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Appendices

Appendix A  Maps
The Lake Macquarie - Tuggerah Lakes Regional Boating Plan has been developed as part of a major NSW Government initiative to boost the experience of recreational boating across the state. The Plan was developed by the Maritime Management Centre (MMC) in Transport for NSW working closely with the NSW Maritime Division of Roads and Maritime Services (Roads and Maritime) and with expert coastal infrastructure advice from consultants GHD.

The Plan identifies the boating safety, access and infrastructure actions across the region to be implemented over the next five years. A summary of the projects and initiatives to be delivered as part of the Plan are detailed in the Delivery Program in Chapter 8. A Progress Report on the Delivery Program will be published annually to provide an update on the delivery of key projects and actions.

Funding for infrastructure projects will be allocated out of the *NSW Boating Now* program announced by the Minister for Roads and Freight in August 2014 which will see $14m per year made available for the delivery of boating infrastructure projects over the next five years.

The Plan is one of eleven Regional Boating Plans that have been developed across the major waterways in NSW as shown in Figure 1.

Each Regional Boating Plan was developed through a two-stage consultation process. The first stage involved workshops with local Councils and key stakeholder groups as well as an online survey open to all waterway users and members of the general public. Feedback received from the first stage was then used to inform the development a Consultation Draft which formed the basis of the second stage of consultation.

A public information session was held in Lake Macquarie (Belmont) on 25 June 2014 to discuss and seek feedback on the key findings and actions identified in the Consultation Draft. Further meetings were also held with Councils to help determine the priority infrastructure projects identified in the final Plan.
Inland lakes and dams have been allocated to their closest region.

Key
1. Tweed-Clarence Valley Region
2. Mid-North Coast Region
3. Tarra-Grasstree Lakes Region
4. Port Stephens-Hunter Region
5. Lake Macquarie-Tuggerah Lakes Region
6. Hawkesbury River, Pittwater, Brisbane Water Region
7. Sydney Harbour Region
8. Botany Bay, Georges River and Port Hacking Region
9. Shoalhaven-Illawarra Region
10. Far South Coast Region
11. Murray-Riverina Region

Figure 1 – Map of regions
2. Physical Character of the Waterways

2.1 Background

This region predominately consists of two major waterways, namely Lake Macquarie and Tuggerah Lakes. Recreational boating is important to both lakes and largely defines the character of the region. Users undertake a wide variety of boating activities on the waters including water-skiing, sailing and fishing. Activities such as swimming and diving are also popular. Lake Macquarie, in particular, is heavily used by recreational boaters and has numerous access points around its perimeter. A profile of the users of the waterways is provided in Chapter 3.

The waterways are covered by two councils:

- Lake Macquarie City Council (LMCC)
- Wyong Shire Council (WSC)

Each of these councils has a plan\(^1\) in place to manage their local waterways and surrounding development with objectives being to: manage and co-ordinate development; improve public accessibility; and protect the visual character and natural landscape of the waterways.

2.2 Lake Macquarie

Lake Macquarie is a large coastal lake located 120 km north of Sydney and to the south of Newcastle (Figure 2). The lake has an overall length of 22 km in the north-south direction and has a maximum width of 8 km. The foreshore has many bays and headlands. The maximum depth of the lake is approximately 16 metres with a mean depth of 5.3 metres. The lake is twice as large as Sydney Harbour and supports a wide range of sea life and environmental habitats. Lake Macquarie is connected to the Pacific Ocean at Swansea by a constricted channel. The water level in the Lake does not have a significant tidal influence.

The Lake Macquarie catchment is spread over two Local Government Areas (LGAs), LMCC and WSC. Much of the catchment, particularly the foreshore and surrounds, is now developed for residential and industrial purposes. There are, however, some remaining rural areas and tracts of State Forest, predominantly in the western part of the catchment.

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\(^1\) Lake Macquarie Development Control Plan 2014 – Foreshore and Waterway Development, and Wyong Shire Council’s W2 (Waterfront Structures) policy
2.3 **Tuggerah Lakes**

The Tuggerah Lakes estuary is located south of Lake Macquarie. It is comprised of three shallow coastal lagoons; Tuggerah Lake, Budgewoi Lake and Lake Munmorah (Figure 3). Major tributaries to Tuggerah Lakes include:

- Wallarah Creek;
- Wyong River; and
- Ourimbah Creek.

The three lakes occupy a combined area of 70 km². They are all interconnected and are open to the Pacific Ocean at The Entrance. The Entrance has a constricted channel and, as such, there is very little tidal influence west of Picnic Point (the most western point of The Entrance). Across Tuggerah Lakes there is a maximum depth of approximately 6 m (near the centre of Tuggerah Lake) with much shallower areas (depths of approximately 2m) extensively elsewhere in the lakes. Tuggerah Lakes are located within the WSC LGA. The estuary has always been important to WSC in terms of its value to tourism, recreation and fisheries.

The physical characteristics of Tuggerah Lakes restrict boating access in a number of areas. The build-up of seaweed (rack) along large sections of the foreshore makes boating access difficult and can detract from the overall boating experience.
Figure 3 – Tuggerah Lakes estuary and catchment
3. **Waterway Users**

The physical character and location of the Lake Macquarie – Tuggerah regional waterways has led to popular and widespread recreational boating usage. The region is popular for recreational fishing, sailing, water skiers, wake vessels, rowers, kayakers, yacht racing and other regattas. The waterways, particularly Lake Macquarie, also host numerous sporting events throughout the year.

Lake Macquarie is an extremely popular destination for a diverse range of recreational boaters, becoming very busy on weekends and during public holidays, particularly during the summer months. This places extensive pressure on existing infrastructure, which stakeholders have suggested is currently insufficient or unsuitable to meet peak demand in numerous places. Being unable to meet such demand detracts from the boating experience and can potentially increase safety risks in areas where there are conflicting user requirements.

Tuggerah Lakes is also a popular region for recreational boaters. Due to its shallow waters and small number of suitable access points the lakes are generally more popular amongst small vessel users including sailing, power, passive craft and hire vessels. Fishing occurs extensively across the lakes as well as other recreational activities.

The constricted nature of the entrance to Lake Macquarie at Swansea contributes to the lake being dominated by trailered boats (generally less than 6m) with few larger vessels accessing the waterway. Larger vessels that access the waterway are generally stored on water at private moorings, private domestic jetties, or at marinas (berths and commercial moorings).

Whilst overall, there are more power vessels in the region, there are a number of bays and areas that are dominated by sail vessels. This was observed in areas where sailing infrastructure such as yacht or sailing clubs are located. For example, close to 80% of private moorings in Toronto are occupied by sailing vessels, with similar percentages in Sunshine (Lake Macquarie) and slightly lower percentages in Belmont. The triangle between Belmont, Toronto and Wangi Wangi is one of the most used parts of the lake where conflicts can occur between organised yacht racing and other users.

Although waterway usage is spread throughout the whole lake, there is a preference to use well sheltered bays for recreational activities for protection from the wind. Vessels seeking suitably protected anchorages at peak boating times do so at Murrays Beach, Pulbah Island, Kilaben Bay and Crangan Bay. Areas that see extensive use as routes for lake-wide access are in the narrow channel between Wangi Wangi peninsula, the sand bars at Swansea Flats and the Swansea Channel.
Water ski and jet ski activities primarily occur in the southern portion of the lake in locations such as Point Wolstoncroft, Sandy Beach, Cam’s Wharf, Bonnels Bay, Chain Valley Bay and Crangan Bay. PWCs also frequent Swansea Bar and offshore beaches.

Similar to Lake Macquarie, the recreational boating demand in Tuggerah Lakes is also driven by local residents. However, vessels accessing the waterway are generally smaller than those accessing Lake Macquarie due to water depth and lack of foreshore access. During peak periods, tourists and other visitors to the region avail themselves of a variety of commercial operations that include hire and drive vessels, kayaks and canoes, smaller sail craft, and more recently, stand up paddle boarding (SUPs). Fishing, both from vessels and prawning from the shore, continue to be popular activities on the waterway.

3.1 Analysis of Waterway Users

3.1.1 Licence Data Analysis

As of the 2011 census, there were 189,006 and 149,746 people living in the LMCC and WSC LGAs respectively. The region generally experienced a population growth between 3-7%, between 2006 and 2011, which was below the national average of 8.32%.

As of 12/03/2014 there were approximately 41,000 boat licence holders in the Lake Macquarie - Tuggerah Lakes Region. This represents approximately 8% of all boating licences in NSW. The majority of licence holders in the region carry a General Boat Licence with approximately 10% licensed to operate Personal Watercrafts (PWCs). This breakdown of licence types is typical across the state.

3.1.2 Registration Data Analysis

As of 12/03/2014 there were approximately 19,000 registered recreational vessels in the Lake Macquarie - Tuggerah Lakes Region, This represents approximately 8% of all registered recreational vessels in NSW. The most common vessel hull types in this region are Open Runabouts followed by Cabin Runabouts and Sail vessels. Whilst overall there are more power vessels registered in this area, there are nevertheless significant numbers of sail craft.

A significant majority (83%) of the registered vessels in this region are below 6 m (overall average for the region is 5 m) and therefore most likely stored on trailers. This has a strong influence on the boating access and storage issues in the Region with a strong focus on boat ramps and trailer parking.

3.1.3 Other Users

Whilst the data analysed above provides information on licence holders and vessels registered in the Lake Macquarie-Tuggerah Lakes Region, it does not capture vessels from other Regions utilising these waterways. Many regular users of Lake Macquarie reside in nearby Newcastle LGA which incorporates approximately 12,000 licence holders and 5,000 registered vessels.

The waterways are also used by boaters from other nearby regions including the Central Coast and Sydney and the Lower and Upper Hunter areas, which can add significantly to the local demand at certain times of the year.

Roads and Maritime’s licence and registration data does not capture passive craft numbers such as kayaks, canoes, beach-launch sail craft which do not require registration. Based on the estimated total number of these vessel types in NSW, it is suggested that there may be several thousand unregistered craft in the Lake Macquarie – Tuggerah region.
3.1.4 Future Demand

In 2010, the then NSW Maritime released a report titled *NSW Boat Ownership and Storage Growth Forecasts to 2026*. The report forecast a continuing growth trend in vessel ownership of 2.9% annually across NSW.

The report used a different regional profile to that being used for the Regional Boating Plan, however it identified the Hunter-Inland region (which incorporates Lake Macquarie) as the ‘powerhouse’ for recreational boating in NSW with growth rates about the State average at between 3-5% per annum across all boat sizes.
4. Safety

Key findings
- Stakeholder consultation suggests high levels of satisfaction with current boating safety in the Region.
- Analysis of incidents, infringements and complaints show the area is typical of a busy waterway with multiple users who sometime conflict with each other.
- Improved signage and navigation aids would help enhance the overall boating experience.

Actions
a. Review and refresh navigation aids
b. Review strategies to improve user behaviour
c. Improve signage clarity and visibility

4.1 Overview of Existing Safety Activities

The MMC has led a successful campaign with Roads and Maritime to promote the wearing of lifejackets, especially in small vessels. The campaign is a response to the fact that 9 out of 10 people who drown when boating, are not wearing a lifejacket.

The campaign has been the most comprehensive, targeted program on boating safety in NSW history. It included an extensive advertising campaign, an innovative mobile lifejacket promotional van which took the safety message to the boating public statewide, a zero tolerance on-water compliance approach and a host of supporting and educational activities.

Roads and Maritime is responsible for the operational delivery of marine safety in NSW, including the operational aspects of the regulation of recreational and commercial boating activity throughout the State. The enforcement role is chiefly performed by Boating Safety Officers (BSOs) who conduct regular on-water patrols and inspections throughout the Lake Macquarie and Tuggerah Lakes to provide boating safety education and ensure compliance with safety requirements (such as lifejackets), speed, wash, distance off, aquatic licences, commercial operations and mooring requirements. Boating safety education is also provided by Roads and Maritime Boating Education Officers (BEOs) throughout the State.

Roads and Maritime also operate a Mobile Safety Education and Compliance Team which is a team of specialist BSOs who can be deployed throughout NSW.
The BSOs work in close partnership with the local NSW Police Force (both general duties police and the local Marine Area Command), often conducting joint patrols, although police officers are solely responsible for conducting random breath testing on NSW navigable waters.

BSOs also work in partnership with officers of the Department of Primary Industries (Fisheries) and National Parks’ rangers in relation to matters of common interest.

- In addition to State-wide regulatory requirements and boating safety campaigns, specific boating safety restrictions that apply in Lake Macquarie and Tuggerah Lakes are shown on the map included in Appendix A and online at [http://www.rms.nsw.gov.au/maritime/using-waterways/maps/boating-maps.html](http://www.rms.nsw.gov.au/maritime/using-waterways/maps/boating-maps.html). These are summarised as follows:
  - Speed restrictions such as:
    - 4 knot zones, specifically at:
      - Swansea Channel;
      - Creeks such as Cockle Creek, Stoney Creek, Dora Creek, South Creek, Ourimbah Creek, Spring Creek; and
      - Upstream Wyong River.
    - 6 knot zone at Swan Bay; and
    - 8 knot zones at Wyong River, Wallarah Point, The Entrance, Fennel Bay and Wallarah Creek.
  - “no wash” zones;
  - personal watercraft prohibited areas;
  - all or power boats prohibited areas;
  - no anchoring submarine cables;
  - shallow waters;
  - bar crossings;
  - shared zones; and
  - no towing zones.

Further controls exist in the NSW maritime legislation, including the International Regulations for Preventing Collisions at Sea. These include but are not limited to:

- The skipper (master of the vessel) is responsible for the safety of the vessel and all people on board;
- The skipper must always:
  - keep to a safe speed for the conditions (eg., slower speeds at times of reduced visibility, rough water, congested waterway);
  - keep a proper lookout;
  - be prepared to take action to avoid a collision; and
  - display appropriate navigation lights at night.

In addition, there are also a number of general “distance off” restrictions which apply on all NSW waters – for example, vessels travelling at 10 knots or more must remain at least 60 m from people in the water and 30 m from structures, shorelines and other powered vessels. Where it is not possible to maintain the specified distances, a “safe distance” should be maintained. This is the distance which will ensure that a vessel will not endanger or injure people or damage
property, having regard to relevant factors such as prevailing weather conditions, visibility, speed and any obstructions.

4.2 Complaints

Analysis of the complaints received by Roads and Maritime during the 5 years leading up to 1 January 2014 reveals that the majority of complaints received relate to:

- speeding;
- noise;
- vessels not observing correct distances off;
- irregular riding of personal watercraft and jet skis, including complaints about wash and not observing correct distances off;
- faulty navigation marks and signage.

The most significant number of complaints received by the Maritime for the Lake Macquarie – Tuggerah Lakes region related to the popular Sandy Beach-Summerland Point area. Other noticeable areas for which complaints were received included Budgewoi Lake, Tuggerah Lake, Wyong River, Dora Creek and Nords Wharf.

As can be seen in 4.5 below, the consultation feedback closely aligned with complaints data, with suggestions that some boaters in the region remain confused or are yet to be properly educated about “distance off” restrictions and “No Wash” areas.

4.3 Infringements

Between 2009 and 2013, the number of penalty notices issued within the Lake Macquarie – Tuggerah Lakes region accounted for 4% of all infringement notices issued throughout NSW. Of the penalties issued over that period, approximately 93% were issued by Roads and Maritime, whilst the remainder were issued by NSW Police. In addition to these penalties, 737 formal warnings were issued. The highly trafficked waters of Lake Macquarie accounted for 75% of the region’s infringements.

As indicated in Figure 4 below, the infringements for which the most penalty notices were issued in the region were for:

- failure to carry the correct safety equipment;
- excessive speed; and
- failure to carry the required licence.
4.4 Incidents Resulting in Death or Injury

In the period between 1 January 2009 and 31 December 2013, there were 109 vessel incidents reported to Roads and Maritime in the region. Ninety-one incidents occurred on Lake Macquarie, nine occurred on Tuggerah Lakes, and another seven incidents occurred offshore. Ninety-six of the incidents involved recreational vessels, 10 involved an interaction between a recreational and commercial vessel and four involved commercial vessels only. This breakdown of incidents shows a lower than average proportion of commercial vessel incident involvement compared to the state-wide average; reflective of the comparatively low level of commercial vessel usage in the Region.

4.4.1 Incidents Resulting in Death or Injury

Six fatal incidents have occurred in the region during this period. One incident resulted in the deaths of two people. Five of these incidents involved small open runabouts and the vessel either capsizing or the deceased falling overboard. The other incident involved a PWC colliding with a fixed object at high speed. All of the deceased, with the exception of the PWC rider, were not wearing an appropriate lifejacket and drowned.

Thirteen incidents occurred which resulted in serious injury to the victim. A serious injury is classified as one requiring hospitalisation or outpatient treatment. These incidents resulted in 20 injuries and while the high number of multiple-injury incidents is slightly unusual, the types and causes of these incidents varied without showing any particular trend or pattern. An additional 14 incidents resulted in minor injury to 18 persons; the vast majority (11) of these were the result of collisions between vessels, capsizing, or a person falling overboard.

4.4.2 Types of Vessels

The main types of vessels involved in incidents, where known, were sailing vessels (25%), small powered craft (open runabouts 24%, cabin runabouts 11%) and larger motor cruisers (21%). PWC (5%), houseboats (3%) and passive craft (1%) were not highly represented.
4.4.3 Incident Locations

While incidents occurred throughout the region there are a number of areas where there were significant concentrations of incidents. These areas are:

- 15 incidents on Lake Macquarie between Swansea Heads and Pelican Island (i.e. Swansea Channel).
- 22 incidents occurred in the mid-east section of Lake Macquarie, between Green, Gallibabba, Wangi and Skye Points.

4.4.4 Incident Cause

Behavioural and environmental factors were identified as the primary cause of the majority of incidents. Fifteen incidents were the result of a lack of proper lookout and another 13 were caused by a lack of judgement, while 20 incidents were the result of weather or tidal conditions. Material factors were attributable to 15 incidents involving failure of a variety of equipment, machinery, electronics or hull; higher than the state-wide average.

4.4.5 Incident Type

Composition of incident types in Lake Macquarie was unexpected and considerably different to state-wide averages. Almost half (53 incidents) involved collisions between vessels, which is a significantly greater proportion than the state-wide average of approximately one third.

The next most common type of vessel incident observed in the region was vessel capsize (16 incidents), and while there were a number of incidents such as fire (6) and falling overboard (4) which had serious consequences, no other incident type registered more than 3 incidents.

4.4.6 Incident Operation

Vessel operation at the time of an incident provides some insight into the nature of incidents occurring. While 55 were the result of vessels underway, 17 vessels were moored and 18 were at anchor or berth, which is an unusually high proportion when compared to the rest of the state. Twenty two of the incident collisions noted at Section 4.4.5 involved collisions with vessels that were moored, berthed or at anchor – mostly by vessels breaking their berths or moorings and colliding with other moored vessels. Only one tow sport incident was reported during the period, much lower than the state-wide average for waterways where towing occurs.

4.4.7 Time of Day, Month and Year

Where the time of the incident is known, 78 occurred during daylight; 30 in the morning and 48 in the afternoon. Twenty two incidents occurred at night, with an even spread before and after midnight. December, January and February were the main months when incidents occurred, corresponding to the heaviest periods of boating activity, with a slight spike also occurring during September. Similarly, weekends were the most likely days for incidents to occur.

4.4.8 Wind and Weather

During consultations anecdotal evidence was provided suggesting that the lakes can be subject to rapidly changing weather conditions, including substantial winds and wave chop, which can cause problems for boaters, particularly in small vessels. The lake has large fetches in both north-easterly and southerly winds. Over half the incidents occurred on days with clear visibility and fine weather, almost half of all incidents were reported as occurring in conditions described as choppy, rough, very rough or in strong current.
4.4.9 Bar Crossings

While there was one fatality on Swansea Bar in 2005, in the past five years there has been only one reported bar crossing incident at Swansea, and none at The Entrance. This is partially due to The Entrance channel being barely navigable during this time, however is also reflective of state-wide statistics which demonstrate improved safety awareness and compliance around crossing bars, particularly in relation to compulsory lifejacket wear.

4.5 Key Findings

The consultation feedback suggests that boaters in Lake Macquarie and Tuggerah Lakes generally have a positive view about safety on the Region’s waterways. Analysis of complaints, infringements and incidents data suggests that, as busy waterways with multiple types of users, Roads and Maritime will need to remain vigilant in actively managing safety on the waterways through its compliance activities and education campaigns, however that there is no immediate need for new measures specific to the Region.

It is also clear that there are areas of dissatisfaction where action can be taken to improve the boating experience in the Region. Improving the behaviour of waterway users was a common theme across the different stakeholder groups, in particular, in areas where there are conflicting uses of the waterway. State-wide education campaigns are important in supporting this objective; however there are also actions that can be taken at the local level through measures such as improving the visibility and clarity of signage.

There are numerous examples of faded and/or obscured safety signage, or safety signage that is “lost” among a cluster of signage from a range of other agencies with different purposes (for example, fishing, overhead powerlines). Updating navigation aids has also been identified as opportunity to deliver improvements for boaters in the area.

Figure 5 – Examples of safety issues

(Left) Timber navigational aid and (Right) Recently installed synthetic navigational aid (preferred)
Examples of unclear and confusing signage in the region
5. Access

Key findings

- There are a relatively large number of waterway access points in Lake Macquarie however more can be done to improve the condition of much of the infrastructure and to increase capacity at key locations to better manage peak demand. Increasing car/trailer parking capacity at key boat ramps is a particular priority.

- The physical characteristics of the Tuggerah Lakes restrict opportunities to improve access in a number of areas, highlighting the need to maximise the utility of existing infrastructure.

- Maintaining ocean access through Swansea Channel is of major importance to boating in the Region.

- Strategic placement of additional courtesy moorings will enhance the overall boating experience and help reduce congestion at public jetties.

Actions

d. Improve the condition of boat ramps and other access facilities at key locations

e. Increase trailer parking capacity

f. Provide additional courtesy moorings at popular locations

g. Maintain a safe navigation channel to the ocean through Swansea Channel

h. Maintain utility of existing access facilities in Tuggerah Lakes

5.1 Overview of Existing Access Facilities

There are a large number of boating access points within Lake Macquarie and Tuggerah Lakes. The Region has one of the highest number of boat ramps per capita of all other regions in NSW. Trailerable vessels can be launched and retrieved at public boat ramps, some of which have public facilities available, such as trailer parking, fish cleaning and toilets. Access is also available through smaller sailing, rowing or similar clubs. There is also informal access for smaller vessels such as dinghies, runabouts, and passive craft from public foreshore land including reserves and beaches. Larger vessels generally access the waterway at their on-water storage facilities such as marinas or through dinghy access to vessels kept on moorings.
Public wharves and jetties are also located on the region’s waterways and provide access to and from the water for recreational and commercial vessels.

Many of the ramps have been identified as being in below average condition, lacking amenities and other associated facilities.

**Boat ramps**

There are currently approximately 55 boat ramps.

- **Location:**
  - 37 are located in Lake Macquarie; and
  - 18 provide direct access to Tuggerah Lake, Budgewoi Lake, Lake Munmorah or Wyong River.

- **Material:**
  - 48 are concrete ramps; and
  - seven are composed of gravel or sand.

- **Ownership:**
  - 49 of the boat ramps are owned and maintained by Councils (LMCC or WSC depending on location)

**Public jetties, wharves and pontoons**

In addition to ramps there are approximately 70 public access points in the region including wharves, jetties, pontoons and landings.

- **Location:**
  - 49 in Lake Macquarie;
  - 12 in Tuggerah Lake; and
  - 9 in Budgewoi Lake.

**Courtesy moorings**

Current courtesy moorings include:

- Two at Pulbah Island;
- Two at Rathmines (Styles Point and Kilaben Bay);
- One at Green Point;
- Five in Swansea Channel;
- One at Murrays Beach; and
- One in Wangi Wangi Bay.

**Figure 6 – Example access facilities within the region**
5.1.1 Previous boating infrastructure grants

Through the Better Boating Program, Roads and Maritime has provided grants totalling over $2.7 million for 24 projects in the Lake Macquarie – Tuggerah Lakes region between 2005 and 2014. A selection of these can be seen in Figure 7 with all projects listed in Table below. It is important to note that the total cost of the projects is not depicted in this table.

Table 1 – List of previous grants provided under Better Boating Program

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Project</th>
<th>Final Grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belmont 16ft Sailing Club</td>
<td>Disabled Access for Lake Macquarie</td>
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<tr>
<td>Lake Macquarie City Council</td>
<td>Blacksmiths Boat Harbour Pontoon - Lake Macquarie Entrance</td>
<td>$85,000</td>
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<tr>
<td>Lake Macquarie City Council</td>
<td>Boat Ramp Upgrade at Dobell Park, Wangi Wangi</td>
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<td>Bonnells Bay Boat Ramp Rehabilitation</td>
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<td>Eleebana Boat Ramp Carpark Upgrade, Warners Bay (Lake Macquarie)</td>
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</tr>
<tr>
<td>Wangi Wangi District Workers Club</td>
<td>Repairs to Wangi Wangi District Workers Club &amp; Public Jetty</td>
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<tr>
<td>Wyong Shire Council</td>
<td>Picnic Point Boat Ramp and Facilities Upgrade, The Entrance (Additional Funding)</td>
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<td>Wyong Shire Council</td>
<td>Vales Point Boat Ramp Upgrade, Mannersing Park</td>
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<td>Wyong Shire Council</td>
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<tr>
<td>Wyong Shire Council</td>
<td>Norah Head Boat Ramp Replacement (Additional Funding 2)</td>
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<tr>
<td>Wyong Shire Council</td>
<td>Norah Head Boat Ramp Replacement (Investigation &amp; Design)</td>
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<tr>
<td>Wyong Shire Council</td>
<td>Sunshine Reserve Boat Ramp Upgrade, Chittaway Point</td>
<td>$20,670</td>
</tr>
</tbody>
</table>

**TOTAL** $2,704,715

* denotes Active projects as of 11/11/2014

**Figure 7 – Completed BBP projects examples within the region**

- Balmoral Jetty at Green Point - Lake Macquarie
- Bonnels Bay Boat Ramp - Lake Macquarie
- Booragul Jetty Replacement
- RMYC Boat Launching ramp upgrade
- Picnic Point Boat Ramp and Facilities Upgrade
- Swansea Wharf Pontoon, Lake Macquarie
5.2 Key Findings

Lake Macquarie has a large number of boating access points however much of the infrastructure is old and offers a relatively basic level of amenity. There is a lack of capacity at many of the more popular access points with many facilities unable to meet demand at peak times.

There are numerous opportunities to enhance the experience of a large number of boaters in the region through upgrading boat ramps and improving parking facilities and other amenities at the ramps.

Opportunities also exist to improve and modernise public jetties and pontoons to enhance access opportunities and improve disability access. The provision of additional courtesy moorings will help to increase safe anchorage opportunities while also relieving the pressure from vessels tying up to public jetties and wharves for excessive periods of time to the exclusion of other users.

The NSW Government’s announcement in February 2014 of $2.5 million in funding for long-term navigational dredging of Swansea Channel was highlighted by many stakeholders as the most important boating project in the region.

There are also opportunities to improve access facilities in Tuggerah Lakes with stakeholders raising similar concerns to Lake Macquarie regarding the overall condition of access infrastructure and the need for more parking.

The physical characteristics of Tuggerah Lakes limit access opportunities in a number of areas, particularly due to shallow waters and the build-up of seaweed (rack) on the foreshore. Addressing such issues is beyond the scope of projects to be funded out of NSW Boating Now however it highlights the need to ensure the utility of existing facilities.
6. Storage

Key findings

• The growth in boat storage capacity across the region will need to keep pace with the forecast growth in vessel numbers.

• A new approach is required to managing dinghy storage to improve the amenity of the Lake Macquarie foreshore in areas adjacent to mooring fields.

• Navigation is restricted in a number of popular bays due to the placement of moorings.

Actions

i. Develop a Lake Macquarie Boat Storage Strategy
j. Provide dinghy storage racks and develop a Dinghy Storage Management Strategy
k. Review the organisation of moorings on Lake Macquarie

6.1 Existing Storage

6.1.1 Overview of Existing Storage Types

Storage for vessels is generally provided on-land for smaller (< 6 m), e.g. trailerable power or sail, and on-water for larger vessels (> 6 m); however larger vessels can also be stored on-land, for example at dry-storage facilities, for vessels up to approximately 10 m.

The main types of on-water storage in for the Lake Macquarie – Tuggerah Lakes region are principally administered as follows:

• Private moorings
• Commercial moorings
• Commercial marina berths
• Domestic berths, moorings and other associated storage

Storage can be at private or commercial facilities. On-water storage at commercial marinas, yacht / sailing clubs, or boating facilities, is provided through berths (floating or fixed), moorings
(swing, fore and aft or other) and where space permits on-land, through dry storage such as a hard-stand or dry-stack. Access to vessels is usually through the commercial land site.

Examples of a commercial marina, commercial swing moorings adjacent to a commercial marina, and yacht club on Lake Macquarie, are shown below at Figure.

**Figure 8 – Examples of commercial marina berths, swing moorings, yacht club and dinghy storage at yacht club on Lake Macquarie**

Storage at private facilities can be adjacent to private property through domestic jetties, slipways, boatsheds, and berths or fore and aft moorings, or, through private swing moorings. Private swing moorings usually also require access to the water with a tender, for example a dinghy. These vessels also generate storage requirements on land. Shown below at Figure and Figure 10 are private domestic jetties, private moorings and dinghies used for accessing private moorings, on Lake Macquarie and Tuggerah Lakes.

Vessels less than 6 metres are most often stored on private property on trailers and access the water via boat ramps.

**Figure 9 – Examples of private domestic jetties, private moorings, fore and aft moorings and dinghies used for accessing private moorings**
6.1.2 Overview of Existing Storage Volume

There are approximately 3,300 vessels stored on-water or at associated land facilities in the region. Whilst numbers provided for each category are in many cases approximate, they can be generally grouped as follows:

**Lake Macquarie**

- There are approximately 2,200 private moorings currently occupied in Lake Macquarie with around 46% of these occupied by sailing vessels, including yachts, tri-marans, sailing catamarans and other sail craft.
- There are a small number of marinas and yacht clubs located in Lake Macquarie including:
  - Lake Macquarie Yacht Club at Belmont – 76 berths, 18 moorings and 21 hard stand;
  - Marks Point Marina – 62 Berths, 26 moorings;
  - Marmong Point Marina – 245 wet berths, 13 swing moorings, 35 dry storage and 25 hard stand spaces;
  - Pelican Marina – 17 berths a number of which are used commercial operators, e.g. houseboats, hire and drive;
  - Royal Motor Yacht Club at Toronto – 51 berths and 10 moorings; and
  - Wyee Point Marina – 36 berths, 4 moorings and 10 hard stand spaces.
- Of the almost 200 commercial moorings on Lake Macquarie, approximately 20% of these are not attached to land-based facilities such as marinas, boatsheds, yacht, sailing or motor clubs.
- A number of other clubs, including Belmont 16ft Sailing Club, Toronto Amateur Sailing Club and Wangi RSL Sailing Club operate in the region. Commercial moorings associated with these clubs are included in the commercial moorings shown above. Most
small clubs offer members access to storage. Storage for these generally smaller vessels can be on-water or land-based, in an open hardstand area, or inside stacks in smaller sheds. Some of these vessels are not required to be registered and therefore do not appear on Roads and Maritime registrations statistics.

- There are very few examples of formalised dinghy storage in Lake Macquarie. Dinghies are predominantly left on the foreshore or adjoining public land and are often chained to trees. No known formalised storage for passive craft.

**Tuggerah Lakes**

- There are no marinas or associated boating facilities in Tuggerah Lakes;
- Tuggerah Lakes has a small number of private and commercial moorings (<80 in total) as well as a small number of domestic jetties, primarily in the Wyong River and Ourimbah Creek areas; and
- Sailing clubs including Toukley Sailing Club, Tuggerah Lakes Memorial Sailing Club and Long Jetty Sailing Club provide on-land storage for members with smaller sailing vessels.

### 6.2 Key Findings

Evidence of unmet demand for boat storage in Lake Macquarie and Tuggerah Lakes is not as prevalent as in some regions, particularly in and around the Sydney region where, for example, there are long waiting lists for private mooring licences. Storage requirements in the Region are also influenced by the high percentage of trailer boats. This places higher demands on the need for access infrastructure however creates less demand for on-water storage methods than in some other regions.

Growth in vessel ownership in the region is forecast to increase by at least 2.9% annually. This excludes paddle craft and other vessels which do not require registration. Anecdotal evidence suggests that the popularity of these craft is growing at an even higher rate.

Some growth will therefore be required across all storage categories in order to keep pace with demand. In 2013, the MMC developed the Sydney Harbour Boat Storage Strategy that examined the existing capacity and forecast demand for boat storage in Sydney Harbour. The Strategy seeks to identify the best way to accommodate growth by planning for the mix of storage facilities best suited to meet the characteristics of vessels and usage in the region.

Adopting the same principles in the Lake Macquarie and Tuggerah Lakes region will help achieve a common understanding of future boat storage requirements across all stakeholder groups and identify future potential projects to be funded in the second half of the 5-year NSW Boating Now program.

**Dinghy storage**

The proliferation of dinghies stored on the foreshores and reserves of Lake Macquarie was the biggest storage issue raised by numerous stakeholders in the region.

It is clear that the region would benefit from the provision of such storage racks. However, a more holistic dinghy management strategy is required to remove the existing dinghies, reduce the overall number of dinghies, and to ensure new storage facilities are effectively managed and maintained effectively.

**Moorings**

The other major storage issue identified in Lake Macquarie is the impact on navigation arising from the proliferation of moorings in bays such as Marmong Point, Wangi Wangi, Belmont,
Croudace Bay, Swan Bay and Toronto. Some of these bays are in close proximity to yachting/sailing and other clubs and are also adjacent to designated sailboat racing areas.

Demand analysis suggests that a significant increase in mooring numbers is not required, however that some growth will be needed to accommodate forecast demand. This presents a challenge of increasing numbers while at the same time minimising the footprint of mooring areas.

The allocation of moorings in Lake Macquarie is currently determined in line with the Lake Macquarie Mooring Management Plan, which was developed by the then Waterways Authority of NSW in 2002. The Mooring Management Plan is currently due for review; however moorings need to be considered as part of an overall approach for managing boat storage in the Region. For example, there may be opportunities where Government funding can assist in the establishing public marina facilities that could increase storage capacity while reducing the size of mooring fields.

The Mooring Management Plan also needs to be informed by a State-wide review of the administrations of moorings, recently commenced by MMC. A Moorings Review Issues Paper was released for comment in March 2014 seeking comments on a number of reform options for the ways moorings are managed across NSW including how mooring numbers are determined, how to improve waiting lists and whether different types of mooring apparatuses can be used to improve overall capacity.

Further consultation will take place in 2015 on policy and regulatory reforms arising from the Moorings Review. Funding has been set aside to support the implementation of these reforms as well as more direct measures to help reduce the number of “mooring minders” and reduce mooring waiting lists in popular areas.


**Figure 11 – Examples of storage issues identified during regional site visits**

- Use of public land for dinghy storage around Croudace Bay
- Example of a recently installed dinghy storage rack in Folly Point, Cammeray that could be considered
Figure 12 – Example of a bay with cluttered moorings – Belmont
7. Feedback on Consultation Draft

7.1 Feedback Summary

Feedback received from Councils other stakeholder groups and the general public was supportive of the Key Findings and Actions contained in the Consultation Draft.

7.1.1 Safety

Submissions were supportive of the proposed Safety actions in the Consultation Draft, particularly the need to improve user behaviour. The importance of educating boaters about safe behaviour on the Region’s waterways was suggested as being of particular importance.

At the Public Information Session, suggestions were also made directly to local BSOs about particular locations where compliance issues had been observed.

7.1.2 Access

There was broad agreement that there are significant opportunities to improve and modernise boating infrastructure in the region. Both LMCC and WSC indicated their willingness to work with MMC and RMS to improve boating facilities in the region. Comments received on the potential projects identified in the Consultation Draft, including Councils’ views on priority projects have helped inform the list of projects identified in Chapter 8 which will receive priority funding as part of the NSW Boating Now program. It should be noted that the list of Priority Regional Projects does not include a number of projects that, while supported, WSC has indicated it is planning to fully fund as part of the implementation of its Aquatic Infrastructure Strategy.

It was noted that there are large number of informal boat launching sites around Lake Macquarie and that some of these sites are a source of contention with local residents. LMCC indicated that it is currently developing a strategy to manage these sites from a public usage, risk and environmental impact perspective.

While the commitment of $2.5 million for urgent navigation dredging in Swansea Channel was welcomed, LMCC noted concerns about the lack of a long-term funding strategy for dredging.

7.1.3 Storage

Stakeholders acknowledged the need for a strategic review of boat storage on Lake Macquarie, with LMCC indicating its support to work with MMC and RMS in developing a Boat Storage Strategy. Comments received about moorings will also be considered as part of the state-wide Moorings Review.
A number of submissions agreed that there is a need for a better approach to managing dinghy storage in the region, but also noted that the solution is more complicated than just providing dinghy storage racks. LMCC noted its support to work with MMC and RMS in developing a Dinghy Management Strategy in close consultation with the community.
8. Delivery Program

8.1 Summary

Table 3 provides a summary of how the actions identified in the Regional Boating Plan will be delivered across the three categories of safety, access and storage. A progress report on the Delivery Program will be published annually.

8.2 NSW Boating Now Funding

$3.08 million in NSW Boating Now funding has been allocated to support delivery of the 13 infrastructure projects identified in Table 2 as being a priority for delivery over the next three years.

The total regional allocation is based on estimated project costs and proposed Council contributions for individual projects. The total regional allocation may be subject to variation following further negotiations with Councils during the delivery phase to confirm project scope, design and the most efficient method of delivery.

The projects are included as part of NSW Boating Statement which includes a total funding commitment of over $33 million to support the delivery of Priority Regional Projects across NSW. The NSW Boating Statement can be downloaded at www.transport.nsw.gov.au/mmc. It includes the full list of Priority Regional Projects for each Region and details on how the Priority Regional Projects were identified.

The NSW Boating Statement includes a summary of the categories of funding to be made available over the five years of the NSW Boating Now program, including at least $10 million to be made available in 2017/18 and 2018/19 to support the delivery of a second round of infrastructure projects. Other funding categories include:

- $10 million to support the delivery of Major Projects that provide benefits to boaters in more than one region including:
  - Measures to address concerns about the impact of boating on riverbanks
  - Boat storage strategies and pilot projects
  - Establishing slipway facilities in strategic locations
  - Measures to reduce the number of “mooring minders”.

- $5 million to support the delivery of dedicated off-street boat trailer parking facilities
- $5 million to be assist with emergency repairs to boating infrastructure, particularly after flood or storm events.

**Table 2 – Priority Regional Projects**

1. Upgrade parking at Thomas Humphreys Reserve boat ramp, Swansea
2. Upgrade parking at The Esplanade boat ramp, Swansea
3. Investigate an upgrade of existing jetty, Valentine (Valentine Crescent)
4. Install pontoon at T.H. Halton Park boat ramp, Croudace Bay
5. Install pontoon at Sunshine Park boat ramp, Sunshine
6. Upgrade parking at Balmoral Reserve boat ramp, Balmoral (Letchworth Pde)
7. Upgrade boat ramp and parking at Lions Park, Toronto
8. Install dinghy storage racks around Lake Macquarie
9. Upgrade boat ramp at Lions Park, Gwandalan
10. Investigate location for new boat ramp on Wyong River, South Tacoma
11. Install pontoon at boat ramp at Kaluah Drive, Chittaway Bay
12. Upgrade parking at Colongara Bay boat ramp, Lake Munmorah
13. Develop new boat ramp and parking at Hot Water Outlet, San Remo
<table>
<thead>
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<th>Action</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety</strong></td>
<td></td>
</tr>
<tr>
<td>Renew and refresh navigation aids</td>
<td>Roads and Maritime will review and upgrade as required existing navigation aids across the region.</td>
</tr>
<tr>
<td>Review strategies to improve user behaviour</td>
<td>Roads and Maritime will work with MMC to review current approach to addressing the user behavior issues identified for this region, including education and compliance campaigns</td>
</tr>
<tr>
<td>Improve signage and visibility</td>
<td>Roads and Maritime will review and upgrade as required existing signage across the region.</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td></td>
</tr>
<tr>
<td>Improve the condition of boat ramps and other access facilities at key locations</td>
<td>$3.08 million in NSW Boating Now funds have been allocated to support the delivery of the 13 Priority Regional Projects listed in Table 2.</td>
</tr>
<tr>
<td>Increase trailer parking capacity</td>
<td></td>
</tr>
<tr>
<td>Maintain existing access facilities in Tuggerah Lakes</td>
<td></td>
</tr>
<tr>
<td>Provide additional courtesy moorings at popular locations</td>
<td>Roads and Maritime will investigate feasibility of installing courtesy moorings at the following locations that were identified during consultation on the draft Lake Macquarie-Tuggerah Lakes Regional Boating Plan: Warners Bay, Murrays Beach, Crangan Bay, Pulbah Island and Rathmines.</td>
</tr>
<tr>
<td>Maintain a safe navigation channel to the ocean through Swansea Channel</td>
<td>MMC and Roads and Maritime will continue to support the Rescuing Our Waterways dredging program and will work with Crown Lands on a longer term strategy for navigation dredging in NSW. In February 2014, NSW Government announced $2.5m had been allocated for navigational dredging in Swansea Channel. Work is due to be completed in early 2015.</td>
</tr>
<tr>
<td>Storage</td>
<td>Develop a Lake Macquarie Boat Storage Strategy</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>Funding will be made available from NSW Boating Now Major Projects allocation to work with Lake Macquarie Council to develop a Lake Macquarie Boat Storage Strategy following community consultation and consideration of demand and capacity issues. Development of the Strategy will include investigation of a pilot project involving alternate on-water storage options including finger wharves or public marinas in suitable locations.</td>
</tr>
<tr>
<td>Provide dinghy storage racks and develop a Dinghy Storage Management Strategy</td>
<td>Provision of dingy storage racks around Lake Macquarie has been identified as a Priority Regional Project. As part of the development of a Lake Macquarie Boat Storage Strategy assistance will also be provided to Lake Macquarie City Council to a Dinghy Management Strategy.</td>
</tr>
<tr>
<td>Review the organisation of moorings on Lake Macquarie</td>
<td>The findings of the Lake Macquarie Boat Storage Strategy will be used to inform a review of the Lake Macquarie Mooring Management Plan.</td>
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</table>
Appendices
Appendix A – Maps
DISCLAIMER! This map is not intended to be used for navigational purposes and Roads and Maritime Services takes no responsibility for the accuracy of the content herein.

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