

Section 4 Growth Considerations and Strategic Directions

This section outlines the range of broad strategic issues and opportunities considered in the development of the Strategy. The key community, economic and environmental issues are addressed in this section at a broad strategic level for the City. This section also outlines the strategic directions that relate to each of these growth considerations and how the development of the City will be approached in the future

4.1 Community

The National Regional Profile and the 2006 Census provide details of the population and housing characteristics for Shoalhaven. The following provides an overview of these characteristics

4.1.1 Age Profile

- The Shoalhaven community is generally older than other communities in NSW in terms of its average age. This is typical of coastal locations in NSW and Australia that have a high retiree population. There are higher proportions of people in the retirement and older age groups than the NSW average and lower proportions of people in the young adult (18-24) age groups. Shoalhaven has a very similar proportion of children to the general population.
- With the higher proportions of older age groups and lower proportions of younger age groups the result is a much higher median age in the various towns and settlements.
- Nowra has a higher percentage of younger age groups and at 34 has the lowest 'median' age of any settlement in the Shoalhaven. This contrasts with places like Culburra Beach, Ulladulla and Sussex Inlet which have much higher median ages. Sussex Inlet has a median age of 55, which is the highest in the City.

4.1.2 Cultural Profile

- The City has a richness of Aboriginal cultural heritage, which is reflected by recognition of the strong spiritual ties that the traditional owners continue to have with the land. A total of 3,311 Aboriginals and Torres Strait Islanders were recorded as living in Shoalhaven in the 2006 Census, making up 3.8% of the population. This compared with 2.1% for the State of NSW.
- A high proportion of Shoalhaven residents were born in Australia – those from non-English speaking countries are predominantly of European origin, mostly drawn from Germany, the Netherlands and Italy.
- Few people living in the City cannot speak English, with only 3.4% speaking another language at home.

4.1.3 Families

Compared to New South Wales, Shoalhaven has a smaller proportion of couple families with children but a similar proportion of one-parent families.

The largest changes in family types between 2001 and 2006 were:

- couples without children (+1,003);
- one parent families with children 15 years and over (+290);
- couples with children 15 years and over (+194), and;
- couples with children under 15 years (-260).

4.1.4 Tourist Population

The permanent population grows three to five times in the peak summer holiday period, increasing demand for services and facilities during holiday periods,

In the City's small towns and villages, the older holiday homes are gradually being replaced with larger permanent residences, many with absentee owners.

4.1.5 Education

Shoalhaven has existing public schools in many of its larger towns and villages. However, public High Schools are limited to the major centres, with a focus on the Nowra area. South of Nowra, the availability of public high schools is limited to stretched facilities at Vincentia and Ulladulla, however, the projected lower numbers of young people may not sustain investment in new or expanded education facilities. Private education facilities (primary and secondary schools) are also present in a number of the major centres.

Higher educational facilities within the City are focused around TAFE colleges at Ulladulla and Nowra, together with the development of the Shoalhaven Campus of the University of Wollongong. Access to the University of Wollongong is relatively convenient, but requires significant travel time and effort from Shoalhaven for those who need or choose to study at the main campus.

4.1.6 Health

Shoalhaven is serviced by four hospitals with the public hospitals located at Berry, Nowra and Milton and a Private hospital in Nowra. Doctor's services are located in a range of towns and villages. However the majority are located within central Nowra and Ulladulla. Some of the City's smaller settlements do not currently have a medical practice such as Kangaroo Valley and Bendalong.

Many of the doctors' practices within Shoalhaven are under pressure and a number currently have their books closed to new patients.

4.1.7 Transport Connections

The Princes Highway is the transport spine for the City, running from north to south through predominantly non-urban settings except for urban areas at Nowra, Berry and Milton-Ulladulla. Single 'lateral' lower order roads connect coastal towns and villages to the Princes Highway, for example via Greenwell Point Road, Sussex Inlet Road, Bendalong Road, Lake Conjola Entrance Road and Bawley Point Road. The Bay and Basin area is the only major collection of towns and villages with a 'loop road' network (including Jervis Bay Road and The Wool Road and Island Point Road).

The City's strategic road corridors include Main Road 92, which connects Nowra to Nerriga and then to Canberra, and the Moss Vale Road, connecting Kangaroo Valley to the Southern Highlands and Hume Highway.

4.1.8 Public Transport Options

Public transport options within Shoalhaven are limited. Buses travel between the larger towns and service the urban areas of Nowra and Ulladulla, however, the services are infrequent and not well utilised.

Rail infrastructure consists of a single non-electrified (South Coast line) line that is used:

- by Cityrail for diesel powered passenger connections to Kiama, with connections via electrified line to Sydney, including Sydney Airport, and
- by freight trains, mainly the regular train to the Manildra Plant at Bomaderry
- There are two railway stations within the City, one at Berry and the other at Bomaderry (the terminus of the line).

4.1.9 Other Transport Alternatives

Commercial boating and fishing fleets are located at Greenwell Point, Huskisson and Ulladulla. There are also naval facilities at HMAS Creswell which is located in the Jervis Bay Territory. In addition to the commercial boating facilities, there are a number of other smaller scale boating facilities providing access to rivers and lakes as well as the ocean (in some of the more protected locations).

Limited air services are provided through a small facility associated with HMAS Albatross. Passenger air services require connecting travel by road or rail to Sydney Airport, some two to three hours to the north.

4.1.10 Pedestrians and Cyclists

Limited pedestrian and cycle networks exist in the City and some improvements continue to be made to pedestrian and bicycle access in and between the towns and villages. Council adopted the Shoalhaven Bicycle Strategy (1997) as a means of identifying required bicycle routes and prioritising their construction, Council has also prepared a Pedestrian Access and Mobility Plan (PAMP) for the main urban areas of the City. The PAMP identifies required pedestrian facilities and priorities their implementation. The implementation of the PAMP is dependent on continued funding.

The private car is the dominant mode of transport in Shoalhaven. However it is important that regional services are co-located in existing centres and that local services are available in smaller settlements within walking and cycling distance. The goal is to reduce dependency on motor vehicles for access to convenience foods and essential services whilst understanding the constraints providing some townships with service provision.

4.2 Challenges

The pressure to accommodate the growing and changing population, and the diversity of community attitudes towards the future development of the city means that the management of population growth and new development is already a major challenge, especially in relation to the location of employment and services, the availability of transport and provision of infrastructure across the city. Key challenges include:

- maintaining housing affordability for older (as well as newly forming) households, in the context of competition for housing opportunities created by inward migration from other regions;
- creating a 'balance' in the overall community profile, towards long term sustainability, by attracting and retaining more younger people and families into Shoalhaven;
- Future households in the area will increasingly be singles and childless couples, primarily in the 65+ age group. This has significant implications for both the mix of housing and range of services needed in the area;
- Catering for the health needs of the community as people take increasing interest in and personal responsibility for their personal health;
- High rate of unemployment across all age ranges
- Large Aboriginal population with cultural connections to the South Coast communities;
- The average person is getting older, and likely to "age in place" rather than move to a more suitable dwelling as their mobility fails;
- The influx of 'sea changers' and investors from Melbourne, Canberra and Sydney is expected to continue to increase housing demand and prices and as a result housing affordability may decline. This will be exacerbated by the concentration of housing forms in traditional housing, limiting the range of housing choice;
- Net out migration of youth, difficulty retaining young people beyond school leaver age;
- Improving both the extent and practical connectivity of public and community transport as the community ages will be critical to retaining a high quality of life in Shoalhaven;
- The dispersed nature of settlement in Shoalhaven presents a major challenge for the provision of community services. Planning and delivering services, for all spheres of government, requires distribution across the five Council planning areas;
- There is a general perception that some areas of Shoalhaven, primarily in the urban centres, are not safe at certain times. One of Council's challenges is to continue to coordinate, with external agencies, to work towards safer areas and communities in conjunction with Council's own infrastructure and development planning framework;
- Ensuring that the area does not excessively gentrify to the point where longer-term local residents including older people and those in the first stages of household formation are increasingly priced out of their own housing market and pushed further to the geographic margins;
- Striving to create a more balanced and sustainable community, including the attraction and retention of younger families, couples and singles to balance out the aging of Shoalhaven's population;
- Monitoring the impact of the high rate of in-migration of older people on service provision to the existing population. This is particularly given the higher than average service demand generated by older people and the fact that they are disproportionately attracted to smaller coastal villages remote from services.

4.3 Opportunities

There are opportunities to:

- Locate key services in areas carefully linked by good public and/or community transport accessibility will become increasingly important;
- Increase supply of adaptable housing for the aged population will be needed, in response to the needs of those with reduced mobility. New housing options need to be focused in or around towns with existing services or transport links to major service centre/s;
- Provide for the large demand for self-care or hostel style housing. Changes to Commonwealth policy on funding for various forms of aged care may influence the provision of aged-specific accommodation;
- To allow for the priority and management of the release of vacant urban lands to maximise development in and around well serviced centres and minimise development in sensitive locations;
- Enable new urban lands to be identified that can deliver sustainable development outcomes where local housing demand is demonstrated;
- Ensure quality urban design and amenity that is sensitive to and complements the character and lifestyle of the regions towns;
- Provide a framework for the planning of new and upgraded regional infrastructure and facilities for the growing population and ageing demographic; and
- To integrate a 'healthy communities' agenda into urban planning, recreation facilities and programs.

4.4 Strategic Directions - Community

The strategic directions that will guide the response to the challenges and opportunities listed above are as follows:

1. Ensure supply of housing opportunities for future residential development will be provided within the environmental and servicing constraints of the area;
2. Ensure that settlement growth is ecologically sustainable, carefully planned and managed to meet the needs of the community;
3. Ensure that population growth is accommodated within the existing urban structure and identified growth areas in accordance with existing structure plans, settlement strategies and the GMS;
4. Ensure new development will be integrated with the adjoining urban structure to improve connectivity and reduce local travel distances;
5. Develop a well planned City of connected urban areas that reinforces the strengths, individual character and identity of each area;

6. Encourage the provision of sufficient housing of a suitable range and quality and diversity to meet the needs of Shoalhaven's residents and visitors;
7. Ensure that settlement opportunities outside the investigation areas identified in this Strategy are not be supported unless compelling reasons are presented and they can satisfy the Sustainability Criteria contained in the South Coast Regional Strategy;
8. Encourage the increased supply of medium density and appropriate lower density housing options including adaptable housing, concentrated within and around key centres, particularly in redevelopment areas close to transport, shops and services;
9. Facilitate an environment that provides shared access to public spaces and promotes healthy activities;
10. Encourage growth which promotes community wellbeing and quality of living throughout various stages of life;
11. Improve community safety and encourage neighbourhood design that makes people feel safe;
12. Identify and plan for social and community infrastructure needs in advance of development;
13. Support community participation in planning processes, enabling local communities to articulate their future aspirations and enhance their sense of place and wellbeing.

Note: It is expected that in the second Version of the GMS these strategic directions will be implemented through the development of strategic actions.

4.5. Economy

4.5.1 Economy and Infrastructure Provision

Economic activity is just as influential as community and environmental factors in urban settlement processes and outcomes. The most important economic factors involved in the shaping of Shoalhaven include the availability and use of employment lands, job creation, the efficient operation of commercial and retail centres, and transport and communications infrastructure provision.

4.5.2 Existing Profile

Nowra/Bomaderry is Shoalhaven's major centre, located on the banks of the Shoalhaven River, and it provides administrative, commercial and other high order services for the City.

The other major centres are Ulladulla in the south as well as the group of settlements in the Jervis Bay/St. Georges Basin area (or Bay and Basin area).

The City's economy features small to large enterprises located within the major town centres, with tourism, food, wine and small business supporting the rural and coastal areas.

4.5.3 Employment Status

The employment status of the population is an important indicator of the socio-economic status of an area. It reflects the extent to which the population is employed full-time, part-time or

unemployed, as well as changes over time in the labour force.

- The size of Shoalhaven City's labour force in 2006 was 33,777 persons; of which 12,783 were employed part-time (37.8%) and 16,984 were full time workers (50.3%);
- Compared to New South Wales, in 2006 a smaller proportion of Shoalhaven's population was in employment and a larger proportion unemployed;
- Overall, 90.6% of the labour force was employed (44.0% of the population aged 15+), and 9.4% unemployed (4.5% of the population aged 15+), compared with 94.1% and 5.9% respectively for New South Wales;
- Between 2001 and 2006, the number of people employed in Shoalhaven showed an increase of 2,915 persons and the number unemployed showed a decrease of 284 persons.

4.5.4 Employment Industries

Shoalhaven's major 'employment lands' are Nowra/Bomaderry, Milton/Ulladulla and the series of settlements at St. Georges Basin district, Culburra Beach and Sussex Inlet. The main sectors of employment within Shoalhaven are manufacturing, government (including defence), retail and tourism. These sectors are supported by building and construction, community services and education. The area has a strong light manufacturing industrial base including goods such as starches, ethanol, cheese, boats, avionics, building products, surfboards and surf wear.

An analysis of the jobs held by the Shoalhaven's resident population in 2006 shows the three most common industry sectors were:

- Retail Trade (4,391 persons or 14.3%)
- Health Care and Social Assistance (3,657 persons or 11.9%)
- Construction (3,057 persons or 10.0%).

These three industries employed 11,105 people in total or 36.3% of the employed resident population.

The tourism related employment sector, Accommodation and Food Services, employed some 2651 people, or 8.7% of the workforce.

In comparison, New South Wales employed 11.1% in Retail Trade; 10.5% in Health Care and Social Assistance; and 7.3% in Construction.

The major differences between the jobs held by the population of Shoalhaven and those of New South Wales were:

- A larger percentage persons employed in Retail Trade (14.3% compared to 11.1%);
- A larger percentage persons employed in Public Administration and Safety (9.2% compared to 6.0%);
- A smaller percentage persons employed in Financial and Insurance Services (1.8% compared to 5.0%); and
- A smaller percentage persons employed in Professional, Scientific and Technical Services (4.2% compared to 7.3%).

4.5.5 Employment Growth in Shoalhaven

Data in the table provided below show an annual average increase in employment of 773 per year in Shoalhaven over the last decade. By comparison Wollongong average employment growth was 819 per year, 485 per year in Shellharbour and 333 per year in Eurobodalla.

Table10 - Employment Growth in Shoalhaven

Shoalhaven	Population	Employment	Unemployment
1988	62108	21220	2661
1998	88188	26147	4295
2008	94469	33878	2965

To ensure that continued employment growth occurs within the City there needs to be encouragement for business development and growth and an adequate supply of employment lands, shops, offices, labour, utilities etc. Shoalhaven also needs to have the amenity to attract both employees and employers. The lifestyle component is becoming increasingly important according to surveys on industry locations drivers. The delivery and presentation of this lifestyle advantage is essential.

Economic and employment opportunities are essential for the maintenance of a viable community. Through appropriate sustainable growth and development and the maintenance of Shoalhaven as an attractive holiday, retirement and investment location the continued economic vitality of Shoalhaven can be maintained and enhanced.

4.5.6 Electricity and Gas Supply

Electricity supply and distribution to the City is the responsibility of Endeavour Energy who have a major Shoalhaven Transmission Sub-station which feeds zone sub-stations at: Berry, Bolong, Bomaderry, Culburra Beach, Huskisson, Kangaroo Valley, Nowra, South Nowra, Sussex Inlet, Ulladulla, and Yatte Yattah.

The Shoalhaven is not well supplied by the national natural gas distribution network and reticulated mains gas is only available in Nowra-Bomaderry. Thus this use of gas is mostly limited to bottled gas, which is supplied by a range of companies.

4.5.7 Telecommunications

The major communications network includes land-line telephone services, GSM mobile telephone network, ADSL and Wireless internet in some locations.

The 2006 ABS Census data showed that 52% of the City had access to the internet with 25% of those people having access to broadband.

4.5.8 Waste Management

All households located in Shoalhaven's urban areas have a weekly waste collection and a fortnightly recycling collection service. An on call user pays pick up service is available for those residents that require additional green waste and bulky waste services. The collection services are supplemented by drop off facilities available at 10 recycling and waste depots located throughout the City. Other services including commercial waste collection services are provided by various private sector operators.

In the 2007/08 there was a 5.1% increase in total waste managed by Council from the previous year. However, kerbside garbage to landfill increased by only 0.45% (approximating population growth) and kerbside recycling increased by 10.7%. Of the total waste managed (domestic, commercial and industrial and building and demolition), waste to landfill decreased by 3.5% (the lowest amount since 2003/04) and waste recycled increased by 26%.

4.5.9. Water and Sewer

Shoalhaven Water provides treated water to National Health and Medical Research Council (NHMRC) Guidelines (2004) to most towns and villages throughout Shoalhaven. Un-serviced towns are located south of Lake Tabourie, and include Termeil, Bawley Point, Kioloa, North Durras and small settlements like Pebbly Beach.

There are a small number of consumers connected to a raw water supply. These are rural properties between Burrier Pump Station and Bamarang WTP, a small isolated system at Strongs Road serviced from a local pipe head weir (not for domestic purposes), and between Porters Creek Dam and Milton WTP. Raw water is supplied to Australian Paper Mill and Manildra Plant at Bomaderry by gravity pipeline from Bamarang Dam.

About 90% of the system's raw water is pumped from the Shoalhaven River at Burrier approximately 47 km upstream of the ocean estuary outlet. The southern Shoalhaven is partly served by the Porters Creek Dam west of Milton and supplies the Milton Water Treatment Plant. A fourth treatment plant is located in Kangaroo Valley at Bendeela Pondage and supplies water to the Kangaroo Valley township. A 7,600 mega litre storage dam at Danjera acts as an emergency backup supply feed for the Shoalhaven River in times of drought.

The flow in the lower Shoalhaven River is controlled from Tallowa Dam, which is operated by Sydney Catchment Authority. Interim flow rules, which have been in place since 1999, allow up to 90 million litres of water to be released daily from the dam as environmental flow for the health of the Shoalhaven River.

During a drought, water is pumped from Tallowa Dam to Wingecarribee Reservoir in the Southern Highlands. From there it is released and flows down the Wollondilly River to Sydney's Warragamba Dam, or the Nepean River to Nepean and Avon dams, which supply the people of the Illawarra with water.

4.5.10 Wastewater Schemes

Shoalhaven Water operates twelve Sewage Treatment Plants within Shoalhaven, from Berry to Burrill Lake. Sewage is treated to secondary treatment at two plants and varying levels of tertiary treatment at the remaining ten plants. The treatment levels of reclaimed waters are compatible with the environmental standards for receiving waters. Existing Plants are located in Berry, Shoalhaven Heads, Bomaderry, Nowra, Culburra Beach, Callala, Vincentia, St Georges Basin, Sussex Inlet, Bendalong, Conjola and Ulladulla.

4.6 Challenges

The key challenges relating to the economy that are faced by the City include:

- Addressing the changing economic needs of the community which include:

- increased workforce mobility, with the capacity and willingness to 'go where the work is';
 - more flexible work structures and working hours;
 - desire for expanding retailing and trading hours;
 - increasing self-funded retirement.
- Ensuring sufficient employment lands are available in appropriate locations to accommodate growth in existing and emerging industries and businesses;
 - Facilitating growth will mean providing the right economic infrastructure, at the right time, to ensure the local economy remains productive, dynamic, and diverse and in balance with our natural environment.
 - Increased taxes and government costs have been identified as a possible broad constraint to investment. Equally the continuing emphasis on deregulation and application of user pays principles affect the wider economic climate;
 - When compared to other non-metropolitan regional areas Shoalhaven suffers from the lack of a passenger airport service and rail links within the City. Airport access, through possible use of the regional facility at the Albatross base for passenger and/or freight would remove a notable constraint;
 - Inconsistent non-capital city broadband and telecommunication services represent a further challenge, with the national broadband rollout likely to create marked improvements in on-line and digital accessibility;
 - Managing conflicting financial demands and reduced financial support from higher levels of government. Along with an the increased burden for provision of infrastructure and management of a increasing asset base;
 - The relatively low skills base in Shoalhaven population may represent a constraint to economic recovery and subsequent growth. Particular areas that might warrant strategic initiatives to generate greater workforce participation include;
 - indigenous people (for whom unemployment is 2.8 times greater than the rest of the Shoalhaven population);
 - currently under-represented groups such as people with a disability, single parents and low income earners; and
 - newly arrived residents seeking timely and well-aligned transition into suitable work, in which they can be fully productive and well rewarded.

4.7 Opportunities

There is an opportunity to:

- Provide for the development of new employment lands required to facilitate the accommodation of a projected 14,400 new jobs (DOP 2007)
- Support and strengthen the existing employment base in primary industries and defence sectors and supporting industries

- Encourage and investigate opportunities and diversify into community and human services, education and aged care
- Support and strengthen tourism opportunities by identifying key tourism sites and precincts and targeting the focus areas identified in the South Coast Regional Tourism Plan 2003-2006
- Encouraging large business to the Shoalhaven and supporting small new business initiatives.
- Creating a clever, clean, low impact economy, characterised by value-adding activities,
- Create an alternative living and working environment to that offered in the major regional cities of Newcastle, Sydney and Wollongong, and
- Enhance the valuable character of existing settlements, places and surrounding landscapes.
- Attract smart, creative low environmental impact industries.
- Infrastructure will need to be developed to:
 - enhance our image and 'place' quality
 - improve access to services and cultural/recreational opportunities
 - improve access to and from other regions
 - support growth and diversity in housing options
 - facilitate telecommunications, especially in broadband/mobile technology
 - improve public transport, including rail, bus and air services
 - ensure freight transport efficiency, including road, rail and air services, and
 - in particular, continue the upgrading of the Princes Highway, completion of the Main Road 92 and its link to the Hume Highway.
- Appropriately serviced land and facilities need to be available for commercial and industrial development to occur. Nowra's position as an established regional centre should be strengthened with new finance, administration, business services and retail investment.

4.8 Strategic Directions - Economy

The strategic directions that will guide the response to the challenges and opportunities listed above are as follows:

1. Retain and enhance the agricultural production capacity of the City;
2. Maintain, renew and enhance existing infrastructure to support economic activity and investment;
3. Encourage growth of settlements only when they are located and designed to minimise the economic, social and environmental costs of providing and maintaining services;

4. Ensure that economic activities reflect the need to preserve the natural environment that helps to sustain the City's economy;
5. Plan for employment generating initiatives, in order to deliver positive local and regional employment outcomes;
6. Provide sufficient industrial and employment generating land to meet future demands;
7. Encourage population growth to occur in or within proximity to existing population centres to encourage local spending and employment growth.

Note: It is expected that in the second version of the GMS these strategic directions will be implemented through the development of strategic actions.

4.9 Environment

Shoalhaven's significant environmental qualities come from its extensive natural areas, vast biodiversity and relatively small area of settlement, as well as its varying topography, coastlines and natural features. The natural landscapes of the area are a strong feature of the City's settlements forming part of cultural heritage of the City and valued as important tourism and economic asset.

4.9.1 Topography and Landscape

Shoalhaven is composed of three broad scale landscape units; the flat coastal plain of the northern and central areas, the short but hilly coastal systems of the south and the rugged coastal plains to the west.

The variety of landforms in Shoalhaven has broadly determined the human footprint and land use that occurs in the different geographic regions. Most of the west of the City is hilly and contained in National Park, while urban and productive areas are concentrated in the narrow coastal strip. Large areas of agricultural land are found, particularly in association with the floodplain of the Shoalhaven River.

The soils and geology of the region limit the extent of certain land uses, particularly the steep escarpment country (much of which is National Park) and the areas of acid sulphate soils. Land erosion and sedimentation resulting from the clearing of land around floodplains have been identified as major environmental issues in Shoalhaven.

4.9.2 Biodiversity

One of the defining features of Shoalhaven is the extent to which it has retained native vegetation. In the north this vegetation is more closely associated with the vegetation of the Sydney Basin Bioregion, while in the south the vegetation is associated with the South East Corner Bioregion.

The cleared areas around Nowra-Berry and Milton reflect historical activity to clear the area for its valuable red cedar before the land was settled for agriculture. These cleared areas are now used for dairy and cattle-farming, providing a valuable rural landscape setting around Shoalhaven's two largest urban centres.

Up to 132 different vegetation communities exist across the City. The most numerous of these communities are woodland communities, while the rarest communities are cool temperate rainforest and turpentine forest. The past loss of wetland habitat, particularly riverine wetlands means that any remaining wetlands provide important habitat and need to be protected and in some cases rehabilitated.

There are also numerous reefs and shallow rocky outcrops that provide important habitats for a range of marine fauna, including the Jervis Bay Marine Park.

4.9.3 Water and Coast

The City has two major river systems in the Shoalhaven and Clyde Rivers, a major coastal Bay (Jervis Bay) and numerous coastal lakes and estuaries, and extensive natural waterways, freshwater rivers and estuarine lake systems support some of our most sensitive ecosystems. At 170 kilometres, the coastline of the City is the longest of any local government area in NSW. The coast is diverse in its character, with major estuaries, many coastal lakes, long wild beaches and small pocket beaches, extensive coastal dune systems, towering sandstone headlands and rugged bluffs.

The coastal zone provides significant environmental values for Shoalhaven, and in particular features sensitive estuarine and littoral environments as well as being the point at which conflicts between the use of the catchment and its downstream effects generally occur. Sensitive coastal locations include wetlands, coastal dune systems, coastal heaths, littoral rainforests and land/water interfaces (rock platforms, intertidal areas), which are all recognised or protected via State planning controls.

The majority of Shoalhaven water catchments have been rated 'good' to 'excellent' using the water quality index. This indicates that overall catchments within Shoalhaven are of a good standard. However, a small number are only rated as 'medium'. This appears to mainly be due to the prevailing drought conditions during the summer of the reporting period and the substantial rain that followed.

Soil erosion and sedimentation have been identified as major environmental problems that contribute to poor water quality by increasing turbidity and nutrient levels that can lead to nuisance algal growth and eutrophication.

4.9.4 Protection and Management

Much of the area of the City (64%) is in public ownership - Crown Land makes up 7%, State Forest 11% and National Park a further 46% - providing a significant protected habitat for flora and fauna. When combined with the diverse habitats of the string of beaches, estuaries, wetlands and lakes along the coast, this makes the area important for both biodiversity and wildlife purposes, as well as commercially for recreational and fishing opportunities.

One of the major challenges in the protection of environmental values in Shoalhaven remains the application of environmental protection systems, beyond the sensitive environments of National Parks and reserves, to protect those habitats, species and communities outside the publicly owned land and reserve system, particularly in areas suitable for development.

4.9.5 Heritage

The cultural heritage of Shoalhaven contains items of National, State and Local significance. Items of local significance include Cambewarra Lookout, *Quercus virginiana* American live oak and Australian red cedars in Berry, World War 2 flying boat base at St Georges Basin and Cambewarra Union Church. The Shoalhaven Heritage Study identified a number of Heritage Conservation Areas, Pastoral and Natural Landscapes. Site specific DCP's provide local heritage protection to some locations.

4.9.6 Natural Hazards

The most significant environmental hazards faced within Shoalhaven come from flooding, bushfire, acid soils and the effect of coastal processes on tidal/wave inundation or land stability.

Council has undertaken a number of flood studies and flood management plans in the northern part the Council area and is progressing now to the southern areas of the City. Because of historical development, a number of towns and villages in the City are significantly flood-prone, for example parts of Greenwell Point and Sussex Inlet. Sea level rise will increase flood risks near the coast. Current criteria used in the design of floodplain infrastructure will need to be assessed to accommodate projected increases in rainfall intensities, runoff volumes and flood levels.

Bushfire also has an effect on settlement processes. Higher temperatures and changes to rainfall patterns will more than likely lead to increased fire frequency in the long term. Unlike Flooding, bushfire issues can generally be managed more effectively during planning processes. During the 2001 bushfires a number of places within the City were isolated as access roads were cut. While the holiday season exacerbates the issue, the planning for large new urban areas should always consider the importance of multiple access points to urban areas.

Using the State Government Guideline: *Planning for Bushfire Protection*, the extent of the City that has been classified as bushfire prone is extensive, including many of the dispersed towns and villages. The expansion of many of these towns and villages will not be possible without extensive clearing of natural bushland to reduce or mitigate bushfire risks.

Acid sulphate soils, are found in coastal locations and pose a significant problem for water quality and preservation of fisheries habitat. The northern part of the City, particularly around the entrance to and tributaries of the Shoalhaven River has been identified as a particular hot spot for acidic soils. In some cases the risks in developing on low level acid soils can be overcome through design controls and construction management. In other cases the extent of the acidity is such that no development can be contemplated without risking acid release.

Coastal processes such as wave inundation and coastal instability are another significant environmental hazard. Council has commissioned research into the level of risk that is experienced along its extensive coast lines. Particular hotspots for wave inundation have been identified along the coast, particularly in places built close to the beachfront. In some of these places, for example Culburra Beach and Callala Beach, the Council has identified particular planning controls and building lines. Coastal instability has been identified in a number of places in the south of the City, particularly on the rocky headlands between beaches. Restrictions on additional coastal frontage development will need to be considered in some locations.

Predicted changes to global and regional climate are expected to have significant impacts on sea levels and rainfall intensities. An increase in extreme weather events is likely to lead to more storm

damage, flash flooding, strains on sewerage and drainage systems, greater insurance losses and possible black-outs. Storms are virtually certain to increase coastal inundation and erosion in settlements near estuaries and beaches. Storm damage to infrastructure including buildings, transport, communications, power and water could lead to settlement isolation and dysfunction.

4.10 Challenges

- The interaction of concentrated human activities in our towns and villages with nearby sensitive water bodies and natural environments is finely balanced. Natural areas on the coast are under pressure and are facing habitat degradation and fragmentation resulting from urban development and tourism.
- Population growth and the resulting demand for new housing and employment lands will increase pressure on biodiversity, water supply catchments, soils, riparian corridors, water bodies, estuaries, natural areas (e.g. National Parks) and other natural assets.
- Protecting and managing water quality will be particularly important. Land use and population increase can affect the quality and quantity of stormwater runoff generated by the catchments. Predicted changes to the seasonality and intensity of rainfall will put pressure on the capacity of current stormwater systems and other infrastructure.
- Improved protection and enhancement of natural environments, including biodiversity, coastal lakes and estuaries and landscape values
- Improved understanding of aboriginal cultural heritage values and incorporating this information within land use planning and natural resource processes
- Ensuring sustainable management and access to natural resources and protection of rural landscapes from increased settlement
- Better understanding and management of natural hazards, namely flooding, coastal erosion and inundation, land instability, bushfire hazard and acid sulphate soil
- Managing and responding to the impacts and effects of climate change
- Increased pressure on rural landscapes creating potential land use conflicts with traditional agricultural practices with rural land increasingly valued for residential purposes rather than for agriculture
- Managing sea level rise and natural hazard risks
- While large areas of the City are protected, there are still sensitive environments (and the links between these environments) that are not protected. Many vegetation communities, endangered ecological communities, threatened species and wildlife corridors are located on private land and require protection.
- The extensive borders between protected areas (National Parks and Marine Parks) and natural areas and surrounding lands require special attention and management to minimise negative environmental impacts and help enhance the natural and cultural values of protected lands. Particular attention is required to urban interface issues.

- Protection of new and existing settlement areas from the risks posed by natural events presents a major challenge. In some cases certain use and development of land may not be possible or will be seriously constrained, and in other cases on-going private and community management regimes may be required.

4.11 Opportunities

There is an opportunity to:

- Recognise the ecosystem services provided by our natural areas and promote their tourism and other economic benefits, including the potential for ecotourism and research within Shoalhaven.
- Foster and facilitate opportunities for landowners to work together to improve environmental outcomes, and promote indigenous input into environmental planning and management decisions
- Ensure planning instruments and complementary urban design frameworks and master plans consistently reference core ESD principles, components, standards and outcomes.
- Develop a comprehensive Environmental Management Plan, and consideration of an 'environment levy' dedicated to funding key initiatives, has been embraced by many local government authorities.
- Council is already active in the implementation of waste hierarchy priorities – with environmental, financial and leadership returns – and should at least continue to promote and facilitate the “Three R’s” (reduce-reuse-recycle) through its waste management operations and community education programs.
- Continue to develop and maintain its strong cooperative and coordination arrangements with Federal and State Emergency Management Agencies and volunteer bodies.

4.12 Strategic Directions - Environment

The strategic directions that will guide Council’s response to the challenges and opportunities listed above are as follows.

1. Ensure that the ecological and biological environments of Shoalhaven are protected and valued through careful management.
2. Implement land use and related strategies for future growth of the City, based on the principles of connectivity, ecological sustainability, flexibility and accessibility.
3. Responsibly manage community exposure to natural hazards and resulting risks.
4. Create urban environments that meet community needs while ensuring the qualities and ecological integrity of the natural environment are protected.

5. Ensure natural assets (aquatic and terrestrial) are identified and protected through the land use planning process.
6. Restrict the fragmentation of rural land beyond identified lifestyle areas to maintain rural amenity and character and prevent pressure on rural infrastructure and productive farming.
7. Enhance the water quality of the City's lakes, rivers and estuaries through careful management of land use activities.
8. Ensure the values and functions of riparian corridors and coastal wetlands are protected, enhanced and reinstated where identified through a strategic process.
9. Ensure urban development is located away from areas that are important for conservation.
10. Protect and encourage the enhancement of the City's significant natural areas including areas of national, regional and local biodiversity significance
11. Develop a local and regional approach to air quality management

Note: It is expected that in the second version of the GMS these strategic directions will be implemented through the development of strategic actions.