

MidCoast Rural Strategy

Rural Waterways Background Report

Version 5 / Date: June 2020



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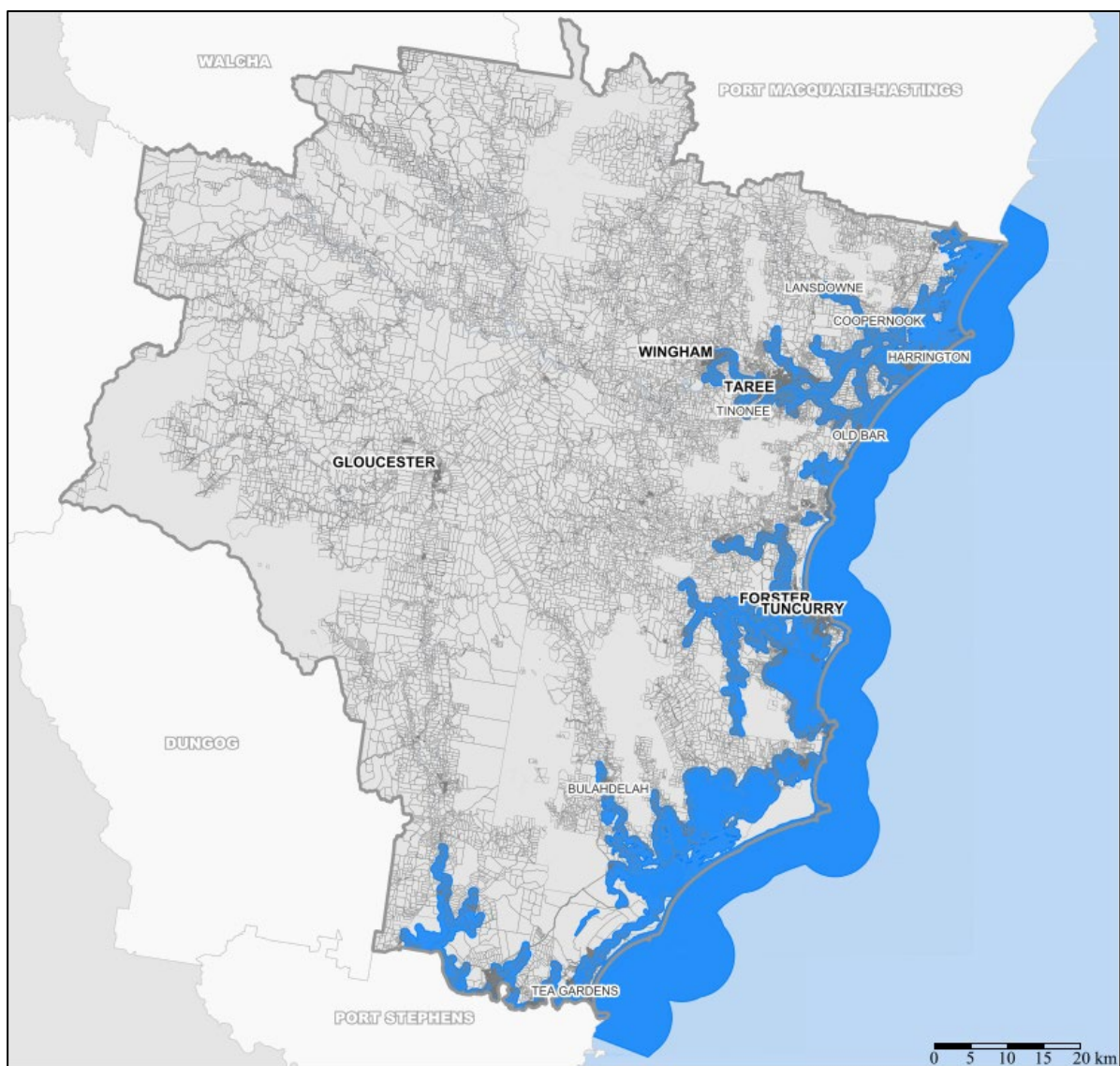
1 Introduction

This Background Report ('this Report') has been prepared by City Plan Strategy and Development, in partnership with Aurora Research and Development and MJD Environmental ('the consultant team') as part of the MidCoast Rural Strategy Project ('the Project') to assist with the formulation of the MidCoast Rural Strategy ('the Rural Strategy') on behalf of MidCoast Council ('Council').

This Report presents the findings of the consultant team's review of land use and development planning considerations relating to waterways, as relevant to land uses rural areas across the MidCoast Local Government Area ('LGA').

This includes a high-level review of all waterways in the LGA using a broad catchment-based approach, focussing on waterways above the tidal limit and outside of the Coastal Zone of the MidCoast. The Coastal Zone encompasses all areas subject to the [Coastal Management Act 2016](#) and [State Environmental Planning Policy \(SEPP\) Coastal Management 2018](#) as shown in Figure 1.

Figure 1. Coastal Zone of the MidCoast, Coastal Management SEPP 2018



This review is intended to identify the common rural uses or activities that are known to impact on waterways and consider land-use planning actions that might be required to for conservation, management or rehabilitation.

This Report should be considered in conjunction with other Background Reports prepared as part of the Project. At the time of writing, these include Reports focusing on the following topics as relevant to rural areas:

1. Housing and Accommodation
2. Agriculture and rural-based industries
3. Land based conservation
4. Marine activities
5. Mining & Energy
6. Tourism
7. Transport
- 8. Rural Waterways (this Report)**

In particular:

- Activities that occur on and in waterways within the Coastal Zone are reviewed in the Marine Activities Background Report in more detail.
- Waterways within National Parks and other ecologically sensitive areas are also considered in the Land Based Conservation Background Report.
- Land and water-based tourism activities are discussed in the Tourism Background Report.

The conclusions and recommended planning framework described in all the Background Reports are presented for consideration and, will form part of the Draft Rural Strategy information presented for public exhibition.

2 Context

The review underpinning this Report has considered the diverse development, management and resource challenges associated with maintaining and improving waterways throughout the MidCoast.

For the purpose of this review, 'waterways' is a broad term used to capture water resources across the MidCoast including any aquifer, billabong, creek, estuary, inlet, lake, lagoon, marsh, pond, river, sedge land, stream, swamp, wet meadow, wet heathland, or wetland outside of the Coastal Zone. These represent significant ecological resources that are also used for domestic, recreational, industrial, agricultural, aquaculture and tourism activities.

Note: The Marine Activities paper addresses the unique development, management and resource issues related specifically to those waterways and water resources up to the tidal limit, within the Coastal Zone, in additional detail.

Waterways are normally identified, discussed and managed as part of a water catchment area. The general definition of a water catchment area or basin is an area of land bound by natural features where water is collected within the natural landscape and eventually flows to a creek, river, dam, lake, ocean, estuary or groundwater system such as an aquifer.

Water Catchment Areas

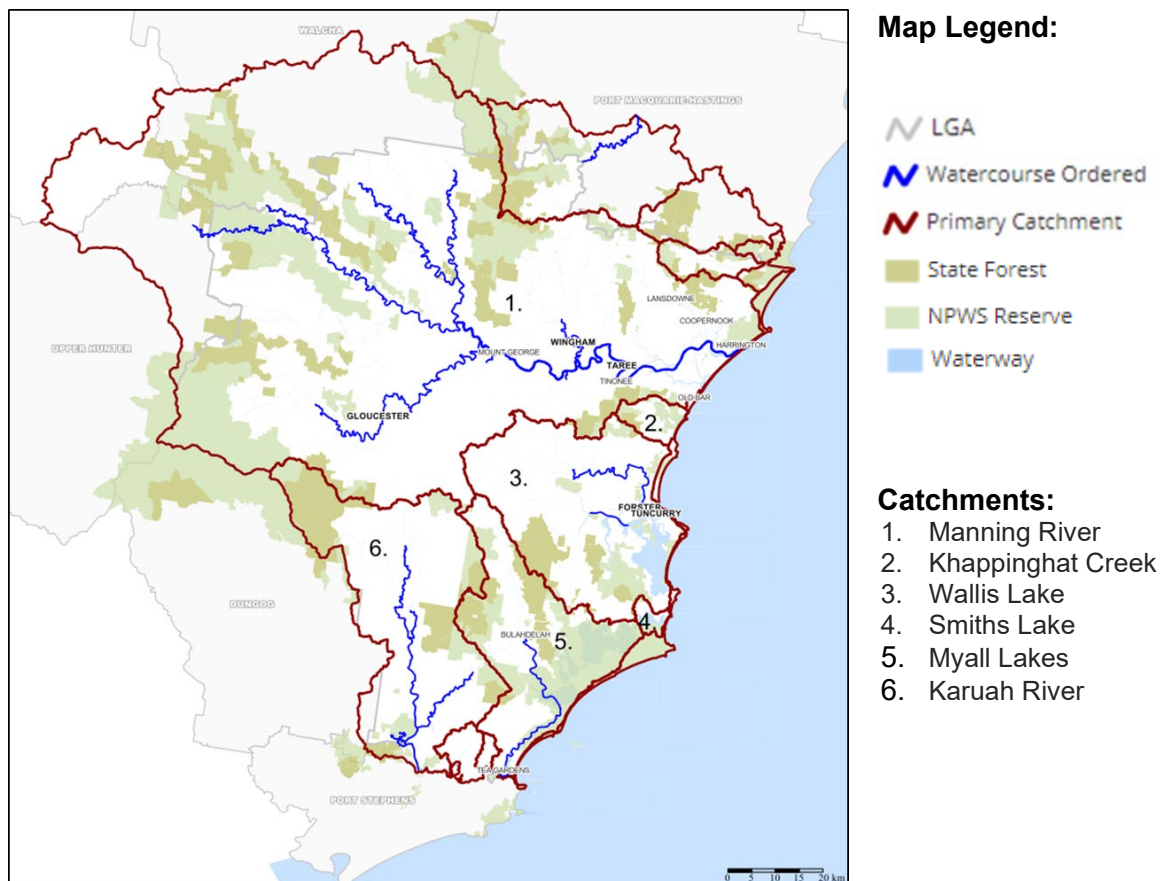
Water catchment areas can be small or large depending on natural features. The largest catchment area in Australia is the Murray-Darling Catchment which extends from Queensland to South Australia. In comparison, coastal catchment areas may extend for only a couple of kilometres, such as the catchment of Khappinghat Creek within the MidCoast LGA.

For the purpose of this review a water catchment area generally means a *broad catchment area which extends from the headwaters of waterways to where the main river reaches an estuary or the ocean.*

Several Broad Catchment Areas (BCA) are located within the MidCoast including: Manning River, Khappinghat Creek, Wallis Lake, Smiths Lake, Myall Lakes and Karuah River catchments.

These are shown in Figure 2, with each catchment containing a range of groundwater and surface water resources. Within each Broad Catchment Area there may also be one or more sub-catchment areas and various watercourses, these are not individually identified in Figure 2 or discussed in detail within this paper.

Figure 2. Broad Catchment Areas of the MidCoast



There are also several small catchments within the MidCoast, but these have not been considered in great detail within this paper as they are either – predominantly located outside of the LGA; require additional investigations beyond the scope of this paper; or form part of the Coastal Margin Catchment which is more relevant to the Marine Activities paper.

For completeness, these catchments are identified in Figure 3 and Figure 4 below.

Figure 3. Northern Catchments - Hastings, Camden Haven, Stewarts River and Watsons Taylor

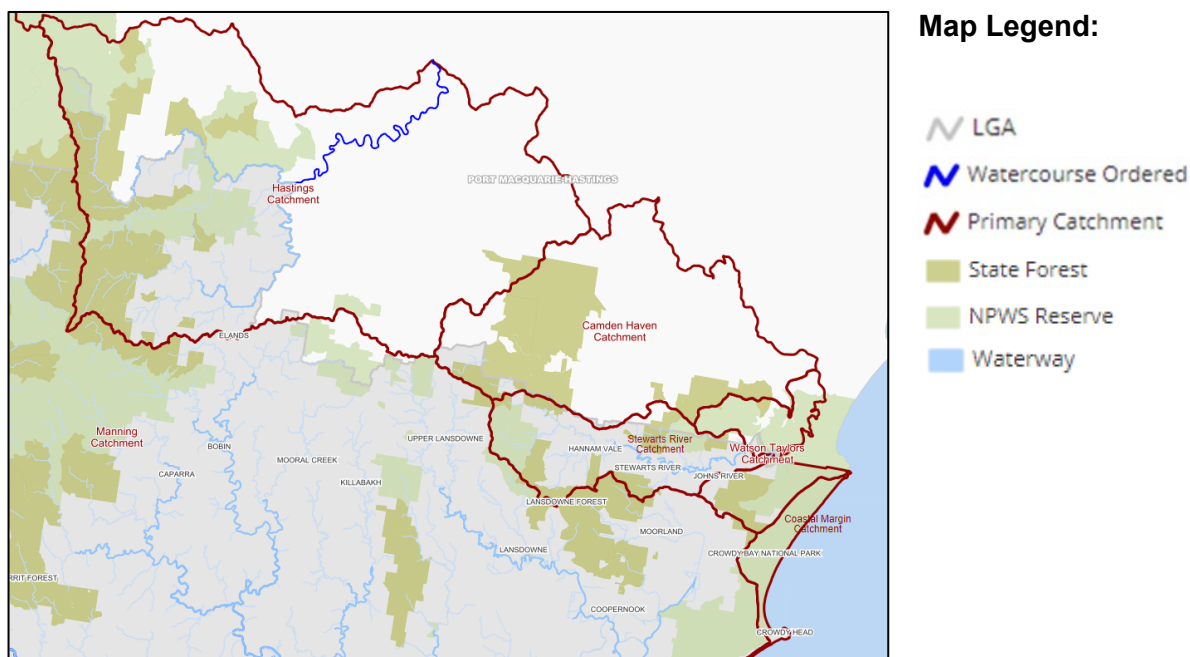
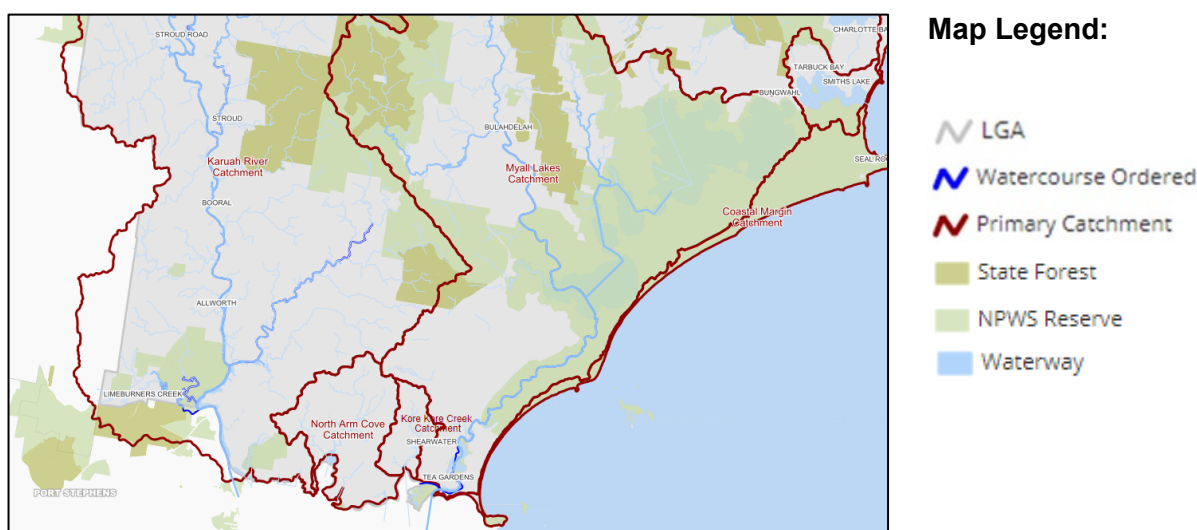


Figure 4. Southern Catchments - North Arm Cove and Kore Kore Creek



Drinking Water Catchments and Aquifers

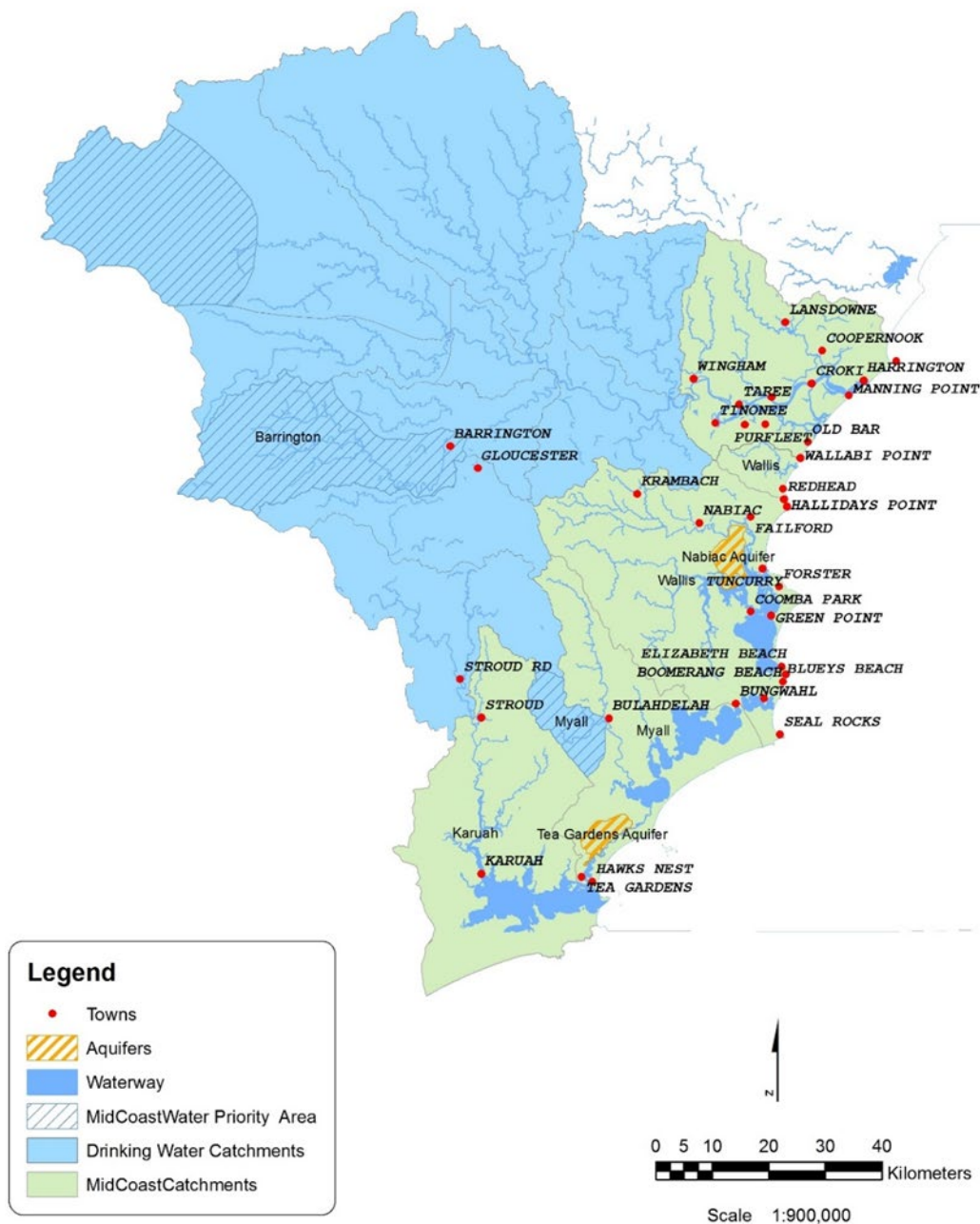
Drinking water catchments and aquifers are areas of land surrounding waterways or groundwater sources that provide drinking water supplies. These areas are generally in the upper areas of a Broad Catchment Area (BCA). There are three main drinking water catchments and two aquifers in the MidCoast:

- Manning River drinking water catchment which forms part of the Manning River BCA
- Karuah River drinking water catchment which forms part of the Karuah River BCA
- Crawford river drinking water catchment, which forms part of the Myall River BCA
- Nahiic Aquifer, which provides water to the Manning Scheme and is within the Manning River BCA.

- Viney Creek Sandbeds Aquifer, which provides water to Tea Gardens and Hawks Nest residents and is within the Myall River BCA.

The Nabitac Water Treatment Plant, supplied from the Nabitac Inland Dune Aquifer, can provide up to 10 million litres of water per day, which is approximately half of the average daily demand for the entire Manning Water Supply System.

Figure 5. Drinking Water Catchments and Aquifers of the MidCoast¹



The MidCoast LGA has a large number of water bodies including rivers, coastal lakes and lagoons, and wetlands. Waterways across the MidCoast are major sources of drinking water for surrounding communities. These waterways support drinking water catchments, natural

¹ R. Abberton, Water Services MidCoast Council

ecosystems and habitats. They also sustain a range of rural industries, including traditional agriculture and aquaculture; and rural tourism. Including recreational fishing.

The biggest threats to water quality (aside from natural phenomena such as drought) and catchment health, come from land use and development activities. Waterways within the MidCoast area are under continued pressure from water usage; pollution; nutrients and sediment; and other impacts associated with a range of rural land uses and activities including:

- Agriculture, including farming, forestry and land-based aquaculture, mining and quarrying can be high-volume water users, affecting downstream flows as a result of dams and weirs; and can impact waterways through run-off, erosion, nutrients and livestock in waterways;
- Fishing and aquaculture within waterways can lead to contamination, depleted fish stock species, assemblages, trophic levels, spills and by-catch if not managed sustainably;
- Tourism and recreational activities e.g. boating, kayaking, can lead to competition for space within and access to, waterways or lands adjoining waterways;
- Large scale clearing and development can change stormwater run-off patterns, contamination by way of nutrients, heavy metals, micro-plastics, waste and rubbish; contamination by way of on-site sewage management system overloads and failures, and cumulatively increase demand on water resources;
- The increasing demand for drinking water supplies results in additional pressure for the construction, expansion and maintenance of major water infrastructure projects up to and including major trunk water pipelines, water supply dams and treatment facilities.
- Unsealed roads also contribute sediments and other pollutants to waterways. Many agricultural activities occurring in drinking water catchments including intensive agriculture forestry rely on unsealed access roads in close proximity to waterways and creek crossings in poor condition. Where these sediments impact on water intake areas, there are higher costs for treatment and much higher risk of pathogens.
- Industries, businesses and residents within urban areas are also dependent on water catchments for their water supply. Activities that affect water quality up-stream will cumulatively affect water quality downstream. A key challenge for planning is balancing the needs of a wide range of users with the protection and maintenance of healthy waterways.

3 Evidence base

This Report has consolidated information from a wide range of sources to provide a catchment-based consideration of the following:

- The types of water resources within the catchment, including any drinking water supplies where relevant;
- Water quality objectives and community values;
- Common rural activities occurring now, or expected in the future;
- Known threats to water availability, water quality or catchment health; and
- Current health status, including any known conservation or rehabilitation actions that are already taking place, or are otherwise required.

The review underpinning this Report considered publicly available information contained in a range of State, Regional and Local strategies, plans and guidelines as relevant to water quality and catchment health in the MidCoast. Where relevant, reference is made to specific government and industry related data and mapping.

Views from selected stakeholders and the general community have been provided through the following initiatives undertaken as part of the Rural Strategy Project.

- Telephone interviews conducted by the consultant team between May 2018 and January 2019. In total, 60 interviews were conducted with several participants representing larger groups or peak organisations. Stakeholders associated with the aquaculture industry and 'waterways health' groups (e.g. estuary committees) were targeted as part of this initiative. There was a low-level of participation from representatives of waterways health groups.
- A public workshop focusing on Tourism ('Tourism Workshop') in the MidCoast, facilitated by the consultant team on 14 June 2018 in Gloucester. This was attended by over 30 people, with a focused discussion on how the planning framework regulates tourism in rural areas, and issues currently considered most relevant to the MidCoast. Issues and opportunities associated with the recreational use of waterways was a strong theme raised by participants.
- A public survey ('Rural Strategy survey'), conducted by Council with inputs from the consultant team. This was made available online and in hard copy and was open to the public between September and November 2018. In total, 63 surveys were returned. A section of this survey was entirely focused on the shared use and management of waterways.

Where relevant, views raised by participants have been incorporated into this Report.

The review has also identified the following data gaps, which limited the extent to which higher-level assessments could be completed:

- A significant gap in the ability for MidCoast Council to appropriately guide development through the assessment process, is the lack of evidence-based mapping of our priority drinking water catchments, ground water supplies and unsewered areas.

To ensure integrated development assessment processes can be effectively triggered and implemented, all drinking water catchments and ground water supply are to be identified within the new MidCoast local environmental plan and appropriate local clauses introduced.

- The Water Quality Improvement Plan (WQIP) outlines strategies to protect waterways of high conservation value and to restore those waterways that are degraded and in poor health. Reviewing the effectiveness of the WQIP would provide important insights into how water quality controls could be improved and consistently applied, to improve water quality and catchment health across the Midcoast.
- The MidCoast's water resources provide limited opportunities for commercial supply. However actual use is difficult to quantify - there are hundreds of licence holders, extraction reports vary considerably and the rate of extraction per user is largely unknown.

4 Strategic planning considerations

This section sets out the basis for local strategic planning in relation to waterways outside of the coastal zone of the MidCoast. It addresses the policy directions for plan-making in NSW, including the following Ministerial Directions issued under section 9.1 of the [Environmental Planning and Assessment Act 1979](#):

- **Direction 1.2 Rural Zones.** Aiming to protect the agricultural production value of rural land by establishing requirements for rural land that is to be rezoned or have an increased development density.
- **Direction 1.5 Rural Lands.** Also aims to protect the agricultural production value of rural land (identified as RU1, RU2, RU3, RU4, RU6, E1, E2, E3 and E4), while facilitating the orderly economic use and development of these lands to the social, economic and environmental benefit of the State, in accordance with the NSW Right to Farm Policy.
- **Direction 2.1 Environment Protection Zones.** Requires that environmental protection standards are upheld when amending planning controls relating to environmentally sensitive areas.
- **Direction 4.3 Flood Prone Land.** Requires planning provisions in an LEP to be commensurate with the flood hazard of that land. In this paper this include consideration of potential flood impacts on and off the subject land.
- **Direction 5.10 - Implementation of Regional Plans.** Within the MidCoast, this direction gives legal effect to the [Hunter Regional Plan 2036](#), requiring any amendments to planning controls to be consistent with its vision, land use strategy, goals, directions and actions.

Discussion predominantly focuses on Government-endorsed policy directions described in long-term strategies and plan at national, state, regional and local-levels. Where relevant, reference is also made to other technical studies or reports.

4.1 National Level Considerations

4.1.1 Australian and New Zealand Guidelines for Fresh and Marine Water Quality

The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC Guidelines) provides a national framework for water quality that can be adapted to state, regional or local scale to address specific issues and environmental conditions². The guidelines were originally published in 2000 and were updated in 2018.

The Guidelines set out a Water Quality Management Framework for users, such as councils, to apply a systematic approach to water quality management and assessment. Key elements included in the framework are³:

- Community values – identifying the values and uses of the waterways in consultation with the community.
- Conceptual models – describing the current understanding of how the waterways work, the issues they face and how we manage them.

² ANZEC 2018

³ OEH & EPA 2017

- Guideline values – specifying levels of water/ sediment quality that protect the community values
- Monitoring – collecting information as we go, to help manage water/ sediment quality.
- Stakeholder involvement – engaging with communities to manage their waterways.
- Weight of evidence – evaluating information from more than one source (multiple lines of evidence) to make decisions.
- Your location – using eco-regionalisation to find default guideline values for physical and chemical (PC) stressors and advice relevant to specific water resources.

A variation of this national framework has already been applied at the local level by the former Great Lakes Council through the Great Lakes Water Quality Improvement Plan (WQIP). An assessment of the above factors was undertaken for each water catchment within the former Great Lakes LGA, including Wallis Lake, Smiths Lake, the Myall Lakes and their catchment areas.

The WQIP outlines strategies to protect waterways of high conservation value and to restore those waterways that are degraded and in poor health. The findings and strategies of the WQIP then underpinned comprehensive changes to the Great Lakes Local Environmental Plan 2014 and Great Lakes Development Control Plan controls to improve water quality.

This WQIP approach was not applied in the Greater Taree or Gloucester LGAs. Reviewing the effectiveness of the WQIPs would provide important insights into how water quality controls could be improved and consistently applied across the MidCoast LGA. This relies on collaboration between Council's planning staff and catchment management team to discuss the standardisation of planning controls to manage water quality and catchment health across the LGA.

This process has commenced and is recognised within the MidCoast Council [Drinking Water Quality Policy](#) (2018) which supports implementation of the the long term service delivery strategies and plans (incl. the Integrated Water Cycle Management Plan, Drinking Water Quality Management Plan, and the Asset Class Management Strategy) for Water Services, by Council, in partnership with our customers, NSW Health, NSW Department of Industry and other stakeholders.⁴

4.2 State Level Considerations

State and Regional-level policy considerations are set out in a range of documents endorsed by the NSW Government. These offer goals, directions and actions in addition to, or in more detail, than those provided in the Hunter Regional Plan. The following documents are relevant to long-term planning for waterways health in the MidCoast and have been reviewed by the consultant team:

- Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (Office of Environment and Heritage and the Environmental Protection Authority, 2017)
- Greater Hunter Regional Water Strategy (NSW Department of Industry, 2018)
- Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources (background document for the amended plan) (Department of Primary Industries - Water, 2016)

⁴ <https://www.midcoast.nsw.gov.au/Council/Policies-Library/Drinking-Water-Quality-Policy>

- Water Sharing Plan for the North Coast Coastal Sands Groundwater Sources (background document) (Department of Primary Industries - Water, 2016)
- Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources (background report) (Department of Primary Industries - Water, 2016)
- Guidelines for Controlled Activities on Waterfront Land - Riparian Corridors (NSW Department of Industry, 2018)
- Using the ANZECC Guidelines and Water Quality Objectives in NSW (Department of Environment and Conservation, 2006)
- Local Planning for Healthy Waterways Using NSW Water Quality Objectives (Department of Environment and Conservation, 2006)
- Hunter Central Rivers Catchment Action Plan 2013-2023 (Catchment Management Authority Hunter - Central Rivers, 2013)

Collectively, these documents offer the following insights for managing water quality and catchment health, which will assist with formulating the MidCoast Rural Strategy:

- The State Government is implementing a 'risk-based framework' for waterway health in strategic land use planning. This framework is based in the national framework (AZECC Guidelines) and the NSW Water Quality Objectives. This is generally being implemented at catchment or sub-catchment scale by a managing authority e.g. Council, regional or state agency. **Note:** A variation of this approach has already been applied to catchment areas in the former Great Lakes LGA under the Water Quality Improvement Program.
- The community's environmental social, and cultural values for a waterway or catchment area should underpin water quality objectives, establishing benchmarks and informing land-use planning decisions.
- Water usage in the Hunter Region is managed by various water-sharing plans. Those that currently apply within the MidCoast are discussed elsewhere in this Report.
- The Hunter Regional Water Strategy identified six major risks to water security, the three relevant to rural areas of the MidCoast include:
 - More severe droughts, which will affect the natural environment and operations of the mining industry most acutely
 - Long periods of water restrictions, this may reduce the diversity of industries within the region who rely on secure water supply
 - Reduced river flows will reduce the quantity and quality of water, this may not be able to sustain environmental and human needs and will be exacerbated by population growth; and
 - Increasing competition for access to and use of water resources, which is expected to place additional stress on this environmental asset⁵.

4.2.1 Water Management Act

Water usage is managed at a state level under the [Water Management Act 2000](#) (WM Act).

The extraction, use and potential interference of ground water resources within aquifers are regulated by both the Act and the [NSW Aquifer Interference Policy](#). The policy primarily relates to extractive activities such as mining and coal seam gas extraction and therefore is discussed primarily within the Extractive Resources and Energy paper.

⁵ https://www.industry.nsw.gov.au/_data/assets/pdf_file/0008/196055/greater-hunter-regional-water-strategy.pdf

Water sharing plans are legislated under the WM Act and are in force to protect the environmental needs of the river and its ecological processes. The plans outline how water is to be allocated and shared and specifically addresses:

- Management of access licences;
- Water allocation accounts;
- The trading of access licences and water allocation;
- The extraction of water;
- Operation of dams; and,
- Management of water flows.

The three Water Sharing Plans that currently apply within the MidCoast LGA are briefly summarised below. All three water sharing plans cover all six BCAs within the MidCoast.

Water Sharing Plan - Lower North Coast Unregulated and Alluvial Water Sources 2009⁶.



This plan regulates resources that are located in all six BCAs and as shown in Figure 6 below, covers all rivers, lakes, estuaries and wetlands upstream of the mangrove limit, the groundwater in the upriver alluvial aquifer at Karuah, Khappinghat Creek, and Myall Lakes downstream of the mangrove limit. The plan was amended in 2016 to incorporate the Karuah River, which had previously been included in a separate plan.

⁶ NSW Government 2009

Figure 6. Map of the Lower North Coast unregulated and alluvial water sources⁷



Water Sharing Plan for the Lower North Coast Coastal Sands Groundwater Sources 2016⁸.

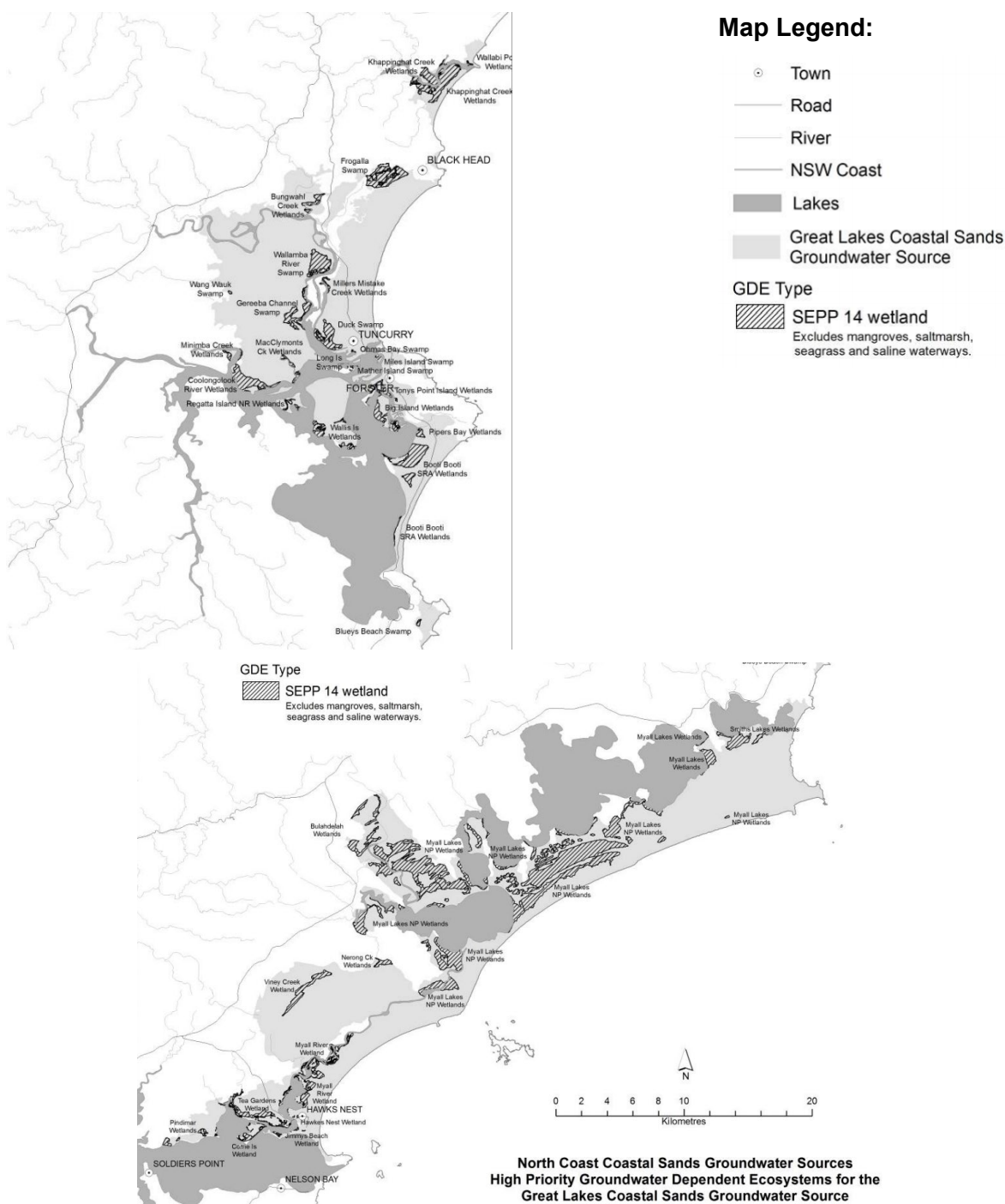
This plan regulates resources that are located in the coastal areas of all six BCAs. The plan boundary covers all coastal sand aquifers on the North Coast of NSW. The coastal sands groundwater sources in the MidCoast is the Great Lakes Coastal Sands Groundwater Source which extends from Old Bar in the north to Tea Gardens in the south⁹.

⁷ https://www.legislation.nsw.gov.au/maps/8df18d89-2152-4e5b-82df-9925f1fafeee/Lower_North_Coast_Unregulated_Alluvial_Plan_Map_WSP001_Version_2.pdf

⁸ NSW Government 2016(a)

⁹ DPI Water 2016(b)

Figure 7. Great Lakes Coastal Sands Ground Water Sources in MidCoast



Note: coastal aquifers are being considered within the broader context of catchments within this paper, rather than as an isolated component of the Marine Activities paper.

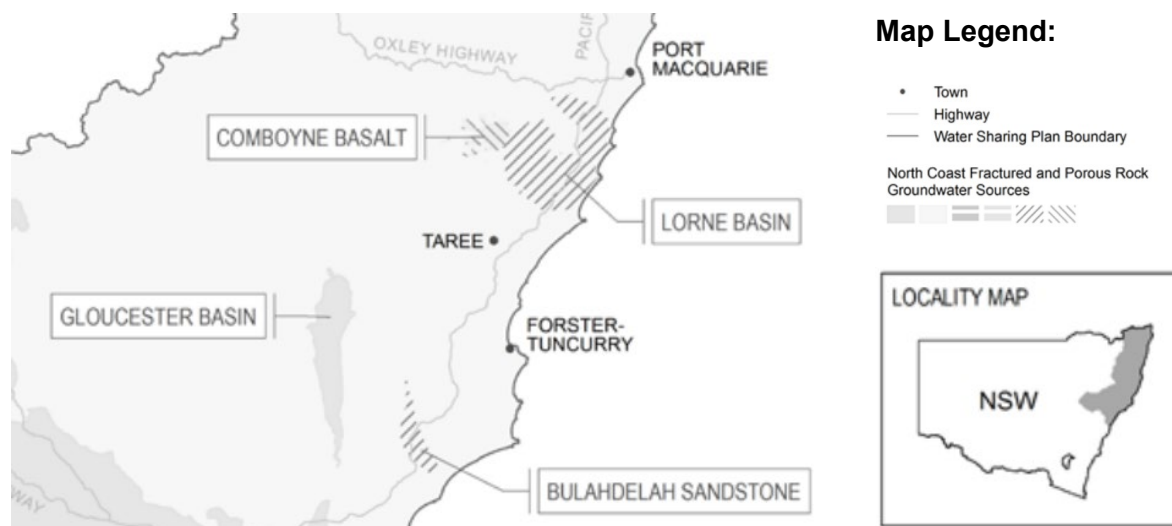
Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016¹⁰.

This plan regulates resources that are located in the six BCAs, however it is difficult to determine the exact location of each groundwater source with the mapping provided. The plan boundary shown in the locality map in Figure 8 below, covers all fractured and porous rock aquifers on the North Coast of NSW.

¹⁰ NSW Government 2016(b)

Fractured rock aquifers within the MidCoast include the Comboyne Basalt Groundwater Source and porous rock groundwater sources within the MidCoast include the Bulahdelah Sandstone Groundwater Source, the Gloucester Basin Groundwater Source and the Lorne Basin Groundwater Source¹¹.

Figure 8. Excerpt from map of North Coast Fractured and Porous Rock Water Sharing Plan Area and groundwater sources¹²



Key insights in relation to water sharing generally are:

- Water allocation is outside of Council's jurisdiction. Water allocation quotas for each use are set in consultation with various State Agencies to consider landholder needs e.g. domestic, agriculture, industry and commercial. When allocating water rights, environmental water and basic landholder rights take precedence over other licensed water users e.g. industry and commercial.
- Water licenses for commercial use are generally granted in perpetuity but are reviewed every 10 years. This is intended to provide water security for commercial activities.
- Allocations are prioritised for water utilities, licensed stock and domestic use over other commercial purposes e.g. dairies or intensive livestock production, aquaculture, irrigated crops, mining, etc. As a result, during drought and periods of water restriction, commercial industries will generally experience water shortages more acutely.
- Some commercial users e.g. mining may be issued a higher-level of security for their water allocation and have the capacity to establish options for water re-use; making these activities less vulnerable to experiencing water shortages compared with other commercial users in times of drought and water restrictions.
- Most of the State's commercial water supplies are already fully allocated. That means most new commercial activities will rely on water trading to access commercial quantities e.g. purchasing water entitlements from an existing user through a broker.
- The MidCoast's water resources provide limited opportunities for commercial supply. However actual use is difficult to quantify - there are hundreds of licence holders,

¹¹ DPI Water 2016(c)

¹² Department of Primary Industries - Water 2016c

extraction reports vary considerably and the rate of extraction per user is largely unknown.

The WM Act also regulates 'controlled activities', which are certain types of activities in, on or under waterfront land e.g. building, removing material, carrying out works. The WM Act defines 'waterfront land' as the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of these waterbodies. These areas are also referred to in environmental planning instruments, as 'riparian land'.

Where controlled activities require approval, the applicant must demonstrate that the activity will be carried out in a way that avoids or minimises negative impacts on waterfront land and water users. Decision making for controlled activities is generally referred to the Natural Resource Access Regulator (Department of Industry - Water) for consideration.

Noting that several exemptions do apply, including activities carried out by public authorities or activities associated with stock rights such as installing water pumps.

In terms of land use planning for waterways and water catchments, it is therefore most appropriate to consider the application triggers within a development assessment process that relate to development and other controlled activities within these riparian lands, based on the classification of the waterway e.g. first order stream.

4.2.2 Crown Land Management Act 2016

The [Crown Land Management Act 2016](#) is relevant to the care, control and management of waterways and marine activities within the coastal zone, as many developments and activities will require permits and/or leases issued in accordance with this Act.

Not all crown land is managed by the State, with many reserves in the Crown Land estate, being under the care, control and management of local Councils, detailed below:

Crown reserves are land set aside on behalf of the community for a wide range of public purposes including environmental and heritage protection, recreation and sport, open space, community halls, special events and government services.

New South Wales has more than 34,000 Crown reserves. The reserve management system enables the NSW Government, local councils and members of the community to work together to provide care, control and management over Crown reserves.

Through our network of regional offices, we ensure that Crown reserves are responsibly managed and that natural resources such as water, flora and fauna and scenic beauty are conserved, while still encouraging public use and enjoyment of the land.¹³

Council relies on several funding sources to maintain and improve assets within local and Crown reserves, which are generally made up of a combination of traditional revenue streams and government-funded grants including but not limited to¹⁴: council rates and charges; council user charges and fees; operating grants; and other ad hoc payments

Critically, the land use zone applied to Crown lands and the permissibility of land uses on that land, must be consistent with the public purpose i.e. reserve for recreation; and should reflect any plan of management that applies to that land.

Similarly, the application of zones and permissibility of land uses within waterways should reflect existing leases, licenses and activities permitted by the Crown within those waters, from commercial aquaculture leases, to the construction of private wharves and jetties.

¹³ <https://www.industry.nsw.gov.au/lands/what-we-do/crown-land/reserves>

¹⁴ NRMA 2017b

From a strategic planning perspective, the condition of land-based infrastructure that provides and maintains access from our key marine activity centres to the adjoining waterways is critical, to both commercial and tourist activities.

Intermodal Terminals and Logistics Hubs

Intermodal terminals are places that provide for freight connections between different modes of transport. Within our marine activity centres, they serve aquaculture leaseholders and commercial fishing, critical to our regional economy; by facilitating the successful movement of live and fresh produce to local, regional, state, national and inter-state markets.

Walking and cycling

Walking and cycling infrastructure can also help encourage healthy and active communities. This infrastructure can also provide a diversity of experiences for visitors to our coastal areas.

The NSW government is focused on improving cycling connections within urban centres which also provides an opportunity to capitalise on the growth of cycle tourism in scenic areas. More than half of the international cycling tourists who visit Australia choose NSW as their riding destination¹⁵.

The MidCoast features outstanding natural assets within our coastal towns and villages these opportunities may be realised through the development and implementation of the 2018-2021 Delivery Program & 2018-2019 Operational Plan initiative to 'review existing bike plans to develop a single MidCoast Council Bike Plan'¹⁶.

The updated bike strategy should consider cycle tourism bike routes to better connect villages to larger urban settlements, which have existing well-utilised road and pedestrian networks. This aligns with the MidCoast Destination Management Plans which states there is a need to increase cycling touring trails, both on and off road, within the region¹⁷. It is understood that a significant cycling project is underway in the MidCoast, the cycleway from the Pacific Highway to Old Bar and then to Wallabi Point¹⁸.

Council is currently also in the process of preparing a Pedestrian Access and Mobility Plan (PAMP) which will consider wider and specific priorities for pedestrian access management in the MidCoast.

4.3 Regional Level Considerations

4.3.1 Hunter Regional Plan 2036

The [Hunter Regional Plan](#) (the Plan) provides for the integration of land use and transport as outlined in Ministerial Direction 3.4 and this is evident in both the vision and introduction of this document.

Vision: The leading regional economy in Australia with a vibrant new metropolitan city at its heart.

¹⁵ NSW Government 2010

¹⁶ MidCoast Council 2018c

¹⁷ MidCoast Council 2017c

¹⁸ NSW Roads and Maritime Services 2018e

The Hunter is the leading regional economy in Australia, with thriving communities and a biodiversity-rich natural environment. The Hunter is home to more than 860,000 people and is still growing due to its reputation as one of the great places to live and work.

Beyond Greater Newcastle are vibrant centres, towns and villages, many of which have benefited from emerging job opportunities in the health, agriculture, tourism, defence, energy and transport sectors. Faster inter-regional transport and digital technology are making it easier for residents and businesses to interact and do business.

Visitors are arriving in greater numbers on cruise ships, via Newcastle Airport and by a variety of rail and highway links to sample international quality wines and fresh food, walk along convict-built trails, trek through World Heritage-listed national parks and swim at lovely beaches.

The region's protected natural environment enriches the experience of living in the region, sustains the region's water supply and protects biodiversity.

Ministerial Direction 5.10 requires future changes to planning controls to be consistent with Hunter Regional Plan 2036.

Therefore, the vision, land use strategy, goals, directions and actions described in the Hunter Regional Plan are considered generally reflective of current Government policy directions at National and State levels. On that basis, the Hunter Regional Plan was used as a platform for identifying top-down considerations for local strategic planning.

The Hunter Regional Plan recognises the importance of healthy waterways to regional economic development. Five directions are particularly relevant to high-level planning for waterways health within the MidCoast.

Goal 1 – The leading regional economy in Australia

The Hunter is the largest regional economy in Australia, ranking above Tasmania, the Northern Territory and the Australian Capital Territory in terms of economic output. It drives around 28 per cent of regional NSW's total economic output and is the largest regional contributor to the State's gross domestic product.⁷

The Hunter is strategically situated to leverage proximity to Asia and the region's growing agricultural, health, education and tourism sectors to supply developing Asian economies with resources and products.

The Plan aims to strengthen the region's economic resilience, protect its well-established economic and employment bases and build on its existing strengths to foster greater market and industry diversification.

Direction 11: Manage the ongoing use of natural resources

Water catchments in the region include the Hunter and Manning river systems and the Karuah and Lake Macquarie water catchments, which encompass important coastal lakes and lagoons, coastal wetlands, sensitive estuaries and the protected waters of Port Stephens and the Great Lakes.

11.3 Implement the cumulative impact assessment methodology when planning for important agricultural land and water resources.¹⁹

Goal 2 - A biodiversity-rich natural environment

The Hunter's diverse natural environment includes some of the most unique ecological systems in Australia. Within the region there are three terrestrial bioregions – the Sydney Basin, North Coast and Brigalow Belt South, and the Hawkesbury and Manning Shelf marine bioregions.

¹⁹ <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Hunter/Hunter-regional-plan/The-leading-regional-economy-in-Australia>

The natural environment sustains important terrestrial and aquatic ecological systems and good habitat connections, including part of a national corridor extending from Victoria to Far North Queensland.

Pristine natural areas are conserved in a network of protected areas, from the World Heritage values of the Greater Blue Mountains to the Port Stephens–Great Lakes Marine Park.

Residents and visitors are fortunate to have ready access to many of the region’s natural areas – and an array of unique experiences. These areas contribute to the region’s identity and the health of its communities and are important for recreational and tourism activities and as a focus for investment. They are also a key factor in the decisions people make about where to live.

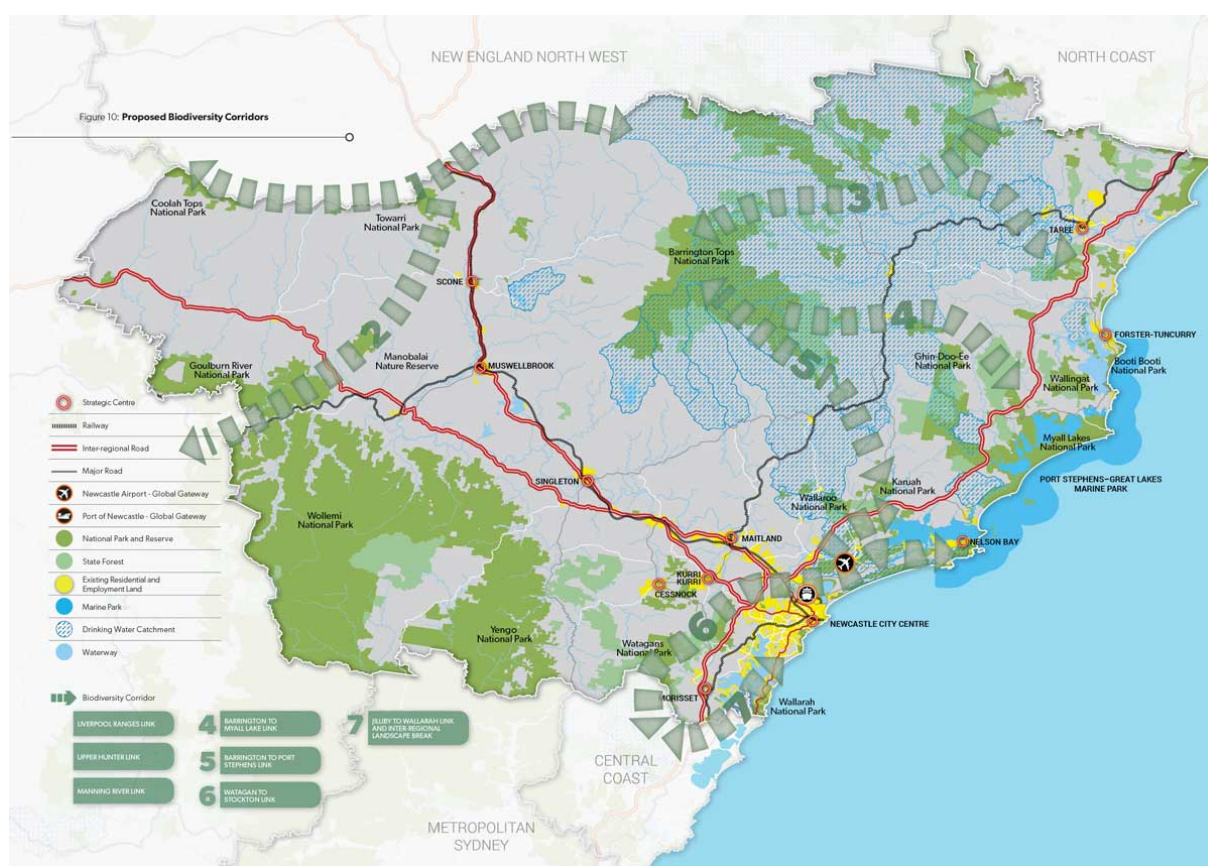
The Hunter contains two major water catchments, the Hunter and the Manning River, which provide water that sustains the region.

Good planning and design will be fundamental to protecting the environment and building greater resilience to natural hazards and climate change.

Direction 14: Protect and connect natural areas

Modelling that identifies habitat connectivity is the first step to identifying and protecting existing habitat links and then establishing new links to support the movement of animals across the landscape.

Many of the region’s natural features are already subject to a high level of regulation to protect their environmental values. Strategic land use planning should identify and take account of the location and extent of these areas of high environmental value.



Direction 15: Sustain water quality and security

Water catchments in the region include the Hunter and Manning river systems and the Karuah and Lake Macquarie water catchments, which encompass important coastal lakes and lagoons, coastal wetlands, sensitive estuaries and the protected waters of Port Stephens and the Great Lakes.

Monitoring and managing the impacts of existing land uses, and in the future those associated with growth, will be essential to protect the quality and security of the region's water supplies. This is particularly important in areas containing drinking water catchments.

Improvements to the networks operated by Hunter Water and MidCoast Water, and Muswellbrook, Singleton and Upper Hunter councils will be necessary to ensure an ongoing supply of water.

Water sharing plans form the basis of water sharing and water allocation in the Hunter. Changes in water demand from different uses may result in the potential reallocation of water over time.

15.1 Protect water catchments to sustain high quality and dependable water supplies across the region.

15.2 Effectively manage surface and groundwater use in agricultural areas to support ecosystem function and food production, and to cater for the increasing demand of urban communities and industry.

15.3 Plan for the security of the region's town water supply.

15.4 Implement catchment-based plans for the ongoing sustainable management and health of estuaries.

15.5 Apply the neutral or beneficial water quality objectives to land use planning in surface and groundwater drinking water catchment areas to minimise the effects of development on waterways, including watercourses, wetlands, groundwater dependent ecosystems, riparian lands, estuaries, lakes, beaches and marine waters.

Direction 16: Increase resilience to hazards and climate change

Most people in the Hunter live near the coast, bushland or rivers. The appeal of these places is obvious; however, they may also come with challenges such as flooding, coastal inundation, erosion and bushfires. For example, the Hunter and Manning rivers and their major tributaries are flood-prone. These issues are a significant factor when planning for future growth.

Climate change is likely to result in varying rainfall, higher temperatures and prolonged dry periods or drought. These conditions may cause more frequent and intense hazards.

The Hunter and Manning Valley floodplains provide some of the region's most fertile soils. The floodplains also host important inter-regional freight connections, including the Hunter Valley Coal Rail Network and North Coast Railway. Tools have to be developed to manage the risk to communities, infrastructure and agricultural productivity from the impacts of climate change.

Land use planning that supports changes to the physical environment and infrastructure can help to avoid or manage risks and build community resilience to hazards. The NSW Government will support councils to develop evidence and provide strategic advice to inform their decision-making.

16.1 Manage the risks of climate change and improve the region's resilience to flooding, sea level rise, bushfire, mine subsidence, and land contamination.

16.2 Review and consistently update floodplain risk and coastal zone management plans, particularly where urban growth is being investigated.²⁰

Goal 3 - Thriving communities

The Hunter is home to some of the most diverse communities in NSW and their distinctive character is a significant competitive advantage for the region.

Many communities are set within and around the Hunter's natural features and open space, which are among the region's best assets. The quality of these areas and the ability to access them gives residents an array of unique experiences and the opportunity for a healthy lifestyle.

The Hunter contains natural features that are important cultural heritage for Aboriginal communities. Conserving these assets and respecting the Aboriginal communities' right to determine how they are identified and managed will preserve some of the world's longest-standing spiritual, historical, social and educational values.

Protecting built heritage values through revitalisation will create thriving communities that are great places to live.

Direction 18: Enhance access to recreational facilities and connect open spaces

Expanding on the recreational walking and cycling trails that already exist in the region will allow more people to experience the region's wonderful natural areas. This includes extending the Great North Walk – a 250-kilometre bushwalking track that already links Sydney to the Hunter Valley and Newcastle – along the coast to Forster and inland.

The Hunter has an extensive network of open space spread across 9,775 hectares of land that provides many opportunities for people to experience the environment. By 2036, the network of recreation facilities, open space and bushland will extend to form a 'green grid' across the region.

The waterways in the region, such as Lake Macquarie, Port Stephens and Manning River, support important water-based recreational activities including both powered and non-powered boating activities.

18.1 Facilitate more recreational walking and cycling paths including planning for the Richmond Vale Rail Trail and expanded inter-regional and intra-regional walking and cycling links, including the NSW Coastal Cycleway.

18.2 Deliver connected biodiversity-rich corridors and open space areas for community enjoyment.

18.3 Enhance public access to natural areas, including coastal and lake foreshores.

18.4 Assist councils to develop open space and recreation strategies that identify a range of accessible open space and recreation opportunities; integrate open space, active transport and recreation networks; and improve public foreshore access.

18.5 Implement actions and invest in boating infrastructure priorities identified in regional boating plans to improve boating safety, boat storage and waterway access.

Direction 19: Identify and protect the region's heritage

Cultural heritage is important to communities by providing tangible connections to the past. Heritage items can also attract tourism, which can contribute to local economies.

The Hunter contains natural features that are important to the cultural heritage of Aboriginal communities. Conserving these assets, and respecting the Aboriginal community's right to determine how they are identified and managed, will preserve their significant values.

²⁰ <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Hunter/Hunter-regional-plan/A-biodiversity-rich-natural-environment>

19.1 Consult with the local Aboriginal communities to identify and protect heritage values to minimise the impact of urban growth and development, and to recognise their contribution to the character and landscape of the region.

19.2 Assist the preparation of appropriate heritage studies to inform the development of strategic plans, including regional Aboriginal cultural heritage studies.²¹

Collectively, these directions provide insights relevant to planning for rural waterways and catchments; and water as a natural resource under significant pressure and demand including but not limited to:

- Encourages implementing a catchment-based approach to sustainably manage water quality and catchment health e.g. Catchment Management Plans.
- Requirements for strategic land use planning to better identify, map and protect natural environments with 'high environmental value' e.g. aquatic environments, foreshores and riparian corridors, irrespective of ownership.
- Requirements to incorporate water sensitive design elements into developments located in areas that can impact on water quality and flows.
- Priority is given to protect drinking water catchments, including surface and groundwater, from the impacts of ongoing or new land uses. The Hunter Regional Plan recommends applying the neutral or beneficial water quality objectives when making land use decisions. This is particularly relevant in catchments that contain drinking water supply resources.

In the MidCoast, drinking water supply resources are located in the Manning, Crawford and Karuah Rivers Broad Catchment Areas with additional drinking water aquifers located at Tea Gardens and Napiac within the Wallis Lake BCA, and at Tea Gardens in the Myall River BCA.

- Priority is given to supporting fishing and aquaculture activities, with emphasis placed on the MidCoast's role in oyster production. This includes managing the natural environments within the whole of a catchment in order to sustain healthy coastal waters, which underpins production capacity and value.
- Priority for developments relating to water-based tourism and recreational experiences. These recognise commercial-scale operations e.g. chartered tours and more passive activities e.g. personal boating and fishing, sight-seeing, etc.
- General support is provided for enhancing and protecting riparian land adjoining waterways. In particular, the integration of land use planning and initiatives to identify and respond to potential risks to land and land holders from natural hazards including but not limited to: flooding, erosion, land degradation through uncontrolled run-off, sedimentation from unsealed roads; and preparing for changing weather patterns and storm events associated with climate change.

4.3.2 MidCoast Regional Economic Development Strategy 2018-2022

The development of Regional Economic Development Strategies across New South Wales was the initiative of the [NSW Department of Premier and Cabinet](https://www.nsw.gov.au/premier-and-cabinet), through the Centre for Economic and Regional Development (CERD). These Strategies were developed with strong linkages to the findings and recommendations of the 20 Year Economic Vision for Regional NSW strategy document.

²¹ <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Hunter/Hunter-regional-plan/Thriving-communities>

CERD worked closely with local councils to the Strategies, which apply standardised regional economic development methodology to identify existing economic strengths; new opportunities to enhance the region's development performance and competitiveness: and to set the region on a path to sustainable economic development.

The [MidCoast Regional Economic Development Strategy](#) (REDS) was released in July 2018. The process included a series of well-attended workshops held across the region, aimed at collaborating to build sustainable economic development. The strategy includes an action plan for the next three years, leveraging regional strengths such as our land and water assets, our infrastructure, and our location, lifestyle and amenity.

The MidCoast REDS is linked with Council's **Community Strategic Plan** and **Destination Management Plan**, and provides a strategic platform for community, business and Council to work with the State Government in driving economic growth. It is an important plan that will help attract State resources to underpin economic projects and create employment in the region.

REDS identified key strengths of the MidCoast regional economy that can be capitalised upon, including our *Land, water and related assets*:

The Region has good agricultural land and reliable rainfall which produces pastures that are highly suitable for dairy and beef production. The land is suitable for other agricultural industries including poultry farming. There are hardwood and softwood forests located in the western sections of the Region which provide the basis of the forestry industry. The MidCoast Region has several estuaries highly suitable for aquaculture. These include areas around the Manning River, Wallis Lake, Karuah River and Port Stephens.

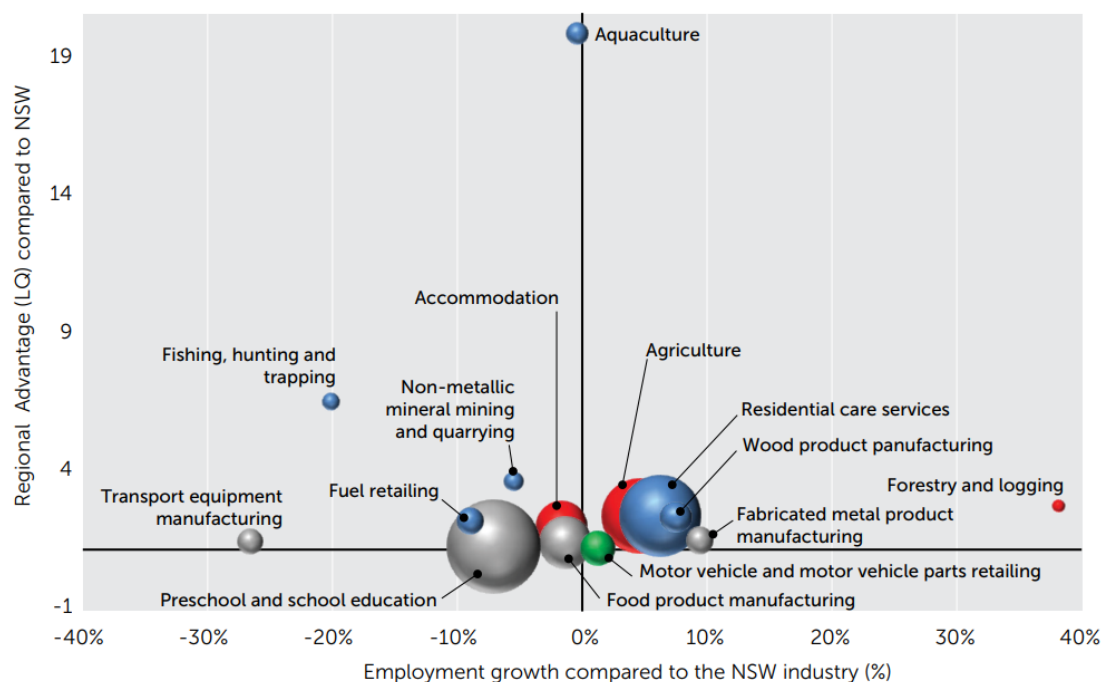
There are a number of key industry specific assets that are used for processing product from the land and from water industries. These include the beef abattoir located in Wingham (which is export licensed), private seafood processing, saw milling facilities and mining infrastructure.²²

REDS also examined the region's competitive advantage (Location Quotient) by industry and comparing these findings to the same sector across NSW. The top five industries in the MidCoast were identified as:

- Aquaculture (LQ of 19.5);
- Fishing, Trapping and Hunting (LQ of 6.6);
- Non-Metallic Mineral Mining and Quarrying (LQ of 3.7);
- Forestry and Logging (LQ of 2.9); and,
- Agriculture (LQ of 2.5).

²² <https://www.midcoast.nsw.gov.au/Part-of-your-every-day/Council-Projects/Regional-Economic-Development-Strategy>

Figure 9. Location Quotients and Employment Growth for MidCoast Industries



Source: Census 2011, 2016. See the Supporting Analysis for notes regarding the analysis.

However, as illustrated by the size of the 'bubbles' in the chart above, these industries do not generally employ a large number of people when compared to other industries; and may not be experiencing growth when compared to the same industry across NSW.

For example - Aquaculture is a specialised industry where the MidCoast has a significant regional advantage however, it employs a relatively small number of people and this number was in slight decline compared to the rest of NSW at the time of analysis (2018).

Based on this analysis, the Strategy then identifies key opportunities within the MidCoast and how infrastructure maintenance and development can ensure they are realised.

Strengthening the Region as a location of choice:

One of the key initiatives identified in the Strategy recommends that Council and other public agencies *improve the core foundation infrastructure, in particular the roads and bridges but also other infrastructure relating to telecommunications and water*. With regards to rural waterways and catchments this includes improvements to *water infrastructure – improving water security*²³.

Creating a supportive environment for businesses to invest and grow

The only initiative/action identifies under this theme as it relates to rural waterways and catchments is *resolving potential land-use conflicts through completion of a land-use strategy*²⁴.

These recommendations are relevant to both the short term local plan recommendations and other medium and long term initiatives being considered in the strategic recommendations, of the Rural Strategy.

²³ <https://www.midcoast.nsw.gov.au/Part-of-your-every-day/Council-Projects/Regional-Economic-Development-Strategy>

²⁴ <https://www.midcoast.nsw.gov.au/Part-of-your-every-day/Council-Projects/Regional-Economic-Development-Strategy>

4.4 Local Level Considerations

At the local level i.e. applying exclusively within the local government area (LGA), additional policy considerations are set out in a range of documents endorsed by the State Government and/or Council. Again, these offer goals, directions and actions that complement, or provide more detail, than those provided in the Hunter Regional Plan 2036.

It is important to note here that the MidCoast Regional Economic Development Strategy, while it applies exclusively to the MidCoast LGA, has been recognised as a regional strategy as it has this intention and purpose. The fact that the MidCoast LGA was found to be an effectively independent Functional Economic Region during preparation of the Strategy, is informative as both an opportunity and a challenge for the MidCoast.

The following documents are relevant to long-term planning for water quality and catchment health in the MidCoast and have been reviewed by the consultant team:

- Great Lakes Water Quality Improvement Plan (Great Lakes Council, 2009)
- Karuah River Catchment Management Plan (Great Lakes Council, 2015)
- Manning River Estuary Management Plan (Greater Taree City Council, 2009)
- Smiths Lake Estuary Coastal Zone Management Plan (BMT, 2011)
- Wallis Lake Estuary and Catchment Management Plan (Great Lakes Council, 2014)
- Wallis Lake Wetland Strategy (also to manage the Karuah catchment wetlands) (Great Lakes Council, 2010)
- Working with our Catchment: Manning River Catchment Management Program (MidCoast Water, 2011)
- Drinking Water Quality Management System (MidCoast Council, 2018)

The following Council documents, which will be discussed in additional detail below, have been identified as particularly relevant to long-term planning for waterways, water catchments and management of water resources in the MidCoast:

- [MidCoast 2030: Shared Vision, Shared Responsibility](#)
- [MidCoast Destination Management Plan](#)
- [Our Water Our Future 2045 - MidCoast Water's Integrated Water Cycle Management Strategy](#) (MidCoast Water, 2015)

4.4.1 MidCoast 2030: Shared Vision, Shared Responsibility

MidCoast 2030 was the first Community Strategic Plan prepared for the new 10,000 square kilometre MidCoast local government area created in May 2016.

Our Vision: We strive to be recognised as a place of unique environmental and cultural significance. Our strong community connection, coupled with our innovative development and growing economy, builds the quality of life we value.

Within this Plan we valued: our unique, diverse and culturally rich communities; a connected community; our environment; our thriving and growing economy; strong leadership and

shared vision²⁵. Critically, we also recognise that our rural landscape is diverse, extensive and key to our economic and social prosperity:

The geographical region of 10,052 square kilometres extends from the coastline, west to the escarpment of the Great Dividing Range, on the mid north coast of New South Wales.

The area spans from beaches on the coast to mountains in the hinterland and numerous national parks and green spaces in between. It includes the Manning River valley, the Wallis, Smiths and Myall Lakes systems, the northern foreshore of Port Stephens, the agricultural hinterland and the rugged, forested ranges of the Barrington Tops, Woko and Tapin Tops National Parks.

We are a region rich in cultural pride and connection to the landscape and we embrace the spirit of reconciliation. Being well known for our natural beauty, our region encompasses 58 National Parks and reserves, five coastal lagoons, one marine park, an internationally recognised wetland in the Myall Lakes, eight Aboriginal Places and the magnificent World Heritage listed area of the Barrington Tops. Protecting and celebrating these features is a key focus and contributes to our lifestyle and wellbeing.

Much of the rural area is used for farming, primarily dairy and beef cattle with a growing poultry industry. Oyster farming and fishing are important industries on our coast.

During the summer months the population swells with tourists coming to enjoy the region's pristine coastline and beaches, coastal lakes, lagoons and other attractions.

Goals and actions, as they relate to Rural Waterways are provided below in

Table 1.

Table 1. Rural Waterway Goals and Actions from MidCoast 2030

WE VALUE... a connected community		
Where do we want to be?	How will we get there?	Who can help?
We protect the health and safety of our communities	Continue to develop a sustainable network of water, sewer and storm water systems to meet community needs and health and safety standards.	MidCoast Council NSW and Federal Government Regional Development Australia Utility providers
How will we know we are on track?		
No suitable measure identified within the Plan		

WE VALUE... our environment		
Where do we want to be?	How will we get there?	Who can help?
We protect maintain and restore our	Value, protect, monitor, and manage the health and diversity of our natural assets, wildlife and ecosystems.	MidCoast Council

²⁵ <https://www.midcoast.nsw.gov.au/Council/Plans-and-reports>

natural environment	<p>Ensure climate change risks and impacts are understood and managed.</p> <p>Protect, maintain and restore water quality within our estuaries, wetlands and waterways.</p> <p>Improve the capacity of industry and the community to achieve the best possible outcomes for the natural environment.</p> <p>Ensure our natural assets are maintained to a standard appropriate to their use.</p>	<p>NSW and Federal Government</p> <p>Environmental groups</p> <p>Volunteers</p> <p>Not for profit organisations</p> <p>Local Aboriginal groups and organisations</p> <p>Education and training providers</p> <p>Chambers of Commerce and business community</p>
We manage resources wisely	<p>Proactively manage our resource consumption.</p>	
We balance the needs of our natural and built environments	<p>Ensure growth and new development complements our existing natural assets, cultural assets and heritage sites.</p> <p>Optimise land use to meet our environmental, social, economic and development needs.</p> <p>Promote greater utilisation of sustainable design in new developments.</p>	
<p>How will we know we are on track?</p> <p>1 There are improved or maintained scores in the annual waterways report card</p> <p>4 The community is satisfied with land use planning decisions</p>		

WE VALUE... our thriving and growing economy		
Where do we want to be?	How will we get there?	Who can help?
We encourage greater rural and agricultural economic diversity	Encourage the diversification and sustainability of agribusiness through the utilisation of sustainable farming practices, new technologies and innovation.	<p>MidCoast Council</p> <p>NSW and Federal Government</p> <p>Regional Development Australia</p> <p>Tourism providers and Destination</p> <p>NSW Chambers of Commerce and business community</p>
<p>How will we know we are on track?</p> <p>2. The net number of new businesses has increased</p>		

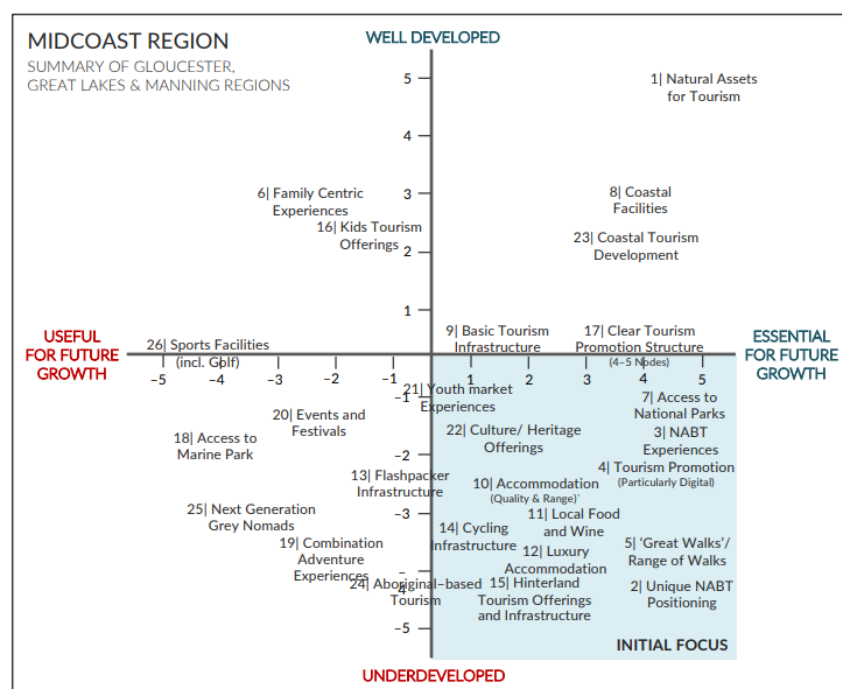
WE VALUE... our thriving and growing economy		
Where do we want to be?	How will we get there?	Who can help?
We work in partnership with our community and government to ensure council is a trusted	Partner with, and positively influence the State and Federal Governments in	<p>MidCoast Council</p> <p>NSW and Federal Government</p> <p>Regional Development Australia</p>

and flexible organisation that delivers on their needs	delivering local priorities and services. Develop and deliver services and programs that provide value for money.	Tourism providers and Destination NSW Chambers of Commerce and business community
<p>How will we know we are on track?</p> <p>1 The community is satisfied that council is well run and managed</p> <p>2 The community is satisfied that decisions are made in their best interest</p> <p>4 The community is satisfied that council provides value for money for ratepayers</p>		

4.4.2 MidCoast Destination Management Plan

The MidCoast Regional Economic Development Strategy endorses the [MidCoast Destination Management Plan](#) (DMP) and recommends its implementation to support investment in key tourism assets to increase yield and visitation, particularly in the off season.

Figure 10. MidCoast Tourism Gap Analysis



As part of the Baseline Analysis, an assessment of the key gaps was undertaken to identify those opportunities that have the greatest potential to contribute to the growth of the visitor economy within the MidCoast region. The Gap Analysis highlights the areas for initial focus, which are essential for future growth although currently underdeveloped. These areas have been further investigated through the DMP process and consultations.²⁶

The consultation process identified several opportunities for tourism development within waterways and their broader catchments including but not limited to:

²⁶ [MidCoast Tourism Destination Management Plan](#)

- Adventure activities and opportunities, relating to World-Heritage Barrington Tops, rivers and other natural areas. Noting that there was also significant community tension over mining and access to rivers and waterways
- Linkages between the mountains and the sea through the rivers and waterways
- Natural events such as wildlife seasons, migrations and high river flows for white-water rafting

A strengths and weaknesses, opportunities and constraints analysis also yielded additional insights into the tourism industry across the MidCoast as shown in Table 2 below.

Table 2. MidCoast Tourism Opportunity and Challenges Analysis

Strengths	Opportunities
<p>Natural environment including world heritage listed national parks, wetlands of international significance, waterways, lakes and river systems</p> <p>Range of existing outdoor recreation and nature-based facilities and places</p> <p>Established tourism industries e.g. dolphin & whale watching, kayaking and some existing high-quality accommodation</p> <p>Cycling and walking trails</p> <p>Wide range of popular events and festivals</p>	<p>MCC's and region's commitment to sustainability</p> <p>Strengthen relationships with potential partners to deliver new products and experience, such as NPWS and the Local Aboriginal Land Councils and private sector</p>
Weaknesses	Challenges
<p>Allocation of existing resources not maximising opportunities to build awareness or promote the region to key target markets</p> <p>Maintenance required to some visitor infrastructure and facilities e.g. walking trails</p> <p>Limited resources for implementation of signature experiences</p>	<p>Hyper-seasonality over summer along the coast</p> <p>Managing visitor economy infrastructure projects across multiple land tenure</p> <p>Growing demand during non-peak (low and shoulder) seasons and increasing regional dispersal</p> <p>Access to waterways e.g. rivers in the hinterland and easements across private land</p>

From this, key implementation strategies were identified regarding the rural waterways and catchments:

- ***Need for collaboration*** between MCC, communities, businesses and other key stakeholders across the region and beyond. Building and maintaining networks and ensuring ongoing communication with local communities and businesses is essential and requires a consistent and planned approach.
- ***Accessibility*** to the experience offer is critical, including to the rivers, lakes and waterways for kayaking or white-water rafting or trails for hiking and mountain biking. This may include the need for public easements or improving signage and trail markers.

- **Partners are critical to long-term success.** *There will be a need to work closely with Destination NSW, the newly formed Destination North Coast Destination Network and other potential partners, such as the NSW National Parks & Wildlife Service (NPWS), Forestry Corporation of NSW (FC), Local Aboriginal Land Councils as well as other public and private sector organisations.*²⁷

Several of the signature visitor experiences and ‘Game Changer’ projects described in the DMP and discussed in more detail in the Tourism paper, will rely on enhanced access to rural waterways and catchments, including but not limited to those shown below in Table 3.

Table 3. Tourism Destination Plan Signature Experiences²⁸

Strategic Themes	Signature & Supporting Experiences	Links & Value-Adds
Nature's Bounty	Soil to Sea Produce Event and Markets	Manning Valley Soil to Sea Produce Precinct (Taree)
Natural Adventure	Great Lakes Great Walk & Aquatic Trails	Contemporary Coast Extend out to Barrington Tops and along the coast in stages
	From Secret Waterholes to Snow Flurries – natural events program	Nature-based and wildlife events – platypus, whales, fishing seasons e.g. Black Bass and deep sea species, snow, high river flows
	Nature & Adventure Itineraries	Highlight existing nature-based and recreational experiences, including tracks and trails, fishing, cycling, kayaking, horse-riding, etc
Vibrant Country Life	Gloucester Dairy Factory Redevelopment	Soil to Sea Produce Event and Markets
	Nabiac Agricultural Hub economic development initiative	Experience real country living – saleyards, rodeos, Agricultural Shows, etc Sustainable Futures Convention
Celebrating Culture on Country	Waters and Wetlands Tours	Great Lakes Great Walk and Aquatic Trails Profiling cultural tourism sites
	Aboriginal Health & Well-being Retreat	Our Country Tours, Bush Tucker Dining and Natural Healing/Remedies ‘Day Spa’

4.4.3 Our Water Our Future – Integrated Water Cycle Management

MidCoast Council operates six water supply systems, harvesting in the vicinity of 11 billion litres of water per year.

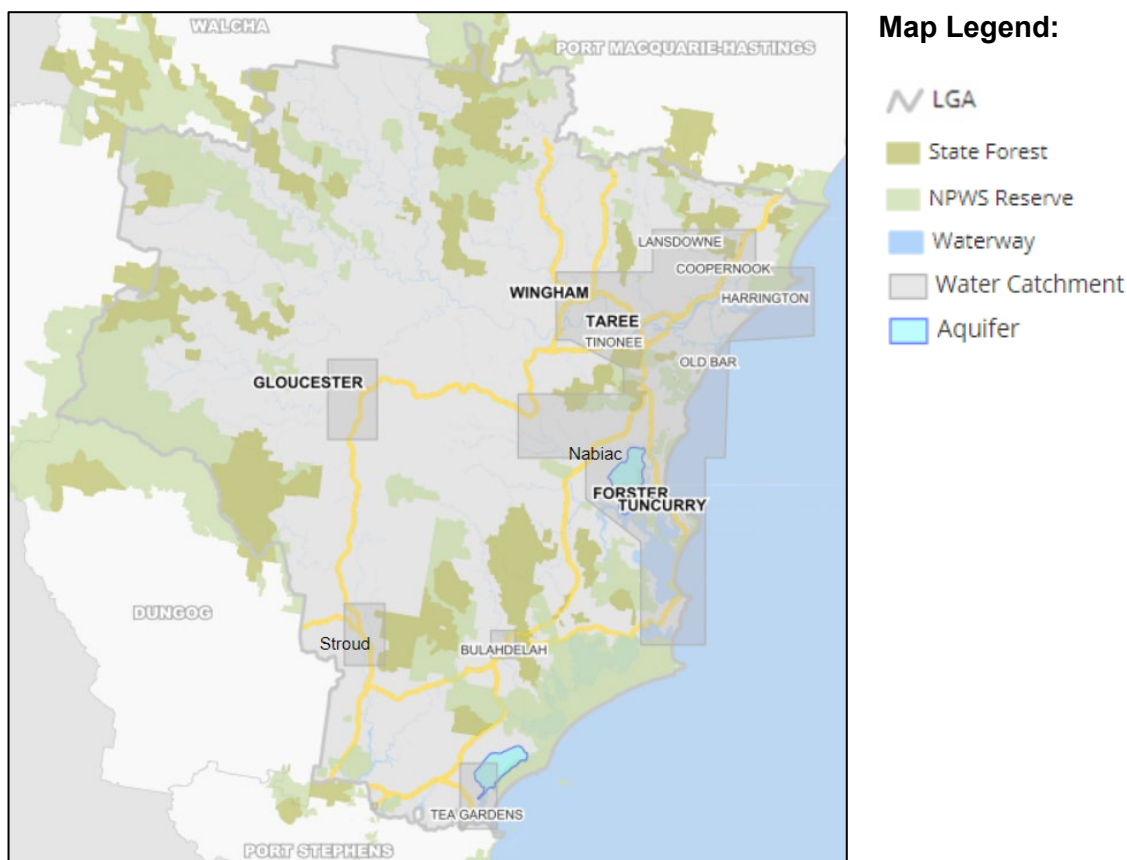
The largest water supply system is the Manning scheme, which provides water for residents from Harrington in the north to Pacific Palms in the south. We also operate four smaller scale

²⁷ [MidCoast Tourism Destination Management Plan](#)

²⁸ [MidCoast Tourism Destination Management Plan](#)

water treatment plants to cater for residents of Stroud and Stroud Road, Bulahdelah, Gloucester and Barrington and Hawks Nest/Tea Gardens. The catchments and aquifers of these systems are broadly illustrated Figure 11 below.

Figure 11. Water Supply Catchments and Aquifers of the MidCoast



These supplies currently serve 37,000 households. The forecast is that by 2050 MidCoast Water Services will need to supply water to 50,000 households.

Securing long term water supplies for our customers is one of our major strategies, and considerable investment is being made in upgrading and extending infrastructure to provide for increased demand.

Water Supply Systems:

- **Manning** – Our main water supply is provided by the Manning scheme. This scheme serves 90 per cent of our water customers in areas such as Taree, Wingham, Forster, Tuncurry, Pacific Palms, Nabiac, Dyers Crossing, Harrington, Coopernook, Hallidays Point and Lansdowne.

Water is pumped from the Manning River and stored in Bootawa Dam, near Wingham which supplies water for the entire scheme. Bootawa Dam has a capacity of 2200 million litres, and to maintain capacity, water is pumped each day from the river to the dam - if the turbidity of the river permits. From Bootawa the water is pumped to reservoirs across the Manning and Great lakes for distribution to households in each area.

- **Bulahdelah** - originally developed in the 1950s. The current water treatment plant was built in 1988 and upgraded in 1995. MidCoast Council provides water to approximately 560 homes and businesses in Bulahdelah.

Water is pumped directly to a treatment plant from a weir on the Crawford River, just near the old Pacific Highway bridge at Bulahdelah. The plant is able to treat two million litres of water each day.

- **Gloucester** - MidCoast Council provides water to approximately 1700 customers in Gloucester and Barrington. The Gloucester Water Supply Scheme comprises of a water treatment plant, three reservoirs, seven booster pump stations and one raw water pump station.

The Gloucester Water Treatment Plant (WTP) was originally built in the late 1930s/early 1940s and underwent an upgrade in the 1980s and again in 2016. Water is drawn from the Barrington River, upstream of Gloucester, and transferred to the Gloucester WTP.

- **Nabiac Aquifer** - The Nabiac Aquifer Water Supply became operational in early 2019 and provides between 6 million - 10 million litres per day to supplement the Manning scheme. The scheme draws water from an inland dune aquifer, located 6km south east of Nabiac, 4km northwest of Tuncurry and with a total catchment surface area of approximately 44sq km.

The surface aquifer is estimated to contain up to 20,000 million litres with the deeper aquifer (that supplies the Nabiac system) holding up to 154,000 million litres when full. The aquifers are recharged by a combination of direct rainfall infiltration and storm water runoff from Bundacree Creek, located to the west of the catchment.

The Nabiac Aquifer supply scheme consists of 18 production bores, the Nabiac Water treatment plant, the Darawank reservoir and pump station, along with over 18 kilometres of pipelines, electrical and telecommunication services. The 18 production bores have a design maximum yield of 143 litres per second.

- **Stroud** - This system provides water to approximately 440 customers in Stroud and Stroud Road. The scheme was developed to overcome water quality problems with the previous supply. Water is pumped from the Karuah River to the treatment plant which has a 50 million litre capacity. The water treatment plant is capable of treating two million litres a day and there are three reservoirs in the system: two at Stroud and one near Stroud Road.
- **Tea Gardens** - Tea Gardens and Hawks Nest residents derive their water from an aquifer borefield to the north-west of Tea Gardens. These bores tap the aquifer between 17 and 20 metres from the surface and can yield up to 12 litres per second.

The borefield, which was developed in 1962, has been expanded and upgraded several times to meet the growing demands of the community. Tower filters within the system are capable of treating eight million litres of water a day. The clear, treated water is pumped to three reservoirs, which have a total capacity of 14 million litres. The scheme has about 37 kilometres of pipelines and serves over 2000 homes and businesses.²⁹

These schemes are established and managed in accordance with the Integrated Water Cycle Management Strategy, first developed in 2008 and revised in 2015 as an adaptable strategy. The strategy is drafted for implementation over approximately 30 years to ensure:

- *Water is managed responsibly and sustainably; and*
- *There is sufficient quality drinking water now and into the future*³⁰

The scope of the Strategy is broad, from the construction of new infrastructure to bank stabilisation and catchment management initiatives.

²⁹ <https://www.midcoast.nsw.gov.au/Water-Services/Water-Supplies>

³⁰ *Our Water Our Future*, MidCoast Water 2015

The strategic issues identified can be grouped into the following:

<p>Water security and secure yield</p> <p>Effluent management</p> <p>Climate variability</p> <p>Compliance</p>	<p>Unserviced communities</p> <p>Water quality and catchment management</p> <p>Leakage and infiltration</p> <p>Condition of major assets</p>
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Options to address each issue were identified and assessed on a Triple Bottom Line basis, taking into account economic, social and environmental factors.³¹

From this Strategy, the following issues and initiatives are directly relevant to planning for our rural waterways and catchments:

REDUCING WATER USE	ENSURING WATER QUALITY	SECURING WATER SUPPLIES	RECYCLING & MANAGING EFFLUENT
Target high water users to help them reduce demand	Support beneficial farm management practices	Investigate and establish additional off-stream storage and augmentation options	Investigate expansion of Taree agricultural reuse scheme and Indirect Potable Reuse
Reduce overall energy consumption and carbon footprint	Advocate to reduce coal seam gas and mining impacts within catchments	Water Sharing Plans balance needs of the river or aquifer and water users	Investigate and prioritise sewer services to 'at risk' small villages
Reduce the volume of stormwater that enters the system and has to be treated.	Water Sharing Plans maintain environmental flows in rivers and aquifers	Water Sharing Plans also balance: town supply, rural domestic supply, stock watering, industry and irrigation	Increase operational efficiency and compliance with best management guidelines and regulations

4.5 Environmental Planning Instruments and other regulatory considerations

The manner in which waterways, water-based activities and water-related infrastructure is considered through various State and Local environmental planning instruments, is relevant to long-term planning and plan making considerations.

The [Environmental Planning and Assessment Act 1979](#) and the [Environmental Planning and Assessment Regulation 2000](#) regulate development activity within, or near, water catchments and waterways.

³¹ [Our Water Our Future](#), MidCoast Water 2015

In particular, the Act identifies development activity located in environmentally sensitive areas as 'designated development' which triggers the need for an Environmental Impact Statement ('EIS'). This, for example, applies to livestock intensive industries such as poultry or piggeries that are located within 100m of a natural water body or wetland, or within a drinking water catchment.

Subordinate environmental planning instruments are: State Environmental Planning Policies (SEPP) and Local Environmental Plans (LEP). The content and format of an LEP is required to be consistent with the Standard Instrument Principal Local Environmental Plan (2006) and not inconsistent with, or repetitious of, the provisions of any relevant SEPP.

This section briefly describes how these types of activities are permitted (with or without consent), and relevant considerations relating to the assessment and determination of development applications within the MidCoast, for example the infrastructure associated with the water supply systems and treatment plants, may be separately zoned, identified and assessed under various planning instruments, in comparison to the waters from which they are supplied.

4.5.1 State Environmental Planning Policy (Coastal Management) 2018

The [State Environmental Planning Policy \(Coastal Management\) 2018](#) provides new statutory definitions and mapping for four 'coastal management areas' that make up the 'Coastal Zone', as listed below. These areas and development matters within the Coastal Zone are discussed in detail within the Marine Activities Background Report.

- Coastal wetlands and littoral rainforests (including surrounding lands), which are protected for conservation under Federal legislation.
- Coastal vulnerability area, which are subject to hazards such as coastal erosion and tidal inundation. Maps for this area are not yet available.
- Coastal environment area, which have recognisable natural features.
- Coastal use area, which encompasses the remaining land not relevant to the above three areas.

Beyond the Coastal Zone, Council has a range of catchment and estuary management plans that provide guidance and implementation recommendations for the extensive rivers, lakes and tributaries that make up our broad catchments and directly influence the healthy flows and water quality of our coastal environments.

Similar to the coastal zone management plans and coastal management programs, these management plans are developed and implemented in partnership with landowners, community and industry groups and other public agencies.

While these plans are prepared in consideration of legislative instruments such as the Water Act and Marine Estate Management Act, their integral relationship with coastal areas and waterways, discussed in the Marine Activity paper, makes them critically important components of coastal management plans under the Coastal Management Act, SEPP, manual and associated frameworks, for the purposes of funding and implementation.

Within the MidCoast LGA these plans have previously been focussed upon land and water management in the former Great Lakes and Greater Taree LGAs. MidCoast Council is however, already establishing a broader and comprehensive program for the integration of catchment, estuary and coastal management programs that deliver a consistent approach from the ranges, to the ocean as shown in Table 4.

Table 4. River, Lake and Estuary Management Plans of the MidCoast

Great Lakes Region ³²	Greater Taree Region ³³
Darawakh/Frogalla Wetland Management Plan Forster Keys Management Plan Great Lakes Coastal Catchment Initiative Karuah River Catchment Management Plan Karuah River Ecological Condition Assessment Lower Myall River Estuary Study (2011) Lower Wallamba River Rivercare Plan Mid-Wallamba River Rivercare Plan Pindimar and Bundabah Foreshore Erosion Study Smiths Lake Estuary Coastal Zone Management Plan Wallamba River Restoration Wallis Lake Estuary and Catchment Management Plan Wallis Lake Navigation Dredging Wallis Lake Sponges Wallis Lake Wetlands Strategy Water Quality Improvement Plan (WQIP) Waterway and Catchment Report Card (and Full Background Reports)	Acid Sulphate Soils Estuary Management Farquhar Inlet entrance opening management plan Manning River maintenance dredging strategy Riverbank restoration

The findings and recommendations of these documents have resulted in significant environmental improvements, particularly with regards to the management of stormwater and agricultural run-off; water quality improvement and report cards; restoration and rehabilitation programs for degraded environments.

These and similar programs in the future are supported through the application of an environmental levy, critical to the ongoing investigation, management and improvement of sensitive environments throughout the MidCoast.

4.5.2 SEPP Exempt and Complying Development Codes

The [Exempt and Complying Development \(CODES\) SEPP](#) contains planning provisions for developments that are likely to have minimal environmental impact to reduce the level of assessment or approval required.

Development on land in and adjoining rural waterways and waterbodies are subject to a higher level of assessment via a development application given: the potential sensitivity of the environment; hazards that may affect the land; or potential impact of development within the location. These areas are identified in the clauses below and include land identified as being: within a buffer area, river front area, ecologically sensitive area, or protected area; affected by

³² <https://www.midcoast.nsw.gov.au/Environment/Coastal-River-Management/River-Lake-Estuary-Management/Great-Lakes-Region>

³³ <https://www.midcoast.nsw.gov.au/Environment/Coastal-River-Management/River-Lake-Estuary-Management/Manning-Valley-Region>

coastal hazard or erosion; land in a foreshore area; or unsewered land in a drinking water catchment.

1.19 Land on which complying development may not be carried out

(1) Specific land exemptions for Housing Code, Inland Code, Low Rise Housing Diversity Code, Rural Housing Code and Greenfield Housing Code To be complying development specified for the Housing Code, the Inland Code, the Low Rise Housing Diversity Code, the Rural Housing Code or the Greenfield Housing Code, the development must not be carried out on—

(a) land within a heritage conservation area or a draft heritage conservation area, unless the development is a detached outbuilding, detached development (other than a detached studio) or swimming pool, or

(b) land that is reserved for a public purpose by an environmental planning instrument, or

(c) land identified on an Acid Sulfate Soils Map as being Class 1 or Class 2, or

(c1) land that is significantly contaminated land within the meaning of the [Contaminated Land Management Act 1997](#), or

(d) land that is subject to a biobanking agreement under Part 7A of the [Threatened Species Conservation Act 1995](#) or a property vegetation plan approved under the [Native Vegetation Act 2003](#), or

(d1) land that is subject to a private land conservation agreement under the [Biodiversity Conservation Act 2016](#) or that is a set aside area under section 60ZC of the [Local Land Services Act 2013](#), or

(e) land identified by an environmental planning instrument as being—

(i) within a buffer area, or

(ii) within a river front area, or

(iii) within an ecologically sensitive area, or

(iv) environmentally sensitive land, or

(v) within a protected area, or

(f) land that is identified by an environmental planning instrument, a development control plan or a policy adopted by the council as being or affected by—

(i) a coastline hazard, or

(ii) a coastal hazard, or

(iii) a coastal erosion hazard, or

(g) land in a foreshore area, or

(h) land that is in the 25 ANEF contour or a higher ANEF contour, unless the development is only for—

(i) the erection of ancillary development, attached development or detached development, or

(ii) the alteration of, or an addition to, ancillary development, attached development or detached development, or

(i) land that is declared to be a special area under the [Water NSW Act 2014](#), or

(j) unsewered land—

(i) to which [State Environmental Planning Policy \(Sydney Drinking Water Catchment\) 2011](#) applies, if that development will result in an increase to the

number of bedrooms on the site or a site disturbance area of more than 250m²,
or

(ii) in any other drinking water catchment identified in any other environmental planning instrument.

(2) Development specified in the **Housing Code, Inland Code or the Low Rise Housing Diversity Code** is not complying development under that code if it is carried out on land described or otherwise identified on a map specified in Schedule 5.

(3) Subclause (2) ceases to have effect—

(a) on 30 November 2018 in relation to land in the local government area of Lake Macquarie and identified on [State Environmental Planning Policy \(Exempt and Complying Development Codes\) 2008 Lake Macquarie Complying Development Land Map](#) (SEPP_ECD_4650_LCD_002_20130730) specified in Schedule 5, and

(b) on 30 November 2021 in relation to land in the local government area of Mosman and identified on any map specified in Schedule 5.

(3A) Development specified in the **Low Rise Housing Diversity Code** is not complying development under that code if it is carried out on land on which there is a heritage item or a draft heritage item.

(4) **Specific land exemptions for Housing Alterations Code and General Development Code** To be complying development specified for the Housing Alterations Code or the General Development Code, the development must not be carried out on unsewered land—

(a) to which [State Environmental Planning Policy \(Sydney Drinking Water Catchment\) 2011](#) applies, if that development will result in an increase to the number of bedrooms on the site or in a site disturbance area of more than 250m², or

(b) in any other drinking water catchment identified in any other environmental planning instrument.

(5) **Specific land exemptions for Commercial and Industrial (New Buildings and Additions) Code** To be complying development specified for the Commercial and Industrial (New Buildings and Additions) Code, the development must not be carried out on—

(a) land within a heritage conservation area or a draft heritage conservation area, or

(b) land that is reserved for a public purpose in an environmental planning instrument, or

(c) land identified on an Acid Sulfate Soils Map as being Class 1 or Class 2, or

(d) land that is significantly contaminated land within the meaning of the [Contaminated Land Management Act 1997](#), or

(d1) land that is subject to a private land conservation agreement under the [Biodiversity Conservation Act 2016](#) or that is a set aside area under section 60ZC of the [Local Land Services Act 2013](#), or

(e) land that is subject to a biobanking agreement under Part 7A of the [Threatened Species Conservation Act 1995](#) or a property vegetation plan approved under the [Native Vegetation Act 2003](#), or

(f) land identified by an environmental planning instrument as being—

(i) within a buffer area, or

(ii) within a river front area, or

(iii) within an ecologically sensitive area, or

(iv) environmentally sensitive land, or

- (v) within a protected area, or
- (g) land that is identified by an environmental planning instrument, a development control plan or a policy adopted by the council as being or affected by—
 - (i) a coastline hazard, or
 - (ii) a coastal hazard, or
 - (iii) a coastal erosion hazard, or
- (h) land in a foreshore area, or
- (i) unsewered land—
 - (i) to which State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 applies, or
 - (ii) in any other drinking water catchment identified in any other environmental planning instrument.

Figure 12. Representation of extent of sewer servicing in the MidCoast

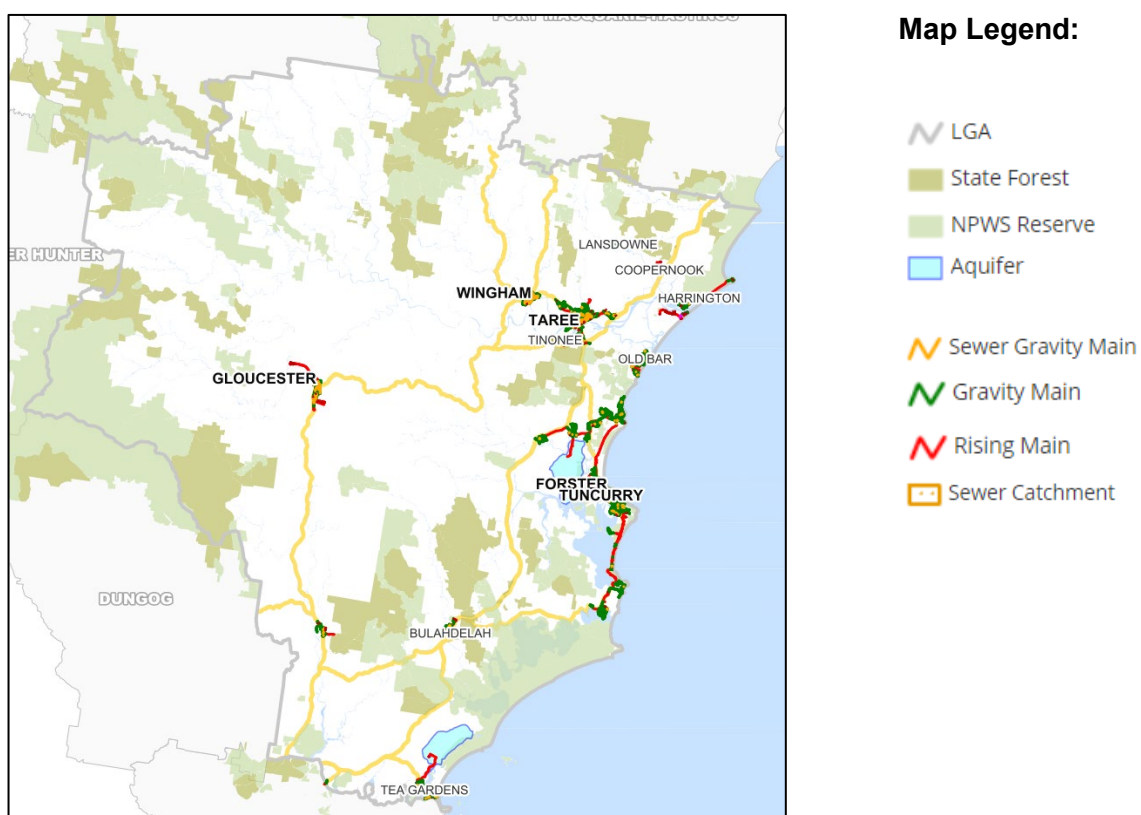
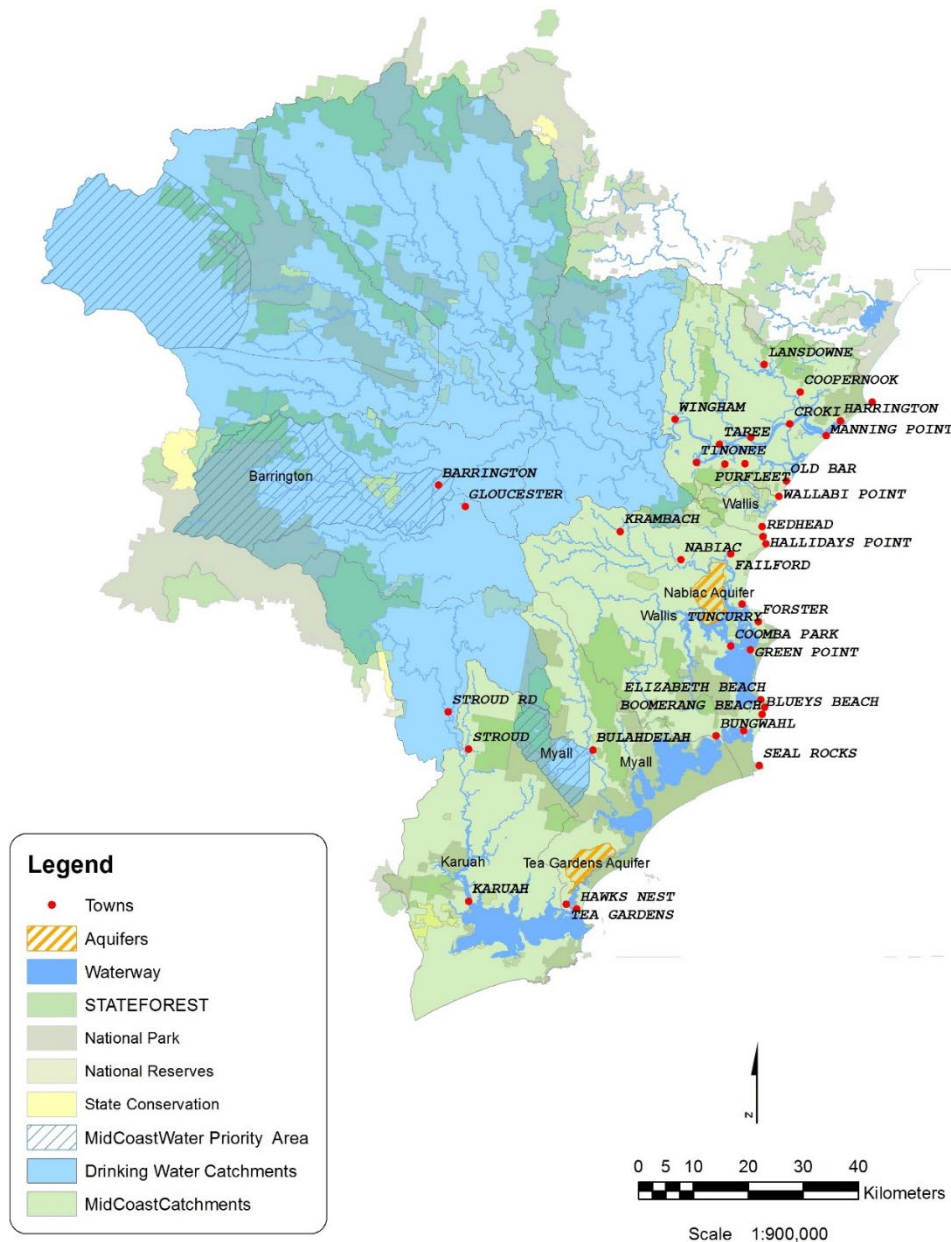


Figure 13. Representation of drinking water catchments in the MidCoast³⁴



A significant gap in the ability for MidCoast Council to appropriately guide development through the assessment process, is the lack of evidence-based mapping of our drinking water catchments, ground water supplies and unsewered areas illustrated above.

The extensive waterways and waterbodies throughout the MidCoast also make the mapping of river fronts, sensitive riparian lands and waterways challenging in terms of data management, accuracy and currency, particularly when waterways can move as a result of not only human interference, but significant weather events.

These data gaps impact on Council's ability to implement effectively, the recommendations from catchment management plans and concurrently, assessment processes for integrated development, if the proposed development can be undertaken through the Exempt & Complying Development SEPP provisions outlined above.

³⁴ Source: Water Services division of MidCoast Council

4.5.3 Primary Production and Rural Development SEPP 2019

The [State Environmental Planning Policy \(Primary Production and Rural Development\) 2019](#) came into force in February 2019 and repealed the following Policies:

- State Environmental Planning Policy No 30—Intensive Agriculture,
- State Environmental Planning Policy No 52—Farm Dams and Other Works in Land and Water Management Plan Areas,
- State Environmental Planning Policy No 62—Sustainable Aquaculture,
- State Environmental Planning Policy (Rural Lands) 2008.

The new SEPP aims to

- (a) to facilitate the orderly economic use and development of lands for primary production,*
- (b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,*
- (c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,*
- (d) to simplify the regulatory process for smaller-scale low risk artificial waterbodies, and routine maintenance of artificial water supply or drainage, in irrigation areas and districts, and for routine and emergency work in irrigation areas and districts,*
- (e) to encourage sustainable agriculture, including sustainable aquaculture,*
- (f) to require consideration of the effects of all proposed development in the State on oyster aquaculture,*
- (g) to identify aquaculture that is to be treated as designated development using a well-defined and concise development assessment regime based on environment risks associated with site and operational factors.³⁵*

While no State-significant agricultural land or land used for the operation of an irrigation corporation are currently identified within the MidCoast; there are significant portions of the new SEPP that will affect the protection, management and potential of agricultural activity within the LGA.

Farm dams and small-scale low risk artificial waterbody provisions for example:

- Permit dams less than 15 megalitres; more than 40m from public roads, natural waterbodies, environmentally sensitive areas and tree clearing operations, to be constructed without consent; while
- Dams between 15 and 100 megalitres in environmentally sensitive areas require development consent.

The SEPP also allows for temporary and emergency facilities and arrangements to be made for lawful livestock industries to ensure the industry can be appropriately maintained during for example periods of drought, but under certain conditions to ensure impacts on environmental sensitive areas and adjoining residents are limited.

³⁵ <https://www.legislation.nsw.gov.au/#/view/EPI/2019/137/part1/cl3>

The SEPP also makes provision for the establishment, assessment and management of sustainable aquaculture activities, particularly marine aquaculture and the oyster industry, which are discussed in greater detail within the Marine Activities paper.

Schedule 4 of the SEPP makes provision for the application of Standard Instrument LEP provisions, to non-Standard Instrument local environmental plans. These provisions are not required to be considered within the MidCoast, but may be considered for additional guidance on the intention of the SEPP with regards to the protection and consideration of agricultural activity and development.

For example, the provisions in Part 3 Intensive livestock agriculture of the SEPP reflect the Standard Instrument LEP wording and requirements of Clause 5.18 Intensive livestock agriculture, with one exception:

A reference to intensive livestock agriculture includes a reference to any of the following land uses that apply under a relevant EPI: agriculture—general farming, intensive animal husbandry, intensive livestock keeping, feedlots, piggeries, poultry farms, stock homes, intensive keeping of animals.³⁶

While these definitions are similar, they are not consistent with those of the Standard Instrument LEP.

The Part goes on to specify what intensive agricultural activities are permitted without consent, by stock numbers and locational considerations, consistent with the Standard Instrument LEP Clause 5.18. This information is reproduced below in Table 5.

Table 5. Intensive Agriculture Activities permitted without consent based on stock numbers

<i>Intensive Agriculture</i>	<i>Permitted without Development Consent</i>
<i>a cattle feedlot</i>	<i>fewer than 50 head of cattle</i>
<i>a goat feedlot</i>	<i>fewer than 200 goats</i>
<i>a sheep feedlot</i>	<i>fewer than 200 sheep</i>
<i>a pig farm</i>	<i>fewer than 20 breeding sows, or fewer than 200 pigs (of which fewer than 20 may be breeding sows)</i>
<i>a dairy (restricted)</i>	<i>fewer than 50 dairy cows</i>
<i>a poultry farm</i>	<i>fewer than 1,000 birds for meat or egg production (or both)</i>

Locational considerations between the SEPP and Standard Instrument LEP Clause are consistent in that intensive livestock agriculture requires consent if it is located:

- (i) *in an environmentally sensitive area, or*
- (ii) *within 100 metres of a natural watercourse, or*
- (iii) *in a drinking water catchment, or*
- (iv) *within 500 metres of any dwelling that is not associated with the development, or a zone under a relevant EPI that is equivalent to a residential zone, or*
- (v) *if the development is a poultry farm—within 500 metres of another poultry farm.*
- (8) *In this clause residential zone means RU4 Primary Production Small Lots, RU5 Village, RU6 Transition, R1 General Residential, R2 Low Density Residential, R3 Medium Density Residential, R4 High Density Residential, R5 Large Lot Residential, B4 Mixed*

³⁶ <https://www.legislation.nsw.gov.au/#/view/EPI/2019/137/sch4>

Therefore, the locational considerations must take precedence over the operational capacity of any intensive agricultural activity, reflecting the escalation of assessment requirement for agriculture:

1. extensive agriculture may be permissible without consent in most locations given the low scale and relatively limited impact; but
2. intensive agriculture of any size will require a certain level of assessment to determine if development consent is required; and
3. larger intensive agriculture operations and/or operations in sensitive locations, will require comprehensive assessment to achieve development consent.

Similarly, Part 4 Aquaculture – development controls reflect the provisions and requirements of Standard Instrument LEP Clause 5.19 Pond-based, tank-based and oyster aquaculture.

Schedule 5 of the SEPP specifies provisions for Rural Land Sharing Communities, but only applies to the Gloucester and Great Lakes LEP regions of the MidCoast; compared to the previous [SEPP No.15 – Rural Landsharing Communities](#), which also applied to Greater Taree LEP region.

The aims of this Schedule are to facilitate the development of rural land sharing communities committed to environmentally sensitive and sustainable land use practices, and allows for their establishment in any rural zone, on land that is not located within an environmentally sensitive area identified by Clause 3.3 of the Standard Instrument LEP:

environmentally sensitive area for exempt or complying development means any of the following—

- (a) the coastal waters of the State,
- (b) a coastal lake,
- (c) land within the coastal wetlands and littoral rainforests area (within the meaning of the [Coastal Management Act 2016](#)),
- (d) land reserved as an aquatic reserve under the [Fisheries Management Act 1994](#) or as a marine park under the [Marine Parks Act 1997](#),
- (e) land within a wetland of international significance declared under the Ramsar Convention on Wetlands or within a World heritage area declared under the World Heritage Convention,
- (f) land within 100 metres of land to which paragraph (c), (d) or (e) applies,
- (g) land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance,
- (h) land reserved under the [National Parks and Wildlife Act 1974](#) or land acquired under Part 11 of that Act,
- (i) land reserved or dedicated under the [Crown Land Management Act 2016](#) for the preservation of flora, fauna, geological formations or for other environmental protection purposes,
- (j) land that is a declared area of outstanding biodiversity value under the [Biodiversity Conservation Act 2016](#) or declared critical habitat under Part 7A of the [Fisheries Management Act 1994](#).

³⁷ <https://www.legislation.nsw.gov.au/#/view/EPI/2019/137/sch4>

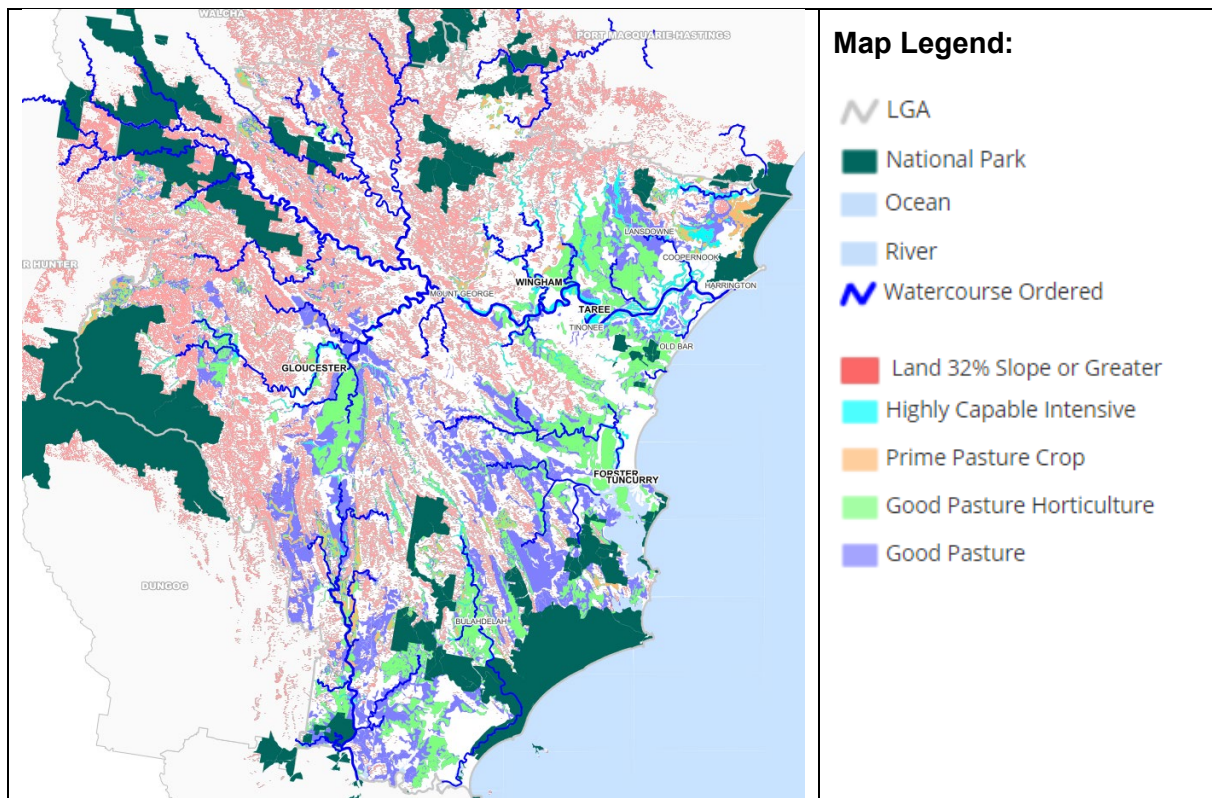
*Direction. Additional areas may be added to this list.*³⁸

The Schedule includes various matters for consideration in assessing this form of development, but critically: prohibits future subdivision of the development; and includes locational and density provisions relating to land capability and maintaining agricultural activity/potential.

The Schedule allows 3 or more dwellings may be constructed on a 10 hectare or more lot if:

- no more than 25% of the land is prime crop and pastureland
- the land is not a wildlife refuge, wildlife corridor or wildlife management area and the development will not adversely affect any such land,
- the land that has a slope less than 18 degrees (32%); and
- if the land has an area between 10 and 210 hectares: 4 dwellings plus 1 additional dwelling for every 4 hectares of land greater than 10 hectares,
- if the land has an area of 210 hectares or more: 54 dwellings plus 1 additional dwelling for every 6 hectares of land greater than 210 hectares up to a maximum of 80 dwellings.

Figure 14. Biophysical Agricultural Land Mapping (BSAL) with steep land overlay MidCoast³⁹



Based on the LGA-wide mapping above, which illustrates the Department of Primary Industries – Biophysical Agricultural Land (BSAL) mapping from 2016, National Parks, and Steep lands over 32% (18 degrees), there are opportunities for this form of development within the MidCoast.

³⁸ <https://www.legislation.nsw.gov.au/#/view/EPI/2006/155a/part3/cl3.3>

³⁹ BSAL Mapping, Department of Primary Industries – Agriculture (2016)

4.5.4 State Environmental Planning Policy (State & Regional Development) 2011

Development, predominantly infrastructure, can be classed as state or regionally significant under the [State and Regional Development SEPP](#).

Two consent authorities may assess and determine development projects under this SEPP – the Independent Planning Commission for certain State significant development; and the Joint Regional Planning Panel for certain Regionally significant development.

Schedule 1 identifies a broad range of State Significant transport and infrastructure development categories, including but not limited to: port facilities or wharf or boating facilities (not including marinas) that has a capital investment value of more than \$30 million;

Schedule 3 identifies additional categories of State significant infrastructure, undertaken by or on behalf of a public authority including: General public authority activities; and Port facilities and wharf or boating facilities (not including marinas) that has a capital investment value of more than \$30 million.

Schedule 7 also allows for Regionally significant development in broad categories including but not limited to:

- General development that has a capital investment value of more than \$30 million.
- Council related development that has a capital investment value of more than \$5 million if Council is the applicant, owner of the land to be developed, the developer or party to an agreement relating to the development.
- Development carried out by or on behalf of the Crown that has a capital investment value of more than \$5 million.
- Private infrastructure and community facilities that has a capital investment value of more than \$5 million for specific purposes including but not limited to: port facilities, sewerage systems, waste or resource management facilities, water supply systems, or wharf or boating facilities.
- Designated development for specific purposes including but not limited to marinas or other related land and water shoreline facilities.

These activities may also be permitted to be undertaken in whole or part, by a public authority without consent or going through the normal development assessment processes, if permitted under the Infrastructure SEPP, discussed below.

4.5.5 State Environmental Planning Policy (Infrastructure) 2007

The [Infrastructure SEPP](#) is a major consideration for local strategic planning and plan-making relating to public infrastructure in that it makes certain development permitted without consent when undertaken by or on behalf of a public authority. These exemptions include provisions for wharves, boating facilities, water supply infrastructure and the like.

4.5.6 Standard Instrument Principal Local Environment Plan

The application of controls through Council's LEP provides several options for identifying where additional considerations are required to determine the potential for a development to impact rural waterway flows, use and quality. These are briefly summarised below.

The [Standard Instrument LEP](#) contains the following relevant definitions relating to rural waterways, waterbodies and associated land-based activities:

agriculture means any of the following—

- (a) aquaculture,
- (b) extensive agriculture,
- (c) intensive livestock agriculture,
- (d) intensive plant agriculture.

Note. Part 6 of the [Plantations and Reafforestation Act 1999](#) provides that exempt farm forestry within the meaning of that Act is not subject to the [Environmental Planning and Assessment Act 1979](#).

aquaculture has the same meaning as in the [Fisheries Management Act 1994](#). It includes oyster aquaculture, pond-based aquaculture and tank-based aquaculture.

Note. Aquaculture is a type of **agriculture**—see the definition of that term in this Dictionary.

boat building and repair facility means any facility (including a building or other structure) used primarily for the construction, maintenance or repair of boats, whether or not including the storage, sale or hire of boats, but does not include a marina or boat shed.

boat launching ramp means a structure designed primarily for the launching of trailer borne recreational vessels, and includes associated car parking facilities.

boat shed means a building or other structure used for the storage and routine maintenance of a boat or boats and that is associated with a private dwelling or non-profit organisation, and includes any skid used in connection with the building or other structure.

canal estate development means development that incorporates wholly or in part a constructed canal, or other waterway or waterbody, that is inundated by or drains to a natural waterway or natural waterbody by surface water or groundwater movement (not being works of drainage, or for the supply or treatment of water, that are constructed by or with the authority of a person or body responsible for those functions and that are limited to the minimal reasonable size and capacity to meet a demonstrated need for the works), and that either—

(a) includes the construction of dwellings (which may include tourist and visitor accommodation) of a kind other than, or in addition to—

- (i) dwellings that are permitted on rural land, and
- (ii) dwellings that are used for caretaker or staff purposes, or

(b) requires the use of a sufficient depth of fill material to raise the level of all or part of that land on which the dwellings are (or are proposed to be) located in order to comply with requirements relating to residential development on flood prone land.

charter and tourism boating facility means any facility (including a building or other structure) used for charter boating or tourism boating purposes, being a facility that is used only by the operators of the facility and that has a direct structural connection between the foreshore and the waterway, but does not include a marina.

environmental facility means a building or place that provides for the recreational use or scientific study of natural systems, and includes walking tracks, seating, shelters, board walks, observation decks, bird hides or the like, and associated display structures.

environmental protection works means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and

includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.

estuary has the same meaning as in the [Water Management Act 2000](#).

Note. The term is defined as follows—

estuary means—

- (a) any part of a river whose level is periodically or intermittently affected by coastal tides, or
- (b) any lake or other partially enclosed body of water that is periodically or intermittently open to the sea, or
- (c) anything declared by the regulations (under the [Water Management Act 2000](#)) to be an estuary,

but does not include anything declared by the regulations (under the [Water Management Act 2000](#)) not to be an estuary.

extractive industry means the winning or removal of extractive materials (otherwise than from a mine) by methods such as excavating, dredging, tunnelling or quarrying, including the storing, stockpiling or processing of extractive materials by methods such as recycling, washing, crushing, sawing or separating, but does not include turf farming.

Note. Extractive industries are not a type of **industry**—see the definition of that term in this Dictionary.

extractive material means sand, soil, gravel, rock or similar substances that are not minerals within the meaning of the [Mining Act 1992](#).

fish has the same meaning as in the [Fisheries Management Act 1994](#).

Note. The term is defined as follows—

Definition of “fish”

- (1) **Fish** means marine, estuarine or freshwater fish or other aquatic animal life at any stage of their life history (whether alive or dead).
- (2) **Fish** includes—
 - (a) oysters and other aquatic molluscs, and
 - (b) crustaceans, and
 - (c) echinoderms, and
 - (d) beachworms and other aquatic polychaetes.
- (3) **Fish** also includes any part of a fish.
- (4) However, **fish** does not include whales, mammals, reptiles, birds, amphibians or other things excluded from the definition by the regulations under the [Fisheries Management Act 1994](#).

industrial retail outlet means a building or place that—

- (a) is used in conjunction with an industry (other than an artisan food and drink industry) or rural industry, and
- (b) is situated on the land on which the industry or rural industry is located, and
- (c) is used for the display or sale (whether by retail or wholesale) of only those goods that have been manufactured on the land on which the industry or rural industry is located,

but does not include a warehouse or distribution centre.

Note. See clause 5.4 for controls relating to the retail floor area of an industrial retail outlet.

information and education facility means a building or place used for providing information or education to visitors, and the exhibition or display of items, and includes an art gallery, museum, library, visitor information centre and the like.

jetty means a horizontal decked walkway providing access from the shore to the waterway and is generally constructed on a piered or piled foundation.

kiosk means premises that are used for the purposes of selling food, light refreshments and other small convenience items such as newspapers, films and the like.

Note. See clause 5.4 for controls relating to the gross floor area of a kiosk.

Kiosks are a type of **retail premises**—see the definition of that term in this Dictionary.

livestock processing industry means a building or place used for the commercial production of products derived from the slaughter of animals (including poultry) or the processing of skins or wool of animals and includes abattoirs, knackeries, tanneries, woolscours and rendering plants.

Note. Livestock processing industries are a type of **rural industry**—see the definition of that term in this Dictionary.

local distribution premises means a building or place used for the storage or handling of items (whether goods or materials) pending their delivery to people and businesses in the local area, but from which no retail sales are made.

Note. Local distribution premises are a type of **warehouse or distribution centre**—see the definition of that term in this Dictionary.

marina means a permanent boat storage facility (whether located wholly on land, wholly on a waterway or partly on land and partly on a waterway), and includes any of the following associated facilities—

- (a) any facility for the construction, repair, maintenance, storage, sale or hire of boats,
- (b) any facility for providing fuelling, sewage pump-out or other services for boats,
- (c) any facility for launching or landing boats, such as slipways or hoists,
- (d) any car parking or commercial, tourist or recreational or club facility that is ancillary to the boat storage facility,
- (e) any berthing or mooring facilities.

mooring means a detached or freestanding apparatus located on or in a waterway and that is capable of securing a vessel, but does not include a mooring pen.

mooring pen means an arrangement of freestanding piles or other restraining devices designed or used for the purpose of berthing a vessel.

native fauna means any animal-life that is indigenous to New South Wales or is known to periodically or occasionally migrate to New South Wales, whether vertebrate (including fish) or invertebrate and in any stage of biological development, but does not include humans.

native flora means any plant-life that is indigenous to New South Wales, whether vascular or non-vascular and in any stage of biological development, and includes fungi and lichens, and marine vegetation within the meaning of Part 7A of the [Fisheries Management Act 1994](#).

native vegetation has the same meaning as in Part 5A of the [Local Land Services Act 2013](#).

navigable waterway means any waterway that is from time to time capable of navigation and is open to or used by the public for navigation, but does not include flood waters that have temporarily flowed over the established bank of a watercourse.

passenger transport facility means a building or place used for the assembly or dispersal of passengers by any form of transport, including facilities required for parking, manoeuvring, storage or routine servicing of any vehicle that uses the building or place.

pond-based aquaculture means aquaculture undertaken predominantly in ponds, raceways or dams (including any part of the aquaculture undertaken in tanks such as during the hatchery or depuration phases), but not including natural water-based aquaculture.

Note. Pond-based aquaculture is a type of **aquaculture**—see the definition of that term in this Dictionary. Typical pond-based aquaculture is the pond culture of prawns, yabbies or silver perch.

port facilities means any of the following facilities at or in the vicinity of a designated port within the meaning of section 47 of the [Ports and Maritime Administration Act 1995](#)—

- (a) facilities for the embarkation or disembarkation of passengers onto or from any vessels, including public ferry wharves,
- (b) facilities for the loading or unloading of freight onto or from vessels and associated receipt, land transport and storage facilities,
- (c) wharves for commercial fishing operations,
- (d) refuelling, launching, berthing, mooring, storage or maintenance facilities for any vessel,
- (e) sea walls or training walls,
- (f) administration buildings, communication, security and power supply facilities, roads, rail lines, pipelines, fencing, lighting or car parks.

public administration building means a building used as offices or for administrative or other like purposes by the Crown, a statutory body, a council or an organisation established for public purposes, and includes a courthouse or a police station.

public authority has the same meaning as in the Act.

public land has the same meaning as in the [Local Government Act 1993](#).

public reserve has the same meaning as in the [Local Government Act 1993](#).

public utility undertaking means any of the following undertakings carried on or permitted to be carried on by or by authority of any Public Service agency or under the authority of or in pursuance of any Commonwealth or State Act—

- (a) railway, road transport, water transport, air transport, wharf or river undertakings,
- (b) undertakings for the supply of water, hydraulic power, electricity or gas or the provision of sewerage or drainage services,

and a reference to a person carrying on a public utility undertaking includes a reference to a council, electricity supply authority, Public Service agency, corporation, firm or authority carrying on the undertaking.

recreation area means a place used for outdoor recreation that is normally open to the public, and includes—

- (a) a children's playground, or
- (b) an area used for community sporting activities, or
- (c) a public park, reserve or garden or the like,

and any ancillary buildings, but does not include a recreation facility (indoor), recreation facility (major) or recreation facility (outdoor).

recreation facility (outdoor) means a building or place (other than a recreation area) used predominantly for outdoor recreation, whether or not operated for the purposes of gain, including a golf course, golf driving range, mini-golf centre, tennis court, paint-ball centre, lawn bowling green, outdoor swimming pool, equestrian centre, skate board ramp, go-kart track, rifle range, water-ski centre or any other building or place of a like character used for outdoor recreation (including any ancillary buildings), but does not include an entertainment facility or a recreation facility (major).

research station means a building or place operated by a public authority for the principal purpose of agricultural, environmental, fisheries, forestry, minerals or soil conservation research, and includes any associated facility for education, training, administration or accommodation.

restaurant or cafe means a building or place the principal purpose of which is the preparation and serving, on a retail basis, of food and drink to people for consumption on the premises, whether or not liquor, take away meals and drinks or entertainment are also provided.

Note. Restaurants or cafes are a type of **food and drink premises**—see the definition of that term in this Dictionary.

retail premises means a building or place used for the purpose of selling items by retail, or hiring or displaying items for the purpose of selling them or hiring them out, whether the items are goods or materials (or whether also sold by wholesale), and includes any of the following—

- (a) (Repealed)
- (b) cellar door premises,
- (c) food and drink premises,
- (d) garden centres,
- (e) hardware and building supplies,
- (f) kiosks,
- (g) landscaping material supplies,
- (h) markets,
- (i) plant nurseries,
- (j) roadside stalls,
- (k) rural supplies,
- (l) shops,
- (la) specialised retail premises,
- (m) timber yards,
- (n) vehicle sales or hire premises,

but does not include highway service centres, service stations, industrial retail outlets or restricted premises.

Note. Retail premises are a type of **commercial premises**—see the definition of that term in this Dictionary.

roadside stall means a place or temporary structure used for the retail sale of agricultural produce or hand-crafted goods (or both) produced from the property on which the stall is situated or from an adjacent property.

Note. See clause 5.4 for controls relating to the gross floor area of roadside stalls.

Roadside stalls are a type of **retail premises**—see the definition of that term in this Dictionary.

rural industry means the handling, treating, production, processing, storage or packing of animal or plant agricultural products for commercial purposes, and includes any of the following—

- (a) agricultural produce industries,
- (b) livestock processing industries,
- (c) composting facilities and works (including the production of mushroom substrate),
- (d) sawmill or log processing works,
- (e) stock and sale yards,
- (f) the regular servicing or repairing of plant or equipment used for the purposes of a rural enterprise.

Note. Rural industries are not a type of **industry**—see the definition of that term in this Dictionary.

rural supplies means a building or place used for the display, sale or hire of stockfeeds, grains, seed, fertilizers, veterinary supplies and other goods or materials used in farming and primary industry production.

Note. Rural supplies are a type of **retail premises**—see the definition of that term in this Dictionary.

rural worker's dwelling means a building or place that is additional to a dwelling house on the same lot and that is used predominantly as a place of residence by persons employed, whether on a long-term or short-term basis, for the purpose of agriculture or a rural industry on that land.

Note. Rural workers' dwellings are a type of **residential accommodation**—see the definition of that term in this Dictionary.

take away food and drink premises means premises that are predominantly used for the preparation and retail sale of food or drink (or both) for immediate consumption away from the premises.

Note. Take away food and drink premises are a type of **food and drink premises**—see the definition of that term in this Dictionary.

tank-based aquaculture means aquaculture undertaken exclusively in tanks, but not including natural water-based aquaculture.

Note. Tank-based aquaculture is a type of **aquaculture**—see the definition of that term in this Dictionary. Typical tank-based aquaculture is the tank culture of barramundi or abalone.

vehicle body repair workshop means a building or place used for the repair of vehicles or agricultural machinery, involving body building, panel building, panel beating, spray painting or chassis restoration.

vehicle repair station means a building or place used for the purpose of carrying out repairs to, or the selling and fitting of accessories to, vehicles or agricultural machinery, but does not include a vehicle body repair workshop or vehicle sales or hire premises.

vehicle sales or hire premises means a building or place used for the display, sale or hire of motor vehicles, caravans, boats, trailers, agricultural machinery and the like, whether or not accessories are sold or displayed there.

Note. Vehicle sales or hire premises are a type of **retail premises**—see the definition of that term in this Dictionary.

waterbody means a waterbody (artificial) or waterbody (natural).

waterbody (artificial) or artificial waterbody means an artificial body of water, including any constructed waterway, canal, inlet, bay, channel, dam, pond, lake or artificial wetland, but does not include a dry detention basin or other stormwater management construction that is only intended to hold water intermittently.

waterbody (natural) or natural waterbody means a natural body of water, whether perennial or intermittent, fresh, brackish or saline, the course of which may have been artificially modified or diverted onto a new course, and includes a river, creek, stream, lake, lagoon, natural wetland, estuary, bay, inlet or tidal waters (including the sea).

watercourse means any river, creek, stream or chain of ponds, whether artificially modified or not, in which water usually flows, either continuously or intermittently, in a defined bed or channel, but does not include a waterbody (artificial).

waterway means the whole or any part of a watercourse, wetland, waterbody (artificial) or waterbody (natural).

wetland means—

- (a) natural wetland, including marshes, mangroves, backwaters, billabongs, swamps, sedgeland, wet meadows or wet heathlands that form a shallow waterbody (up to 2 metres in depth) when inundated cyclically, intermittently or permanently with fresh, brackish or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities, or
- (b) artificial wetland, including marshes, swamps, wet meadows, sedgeland or wet heathlands that form a shallow waterbody (up to 2 metres in depth) when inundated cyclically, intermittently or permanently with water, and are constructed and vegetated with wetland plant communities.

wharf or boating facilities means a wharf or any of the following facilities associated with a wharf or boating that are not port facilities—

- (a) facilities for the embarkation or disembarkation of passengers onto or from any vessels, including public ferry wharves,
- (b) facilities for the loading or unloading of freight onto or from vessels and associated receipt, land transport and storage facilities,
- (c) wharves for commercial fishing operations,
- (d) refuelling, launching, berthing, mooring, storage or maintenance facilities for any vessel,
- (e) sea walls or training walls,
- (f) administration buildings, communication, security and power supply facilities, roads, rail lines, pipelines, fencing, lighting or car parks.⁴⁰

The Standard Instrument LEP also includes zones, local clauses specific to waterways and waterbodies outside of the coastal zone:

Land use zones

While three waterway zones are available, they are generally applied to waterways and water bodies up to the tidal limit. This is primarily a function of mapping limitations, particularly ongoing identification and accuracy given watercourses may shift over time and/or may have been used to inform property boundaries.

⁴⁰ <https://www.legislation.nsw.gov.au/#/view/EPI/2006/155a/dict1>

While environmental protection and management zones are also available, they are also not commonly applied to waterways, waterbodies or adjoining riparian lands beyond the tidal limit due to mapping limitations. When applied, they identify where environmental management or conservation requirements will take precedence over other considerations. These zonings tend to permit the narrowest range of land uses compared with other zonings, so tend to only apply where environmental management and conservation outcomes are clearly understood for the water and adjoining lands.

In this regard, the majority of rural waterways and waterbodies will be incorporated into the surrounding, predominantly rural, land use zone unless identified for Special Purposes – Infrastructure associated with water supply systems or the like.

Local Clauses

A range of local clauses are available from the Standard Instrument LEP or Model Clauses and are usually associated with other mapped controls, these clauses may also be developed by Councils to reflect local character and assessment requirements.

A limited number of clauses within the Standard Instrument Principle Local Environmental Plan are identified as being for 'optional' or 'compulsory' inclusion as they relate to rural waterways and waterbodies.

3.3 Environmentally sensitive areas excluded [compulsory]

(1) *Exempt or complying development must not be carried out on any environmentally sensitive area for exempt or complying development.*

(2) *For the purposes of this clause—*

environmentally sensitive area for exempt or complying development means any of the following—

(a) *the coastal waters of the State,*

(b) *a coastal lake,*

(c) *land within the coastal wetlands and littoral rainforests area (within the meaning of the [Coastal Management Act 2016](#)),*

(d) *land reserved as an aquatic reserve under the [Fisheries Management Act 1994](#) or as a marine park under the [Marine Parks Act 1997](#),*

(e) *land within a wetland of international significance declared under the Ramsar Convention on Wetlands or within a World heritage area declared under the World Heritage Convention,*

(f) *land within 100 metres of land to which paragraph (c), (d) or (e) applies,*

(g) *land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance,*

(h) *land reserved under the [National Parks and Wildlife Act 1974](#) or land acquired under Part 11 of that Act,*

(i) *land reserved or dedicated under the [Crown Land Management Act 2016](#) for the preservation of flora, fauna, geological formations or for other environmental protection purposes,*

(j) *land that is a declared area of outstanding biodiversity value under the [Biodiversity Conservation Act 2016](#) or declared critical habitat under Part 7A of the [Fisheries Management Act 1994](#).*

*Direction. Additional areas may be added to this list.*⁴¹

Schedule 6 Pond-based and tank-based aquaculture

(Clause 5.19)

Part 1 Pond-based and tank-based aquaculture

Division 1 Site location requirements

1 Conservation exclusion zones

(1) Must not be carried out on the following land, except to the extent necessary to gain access to water—

(a) land declared an area of outstanding biodiversity value under the [Biodiversity Conservation Act 2016](#),

(b) vacant Crown land,

(c) land within a wetland of international significance declared under the Ramsar Convention on Wetlands.

(2) Must not be carried out on the following land, except for the purposes of minimal infrastructure to support the extraction of water from, and discharge of water to, the land concerned—

(a) land declared as an aquatic reserve under the [Marine Estate Management Act 2014](#),

(b) land declared as a marine park under the [Marine Estate Management Act 2014](#).

Note. Nothing in this clause affects any requirement under an Act relating to land specified in this clause to obtain a licence or other authority under that Act for development of the land.

Division 2 Operational requirements

2 Species selection

Species of fish or marine vegetation cultivated or kept must be consistent with the relevant aquaculture industry development plan (within the meaning of clause 5.19).

3 Pond-based aquaculture that is also intensive aquaculture—pond design

For pond-based aquaculture that is also intensive aquaculture—ponds must be capable of being drained or pumped and then completely dried.

4 Pond-based aquaculture and tank-based aquaculture that is also intensive aquaculture—freshwater discharges

For pond-based aquaculture and tank-based aquaculture that is also intensive aquaculture—no discharge of freshwater used to intensively cultivate or keep fish to natural waterbodies or wetlands is permitted, except freshwater discharge from open flow through systems.

5 Outlets from culture ponds etc

All outlets from culture ponds, tanks and other culture facilities must be screened to avoid the escape of fish.

6 Definition

In this Division—

⁴¹ <https://www.legislation.nsw.gov.au/#/view/EPI/2006/155a/part3/cl3.3>

intensive aquaculture has the same meaning as it has in the [Fisheries Management \(Aquaculture\) Regulation 2017](#).

Part 2 Extensive pond-based aquaculture

Division 1 Site location requirements

7 Conservation exclusion zones

(1) Must not be carried out on the following land, except to the extent necessary to gain access to water—

- (a) land declared an area of outstanding biodiversity value under the [Biodiversity Conservation Act 2016](#),
- (b) vacant Crown land,
- (c) land within a wetland of international significance declared under the Ramsar Convention on Wetlands.

Note. Nothing in this clause affects any requirement under an Act relating to land specified in this clause to obtain a licence or other authority under that Act for development of the land.

8 Flood liability

Must be designed or constructed on land so that it will not be inundated by the discharge of a 1:100 ARI (average recurrent interval) flood event.

Division 2 Operational requirements

9 Species selection

Species of fish or marine vegetation cultivated or kept must be consistent with the relevant aquaculture industry development plan (within the meaning of clause 5.19).

10 Pond design

- (1) Must not require the construction of new ponds, water storages, dams or buildings.
- (2) Must not be located on permanent watercourses, creeks, billabongs or isolated outreaches of creeks or rivers.
- (3) Must be capable of preventing the escape of stock into natural waterbodies or wetlands.

11 Culture water

Must use freshwater.⁴²

'Model clauses' are those that have been settled by the Parliamentary Counsel's Office in relation to topics commonly raised by Councils across the State⁴³. Only one is relevant to rural waterways and waterbodies beyond the tidal limit:

Model Clause 7.3 Flood planning

General information: Councils are first encouraged to identify flood planning areas through their strategic work and to zone appropriately, wherever possible. Care should therefore be taken in determining the permissible development on land that may be subject to flooding to ensure that appropriate uses are included and that relevant types of development require consent under the applicable zones.

⁴² <https://www.legislation.nsw.gov.au/#!/view/EPI/2006/155a/sch6>

⁴³ <https://www.planning.nsw.gov.au/Plans-for-your-area/Local-Planning-and-Zoning/Resources>

Councils are then encouraged to apply this model clause in flood planning areas, particularly where flooding matters cannot be fully addressed by limiting land uses e.g. in areas where an existing zone and existing land uses include residential accommodation.

Councils in coastal areas may wish to refer to 'projected sea level rise' instead of 'climate change' in subclause (1)(b).

Councils' attention is also drawn to the section 117 Direction 4.3 Flood Prone Land. In applying the clause, councils should provide a map of the flood planning area. This will assist councils in demonstrating their consideration of s 149(2) certificate matters.

Further details of requirements behind the clause should be provided in councils' DCPs. This may include, for example, evacuation route maps, setbacks for buildings and types of construction. An LEP Practice Note to provide further guidance on the use of this clause is being prepared.

(1) The objectives of this clause are as follows:

- (a) to minimise the flood risk to life and property associated with the use of land,
- (b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,
- (c) to avoid significant adverse impacts on flood behaviour and the environment.

(2) This clause applies to:

- (a) land that is shown as "Flood planning area" on the Flood Planning Map, and
- (b) other land at or below the flood planning level.

Drafting direction Councils know of some areas that flood and those areas are mapped as the "flood planning area", but there are other areas where accurate mapping is not possible. Consequently, the wording of this subclause captures the land that can be accurately mapped and the land that cannot. Such unmapped land includes the "flood planning area" (as defined in the Floodplain Development Manual) up to the "flood planning level".

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:

- (a) is compatible with the flood hazard of the land; and
- (b) will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
- (c) incorporates appropriate measures to manage risk to life from flood, and
- (d) will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and
- (e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

Drafting direction The following subclauses apply to council areas that include coastal land:

(4) Subclause (5) applies to:

- (a) land shown as "projected 2100 flood planning area" and "projected 2050 flood planning area" on the Flood Planning Map; and to
- (b) other land below the projected 2100 flood planning level and the projected 2050 flood planning level as a consequence of projected sea level rise.

(5) When determining development to which this subclause applies, council must take into consideration any relevant matters outlined in subclause 3(a) – (e), depending on the context of the following:

- (a) the proximity of the development to the current flood planning area; and

- (b) the intended design life of the development; and
- (c) the scale of the development; and (d) the sensitivity of the development in relation to managing the risk to life from any flood, and
- (e) the potential to relocate, modify or remove the development.

Drafting direction Subclauses (4) & (5) shall only be used once council has identified the 'projected 2100 flood planning area' and 'projected 2050 flood planning area' as outlined in the to be finalised draft Flood Risk Management Guide 2009, which will update the sea level rise information in the NSW Floodplain Development Manual 2005

The definition of projected sea level rise shall only be included in subclauses (6) once council has identified the 'projected 2100 flood planning area' as outlined in the to be finalised draft Flood Risk Management Guide 2009, which will update the sea level rise information in the NSW Floodplain Development Manual 2005

6. A word or expression used in this clause has the same meaning as it has in the NSW Government's Floodplain Development Manual published in 2005, unless it is otherwise defined in this clause.

7. In this clause:

flood planning area means the land shown as "Flood planning area" on the Flood Planning Map

flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus [XX] metres freeboard.

Flood Planning Map means the [Name] Local Environment Plan 2010 Flood Planning Map.

projected sea level rise means the 2050 and 2100 sea level rise planning benchmarks as specified in the NSW Government's Sea Level Rise Policy Statement 2009.⁴⁴

Across NSW, several Councils have also applied local clauses requiring consideration of potential impacts of development on watercourses and adjoining lands. These Draft Natural Resource management clauses were prepared by the NSW Office of Environment and Heritage for consideration as Model Clauses in 2010, but did not progress to adoption.

Many of these are already incorporated into the Great Lakes LEP 2014, potentially as a legacy of the oyster infections from the 1980s and resulting water quality improvement programs implemented throughout the 1980s to early 2000's.

Part 7 (Additional local provisions) of the Great Lakes LEP is used to address specific issues relating to the quality of waterways and waterbodies including stormwater management, drinking water catchments, riparian land and watercourses and wetlands. The Great Lakes DCP also contains comprehensive water sensitive design controls to manage water quality.

7.2 Earthworks

(1) *The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.*

(2) *Development consent is required for earthworks unless—*

(a) the earthworks are exempt development under this Plan or another applicable environmental planning instrument, or

⁴⁴ <https://www.planning.nsw.gov.au/-/media/Files/DPE/Other/model-local-clauses-for-standard-instrument-leps-7-3-flood-planning.pdf>

(b) the earthworks are ancillary to development that is permitted without consent under this Plan or to development for which development consent has been given.

(3) Before granting development consent for earthworks (or for development involving ancillary earthworks), the consent authority must consider the following matters—

(a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,

(b) the effect of the development on the likely future use or redevelopment of the land,

(c) the quality of the fill or the soil to be excavated, or both,

(d) the effect of the development on the existing and likely amenity of adjoining properties,

(e) the source of any fill material and the destination of any excavated material,

(f) the likelihood of disturbing relics,

(g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,

(h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

Note. The [National Parks and Wildlife Act 1974](#), particularly section 86, deals with harming Aboriginal objects.

7.5 Stormwater management

(1) The objective of this clause is to minimise the impacts of stormwater on land to which this clause applies and on adjoining properties, native bushland, groundwater, wetlands and receiving waters.

(2) Development consent must not be granted to development on any land unless the consent authority is satisfied that the development—

(a) is designed to maximise the use of water permeable surfaces on the land having regard to the soil characteristics affecting on-site infiltration of water, and

(b) is designed to minimise the use of impervious surfaces on the land, directing run off to piped drainage systems and waterways, and

(c) is designed to integrate water sensitive design measures, including stormwater, groundwater and wastewater management, to minimise environmental degradation and to improve the aesthetic and recreational appeal of the development, and

(d) incorporates an appropriately managed and maintained stormwater management system that will maintain or improve the quality of stormwater discharged from the land, and

(e) includes, if practicable, on-site stormwater retention for use as an alternative supply to mains water, groundwater or river water, and

(f) avoids any significant adverse impacts of stormwater runoff on adjoining properties, native bushland, groundwater, wetlands and receiving waters, or if that impact cannot be reasonably avoided, minimises and mitigates the impact.

7.6 Drinking water catchments

(1) The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering and stored in drinking water storages.

(2) This clause applies to land identified as “Drinking Water Catchment” on the [Drinking Water Catchment Map](#).

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider the following—

(a) whether or not the development is likely to have any adverse impact on the quality and quantity of water entering and stored in the drinking water storage, having regard to the following—

(i) the distance between the development and any waterway that feeds into the drinking water storage,

(ii) the on-site use, storage and disposal of any chemicals on the land,

(iii) the treatment, storage and disposal of wastewater and solid waste generated or used by the development,

(iv) any permanent interception or lowering of the watertable,

(v) any change in groundwater flow direction,

(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any significant adverse impact on water quality and flows, or

(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact.

7.7 Riparian land and watercourses

(1) The objective of this clause is to protect and maintain the following—

(a) water quality within watercourses,

(b) the stability of the bed and banks of watercourses,

(c) aquatic and riparian habitats,

(d) ecological processes within watercourses and riparian areas.

(2) This clause applies to all of the following—

(a) land identified as “Watercourse” on the [Watercourse Map](#),

(b) all land that is within 40 metres of the top of the bank of each watercourse on land identified as “Watercourse” on that map.

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider—

(a) whether or not the development is likely to have any adverse impact on the following—

(i) the water quality and flows within the watercourse,

(ii) aquatic and riparian species, habitats and ecosystems of the watercourse,

(iii) the stability of the bed, shore and banks of the watercourse,

(iv) the free passage of fish and other aquatic organisms within or along the watercourse,

(v) any future rehabilitation of the watercourse and riparian areas, and

- (b) whether or not the development is likely to increase water extraction from the watercourse, and*
- (c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.*
- (4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—*
 - (a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or*
 - (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or*
 - (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.*

While the majority of these local clauses have been implemented successfully within the assessment process for both urban and rural development, the 'Riparian land and watercourses' clause has had a mixed response.

This local clause tends to be associated with mapping to identify watercourses for the purpose of applying controls however the accuracy of this mapping has been found to be unreliable in some circumstances due to the movement of watercourses over time as a result of human influences and significant weather events.

The different approaches to managing waterway health have resulted in a high level of inconsistency in the types of controls currently applying through the various planning instruments.

This inconsistency will need to be addressed when consolidating controls into a single framework for the MidCoast and is likely to result in a reduced reliance on fixed mapping within the LEP and a shift towards online mapping resources and/or specified assessment criteria.

4.5.7 Land use permissibility within a Local Environmental Plan

The [Standard Instrument-Principal Local Environmental Plan](#) (Standard Instrument LEP), mandates intensive livestock agriculture must be included as either "Permitted without consent" or "Permitted with consent", only in the RU1 Primary Production zone.

Extensive agriculture is Permitted without consent in the RU1 Primary Production and RU2 Rural Landscape zones.

Aquaculture is Permitted with consent in the following zones: RU1 Primary Production, RU2 Rural Landscape, RU3 Forestry, RU4 Primary Production Small Lot, IN4 Working Waterfront, SP1 Special Activities, SP3 Tourist, both the RE1 Public and RE2 Private Recreation zones, and all of the Waterway zones.

Oyster aquaculture is specifically Permitted with consent in the following zones: RU5 Village, RU6 Transition, all of the Residential zones, all of the Business zones, all Industrial zones, the E2 Environmental Conservation, E3 Environmental Management and E4 Environmental Living zones; with significant variation as to whether or not tank-based or pond-based aquaculture is also permitted with consent.

In this regard, Council has some discretion as to whether or not any or all of the above land use activities as defined, are permitted with consent across the majority of the LGA.

From this, it must be considered that aquaculture and oyster production in particular, are considered to be an appropriate form of agriculture throughout the State. The location of any environmentally sensitive lands and water supply catchments; and consideration of biosecurity issues and water resources available to establish such activities in the rural rather than coastal environment; must be significant considerations in the assessment of such activities within the MidCoast.

4.5.8 Council as Consent Authority

In most circumstances, where development is not triggered by state significant or regional development under the State and Regional Development SEPP, Council will be the consent authority. Applications would be assessed against:

- any relevant considerations in the LEP, including any zone objectives
- any Development Control Plan
- any relevant Council Policy.

4.5.9 Development controls

The majority of development controls associated with development and activities associated with rural waterways are governed by various State legislative frameworks and relevant provisions of the local environmental plan and do not need to be replicated within the local development control plan.

Consideration of how and what development could be managed through the development control plan would have to include relevance and potential effectiveness. For example, water sensitive design, stormwater management and nutrient run-off provisions are usually applied throughout the LGA, in recognition that up-stream impacts on water quality can have a cumulative impact throughout the catchment as water flows to the ocean.

Similarly, structures proposed in close proximity to any waterway, such as jetties, boat sheds and ramps do not require separate development control plan provisions if they are proposed on or near a rural waterway versus coastal waters.

The one exception may be those relating to subdivision over or in close proximity to rural waterways, which would need to reflect the State-wide initiatives to manage and where appropriate reduce, the number of water access licences across the rural landscape.

5 Review of Broad Catchment Areas

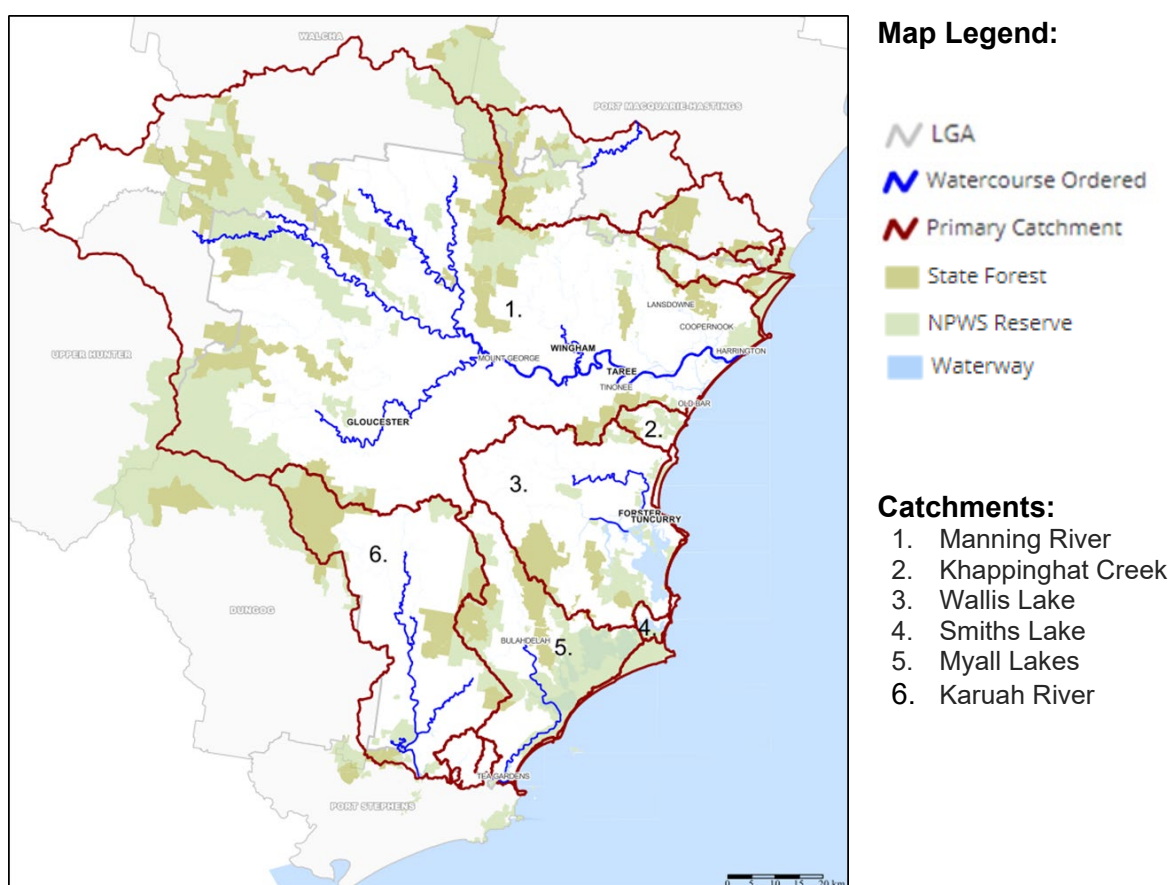
This section provides an overview of the land use planning considerations for each Broad Catchment Area, to support the recommendations outlined in the Planning Framework presented later in this paper. This information is not exhaustive, but representative at the time of preparation.

Six separate catchments can be described as having unique natural, social and economic characteristics:

4. Manning River
5. Khappinghat Creek
6. Wallis Lake
7. Smiths Lake
8. Myall Lakes
9. Karuah River

These catchments relate directly to the marine waterfront precincts referred to within the Marine Activities paper as illustrated below, with the exception of the Crowdy Head marine waterfront precinct, which is fully within the Coastal Zone.

Figure 15. Broad Catchment Areas of the MidCoast



The range of land uses and development undertaken across these catchments and particularly those reliant on the waterways and waterbodies within these areas, require a diverse range of services and infrastructure to provide commercial and recreational connections between land-based facilities and water-based activities. These are considered and discussed in the following section of this paper, to inform strategic and local plan recommendations within the Rural Strategy.

5.1 Manning River Broad Catchment Area

The Manning River BCA is the largest water catchment in the MidCoast area, covering an area of around 8,400sq km. The map below shows the entire catchment area including the drinking water catchment area. There are numerous watercourses running into the Manning River, with some listed in Table 6.

Figure 16. Manning River Broad Catchment Area

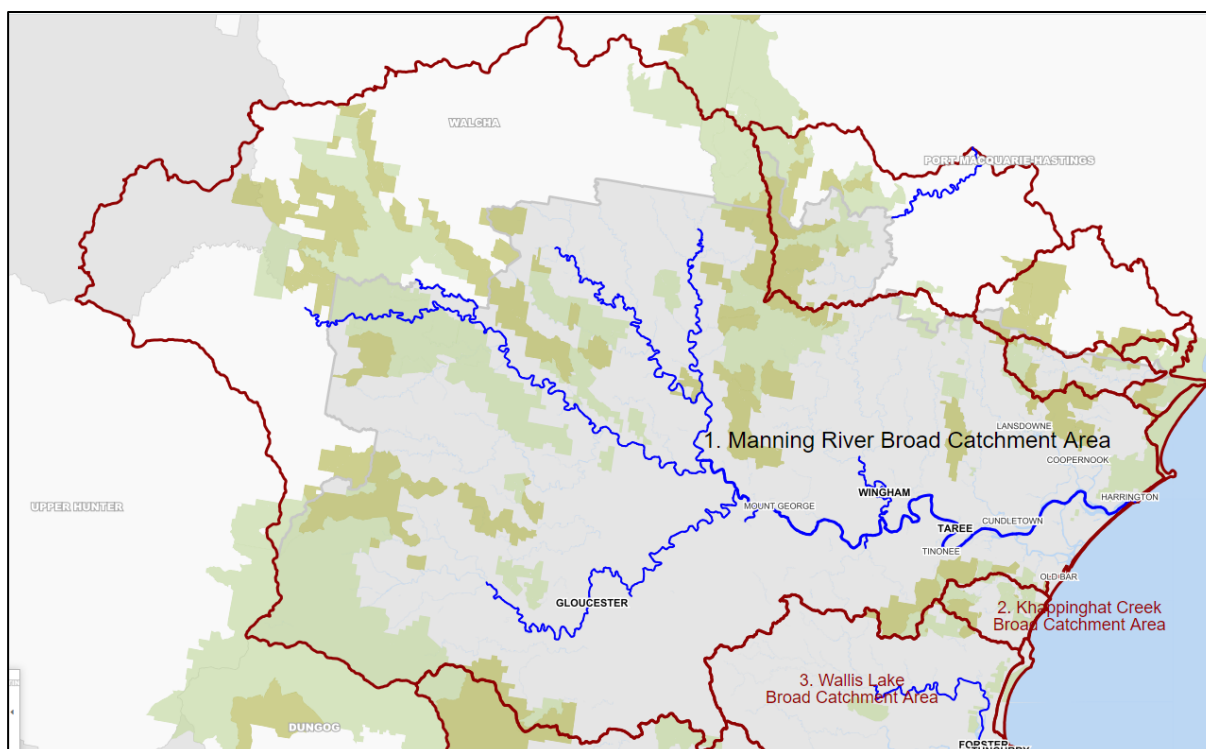


Table 6. Waterways within the Manning River Broad Catchment Area

Various Rivers and Creeks within the- Manning River Broad Catchment Area		
Avon River Barnard River Barrington River Bowman River Cells River Cobark River Cooplacurripa River Curricabark River	Dawson River Dilgry River Gloucester River Lansdowne River Kerripit River	Manning River Moppy River Mummel River Nowendoc River Pigna Barney River Rowleys River
Bakers Creek Bo Creek Burrel Creek Caparra Creek Cedar Party Creek Dingo Creek	Ghinni Creek Halls Creek Khatambuhl Creek Killabakh Creek Long Creek Mernot Creek	Scotts Creek Tuggolo Creek Two Mile Creek Waukivory Creek

Water supply

The Manning River is the main drinking water catchment in the MidCoast. It currently supplies 90% of MidCoast Water's town water supply which is around 70,000 people⁴⁵. There are two main drinking water extraction points within the catchment. Water extracted from the Manning River is then stored at Bootawa Dam and treated at Bootawa Water Treatment Plant (WTP). The Barrington River also supplies water to approximately 3500 residents both in Gloucester and Barrington and is sourced upstream from the point where the Gloucester and Avon Rivers meet the Barrington River⁴⁶.

Various industries including intensive agriculture, cropping, mining (Duralie, Stratford and other minerals) and energy production occur within the catchment draw water from the Manning BCA for commercial purposes. All water access entitlements for these users are regulated by legislated water sharing plans, as discussed earlier in this Report.

The Manning River also receives treated effluent from the Taree and Wingham sewerage schemes, while the Gloucester River receives treated effluent from Gloucester Sewage Treatment Plant⁴⁷. All of these schemes also have an integrated, agricultural re-use scheme which is especially relevant to extraction during hot and dry weather events, when release to the river would have the most adverse impacts associated with the nutrients in treated effluent.


With increased risk of drought, irrigation demand and population growth throughout the catchment, there is a corresponding potential for increased risks to maintaining a secure water supply in the future. A key action for MidCoast Water Services is to find long-term solutions to improve the reliability of water supply in the catchment and broader LGA⁴⁸.

Water Quality Objectives and Community Values

The water quality objectives for the Manning River BCA were developed in 2006 by MidCoast Water in consultation with the Manning River community as part of the NSW Water Quality and River Flow Objectives initiatives.

The [NSW Water Quality and River Flow Objectives](#) as shown below in Table 7 apply to the Manning River catchment with each of the objectives applying to one of the five identified areas: town and water supply catchments; forested areas; waterways affected by urban development; uncontrolled streams; and estuaries.

Table 7 NSW Water Quality Objectives for the Manning River Broad Catchment Area⁴⁹

Water Quality Objectives for the Manning River Broad Catchment Area		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none">• To all natural waterways,• High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use,• Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems,		







⁴⁵ MidCoast Water 2018 p. 12

⁴⁶ MidCoast Water 2018 p. 13

⁴⁷ MidCoast Water 2016 p. 10

⁴⁸ NSW Department of Industry 2018 p. 58

⁴⁹ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

<ul style="list-style-type: none"> Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses, and Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 	
 Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 	
 Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies to all waters but may not be achievable for some time in some areas. Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 	
 Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 	
 Livestock water supply	<i>Protecting water quality to maximise the production of healthy livestock</i>
<ul style="list-style-type: none"> This objective applies to all surface and ground waters used to water stock. 	
 Irrigation water supply	<i>Protecting the quality of waters applied to crops and pasture</i>
<ul style="list-style-type: none"> This objective applies to all current and potential areas of irrigated crops, both small- and large-scale. Local requirements for irrigation water quality, such as salinity, apply. 	
 Homestead water supply	<i>Protecting water quality for domestic use in homesteads, including drinking, cooking and bathing</i>
<ul style="list-style-type: none"> The objective applies to all homesteads that draw water from surface and ground waters for domestic needs, including drinking water. The NSW Health Department advises that water for domestic use in homesteads should comply with the Australian Drinking Water Guidelines (NHMRC & NRMMC 2004) at the point of use, regardless of source. 	
 Drinking water: disinfection, clarification and groundwater	<i>Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment</i>

- These objectives apply to all current and future licensed offtake points for town water supply and to specific sections of rivers that contribute to drinking water storages or immediately upstream of town water supply offtake points.
- The objective also applies to sub-catchments or ground waters used for town water supplies. Note: 3 km around extraction point is critical to maintain water quality



Aquatic foods

Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities

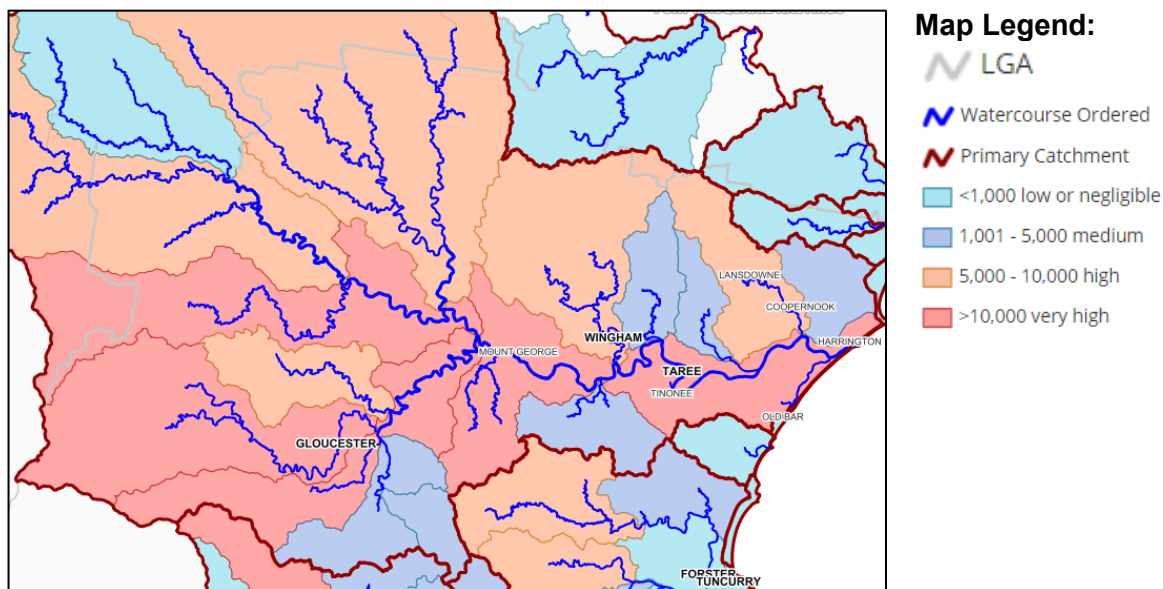
- The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting.

5.1.1 Rural activities and industries

The main rural activities and industries occurring within the Manning River BCA are beef cattle grazing, dairying, forestry, mining, tourism and oyster growing. Large parts of the catchment are also conserved within National Parks and Nature Reserves and conversely, a source for both public and private native forestry.

Beef Cattle Grazing There are extensive beef cattle grazing activities throughout the Manning BCA. The Upper Manning River, Lower Manning River, Gloucester River and the Barrington River sub catchments all have the highest intensity of cattle grazing with each sub catchment containing between 10,000 and 20,000 head of beef cattle⁵⁰.

The Barnard River, Nowendoc River, Lansdowne River and Dingo Creek sub-catchment areas all have a high intensity of cattle grazing with containing between 5,000 and 10,000 head of cattle⁵¹.

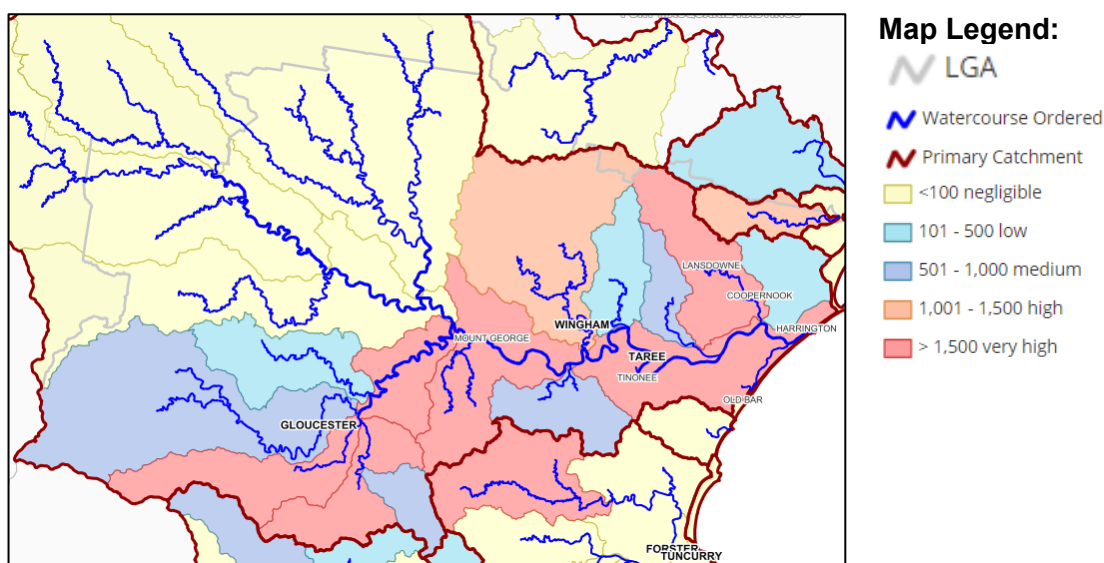


Dairying: The Manning BCA is home to one of the largest dairy industries in NSW. Dairy farms are generally found along river flats and flood plains where there is the most productive agricultural land and providing good access to water.

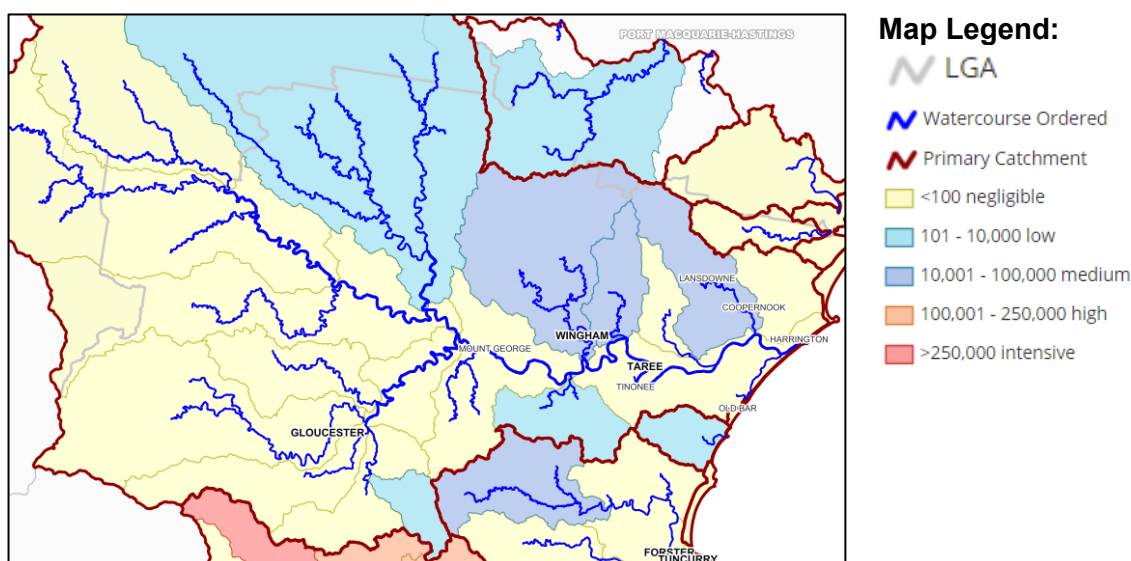
⁵⁰ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

⁵¹ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

The Manning River and Lansdowne River sub catchments have the highest intensity of dairy cattle containing 5,000 and 2,300 head of dairy cattle respectively⁵². The Gloucester River and Avon River sub catchments are also home to a high number of dairy cattle with each containing between 1,500 – 2,000 head of cattle⁵³.



Poultry: including both eggs and chicken meat, is a growing industry within the Manning Valley. Currently, the sub catchments containing the most chicken farms include Dingo Creek, Cedar Party Creek and the Lansdowne River which each contain between 100,000 to 50,000 chickens⁵⁴.



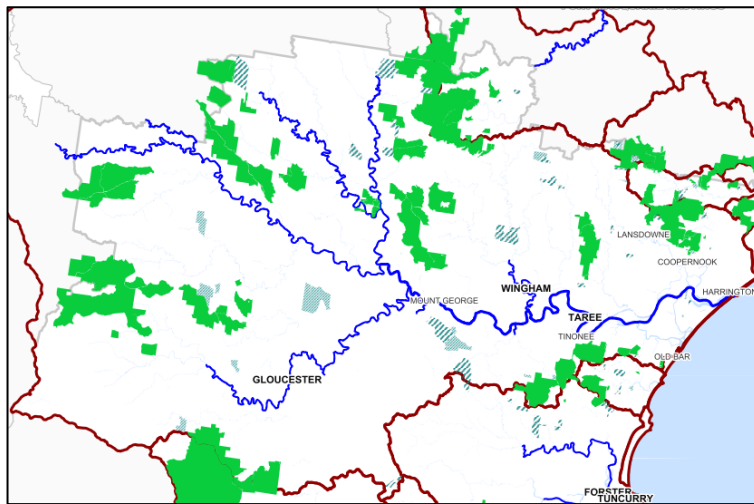
Forestry: Timber harvesting also occurs in the Manning BCA in a number of State Forests and land identified for Private Forestry. Forests with logging activity include the Lansdowne State Forest between Lansdowne and Hannam Vale, the Yarratt State Forest near Dawson River, the Barrington Tops State Forest near the Dilgry River, Bowman State Forest near the Bowman River, the Chichester and Avon State Forests near the Avon River. There are also hardwood plantation forests along Rowleys River⁵⁵.

⁵² Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

⁵³ *ibid.*

⁵⁴ *ibid.*

⁵⁵ Forestry Corporation of NSW 2018

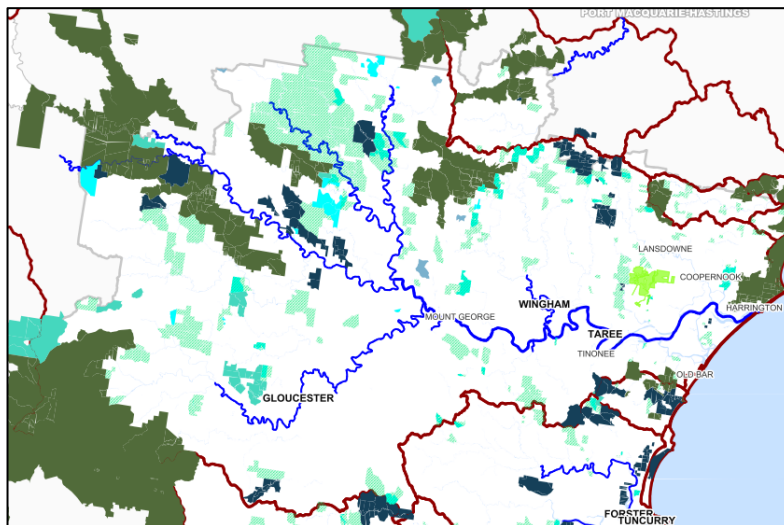


Map Legend:

- LGA
- Watercourse Ordered
- Primary Catchment
- State Forest
- Part 5B Local Land Services Act 2013
- Part 5C Forestry Act 2012

Conservation: Biodiversity conservation is significant with the Manning BCA including National Park estate and reserves, State conservation areas and private land under conservation agreements. The upper catchment areas contain the most significant portion of National Parks including the Barrington Tops, Gloucester Tops and Dingo Tops National Parks.

A wide range of vegetation communities are found in these conservation areas such as sub-tropical and cool temperate rainforest, tall open eucalypt forests, sub-alpine communities including woodland grasslands and swamps in the upper catchment areas, and littoral rainforest, coastal heath and coastal forests near the coast.



Map Legend:

- LGA
- Watercourse Ordered
- Primary Catchment
- PVP - Native Vege Act 2003 (Notified)
- Biodiversity certification
- Property Vegetation Plan - NV Act
- Biobanking Agreement
- Flora Reserve
- National Park
- Nature Reserve
- State Conservation Area

Mining: There are two open cut coal mines currently operating in the Avon River Valley – Duralie and Stratford; other mining and quarry activities throughout the catchment; and the potential for future mining and exploration activities to occur.

Oyster Growing: Both the northern and southern channels of the Manning River have large expanses of Priority Oyster Aquaculture Areas which produce primarily Sydney Rock and Pacific varieties. Oyster Aquaculture is discussed in more detail within the Marine Activity paper.

Recreation and Tourism: Recreational swimming, fishing, boating and kayaking occur along the Manning River and most associated tributaries. The Manning River is a renowned recreational fishing spot and is extremely popular for boating activities. The Barrington River

is also a popular location for kayaking with adventure-based tourism operators offering kayaking experiences.

Sometimes there are limited public access points for recreation and tourism waterway users to access rivers and waterways. The riparian areas and even portions of a waterway can be classed as private land depending on the ownership title. Accessing waterways using publicly owned Crown Roads sometimes involves passing through private property, which can make the ownership legal arrangements over these spaces unclear. As a result, river access can be contentious, and this is of particular concern on the Barrington River.

Camping is also a popular recreation and tourism activity and some areas within the catchment are 'hot-spots' for unauthorised camping⁵⁶. These activities are often associated with family and/or small group primitive camping on private lands without a dwelling entitlement waterways and unauthorised camping grounds on large rural properties, supplementing farming and other activities on the land.

A permanent or temporary camping ground that accommodates more than two tents and has not been approved under the planning system is considered unauthorised camping. The Gloucester Valley is one 'hot-spot' with this being an issue, along with access to waterways within the area.

5.1.2 Threats to catchment health

Across the rural landscape there are a number of threats to water availability, water quality and catchment health within the Manning River BCA. The threats discussed below relate to activities and land uses in rural areas of the catchment.

Livestock: a key threat to waterway health in the Manning BCA is unrestricted livestock access to waterways associated with both beef and dairy activities across the catchment.

Cattle accessing waterways increases nutrient run-off, likelihood of pathogens within the water, exacerbates riverbank erosion and damage to riverbank vegetation by cattle trampling and grazing along riverbanks. Additional pollutants from cropping and other uses associated with livestock activities also have the potential to increase nutrient run-off within the catchment.

Waterways that are sensitive to livestock grazing and dairying include the Barrington and Barnard Rivers, and their tributaries. These rivers have been identified as locations where erosion is occurring and is a significant source of sediment and nutrient pollution within the Manning River⁵⁷. The two rivers with the Gloucester River, contribute the most river flow into the Manning River. Other waterways within the Manning River BCA are also potentially deteriorating, due in part to unrestricted livestock access.

A number of catchment programs have been undertaken in the catchment, particularly along the Barnard River to improve overall waterway health. The programs include working with farmers to improve severe bank erosion, implement off river stock watering and restricting cattle access to rivers⁵⁸. These practices will help to improve water quality and also the environmental condition of the catchment as a whole.

Rural Development: increased development in rural areas, including new housing, has the potential to increase the level of nutrients and other pollutants entering the waterways via on-

⁵⁶ Anecdotal evidence from Council staff

⁵⁷ MidCoast Water 2011

⁵⁸ MidCoast Water 2018 p. 103

site sewage management system failures, stormwater runoff and wet weather sewer overflows.

During vegetation clearing, ground works and construction, failures in erosion and sediment control practices can result in pollution to waterways from sediment and nutrient runoff. Development relying on access and use of unsealed roads is also likely to have similar negative impacts.

Mining: the impact that the mining industry is having on the waterways within the Manning River catchment is not well understood. However more broadly, mining can impact on surface water base flows by intercepting groundwater aquifers, drawing down water tables near rivers, and by intercepting surface water runoff and activating nutrients in disturbed areas.

These effects are most commonly experienced after mining activity ceases and may occur for an extended period. Research shows that these effects are already being felt in the broader Hunter Region⁵⁹. Currently there are only a small number of mines and quarries within the catchment, with two coal mines at Stratford and Duralie, but growth and expansion of mining could impact on overall waterway health. These issues are discussed in more detail within the Mines and Quarries paper.

Unauthorised Camping: threats to waterway health along the Gloucester River and associated tributaries have been identified due to the increasingly popularity of primitive and 'free' camping on rural properties. Primitive and unauthorised camp sites are unregulated and generally do not have adequate water, sewage management or refuse facilities. Sites can also be established within riparian areas, resulting in a much higher opportunity for contaminants from washing, refuse and rubbish to enter the waterway.

Limited measures have currently been undertaken to address this issue, which is discussed in more detail within the Tourism paper.

Acid Sulfate Soils: the runoff from areas of exposed acidic soils has been a significant management issue in coastal areas of the Manning River BCA. Land clearing and drainage for agricultural and urban land uses has also led to the exposure and oxidation of these soils at a number of 'hotspots'⁶⁰. In 1999 the State Government identified four 'hotspots' in the catchment: Cattai-Pipeclay; Lower Lansdowne – Moto – Ghinni Creek; Cattai Creek; and North Oxley Island⁶¹.

Council continues to address acid sulfate soils in these hotspots, particularly through the staged implementation of the Big Swamp Project. The Big Swamp is a 2000 hectare coastal floodplain at Coralville which was extensively cleared and drained agricultural activities and resulted in the generation and discharge of ASS pollution into the Manning River Estuary via Cattai Creek and the Pipeclay Canal, which has adverse impacts on water quality, aquatic ecology, oyster production and commercial and recreational fishing⁶².

Remediation activities have included extensive drain modification works to reinstate the natural hydrology of the landscape and reintroduce tidal flows, to reduce the amount of acid runoff entering the Manning River. As a result of the works, both saltwater and freshwater wetlands are now re-establishing at the site and improvements in water quality are already evident⁶³.

⁵⁹ DPI Water 2018(b) p.61

⁶⁰ Greater Taree City Council 2009 p. 30

⁶¹ Greater Taree City Council 2009 p. 30

⁶² MidCoast Council 2018(a)

⁶³ *ibid.*

With funding provided through the NSW Estuary Management Program and Council's Environmental Levy, Council has also purchased an additional 170 hectares of ASS affected land, building on the 700 hectares of land already acquired and remediated through the project to date⁶⁴.

The Standard Instrument LEP introduced specific and consistent planning controls to manage the risk of acid sulfate soils from land use activities across NSW.

A range of other activities can impact on waterway health – flows and quality, including but not limited to: loss of biodiversity; introduction and spread of weeds; vegetation loss; impacts associated with public and private forestry, particularly on steep land and increased heavy traffic unsealed roads; pesticides and heavy metals.

5.1.3 Catchment health

A number of threats to the ongoing health of the Manning River BCA have been identified. Despite this, the catchment is classified as having good overall health. This is due in part to the various management plans, programs and planning controls that have been implemented within the catchment to monitor water quality and address some of the main threats to waterway health.

Water Quality Management Programs: Council in partnership with the Office of Environment and Heritage (OEH) run an ongoing water quality program to monitor the ecological health of waterways within the MidCoast area.

To determine the health of each catchment they measure a number of different indicators including algal growth, sediment inputs and water clarity, and intact aquatic habitats like seagrass, macrophyte and riparian vegetation⁶⁵.

Within the Manning River BCA, water quality is measured at three key management areas the Upper, Middle and Lower Manning River Estuary. The most recent monitoring completed in 2018 has indicated water clarity in the Manning River Estuary is excellent but there was an over-abundance of algae, particularly in the Upper Manning River Estuary which is the section between Wingham and Dumaresq Island⁶⁶. The overall grade for all three monitoring areas is 'B' or 'good', this score is consistent with previous years.

Other water quality management projects include the Big Swamp Project discussed previously; and educational projects between farmers, MidCoast Council and Hunter Local Land Services to achieve improvements to agricultural management practices. Local Landcare Groups, Council and Local Land Services also undertake riparian management programs aimed at improving vegetation along and/or stability of, the banks of compromised waterways.

Ecological Health: there are many important estuarine communities that provide key habitat for a diverse range of animals and aquatic species. These communities act as filters for nutrients and sediments, reduce erosion, improve water quality and act as important carbon stores.

Generally, the condition of freshwater fish communities within the catchment is poor in the upper river sub-catchment areas; and fair to good in the middle and lower catchment areas. Only a few areas were recognised as having very poor freshwater fish communities. The very poor areas are the headwaters of the Manning, Gloucester and Dilgry Rivers⁶⁷.

⁶⁴ *ibid.*

⁶⁵ MidCoast Council 2018(b) p. 5

⁶⁶ MidCoast Council 2018(b) p. 16

⁶⁷ Freshwater Fishing Communities Status Dataset

In the upper Manning River catchment areas, where the main land uses are conservation, State Forest and livestock agriculture, less information is available regarding the health status of particular waterways. However, waterway health is likely to be most compromised in areas that experience a high intensity of agricultural land uses, including public and private forestry, unless these uses are adequately managed through on farm management programs.

5.2 Khappinghat Creek Broad Catchment Area

The Khappinghat Creek catchment is the smallest in the MidCoast. The main waterway is Khappinghat Creek which forms part of a large undeveloped wetland and naturally opening and closing estuary (ICOLL).

Key features of the catchment include Saltwater Lagoon at the mouth of the estuary and creek tributaries. The main watercourses are shown in Table 8.

Figure 17. Khappinghat Creek catchment area (Source: MJD)

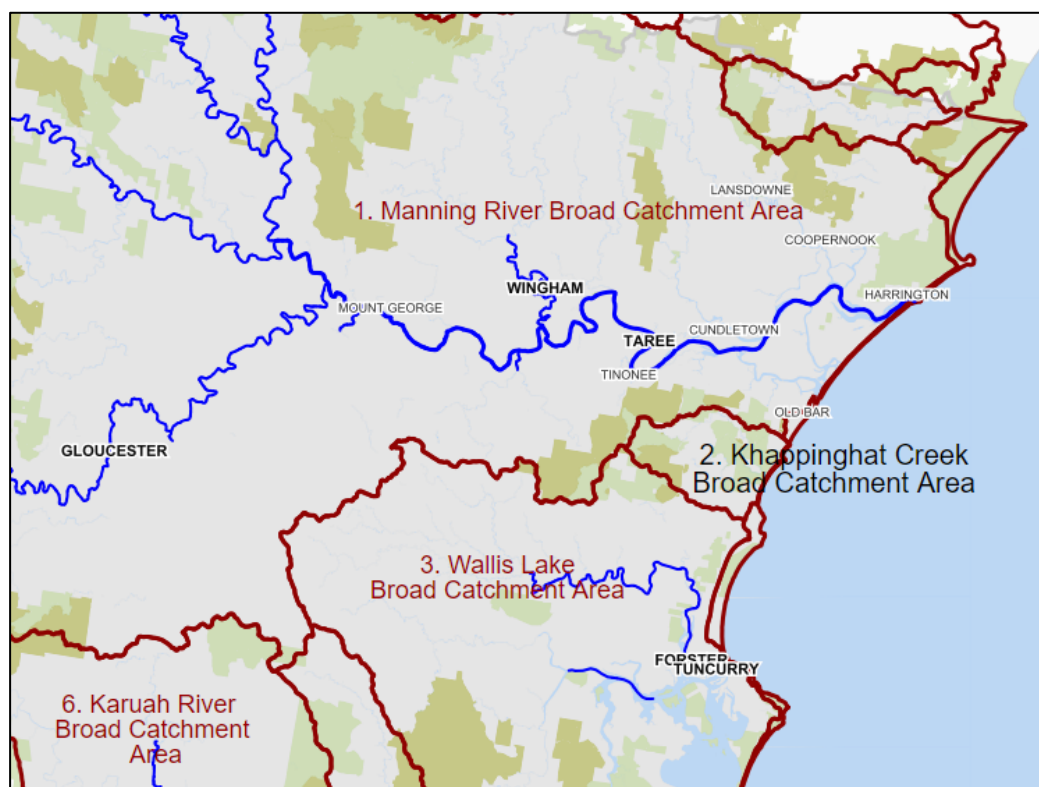


Table 8. Waterways within the Khappinghat Creek Broad Catchment Area

Waterways within the Khappinghat Creek Broad Catchment Area		
Khappinghat Creek	Koorainghat Creek	Rainbow Creek

Water supply

The catchment does not form part of a water supply or drinking water catchment area.

Water Quality Objectives and Community Values

The water quality objectives were developed in 2006 in consultation with the local community as part of the [NSW Water Quality and River Flow Objectives](#) initiatives project. The objectives that apply to the Khappinghat are those relevant to: forested areas; uncontrolled streams; and estuaries. The specific objectives for the Khappinghat catchment area and where they apply are shown in the table below.

Table 9 NSW Water Quality Objectives for the Khappinghat Creek Broad Catchment Area⁶⁸

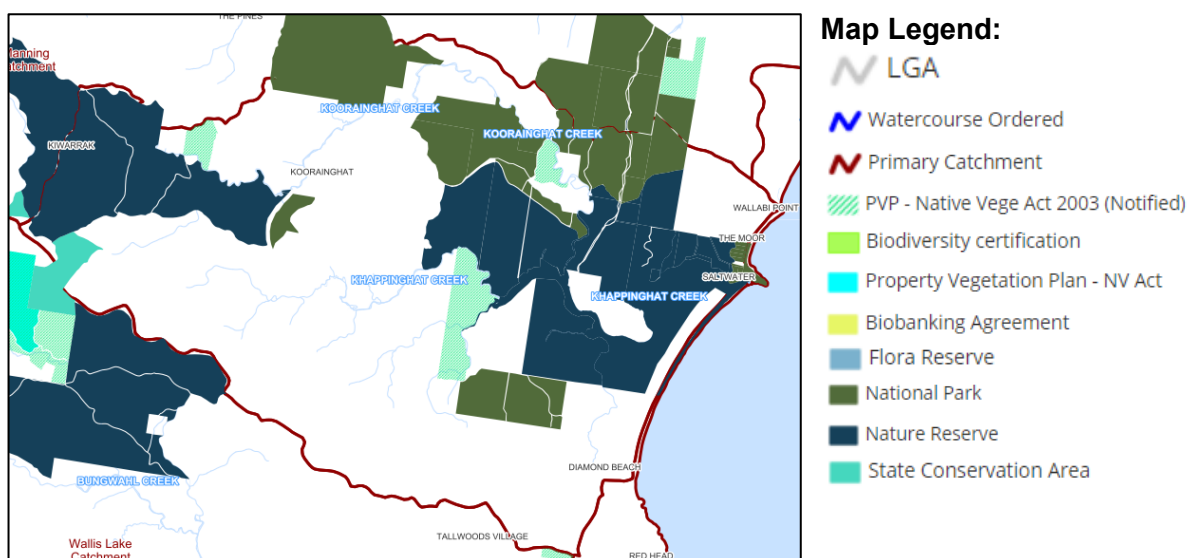
Water Quality Objectives for the Khappinghat Broad Catchment Areas		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none"> • This objective applies to all-natural waterways. • High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use. • Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems. • Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses. • Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 		
	Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> • The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 		
	Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> • This objective applies to all waters but may not be achievable for some time in some areas. • Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 		
	Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> • This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. • Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 		
	Aquatic foods	<i>Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities</i>
<ul style="list-style-type: none"> • The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting. 		

5.2.1 Rural activities and industries

Biodiversity conservation is the main land use within the catchment with most of the area contained within the Khappinghat Nature Reserve, Talawahl Nature Reserve and Saltwater National Parks Estate. These parks support a diverse range of vegetation communities including coastal heath, coastal forests and littoral rainforest⁶⁹.

⁶⁸ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

⁶⁹ OEH 2012 p. 15



The creeks and lagoon are popular for recreational activities including boating, fishing, canoeing, bushwalking and birdwatching. The Saltwater Lagoon, which is located at the mouth of Khappinghat Creek is shallow which restricts the types of boats used and makes it unsuitable for water skiing or jet skiing. The roads and trail network within the National Parks Estates is also used for walking, cycling, off road vehicle touring and horse riding⁷⁰.

The catchment is also of great importance to the Biripi and Worimi Aboriginal people. Saltwater National Park in particular continues as a place of cultural and spiritual significance as a coastal camping and ceremonial site⁷¹.

5.2.2 Threats to catchment health

As most of the catchment is set aside for biodiversity conservation, there are few known threats with the exception of recreation and forestry activities which are largely outside of Council's jurisdiction.

Recreation activities: in addition to water-based recreation activities, there are known and potential threats to the catchment health from vehicles and horse-riding on unsealed roads and management trails. In particular, there are significant impacts from these activities in low, swampy areas; contributing to soil erosion, turbidity and damage to sensitive vegetation⁷². Informal boat launching also occurs in environmentally sensitive areas on Duckhole Gully, Magpie Creek, Moor Creek and Khappinghat Creek.⁷³

These and other impacts associated with the absence of regular tidal flushing can result in the accumulation of nutrients within the catchment⁷⁴. Given the catchment is predominantly within the coastal zone, this location is discussed in more detail in the Marine Activities paper.

Forestry: Timber harvesting occurs in and on the fringes of the catchment in a number of State Forests and land identified for Private Forestry. These activities can result in the loss of protective vegetation, biodiversity and result in additional sediment and nutrient run-off within this sensitive catchment.

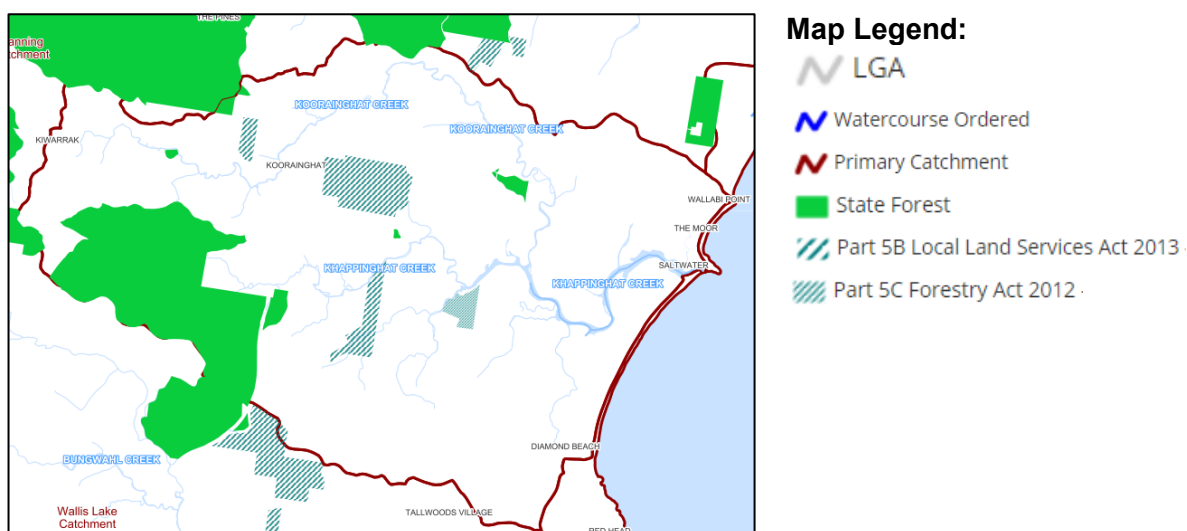
⁷⁰ *ibid.*

⁷¹ *ibid.*

⁷² OEH 2012 p. 25

⁷³ *ibid.*

⁷⁴ OEH 2012 p. 11



5.2.3 Catchment health

The Khappinghat Creek catchment is one of the few estuaries in NSW with relatively natural waters and catchment, as a result it has a high conservation value and is in overall excellent health.

Water Quality Management Programs: Most of the catchment is managed by the National Parks and Wildlife Services according to the Khappinghat Reserve Saltwater National Park Plan of Management. T

he specific management directions include protecting “the water catchment values of the Khappinghat Creek estuarine system through the planning and implementation of catchment protection and rehabilitation activities and management of vegetation, fire, roads, trails and tracks, waterway activities and visitor areas in the planning area”⁷⁵.

Council, in partnership with the Office of Environment and Heritage (OEH) also undertakes regular water quality monitoring of Khappinghat Creek as part of the ongoing water quality program to monitor the ecological health of waterways within MidCoast area. Over the last five years Khappinghat estuary received an ‘A’ grade or excellent result, with the exception of the score in 2018, when it declined due to a slight drop in water clarity⁷⁶.

Ecological Health: The presence of intact aquatic habitats such as seagrass is also an indicator of ecological health. The Khappinghat estuary contains both seagrass and saltmarsh which provide important habitat for marine species and birds and improve water quality.

Khappinghat Creek has experienced an increase in saltmarsh communities between 1985 and 2011 and contains approximately 16ha of saltmarsh however, there appears to have been a decline in seagrass with only a small area remaining⁷⁷. The reason for this decline is unclear. The estuary also contains extensive areas of sand, mud flats and rocky shores which are also important aquatic habitats.

⁷⁵ *ibid.*

⁷⁶ MidCoast Council 2018(b) p. 17

⁷⁷ NSW Government Marine Estate Management Authority 2017 p. 69

5.3 Wallis Lake Broad Catchment Area

The Wallis Lake BCA extends over 1400 square kilometres and is shown in the map below. The catchment area includes Wallis Lake and the tributaries of Wallamba, Coolongolook, Wallingat and Wang Wauk Rivers, which all drain into the northern part of the Lake.

The catchment can be divided into seven primary sub-catchments based on the major drainage networks which are the Coolongolook, Wallamba, Lower Wallamba, Wang Wauk, Wallingat, Wallis and Minimbah Rivers.

Figure 18. Wallis Lake catchment area (Source: MJD)

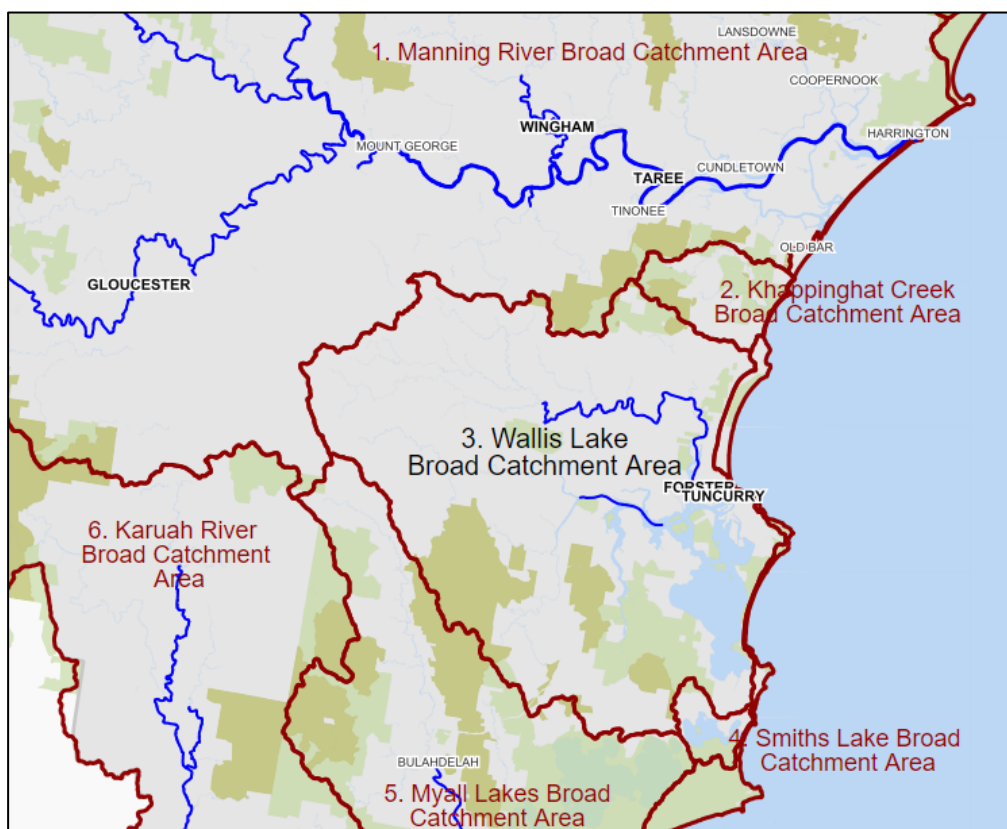


Table 10. Waterways within the Wallis Lake Broad Catchment Area

Waterways within the Wallis Lake Broad Catchment Area		
Bungwahl Creek Darawakh Creek Firefly Creek Horse Creek Khoribakh Creek	Coolongolook River Lower Wallamba River Minimbah River Wallamba River Wallingat River Wallis River Wang Wauk River	Wallis Lake

Water supply







MidCoast Water Services has a Water Treatment Plant (WTP) at Nabiac. Water is extracted from via the Nabiac Inland Dune Aquifer borefield, to supplement the Manning Water Supply Scheme⁷⁸.

⁷⁸ [MidCoast Water 2018](#) p. 12

Water Quality Objectives and Community Values

As part of the Great Lakes Coastal Catchments Initiative (CCI), the Council has been committed to engaging stakeholders in developing a Water Quality Improvement Plan for Wallis, Smiths and Myall Lakes. Building on the previous work to develop water quality objectives for catchment areas across NSW, community workshops were held to determine how local community groups' value and use their waterways locally. The resulting community values specific to Wallis Lake are shown in the table below⁷⁹.

Table 11 NSW Water Quality Objectives for the Wallis Lake Broad Catchment Area⁸⁰




Water Quality Objectives for the Wallis Lake Broad Catchment Area		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none"> This objective applies to all-natural waterways. High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use. Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems. Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses. Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 		
	Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 		
	Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies to all waters but may not be achievable for some time in some areas. Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 		
	Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 		
	Livestock water supply	<i>Protecting water quality to maximise the production of healthy livestock</i>
<ul style="list-style-type: none"> This objective applies to all surface and groundwaters used to water stock. 		
	Industrial Water Supply	<i>The high economic value of water taken from rivers and lakes for use by industry needs recognition in water quality planning and management.</i>

⁷⁹ Great Lakes Council 2009(a) p. 50

⁸⁰ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

ANZECC 2000 Guidelines do not provide guidance on the water quality needed for various industries. Sources of water used for industry invariably have other environmental values, which mostly need water of a higher quality than that needed by industry.

Further, individual industries generally have the capacity to monitor and treat the available water resources to meet their own needs.

	Homestead water supply	<i>Protecting water quality for domestic use in homesteads, including drinking, cooking and bathing</i>
<ul style="list-style-type: none"> • The objective applies to all homesteads that draw water from surface and groundwaters for domestic needs, including drinking water. • The NSW Health Department advises that water for domestic use in homesteads should comply with the Australian Drinking Water Guidelines (NHMRC & NRMMC 2004) at the point of use, regardless of source. 		
	Groundwater	<i>Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment</i>
<ul style="list-style-type: none"> • These objectives apply to all current and future licensed off-take points for town water supply and to specific sections of rivers that contribute to drinking water storages or immediately upstream of town water supply offtake points. • The objective also applies to sub-catchments or groundwaters used for town water supplies. 		
	Aquatic foods	<i>Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities</i>
<ul style="list-style-type: none"> • The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting. 		

5.3.1 Rural activities and industries

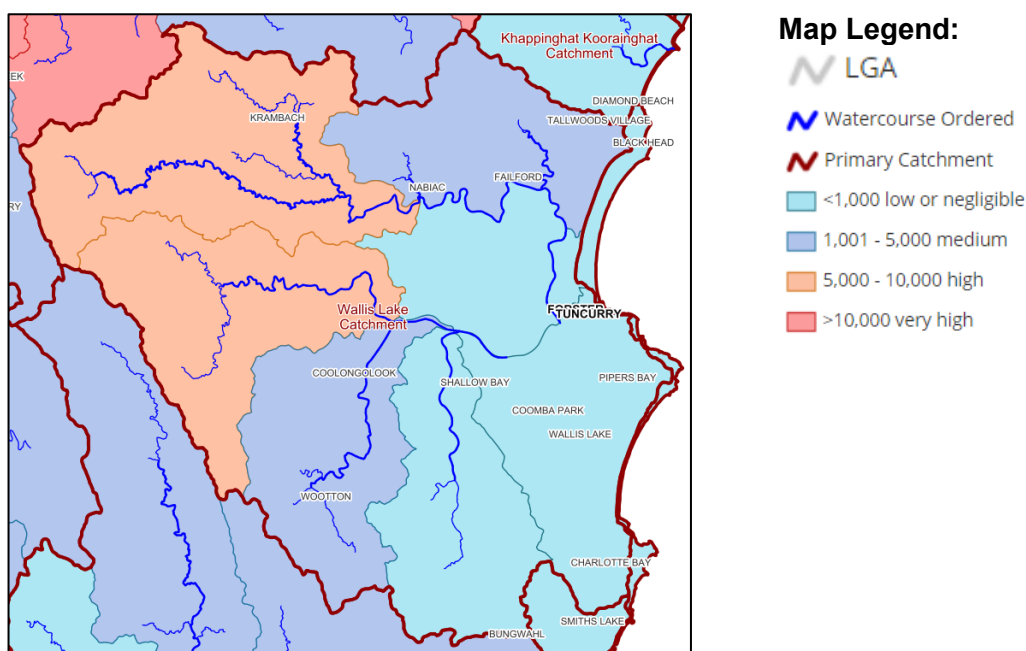
Rural activities and industries occurring within the Wallis Lake catchment include beef cattle grazing, oyster growing and water-based recreation and biodiversity conservation. Significant areas of the catchment are also conserved within National Parks and Nature Reserves.

Many people also live in the Wallis Lake catchment, however they are predominantly concentrated in urban areas, within the coastal zone.

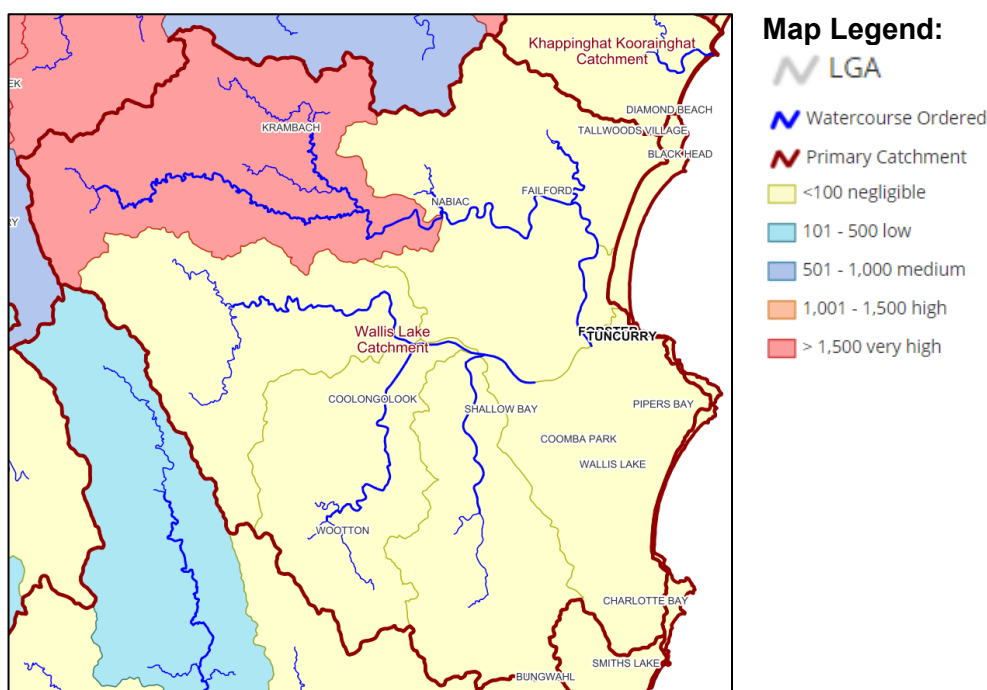
Beef Cattle Grazing: is the most extensive land use within the catchment. The Wallamba and Wang Wauk Rivers both have a high intensity of cattle grazing containing between 5,000 and 10,000 head of cattle within each sub-catchment⁸¹. Beef cattle grazing also occurs in the Lower Wallamba and Coolongolook River sub catchments with both having approximately 2,000 to 2,500 head of beef cattle⁸².

⁸¹ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

⁸² Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)



Dairying: Historically, the Wallis Lake BCA had a significant dairy industry with around 50 dairy farms⁸³. However, today the dairy industry in the area has declined and there are less than 10 dairy farms⁸⁴. These farms are concentrated in the Wallamba River sub catchment, which has approximately 1,500 head of dairy cattle indicating a very high intensity of dairying within that area⁸⁵. Other areas of the catchment are not used for dairy farming.



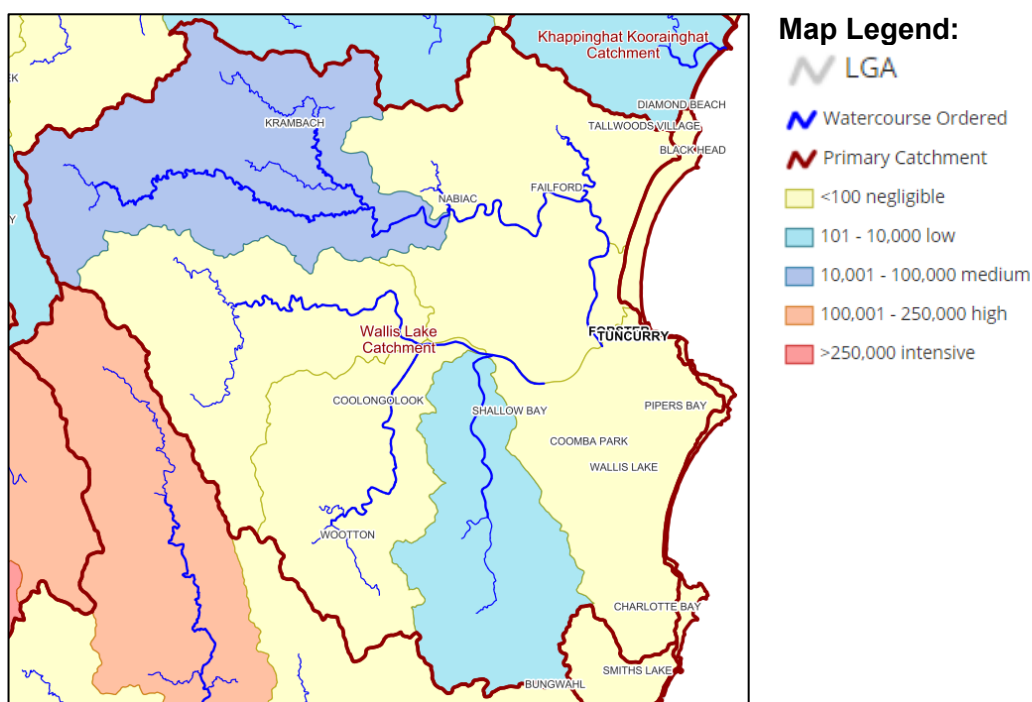
Poultry: also occurs in the Wallamba River sub-catchment area, with approximately 36,000 chickens, which indicates a medium intensity in the area⁸⁶. The nature of poultry farming does appear to be transitioning from intensive to more diverse forms including barn-fed and free range.

⁸³ Great Lakes Council 2009(d) p. 610

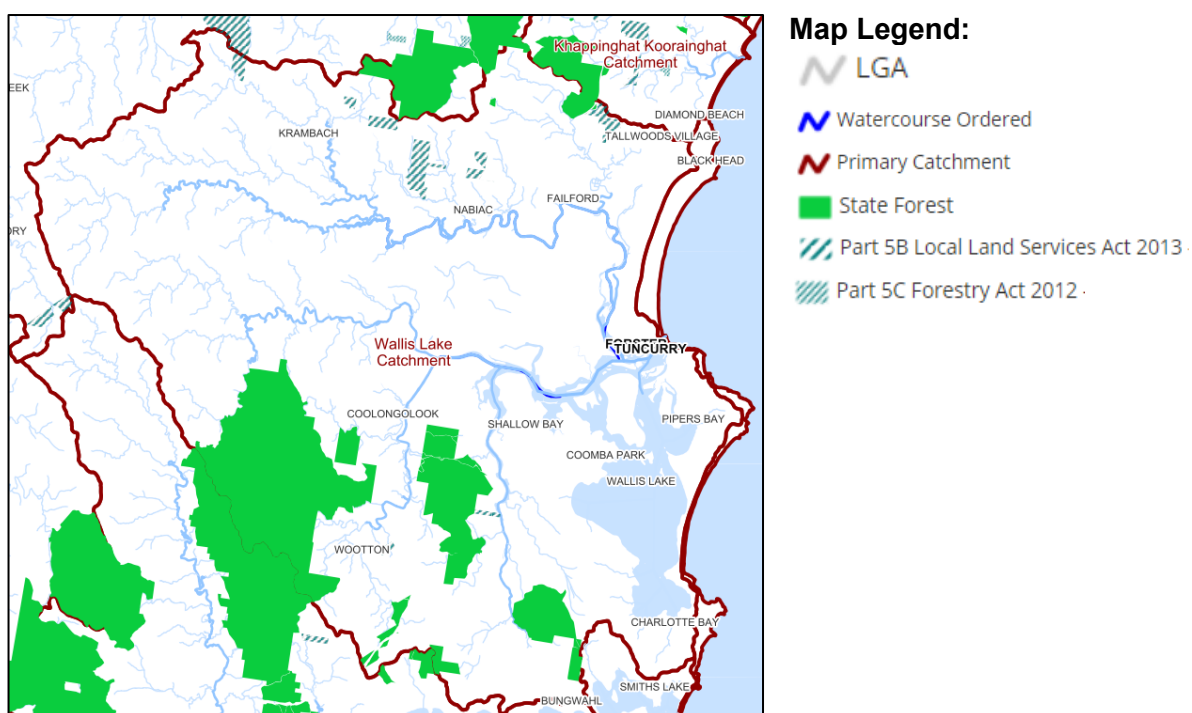
⁸⁴ Great Lakes Council 2009(d) p. 610

⁸⁵ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

⁸⁶ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)



Forestry: occurs in some areas of the Wallis Lake catchment area. In the north-western parts of the Wallamba River sub-catchment, substantial areas of private native forest are being managed as commercial timber plantations⁸⁷. Timber harvesting also occurs within the Wang Wauk State Forest near the headwaters of the Wang Wauk River. Other smaller areas of forestry include the Bachelor State Forest near the Wallingat River and a small hardwood plantation area south of Wallingat National Park⁸⁸.



Conservation: A significant portion of the catchment area is identified for conservation or preservation purposes⁸⁹. The two main National Parks are the Wallingat National Park and

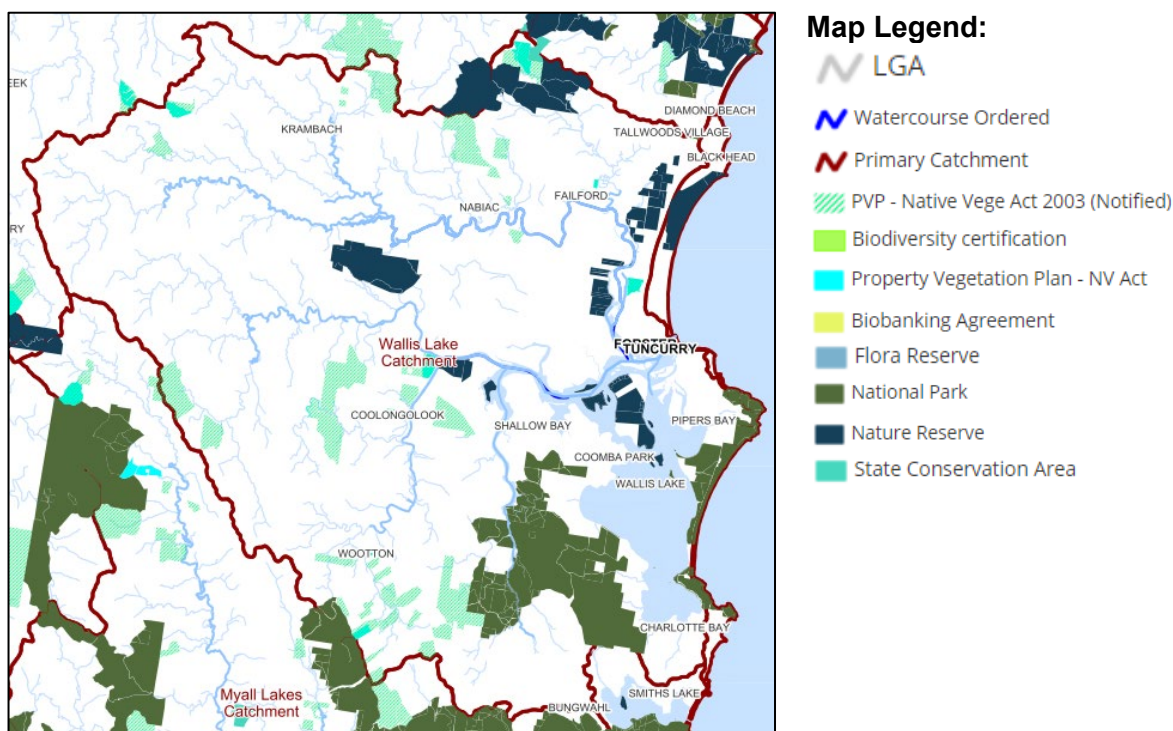
⁸⁷ Great Lakes Council 2009(d) p. 611

⁸⁸ Forestry Corporation of NSW 2018

⁸⁹ Great Lakes Council 2009(d) p. 612

the Booti Booti National Park. Both support a diverse range of vegetation communities including littoral rainforest, coastal heath, coastal forests, cabbage palm forests and moist eucalypt forests⁹⁰. However, much of the current conservation estate is located on steeper timbered hill slopes and ridge top landscapes within the catchment⁹¹. Riverine and riparian rainforest and valley lowland habitats are poorly represented within the current Wallis Lake BCA conservation areas⁹².

The land identified in an environmental development zone is discussed in additional detail within the Housing and Accommodation and Land-based Conservation papers. The E4 Environmental Living zone has also been the subject of a zone-specific review to inform the Housing and Accommodation paper.



Recreational Use: The tourism industry is one of the most significant industries locally and large numbers of tourist visit the area over the summer season. Wallis Lake itself, is widely used for a range of recreation activities including but not limited to boating, fishing, swimming and jet-skiing⁹³. These activities do not generally fall within the jurisdiction of development assessment, but are reliant on land based services and facilities that are, and these are discussed more extensively in the Marine Activities paper.

Oyster Aquaculture and Commercial Fishing: Wallis Lake is one of the most significant producers of Sydney Rock Oysters in Australia. Wallis Lake and the estuarine areas account for one third of all Sydney Rock Oysters produced, making the area the largest producer in NSW.

The northern part of Wallis Lake including the Wallamba and Coolongolook estuaries contain large Priority Oyster Aquaculture Areas. Commercial fishing also occurs on the lake and commercial ocean-fishing rely upon the facilities available within Cape Hawke Harbour within Wallis Lake; and it is one of NSW's top three producing estuarine fisheries

⁹⁰ Great Lakes Council 2009(a) p. 46

⁹¹ Great Lakes Council 2009(d) p. 612

⁹² Great Lakes Council 2009(d) p. 612

⁹³ Great Lakes Council 2009(a) p. 46

Oyster aquaculture and commercial fishing are discussed more extensively in the Marine Activity paper.

5.3.2 Threats to catchment health

Cattle Livestock: Cattle grazing is a contributor to nutrients and sediments entering streams, rivers and estuaries. Most of the nutrient and sediment load appears to enter the waterway from unimproved pasture which is disturbed and degraded by the grazing activities⁹⁴. Sediment and nutrient runoff increase in times of drought because there is less groundcover to trap the nutrients and sediments⁹⁵. Waterways that are most impacted by livestock grazing in the Wallis Lake catchment are the Upper Wallamba, Coolongolook and Wang Wauk Rivers⁹⁶.

Poultry: The key issue with poultry farming is poultry litter, which enters waterways during periods of rain, increasing the nutrient load in rivers and estuaries. The poultry industry is currently only small in the catchment area, however an intensification of the industry will increase the amount of nutrients washing into rivers and estuaries⁹⁷. Management of poultry litter is outside of the planning framework and should be undertaken in accordance with the Department of Primary Industry's best management practice guidelines⁹⁸.

On-site Sewerage Management: Wallis Lake experienced a Hepatitis A outbreak in 1997. The outbreak devastated the oyster industry in Wallis Lake. The contamination occurred from untreated sewage entering the waterway. Following the outbreak, a Septic Safe Program was introduced to address poorly maintained septic tanks and failures with these systems. Some towns and villages remain unsewered within the catchment, including Coomba Park and Coolongolook.

On-site sewer management systems continue to be carefully regulated through Council's inspection and approval programs to avoid any future contamination of the waterway from sewage.

Urban Development: The Wallis Lake catchment relies on water supply from the Manning and any significant additional growth within this catchment would require additional infrastructure, extraction and management through the Manning system. Noting that the Nabic borefield is interlinked with the Manning system and has created additional capacity, particularly during droughts and periods of water shortages.

It is noted that associated with increased urban development the Tuncurry Waste Management Centre has reached capacity and Council established an alternative solid waste landfill at Minimbah. The management of landfill sites must be undertaken at the highest standard to ensure that there are no future leachate issues from this site into the Nabic aquifer, from which water is extracted.

Unpaved Roads: stormwater runoff from unpaved roads has contributed to sediment and nutrient runoff within the catchment. Areas causing the most runoff are unpaved roads near creek crossings. Council's implementation of best practice road management, including but not limited to the construction of culverts, swales and drains to divert runoff will reduce pollutants and sediments from entering waterways⁹⁹.

⁹⁴ Great Lakes Council 2009 (e) p. 541

⁹⁵ Great Lakes Council 2009(a) p. 52

⁹⁶ Great Lakes Council 2009 (e) p. 541

⁹⁷ Great Lakes Council 2009(a) p. 54

⁹⁸ NSW DPI 2011

⁹⁹ Great Lakes Council 2009 (e) p. 544

Riparian Erosion: Much of the catchment area is identified as having highly erodible soils. This includes the Wang Wauk River sub catchment, Wallamba River sub catchment, and the Coolongolook River sub catchment¹⁰⁰. Due to highly erodible soils, these areas would be most sensitive to clearing and development along riparian corridors; and riverbank erosion associated with boat wash, which has been of significant impact within the Wallambah River.

5.3.3 Catchment health

The current health of Wallis Lake and its catchment is generally measured as being good to excellent¹⁰¹. The variability is in part related to adjoining land-based activities which range from residential and commercial development precincts within Tuncurry and Forster, unsewered villages of Coomba Park and Coolongolook, dispersed agricultural activities and significant areas of protected ecologically sensitive lands.

Ecological health: Wallis Lake is an extremely important lake system for a number of ecological communities such as saltmarsh and seagrass. These communities provide key habitat for marine and bird species, act as filters for nutrients and sediments, reduce erosion and improve water quality and act as important carbon stores. The estuarine areas of Wallis Lake contain the largest area of seagrass beds in NSW which is approximately 3,190 hectares.

Within the southern part of Wallis Lake at Charlotte Bay there is a significant area of seagrass beds and macrophytes, which is home to possibly the highest diversity of sponges of all NSW estuarine areas¹⁰². Wallis Lake also contains the second largest area of saltmarsh in the State totalling approximately 590 hectares¹⁰³.

As noted above, the Wallamba River is the most compromised waterway within the catchment area due to agricultural and water-based recreational activities, and has the largest impact on the overall ecological condition of Wallis Lake¹⁰⁴.

The Coolongolook and Wang Wauk Rivers are also compromised from these land uses, but to a lesser extent. In these waterways, algal abundance is higher than desired, this indicates the need to better manage land uses and activities that increase the nutrient load entering rivers and estuaries¹⁰⁵.

Catchment Management Programs: Over the years, the Wallis Lake catchment has been subject to many years of water quality monitoring, modelling and ecological research¹⁰⁶. Currently water quality modelling is undertaken by Council and OEH, and focus on measuring indicators such as algal growth, sediment inputs and water clarity; and determine the overall ecological health of the catchment by looking at intact aquatic habitats like seagrass, macrophyte and riparian vegetation¹⁰⁷.

There are also a number of catchment management programs, which are often introduced to implement the actions outlined in the Catchment Management and Estuary Management Plans. Specific programs include on-farm management projects to control livestock access to waterways, implement off stream watering systems, reduce erosion and protect native vegetation. Landcare, Coastcare and farming groups also actively implement on ground works to reduce streambank erosion and improve riparian corridors.

¹⁰⁰ Great Lakes Council 2009 (e)

¹⁰¹ MidCoast Council 2018(b) p. 2

¹⁰² MidCoast Council 2018(b) p. 21

¹⁰³ NSW Government Marine Estate Management Authority 2017 p. 68

¹⁰⁴ MidCoast Council 2018(b) pp. 19-20

¹⁰⁵ MidCoast Council 2018(b) pp. 19-20

¹⁰⁶ Great Lakes Council 2009(a) p. 51

¹⁰⁷ MidCoast Council 2018(b) p. 5

5.4 Smiths Lake Broad Catchment Area

Smiths Lake has a catchment of approximately thirty-six square kilometres, shown in the map below. The lake is divided into three similar sized basins and coastal lagoon subject to intermittent closures and openings (ICOLL). The lakes entrance is artificially opened when water levels reach 2.1 metres above sea level to prevent flooding of nearby areas¹⁰⁸. The catchment area contains several small tributary streams of very little annual average flow. The main watercourses are listed in Table 12 below.

Figure 19. Smiths Lake catchment area (Source: MJD)

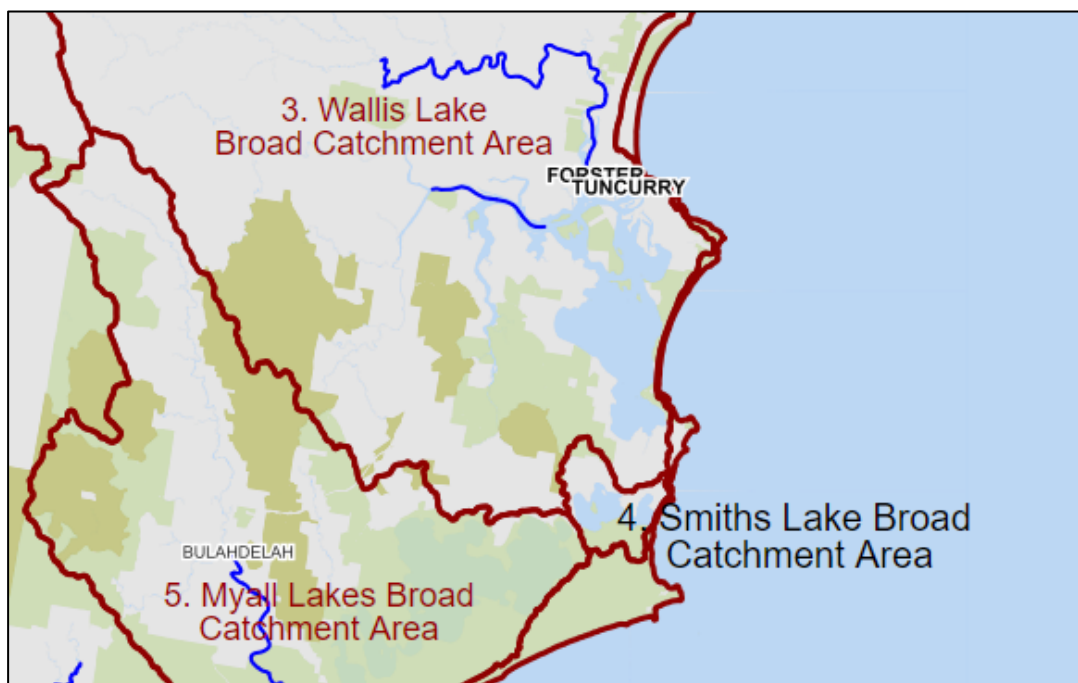


Table 12. Waterways within the Smiths Lake Broad Catchment Area

Waterways within the Smiths Lake Broad Catchment Area		
Tarback Creek	Wamwarra Creek	Smiths Lake

Water supply

The Smiths Lake catchment does not contain a drinking water catchment area and water is piped from the Manning water supply system, reliant on extractions from the Manning River, Bootawa Dam and Nabiac borefield.






Water Quality Objectives and Community Values

As part of the Great Lakes Coastal Catchments Initiative (CCI), the former Great Lakes Council were committed to engaging stakeholders in developing a Water Quality Improvement Plan for Wallis, Smiths and Myall Lakes. Building on previous work to develop water quality objectives for catchment areas across NSW, community workshops were held to determine how local community groups' value and use their waterways locally. The resulting community values specific to Smiths Lake are shown in the table below¹⁰⁹.

¹⁰⁸ MidCoast Council 2018(b) p. 22

¹⁰⁹ Great Lakes Council 2009(a) p. 146

Table 13 NSW Water Quality Objectives for the Smiths Lake Broad Catchment Area¹¹⁰

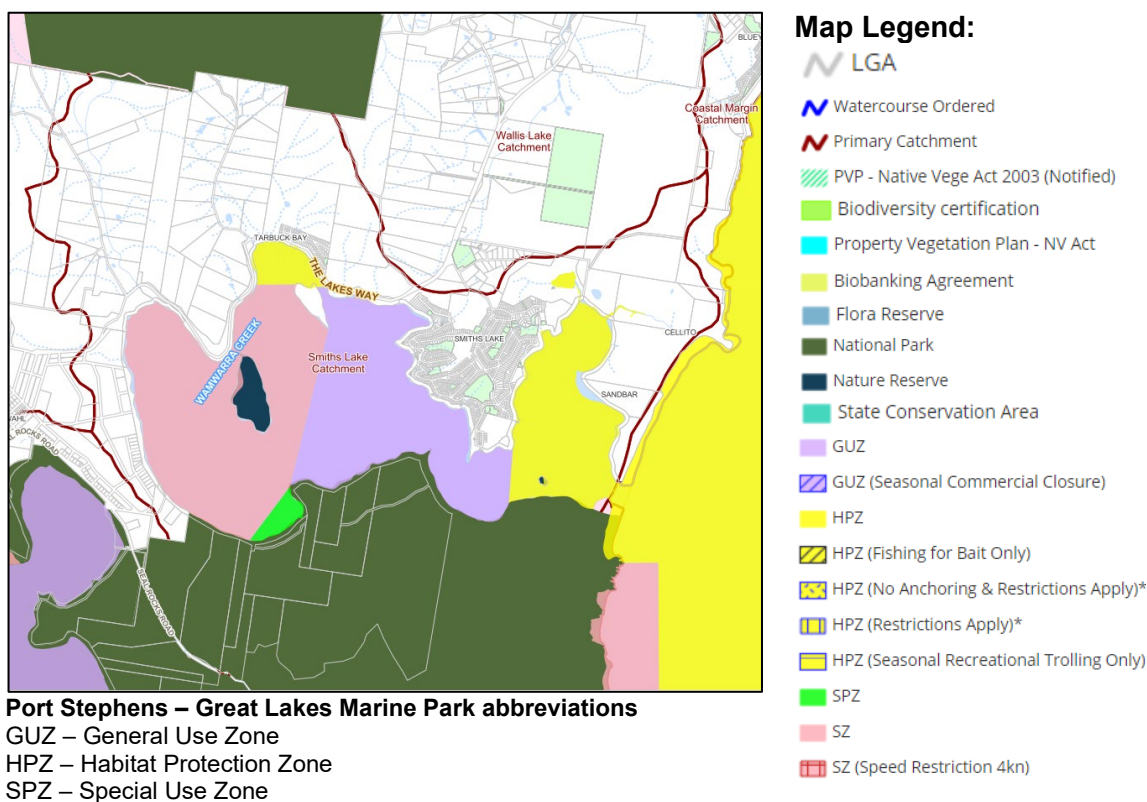
Water Quality Objectives for the Smiths Lake Broad Catchment Area		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none"> • This objective applies to all-natural waterways. • High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use. • Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems. • Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses. • Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 		
	Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> • The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 		
	Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> • This objective applies to all waters but may not be achievable for some time in some areas. • Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 		
	Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> • This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. • Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 		
	Aquatic foods	<i>Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities</i>
<ul style="list-style-type: none"> • The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting. 		

5.4.1 Rural activities and industries

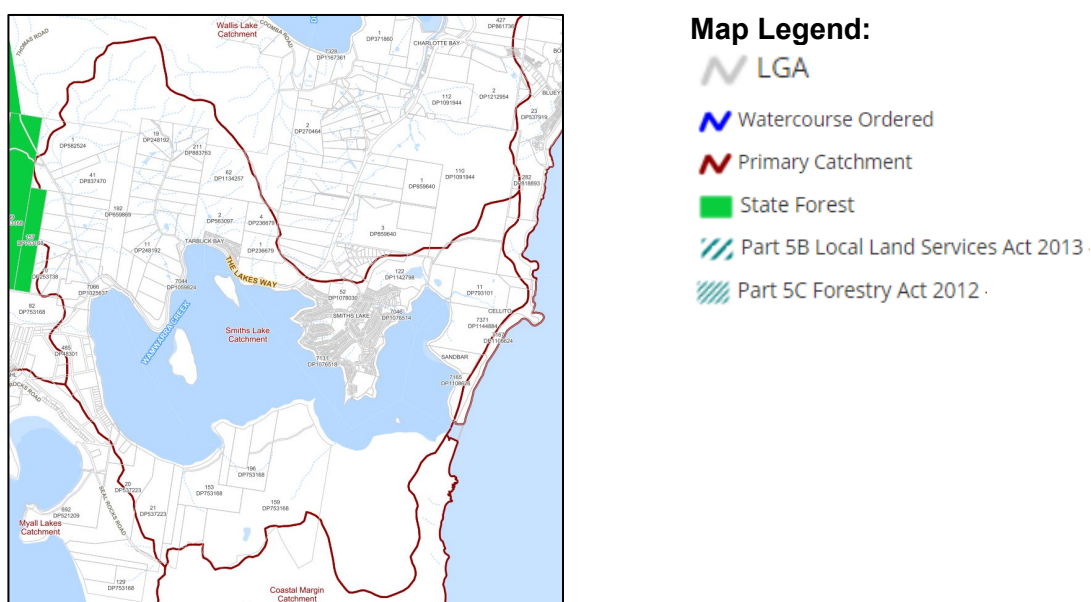
The catchment area of Smiths Lake is mostly forested with much of the surrounding land use included in the National Park estate or managed by State Forests. The villages of Smiths Lake and Tarbuck Bay are located on the foreshores of the lake itself and both villages are also valued for their 'bushland' setting.

¹¹⁰ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

Conservation: is the dominant land use within the catchment with around 30% of the surrounding area contained within the Myall Lakes and Wallingat National Parks estate¹¹¹. The lake and tributaries up to the tidal limit also form part of the Port Stephens – Great Lakes Marine Park (PSGLMP). These two parks support a diverse range of vegetation communities including littoral rainforest, coastal heath, coastal forests, cabbage palm forests and moist eucalypt forests¹¹².



Forestry: commercial logging historically was a dominant land use within the Smith's Lake catchment¹¹³. However timber harvesting has significantly reduced and there is limited activity within the catchment.



¹¹¹ Great Lakes Council 2009(b) p. 752

¹¹² Great Lakes Council 2009(b) p. 756

¹¹³ Great Lakes Council 2009(b) p. 752

Recreational Use: Smiths Lake is a popular area for recreational activities especially during the summer season. Recreational activities practiced on the lake include swimming, canoeing, kayaking, sailing, power boating, water skiing and fishing. As the entire body of Smiths Lake is within the Port Stephens – Great Lakes Marine Park, the area is managed to conserve biodiversity while still allowing for recreational and commercial activity¹¹⁴. Marine based activities are discussed more extensively in the Marine Based Activities Issue Paper.

Agriculture: a small area of the catchment is used for grazing and other agricultural activities, particularly concentrated in the lower Wamwarra Creek Valley. While there is a diversity of activity, given the limited area, commercial-scale grazing is unlikely and stock is generally managed as part of a hobby farm¹¹⁵. Little growth in agricultural activity is likely to occur in the catchment area due to relatively steep and unfertile nature of the surrounding land¹¹⁶.

5.4.2 Threats to catchment health

There are limited significant threats to waterway health occurring within non-urban areas of the catchment, mainly because there has been little clearing or modification of the landscape in comparison to neighbouring catchments¹¹⁷.

It is unlikely that the catchment will experience significant growth in agricultural land use beyond hobby farming given the fragmented land ownership, steep and heavily vegetated lands to the west of the catchment, and the predominance of conserved lands within national parks to the east.

Additional rural subdivision and/or greenfield development is likely to pose the biggest threat to waterway health within the catchment, as it may lead to an increase in urban runoff into the lake or associated tributaries. It is noted however that this threat is limited, with no additional urban release areas identified in this location in any local or regional strategy.

5.4.3 Catchment health

Smiths Lake is usually recorded as being in excellent ecological health. While there are threats to the water quality and manual opening is required, there are relatively few polluting land-uses within the catchment area, resulting in low nutrient and sediment loads entering the waterways.

Ecological Health: Currently water quality monitoring is undertaken by Council and OEH who measure indicators including algal growth, sediment inputs and water clarity, and intact aquatic habitats like seagrass, macrophyte and riparian vegetation to determine the overall ecological health of the catchment. [Smiths Lake](#) is reported on bi-annually and continues to receive an 'A' grade, representing excellent ecological condition.

The catchment is a high priority area for conservation because of its ecological health, importance to the community and identification within the Port Stephen-Great Lakes Marine Park.

Smiths Lake has a wide range of vegetation communities with some local fauna listed as threatened under State and/or Commonwealth legislation, including but not limited to the Long-nosed Potoroo and Masked Owl¹¹⁸. Three wetlands adjoining the western and southern

¹¹⁴ Great Lakes Council 2009(b) p. 756

¹¹⁵ Great Lakes Council 2009(b) p. 755

¹¹⁶ Great Lakes Council 2009(b) p. 762

¹¹⁷ Great Lakes Council 2009(b) p. 762

¹¹⁸ Great Lakes Council 2009(c) p. 728

edges of Smiths Lake are classified as protected Coastal Wetland under the Coastal Management SEPP.

Smiths Lake has experienced a decline in saltmarsh between 1985 and 2011 however, due to the clarity of the water, it has experienced an increase in seagrass between 1985 and 2013 and now contains 295ha of seagrass¹¹⁹.

Catchment Management Programs: Smiths Lake, has been included in the extensive Water Quality Improvement Plan undertaken by the former Great Lakes Council and now MidCoast Council. Due to the pristine nature of the catchment area, it has not been the focus of catchment management programs when compared to other catchments which have required additional restoration and rehabilitation programs to be undertaken in order to improve water quality and catchment health.

The Water Quality Improvement Plan undertaken by MidCoast Council recommends the following remediation actions for rural areas of the Smiths Lake catchment area: ground cover management on pasture lands; and remediation of unpaved roads¹²⁰:

¹¹⁹ NSW Government Marine Estate Management Authority 2017 p. 72

¹²⁰ Great Lakes Council 2009(c) p. 729

5.5 Myall Lakes Broad Catchment Area

The Myall Lakes catchment covers approximately 440 square kilometres and is shown in the map below. The Myall Lakes are formed by a series of three interconnected lakes: Myall Lake, Boolambyte Lake and Bombah Broadwater. The headwaters of the Myall River extend to Craven Nature Reserve and the Kyle Range.

Figure 20. Myall Lakes Broad Catchment Area

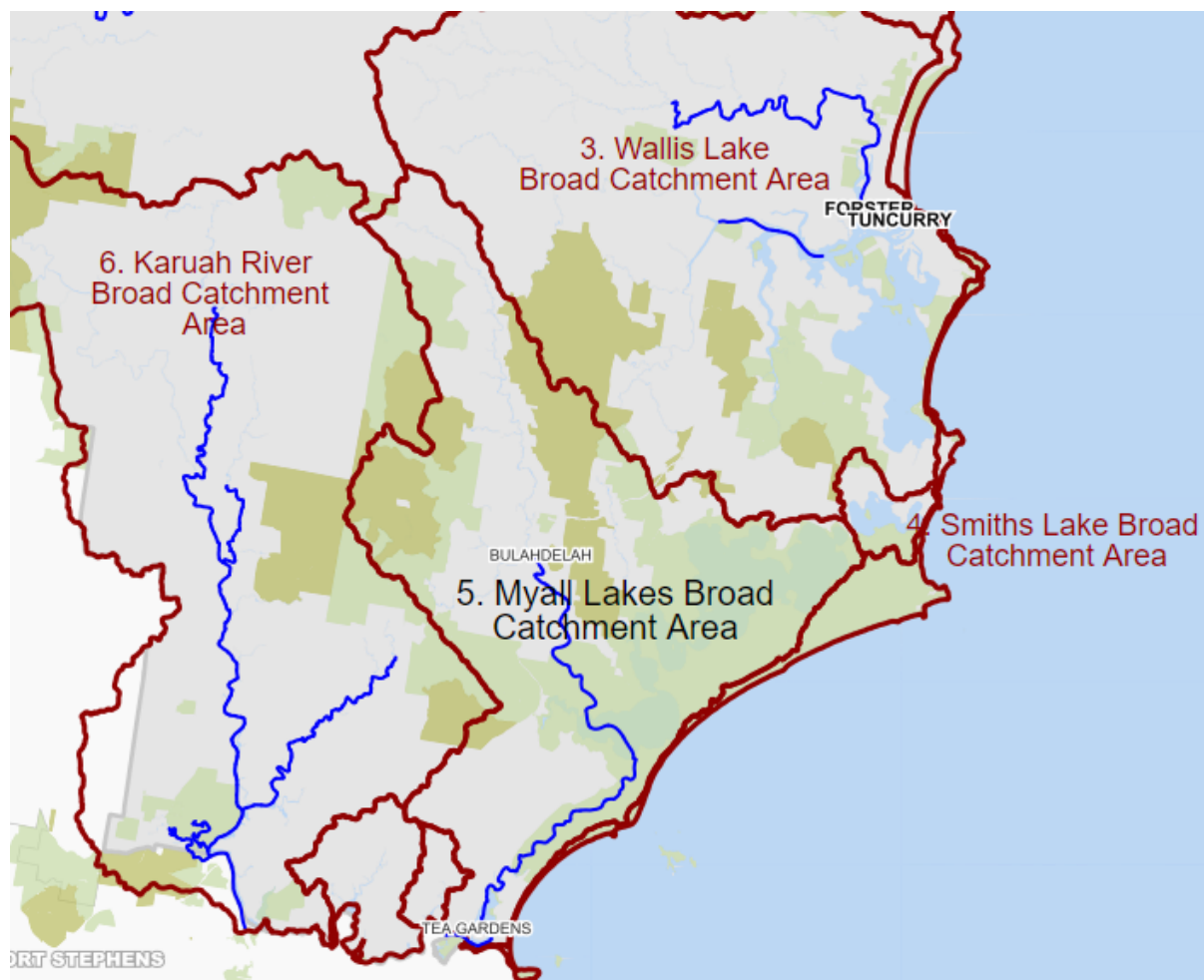


Table 14. Watercourses within the Myall Lakes Broad Catchment Area

Waterways within the Myall Lakes Broad Catchment Area		
Boolambayte Creek Frys Creek Nerong Creek Two Mile Creek	Crawford River Little Myall River Myall River	Boolambayte Lake Bombah Broadwater Myall Lakes

Water supply






The Bulahdelah Water Supply Scheme sources water from the Crawford River to supply water to approximately 1,200 people in the rural centre of Bulahdelah¹²¹. Water is treated at a small Water Treatment Plant located at Bulahdelah.

¹²¹ [MidCoast Water 2018](#) p. 12

Water Quality Objectives and Community Values

As part of the Great Lakes Coastal Catchments Initiative (CCI), the former Great Lakes Council were committed to engaging stakeholders in developing a Water Quality Improvement Plan for Wallis, Smiths and Myall Lakes. Building on previous work to develop water quality objectives for catchment areas across NSW, community workshops were held to determine how local community groups' value and use their waterways locally. The resulting community values specific to the Myall Lakes are shown in the table below¹²².

Table 15 NSW Water Quality Objectives for the Myall Lakes Broad Catchment Area¹²³

Water Quality Objectives for the Wallis Lake Broad Catchment Area		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none"> This objective applies to all-natural waterways. High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use. Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems. Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses. Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 		
	Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 		
	Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies to all waters but may not be achievable for some time in some areas. Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 		
	Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 		
	Aquatic foods	<i>Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities</i>
<ul style="list-style-type: none"> The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting. 		

¹²² Great Lakes Council 2009(a) p. 146

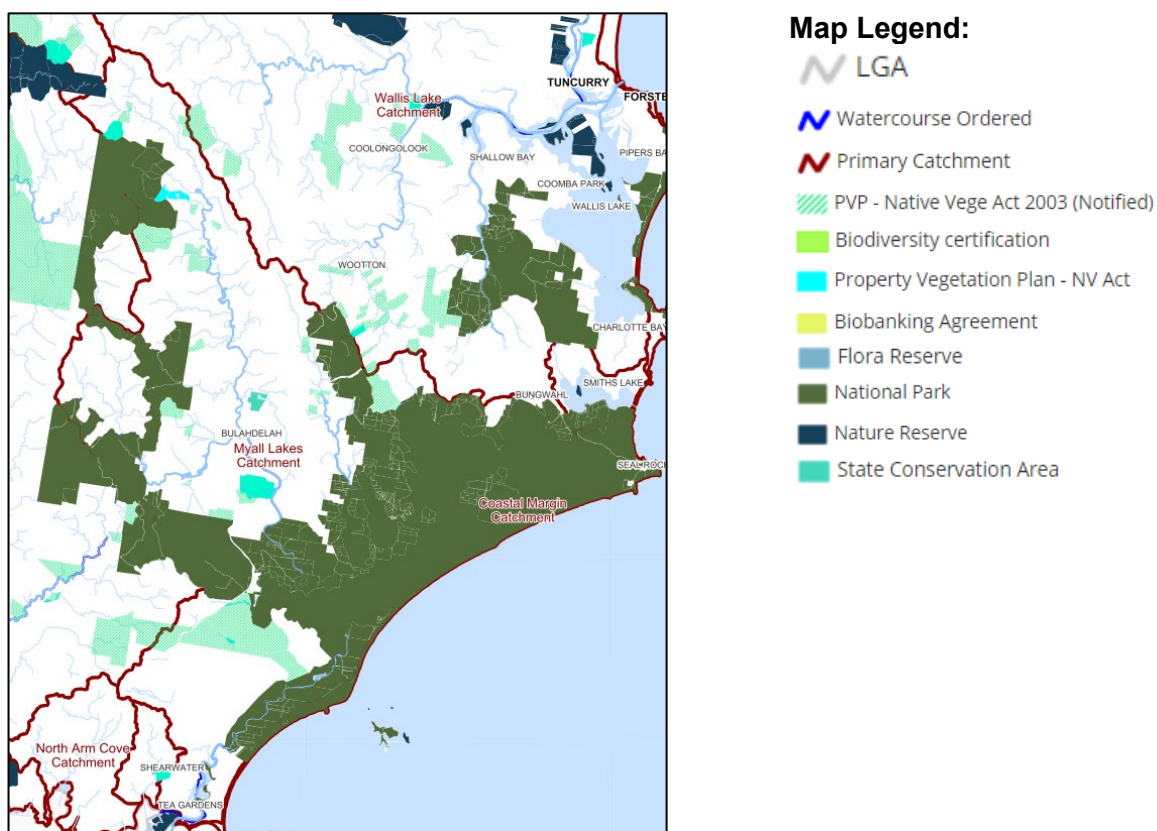
¹²³ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

5.5.1 Rural activities and industries

The majority of the upper catchment is forested land managed by National Parks and Wildlife Services and State Forests¹²⁴. Agriculture is the primary activity in the catchment, others include aquaculture, commercial fishing, tourism and forestry. Urban and rural development is also scattered throughout the catchment area.

Conservation: The dominant land use in the Myall Lakes catchment is conservation, encompassing approximately 45% of the catchment, including the lakes themselves¹²⁵. The National Parks Estate in the catchment area include the Myall Lakes National Park, Ghin-Doo-Ee National Park and The Glen Nature Reserve.

The lakes and waterways are also identified within the Myall Lakes National Park and contiguous with the waters of the Port Stephens–Great Lakes Marine Park. The Myall Lakes National Park is also listed as a Ramsar Wetland of International Importance, and provides important habitat for many migratory bird species¹²⁶. The catchment supports a diverse range of vegetation communities including sub-tropical rainforest, woodland, coastal dry and wet heath, grassland, and wetlands¹²⁷.



Beef Cattle Grazing: progressively replacing dairy as the primary agricultural land use within the Myall Lakes catchment¹²⁸. Grazing lands cover approximately 14% of the catchment. There are approximately 4500 head of beef cattle within the Myall River sub catchment, and another 3,000 head of beef cattle within the Myall Lake sub catchments, indicating a medium intensity in both areas¹²⁹.

¹²⁴ MidCoast Water 2018 p. 40

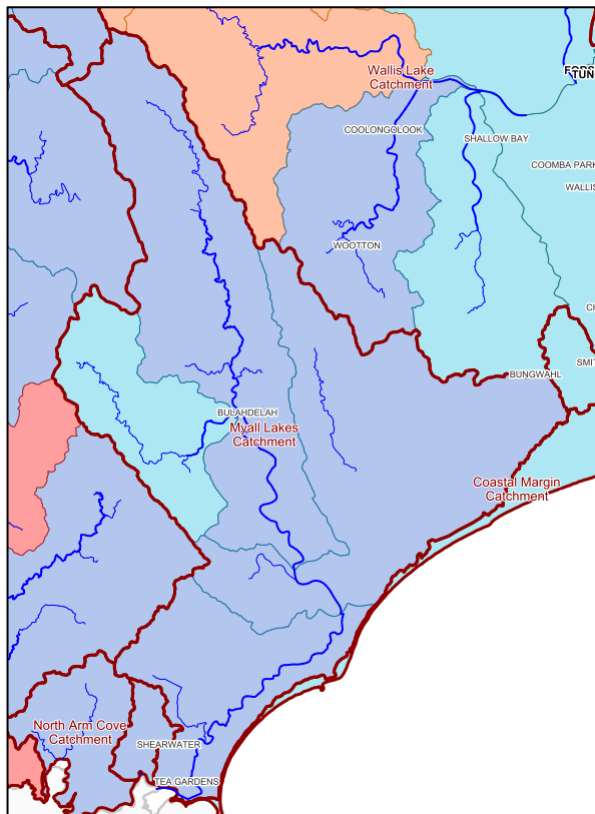
¹²⁵ Great Lakes Council 2009(a) p. 170

¹²⁶ Great Lakes Council 2009(a) p. 174

¹²⁷ Great Lakes Council 2009(a) p. 174

¹²⁸ Great Lakes Council 2009(a) p. 170

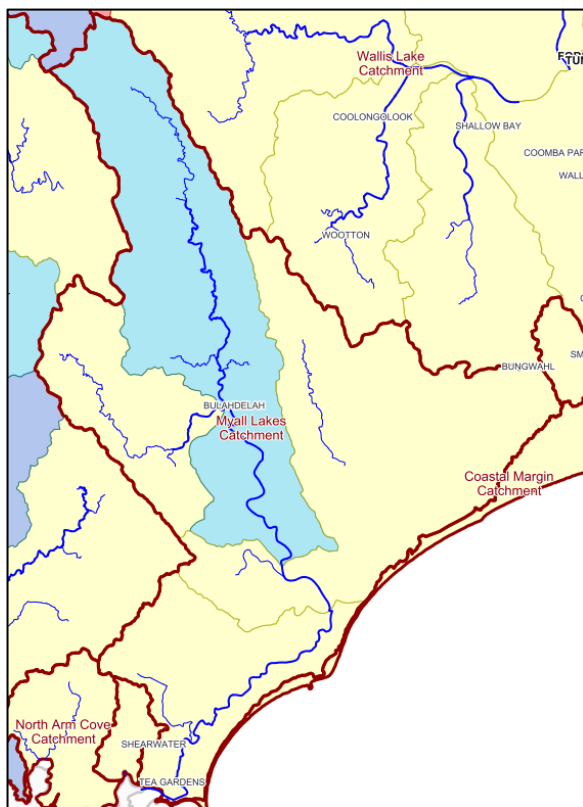
¹²⁹ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)



Map Legend:

- LGA
- Watercourse Ordered
- Primary Catchment
- <1,000 low or negligible
- 1,001 - 5,000 medium
- 5,000 - 10,000 high
- >10,000 very high

Dairying: occurs in low intensity along the Myall River, with approximately 100 head of dairy cattle within the sub catchment¹³⁰. Note: with the establishment of a new automated dairy within the catchment, these figures may have increased since the LLS data was provided in 2016.

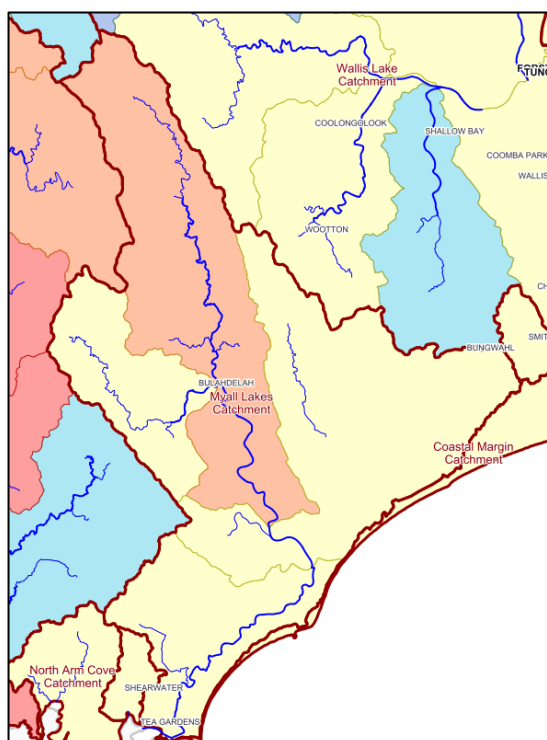


Map Legend:

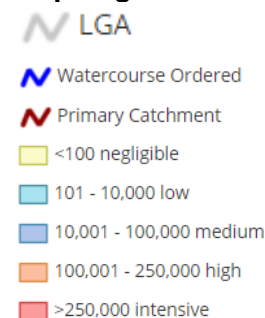
- LGA
- Watercourse Ordered
- Primary Catchment
- <100 negligible
- 101 - 500 low
- 501 - 1,000 medium
- 1,001 - 1,500 high
- > 1,500 very high

¹³⁰ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

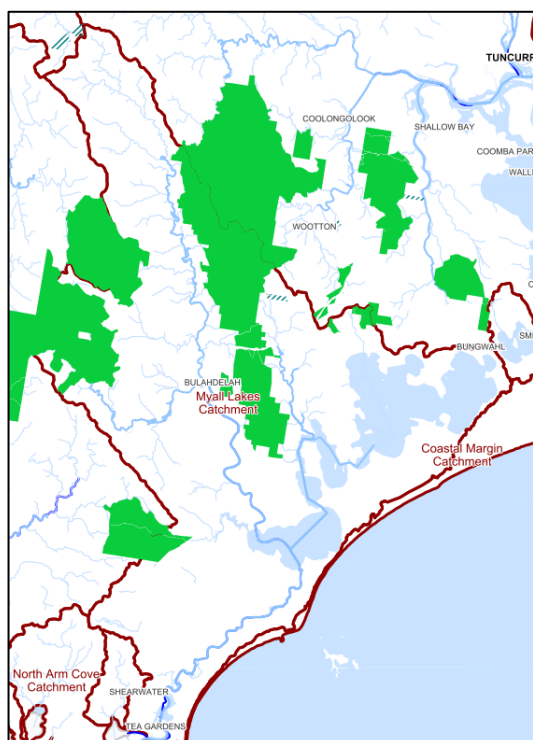
Poultry: within the catchment area is primarily concentrated within the Myall River sub catchment around Bulahdelah, Markwell and Newell's Creek. The area contains approximately 235,000 chickens indicating a high intensity of poultry farming¹³¹.



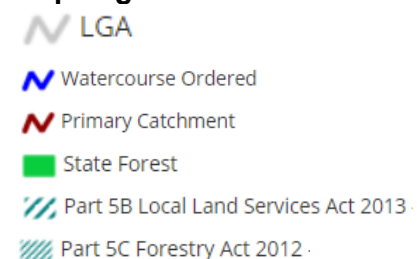
Map Legend:



Forestry: historically there has been extensive timber harvesting in the area in the early 1800s for the use of ship building¹³². Today, timber harvesting occurs in the Wang Wauk State Forest near the upper Myall River, the Myall River State Forest which the Crawford River flows through, and in the Nerong State Forest¹³³.



Map Legend:

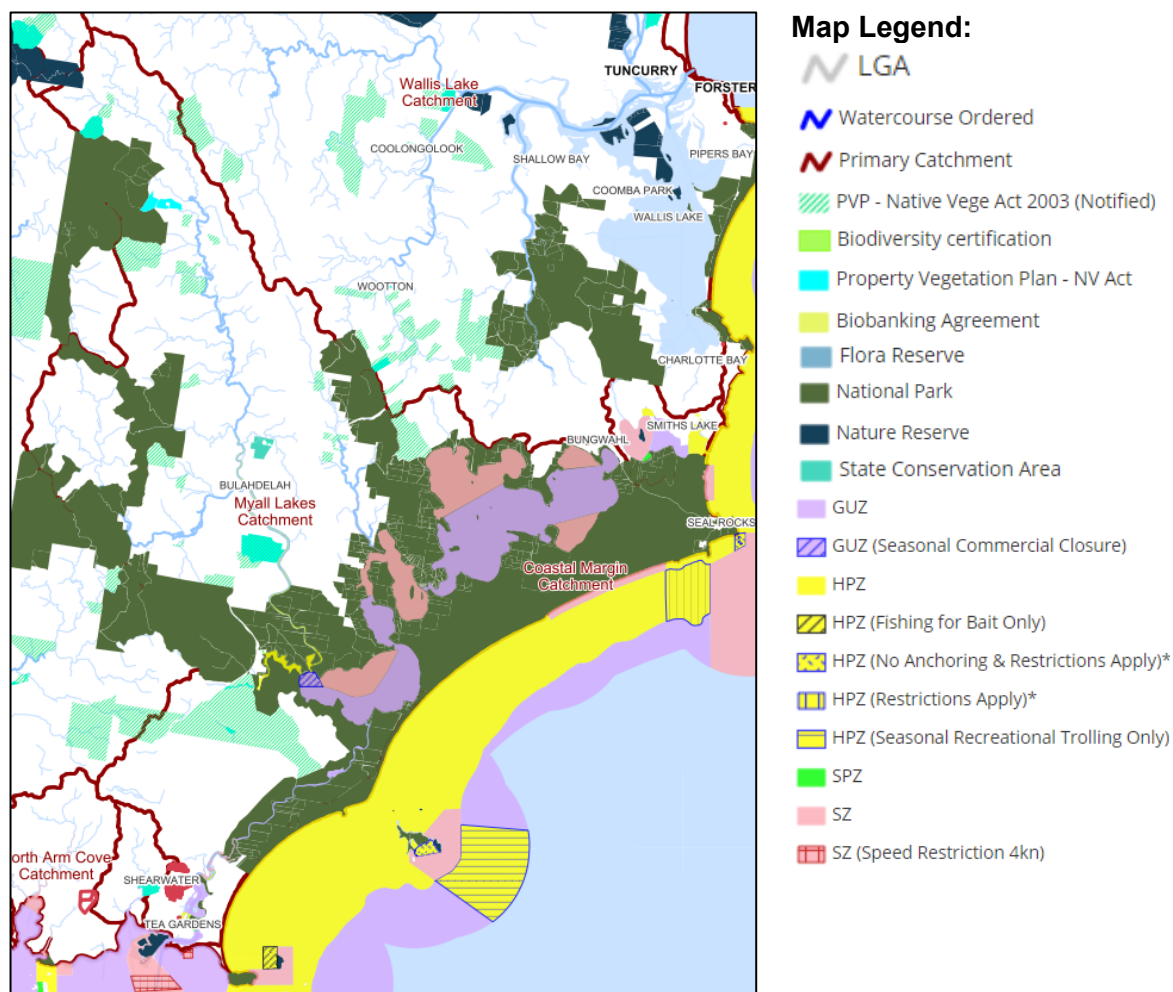


¹³¹ Local Land Services Agricultural Intensity Sub Catchment Data (request reference from Council)

¹³² Great Lakes Council 2009(a) p. 170

¹³³ Forestry Corporation of NSW 2018

Conservation: Biodiversity conservation is significant with the Myall Lakes catchment, including extensive areas of National Park estate and reserves, State conservation areas, RAMSAR wetlands and private land under conservation agreements.



Port Stephens – Great Lakes Marine Park abbreviations

GUZ – General Use Zone
HPZ – Habitat Protection Zone
SPZ – Special Use Zone

Recreational Use: tourism is a key industry in the catchment, particularly with the extensive three water bodies within the Myall Lakes National Park. A diverse range of active and passive recreation is undertaken throughout the catchment, including camping, houseboat hire, hikes and trail-bike rides.

5.5.2 Threats to catchment health

Cattle grazing: contributes to nutrients and sediments entering streams, rivers and estuaries, primarily from unimproved pastures¹³⁴. Sediment and nutrient runoff increase in times of drought because there is less groundcover to trap the nutrients and sediments¹³⁵. Waterways that are most compromised by livestock grazing in the Myall Lakes catchment are the Upper Myall River and the Crawford River sub-catchment areas¹³⁶.

Poultry: the key issue affecting water quality with poultry farming is the concentration of poultry litter which enters waterways during periods of rain, significantly increasing the

¹³⁴ Great Lakes Council 2009 (e) p. 541

¹³⁵ Great Lakes Council 2009(a) p. 52

¹³⁶ Great Lakes Council 2009 (e) p. 541

nutrient load in rivers and estuaries. The poultry industry is currently only concentrated within the Myall River sub-catchment areas, however an intensification of the industry into other sub catchments will increase the amount of nutrients washing into rivers and estuaries¹³⁷. Poultry litter should be applied according to the Department of Primary Industry's best management practice guidelines¹³⁸.

The use of chicken litter for soil improvement has been identified as an issue in the Karuah and Crawford river catchment areas, where water is extracted and must be treated before use in the town water supply.

Unsealed Roads: road runoff from unsealed roads has contributed to sediment and nutrient runoff in the catchment area, particularly near creek crossings. Best management practice such as constructing drains to divert road runoff away from streams and onto grassed areas reduces the amount of pollutants entering waterways.

The Water Quality Improvement Plan undertaken by the former Great Lakes Council recommended the following remediation actions for rural areas of the Myall Lakes catchment area: ground cover management on pasture lands; nutrient (fertiliser) management; infrastructure management including dam refurbishment and/or decommissioning; and riparian remediation, focussing on areas of active stream bank erosion¹³⁹.

The Water Quality Improvement Plan also recommends following protection actions for rural areas of the Myall Lakes catchment¹⁴⁰:

- Fencing and/or stock exclusion for areas of remnant riparian vegetation including off-stream watering and some planting where vegetation requires rehabilitation,
- Protection of coastal wetlands including exclusion of stock and buyback of wetlands where necessary, and
- DCP provisions on greenfield development sites in the catchment area to enforce 'no net increase' in pollutants as a result of any future urban development.

5.5.3 Catchment health

The current health status of the Myall Lakes BCA is generally good, however some areas of the BCA, such as the Crawford River sub-catchment, show the effects of polluting land uses which impact on the health of the catchment as a whole.

Ecological health: Myall Lakes and Boolambayte Lake are considered to be in excellent condition while Bombah Broadwater is considered to be more disturbed. This is because Bombah Broadwater receives the majority of its inflow from the Upper Myall River and Crawford River sub-catchments, which have the highest intensity of agricultural land uses¹⁴¹. Water clarity is generally excellent within the Myall Lakes however algal growth is an issue, with Bombah Broadwater experiencing periodic algal blooms.

The Myall Lakes is an extremely important lake system for a number of ecological communities, especially the RAMSAR listed wetland of international importance. These communities provide key habitat for marine and bird species, act as filters for nutrients and sediments, reduce erosion and improve water quality and act as important carbon stores.

¹³⁷ Great Lakes Council 2009(a) p. 54

¹³⁸ NSW DPI 2011

¹³⁹ Great Lakes Council 2009(c) p. 733

¹⁴⁰ Great Lakes Council 2009(c) p. 733

¹⁴¹ MidCoast Council 2018(b) p. 24

Catchment Management Programs: Like Wallis Lake, the Myall Lakes catchment has been subject to many years of water quality monitoring and modelling and ecological research¹⁴². Currently water quality modelling is undertaken by Council and OEH who measure indicators including algal growth, sediment inputs and water clarity, and aquatic habitats like seagrass, macrophyte and riparian vegetation to determine the overall ecological health of the catchment¹⁴³.

There are also a number of actions outlined in Catchment Management Plans or Estuary Management Plans identified for implementation. Specific programs include on-farm management projects to control livestock access to waterways, off stream watering systems, reduce erosion and protect native vegetation.

Other agencies such as Landcare and Rivercare also actively implement on ground works to reduce streambank erosion and improve riparian corridors.

The Crawford River sub-catchment area has been identified as a priority area for catchment management projects as it is a drinking water catchment and land uses within the area are impacting upon water quality.

¹⁴² Great Lakes Council 2009(a) p. 51

¹⁴³ MidCoast Council 2018(b) p. 5

5.6 Karuah River Broad Catchment Area

The Karuah River BCA covers an area of approximately 1,460 square kilometres, shown in the map below. The main waterways within the catchment area are identified in the table below.

Figure 21. Karuah River Broad Catchment Area

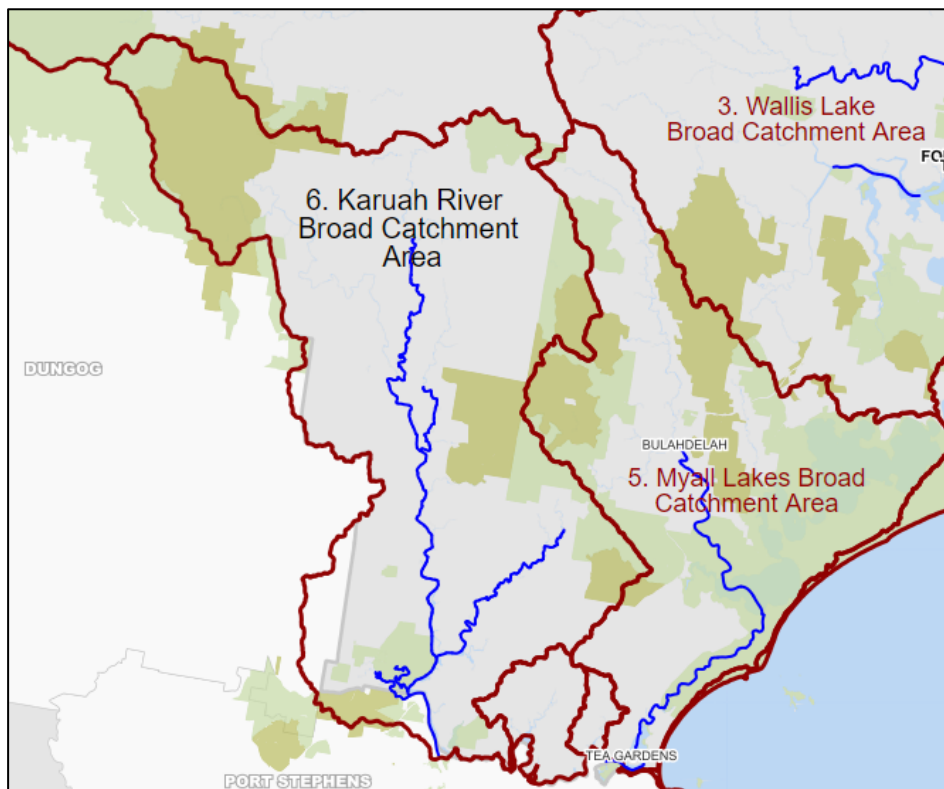


Table 16. Watercourses in the Karuah River Broad Catchment Area

Waterways within the Karuah River Broad Catchment Area		
Kore Creek Bundabah Creek Bulga Creek Little Branch Creek Booral Creek Mill Creek Lamans Creek Alderley Creek Terreel Creek Sugarloaf Creek Lawlers Creek Ramstation Creek Deep Creek Limeburners Creek Monkey Jacket Creek	Karuah River Lower Myall River The Branch River Mammy Johnsons River Wards River Telegherry River	Port Stephens

Water supply

The Karuah River catchment encompasses the Stroud Water Supply Scheme which sources water from the Karuah River to supply a population of approximately 1,000 in the community of Stroud¹⁴⁴.




Groundwater is also extracted from Viney Creek Aquifer north-west of Tea Gardens to supply water to a population of approximately 3,800 in the coastal centre of Tea Gardens-Hawks Nest. The aquifer extends over 32sq km to the west of the Myall River and north of Tea Gardens¹⁴⁵.

Water Quality Objectives and Community Values

The water quality objectives for the Karuah River catchment were developed in 2006 in consultation with the Karuah River community as part of the NSW Water Quality and River Flow Objectives initiatives.

Each of the objectives apply to one of the five identified areas within the catchment or more. The identified areas are town and water supply catchments, forested areas, waterways affected by urban development, uncontrolled streams and estuaries.







Table 17 NSW Water Quality Objectives for the Karuah River Broad Catchment Area¹⁴⁶

Water Quality Objectives for the Karuah River Broad Catchment Area		
	Aquatic ecosystems	<i>Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term</i>
<ul style="list-style-type: none"> This objective applies to all-natural waterways. High level protection of aquatic ecosystems applies to waters in and immediately upstream of national parks, nature reserves, state forests, drinking water catchments and high-conservation-value areas. This reflects their largely unmodified aquatic ecosystems, value in providing natural sources of high-quality drinking water, and high levels of recreational use. Even in areas greatly affected by human use, continuing improvement is needed towards healthier, more diverse aquatic ecosystems. Water quality in artificial watercourses (e.g. drainage channels) should ideally be adequate to protect native species that may use them, as well as being adequate for the desired human uses. However, full protection of aquatic ecosystems may not be achievable in the short-term in some artificial watercourses. Artificial watercourses should meet the objectives (including protection of aquatic ecosystems) applying to natural waterways at any point where water from the artificial watercourse flows into a natural waterway. 		
	Visual amenity	<i>Aesthetic qualities of waters</i>
<ul style="list-style-type: none"> The objective applies to all waters, particularly those used for aquatic recreation and where scenic qualities are important. 		
	Secondary contact recreation	<i>Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies to all waters but may not be achievable for some time in some areas. 		

¹⁴⁴ MidCoast Water 2018 p. 57

¹⁴⁵ MidCoast Water 2018 p. 57

¹⁴⁶ <https://www.environment.nsw.gov.au/ieo/Manning/report-03.htm>

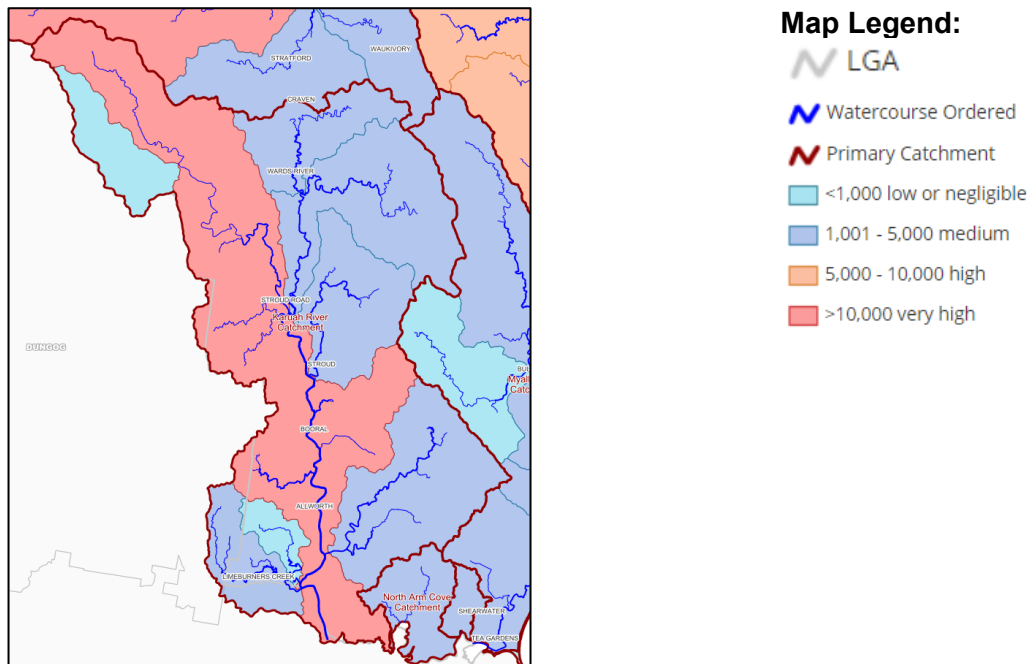
<ul style="list-style-type: none"> Secondary contact recreation applies in waterways where communities do not require water quality of a level suited to primary contact recreation, or where primary contact recreation will be possible only in the future. 		
	Primary contact recreation	<i>Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed</i>
<ul style="list-style-type: none"> This objective applies in the immediate future to waters within and immediately upstream of recognised recreation sites. For many other waters, this is a long-term objective. Secondary contact recreation levels should apply in areas where primary contact recreation, such as swimming, is unlikely to be achieved in the immediate future, owing to pollution. 		
	Livestock supply	<i>Protecting water quality to maximise the production of healthy livestock</i>
<ul style="list-style-type: none"> This objective applies to all surface and groundwaters used to water stock. 		
	Irrigation supply	<i>Protecting the quality of waters applied to crops and pasture</i>
<ul style="list-style-type: none"> This objective applies to all current and potential areas of irrigated crops, both small- and large-scale. Local requirements for irrigation water quality, such as salinity, apply. 		
	Homestead water supply	<i>Protecting water quality for domestic use in homesteads, including drinking, cooking and bathing</i>
<ul style="list-style-type: none"> The objective applies to all homesteads that draw water from surface and groundwaters for domestic needs, including drinking water. The NSW Health Department advises that water for domestic use in homesteads should comply with the Australian Drinking Water Guidelines (NHMRC & NRMMC 2004) at the point of use, regardless of source. 		
	Drinking water	<i>Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment</i>
<ul style="list-style-type: none"> These objectives apply to all current and future licensed offtake points for town water supply and to specific sections of rivers that contribute to drinking water storages or immediately upstream of town water supply offtake points. The objective also applies to sub-catchments or groundwaters used for town water supplies. 		
	Aquatic foods	<i>Refers to protecting water quality so that it is suitable for the production of aquatic foods for human consumption and aquaculture activities</i>
<ul style="list-style-type: none"> The objective applies to all waters where aquatic foods are taken for non-commercial and commercial harvesting. 		

5.6.1 Rural activities and industries

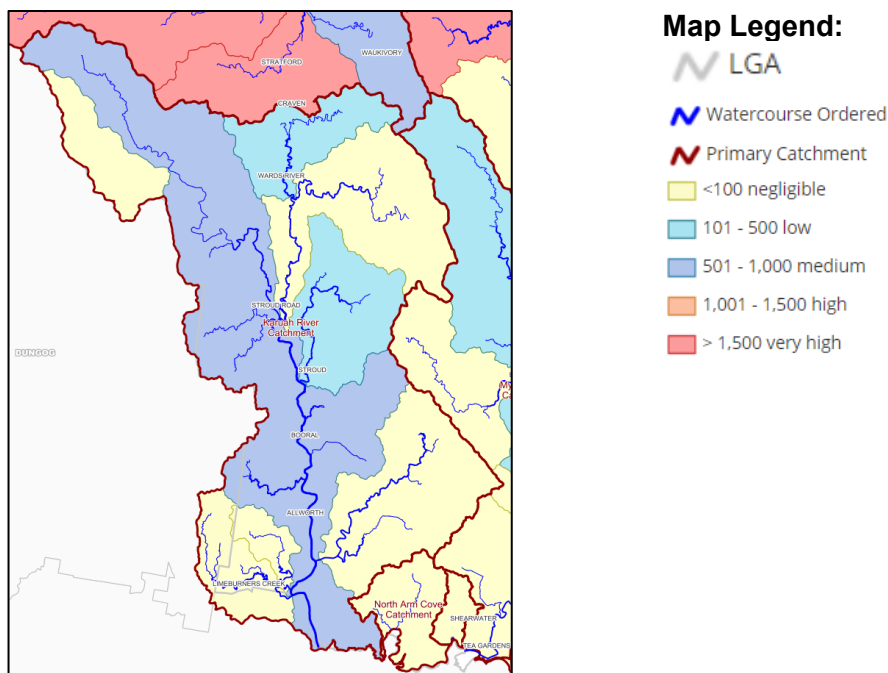
The main land use activities within the catchment include agriculture including beef cattle, poultry and dairy farming; conservation, forestry, oyster farming and rural lifestyle

properties¹⁴⁷. Tourism, including water-based activities are also popular within the catchment and the adjoining Port Stephens estuary.

Beef Cattle Grazing: Lands adjoining the Karuah River have the highest intensity of cattle grazing with over 12,000 head of beef cattle. Most of the remaining sub catchment areas all have a medium intensity of cattle grazing containing between 1,000 and 5,000 head of beef cattle within each sub catchment including Wards River, Mammy Johnson River, Mill Creek, Lower Myall River, The Branch River, Kore Kore Creek, North Arm Cove and Limeburner's Creek¹⁴⁸.



Dairying: there is only a small dairy industry remaining within the catchment area along the Karuah River, which contains approximately 600 head of dairy cows¹⁴⁹.



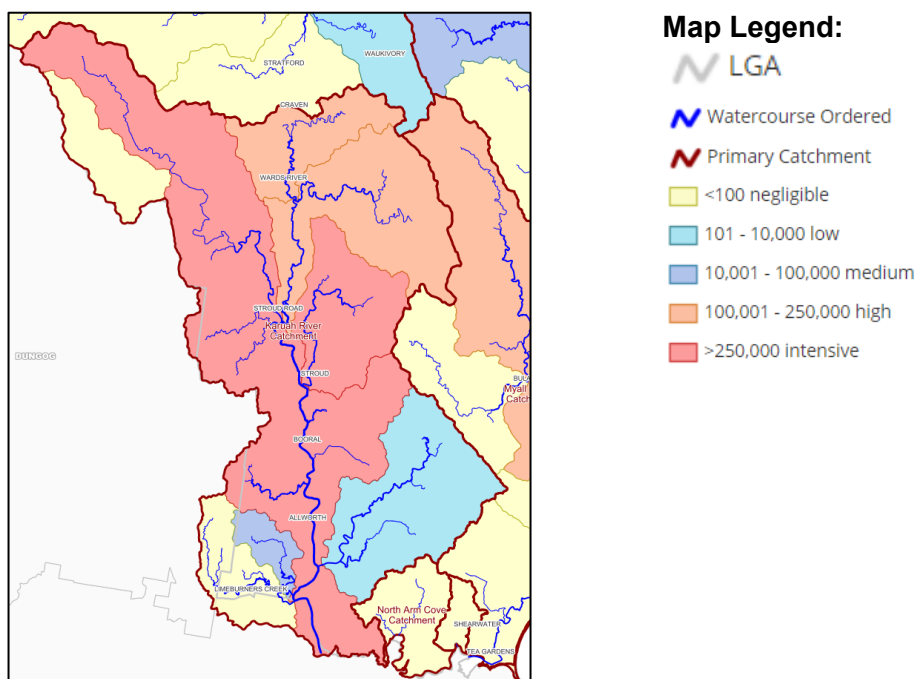
¹⁴⁷ Great Lakes Council 2015 p. 4

¹⁴⁸ Local Land Services Agricultural Intensity Sub Catchment Data (2016)

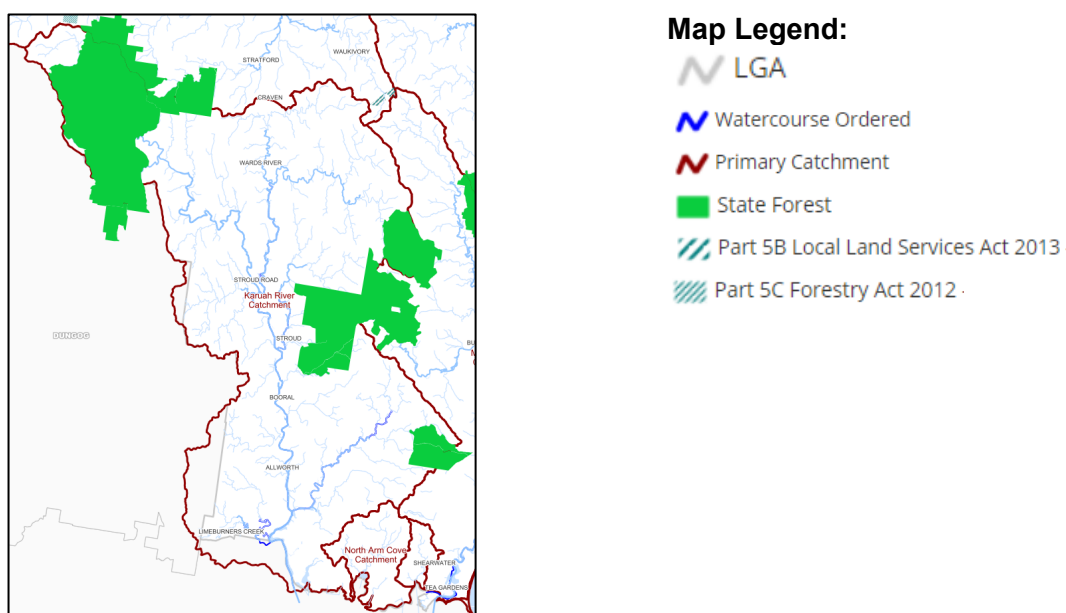
¹⁴⁹ Local Land Services Agricultural Intensity Sub Catchment Data (2016)

Poultry: is a significant agricultural industry within the catchment and is concentrated in the Stroud Valley. Large-scale chicken production began in the Karuah River BCA in the 1960s and while other industries have declined, such as the dairy industry, both poultry meat and egg production has increased. Today, it is one of the largest agricultural industries in the area alongside beef production¹⁵⁰.

The most intensive poultry farming occurs along the Karuah River with farms nearby containing over 1 million chickens. The Mill Creek sub catchment also has a very high intensity of poultry farms containing around 430,000 chickens. The Mammy Johnson and Ward River sub catchments contain approximately 100,000 chickens each indicating a high intensity of poultry farming in these areas¹⁵¹.



Forestry: timber harvesting occurs in the upper Karuah River catchment, primarily within the Chichester and Fosterton State Forests within the Telegraphy River sub-catchment¹⁵².

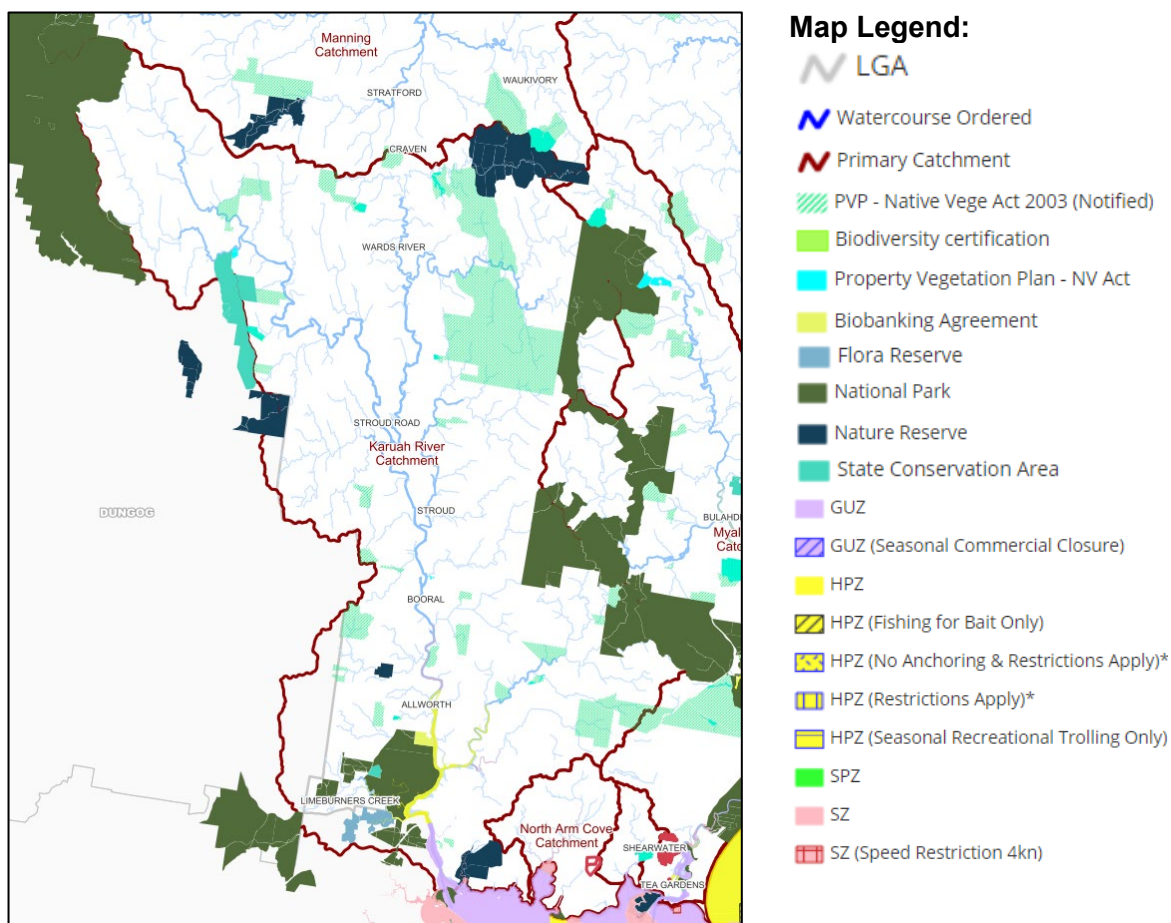


¹⁵⁰ Great Lakes Council 2015 p. 14

¹⁵¹ Local Land Services Agricultural Intensity Sub Catchment Data (2016)

¹⁵² Forestry Corporation of NSW 2018

Conservation: Biodiversity conservation is less significant with the Karuah River catchment in comparison to others across the MidCoast, despite the identification of tidal waters within the Port Stephens – Great Lakes Marine Park.



Port Stephens – Great Lakes Marine Park abbreviations

GUZ – General Use Zone
HPZ – Habitat Protection Zone
SPZ – Special Use Zone

Oyster Growing: The Karuah River Estuary, Port Stephens and the Lower Myall River Estuary have expanses of Priority Oyster Aquaculture Areas which produce primarily Sydney Rock and Pacific varieties. Oyster Aquaculture is a type of marine activity and is also discussed in the Marine Activity Issue Paper.

Recreational Use: swimming, fishing, boating and kayaking occur within the catchment. Port Stephens is a renowned spot for boating activities and is an extremely popular tourist destination. Marine based activities within the catchment area are discussed more extensively in the Marine Activity Issue paper.

5.6.2 Threats to catchment health

The Karuah River and associated sub-catchments have suffered periodic water quality issues associated with catchment runoff, the two key threats are beef cattle grazing and poultry farming.

Poultry: as poultry farming occurs intensively within the catchment it is a key threat to waterway health in the catchment. The key issue affecting water quality with poultry farming is concentrated use of poultry litter which is high in nutrients. If not carefully managed, spreading of manure and litter from the large number of poultry operations in the catchment can generate substantial nutrient loads. Proper management is needed to prevent excess

nutrient and sediment losses to the estuary; therefore, poultry operations should follow the Department of Primary Industries best practice guidelines for the poultry meat and egg production industries¹⁵³.

Beef Cattle Livestock: a key threat to waterway health in the Karuah River BCA is sediment and nutrient runoff from grazing pasture and unrestricted livestock access to waterways. This is due to the large numbers of both beef and dairy cattle in areas of the BCA. Cattle accessing waterways increases nutrient run-off from stock, riverbank erosion and damage to riverbank vegetation caused by cattle trampling and grazing along riverbanks. Pollutants from associated cropping also causes nutrient run-off. Waterways that are most sensitive to livestock grazing and dairying are the Karuah River and The Branch River, however beef cattle grazing occurs throughout most of the BCA.

5.6.3 Catchment health

Ecological Health: Overall, the Karuah River catchment has been assessed as being in only fair health. Currently water quality modelling is undertaken by Council and OEH who measure indicators including algal growth, sediment inputs and water clarity, and aquatic habitats like seagrass, macrophyte and riparian vegetation to determine the overall ecological health of the catchment¹⁵⁴.

Monitoring in Karuah River shows that algal growth is much higher than desired and the extent of important aquatic habitats such as seagrasses and saltmarsh has decreased.

The Karuah River has experienced a significant decline in saltmarsh between 1985 and 2011 losing approximately 115ha, however approximately 370ha still remains. The Karuah River has experienced an increase in mangroves over the same period by 108ha. The spread of mangroves may be related to human activities and is often associated with declines in saltmarsh. The Karuah River has also experienced a decline in seagrass and currently contains no important seagrass¹⁵⁵.

Port Stephens contains significant expanses of saltmarsh and seagrasses. Both vegetation types have increased and Port Stephens contains the largest area of saltmarsh in the State totalling 15% or 1,150ha; and 1,510ha of seagrass which makes up approximately 10% of the State's total.

Catchment Management Programs: The Karuah River catchment has been subject to many years of water quality monitoring and ecological research¹⁵⁶.

There are also a number of actions outlined in the Karuah Catchment Plan, which was established to address water quality issues associated with nutrient runoff. Specific programs within the catchment include on-farm management projects to control livestock access to waterways, implement off stream watering systems, reduce erosion and protect native vegetation. Council, Landcare, Rivercare and other groups also actively implement on ground works to reduce streambank erosion and improve riparian corridors.

The Branch River sub-catchment area has been identified as a priority area for catchment management projects as it is an area where nutrient runoff is particularly high and affecting water quality within the catchment.

¹⁵³ NSW DPI 2011

¹⁵⁴ MidCoast Council 2018(b) p. 5

¹⁵⁵ NSW Government Marine Estate Management Authority 2017 p.73

¹⁵⁶ Great Lakes Council 2009(a) p. 51

6 Recommended Planning Framework

This section outlines the recommended planning framework that could apply to support rural waterways across the MidCoast. This framework is based on the Broad Catchment Areas, noting enhanced considerations are given to coastal areas and should be read in conjunction with the recommended planning framework for coastal areas described in the Marine Activities Background Report. The recommended framework:

- Includes zone-selection criteria describing the circumstances for applying waterways or environmental protection zonings to waterways beyond the tidal limit;
- Describes options for applying local clauses through Council's LEP and associated mapped controls; and
- Supports the development of catchment management programs, which can be used as a basis for future planning and plan-making.

It is also relevant to recognise that efforts and initiatives to improve waterways health often fall outside of the influence of planning controls (Council's LEP and DCP). Controls implemented through this recommended planning framework should therefore be considered as one of several management responses available.

Other initiatives, provided by Council or others, may include, for example: education/awareness programs that raise awareness of land use activities that protect and enhance the health of rivers and creeks, or environmental improvements funded and delivered through catchment and estuary management plans.

Zone Selection Criteria

The Standard Instrument provides several land use zonings relevant to waterways and associated landside developments.

However, the extensive waterways and waterbodies across the MidCoast make allocation of a waterway or environmental zones impractical and inappropriate beyond the tidal limit. Primarily this is as a result of data-management issues related to the maintenance of mapping for these waterways, which may be intermittent or move as a result of different weather events over time and human interference.

The exceptions to this are those lands and waters located within a national park or reserve that must be contained in the E1 National Parks and Reserves zone, and identified foreshore reserves which can be zoned for environmental or recreation purposes in accordance with the existing and/or intended future public purpose.

With the exception of the above, we recommend land use zonings apply to rural waterways in line with the long-term desired outcomes of surrounding rural or environmental lands. Additional guidance for the future consideration of expanding waterway zones beyond the tidal limit, as mapping data and accuracy improves, is also provided.

Table 18: Considerations for applying waterways zonings above the tidal limit

Zoning:	Commentary
W1 Natural Waterways	<p>Allows for a limited number of low-impact development and land uses that do not have an adverse impact on the natural value of the waterway.</p> <p>Recommended to be applied to waterways below the tidal limit that are located in highly protected areas, such as within or tributaries of, the Port Stephens-Great Lakes Marine Park and/or RAMSAR wetlands.</p>

	<p>Above the tidal limit additional investigation is required to determine if this zone could be applied to waterways that are identified within the existing map cadastre and:</p> <ul style="list-style-type: none"> • upstream from, National Parks, other major conservation reserves, wetlands or receiving waters; • with outstanding scenic, biodiversity, cultural or other conservation value; or • identified drinking water ground water supply such as Bootawa Dam.
W2 Recreational Waterways	<p>Provides greater flexibility than W1 to accommodate a higher level of water-based recreation, boating and water transport, and development associated with aquaculture and fishing industries.</p> <p>Noting that Priority Oyster Aquaculture Areas may be identified in any waterway zone.</p> <p>Above the tidal limit additional investigation is required to determine if this zone could be applied to waterways that are identified within the existing map cadastre and:</p> <ul style="list-style-type: none"> • cater for a higher volume of recreational users, including boating, kayaking, etc.
W3 Working Waterways	<p>Intended to prioritise commercial shipping, ports, water-based transport, maritime industries and development associated with commercial fishing industries.</p> <p>Recommended for application only in areas expected to accommodate a higher level of commercial vessels.</p> <p>Above the tidal limit additional investigation is required to determine if this zone could also apply on a case-by-case basis in association proposals for natural aquaculture (based within the watercourse), or commercial fishing activities.</p>

Local provisions (LEP) and mapped controls

Local clauses within a local environmental plan can also identify where additional assessment considerations apply, beyond the objectives and land uses within a zone.

The recommended framework generally builds on the model currently applying through the Great Lakes LEP 2104 and DCP, to provide separate provisions to:

- Protect drinking water supplies through a local clause and identification of these areas on a map incorporated in Council's LEP;
- Manage development within riparian areas through a local clause in Council's LEP. It is however noted that the identification of watercourses and associated riparian lands beyond the tidal limit, is beyond the capacity of Council's mapping and data-maintenance at this time.
- Manage stormwater in line with water quality objectives through a local clause in Council's LEP for stormwater management, supported by detailed guidelines for water sensitive design in Council's DCP. This would rely on the preparation of additional water quality improvement plans, or similar, across the MidCoast.

- Manage the potential environmental hazards associated with on-site sewage management through a modified Essential Services local clause, review and potential increase of the minimum lot size (for subdivision) provisions in unsewered areas, with a focus on villages and rural residential developments.

Any such modifications would be guided by the recommendations of the MidCoast On-Site Sewage Management System Development Assessment Framework (OSSM DAF) and associated hazard classification mapping currently in development.

This recognises current guidelines that recommend local clauses are applied where zone provisions need to be augmented for specific environment features, such as the protection or management of foreshore reserves; protection and management of water catchments and aquifers; and criteria for assessment of development in close proximity to waterways that may result in unacceptable impacts on riparian lands.

Riparian lands and Watercourses

The mapping currently available for watercourses within the Great Lakes LEP 2014 is generally considered inaccurate beyond the coastal zone, which can lead to inefficient and inappropriate development assessment process.

To ensure all waterways that are beyond the tidal limit and not identified within a waterway zone and the adjoining riparian lands are: recognised, appropriately managed and the impacts of development are minimised; an alternative approach is required.

It is recommended that:

- watercourse mapping is removed from any planning instrument, but provided on a public mapping system that can be improved over time and informed by external agencies where available; and
- the model clause for riparian land and watercourses be amended to reflect the provisions of the Water Act as shown below.

7.X Riparian land and watercourses

(1) The objective of this clause is to protect and maintain the following—

- (a) water quality within watercourses,*
- (b) the stability of the bed and banks of watercourses,*
- (c) aquatic and riparian habitats,*
- (d) ecological processes within watercourses and riparian areas.*

(2) This clause applies to all of the following—

- (a) all land that is within 40 metres of the top of the bank of each first order watercourse*
- (b) all land that is within 30 metres of the top of the bank of each second order watercourse.*
- (c) all land that is within 20 metres of the top of the bank of each third order watercourse.*
- (d) all land that is within 10 metres of the top of the bank of each fourth order watercourse.*

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider—

- (a) whether or not the development is likely to have any adverse impact on the following—*

- (i) *the water quality and flows within the watercourse,*
 - (ii) *aquatic and riparian species, habitats and ecosystems of the watercourse,*
 - (iii) *the stability of the bed, shore and banks of the watercourse,*
 - (iv) *the free passage of fish and other aquatic organisms within or along the watercourse,*
 - (v) *any future rehabilitation of the watercourse and riparian areas, and*
 - (b) *whether or not the development is likely to increase water extraction from the watercourse, and*
 - (c) *any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.*
- (4) *Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—*
- (a) *the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or*
 - (b) *if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or*
 - (c) *if that impact cannot be minimised—the development will be managed to mitigate that impact*

There may be certain circumstances where requirements to maintain water quality objectives would, either singularly or in conjunction with other management objectives, justify the application of environmental protection zonings. This is particularly relevant where several overlapping controls would, in effect, create a sub-zone or otherwise create an unnecessarily complex assessment process.

Alternatively, Council can continue to use the development control plan to provide additional guidance on nuanced development controls, such as for water sensitive design requirements and deemed to comply/technical on-site sewage management system design requirements.

Drinking Water Catchments

The location of unsewered land within drinking water catchments is inconsistent at the time of writing, as drinking water catchments are not adequately or accurately identified within the existing local environmental plans.

A significant gap in the ability for MidCoast Council to appropriately guide development through the assessment process, is the lack of evidence-based mapping of our drinking water catchments, ground water supplies and unsewered areas.

To ensure integrated development assessment processes can be effectively triggered and implemented, all drinking water catchments and ground water supply are to be identified within the new MidCoast local environmental plan and appropriate local clauses introduced.

[7.6 Drinking water catchments](#)

- (1) *The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering and stored in drinking water storages.*
- (2) *This clause applies to land identified as “Drinking Water Catchment” on the [Drinking Water Catchment Map](#).*
- (3) *Before determining a development application for development on land to which this clause applies, the consent authority must consider the following—*

(a) whether or not the development is likely to have any adverse impact on the quality and quantity of water entering and stored in the drinking water storage, having regard to the following—

(i) the distance between the development and any waterway that feeds into the drinking water storage,

(ii) the on-site use, storage and disposal of any chemicals on the land,

(iii) the treatment, storage and disposal of wastewater and solid waste generated or used by the development,

(iv) any permanent interception or lowering of the watertable,

(v) any change in groundwater flow direction,

(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any significant adverse impact on water quality and flows, or

(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact.

Stormwater management and water sensitive design

Stormwater management and water sensitive design controls are currently applied in various forms in both the Great Lakes and Greater Taree LEP and DCP provisions. As the consolidation of existing practice and policy continue, the review and expansion of these controls, particularly within urban areas as opposed to rural areas, are supported as they have been demonstrated as effectively contributing to water quantity and quality management throughout the catchment.

7.5 Stormwater management

(1) The objective of this clause is to minimise the impacts of stormwater on land to which this clause applies and on adjoining properties, native bushland, groundwater, wetlands and receiving waters.

(2) Development consent must not be granted to development on any land unless the consent authority is satisfied that the development—

(a) is designed to maximise the use of water permeable surfaces on the land having regard to the soil characteristics affecting on-site infiltration of water, and

(b) is designed to minimise the use of impervious surfaces on the land, directing run off to piped drainage systems and waterways, and

(c) is designed to integrate water sensitive design measures, including stormwater, groundwater and wastewater management, to minimise environmental degradation and to improve the aesthetic and recreational appeal of the development, and

(d) incorporates an appropriately managed and maintained stormwater management system that will maintain or improve the quality of stormwater discharged from the land, and

(e) includes, if practicable, on-site stormwater retention for use as an alternative supply to mains water, groundwater or river water, and

(f) avoids any significant adverse impacts of stormwater runoff on adjoining properties, native bushland, groundwater, wetlands and receiving waters, or if that impact cannot be reasonably avoided, minimises and mitigates the impact.

Catchment and Estuary Management Plans

Beyond the Coastal Zone, Council has a range of catchment and estuary management plans that provide guidance and implementation recommendations for the extensive rivers, lakes and tributaries that make up our broad catchments and directly influence the healthy flows and water quality of our coastal environments.

Similar to the coastal zone management plans and coastal management programs, these management plans are developed and implemented in partnership with landowners, community and industry groups and other public agencies.

The findings and recommendations of these documents have resulted in significant environmental improvements, particularly with regards to the management of stormwater and agricultural run-off; water quality improvement and report cards; restoration and rehabilitation programs for degraded environments.

These and similar programs in the future are supported through the application of an environmental levy, critical to the ongoing investigation, management and improvement of sensitive environments throughout the MidCoast. As these programs are developed, the data and evidence of improved land management practices are to be reviewed and integrated into local clauses and development controls where appropriate and necessary.

An example of a catchment management clause within a local environmental plan is available from the adjoining Dungog and Port Stephens LGA, which should be considered for application in those MidCoast catchments under threat:

[6.10 Williams River catchment](#)

- (1) The objective of this clause is to protect and improve the environmental quality of the Williams River Catchment.*
- (2) This clause applies to land identified as “Williams River Catchment Area” on the [Williams River Catchment Map](#).*
- (3) Development consent must not be granted to development on land to which this clause applies unless the consent authority has considered whether the development—*
 - (a) promotes the sustainable use of land, water, vegetation and other natural resources within the Williams River Catchment, and*
 - (b) promotes the protection and improvement of the environmental quality of the Williams River Catchment, and*
 - (c) will have any significant adverse impacts on water quality within the Williams River Catchment, and*
 - (d) is consistent with the Williams River Catchment Regional Planning Strategy published in September 1997 by the Department of Planning and Environment.*

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