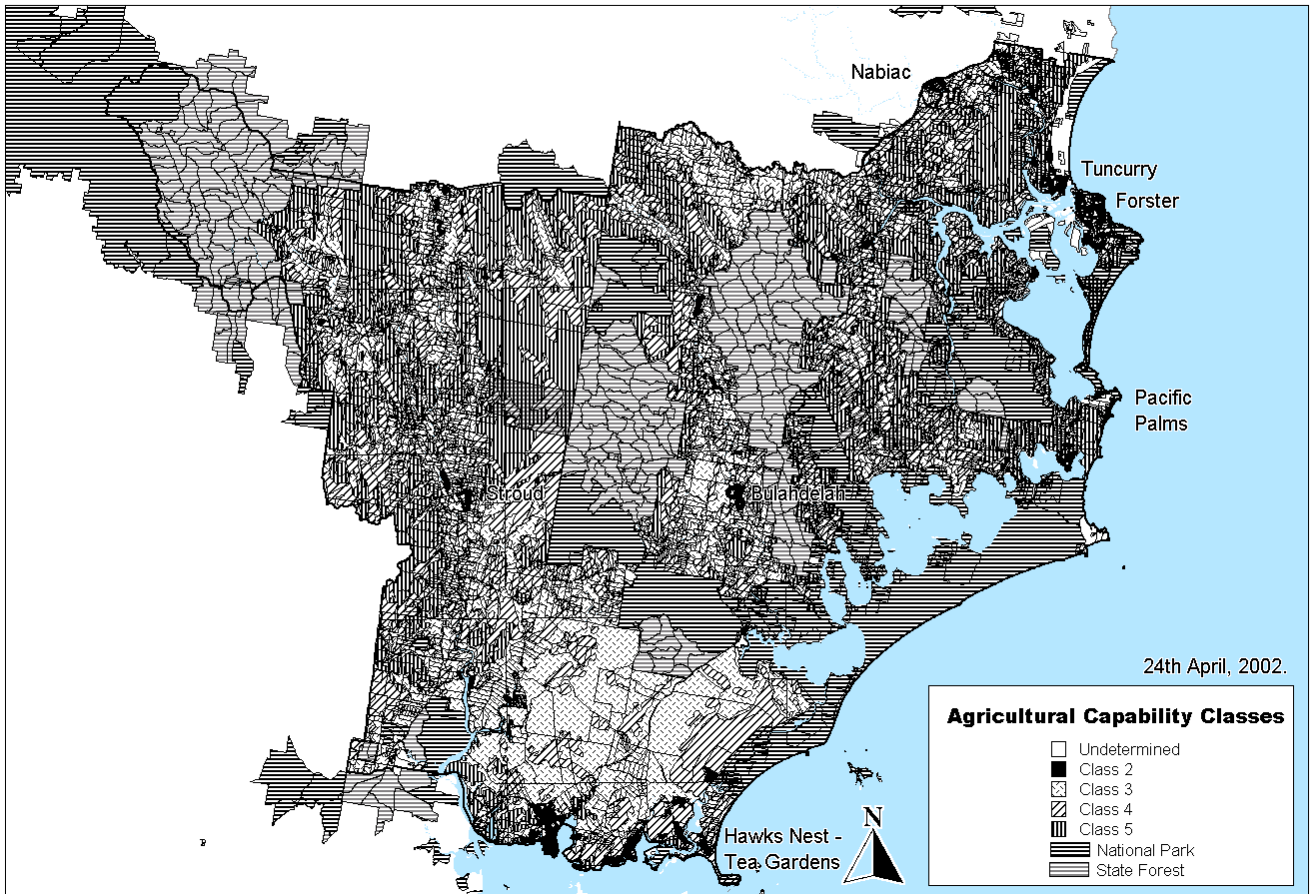
Photograph 6 shows an open-cut coalmine near the village of Wards River.

**Photograph 6 – Coal Mine near Wards River**

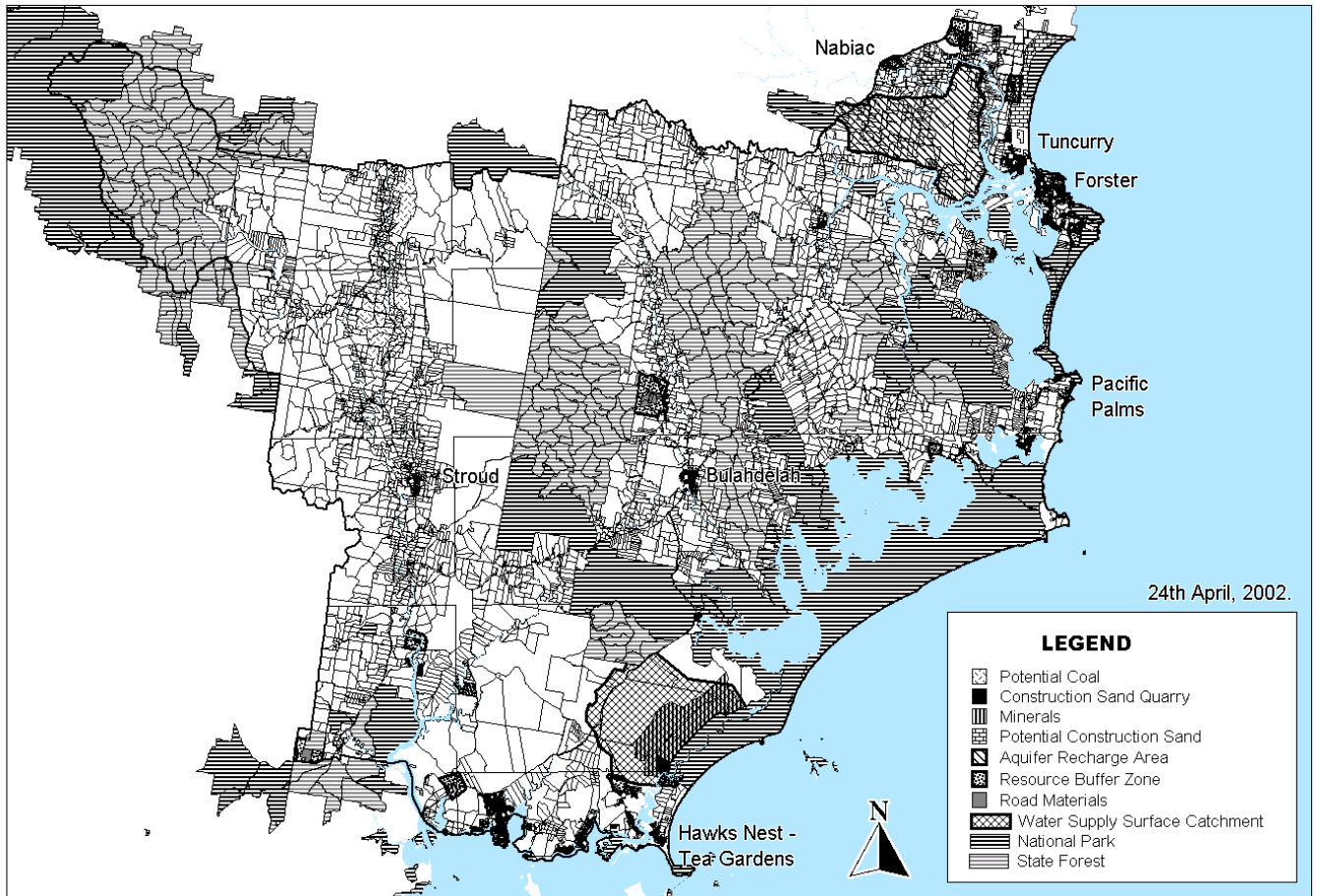




## Map 9 – Agricultural Capability Classes



## Map 10 – Extractive Resources



### 3.8 POTENTIAL URBAN AREAS

Land zoned 1(c) – Future Urban Investigation is found in the areas of Hawks Nest, Pacific Palms/Smiths Lake and Forster/Tuncurry. These are not shown on a separate map due to the zone being relatively small in area (compared to the LGA), and because the zone is predominantly along the coastal strip.

Land zoned 1(c) is a constraint to rural residential development as the more intensive landuse (urban) should be considered first. The 1(c) zone appears on the various rural residential inner catchment maps in coastal areas.

### 3.9 SERVICING/ROADS/LANDFILLS

The following road hierarchy was developed for the purposes of the Strategy:

- Pacific Highway;
- Regional Road (eg. Lakes Way, Bucketts Way, Booral Road & Failford Road);
- Sealed Secondary Road (all remaining sealed roads); and
- Unsealed Secondary Road.

In order to display the roads in “grey-scale” in this report, it was necessary to make all the roads “black” in colour and of varying widths. It was also necessary to reduce the number of categories otherwise they would not be distinct. The following road hierarchy was adopted:

- Pacific Highway;
- Primary Link Roads (Lakes Way, Bucketts Way, Booral Road & Failford Road); and
- Sealed and Unsealed Secondary Roads (all remaining roads [see Map 11]).

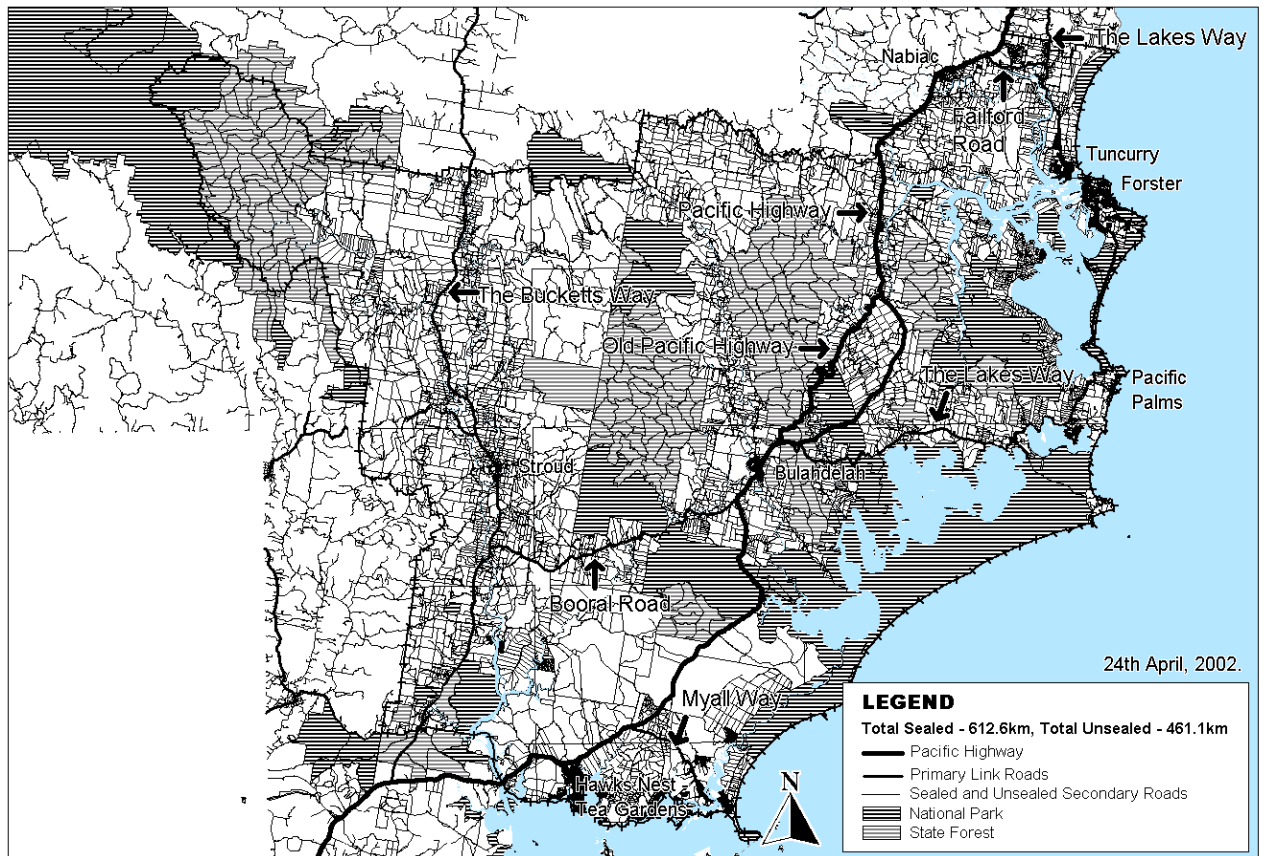
Roads within State Forests and National Parks have been intentionally left off the map so as not to make the map more congested than necessary. Not all roads in the LGA are maintained by Council, some are on private property, whilst others are maintained by other government agencies (eg. NPWS and State Forests).

Great Lakes’ LGA has 590.7 km of sealed roads and 436.4 km of unsealed roads.

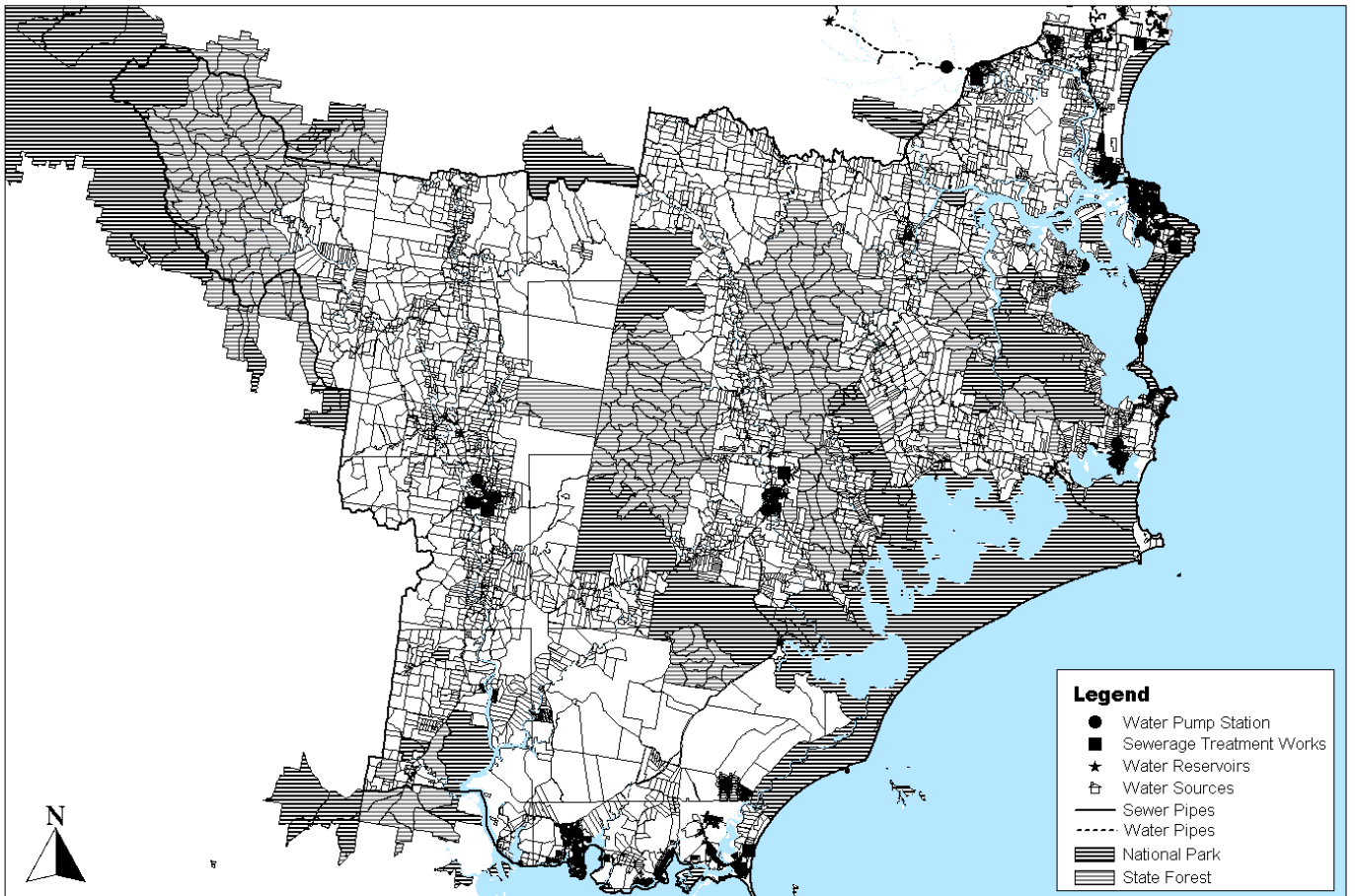
Map 12 shows the location of MidCoast Water’s assets (both water and sewerage) across the Great Lakes LGA. From Map 12, it can be seen that there are 7 sewerage treatment plants in Great Lakes, and numerous water pump stations and reservoirs. Only the larger villages/towns are sewered at present, including Stroud, Bulahdelah, Tea Gardens/Hawks Nest, Pacific Palms/Smiths Lake, Forster/Tuncurry and Nahiab.

Council currently operates 4 landfills: Tuncurry, Tea Gardens, Bulahdelah and Stroud. The Tuncurry, Tea Gardens and Bulahdelah landfills are all reaching the end of their economic life and investigations are currently underway into the establishment of a new landfill at Minimbah, near Nahiab. The Tea Gardens landfill is currently under pressure from expanding urban development, whilst the Tuncurry landfill would have been under pressure in the future due to the expected expansion of Tuncurry, had it not been for its pending closure. The Tuncurry site, however, is still intended to be utilised as a waste recycling centre in the future.

## Map 11 – Road Network



## Map 12 – Water & Sewerage





### 3.10 STATE FORESTS

State forests make up approximately 16.7% of the area of Great Lakes LGA. They provide a scenic backdrop to the coastal lakes system and contain a significant proportion of the timbered lands. The total area of State forests within the LGA is approximately 57,069 ha. A breakdown of State Forests is shown in Table 12.

**Table 12 – State Forests Area**

STATE FOREST	AREA (HA)
Avon River	626
Bachelor	2,656
Bulahdelah	8,623
Chichester	14,194
Karuah	484
Myall River	18,159
Nerong	2,193
Trevor	285
Wallaroo	234
Wallingat	1,247
Wang Wauk	8,365
<b>Total</b>	<b>57,069 ha</b>

*Source: 1999/2000 SoE Report (Great Lakes)*

Map 6 depicts the State Forests in the Great Lakes LGA. They are also depicted on a number of the other maps associated with the Strategy.

Photograph 7 shows a sawmill at Booral. It is intended to remind the reader of the income generating capacity of State Forests.

**Photograph 7 – Sawmill at Booral**



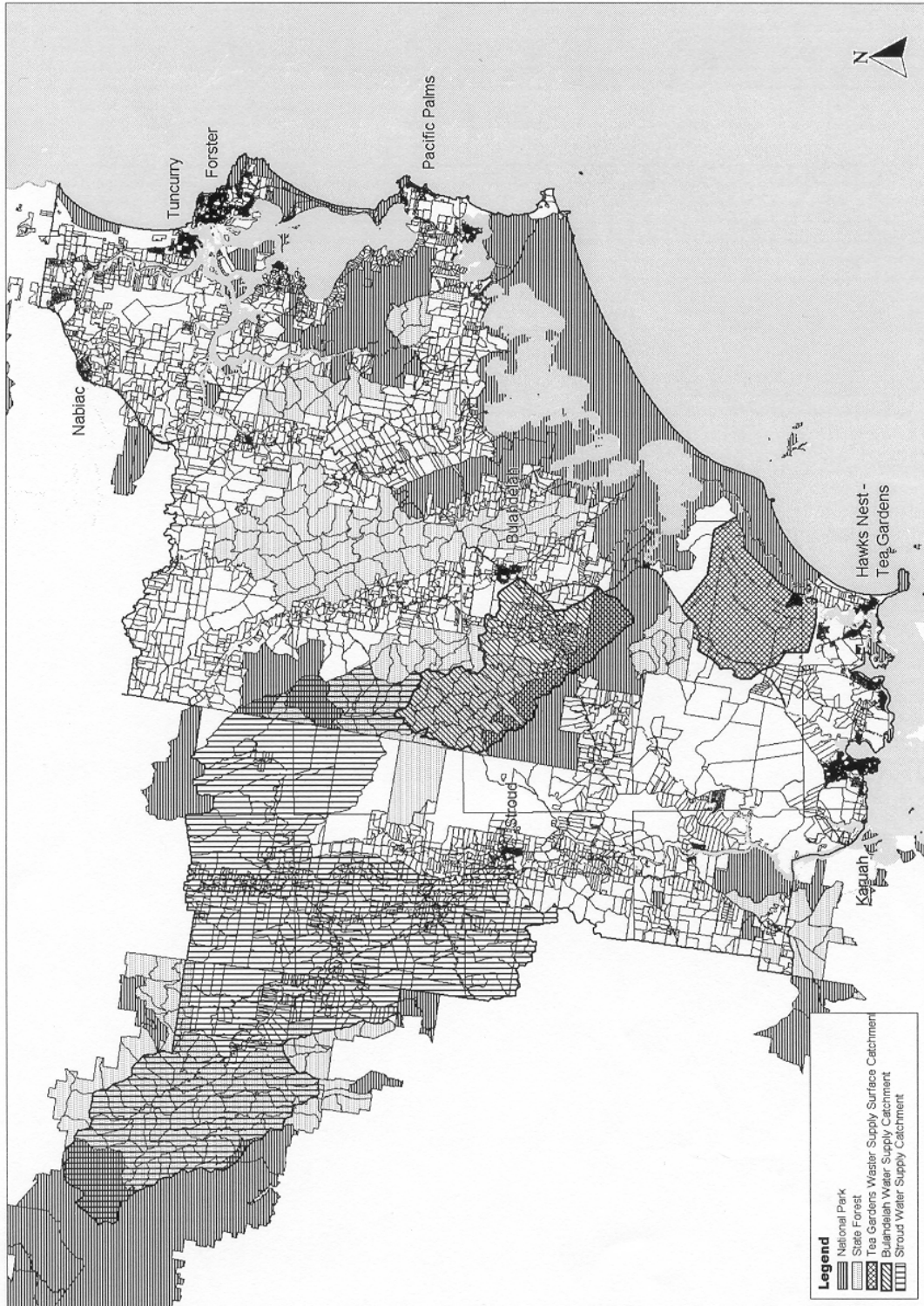
### **3.11 DRINKING WATER**

Drinking water in Great Lakes is supplied by MidCoast Water and is obtained from both groundwater and surface water. The quality of drinking water and its potential contamination is an important issue for any LGA. One of the main threats to drinking water quality is contamination from on-site effluent disposal systems. Recent government legislation covering the inspection of on-site effluent disposal should enable better management of these systems in the future.

Groundwater is in a relatively good state, as can be inferred from the fact that MidCoast Water is considering drinking water extraction of an aquifer at Minimbah, near Nabiac (see Map 10). MidCoast Water currently supplies drinking water to Tea Gardens/Hawks Nest from a borefield to the north of the Tea Gardens township. Drinking water for Stroud and Stroud Road is sourced directly from the Karuah River, whilst drinking water for the township of Bulahdelah is supplied from the Crawford River. The mapping of these drinking water catchments (see Map 13) allow them to be used as a constraint to further development.

Advice from MidCoast Water is that it is unrealistic to consider permitting urban development within these catchments, but that rural residential development will have to conform with the EPA Interim Objectives and ANZECC water quality guidelines to be permitted. This makes drinking water catchments a management issue, rather than an exclusionary constraint, to rural residential development.

# Map 13 – Drinking Water Catchments





### 3.12 MAIN FINDINGS

The main findings from Section 3 are:

- In the 1996/97 period, tourism was estimated to have contributed M\$124 to the Great Lakes economy. It was estimated that in 2000 Great Lakes had approximately 21,300 holiday beds, of which there is a 95% occupancy rate during peak periods.
- NSW Agriculture estimate the farm gate value of agriculture in Great Lakes to be M\$45. When flow-on effects are added, this figure climbs to M\$77/year. Great Lakes has a greater predominance of smaller size agricultural holdings than other LGA's in the region and state. Poultry (meat production), dairying and beef cattle contribute 98.5% of the total value of agriculture in Great Lakes. The total value of aquaculture, as provided by NSW Fisheries, is M\$14.4 for the 1999/2000 period.
- The major rural landuses in the LGA are Forested – Private Unprotected and Grazing – Beef [although land within National Parks and State Forests represents approximately 1/3 of the LGA area, it does not come out as a major landuse due to the small number of lots involved].
- The majority of rural lots in the LGA are in the 0 – 0.8 ha range (approximately 55%). Many of these lots are zoned 1(a) – Rural and are unable to have a dwelling constructed on them under Great Lakes LEP 1996. The next largest number of lots is in the range of 8.01 to 18 ha, followed closely by the greater than 42.01ha range.
- Coomba Park and Smiths Lake have, by far, the greatest number of useable vacant lots (422 and 362 respectively), followed by Pacific Palms and North Arm Cove. All village zones have vacant lots. There are a total of 1,694 useable vacant village zoned lots at the time the survey was conducted.
- There are relatively few rural residential vacant lots available within any one particular estate. There were a total of 72 vacant lots recorded in the 17 separate rural residential zones scattered throughout the LGA. There were 94 proposed lots within two recent rural residential rezonings.
- Great Lakes has no Class 1 Agricultural Land, a small amount of Class 2 and a large number of lots classified as Class 3. Classes 1-3 are deemed by NSW Agriculture to be Prime Agricultural Land.
- There are a number of road materials extractive sites and associated buffers scattered around the LGA that should be used as a constraint to future development. There are a few areas in the vicinity of Tuncurry identified as potential construction sand and a large elongated underground coal seam at Wards River.
- There are three main areas, being Hawks Nest, Pacific Palms and South Forster, that have areas zoned 1(c) – Future Urban Investigation, which is considered a constraint to rural residential development.
- There is 590.7 km of sealed roads and 436.4 km of unsealed roads in the Great Lakes LGA. Not all of these roads are maintained by Council, with some being on private property, whilst others are in National Parks and State Forests.

- State Forests make up approximately 16.7% of the area of the LGA, equating to 57,069 ha.
- Groundwater, and its' potential contamination is an important issue in Great Lakes, and a constraint to urban development or intensive agricultural production. Surface drinking water catchments are also a constraint.

### 3.13 DISCUSSION

Constraints to further development, outlined in Section 3, include:

- Land classified as Class 2 and 3 by NSW Agriculture (known as Prime Agricultural Land [Great Lakes has no Class 1 land]). Heavily fragmented Class 3 land (which is also closer to Class 4 in character) may be suitable for rural residential development.
- The location and associated buffers of extractive resources (whether potential or in current use), land within the water supply surface catchment of Tea Gardens/Hawks Nest, and land over the aquifer near Nabiac being considered for drinking water extraction by MidCoast Water. It should be noted that water supply catchments are an exclusionary constraint to urban development (ie village expansion) and a management issue for rural residential development.
- Land zoned 1(c) – Future Urban Investigation.
- Land within State Forests.

Tourism is a very important sector of the Great Lakes economy, especially for Forster/Tuncurry and Tea Gardens/Hawks Nest. Agriculture is also an important sector of the Great Lakes economy, not only the rural areas in general, but for the sustainability of the numerous villages scattered throughout the LGA.

Great Lakes has a large proportion of privately owned lots that are vegetated and also that are used for beef cattle production. There are also quite a number of lots that are used for rural residential purposes, of varying sizes and scattered throughout the LGA. Every village has vacant lots and 15% of all rural residential zoned lots in the LGA are vacant. Although this is the case, the villages with the highest number of vacant lots tend to be the ones with the slowest growth rates (see Section 4).

When the constraints to development from Section 3 (especially Prime Agricultural Land) are added to the list from Section 2, we find that there are a large number of constraints to development in Great Lakes. The economy of the rural areas is dependent upon agriculture, and the maintenance of suitably sized lots in rural areas will go some way towards preserving this sector of the economy.

## SECTION 4 — SOCIAL CONTEXT

Social features of the LGA include services available to residents (and tourists), population, dwellings (and dwelling approvals), household size, vacancy rate, population projections, bushfire (risk and protection of assets) and heritage (both Aboriginal and European). These features relate to the population and its' wellbeing. Features such as bushfire and heritage can easily be placed in Section 3, but due to their social aspect have been included here.

Photograph 8 is of NABIAC Showground Hall, one of the locations of the community consultation workshops held for the Strategy.

**Photograph 8 – NABIAC Showground Hall**



### 4.1 DEMOGRAPHICS

#### 4.1.1 Population

Data on the 2001 Census will be available from the ABS in two stages. Stage 1 is anticipated to be available in September 2002, whilst Stage 2 is anticipated to be available in June 2003. Stage 1 will only involve the release of general statistical information, whilst Stage 2 will involve the release of all information collected during the Census. As such, only limited data from the 2001 Census is available for inclusion in the Great Lakes Rural Living Strategy. The only available data is population at the collector district level.

It should be noted that all collector district level information provided by the ABS does not account for a person's place of residence, but rather outlines statistics based on where people were on Census night. Population figures are, however, available on an adjusted basis by LGA. The permanent population of Great Lakes LGA at the 2001 Census was 32,598 [this compares to the figure of 31,384 used in the Background Data Report]. This figure cannot be used for the purposes of the Strategy as population statistics are required at the collector district level.

Table 13 shows the population of areas identified as urban by Council for the 1991, 1996 and 2001 Census'. Areas that experienced significant growth (% Annual Increase) between the 1991 and 1996 Census' include Coomba Park, Tea Gardens, Smiths Lake, Pacific Palms, Green Point and North Arm Cove. Areas that experienced significant growth between the 1996 and 2001 Census' include Tea Gardens, Coomba Park and Pacific Palms. From Table 13 it can be further seen that the high levels of growth for Green Point, Smiths Lake and North Arm Cove during the 1991-1996 period could not be sustained over time. There was also a significant reduction in the growth of Coomba Park, whilst Tea Gardens (although reduced) sustained a high level of population growth.

It should be noted that the majority of lots in North Arm Cove have no dwelling entitlements and that the Great Lakes Rural Living Strategy is not considering the expansion of this village zone as it has been covered in the draft Tea Gardens/Hawks Nest Conservation & Development Strategy.

It is important to remember that Table 13 deals with % Annual Increase as a measure of change. Consideration should also be given to the absolute growth, as a high % Annual Increase may only equate to a relatively small number of people.

**Table 13 – Urban Population Data**

AREA	1991	1996	2001	% Annual Increase 1991-96	% Annual Increase 1996-01
<b>Bulahdelah</b>	1,092	1,113	1,161	0.38	0.86
<b>Coomba Park</b>	183	269	329	9.40	4.46
<b>Forster</b>	9,515	10,906	12,202	2.92	2.38
<b>Green Point</b>	429	522	526	4.34	0.15
<b>Hawks Nest (HN)</b>	902	1,065	1,173	3.61	2.03
<b>Nabiac</b>	509	536	568	1.06	1.19
<b>North Arm Cove</b>	226	274	292	4.25	1.31
<b>Pacific Palms</b>	437	542	655	4.81	4.17
<b>Smiths Lake</b>	656	849	907	5.88	1.37
<b>Stroud</b>	558	598	672	1.43	2.47
<b>Tea Gardens (TG)</b>	684	996	1,372	9.12	7.55
<b>Tuncurry</b>	5,051	5,500	5,794	1.78	1.07
<b>Forster/Tuncurry</b>	14,566	16,406	17,996	2.53	1.94
<b>TG/HN</b>	1,586	2,061	2,545	5.99	4.70
<b>TOTAL Urban</b>	20,242	23,170	25,651	2.89	2.14

*Source: Great Lakes Community Profile 1999 & ABS 2002*

See Map 14 for the location of localities (both urban and rural) shown in Table 13. Map 14 corresponds with the names given to all urban and village zones within Great Lakes LGA.

Figure 5 depicts the percentage annual increase between the 1996 and 2001 Census' for the areas shown in Table 13. From Figure 5 it can clearly be seen that Tea Gardens experienced the greatest annual increase in population.

**Figure 5 – Percentage Population Increase**

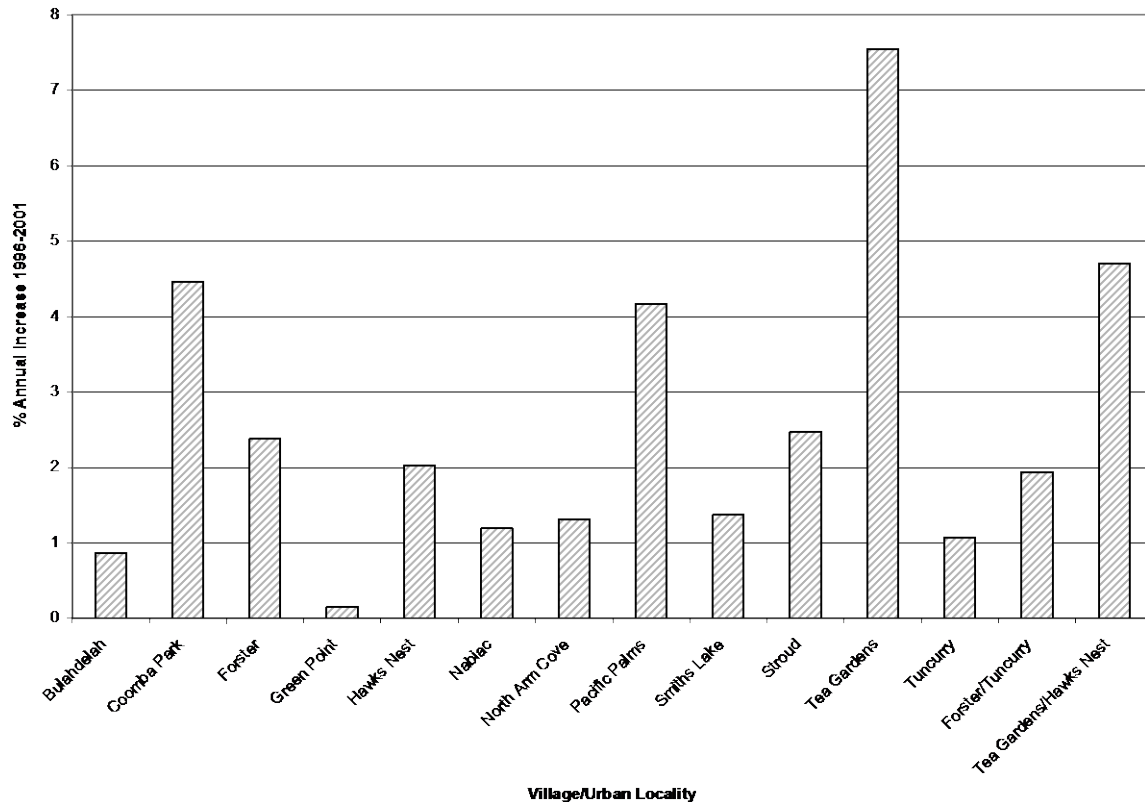
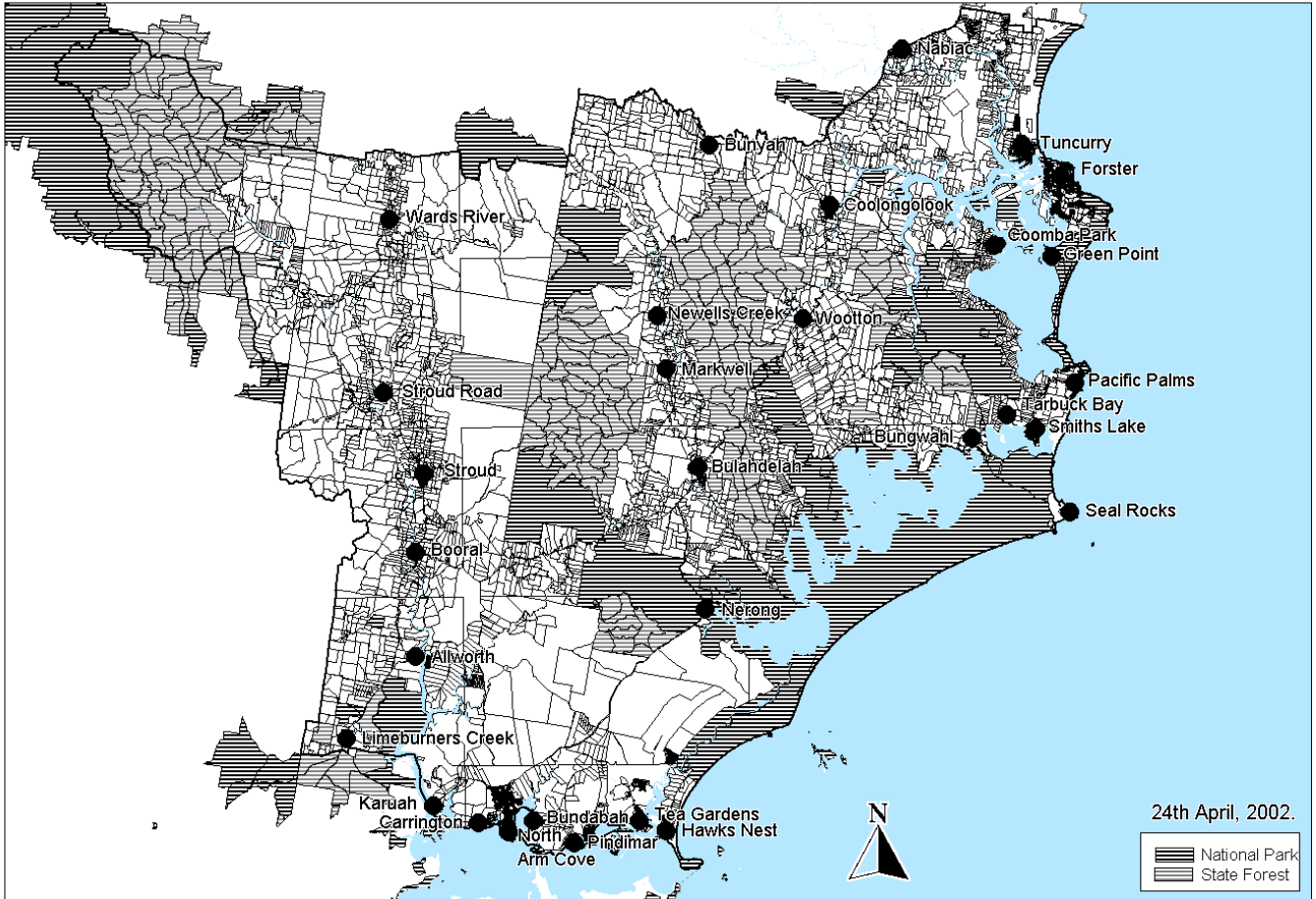


Table 14 shows the population of Great Lakes that is not within urban areas at the 1991, 1996 and 2001 Census'. There were two rural collector districts that experienced significant growth (% Annual Increase) between the 1991 and 1996 Census', these being Booral/The Branch and Coomba. The collector districts of Allworth/Limeburners Creek and Darawank/Failford also grew within this period, whilst Myall Lakes, Terreel/Girvan/Crawford River, Wallamba and Weismantels experienced negative growth. Growth for other collector districts could not be calculated due to no available data. The overall rural population experienced a small decline during the period 1991-1996.

Pindimar was the only rural collector district that experienced significant growth between the 1996 and 2001 Census'. The collector districts of Nerong State Forest, Wallamba and Tarbuck Bay had moderate growth. Seven rural collector districts had negative growth, the most significant being Myall Lakes with -5.26%. The overall rural population experienced an increase during the 1996-2001 period.

It is important to remember that Table 14 deals with % Annual Increase as a measure of change. Consideration should also be given to the absolute growth, as a high % Annual Increase may only equate to a relatively small number of people.

# Map 14 – Localities



**Table 14 – Rural Population Data**

RURAL COLLECTOR DISTRICTS	1991	1996	2001	% Annual Increase 91-96	% Annual Increase 96-01
Allworth, Limeburners Creek	393	447	459	2.75	0.54
Booral, The Branch	156	223	250	8.59	2.42
Bungwahl	n/a	413	438	n/a	1.21
Coolongolook, Wootton, Bunyah	n/a	373	380	n/a	0.38
Coomba	154	213	243	7.66	2.82
Darawank, Failford	527	589	661	2.35	2.44
Lower Myall, Nerong (village)	n/a	110	103	n/a	-1.27
Markwell, Upper Myall, Warranulla	n/a	265	228	n/a	-2.79
Mayers Flat, Boolambayte, Wattley Hill	n/a	340	343	n/a	0.18
Myall Lakes	197	171	126	-2.64	-5.26
Nerong State Forest	227	234	287	0.62	4.53
Pindimar	n/a	157	346	n/a	24.08
Port Stephens, Tahlee, Carrington, Bundabah	n/a	341	364	n/a	1.35
Stroud Road	n/a	114	120	n/a	1.05
Tarbuck Bay	n/a	125	149	n/a	3.84
Terreel, Girvan, Crawford River	372	307	293	-3.49	-0.91
Wallamba	234	225	275	-0.77	4.44
Wallis Lake, Booti Booti	n/a	55	48	n/a	-2.55
Wards River, Monkerai, Upper Karuah River	200	238	234	3.8	-0.34
Washpool, Nooroo	n/a	254	271	n/a	1.34
Weismantels	158	136	115	-2.78	-3.09
<b>TOTAL Rural</b>	<b>5,370</b>	<b>5,330</b>	<b>5,733</b>	<b>-0.15</b>	<b>1.51</b>

*Source: Great Lakes Community Profile 1999 & ABS 2002*

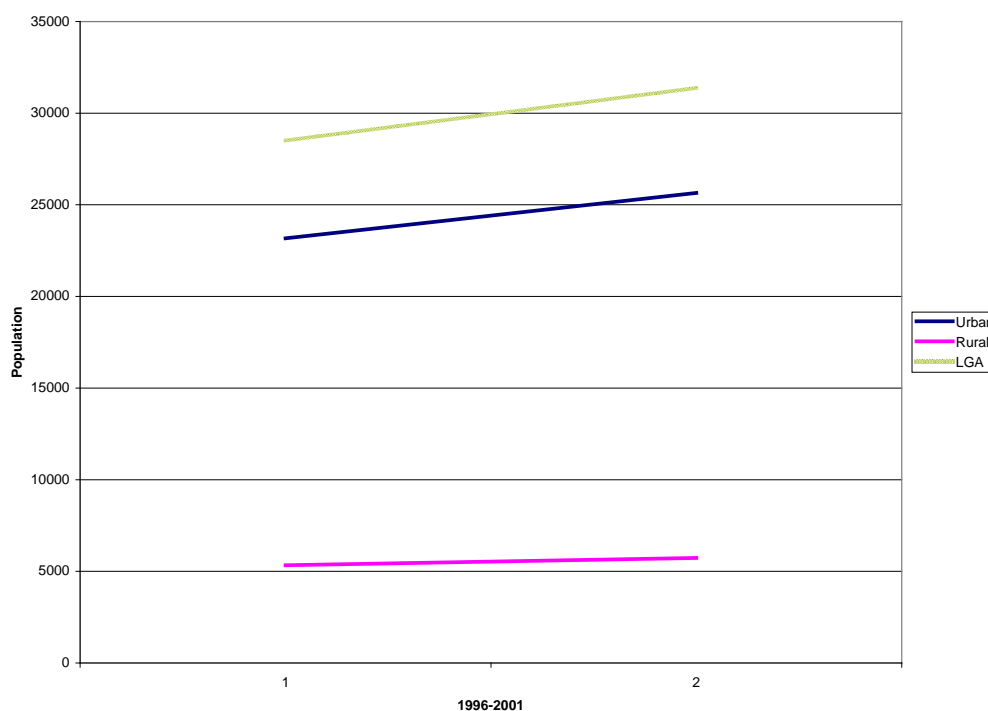
Table 15 shows the totals from Tables 13 and 14, giving a LGA population total. From Table 15, it can be seen that Great Lakes' population is growing at an average of 2.02% per annum, a significant (though moderate) growth rate. The urban population is growing at a much higher rate than the rural population.

**Table 15 – Urban/Rural Population Totals**

AREA	1991	1996	2001	% Annual Increase 91-96	% Annual Increase 96-01
<b>Total Urban</b>	20,242	23,170	25,651	2.89	2.14
<b>Total Rural</b>	5,370	5,330	5,733	-0.15	1.51
<b>Total LGA</b>	25,612	28,500	31,384	2.26	2.02

Figure 6 diagrammatically shows the population trends for the areas shown in Table 15, in terms of absolute population figures for the 1996 and 2001 Census'. From Figure 6 it can be seen that the rural population remained relatively constant, whilst the urban and LGA population increased at a similar rate.

**Figure 6 – Population Trends**



#### 4.1.2 Age Structure

Table 16 shows the age structure of the Great Lakes population for the 1991, 1996 and 2001 Census'. From the table it can be seen that the age range with the highest absolute growth is the 60+ (consistently the highest), whilst the age range increasing at the greatest rate is the 50-59 years, closely followed by the 13-19 year group. There were three age groups with negative growth, the greatest being the 30-39 years, having -2.04% annual growth, followed by 0-4 and 20-29 year ranges.

**Table 16 – Great Lakes Age Structure**

Age Range	1991 Persons	1996 Persons	2001 Persons	Absolute Growth 1996-2001	Annual % Growth 1996-2001
0-4 yrs	1,758	1,697	1,550	-147	-1.73
5-12 yrs	2,661	3,112	3,176	64	0.41
13-19 yrs	2,147	2,035	2,471	436	4.29
20-29 yrs	2,397	2,174	2,141	-33	-0.30
30-39 yrs	3,320	3,565	3,201	-364	-2.04
40-49 yrs	2,897	3,456	4,054	598	3.46
50-59 yrs	2,870	3,436	4,304	868	5.05
60+ yrs	7,909	9,052	10,373	1,321	2.92

Source: 2000 Great Lakes Community Profile & ABS 2002

Table 17 shows the age structure of urbanised areas in Great Lakes for the 1991 and 1996 Census'. From this table, it can clearly be seen that the greatest number of persons for each area, in each Census, is in the 60+ age group. The only exception to this in the 2001 Census is Green Point.



**Table 17 – Age Structure of Urban Areas**

Age Range/ Urban Area	Bulahdelah	Coomba Park	Forster	Green Point	Hawks Nest	Nabiac	North Arm Cove	Pacific Palms	Smiths Lake	Stroud	Tea Gardens	Tuncurry
<b>1991</b>												
0-4	89	12	531	44	50	57	3	29	89	50	44	294
5-12	119	9	864	72	80	84	32	38	97	57	72	437
13-19	90	6	769	21	93	53	15	46	42	51	56	353
20-29	119	6	852	38	110	47	9	57	78	64	56	362
30-39	159	15	1089	<b>95</b>	110	<b>100</b>	36	68	<b>126</b>	81	85	594
40-49	153	22	1055	35	142	49	20	58	62	67	77	490
50-59	142	27	995	33	165	41	42	46	50	63	85	603
60+	<b>245</b>	<b>71</b>	<b>3412</b>	83	<b>501</b>	87	<b>72</b>	<b>85</b>	109	<b>128</b>	<b>222</b>	<b>1917</b>
<b>1996</b>												
0-4	72	15	607	45	37	41	16	29	80	55	67	236
5-12	141	37	1036	89	73	<b>88</b>	17	64	169	86	108	454
13-19	87	7	791	50	53	57	6	36	56	40	49	333
20-29	116	12	851	25	83	52	9	41	48	46	97	373
30-39	133	47	1238	<b>113</b>	88	87	41	99	<b>186</b>	87	124	512
40-49	148	31	1253	60	127	75	28	60	94	71	123	575
50-59	118	48	1210	36	198	38	50	75	90	58	155	628
60+	<b>294</b>	<b>91</b>	<b>3871</b>	91	<b>513</b>	81	<b>95</b>	<b>144</b>	140	<b>133</b>	<b>260</b>	<b>2335</b>
<b>2001</b>												
0-4	55	12	640	24	54	45	12	47	68	39	69	221
5-12	129	35	1062	83	87	86	15	52	139	98	116	418
13-19	114	24	929	59	56	62	15	66	87	63	90	537
20-29	75	9	929	34	77	51	18	48	62	42	82	340
30-39	115	16	1137	70	119	83	22	88	115	88	161	588
40-49	149	53	1500	<b>102</b>	113	81	36	111	145	90	134	633
50-59	140	63	1575	46	192	63	63	85	85	90	236	772
60+	<b>339</b>	<b>108</b>	<b>4313</b>	101	<b>479</b>	<b>104</b>	<b>137</b>	<b>184</b>	<b>196</b>	<b>160</b>	<b>493</b>	<b>3637</b>

Source: 2000 Great Lakes Community Profile & ABS 2002

NB. The highest number of persons in each age group for each area has been highlighted for comparison purposes.

### **4.1.3 Housing**

Table 18 portrays housing data presented in the Great Lakes Community Profile 1999. Council does not collate census housing data on areas not identified as urban by Council.

Table 18 shows that all areas had an absolute increase in dwellings. Of particular interest were Smiths Lake, Coomba Park and Tea Gardens which each experienced an approximate 30% increase in the total number of dwellings. Table 18 again shows that coastal areas are increasing at a greater rate than their western counterparts, except for NABIAC, which experienced a 17.99% increase in the number of dwellings.

Tea Gardens and North Arm Cove are the only urban areas that experienced a reduction in the number of unoccupied dwellings. Bulahdelah had no increase, whilst Green Point, Coomba Park, Stroud and NABIAC experienced small increases. Smiths Lake and Pacific Palms experienced a moderate increase in the number of unoccupied dwellings, whilst Hawks Nest, Tuncurry and Forster experienced a significant increase.

**Table 18 – Dwellings by Locality**

Housing	1991 Census	1996 Census	Absolute Increase	% Increase	Average Increase per year	% Increase/Year
<b>Occupied</b>						
Bulahdelah	398	424	26	6.53	5	1.31
Coomba Park	78	117	39	50	10	5
Forster	3,902	4,590	688	17.63	138	3.53
Green Point	152	182	30	19.74	6	3.95
Hawks Nest	402	520	118	29.35	24	5.87
Nabiac	172	195	23	13.37	5	2.67
North Arm Cove	104	129	25	24.04	5	4.81
Pacific Palms	188	236	48	25.53	10	5.11
Smiths Lake	226	310	84	37.17	17	7.43
Stroud	206	221	15	7.28	3	1.46
Tea Gardens	285	4-23	138	48.42	28	9.68
Tuncurry	2,140	2,526	386	18.04	77	3.61
LGA	10,286	11,854	1,568	15.24	314	3.05
<b>Unoccupied</b>						
Bulahdelah	37	37	0	0	0	0
Coomba Park	98	113	15	15.31	3	3.06
Forster	1,155	1,315	160	13.85	32	2.77
Green Point	32	35	3	9.38	1	1.88
Hawks Nest	642	733	91	14.17	18	2.83
Nabiac	17	28	11	64.71	2	12.94
North Arm Cove	132	119	-13	-9.85	-3	-1.97
Pacific Palms	373	403	30	8.04	6	1.61
Smiths Lake	145	174	29	20	6	4
Stroud	19	24	5	26.32	1	5.26
Tea Gardens	143	128	-15	-10.49	-3	-2.10
Tuncurry	497	629	132	26.56	26	5.31
LGA	4,167	4,392	225	5.40	45	1.08
<b>Total Dwellings</b>						
Bulahdelah	435	461	26	5.98	5	1.20
Coomba Park	176	230	54	30.68	11	6.14
Forster	5,057	5,905	848	16.77	170	3.35
Green Point	184	217	33	17.93	7	3.59
Hawks Nest	1,044	1,253	209	20.02	42	4.00
Nabiac	189	223	34	17.99	7	3.60
North Arm Cove	236	248	12	5.08	2.4	1.02
Pacific Palms	561	639	78	13.90	16	2.78
Smiths Lake	371	484	113	30.46	23	6.09
Stroud	225	245	20	8.88	4	1.78
Tea Gardens	428	551	123	28.74	25	5.75
Tuncurry	2,637	3,155	518	19.64	104	3.93
LGA	14,453	16,246	1,793	12.41	359	2.48

Source: Great Lakes Community Profile 1999 & CASAS 96

Table 19 shows the household size for areas identified as urban by Council for the 1991 and 1996 Census'. Household size for all areas has not increased between census periods, except for Green Point.

**Table 19 – Household Size**

Area	1991 Census	1996 Census	Change
Bulahdelah	2.7	2.6	-0.1
Coomba Park	2.3	2.3	0
Forster	2.4	2.4	0
Green Point	2.8	2.9	+0.1
Hawks Nest	2.2	2.0	-0.2
Nabiac	3.0	2.7	-0.3
North Arm Cove	2.2	2.1	-0.1
Pacific Palms	2.3	2.3	0
Smiths Lake	2.9	2.7	-0.2
Stroud	2.7	2.7	0
Tea Gardens	2.4	2.4	0
Tuncurry	2.4	2.2	-0.2
LGA	2.5	2.4	-0.1

(Household Size = resident population per private occupied dwelling)

Table 20 shows the vacancy rate, in relation to housing, for areas identified as urban by Council for the 1991 and 1996 Census'.

From Table 20 it can be seen that all areas except Tuncurry, Stroud and Nabiac experienced a reduction in the vacancy rate. Nabiac saw the greatest increase in the percentage of unoccupied dwellings to total dwellings of all urban areas between the two census periods. Pacific Palms (63%) and Hawks Nest (59%) had more than half the dwellings in each area unoccupied in 1996, whilst Coomba Park (49%) and North Arm Cove (48%) had just under half the dwellings in each area unoccupied. Tea Gardens, North Arm Cove and Coomba Park all experienced a significant decline in the vacancy rate.

**Table 20 – Vacancy Rate**

Area	1991 Census	1996 Census
Bulahdelah	8.51	8.03
Coomba Park	55.68	49.13
Forster	22.84	22.27
Green Point	17.39	16.13
Hawks Nest	61.49	58.50
Nabiac	8.99	12.56
North Arm Cove	55.93	47.98
Pacific Palms	66.49	63.07
Smiths Lake	39.08	35.95
Stroud	8.44	9.80
Tea Gardens	33.41	23.23
Tuncurry	18.85	19.94
LGA	28.83	27.03

(Vacancy Rate = % unoccupied dwellings to total dwellings)

#### 4.1.4 Building

Table 21 shows the building activity that has occurred in Great Lakes since 1992/93. From Table 20, it can be seen that building activity fluctuates, sometimes dramatically, over time. The best gauge of building activity in an area is obtained from the average over time. From this, it can be seen that coastal areas, for example Pacific Palms, experienced a greater level of growth (as can be seen through the number of dwellings approved) than rural areas.

The rural districts, for example Karuah Valley, often cover large areas, and hence new dwellings built are likely to be spread over greater distances than coastal districts.

The districts in Table 21 generally refer to areas, not villages. The exception to this would be Green Point, due to the village being bounded by National Park and Wallis Lake. It is also important to note that “dwellings” refers to all habitable dwellings, including houses, cabins, dual occupancies and units. The most common form of housing, however, in rural areas is detached housing.

**Table 21 – Building Activity**

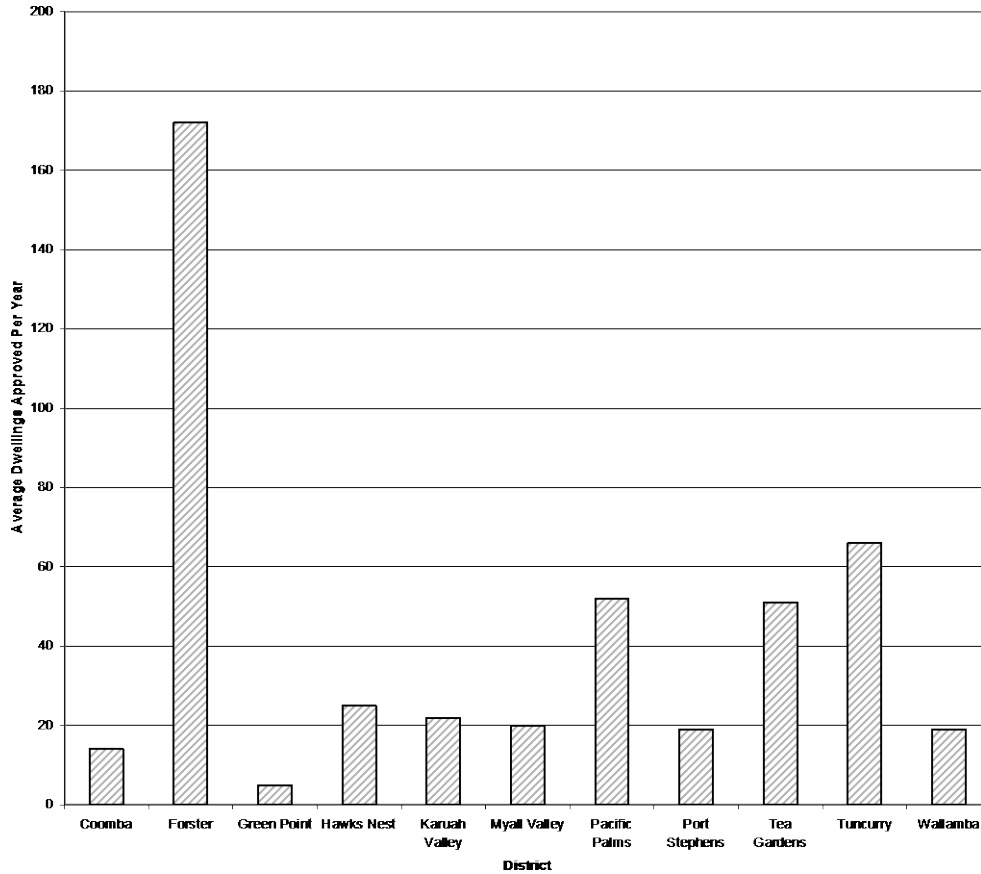
Districts	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Avg
<b>Applications Approved</b>										
Coomba	39	36	50	35	41	10	24	45	23	34
Forster	285	317	312	236	246	322	326	344	224	290
Green Point	21	14	12	12	10	12	14	16	17	14
Hawks Nest	56	58	49	53	49	53	45	63	37	51
Karuah Valley	72	62	77	91	62	47	33	45	60	61
Myall Valley	68	43	76	63	72	49	37	44	35	54
Pacific Palms	97	104	119	114	102	109	93	97	84	102
Port Stephens	52	59	77	29	51	35	33	57	34	47
Tea Gardens	47	58	75	50	72	80	105	117	97	78
Tuncurry	174	166	110	110	104	92	138	139	105	126
Wallamba	55	66	63	54	64	74	48	72	72	63
Other	3			1	1					
LGA	969	983	1,020	848	874	883	896	1,039	788	922
<b>Dwellings Approved</b>										
Coomba	20	18	23	12	18	5	7	15	7	14
Forster	150	165	221	112	164	266	181	199	87	172
Green Point	10	2	3	3	4	5	5	6	6	5
Hawks Nest	27	31	10	28	26	25	27	28	21	25
Karuah Valley	22	35	22	34	27	12	6	14	23	22
Myall Valley	21	19	23	34	28	14	6	19	13	20
Pacific Palms	46	76	68	52	42	58	36	60	30	52
Port Stephens	23	23	29	11	21	17	16	23	12	19
Tea Gardens	29	40	45	29	42	37	98	78	61	51
Tuncurry	94	113	61	42	49	49	92	64	32	66
Wallamba	15	20	22	18	26	16	10	28	20	19
LGA	457	542	527	375	447	504	484	534	312	465

Source: Great Lakes Council

**NB.** Port Stephens refers to an area (includes Pindimar, Bundabah, North Arm Cove, Carrington and North Karuah areas) in the Great Lakes LGA [along the northern shores of Port Stephens], not to Port Stephens Council building figures.

Figure 7 plots the average number of dwellings approved per year for each district. From this graph, it can clearly be seen that Forster has the highest number of average dwellings approved per year.

**Figure 7 – Building Activity**



Photograph 9 is an aerial photograph of new housing at Tea Gardens.

**Photograph 9 – Residential Development at Tea Gardens (The Grange)**



#### 4.1.5 Population Projections

This section does not take into consideration any constraints to further development, ie the following tables assume that land will be available upon which to build (hence, no barriers to population expansion). Although, in reality, this does not occur, it is still the most appropriate method for this strategy.

Table 22 shows the projected population from the 2001 Census to the year 2021, based on the percentage annual growth between the 1996 and 2001 Census'.

The population projections in Table 22 show that coastal urban areas will increase in size at a greater rate than rural areas. The slowest growing village is Green Point, whilst the fastest growing village is Coomba Park. As mentioned above, this table does not take into consideration any constraints to further development. It also does not take into account whether or not the desire to live in these areas will change over time.

**Table 22 – Population Projections**

AREA	1991	1996	2001	2006	2011	2016	2021
<b>Bulahdelah</b>	1,092	1,113	1,161	1,210	1,262	1,316	1,372
<b>Coomba Park</b>	183	269	329	402	491	600	733
<b>Forster/ Tuncurry</b>	14,566	16,406	17,996	19,714	21,596	23,658	25,917
<b>Green Point</b>	429	522	526	529	532	535	539
<b>Hawks Nest/ Tea Gardens</b>	1,586	2,061	2,545	3,143	3,881	4,793	5,919
<b>Nabiac</b>	509	536	568	601	636	673	713
<b>North Arm Cove</b>	226	274	292	311	331	352	375
<b>Pacific Palms</b>	437	542	655	791	956	1,155	1,395
<b>Smiths Lake</b>	656	849	907	969	1,035	1,105	1,180
<b>Stroud</b>	558	598	672	754	847	951	1,068
<b>URBAN (2.14%)</b>	20,242	23,170	25,651	28,395	31,433	34,796	38,519
<b>RURAL (1.51%)</b>	5,370	5,330	5,733	6,165	6,630	7,130	7,668
<b>LGA (2.02%)</b>	25,612	28,500	31,384	34,553	38,042	41,884	46,114

**NB.** Table 22 uses % Annual Pop. Increase for 1996-2001, multiplied by 5 to equal a census period.

The rural collector districts are not shown separately in this report as it was deemed that a more reliable population growth would be obtained by using the total population figures for the rural areas.

The urban, rural and LGA population projections from Table 22 have been graphed and appear in Figure 8. From this graph, it can be seen that rural areas are expected to slowly increase over time, whereas urban areas are expected to experience significant growth. The LGA population is expected to increase steadily over this period.

**Figure 8 – Population Projections**

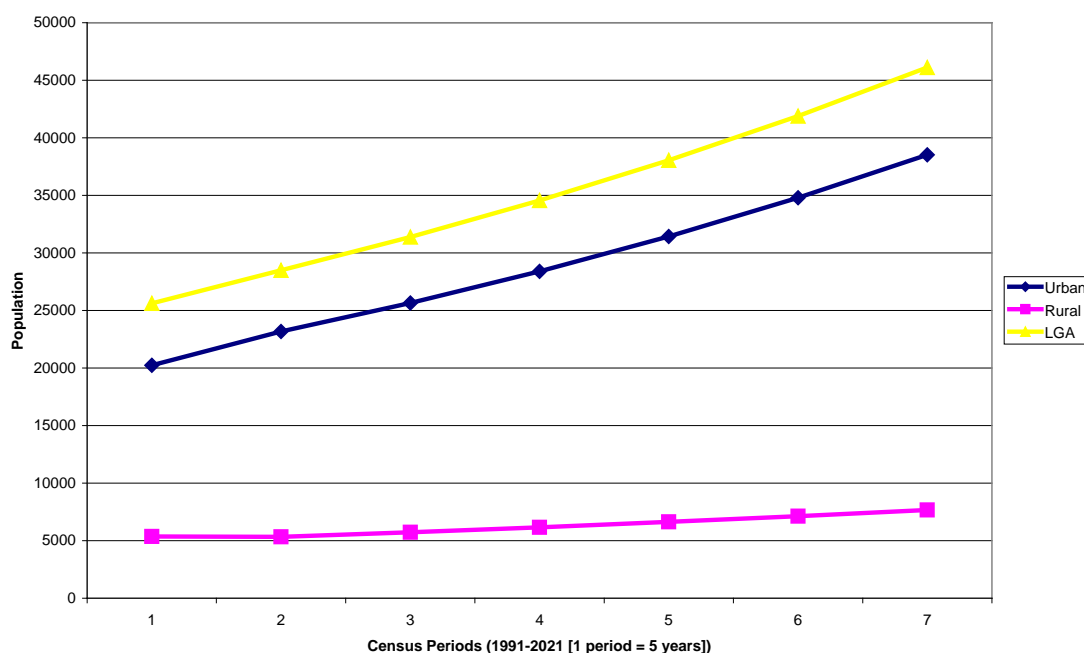


Table 23 shows the urban and rural proportion of the population projections from Table 22. From Table 23 it can be seen that the proportion of people living in urban centres compared to rural areas is predicted to gradually increase over time.

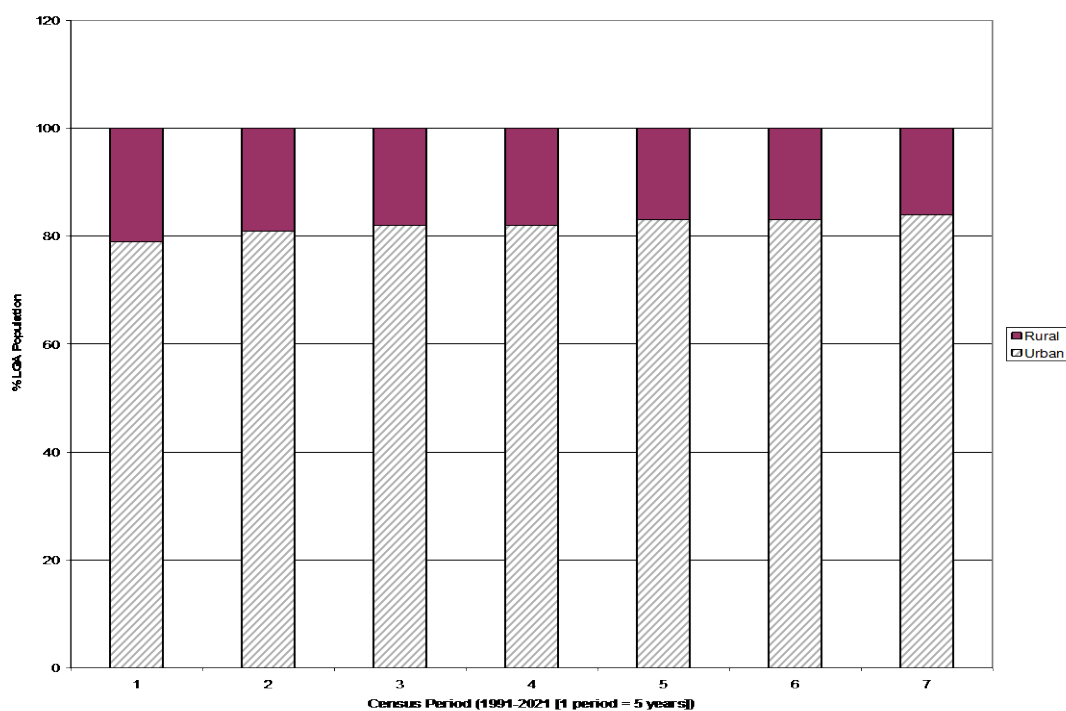
**Table 23 – Urban/Rural as Percentage of Total Population**

AREA	1991	1996	2001	2006	2011	2016	2021
<b>Total Urban (%)</b>	79	81	82	82	83	83	84
<b>Total Rural (%)</b>	21	19	18	18	17	17	16
<b>LGA</b>	100	100	100	100	100	100	100

Figure 9 shows the rural and urban proportion of the population over time. From this graph, it can be seen that the rural proportion of the total population is expected to slowly decrease over time, to the point where 84% of the population in 2021 is expected to live in urban areas.



**Figure 9 – Urban/Rural Proportion of Population Projections**



A more accurate way of predicting population growth would be to show when each village is expected to become “built-out”. This is seen as more accurate due to the fact that some villages may not have suitable land to enable expansion, whilst other villages may not wish to experience further growth.

The ‘census period built out’ is calculated by adding the ‘population to use lots’ to the 2001 population figures in Table 22. This amount is then compared to the census year predictions in Table 22 to work out which census period the village will become built-out.

The villages that are predicted to become built-out first are Nabiac, Stroud and Pacific Palms, followed by Bulahdelah and finally North Arm Cove, Smiths Lake, Coomba Park and Green Point. A quick perusal of Tables 13 & 14 show that growth rates can alter dramatically between Census periods and, hence, Build-Out Projections alone cannot be used as a reason to consider whether to permit a village to expand. Sustained growth [over more than one Census period], such as that seen in Tea Gardens, is a better indicator of an areas’ propensity to grow.

**Table 24 – Build-Out Projections**

VILLAGE	Useable Vacant Lots	Household Size	Population to Use Lots	Census Period Built Out
<b>Bulahdelah</b>	62	2.6	161	2016-2021
<b>Coomba Park</b>	422	2.3	971	After 2021
<b>Green Point</b>	71	2.9	206	After 2021
<b>Nabiac</b>	60	2.7	162	2011-2016
<b>North Arm Cove</b>	116	2.1	244	After 2021
<b>Pacific Palms</b>	135	2.3	311	2011-2016
<b>Smiths Lake</b>	362	2.7	977	After 2021
<b>Stroud</b>	68	2.7	184	2011-2016

**NB.** The household size in Table 24 is taken from the 1996 Census. Not all villages could be included in Table 22, due to the fact that the ABS do not have separate population figures for all villages in the Great Lakes LGA.

#### **4.1.6 Services and Facilities**

A component of the Landuse Survey was a survey of all villages to determine the services available within each. The results are shown in Table 25.

Bulahdelah is the only village with all the services listed in Table 25, with Forster/Tuncurry also having these services. The most common service found was a regular school bus service, whilst the least common service was a secondary school.

The villages with the number of services comparable to Bulahdelah are Stroud, Karuah and Nabiac (see Table 25). Bundabah, Newells Creek and Pindimar are the villages with the least services, having only a regular school bus service. When Table 25 refers to Karuah, it refers to the town in Port Stephens LGA, rather than the village zone of North Karuah in Great Lakes LGA. Karuah was included in the survey, as the people living in North Karuah have convenient access to the services provided in Karuah.

The following information was obtained from the Great Lakes Council Social Plan 2000-2004. Council provides the following cultural services:

- Community Facilities – public halls, historic buildings, museums, arts and crafts buildings, CWA halls, community centres, doctor’s surgeries;
- Building maintenance to early childhood premises on Council-controlled land;
- Support to community organisations and events that contribute positively to the social or cultural welfare of residents;
- Promotion of Hunter Area Assistance Scheme opportunities to maximise funding to local projects. Assessment of submissions to establish priorities for funding and representation of submissions at the regional level;
- Provision of After School Care Services to meet local childcare needs;
- Provision of a range of Cemetery Services through seven locations in the LGA; and
- Provision of Library Services through six locations in the LGA.

Table 25 – Village and Urban Services

Service/Village/Urban Area	Wards River	Wootton	TG/Hawks Nest	Tarbuk Bay	Stroud Road	Smiths Lake	Seal Rocks	Stroud	Pindimar	Pacific Palms	North Arm Cove	Nerong	Newells Creek	Nabiac	Markwell	Limeburners Creek	Karuah	Green Point	Forster/Tuncurry	Coomba Park	Coolongolook	Carrington	Bulahdelah	Bunyah	Bungwahl	Bundabah	Booral	Allworth
Education - Primary	✓		✓		✓			✓																				
Education - Secondary																												
Bank																												
Post Office			✓																									
Police			✓																									
Ambulance																												
Rural Fire Station																												
Health Services or Doctor																												
Pharmacy																												
Community Hall																												
Sporting Facility																												
Showground																												
Small Business Centre																												
Mini-market With Fresh Foods																												
General Store																												
Newsagent																												
Takeaway/Cafe/Restaurant																												
Petrol Station																												
Hotel																												
Church																												
Reticulated Sewerage																												
Reticulated Water																												
Regular School Bus Service																												

Survey completed January 2001.

## 4.2 BUSHFIRE

The Great Lakes Rural Fire Service classifies most of the Great Lakes LGA as High Fire Hazard, see Map 15. The next most common category is Low Fire Hazard, which generally relates to cleared agricultural land and urban areas. There are a few areas that are classified as Medium Fire Hazard, whilst a few parcels of land are undetermined due to a lack of data.

It should be noted that even cleared land may be classified as having a High Fire Hazard due to surrounding vegetation, topography and access.

Land in the Karuah Valley, in proximity to the Karuah River (and the Bucketts Way) is generally classified as Low Fire Hazard. Land in close proximity of the Myall River, north of Bulahdelah, is also generally classified as Low Fire Hazard.

Generally, land in close proximity to rivers tends to be cleared for agricultural purposes, and have a Low Fire Hazard. Land within National Parks and State Forests are generally classified as having a High Fire Hazard, due to the presence of vegetation.

The Bush Fire Risk Management Plan, developed by the Great Lakes Bush Fire Management Committee, identifies bush fire risk as the chance of a bush fire igniting, spreading and causing damage to assets of value to the community. The three main factors identified by the plan as contributing to bush fire risk include:

1. The potential severity of the fire (or bush fire hazard). The vegetation, slope and weather conditions influence the bush fire hazard.
2. How close the bush fire hazard is to an asset (or bush fire threat).
3. The capacity of an asset to cope with, and recover from the expected bush fire (or vulnerability). Different types of assets have different abilities to cope with fire.

Five bush fire risk categories, in relation to the risk posed to assets, have been identified, these being:

1. *Extreme*
  - Populated areas where the combination of threat and vulnerability expose a community to a significant likelihood of fatalities and major injuries.
  - Extinction of native species.
2. *Major*
  - Less likely to be fatalities or major injuries due to the presence of attributes which afford some protection.
  - Extensive and widespread loss of property. Major impact across a large part of the community and region. Long term external assistance required to recover.
  - Irreversible damage to the environment.
3. *Moderate*
  - Loss of life or major injury highly unlikely. Medical/hospital treatment may be required.
  - Localised damage to property. Short term external assistance required to recover.
  - Long term damage to the environment over a landscape scale.
4. *Minor*
  - Minor injuries only – first aid treatment. No major injuries or fatalities likely.
  - Short term damage to individual assets. No external assistance required to recover.
  - Short term, localised damage to the environment.

#### 5. *Insignificant*

- No injuries or fatalities likely.
- Inconsequential or no damage to property. Little or no disruption to the community.
- Minor impact on the environment.

The risk categories for assets for urban and rural residential areas in the LGA are as follows:

- *Extreme Risk*
  - Charlotte Ohma Reserve – Tuncurry, Elim, Hawks Nest (nursing home), North Arm Cove (western portion), Pacific Palms (some areas), Pindimar – North & South, Seal Rocks, Shearwater, Smiths Lake, Tuncurry Lakeside Village, Treachery camping reserve and Whoota.
- *Major Risk*
  - Tiona Park, Elizabeth Beach, Tarbuck Bay, Bundabah, Carrington, Booral Mills, Nerong, North Tuncurry and North Hawks Nest bush interface.
- *Moderate Risk*
  - Racecourse Estate – North Tuncurry, Green Point, Bungwahl, Seal Rocks Lighthouse, Hamilton, Allworth and all National Parks estates.
- *Minor Risk*
  - Cape Hawke, Pioneer Park, Tea Gardens (western side), The Branch, Booral, Stroud Road, Coolongolook, Nabiac and Failford Heights.
- *Insignificant Risk*
  - Forster/Tuncurry townships, Bulahdelah, North Karuah, Stroud, Wards River and general grazing properties.

The Department of Planning (PlanningNSW) has advised Council of a new Act and Section 117 Direction in relation to bushfire protection. The changes are only relevant to Councils currently required to prepare Bushfire Risk Management Plans under the *Rural Fires Act 1997*. Great Lakes Council is one of these Councils.

On 1 August 2002, the *Rural Fires and Environmental Assessment Legislation Amendment Act 2002* commenced. This Act amended both the *Environmental Planning and Assessment Act 1979* and the *Rural Fires Act 1997*, with the intention of providing a stronger, more streamlined system for planning for bushfire protection.

Hazard reduction activities are now covered completely by the Rural Fires Act. Further detail is available (including a Bush Fire Code) from the NSW Rural Fire Service's Planning and Environment Services Division, the Great Lakes Rural Fire Service or by accessing the Rural Fire Service's web-site ([www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)).

Planning and development control provisions have also changed. *Planning for Bushfire Protection 2001*, published by the NSW Rural Fire Service in partnership with PlanningNSW, now forms the basis for all planning and development control measures regarding bushfire protection in NSW.

Changes to the EP&A Act include:

- A requirement for Councils to map bushfire prone land
- A requirement for development on bushfire prone land to conform with the provisions of *Planning for Bushfire Protection 2001*. If the development does not conform, Council must consult with the NSW Rural Fire Service regarding the proposed development
- The introduction of new requirements for integrated development proposals considered vulnerable to the threat of bushfire
- Requirement to indicate bush fire prone land on Section 149 planning certificates.

The Minister for Planning has also issued a revised Section 117 Direction for bushfire protection. The effect of this is that Great Lakes Council must now consult with the NSW Rural Fire Service when preparing draft local environmental plans (LEP's), and comply with specific provisions in *Planning for Bushfire Protection 2001*. This new Direction applies to both new and draft LEP's currently being prepared by Council.

The following extract is from the combined publication by the NSW Rural Fire Service and PlanningNSW, titled *Planning for Bushfire Protection 2001*. This document has to be taken into consideration when developing land in rural areas.

#### **PLANNING PRINCIPLES FOR BUSHFIRES**

##### **Objectives**

- To prevent loss of life and property due to bushfires, by discouraging the establishment of incompatible uses in bushfire-prone areas.
- To encourage sound management of bushfire-prone areas.

##### **When these principles apply**

These principles will apply when a council is required to prepare a draft LEP that permits land, which is bushfire-prone to be developed. Such land would be identified by the council in accordance with *Planning for Bushfire Protection* (PBP).

##### **What a council should do if these principles apply**

A council should not prepare the draft LEP unless it is justified by an environmental study. When preparing an environmental study, the council should consider PBP.

If a draft LEP proposes to permit development of land which has been found to be bushfire-prone, the plan should, as appropriate:

- Provide an Asset Protection Zone (APZ) incorporating at a minimum:
  - An Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development, and has a building line consistent with the incorporation of an APZ within the property.
  - An Outer Protection Area managed for hazard reduction, and located on the bushland side of the perimeter road.
- Contain provisions for two way access which links to the road or fire trail network.
- Minimise the perimeter of the area of land, interfacing the hazard, which may be developed.
- Introduce controls which avoid placing inappropriate developments in hazardous areas.
- Introduce controls on the placement of combustible materials within the Inner Protection Area.

The NSW Rural Fire Service should be consulted in the preparation of the LEP which affects a bushfire-prone area (PBP Ch 3, p 11).

The following is the revised *S117 (2) Directions Pursuant to the EP&A Act 1979* referred to above and affects the rezoning of land in bushfire prone areas [Great Lakes Council is one of the councils listed in Schedule 1]:

#### **Direction G20 – Planning For Bushfire Protection**

##### **Objectives**

- To prevent loss of life and property due to bush fires, by discouraging the establishment of incompatible land uses in bush fire prone areas.
- To encourage sound management of bush fire prone areas.

##### **Where this direction applies**

This direction will apply to councils in Schedule 1, when preparing a draft local environmental plan for land that is identified as bush fire prone on a bush fire prone land map.

A *bush fire prone land map* is a map with the same meaning as in section 146 of the Act, or, until such a map has been certified by the Commissioner of the NSW Fire Service a map referred to in Schedule 6 of the Act.

### **What a council must do if this direction applies**

A council must, in the preparation of a draft local environmental plan:

- 1) consult with the Commissioner of the NSW Rural Fire Service under section 62 of the Act, and take into account any comments so made;
- 2) have regard to *Planning for Bushfire Protection 2001*; and
- 3) where development is proposed, comply with the following provisions, as appropriate:
  - (a) provide an Asset Protection Zone (APZ) incorporating at a minimum:
    - i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property; and
    - ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road;
  - (b) for infill development (that is development within an already subdivided area) where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service;
  - (c) contain provisions for two-way access which links the road or fire trail network;
  - (d) contain provisions for adequate water supply for firefighting purposes;
  - (e) minimise the perimeter of the area of land interfacing the hazard, which may be developed;
  - (f) introduce controls which avoid placing inappropriate developments in hazardous areas;
  - (g) introduce controls on the placement of combustible materials in the Inner Protection Area; and
  - (h) ensure that bushfire hazard reduction is not prohibited within the APZ.

If the draft local plan does not comply with the provisions listed in paragraph 3, the council must obtain written advice from the Commissioner of NSW Fire Service, to the effect that, notwithstanding the non-compliance, NSW Fire Service does not object to the progression of the draft local environmental plan.

#### **4.2.1 Implications of New Bushfire Regulations**

The implications to Council of the new legislation include:

- Preparation of a bushfire prone land map for the LGA by 1 August 2003. The final map must be certified by the Commissioner of the Rural Fire Service and must also be reviewed every 5 years.
- Until such time as Council has prepared (and had certified) a bushfire prone land map, the bushfire hazard map prepared as part of the Great Lakes Bushfire Risk Management Plan will be used to give effect to the legislation.
- When preparing draft Local Environmental Plans, Council must consult with the Commissioner of the NSW Rural Fire Service under Section 62 of the EP&A Act 1979.
- The draft LEP must have regard to the planning for bushfire protection guidelines.
- If the draft LEP does not comply with the provisions identified in the direction (G20), Council must obtain written advice from the Commissioner of the NSW Rural Fire Service that non-compliance is acceptable.

- PlanningNSW urges Council to review provisions in existing LEP's to ensure consistency with the Planning for Bushfire Guidelines.
- PlanningNSW urges Council to consider preparing a Bushfire Management Development Control Plan or include appropriate provisions in relevant DCP's relating to bushfire management.
- Development Applications for residential and rural residential subdivision, and certain other prescribed types of development considered particularly vulnerable to bushfire, will be integrated development where the approval of the Commissioner will be required.

The requirement for the bushfire hazard map to be used as an interim measure for identification of bushfire prone land means that all land in Great Lakes LGA is caught by the legislation. This is because of the prescriptions in the legislation as to when land is to be considered bushfire prone. The prescriptions are:

- Land within, or within 100m of high or medium hazard areas; and
- Land within, or within 30m of low hazard areas.

Further discussion on bushfire can be found in Section 6.2.5 of the Issues Paper. Bushfire risk also appears as a management criteria that will be used to identify land and assess Development Applications for land that may be capable of supporting smaller holding subdivision, in Section 3.3.2 of the Strategic Environmental Assessment and Draft Strategy.

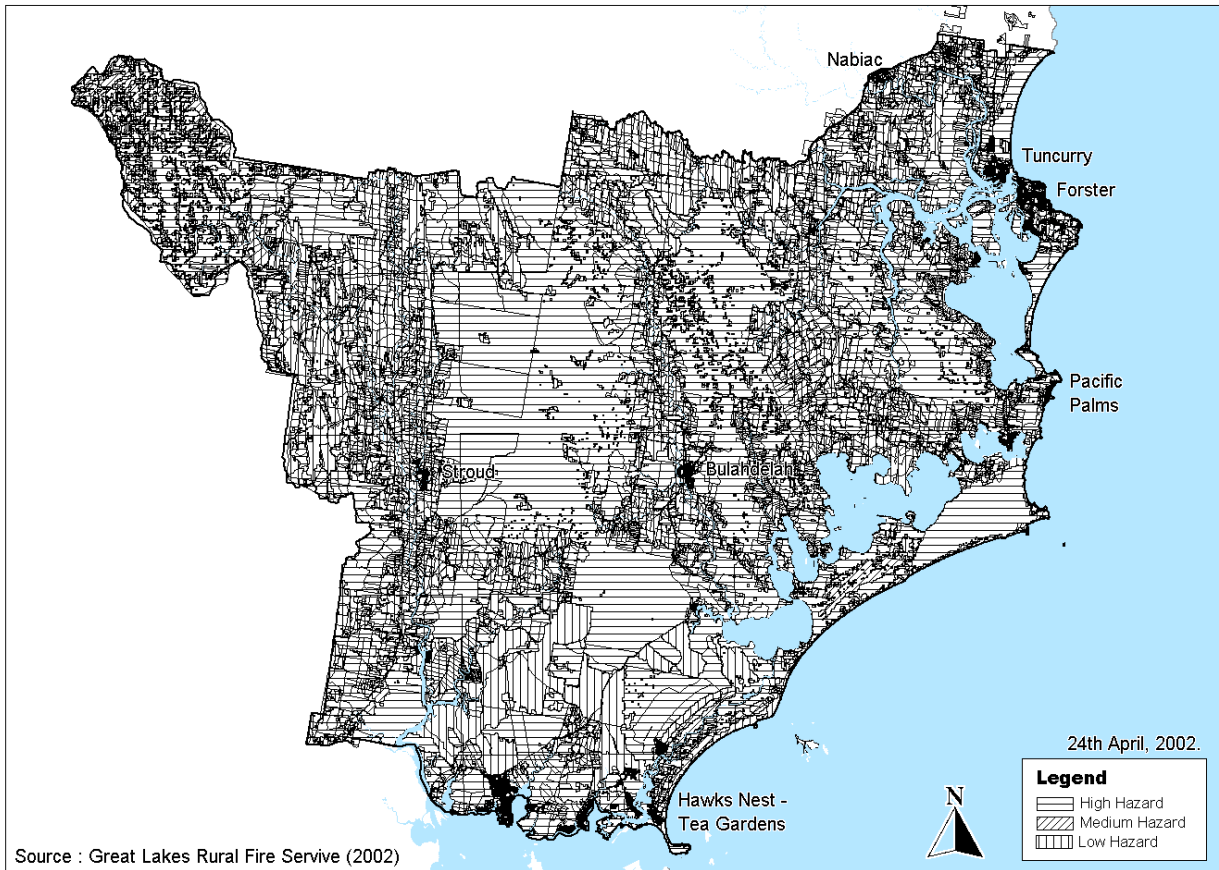
Photograph 10 is of the village (centre left) and surrounds of Smiths Lake. The village is classified as having a High Fire Hazard by the Great Lakes Rural Fire Service, due to the amount of vegetation within and surrounding the village, steep land/ridges and access.

**Photograph 10 – Smiths Lake**





## Map 15 – Fire Hazard



### 4.3 HERITAGE – ABORIGINAL AND EUROPEAN

There are many items and areas of both Aboriginal and European heritage in the Great Lakes LGA. The following table identifies items of historical significance, their location and their level of significance. All of these items relate to European significance. Items of Aboriginal significance are recorded by the National Parks and Wildlife Service and are not generally disseminated to the public.

Table 26 is based on Schedule 2 – Heritage Items in Great Lakes LEP 1996. It varies in that it is an updated list of Heritage Items that will replace the current list (as part of the next set of General Amendments to the LEP).

The symbols L, R and S used for each item in Table 26 indicate whether the heritage item has Local, Regional or State significance in the opinion of Council.

Photograph 11 is of Stroud Common, an integral part of the history of Stroud.

**Photograph 11 – Stroud Common**



Council will commence the Great Lakes Heritage Assessment and Study in 2002-2003. This will provide decision makers and the public with a comprehensive list of heritage items as well as detailed background on the relevance of each item.

**Table 26 – Heritage Items in Great Lakes LGA**

ADDRESS	PROPERTY DESCRIPTION	ITEM	SIGNIFICANCE
<b>ALLWORTH</b> <b>Allworth River and Karuah River</b>	<i>Eastern side of Karuah River, south of concrete boat ramp</i>	<i>Allworth Wharf (remains)</i>	R
<b>BOORAL</b> 2653 The Bucketts Way	Lot 100, DP 839447	Alderley House (private residence)	R
<b>Isaacs Lane/Lowes Lane</b> 9 Lowes Lane	<i>Portion 81, Parish Booral, Lot 1, DP632812</i> Lot 1, DP47370 & Lot 1, DP632812	<i>Booral House</i> Gundayne House Group, Residence Outhouse and Schoolhouse	R S
<b>Karuah River</b> <b>The Bucketts Way</b> <i>Lowes Lane – or Mill Brook Rd, Stroud?</i>	<i>about 1 mile south of Booral</i> <i>Parish Booral, Pt Portion 6</i> —	<i>Booral Wharf</i> <b>St Barnabas Church and Cemetery</b> <i>The Gables</i>	R L R
<b>BULAHDELAH</b> Corner of Markwell Road, Red Gum Road & Mahogany Street Corner Crawford & Ann Streets <i>Horses Creek</i> <i>Alum Mountain</i>	Lot 7015, DP 1002815 Lot 204, DP 753154 <i>Wang Wauk State Forest</i> <i>Lot 1 DP228555 (Portion 150), Portions 64, 122 &amp; 187 Parish of Bulahdelah</i>	General Cemetery Former Courthouse (museum) <i>Tramline Trestle Bridge</i> <i>Former Alum Mine</i>	R R S R
<b>BUNGWAHL</b> The Lakes Way		Old Bungwahl Cemetery	R
<b>CARRINGTON</b> See LEP map Tahlee Road Tahlee Road (On Port Stephens) Corner Church & Blake Streets Cock Renoyo Point Cock Renoyo Point	Crown Land within Lot 206 DP 95426 <b>Lot 342, DP740621</b> Lot 1A, Section K, DP 95447 —	Carrington Conservation Area <b>Carrington Cemetery</b> Tahlee House Former St Andrews Church <i>Carrington Boat Harbour and Lime Kiln</i> <i>2 roomed brick cottage</i>	S S L S R
<b>COOLONGOLOOK</b> Corner of Curreeki Creek Road & Pacific Highway	Lot 11, DP 883955	Morris Property Graves	R
<b>DARAWANK</b> <b>North or East of 31 Manns Road</b>	<b>Lot 121, DP 753207</b>	<b>Former Darawank Public School</b>	L
<b>FAILFORD</b> 33 Bullocky Way	Lot B, DP 415592	House (private residence)	R
<b>FORSTER</b> 1 West Street (corner North Street) Corner St Albans Place, Strand Street & Likely Street	Lot 9, DP536200 Reserve 19843	Tudor House Restaurant and Bar General Cemetery	R R

ADDRESS	PROPERTY DESCRIPTION	ITEM	SIGNIFICANCE
<b>HAWKS NEST</b> <i>Bennett Street</i>	—	<i>Timber Cottage</i>	<i>L</i>
<b>MONKERAI</b> 1716 The Bucketts Way (corner Weismantels Road) <b>Moore's Road</b> <b>Weismantels – Dingadee Road at the Karuah River</b>	Lot 4, DP803291 <i>FP970544, Moore's Road</i>	Former Weismantels Inn (private residence) <i>Monkerai Hall</i> Monkerai Bridge over the Karuah River	R <i>L</i> S
<b>NABIAC</b> 7-9 NABIAC Street Cnr NABIAC Street & Showground Lane 37 NABIAC Street 21 NABIAC Street (rear of shops) 77 Clarkson Street (opposite Memorial Reserve)	Lot 1, DP 948711 Lot 96, DP 753195 NABIAC Showground Reserve R 43890 Lot 2/3 DP 7007 Lot 12, DP 384311 Lot 50, DP 601632	Former Hancocks Store (Amish Country Barn) Showground Former Hospital (Neighbourhood Centre) Former ES&A Bank & Dwelling (private dwelling) House (veterinary clinic)	S R L L L
<b>NERANI HEAD</b>	<i>Between two knolls which form Nerani Head</i>	<i>Nerani Head Cemetery</i>	<i>R</i>
<b>SEAL ROCKS</b> <i>Sugarloaf Point</i>	<i>National Park</i>	<i>Lighthouse Group – tower, signal store and residences</i>	<i>R</i>
<b>STROUD</b> See attached map <b>Mill Creek Road</b> 13 - 21 Erin Street 25 Erin Street 42 Cowper Street 44 Cowper Street 59 Cowper Street 67 Cowper Street 52 Cowper Street (corner Memorial Avenue) 73 Cowper Street (corner Memorial Avenue) 63 Cowper Street (corner Church Street)	Lots 1 & 2, DP794878 & Lot 1, DP 137185, Lot 3, DP 794878 Lots 4, Section 1, 95874 Lot 75, DP 95868 Lot 75, FP 150877 Lot 1, DP 753193 Lot 613, DP709600 Lot 3 & 4, Section A, DP 711520 Lot 1, DP718388 Lot 1, Section B, DP 770116	Stroud Conservation Area <i>House - Mill Creek Road</i> Public School & Residence St James Presbyterian Church "Stroud House" (private residence) Former Bank of New South Wales (ANZ when closed) [private residence] Stroud Post Office Former Stroud Courthouse (museum) Central Hotel Former Stroud Shire Council Chambers (offices) Uniting Church and Hall	L R L S L R R L R L

ADDRESS	PROPERTY DESCRIPTION	ITEM	SIGNIFICANCE
<b>STROUD (Continued)</b>			
<b>St John's Church Group</b>			
• 85 Cowper Street	Lot 6, DP 939759	The Rectory	S
• 85 Cowper Street	Lot 7, DP 939759 & Lot 91, DP 584892	St John's Anglican Church, Church Hall, cemetery & surrounding grounds	
• 87 Cowper Street	Lot 92, DP 584892	"Quambi" schoolhouse and residence (museum)	
70 Cowper Street	Lot 3, Section C	Baptist Church	L
1 Berkeley Street	Lot 16, DP 705627	Former A.A. Co. Cottage (private residence)	R
5 Berkeley Street	Lot 1, DP 194077	Former A.A. Co. Cottage (private residence)	R
<i>Berkeley Street</i>	<i>Located between Broadway &amp; Collins Streets</i>	<i>Former A.A. Co. Cottage (private residence)</i>	<i>R</i>
8 Berkeley Street	Lot 4, DP 939759	School of Arts	L
13 Berkeley Street	Lot 1, DP 800052	"Thornleigh" - 2 storey colonial home (private residence)	L
Cnr Broadway & Mallon Streets	Lot 1, DP803474	St Columbanus Catholic Church	R
2 Broadway Street (Silo Hill)	Lot 1, DP 199606	Underground Grain Silos and Cannons	R
6 Bridge Street	Lot 20 DP 1016958 (formerly Lot 2, DP 501301)	House (private residence)	R
<b>Karuah River</b>	<i>7.5km south of Stroud</i>	<i>Washpool</i>	<i>S</i>
Simsville to Allworth railway line		Kauri & Jarrah Co's Railway	S
<b>STROUD ROAD</b>			
Main Road, Stroud Road	Lot 2, DP 770309	Uniting Church	L
<b>TEA GARDENS</b>			
<i>53 Marine Drive</i>	<i>Lot 1, DP 780806</i>	<i>Courthouse and cell block</i>	<i>R</i>
Yalinbah Street (south end)	Lot 28, DP95468	General Cemetery	L
<b>TUNCURRY</b>			
4 Manning Street (opposite John Wright Park)	Lot 1 DP 943042	Timber Church (Tuncurry Community of Christ)	S
2 Manning Street (opposite John Wright Park)	Lot 3, Sec 2, DP759005	"Tokelau House" (single dwelling converted to Bed & Breakfast, 199x?)	R
South Street (end of South Street)	Lot 2, DP619110	"Tuncurry House" (private residence – originally located at 28 Wharf Street)	L

Source: Great Lakes Council

(Note: Those items in *italics* are yet to be verified.)

## 4.4 MAIN FINDINGS

The main findings in Section 4 are that:

- In respect to population, the largest urbanised areas are (in order – highest to lowest) Forster/Tuncurry, Tea Gardens/Hawks Nest, Bulahdelah, Smiths Lake, Stroud, Pacific Palms, Nabiac, Green Point, Coomba Park and North Arm Cove. The total urbanised (includes village zones) population in 2001 was 25,651. The combined urban areas have experienced significant growth.
- Village zones not included in the above point are not identified by the ABS with separate collector districts. These village zones, as well as properties outside village areas are classified as rural, and had a combined total population in 2001 of 5,733. The combined “rural” areas experienced minor growth between the 1996 and 2001 Census’.
- The age range with the highest absolute growth is the 60+, whilst the age range increasing at the greatest rate is the 50-59 years. When the age structure is viewed for the urbanised areas, it can clearly be seen that the greatest numbers of persons in each area are in the 60+ age group, with the exception of the areas of Nabiac, Green Point and Smiths Lake.
- All urbanised areas experienced an increase in the number of dwellings. All areas, except North Arm Cove and Tea Gardens, experienced an increase in the number of unoccupied dwellings. All areas experienced an increase in the number of occupied dwellings.
- All areas, except Tuncurry, Stroud and Nabiac experienced a reduction in the overall vacancy rate. Green Point is the only urbanised area that experienced an increase in the household size from 1991-1996. The overall LGA household size fell to 2.4 residents per private occupied dwelling in 1996.
- The areas with the greatest average increase in dwellings approved are (in order) Forster, Tuncurry, Pacific Palms (includes Smiths Lake), Tea Gardens, Hawks Nest, Karuah Valley, Myall Valley, Port Stephens, Wallamba, Coomba and Green Point. The average annual number of dwellings approved in Great Lakes is 465.
- Population projections do not take into consideration any constraints to further development, and assume that areas will continue to increase at historical rates. The total urbanised area is predicted to increase from 25,651 in 2001 to 38,519 in 2021. The areas with the greatest predicted population in 2021 are (in order) Forster/Tuncurry, Tea Gardens/Hawks Nest, Pacific Palms, Bulahdelah, Smiths Lake, Stroud, Coomba Park, Nabiac, Green Point and North Arm Cove.
- The combined total rural collector districts are expected to increase in population from 5,733 in 2001 to 7,668 in 2021. The LGA population is predicted to rise from 31,384 in 2001 to 46,114 in 2021.
- The villages that are expected to become “built-out” first (when the current vacant lots are expected to be built upon) are Nabiac, Stroud and Pacific Palms, then Bulahdelah, then finally North Arm Cove, Smiths Lake, Coomba Park and Green Point.
- There are 26 village zones in the LGA, all of which have at least one service (regular school bus service). Bulahdelah is the village with the most services, followed by Stroud, Karuah and Nabiac. The villages with the least services are Bundabah, Newells Creek and Pindimar. Forster/Tuncurry (as would be expected) has the most services and facilities of any urban area in Great Lakes.

- The most common classification of land in regard to bushfire is High Fire Hazard. This is the case due to the amount of land in the LGA that is in National Parks or State Forests, though these are not the only areas with a high fire danger.
- Changes to bushfire legislation which came into effect on 1 August 2002 affect rezonings and Development Applications (DA's). Rezonings are effectively required to be "signed-off" by the Commissioner of the NSW Rural Fire Service. DA's for urban and rural residential subdivision, together with a number of nominated development types, will become Integrated Development and will require the approval of the Commissioner.
- There are many items in Great Lakes LGA of Aboriginal or European heritage. The items of Aboriginal significance are recorded on the National Parks & Wildlife database, whereas there are 58 items of European heritage currently recorded in Schedule 2 of Great Lakes LEP 1996 (a revised list of Heritage Items is provided in this report).
- The majority of landowners in rural residential estates in close proximity to Forster/Tuncurry do not want further subdivision.

#### **4.5 RURAL RESIDENTIAL QUESTIONNAIRE**

At its' meeting on 11 September 2001 Council considered a rezoning request for an existing rural residential estate (Racecourse Estate) at North Tuncurry to allow for subdivision down to 2000m<sup>2</sup>. The request came from a few landowners who were finding the burden of maintenance (mowing) too onerous and who had a desire to make money by selling off land. The request was prompted by the fact that MidCoast Water was connecting the estate to reticulated sewerage at the time and was burdening each lot with part of the cost of doing so.

At this meeting Council resolved to defer the rezoning request until it was considered as part of the Great Lakes Rural Living Strategy and to canvas the residents of both Racecourse Estate and Cape Hawke Estate (both being rural residential estates) to see if they were in favour of further subdivision and to find out why they originally purchased these properties.

The questionnaire that was sent to landowners is shown in Figure 10, whilst the results obtained from the estates is shown in Figures 11 and 12. From the results it can be ascertained that the percentage of people in each estate who want further subdivision is similar, as are the reasons why people first purchased these properties. The basic outcome of the results is that the majority of people in each estate do not want further subdivision.

The questionnaire was intended to ascertain community reaction to the abolishment of rural residential lots in favour of large urban lots (within these estates) as a consequence of pressure from encroaching urban development. It would be almost impossible to convert these lots to current urban sized lots (500-700m<sup>2</sup>). It would be possible to create large urban lots, though this would alter the character of these estates from rural residential to urban. This issue is further dealt with in the Issues Paper.

**Figure 10 – Rural Residential Questionnaire**

1. Which estate do you own land in (please tick one)?

Racecourse Estate  Cape Hawke Estate

2. Why did you originally purchase the rural residential lot (tick as many as you like)?

Larger lot sizes  Semi-rural “feel”

No close neighbours  Close to Racecourse

Near Booti Booti National Park

Possible future chance to subdivide

Other  Please specify \_\_\_\_\_  
\_\_\_\_\_

3. Would you like to see your estate rezoned to allow smaller lot subdivision?

Yes  Go to Question 4.

No  Go to Question 5.

4. What minimum lot size would you like to see?

2000m<sup>2</sup> (½ acre)

5000m<sup>2</sup> (1¼ acres) [½ hectare]

Other  Please specify \_\_\_\_\_

5. Comments (please print)? [Please use back of page if more space required]

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Thank you for taking the time to fill out this questionnaire.



## Figure 11 – Rural Residential Questionnaire Results – Racecourse Estate

[72 questionnaires sent, 54 responses received (75%)]

### QUESTION 2 – Why did you originally purchase the rural residential lot?

Larger Lot Sizes = 43

Semi-Rural “Feel” = 32

No Close Neighbours = 36

Close to Racecourse = 14

Possible Future Chance to Subdivide = 18

#### Other

- Get away from “cluster housing”
- No prospect of subdividing
- Cheap land at time of purchase
- Capital gain
- Large block, but still in town
- Lifestyle

### QUESTION 3 – Would you like to see your estate rezoned to allow smaller lot subdivision?

Yes = 23 (43%)

No = 31 (57%)

### QUESTION 4 – What minimum lot size would you like to see?

2000m<sup>2</sup> = 18

5000m<sup>2</sup> = 0

#### Other

- 1500-2000m<sup>2</sup>
- 1200-1500m<sup>2</sup>
- 1 acre
- 5 acres

### QUESTION 5 – Comments? [Only a selection of comments are shown below]

- If we wanted to live on a small block we would have purchased at Banksia.
- We bought our lot mainly for size and quietness.
- To be close to town and yet to feel that you’re in a rural atmosphere.
- Subdivision would spoil the current uniqueness that the existing block sizes afford.
- Anyone who finds hardship in maintaining blocks can sell and relocate to small property. This is a normal life cycle change.
- If I wanted a house block I would have purchased a house block.
- It seems a very high cost to pay for sewerage, where residential blocks do not pay.
- I have no plans to subdivide at this time, but would like the right to if and when I decide to subdivide.
- We can understand some people wanting to subdivide for financial reasons, but the feel (semi-rural) is determined by the whole estate.
- Don’t really mind size, so long as they are not too small – must be seen as large blocks.

## Figure 12 – Rural Residential Questionnaire Results – Cape Hawke Estate

[157 questionnaires sent, 63 responses received (40%)]

### QUESTION 2 – Why did you originally purchase the rural residential lot?

Larger Lot Sizes = 44

Semi-Rural “Feel” = 47

No Close Neighbours = 36

Near Booti Booti National Park = 16

Possible Future Chance To Subdivide = 16

#### Other

- No noisy neighbours
- Great views, good price
- Peace and quiet
- Elevated position
- Get away from “subdivision”
- Required larger lot than available in standard residential estates
- Quiet environment

### QUESTION 3 – Would you like to see your estate rezoned to allow smaller lot subdivision?

Yes = 29 (46%)

No = 34 (54%)

### QUESTION 4 – What minimum lot size would you like to see?

2000m<sup>2</sup> = 19

5000m<sup>2</sup> = 3

#### Other

- 4000m<sup>2</sup>
- 1500m<sup>2</sup>
- 1000m<sup>2</sup>
- ¾ acre
- 1 acre

### QUESTION 5 – Comments? [Only a selection of comments are shown below]

- It is horrible to imagine the desire to put further pressure upon the National Park.
- An environment of 5-6 or even more houses to the acre is just not on.
- I feel that 1 acre is ample space and would be much easier to maintain.
- With the rapid development of Cape Hawke and Lakes Estate, it’s now a waste of good residential land.
- No objection – provided each case is treated on its merits and is done in harmony with the environment.
- Would this mean street lights, guttering and correction of poor street drainage?
- We feel that lot sizes of less than 1 acre will spoil this unique estate.
- We would be very unhappy with any further subdivision of blocks in Cape Hawke.
- I would be very active in opposing any proposal to subdivide land in Cape Hawke.

## 4.6 DISCUSSION

The only constraint to development, identified in Section 4, is land classified as having a High Fire Danger. This, though, has been deemed more of a management issue (unless clearing for bushfire protection necessitates the clearing of medium or high habitat, whereby it becomes an exclusionary constraint), rather than an outright constraint to further development of land.

Consideration also needs to be given to the range of services presently available for villages which are being considered for expansion (and for rural residential development around these villages), as well as the presence of heritage items (both European and Aboriginal) in areas being considered for further development.

The population projections made in this section indicate that the total LGA population is expected to experience moderate, though significant, growth. Most of this growth is expected to occur in the urbanised areas, as the rural population is only expected to experience minor growth. When this growth is viewed in relation to the age structure of the population, it can be seen that most areas will experience an increase in people in the older age groups (most likely retirees). This will have an impact on the support services needed for these age groups.

## SECTION 5 — SETTLEMENT PROFILES

Each of the 28 settlements in Great Lakes is analysed separately in this section. Forster/Tuncurry and Tea Gardens/Hawks Nest have not been considered separately due to their interrelatedness. The demographics, facilities present, physical characteristics and constraints to future development are described for each.

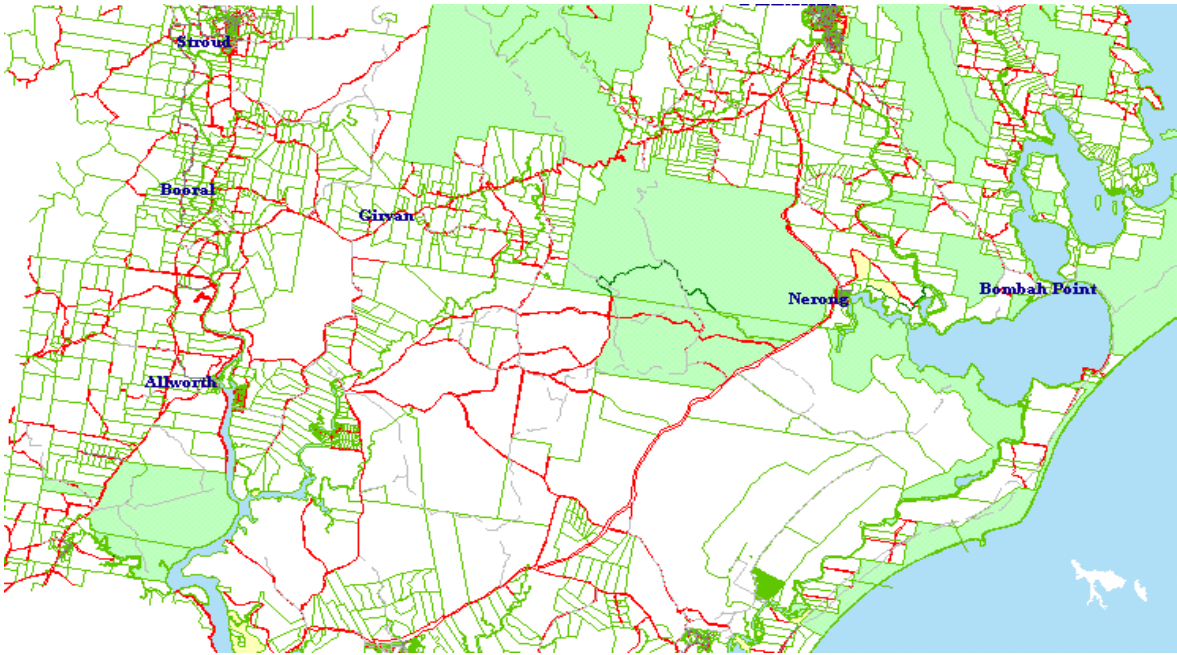
In respect to shopping facilities, the following definitions were used:

- ***General Store***  
one shop that serves the convenience shopping needs of the settlement (can form part of a Service Station). Booral and Bungwahl are examples.
  
- ***Small Shopping Centre***  
a group of small shops that provides convenience shopping needs, including a General Store, Real Estate Agent, Post Office etc. Green Point and Pacific Palms are examples.
  
- ***Medium Shopping Centre***  
a group of shops that provides the weekly shopping needs of the settlement, with both retail and offices, including a Supermarket, Hairdresser, Newsagent, Chemist etc. Nabiac and Bulahdelah are examples.
  
- ***Large Shopping Centre***  
a group of shops that provide a full range of weekly and comparison shopping needs for the settlement. It will contain retail and offices, as well as Local and/or State Government Departments. Tea Gardens/Hawks Nest is an example.

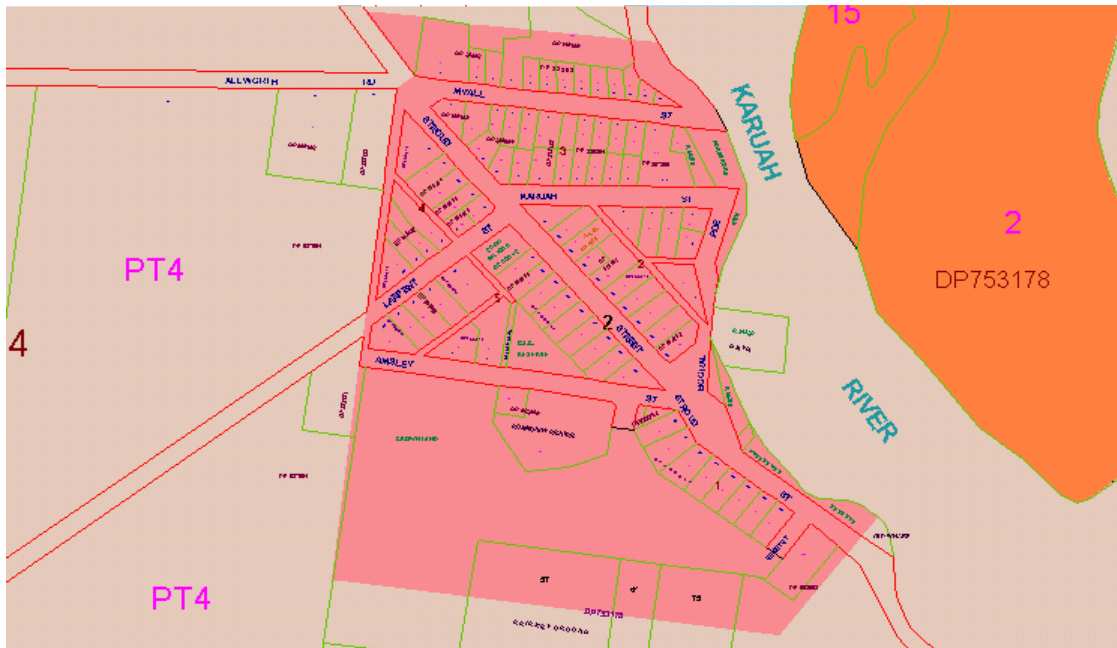
A Locality Map and Settlement Map is provided for each settlement. Any zoning indicated on these maps should not be taken as a true account of the zoning of land in an area. This information should be obtained directly from Council.

Not all the population figures supplied for each settlement can be seen as being an accurate reflection of the population within that particular settlement, as the Collector Districts from which the figures are taken often relate to wider areas. Where this occurs, specific notations as to the areas that the population figures relate to have been made.

## LOCALITY MAP – ALLWORTH



## SETTLEMENT MAP



### Settlement Map Legend

	7(a)
	2
	1(a)

## 5.1 ALLWORTH

### *Demographics*

Population (2001 Census)	459
% Annual Pop. Increase 1996-2001	0.54%
Number of dwellings (2001)	69
Number of vacant lots (2001)	44
Total Lot Capacity	113

NB. Population includes Limeburners Creek and surrounding land.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

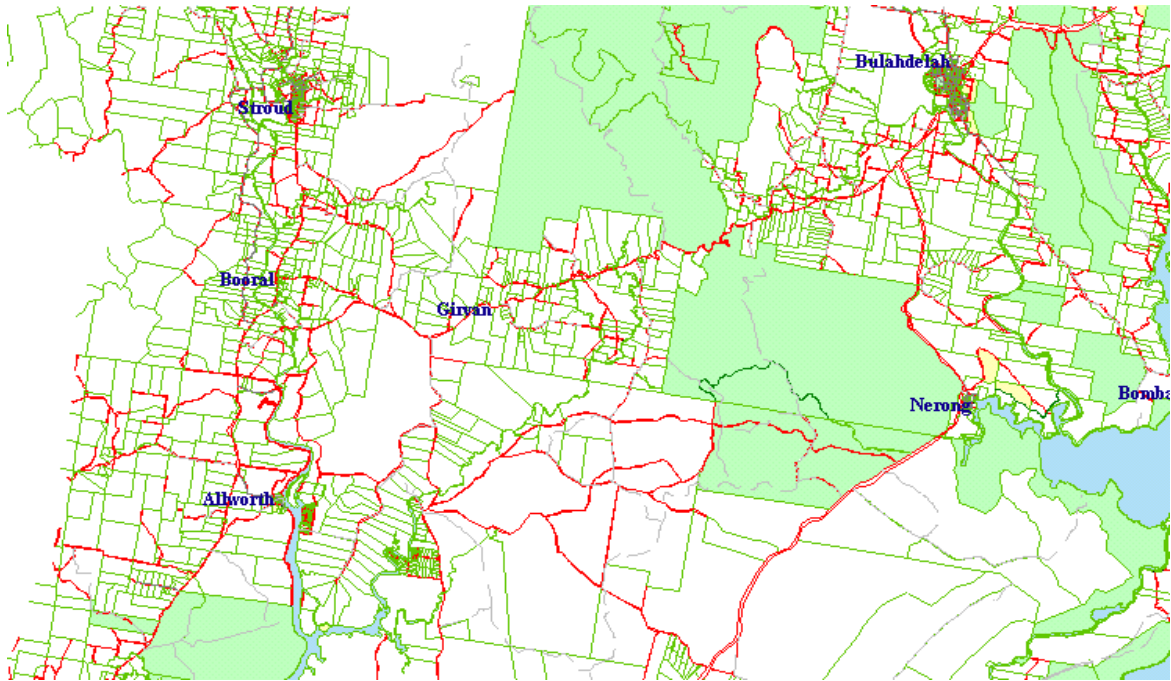
### *Physical Characteristics*

Located off the Bucketts Way, with the turnoff for Allworth being approximately 15km north of the intersection of the Bucketts Way and the Pacific Highway. Allworth is situated beside (west of) the Karuah River, with the land sloping from north west to south east (to the river). The village itself is cleared of vegetation, whilst agricultural land to the north and south is generally cleared. Land to the west is heavily vegetated. There is a large poultry farm to the north (with heavily vegetated land to the north) and another smaller farm to the west, in a cleared pocket in the heavily vegetated area.

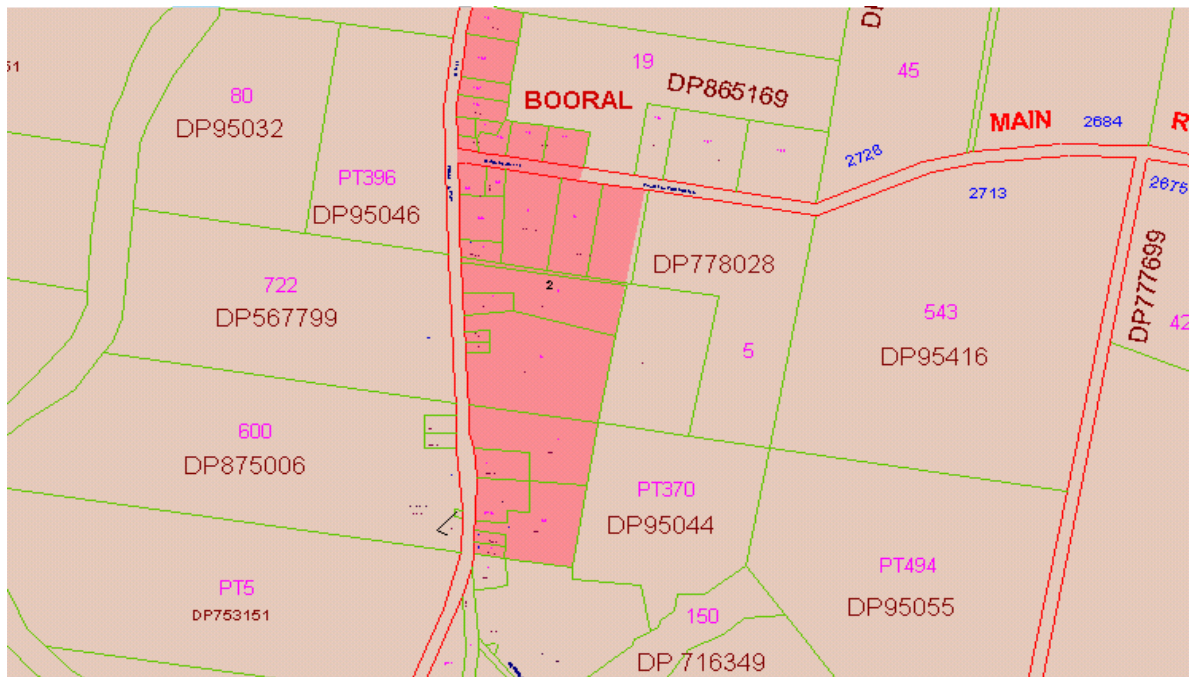
### *Constraints to Future Development*

- Potential for flooding
- Vegetation
- Prime agricultural land
- Poultry farm locations
- Slope
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

## LOCALITY MAP - BOORAL



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.2 BOORAL

### *Demographics*

Population (2001 Census)	250
% Annual Pop. Increase 1996-2001	2.42%
Number of dwellings (2001)	19
Number of vacant lots (2001)	9
Total Lot Capacity	28

NB. Population includes The Branch Lane and surrounding areas

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	General Store	School	Primary
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

### *Physical Characteristics*

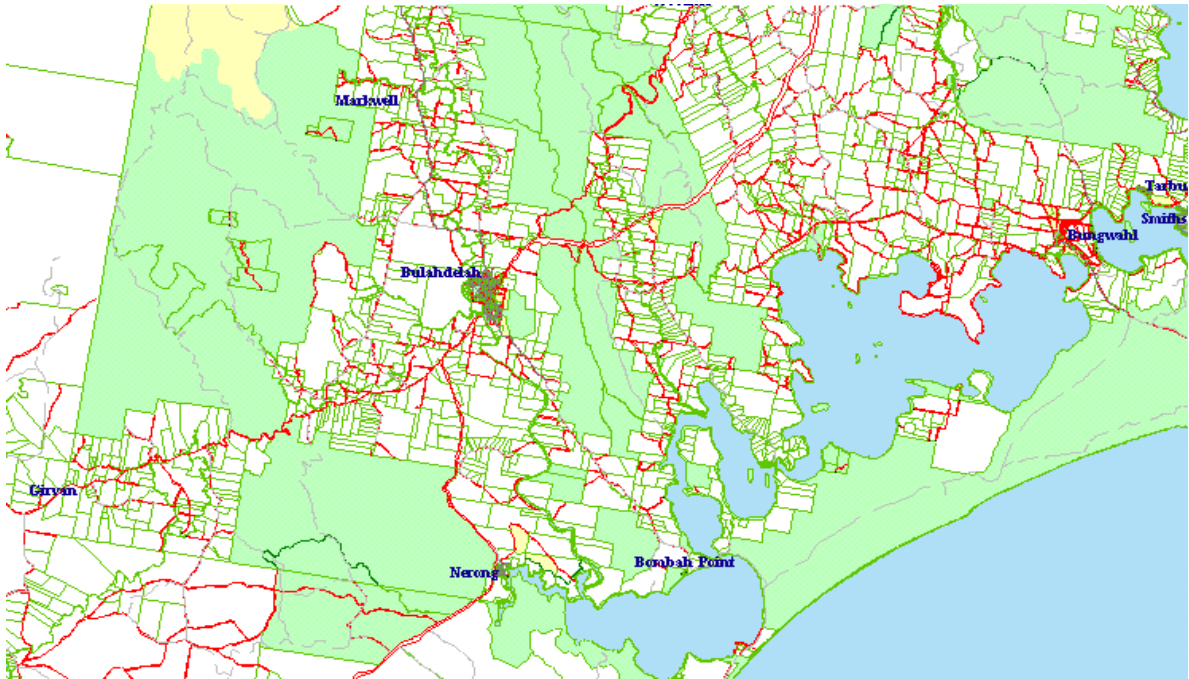
Located on the Bucketts Way, 8km south of Stroud and 23km north of the intersection between the Bucketts Way and the Pacific Highway. The Karuah River runs parallel to the Bucketts Way near the village zone of Booral, approximately 500m to the west. Poultry farms are located to the west and south of Booral, whilst a sawmill is located to the north. The village zone is surrounded by cleared agricultural land, except for a pocket of heavily vegetated land to the north west. The land slopes gradually from north to south.

### *Constraints to Future Development*

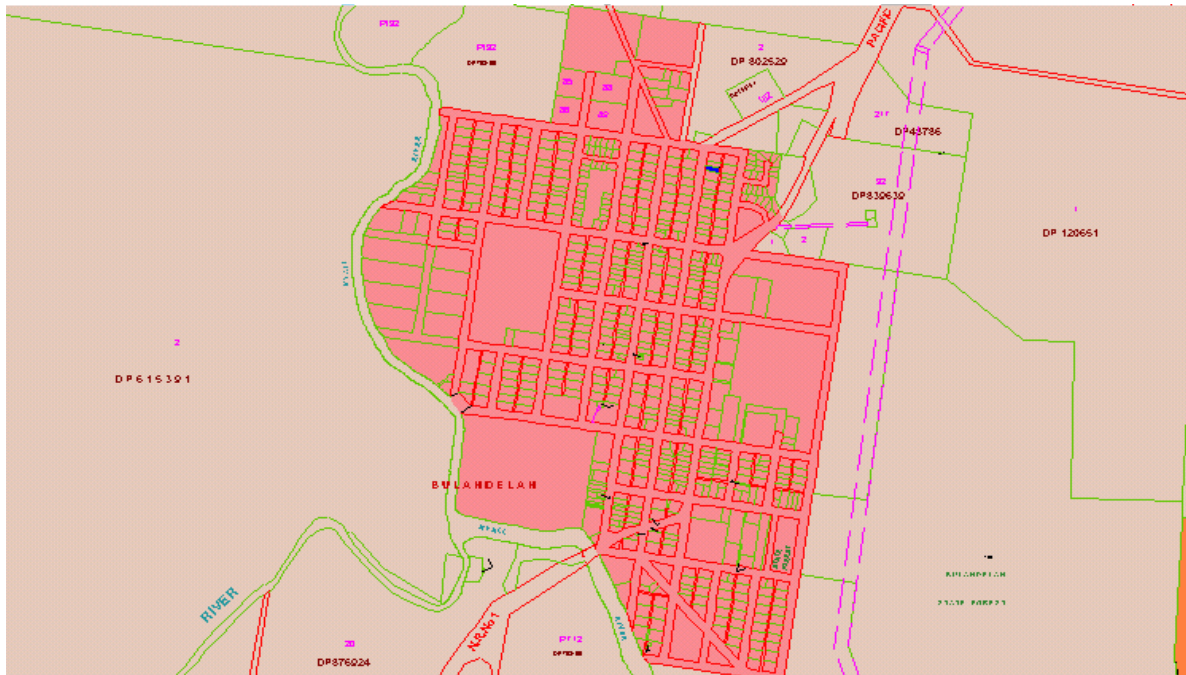
- Prime agricultural land
- Flooding
- Vegetation
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure



## LOCALITY MAP - BULAHDELAH



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.3 BULAHDELAH

### *Demographics*

Population (2001 Census)	1161
% Annual Pop. Increase 1996-2001	0.86%
Number of dwellings (1996)	461
Percentage Unoccupied (1996)	8.03
Number of vacant lots (2001)	99 (62 lots not flood affected)
Total Lot Capacity	664

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	Medium Centre	School	Central
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	Yes	Sporting Complex	Yes
Police Station	Yes	Showground	Yes
Community Hall	Yes	Water & Sewer	Both Reticulated

### *Physical Characteristics*

Located on the Pacific Highway, 44km north of Karuah, 32km south of Coolongolook and 49km south of Nabiac. The town is located on the eastern side of the Myall River. The land slopes from east to west, from Bulahdelah Mountain directly east of the town down to the Myall River to the west. Land to the west of the Myall River is classified as prime agricultural land and some of it forms a floodplain for the river. Bulahdelah is the only location covered by this Strategy that has a hospital.

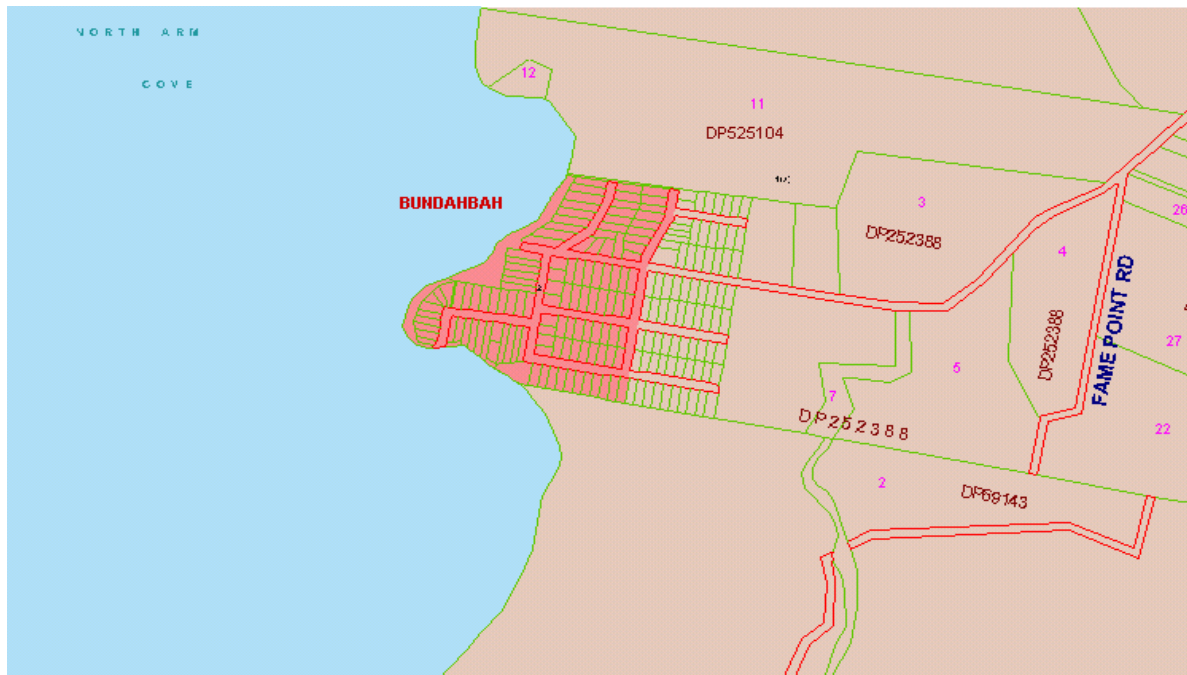
### *Constraints to Future Development*

- Flooding
- Prime agricultural land (to the north, south and west of town)
- Poultry farm locations
- Bulahdelah Mountain
- Bulahdelah bypass location
- Steep land
- Vegetation

## LOCALITY MAP - BUNDABAH



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.4 BUNDABAH

### *Demographics*

Population (2001 Census)	364
% Annual Pop. Increase 1996-2001	1.35%
Number of dwellings (2001)	62
Number of vacant lots (2001)	55
Total Lot Capacity	117

NB. Population includes the surrounding localities of Port Stephens, Tahlee and Carrington.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

### *Physical Characteristics*

Located at the southern end of Bundabah Road, which comes off of Pindimar Road, which comes off Myall Road (Tea Gardens), which intersects with the Pacific Highway 14km north of Karuah. Bundabah Road is unsealed. The village zone itself is relatively flat and although it is adjacent to the water body of Port Stephens, it is elevated above the water level. There is a gradual slope from east to west. Land surrounding the village zone is vegetated.

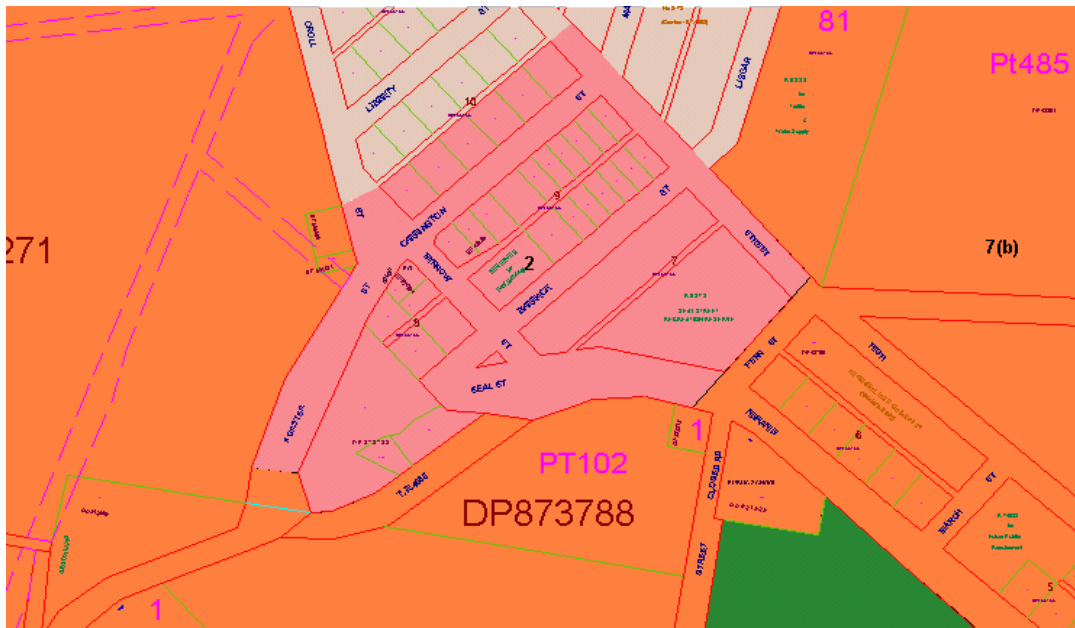
### *Constraints to Future Development*

- Vegetation
- Lack of reticulated sewerage & water
- Unsealed access
- Lack of physical and social infrastructure
- Slope
- Proximity to Port Stephens water-body

## LOCALITY MAP - BUNGWAHL



## SETTLEMENT MAP



### Settlement Map Legend

	National Park
	7(b)
	2
	1(a)

## 5.5 BUNGWAHL

### *Demographics*

Population (2001 Census)	438
% Annual Pop. Increase 1996-2001	1.21%
Number of dwellings (2001)	31
Number of vacant lots (2001)	7
Total Lot Capacity	38

NB. The Collector District of Bungwahl includes land outside the village zone.

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	General Store	School	Primary
Post Office	Yes	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

### *Physical Characteristics*

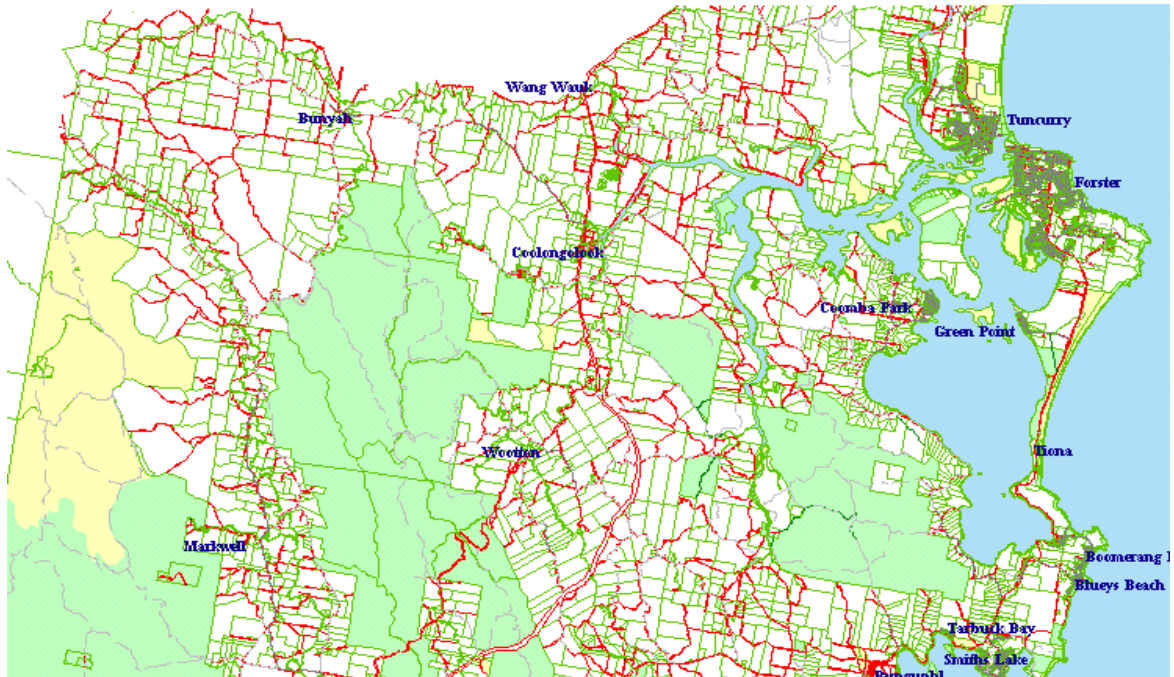
Located on the Lakes Way and Seal Rocks Road, 27km east of the intersection of the Lakes Way and Pacific Highway (near Bulahdelah) and 32km south of the bridge separating Forster and Tuncurry. Bungwahl is actually a collection of small village zones located at the north eastern end of the Myall Lakes. The land is very steep in places and also heavily vegetated.

### *Constraints to Future Development*

- Vegetation
- Lack of reticulated sewerage & water
- Water quality – The Myall Lakes system has been experiencing algal blooms recently.
- Slope
- Bushfire hazard
- Lack of physical and social infrastructure



## LOCALITY MAP – BUNYAH



## SETTLEMENT MAP



### Settlement Map Legend

	1(a) & 2
	2
	1(a)

## 5.6 BUNYAH

### *Demographics*

Population (2001 Census)	380
% Annual Pop. Increase 1996-2001	0.38%
Number of dwellings (2001)	6
Number of vacant lots (2001)	3
Total Lot Capacity	9

NB. Population also includes Coolongolook and Wootton.

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

### *Physical Characteristics*

Located north west of Coolongolook, at the western end of Willina Road, where it turns into Bunyah Road. The village zone of Bunyah is surrounded by cleared prime agricultural land.

### *Constraints to Future Development*

- Prime agricultural land
- Lack of reticulated sewerage & water
- Unsealed access road
- Lack of physical and social infrastructure



### LOCALITY MAP - CARRINGTON



### SETTLEMENT MAP



#### Settlement Map Legend

	2
	1(a)

## 5.7 CARRINGTON

### *Demographics*

Population (2001 Census)	364
% Annual Pop. Increase 1996-2001	1.35%
Number of dwellings (2001)	23
Number of vacant lots (2001)	17
Total Lot Capacity	40

NB. Population includes Bundabah, Tahlee and Port Stephens.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

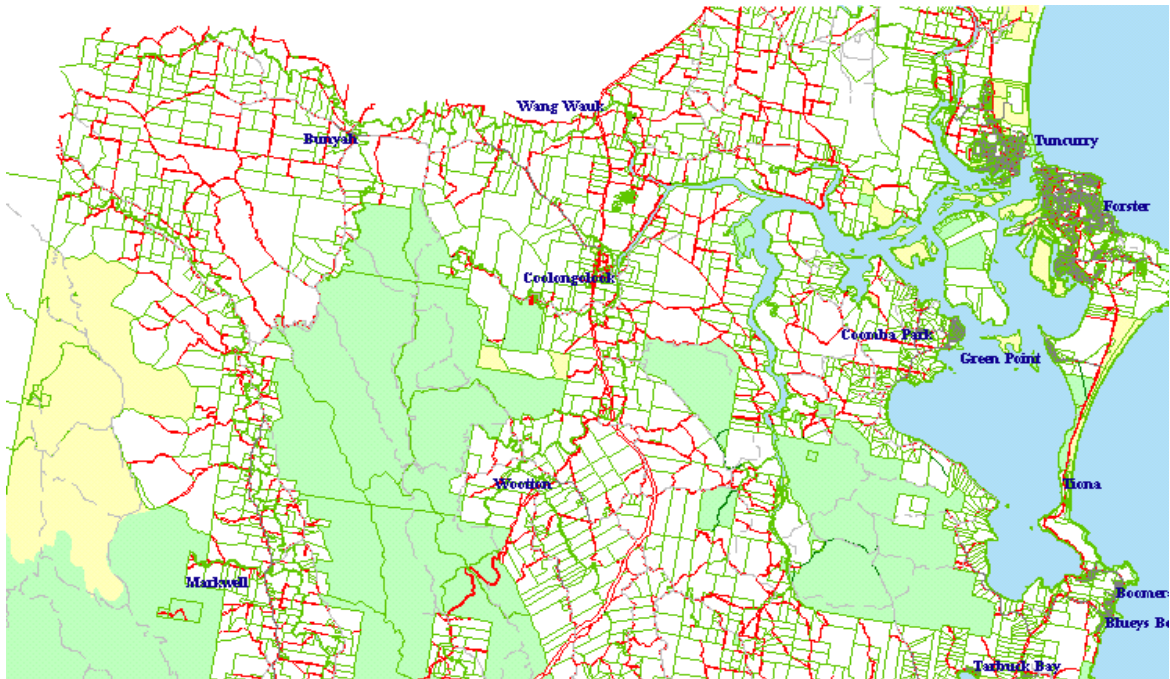
### *Physical Characteristics*

Located on Carrington Road, which intersect with the Pacific Highway approximately 7km north of Karuah. The village zone is low lying and flood prone, adjacent to the Port Stephens water body.

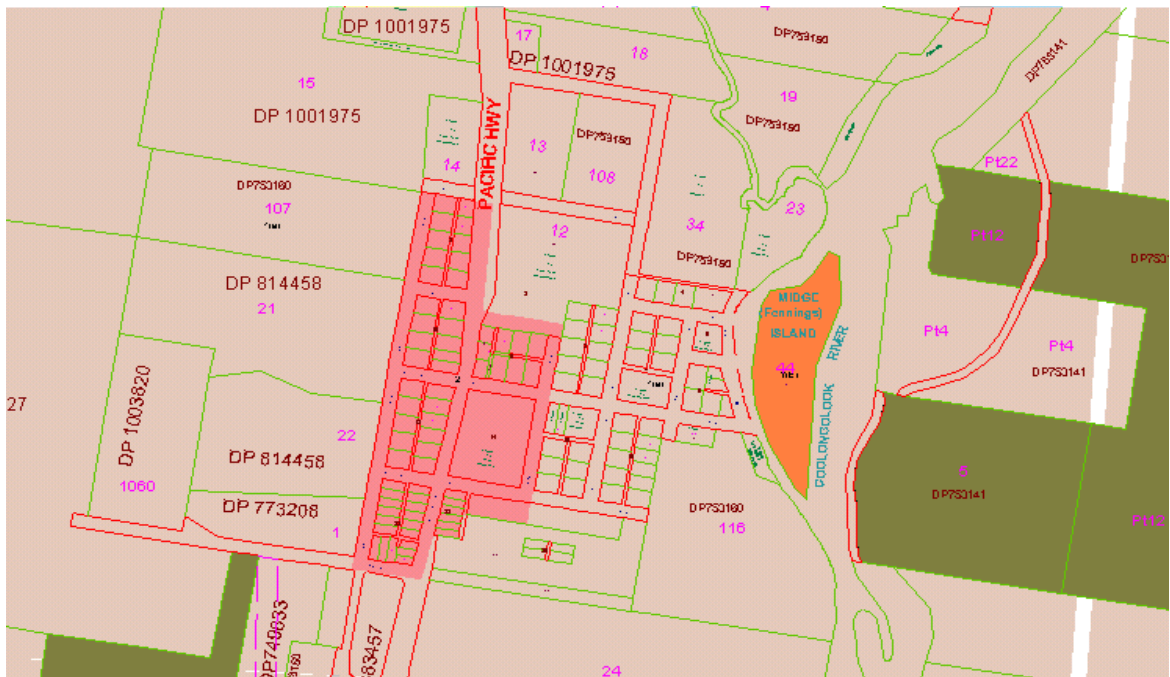
### *Constraints to Future Development*

- Flooding
- Vegetation and fauna
- Water quality
- Lack of reticulated sewerage & water
- Slope (lack of)
- Access via unsealed road
- Proximity to Port Stephens water-body

## LOCALITY MAP - COOLONGLOOK



## SETTLEMENT MAP



### Settlement Map Legend

	1(a)
	7(b)
	2
	1(a)

## 5.8 COOLONGOLOOK

### *Demographics*

Population (2001 Census)	380
% Annual Pop. Increase 1996-2001	0.38%
Number of dwellings (2001)	41
Number of vacant lots (2001)	23
Total Lot Capacity	64

NB. Population includes Wootton and Bunyah

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	General Store	School	Primary
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

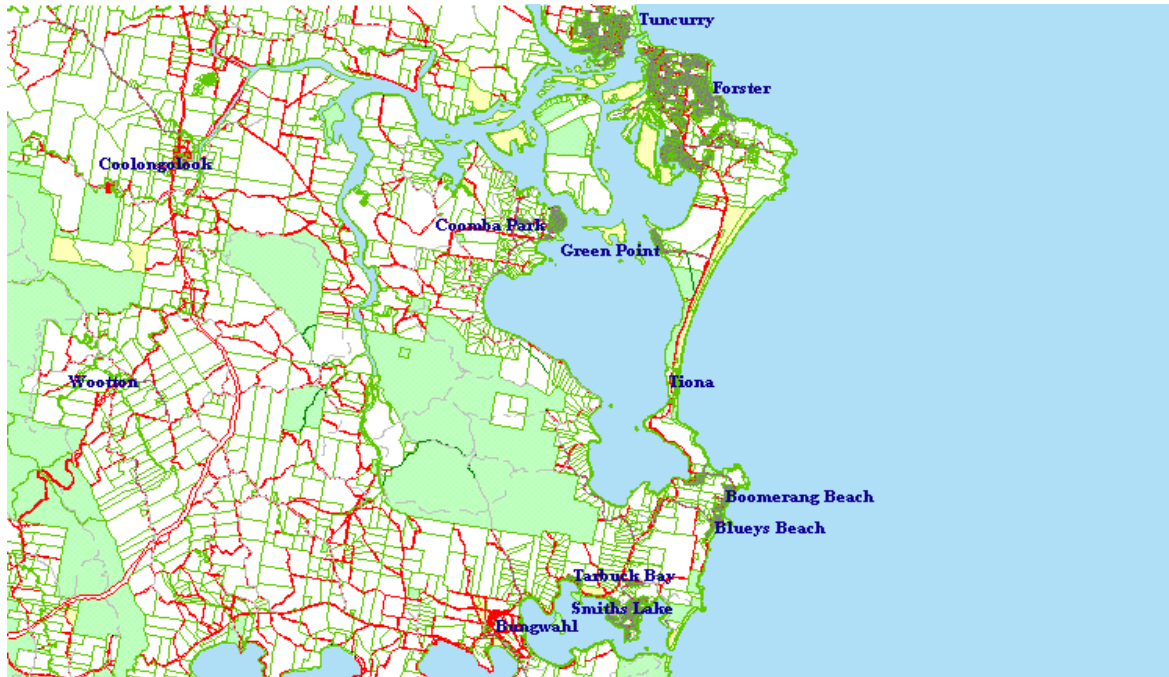
### *Physical Characteristics*

Located on the Pacific Highway, 17km south of Nabitac and 32km north of Bulahdelah. The Coolongolook River is immediately east of the village, with some of the surrounding land likely to be affected by flooding. The Coolongolook River is part of the Wallis Lake catchment and joins the sea at Forster/Tuncurry. The land rises significantly from east to west, with most of the village considered to be flood free. Most of the land is cleared, though there are significant stands of vegetation to the west and north. The Pacific Highway upgrade dissects the village.

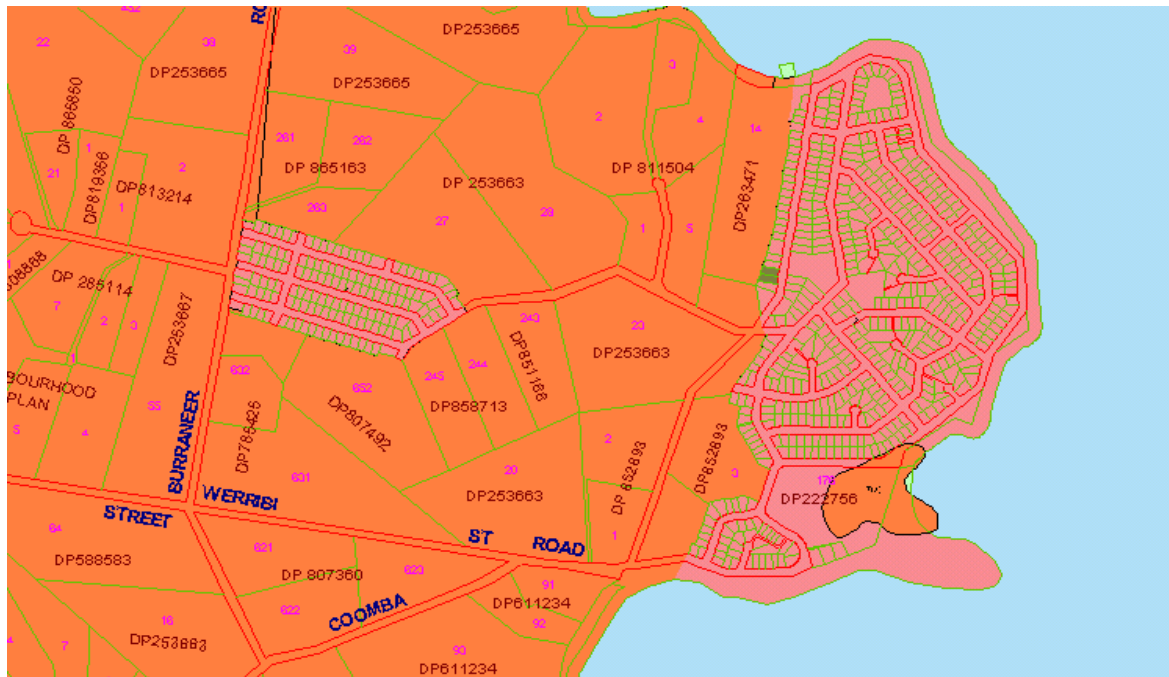
### *Constraints to Future Development*

- Lack of reticulated sewerage & water
- Flooding
- Highway Upgrade (through centre of village)
- Prime agricultural land (surrounding the village)
- Vegetation
- Lack of physical and social infrastructure
- Water quality – The Wallis Lake catchment is one of the States' most important.

## LOCALITY MAP - COOMBA PARK



## SETTLEMENT MAP



### Settlement Map Legend

	7(c)
	2

## 5.9 COOMBA PARK

### *Demographics*

Population (2001 Census)	329
% Annual Pop. Increase 1996-2001	4.46%
Number of dwellings (1996)	230
Percentage Unoccupied (1996)	49.13%
Number of vacant lots (2001)	422
Total Lot Capacity	669

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	General Store	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

### *Physical Characteristics*

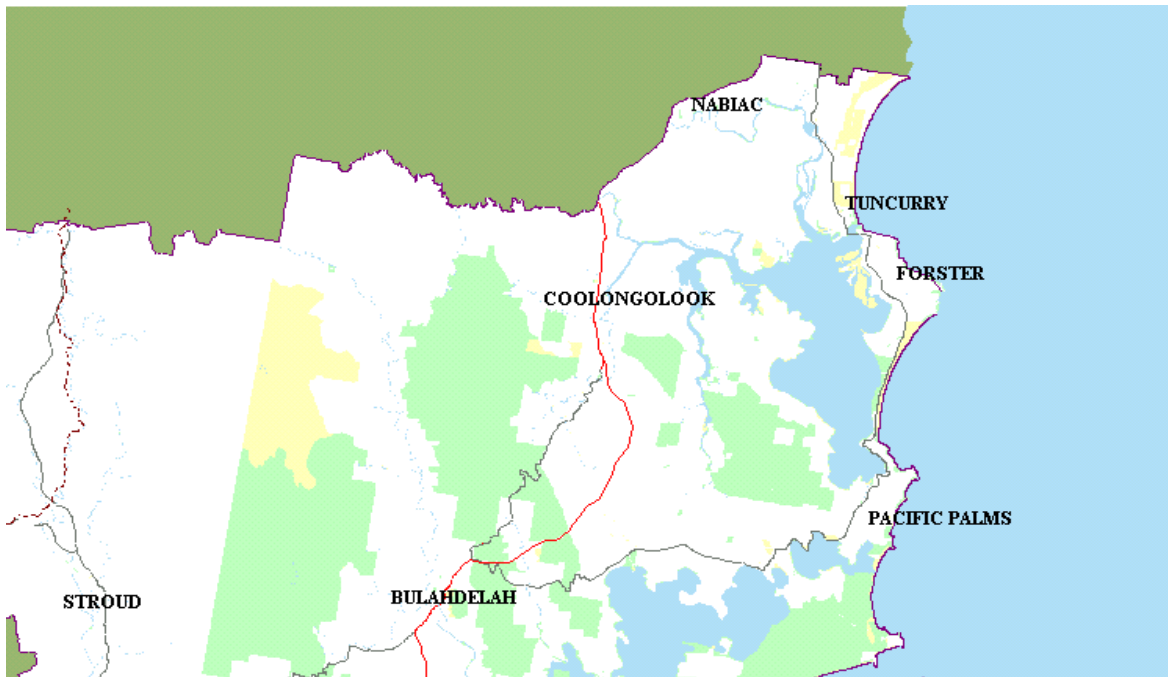
Located at the western end of Coomba Road, on the western shores of Wallis Lake. Coomba Road begins approximately 22km south of the bridge linking Forster and Tuncurry. The land rises significantly to the west, away from the shores of Wallis Lake. East and West Coomba Park are separated by a plateau of cleared grazing land.

### *Constraints to Future Development*

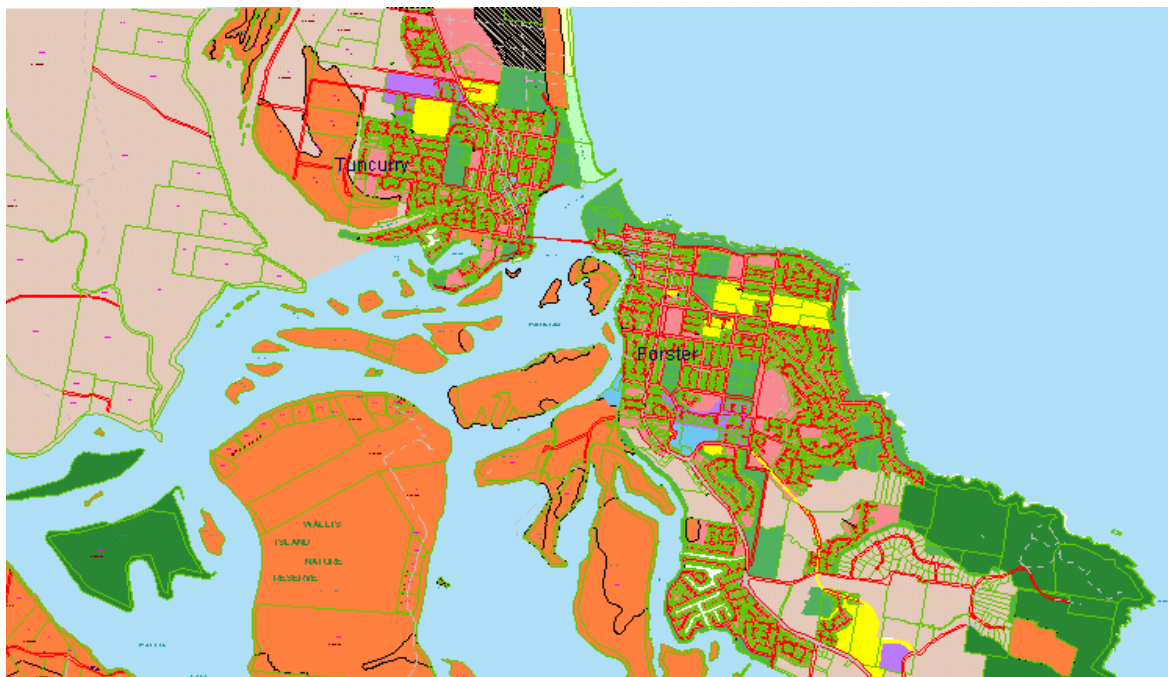
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure
- Distance village is located down a 'no through road'
- Number of unutilised building lots



## LOCALITY MAP – FORSTER/TUNCURRY



## SETTLEMENT MAP



NB. There are too many zones in the Forster/Tuncurry Settlement Map to be shown in “grey-scale”.

## 5.10 FORSTER/TUNCURRY

### *Demographics*

Population (2001 Census)	17,996
% Annual Pop. Increase 1996-2001	1.94%
Number of dwellings (1996)	9,060
Percentage Unoccupied (1996)	21.46%
Number of vacant lots (1/7/01)	494
Total Lot Capacity (1/7/2001)	9,211

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	Large Centre	School	Primary & Secondary
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	Yes	Sporting Complex	Yes
Police Station	Yes	Showground	Yes
Community Hall	Yes	Water & Sewer	Yes

### *Physical Characteristics*

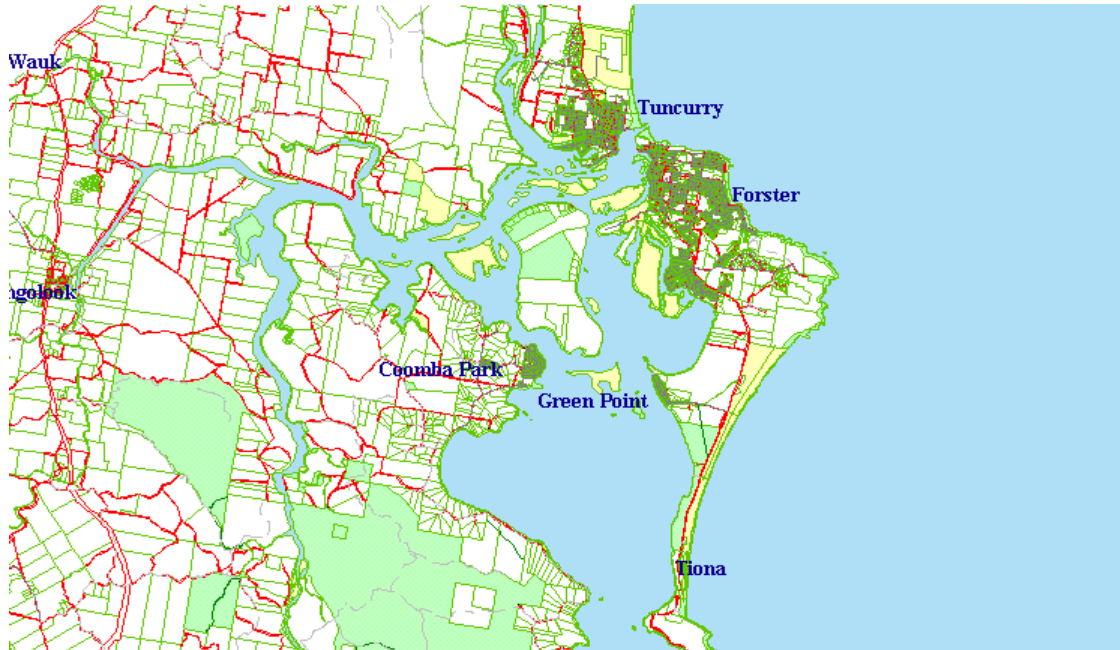
Located at the mouth of the entrance of Wallis Lake and the sea, on the Lakes Way. Forster and Tuncurry and on opposite sides of the entrance (Forster on the south and Tuncurry on the northern side) separated by a two lane bridge. Forster is bounded by the sea to the east, Wallis Lake to the west, the entrance to the north and by Booti Booti National Park to the south. Tuncurry is bounded by the entrance to the south, the sea to the east, Wallis Lake and the Wallamba River to the west and crown land to the north. Tuncurry is relatively flat and has sandy soils, compared to Forster which is undulating and has a variety of soil types.

### *Constraints to Future Development*

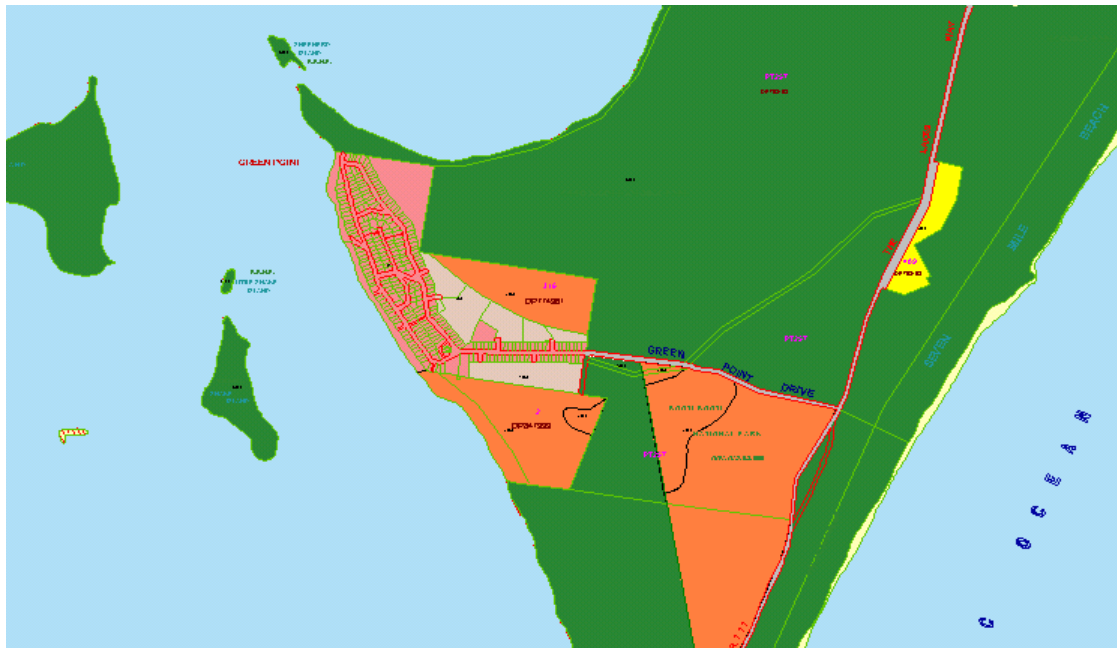
- Flooding
- Presence of threatened fauna species and vegetation communities
- “Ceiling” on number of future sewer connections (Tuncurry)
- National Park to south of Forster
- Landfill to north of Tuncurry



## LOCALITY MAP – GREEN POINT



## SETTLEMENT MAP



### Settlement Map Legend

	National Park
	7(b)
	2
	1(c)

## 5.11 GREEN POINT

### *Demographics*

Population (2001 Census)	526
% Annual Pop. Increase 1991-1996	0.15%
Number of dwellings (1996)	217
Percentage Unoccupied (1996)	16.13%
Number of vacant lots (2001)	73 (71 lots not flood affected)
Total Lot Capacity	312

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	Small Centre	School	No
Post Office	Yes	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	Both Reticulated

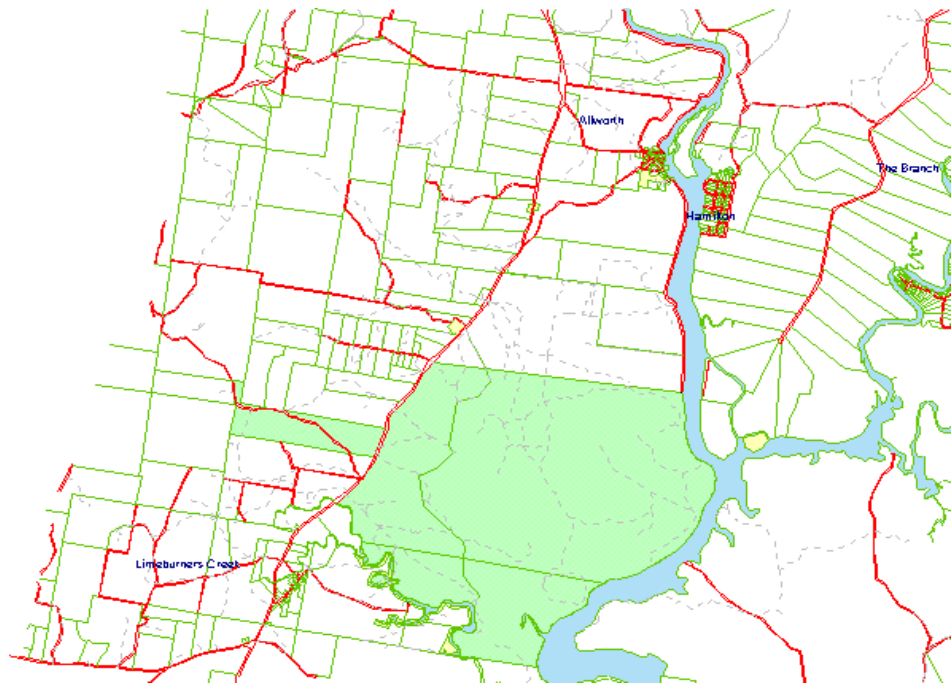
### *Physical Characteristics*

Located along the western side of the Lakes Way, overlooking Wallis Lake, approximately 5km south of the southern outskirts of Forster. The north eastern side of the village is flood affected by Wallis Lake. The village is adjacent to Booti Booti National Park and parts of the village are vegetated. The land is flat to the east, rising significantly to the west, before dropping away sharply to the eastern shores of Wallis Lake. Some of the lots within the village are on very steep

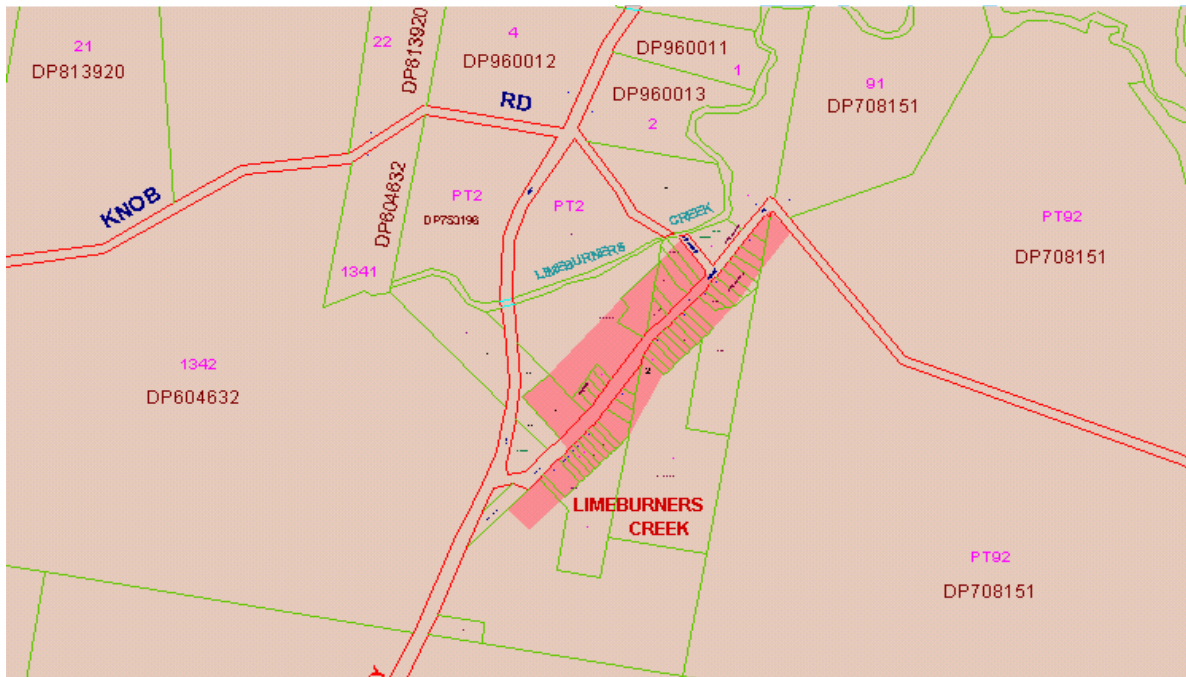
### *Constraints to Future Development*

- Flooding
- Vegetation
- National Park
- Slope
- Water quality
- Lack of physical and social infrastructure

## LOCALITY MAP – LIMEBURNERS CREEK



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.12 LIMEBURNERS CREEK

### *Demographics*

Population (2001 Census)	459
% Annual Pop. Increase 1996-2001	0.54%
Number of dwellings (2001)	41
Number of vacant lots (2001)	10
Total Lot Capacity	51

NB. Population includes the village of Allworth and surrounding land.

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

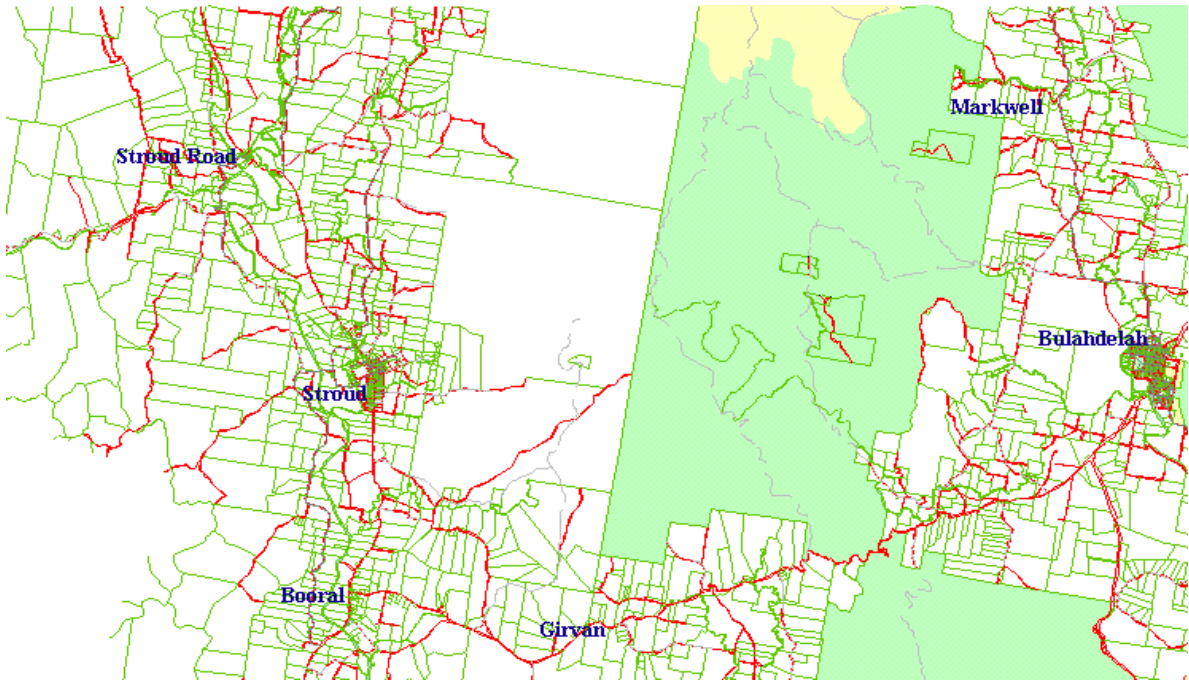
### *Physical Characteristics*

Located just off the Bucketts Way (to the east), approximately 6km north of the intersection of the Bucketts Way and Pacific Highway. The village is immediately south of the Limeburners Creek waterbody. There is some cleared agricultural land surrounding the village, whilst there is significant stands of vegetation to the north west, south and east. The topography is very flat.

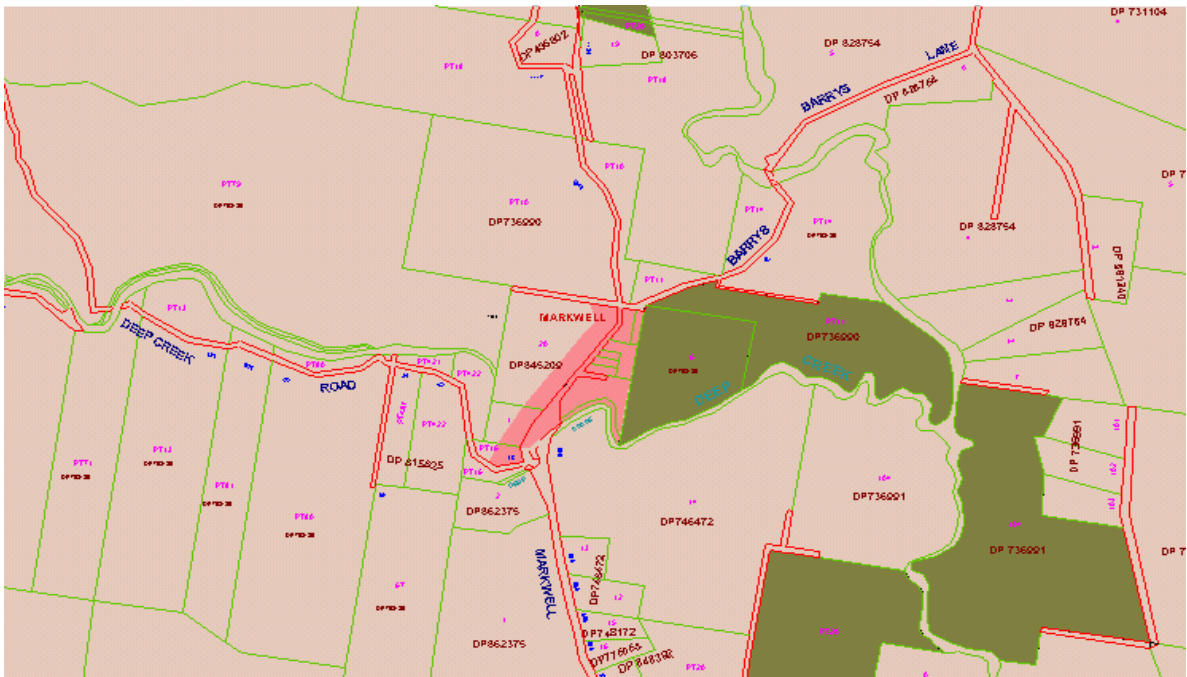
### *Constraints to Future Development*

- Vegetation
- Flooding
- Prime agricultural land
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

### LOCALITY MAP - MARKWELL



### SETTLEMENT MAP



### Settlement Map Legend

	1(a)
	2
	1(a)

## 5.13 MARKWELL

### *Demographics*

Population (2001 Census)	228
% Annual Pop. Increase 1996-2001	-2.79
Number of dwellings (2001)	7
Number of vacant lots (2001)	6
Total Lot Capacity	13

NB. Population includes Upper Myall and Warranulla

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

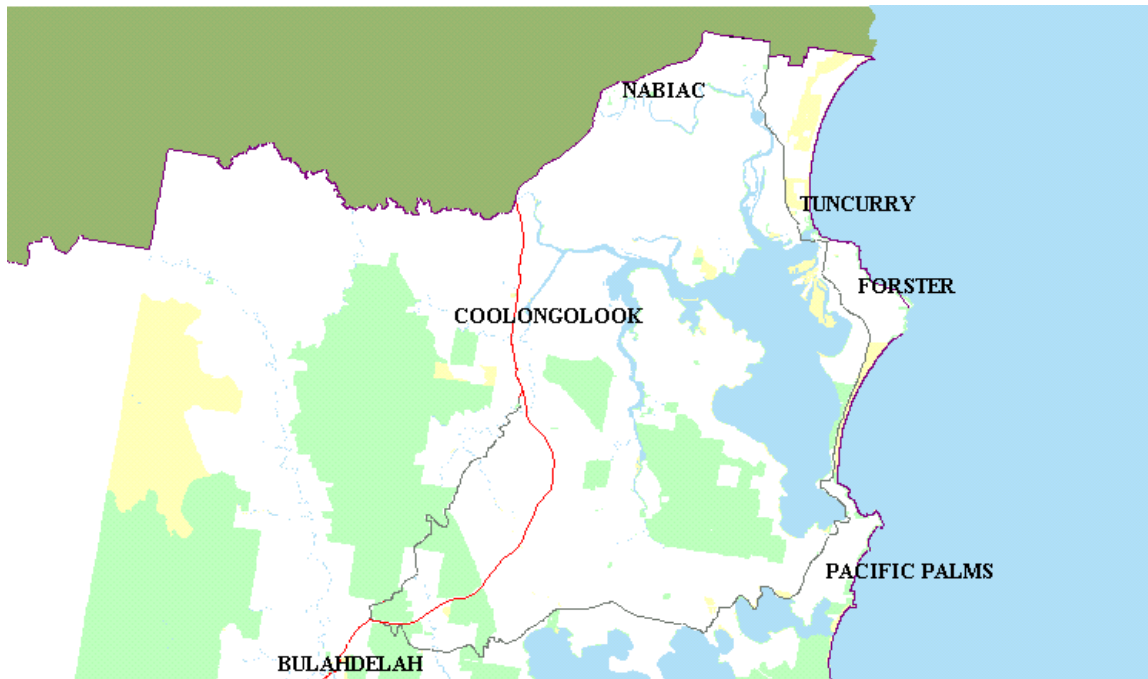
### *Physical Characteristics*

Located along Markwell Road, which is a mostly unsealed road extending north from Bulahdelah. The village zone is located in an area of prime agricultural land, although land to the east and west is heavily vegetated (both being State Forest). The cleared agricultural land extends in a corridor north of Bulahdelah. There is a chicken farm located to the north of the village zone.

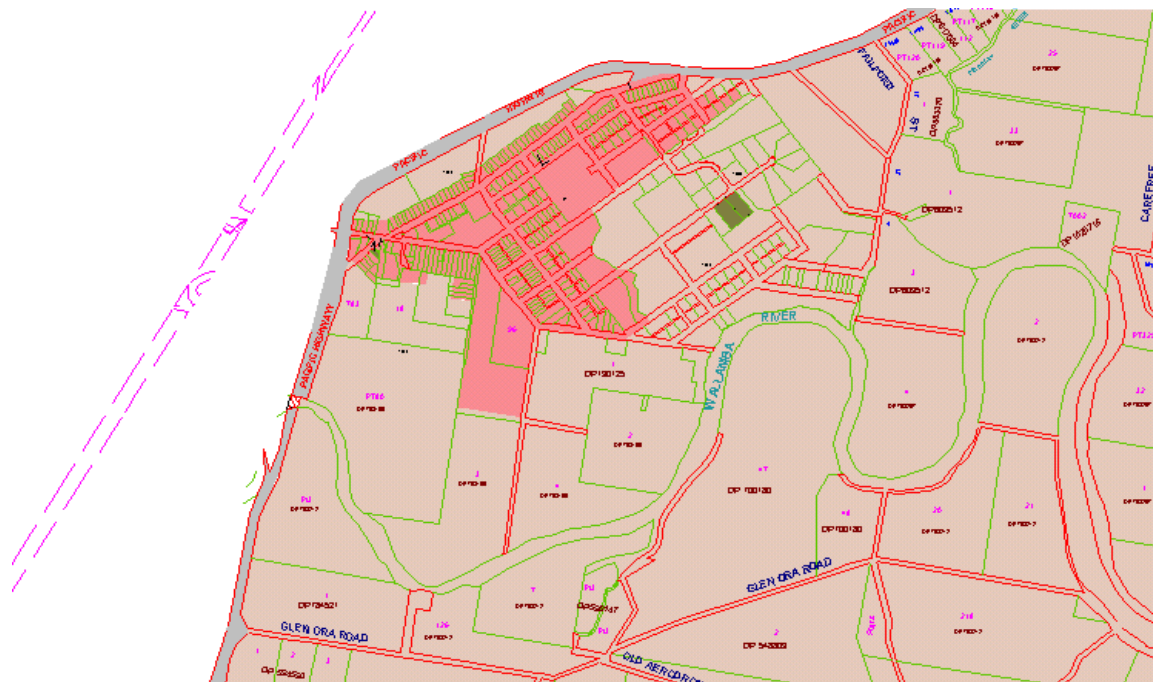
### *Constraints to Future Development*

- Prime agricultural land
- Vegetation
- Poultry farm location
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

## LOCALITY MAP - NABIAC



## SETTLEMENT MAP



### Settlement Map Legend

	1(d)
	2
	1(a) & 1(d)

## 5.14 NABIAC

### *Demographics*

Population (2001 Census)	568
% Annual Pop. Increase 1996-2001	1.19%
Number of dwellings (1996)	223
Percentage Unoccupied (1996)	12.56%
Number of vacant lots (2001)	63 (60 lots not flood affected)
Total Lot Capacity	280

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	Medium Centre	School	Primary
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	Yes	Sporting Complex	Yes
Police Station	Yes	Showground	Yes
Community Hall	Yes	Water & Sewer	Both Reticulated

### *Physical Characteristics*

Located on the Pacific Highway, 28km south of Taree and 17km north of Coolongolook. It adjoins the Local Government Area of Greater Taree City Council. There is a rural residential zone within the village. The Wallamba River is immediately south of the village, with some of the land affected by flooding. The Wallamba River is part of the Wallis Lake catchment and enters the sea at Forster/Tuncurry. Much of the land to the south is generally flat, rising gradually to the north. Much of the land within and immediately adjoining the village (to the north and east) is heavily vegetated. The Pacific Highway upgrade (Nabiac bypass) will be immediately to the west of the village.

### *Constraints to Future Development*

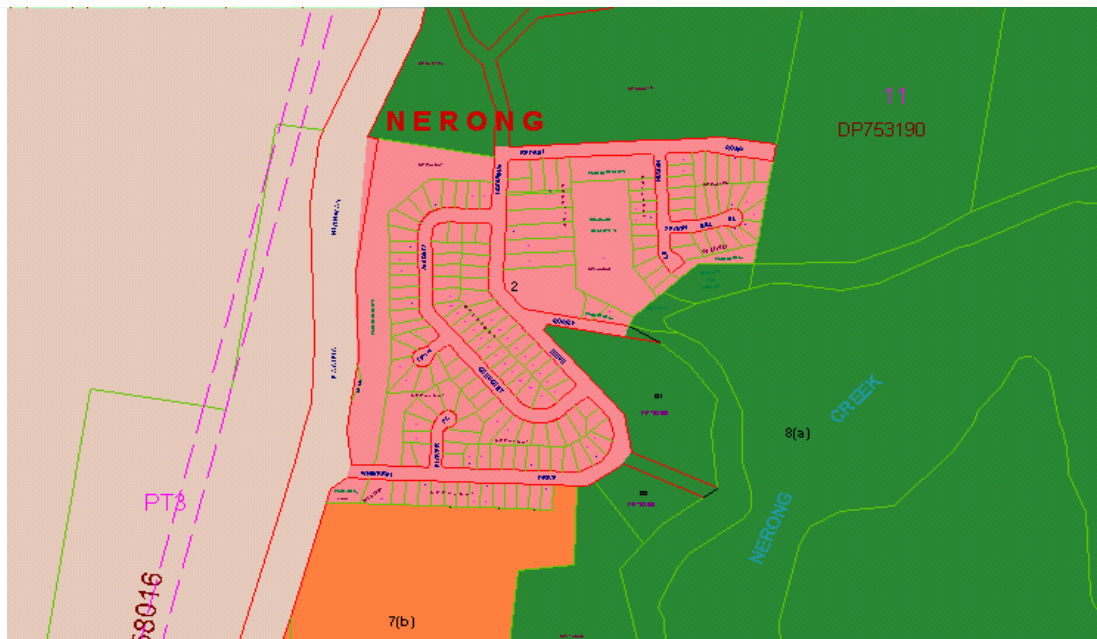
- Flooding
- Vegetation
- Prime agricultural land



## LOCALITY MAP - NERONG



## SETTLEMENT MAP



### Settlement Map Legend

	National Park
	7(b)
	2
	1(a)

## 5.15 NERONG

### *Demographics*

Population (1996 Census)	103
% Annual Pop. Increase 1996-2001	-1.27%
Number of dwellings (2001)	67
Number of vacant lots (2001)	93 (72 lots not flood affected)
Total Lot Capacity	160

NB. The population also includes the locality of Lower Myall.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

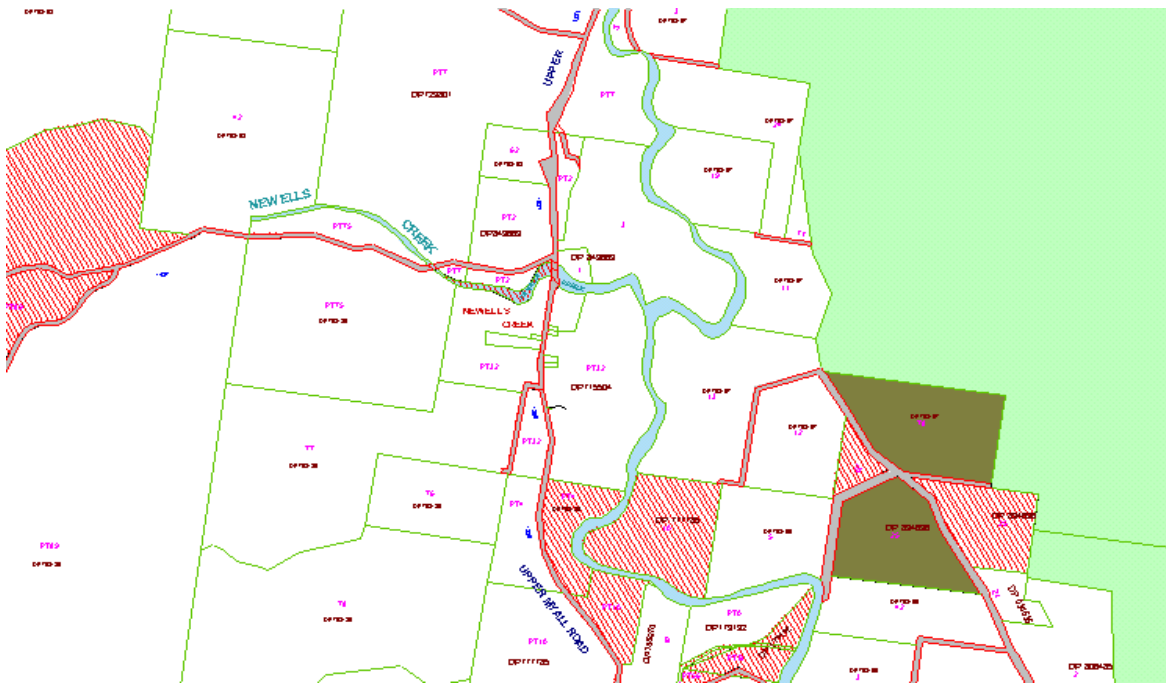
### *Physical Characteristics*

Located just to the east of the Pacific Highway, 13km south of Bulahdelah, 31km north of Karuah and 17km north of the Tea Gardens turn-off. Nerong is located on the western extreme of the Bombah Broadwater, part of the Myall Lakes system. Nerong is surrounded by State Forest and National Park.

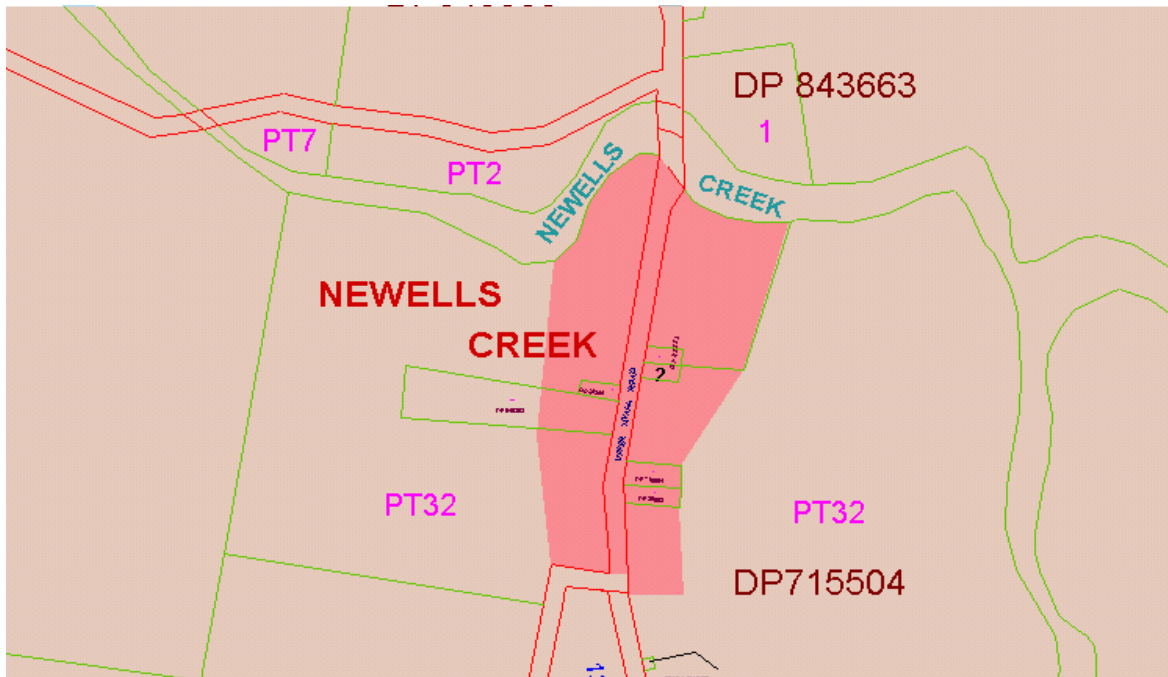
### *Constraints to Future Development*

- Flooding
- State Forest and National Park
- Vegetation
- Water Quality (Myall Lakes)
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

## LOCALITY MAP – NEWELLS CREEK



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.16 NEWELLS CREEK

### *Demographics*

Population (2001 Census)	228
% Annual Pop. Increase 1996-2001	-2.79%
Number of dwellings (2001)	10
Number of vacant lots (2001)	2
Total Lot Capacity	12

NB. Population also includes Markwell, Upper Myall and Warranulla

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

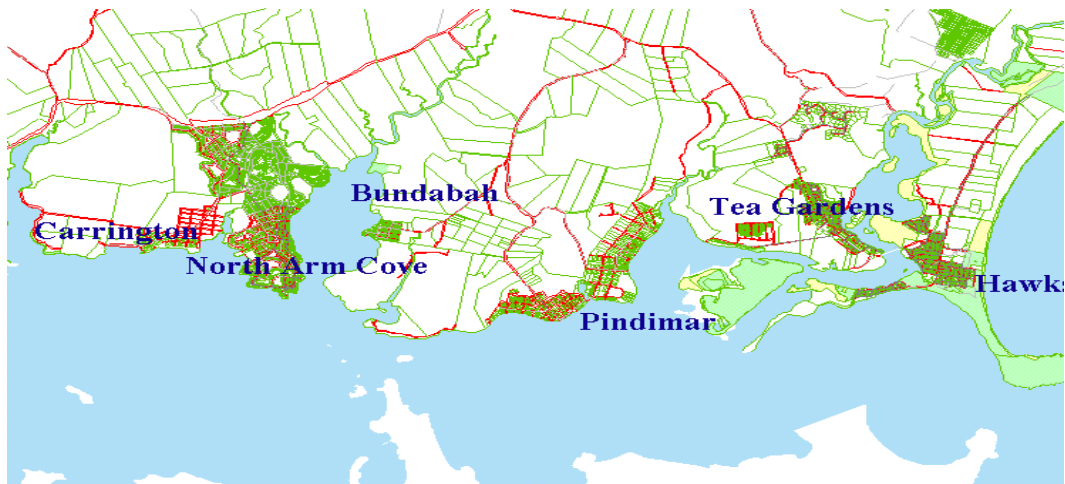
### **Physical Characteristics**

Located north of Bulahdelah and Markwell, on Upper Myall Road. The village zone is named after Newells Creek, which is a tributary of the Myall River. It is located within the cleared land corridor extending north of Bulahdelah between state forests. There is a very large chicken farm to the south west, as well as another further to the south of the village zone.

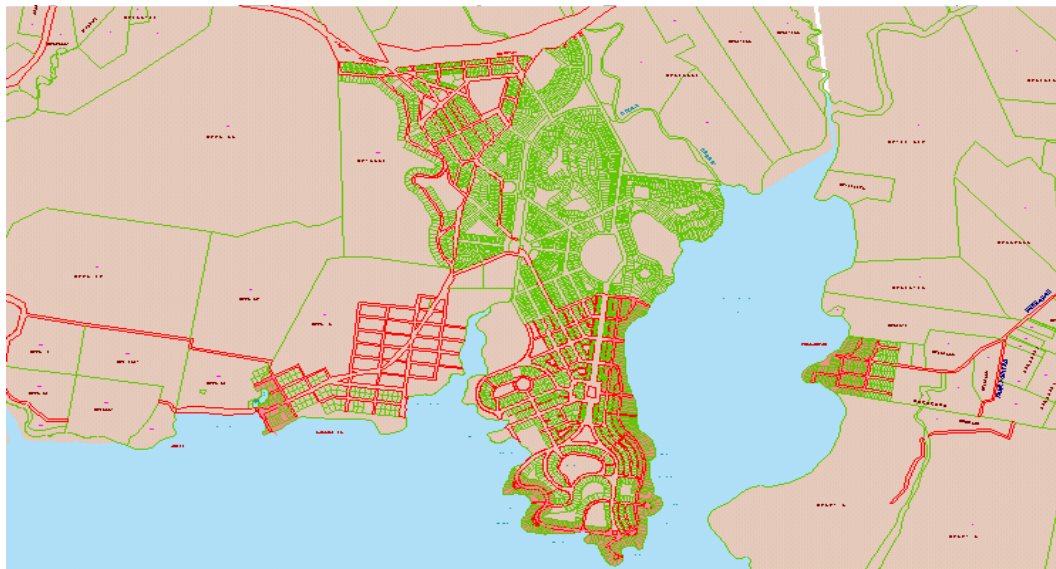
### *Constraints to Future Development*

- Prime agricultural land
- Location of poultry farms
- State Forests (vegetation)
- Lack of reticulated sewerage & water
- Unsealed access road
- Possibility of flooding
- Lack of physical and social infrastructure

## LOCALITY MAP – NORTH ARM COVE



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

It should be noted that although the settlement pattern of North Arm Cove appears large, houses are only permitted along the fringe of the water in areas zoned 2 --Village. There are a large number of lots adjoining the village area that are not zoned for housing.

North Arm Cove was one of a number of areas originally designed to house the national capital. The area is not suited to development on this scale due to the lack of social and physical infrastructure and the area's high environmental value.

## 5.17 NORTH ARM COVE

### *Demographics*

Population (2001 Census)	292
% Annual Pop. Increase 1991-1996	1.31%
Number of dwellings (2001)	291
Number of vacant lots (2001)	116
Total Lot Capacity	407

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

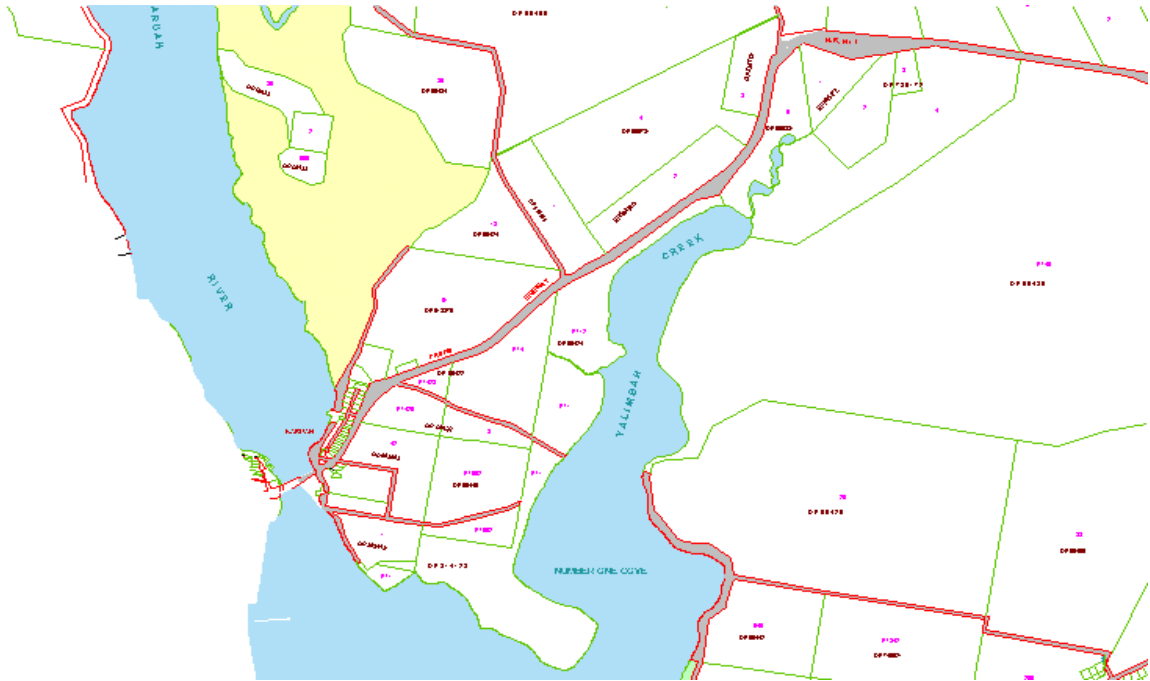
### *Physical Characteristics*

Located south east of the Pacific Highway. The turn-off for North Arm Cove is approximately 7km north of Karuah along the Pacific Highway, approximately halfway between Karuah and the turn-off for Tea Gardens. The area is ecologically diverse and significant in a local and regional context. The cove is used by dolphins for breeding (anecdotal evidence), whilst the areas surrounding the village zone are rich in both flora and fauna. The area has known habitat for a number of threatened species and is an important wildlife corridor linking surrounding vegetated areas. The land in the village zone slopes sharply down towards Port Stephens, with steep banks at the waterline.

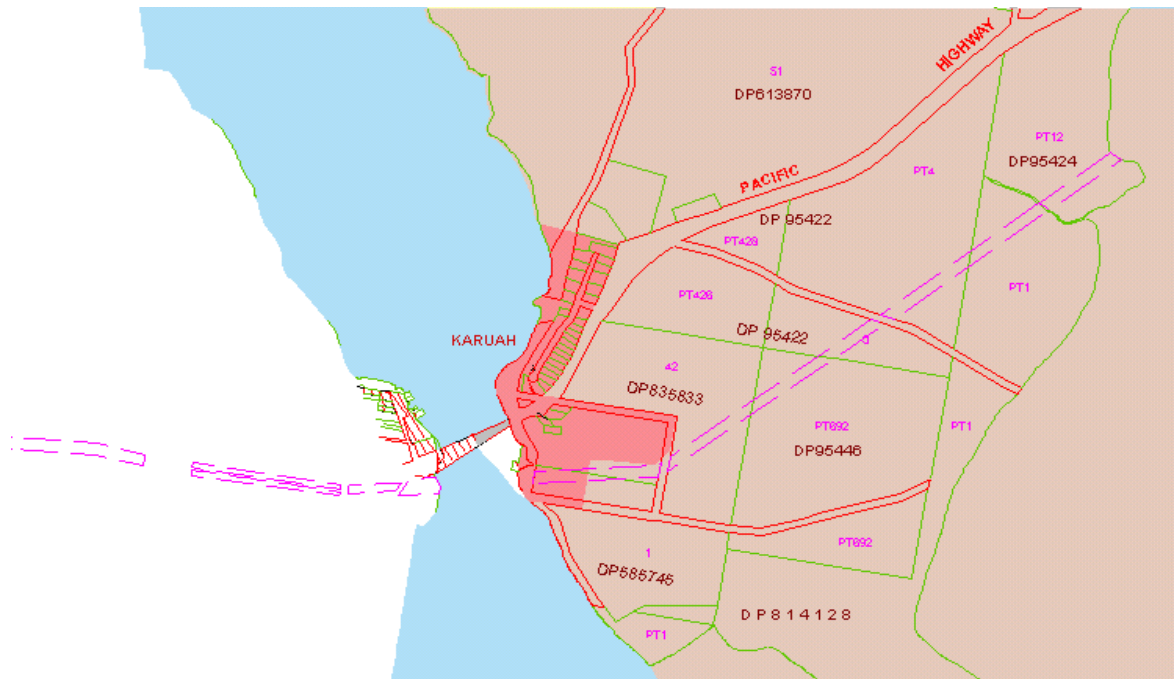
### *Constraints to Future Development*

- Vegetation
- Fauna (especially threatened species)
- Wildlife corridor
- Lack of reticulated sewerage, water and associated infrastructure (formed roads etc)
- Slope
- Fire Hazard
- Lack of other physical and social infrastructure

## LOCALITY MAP – NORTH KARUAH



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.18 NORTH KARUAH

### *Demographics*

The table below relates to the village zone of North Karuah, not the town of Karuah.

Population (2001 Census)	250
% Annual Pop. Increase 1996-2001	2.42%
Number of dwellings (2001)	22
Number of vacant lots (2001)	14
Total Lot Capacity	36

NB. Population includes Booral and The Branch

### *Facilities*

The table below relates to the town of Karuah in Port Stephens LGA

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	Medium Centre	School	Primary
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	No	Sporting Complex	Yes
Police Station	Yes	Showground	No
Community Hall	Yes	Water & Sewer	Both Reticulated

### *Physical Characteristics*

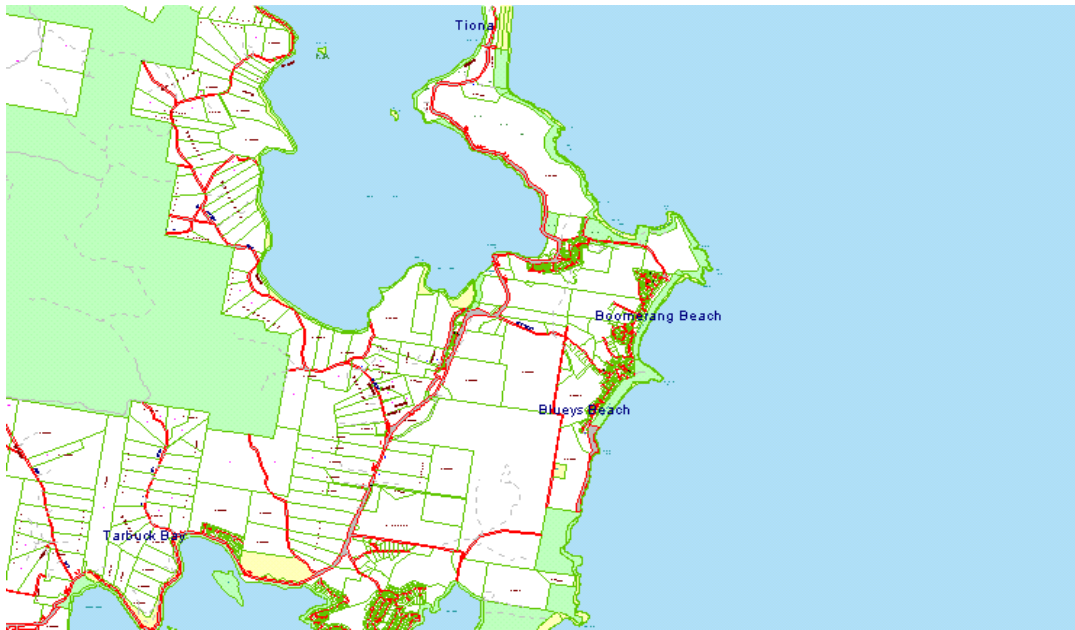
The town of Karuah is located on the Pacific Highway, 44km south of Bulahdelah. The village zone of North Karuah is located on the eastern banks of the Karuah River, over the river from the town of Karuah. The village zone extends both north and south of the Pacific Highway, although houses are concentrated to the north. There is approximately 5ha of land within the village zone located on the southern side of the Pacific Highway. This area has not been developed due to a problem with access off the Pacific Highway. Once the Karuah bypass is complete, this area is likely to be developed. The land slopes from east to west, down to the river. The land is mostly cleared, with vegetated areas to the north and east of the village zone. Land north of the village has been identified as prime agricultural land.

### *Constraints to Future Development*

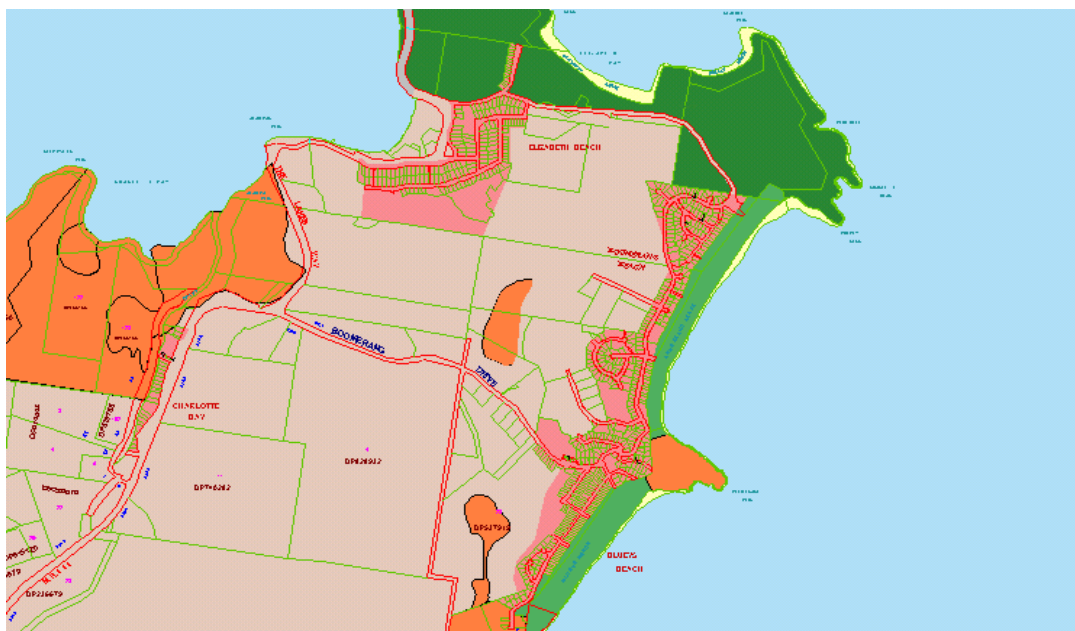
- Flooding
- Prime agricultural land
- Pacific Highway, until the Karuah bypass is completed
- Vegetation
- Fire risk
- Lack of reticulated sewerage at North Karuah (there are plans to connect this area, via the bridge, to Karuah's sewerage system).



## LOCALITY MAP – PACIFIC PALMS



## SETTLEMENT MAP



### Settlement Map Legend

	National Park
	6(a)
	7(c)
	2
	1(c) & 1(d)

## 5.19 PACIFIC PALMS

### *Demographics*

Population (2001 Census)	655
% Annual Pop. Increase 1996-2001	4.17%
Number of dwellings (1996)	639
Percentage Unoccupied (1996)	63.07%
Number of vacant lots (2001)	132
Total Lot Capacity	703

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	Small Centre	School	Primary
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	Both Reticulated

### *Physical Characteristics*

Located to the east of the Lakes Way (except Charlotte Bay), approximately 18km south of the bridge separating Forster and Tuncurry. Blueys, Boomerang and Elizabeth Beaches all adjoin the Tasman Sea. The village zone also abuts the southern end of Wallis Lake, which is poorly flushed. The area is heavily vegetated in places, with a varied topography including relatively flat land and some steep slopes. A variety of wildlife inhabit the vegetated areas, including a number of threatened species.

### *Constraints to Future Development*

- Vegetation
- Water Quality (Wallis Lake)
- Fauna (particularly threatened species)
- Fire risk
- Slope

### LOCALITY MAP - PINDIMAR



### SETTLEMENT MAP



#### Settlement Map Legend

	7(a)
	2
	1(a)

## 5.20 PINDIMAR

### *Demographics*

Population (2001 Census)	346
% Annual Pop. Increase 1996-2001	24.08%
Number of dwellings (2001)	139
Number of vacant lots (2001)	59
Total Lot Capacity	198

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

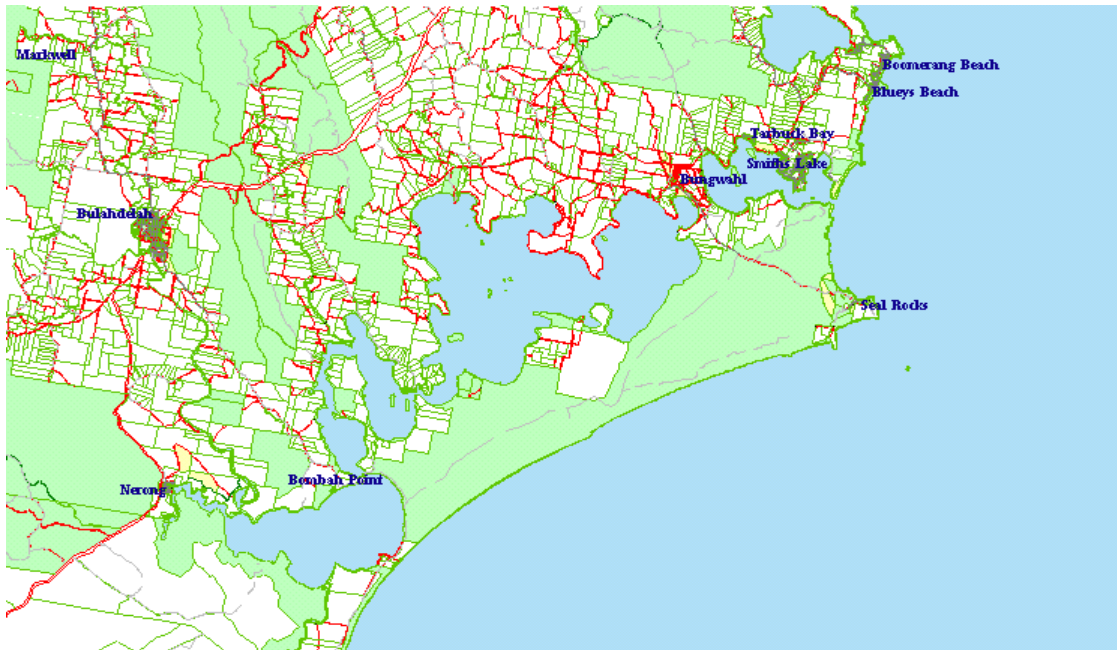
### *Physical Characteristics*

Pindimar is made up of two separate village zones known as Upper and Lower Pindimar. Lower Pindimar is located at the southern end of Pindimar Road, which comes off of Myall Road (Tea Gardens). Myall Road begins east of the Pacific Highway, 14km north of Karuah. Upper Pindimar is located on Warri Street, which comes off the eastern side of Pindimar Road. Both Upper and Lower Pindimar are flood affected and also often inundated during times of extreme tides. Land to the west of both village zones rises sharply away from Port Stephens. The area has important wetlands adjacent to both village zones. Both also have significant stands of adjacent vegetation.

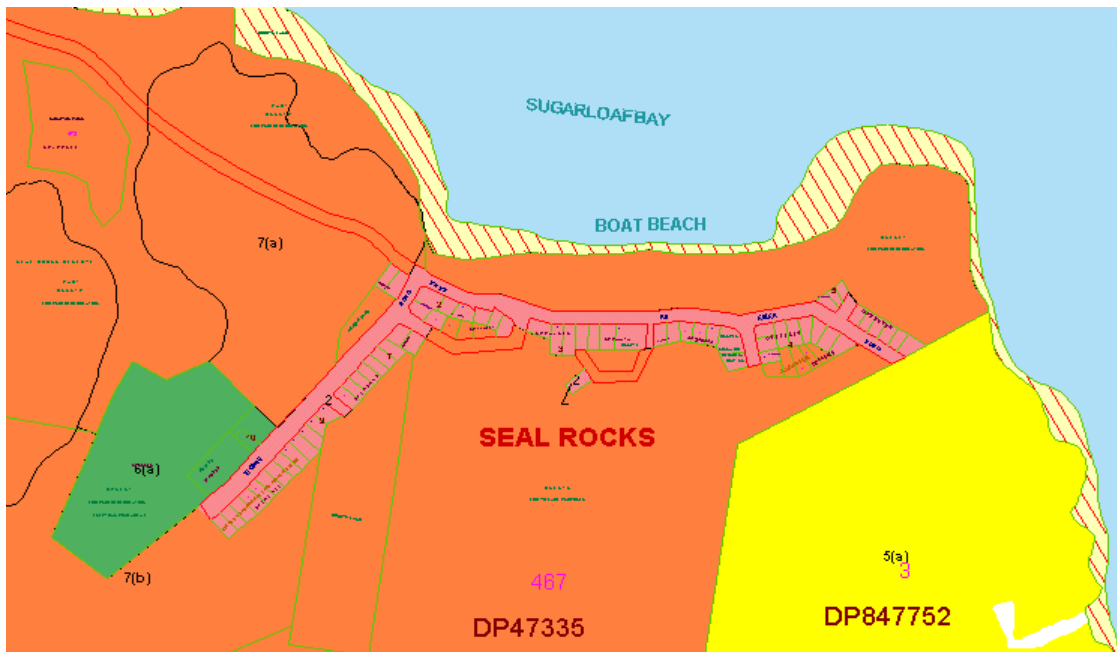
### *Constraints to Future Development*

- Flooding
- SEPP 14 Wetlands
- Vegetation
- Water quality
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

## LOCALITY MAP – SEAL ROCKS



## SETTLEMENT MAP



### Settlement Map Legend

	6(a)
	7(a) & 7(b)
	2
	5(a)

## 5.21 SEAL ROCKS

### *Demographics*

Population (2001 Census)	126
% Annual Pop. Increase 1996-2001	-5.26%
Number of dwellings (2001)	54
Number of vacant lots (2001)	12
Total Lot Capacity	66

NB. Population includes the areas between Seal Rocks and Bulahdelah Mountain.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	General Store	School	No
Post Office	Yes	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	No

### *Physical Characteristics*

Located at the eastern end of Seal Rocks Road, which begins at Bungwahl, on the eastern side of the Lakes Way, 31km north of Bulahdelah (27km north of the intersection of the Lakes Way and Pacific Highway) and 32km south of the bridge separating Forster and Tuncurry. Seal Rocks Road has approximately half of its surface unsealed. The village is surrounded by National Park and SEPP 26 Littoral Rainforest. The village is adjacent to the beach and has Myall Lake some distance to the west. The Seal Rocks Lighthouse (Sugarloaf Point) is a heritage listed building located in the National Park, a short walk from the village.

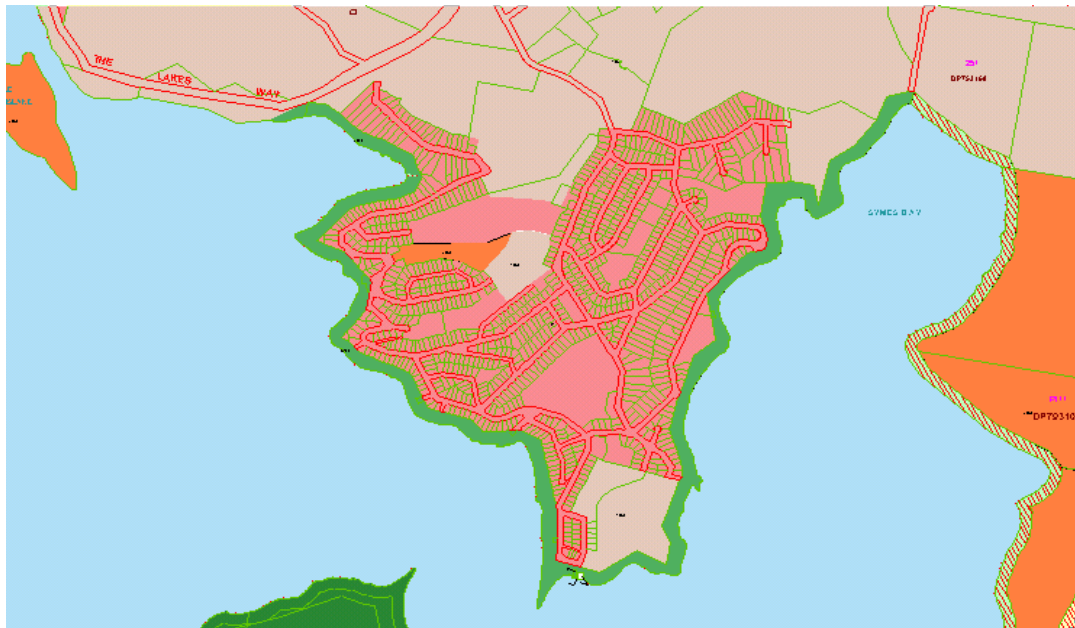
### *Constraints to Future Development*

- National Park
- SEPP 26 Littoral Rainforest
- Vegetation
- Lack of reticulated sewerage & water
- Unsealed access
- Lack of physical and social infrastructure

## LOCALITY MAP – SMITHS LAKE



## SETTLEMENT MAP



### Settlement Map Legend

	National Park
	6(a)
	7(f1)
	7(b)
	2
	1(c)



## 5.22 SMITHS LAKE

### *Demographics*

Population (2001 Census)	907
% Annual Pop. Increase 1996-2001	1.37%
Number of dwellings (1996)	481
Percentage Unoccupied (1996)	36.59%
Number of vacant lots (2001)	365 (362 lots not flood affected)
Total Lot Capacity	923

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	Small Centre	School	No
Post Office	No	Hotel/Club	Yes
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	Both Reticulated

### *Physical Characteristics*

Located on the eastern side of the Lakes Way, 24km south of the bridge separating Forster and Tuncurry. The village of Smiths Lake overlooks the water body of Smiths Lake, as well as the Tasman Sea (from the eastern parts of the village). The village itself is heavily vegetated and has a high fire risk. The land is very steep in places, with only the lower southern fringe affected by the flooding of Smiths Lake (although it should be pointed out that the lake is mechanically opened to the sea after prolonged heavy rain to prevent flooding).

### *Constraints to Future Development*

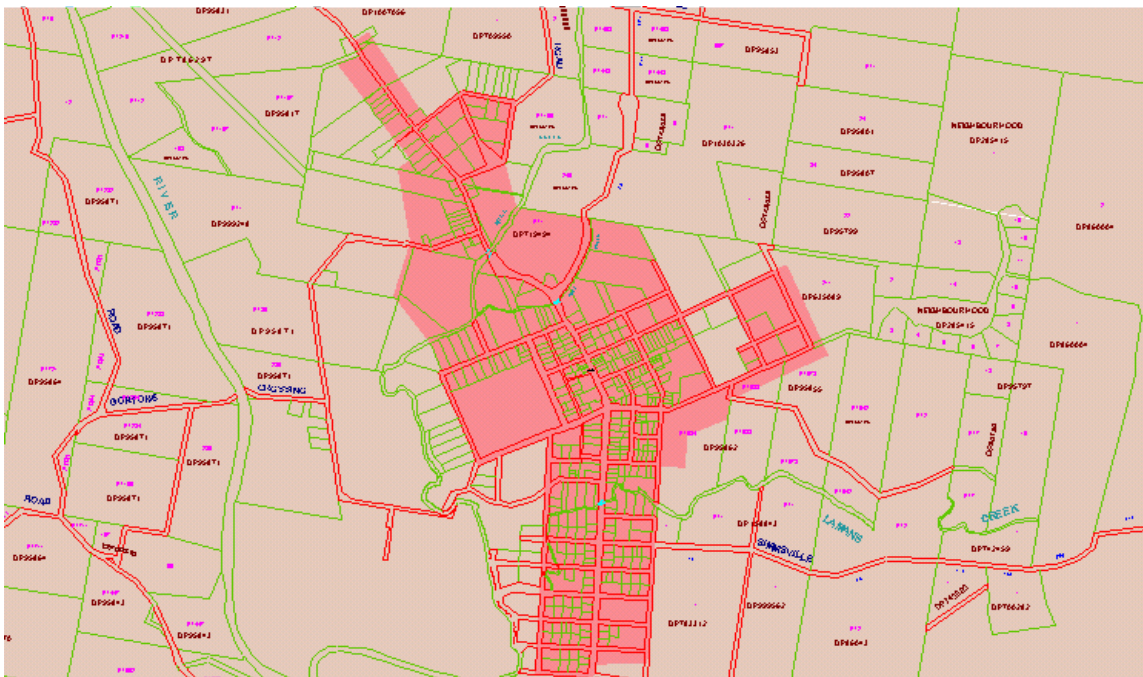
- Vegetation
- Fire Risk
- Slope
- Water quality (Smiths Lake)
- Erosion potential



## LOCALITY MAP - STROUD



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.23 STROUD

### *Demographics*

Population (2001 Census)	672
% Annual Pop. Increase 1996-2001	2.47%
Number of dwellings (1996)	245
Percentage Unoccupied (1996)	9.80%
Number of vacant lots (2001)	118 (68 lots not flood affected)
Total Lot Capacity	419

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	Medium Centre	School	Primary
Post Office	Yes	Hotel/Club	Yes
Bank/Building Society	Yes	Sporting Complex	Yes
Police Station	Yes	Showground	Yes
Community Hall	Yes	Water & Sewer	Both Reticulated

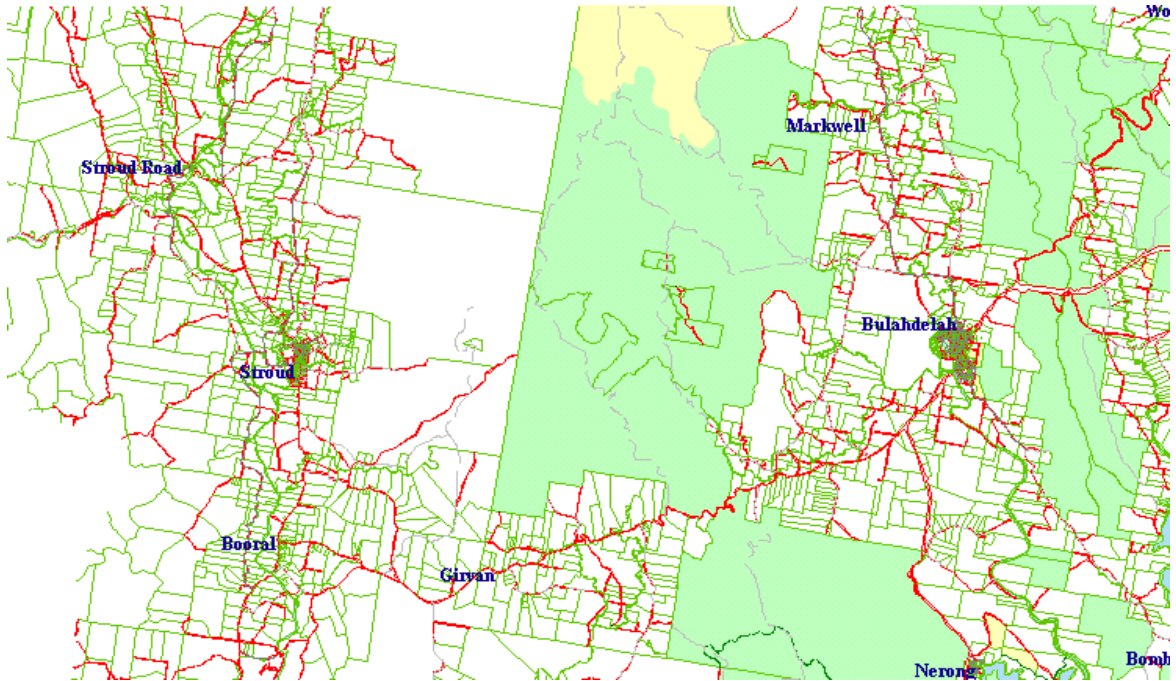
### *Physical Characteristics*

Located on the Bucketts Way, 31km north of Karuah. Mill Creek dissects the village, with a significant part of the village flood affected. Mill Creek is part of the Karuah Catchment and enters the sea through Port Stephens. Vegetation is sparse throughout the village. The topography is undulating, ranging up and down from north to south, with the commercial area on the centre hill. Chicken farms are scattered around the village. Stroud has many historic buildings, most located in the Heritage Area in the centre of town.

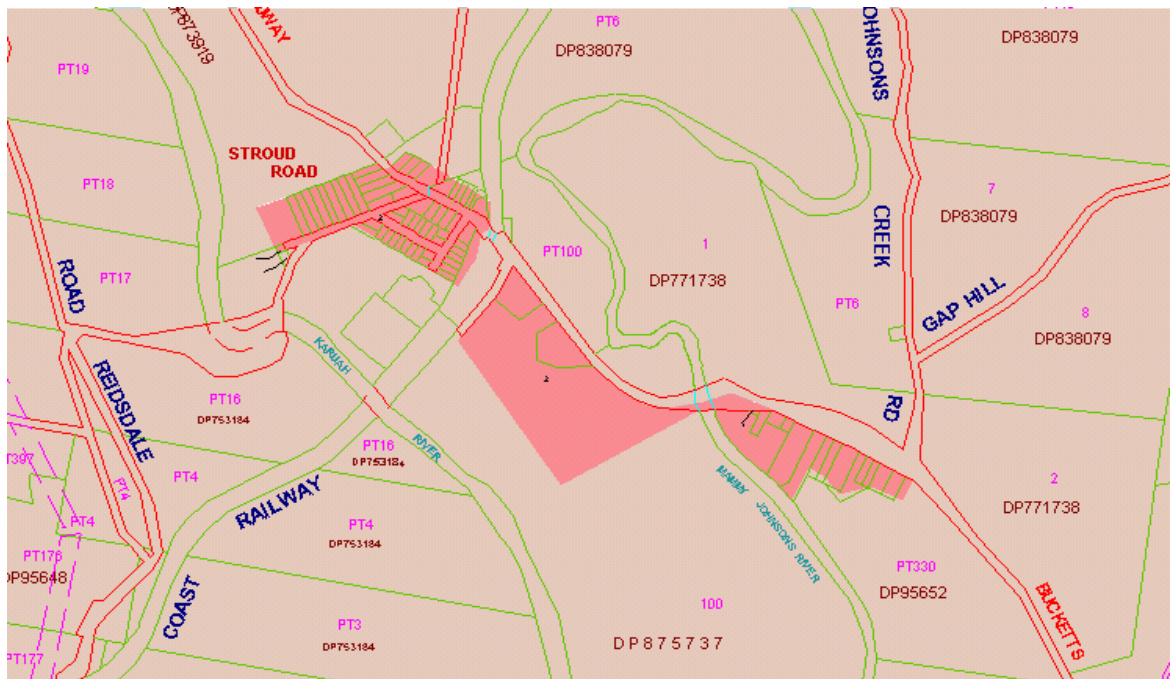
### *Constraints to Future Development*

- Poultry farm locations
- Flooding
- Prime agricultural land
- The need to ensure future development compliments the heritage significance of Stroud.
- The relatively compact nature of the town may be jeopardised by further development/expansion of the town.

## LOCALITY MAP – STROUD ROAD



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.24 STROUD ROAD

### *Demographics*

Population (2001 Census)	120
% Annual Pop. Increase 1996-2001	1.05%
Number of dwellings (2001)	67
Number of vacant lots (2001)	11
Total Lot Capacity	78

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	Small Centre	School	Primary
Post Office	Yes	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	Reticulated Water

### *Physical Characteristics*

Located on the Bucketts Way, approximately 6km north of Stroud. The Karuah River is to the west of the village and Johnsons River is to the east of the village. There is one large chicken farm to the west of the village and another to the south. The village is surrounded by mostly cleared agricultural land.

### *Constraints to Future Development*

- Potential flooding
- Prime agricultural land
- Chicken farm locations
- Lack of reticulated sewerage
- Lack of physical and social infrastructure

## LOCALITY MAP – TARBUCK BAY



## SETTLEMENT MAP



### Settlement Map Legend

	7(b)
	2
	1(a)

## 5.25 TARBUCK BAY

### *Demographics*

Population (2001 Census)	149
% Annual Pop. Increase 1996-2001	3.84%
Number of dwellings (2001)	74
Number of vacant lots (2001)	32 (none flood affected)
Total Lot Capacity	106

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	No	Water & Sewer	Both Reticulated

### *Physical Characteristics*

Located on the Lakes Way, approximately 26km south of the bridge separating Forster and Tuncurry. Tarbuck Bay is part of the Smiths Lake water-body, with the village zone located on the northern side of the Lakes Way, which skirts the edge of the bay. The land surrounding the village zone is heavily vegetated. The village zone itself is flat, although land immediately to the north rises sharply.

### *Constraints to Future Development*

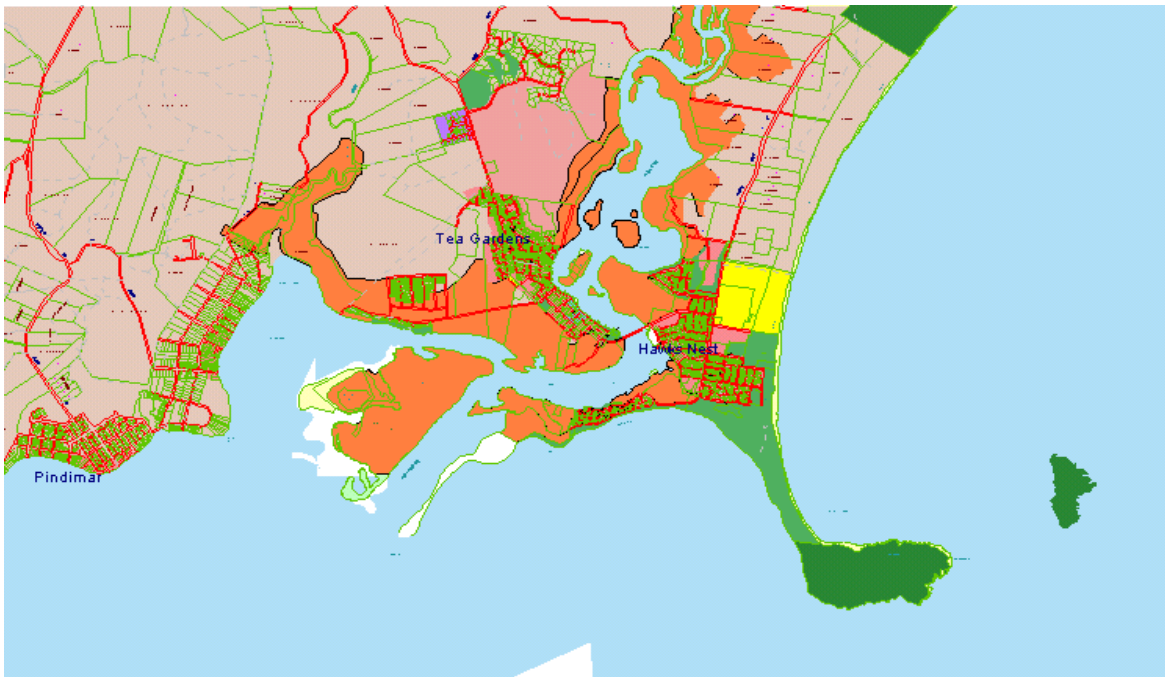
- Flooding (from Smiths Lake)
- Vegetation
- Fire Hazard
- Slope
- Water quality (Smiths Lake)
- Lack of physical and social infrastructure



## LOCALITY MAP – TEA GARDENS/HAWKS NEST



## SETTLEMENT MAP



NB. There are too many zones in the Forster/Tuncurry Settlement Map to be shown in “grey-scale”.

## 5.26 TEA GARDENS/HAWKS NEST

### *Demographics*

Population (2001 Census)	2,545
% Annual Pop. Increase 1996-2001	4.70%
Number of dwellings (1996)	1804
Percentage Unoccupied (1996)	40.87%
Number of vacant residential lots (1999)	246

### *Facilities*

Facilities	Yes/No/Comment	Facilities	Yes/No/Comment
Shopping	Large Centre	School	Primary
Post Office	Yes (2)	Hotel/Club	Yes
Bank/Building Society	Yes	Sporting Complex	Yes
Police Station	Yes	Showground	No
Community Hall	Yes	Water & Sewer	Both Reticulated

### *Physical Characteristics*

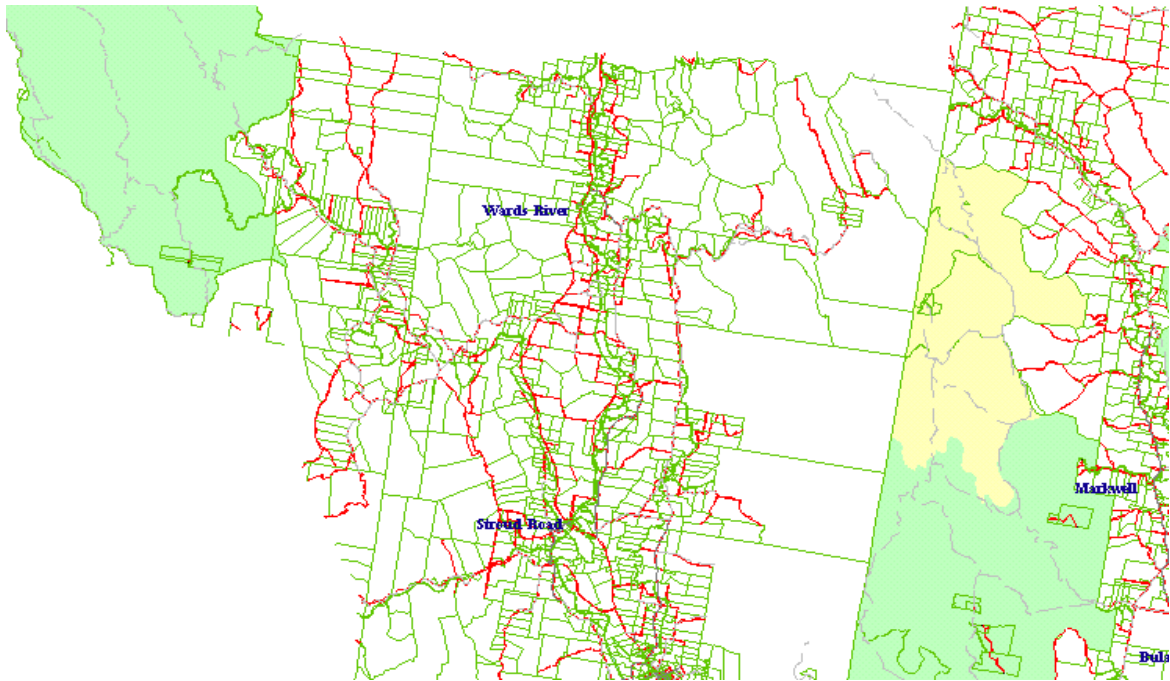
Located at the southern end of Myall Way, which begins on the eastern side of the Pacific Highway, 14km north of Karuah. The Myall River separates the twin towns of Tea Gardens and Hawks Nest. The area is an important oyster growing area and is abundant in wildlife. Land immediately north of Hawks Nest (known as North Hawks Nest) is vegetated, adjoins the National Park and contains known habitat for threatened species, including the koala. The town of Hawks Nest itself contains many trees which form corridors between heavily vegetated areas. Land west of Tea Gardens is also heavily vegetated. The land within the towns is very flat and some areas, especially in Tea Gardens, are flood affected. There is a significant hill north west of Tea Gardens, effectively forming a basin around the town areas.

### *Constraints to Future Development*

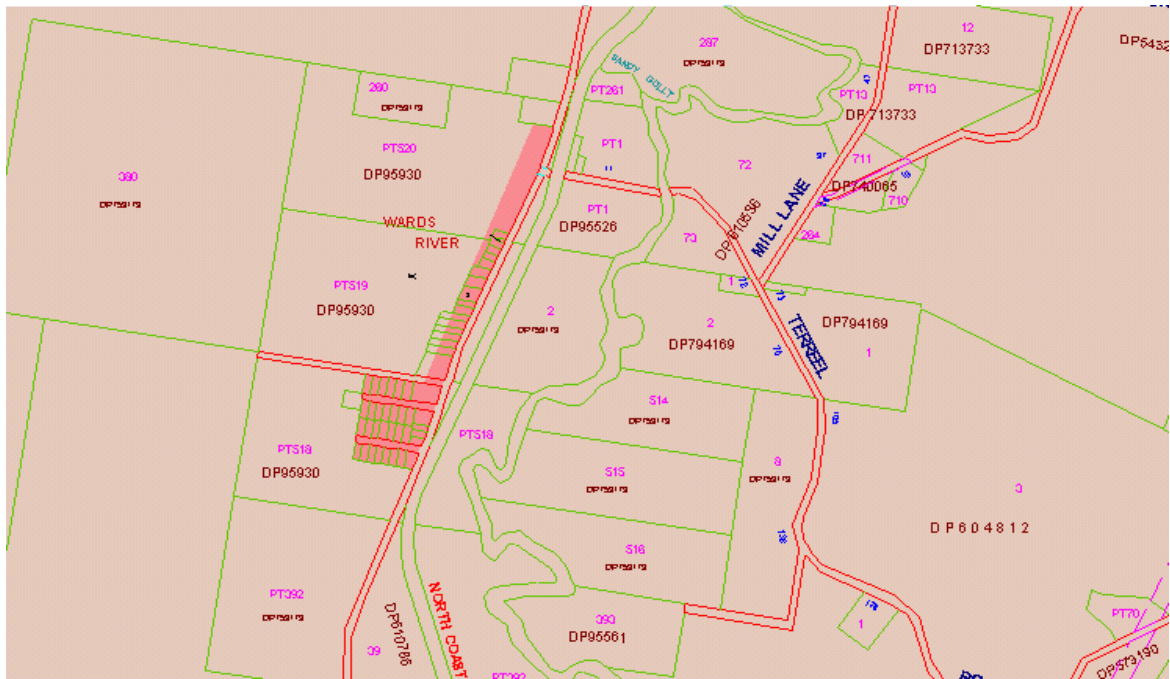
- Flooding
- Vegetation
- SEPP 14 Wetlands
- Fauna (especially threatened species)
- Fire risk
- Extractive resource buffers
- Water supply surface catchment



## LOCALITY MAP – WARDS RIVER



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.27 WARDS RIVER

### *Demographics*

Population (2001 Census)	234
% Annual Pop. Increase 1996-2001	-0.34%
Number of dwellings (2001)	34
Number of vacant lots (2001)	18
Total Lot Capacity	52

NB. Population includes Monkerai, Upper Karuah River and surrounding land.

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	General Store	School	No
Post Office	Yes	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	No
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

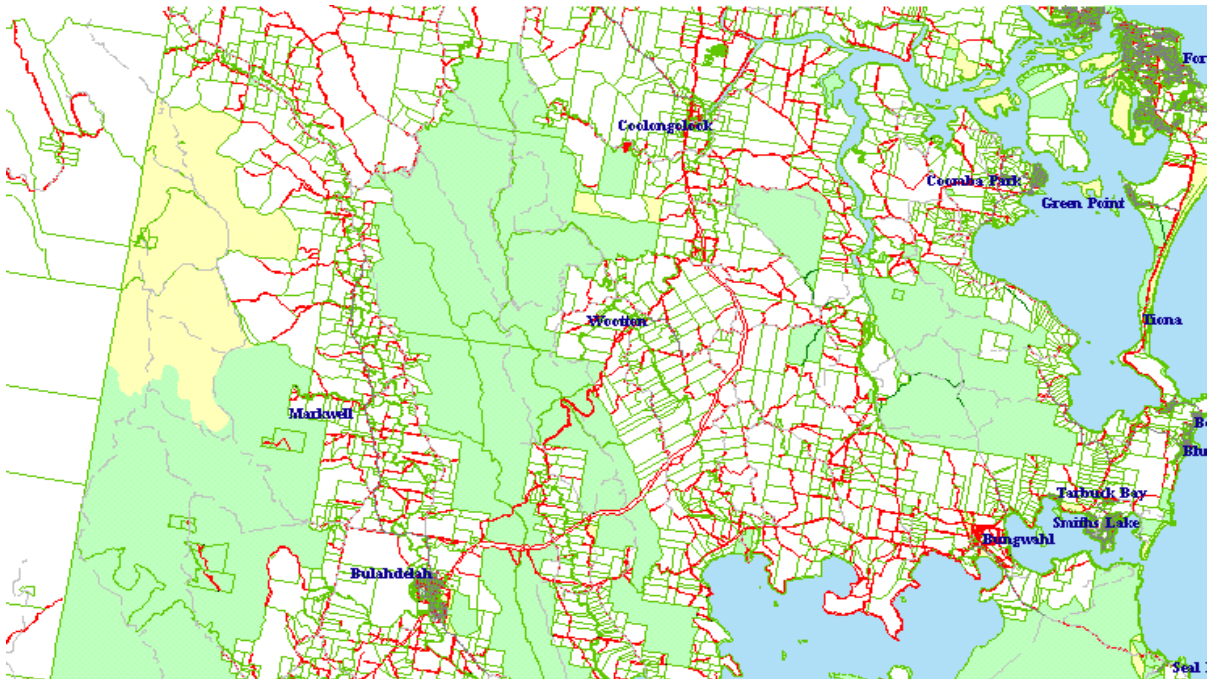
### *Physical Characteristics*

Located on the Bucketts Way, approximately midway between Stroud and Gloucester. Wards River (waterbody) runs to the east of the village. Wards River is surrounded by rolling hills, which are primarily cleared grazing land. A chicken farm is located to the south of the village (which has been approved for expansion), whilst a large coal seam is located to the east.

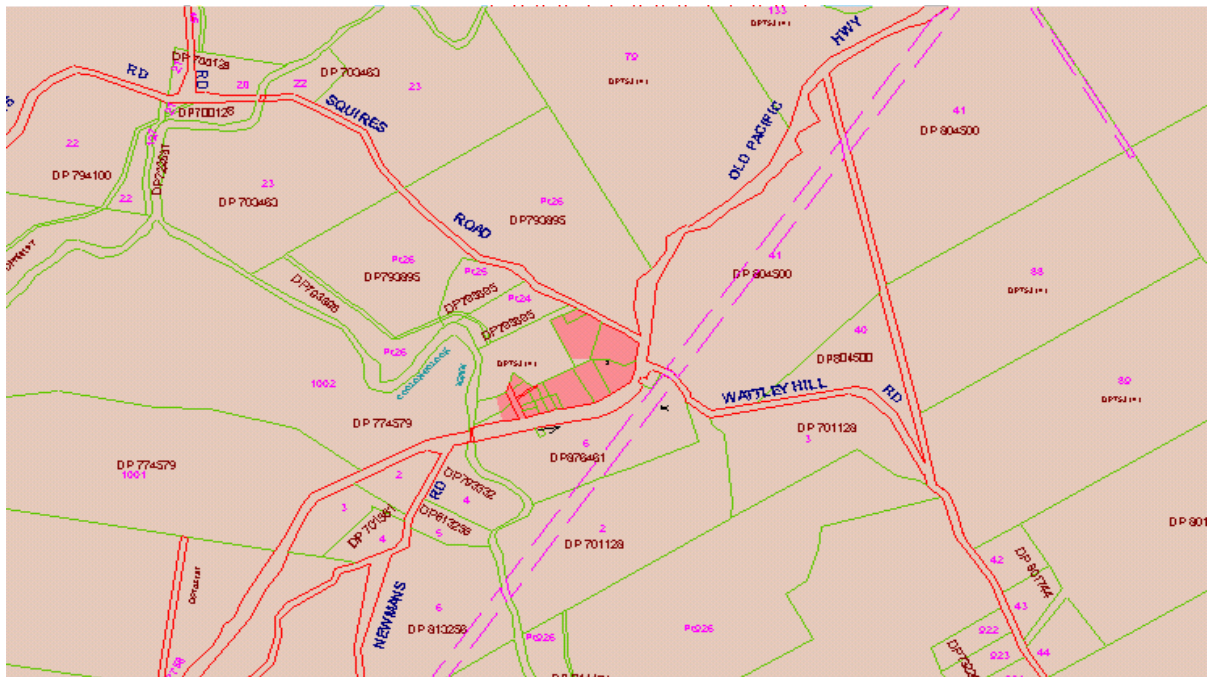
### *Constraints to Future Development*

- Coal seam and associated buffer
- Possibility of flooding
- Chicken farms
- Prime agricultural land
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure
- Slope (steep land)

## LOCALITY MAP - WOOTTON



## SETTLEMENT MAP



### Settlement Map Legend

	2
	1(a)

## 5.28 WOOTTON

### *Demographics*

Population (2001 Census)	380
% Annual Pop. Increase 1996-2001	0.38%
Number of dwellings (2001)	13
Number of vacant lots (2001)	4
Total Lot Capacity	17

NB. Population includes Coolongolook and Bunyah

### *Facilities*

<b>Facilities</b>	<b>Yes/No/Comment</b>	<b>Facilities</b>	<b>Yes/No/Comment</b>
Shopping	No	School	No
Post Office	No	Hotel/Club	No
Bank/Building Society	No	Sporting Complex	Yes
Police Station	No	Showground	No
Community Hall	Yes	Water & Sewer	No

### *Physical Characteristics*

Located on the Old Pacific Highway between Bulahdelah and Coolongolook. The turn-off for the Old Pacific Highway is 5km south of Coolongolook, with the village zone approximately another 5km further south, on the western side of the road. Anecdotal evidence suggests the village is in decline after its' bypass by the new route of the Pacific Highway. The area is hilly, with the village zone sloping from north east to south west. The area has been mostly cleared for grazing.

### *Constraints to Future Development*

- Slope
- Prime agricultural land
- Lack of reticulated sewerage & water
- Lack of physical and social infrastructure

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