

Transport and Main Roads

Ship operations and activities on the Maroochy River

Final Report to the General Manager

Document control sheet

Contact for enquiries and proposed changes

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Version history

Version no.	Date	Changed by	Nature of amendment
0.1	03/03/11	Peter Kleinig	Initial draft
0.2	09/03/11	Peter Kleinig	Minor corrections throughout document
0.3	10/03/11	Peter Kleinig	Insert appendices and new maps
0.4	14/03/11	Peter Kleinig	Updated recommendations and appendix 1
0.5	13/07/11	Peter Kleinig	Updated following meeting
0.6	25/07/11	Peter Kleinig	Inserted new maps
1.0	28/07/11	Peter Kleinig	Final draft
1.1	28/07/11	Peter Kleinig	Final

Document sign off

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1 Executive summary

Maritime Safety Queensland is an agency established by the *Maritime Safety* Queensland Act 2002 and also a division of the Department of Transport and Main Roads. The agency is responsible for the administration and regulation of the *Transport Operations (Marine Safety) Act 1994.* One of the agency's functions is to monitor and manage the operations and activities of ships to ensure marine safety.

The purpose of this report is to inform the General Manager of Maritime Safety Queensland, the decision-maker for matters of marine safety.

The Maroochy River system is a major waterway system on the Sunshine Coast, which includes the Maroochy River, Coolum Creek, Petrie Creek and Eudlo Creek. The character of these waterways varies greatly from broad expanses of navigable water like the Maroochy River near Maroochydore, to narrow sections with tight bends or shallow waters, such as Eudlo and Coolum Creeks. These features are important considerations when regulating for the safe operations of ships.

The level of ship traffic on certain areas of the Maroochy River system has increased significantly during recent times. These areas include sections of the river system used for high-speed activities, such as water skiing, wake boarding and the operations of personal watercraft. Maritime Safety Queensland has also received a number of complaints regarding the high-speed operations of speed boats and personal watercraft on waters of the Maroochy River from Bli Bli to Maroochydore, as well as Eudlo Creek.

In June 2009, Maritime Safety Queensland released its discussion paper on ship operations and activities on the Maroochy River system. The river system was divided into seven areas (numbered 1 to 7) and its main tributaries of Coolum, Petrie, Paynter and Eudlo Creeks. The purpose of the discussion paper was to highlight the operations and activities of ships on each of the areas and the creeks, and promote discussion amongst stakeholders and the broader maritime community.

The discussion paper made a number of recommendations about speed limits and water skiing prohibitions, amongst other things. Maritime Safety Queensland had not made any decisions regarding changes to speed limits and water skiing, at that time. The discussion paper was the first phase of a process that could result in regulatory change.

The discussion paper generated considerable public response. Maritime Safety Queensland received 239 written comments and submissions, as well as a large number of enquiries from different groups within the maritime community. Further, the Member for Buderim tabled a petition signed by 685 petitioners before the Queensland Parliament on 4 August 2009. The petition requested Maritime Safety Queensland to preserve the existing water skiing regime and to hold unbiased and open discussions with all stakeholders before any decisions are made.

The response to the discussion paper identified three groups:

- water skiers who expressed concern about the reduction in areas where water skiing might be allowed
- paddlers who expressed concern about the interaction between powered and passive craft, primarily on Eudlo Creek
- the residents of Cook Road at Bli Bli who were concerned about ship traffic, wash and bank erosion near their dwelling houses.

In October 2009, Maritime Safety Queensland formed the Maroochy River Reference Group made up of key stakeholders from the local maritime community. The group's membership included the Maroochy River Water Ski Association, the Sunshine Coast Kayak Club, representation for the residents of Cook Road at Bli Bli, the Sunshine Coast Regional Council, Surf Life Saving Queensland and four State Government departments. The Reference Group was chaired by the Director (Maritime Services).

The principle objective of the Reference Group was to produce this report, which would enable the General Manager of Maritime Safety Queensland to properly exercise discretion in relation to speed limits and water skiing prohibitions. The secondary objective of the Reference Group was to document issues that fall outside the sphere of marine safety, with a view to progressing resolution of those issues through other mechanisms, such as the establishment of a marine zone.

The Reference Group met on eight occasions from November 2009 to July 2011. Its members carefully considered comments and submissions from the discussion paper, as well as documents tabled during the meetings. The group identified a number of factors that influenced marine safety, including:

- the level and type of ship activities
- the history and popularity of those activities
- competing interests of different groups within the maritime community
- natural features and characteristics of the river system
- specific hazards and obstructions.

The Reference Group followed a problem-solving methodology to gain an appreciation of relevant issues before deciding on solutions, which have become the recommendations of this report. The Reference Group strived to make recommendations that provide a balanced approach to regulation for marine safety on the Maroochy River system.

The Reference Group makes 54 recommendations, which are grouped as either general recommendations for the Maroochy River system or recommendations specific to a particular area or creek.

In brief, the Reference Group's specific recommendations for speed limits and water skiing prohibitions are:

Maroochy River system

 Expand the speed limits of 6 knots throughout the Maroochy River system to include all creeks and waterways flowing into the Maroochy River, except certain waters of Coolum Creek, Petrie Creek and Eudlo Creek. Review the new speed limits and water skiing prohibitions by December 2012.

Area 1 – North and South Maroochy Rivers to Brown's Rocks

- Reduce the speed limit from 40 knots to 6 knots for waters within 50 metres upstream and downstream of Brown's Rocks.
- Expand the water skiing prohibition to include waters upstream from 50 metres downstream of Brown's Rocks.
- From 50 metres upstream of Brown's Rocks to the river's confluence with its north and south arms, either:
 - reduce the speed limit from 40 knots to 20 knots; or alternatively
 - reduce the speed limit from 40 knots to 6 knots.

Area 2 - Brown's Rock to near Dunethin Rock

• Expand the speed limit of 6 knots near Dunethin Rock to include waters from 50 metres upstream to 400 metres downstream of Lake Dunethin.

Area 3 - Near Dunethin Rock to the cane train bridge

 Reduce the speed limit from 40 knots to 6 knots for waters within 50 metres upstream and downstream of the cane train bridge.

Area 4 – Cane train bridge to downstream of Coolum Creek

- From 450 metres to 720 metres downstream of Small Creek, either:
 - reduce the speed limit of 40 knots to 20 knots and expand the water skiing prohibition to include these waters as well; or alternatively
 - reduce the speed limit of 40 knots to 6 knots.

Area 5 – Downstream of Coolum Creek to David Low Bridge

- Reduce the speed limit from 40 knots to 20 knots for waters from 1,500 metres downstream of Coolum Creek to 1,050 metres upstream of the David Low Bridge.
- For waters near Cook Road:
 - reduce the speed limit from 40 knots to 20 knots (as mentioned above) and erect speed signs for operational speed limits near the dwelling houses on Cook Road, or alternatively
 - reduce the speed limit from 40 knots to 20 knots (as mentioned above)
 and implement a periodic speed limit of 6 knots from 1,300 metres to 1,050
 metres upstream of the David Low Bridge for weekends and public
 holidays; or alternatively
 - reduce the speed limit from 40 knots to 6 knots from 1,300 metres to 1,050 metres upstream of the David Low Bridge.
- Review the new speed limit near Cook Road by December 2012.

Area 6 – David Low Bridge to upstream of Sunshine Motorway Bridge

- Reduce the speed limit from 40 knots to 20 knots for waters from 50 metres upstream to 1,000 metres downstream of the David Low Bridge.
- Expand the water skiing prohibition to include waters from 50 metres upstream to 1,000 metres downstream of the David Low Bridge.

Area 7 – Upstream of Sunshine Motorway Bridge to Maroochy Bar

- Reduce the speed limit from 40 knots to 20 knots for waters downstream from 200 metres upstream of the Sunshine Motorway Bridge to the river's mouth, except for nominated personal watercraft on the Maroochy River commercial personal watercraft area, which will remain 30 knots.
- Reduce the water skiing prohibition from downstream of 500 metres upstream of the Sunshine Motorway Bridge to downstream of 200 metres upstream of that bridge.

Coolum Creek

- Reduce the speed limit from 40 knots to 20 knots for waters downstream from West Coolum Road.
- Reduce the speed limit from 40 knots to 6 knots for waters upstream of West Coolum Road.

Petrie and Paynter Creeks

- Reduce the speed limit from 40 knots to 20 knots for waters to the Bridge on David Low Way at Diddillibah.
- Reduce the speed limit from 40 knots to 6 knots for waters upstream from the bridge on David Low Way at Diddillibah, including Paynter Creek.

Eudlo Creek

- Reduce the speed limit of 40 knots to 6 knots for waters upstream from 1,150 metres upstream of the public boat ramp in Fishermans Road.
- Maintain the speed limit of 6 knots for the creek and the adjoining lagoon from Eudlo Creek Bridge to 50 metres upstream of the Fishermans Road public boat ramp.
- For other waters of the creek, either:
 - maintain the speed limit of 40 knots and expand the water skiing prohibition to allow water skiing on conditions; or alternatively
 - reduce the speed limit of 40 knots to 20 knots and expand the water skiing prohibition to include all waters of the creek.

The Reference Group also makes a number of recommendations that relate to:

- increasing the enforcement presence
- erecting new regulatory and warning signs

- updating Beacon to Beacon
- fixing new reflectors for the cane train bridge
- developing and implementing a new code of conduct for water skiers and paddlers on Eudlo Creek
- developing and implementing a new safety management plan for water skiers on Eudlo Creek
- a proposal for a marine zone by Sunshine Coast Regional Council.

All of the Reference Group's recommendations are set out in appendix 1 of this report, with specific recommendations set out in the relevant sections.

The relevant sections also contain maps that describe the recommendations.

2 Introduction

The Maroochy River system is a major waterway system within the Sunshine Coast Area of Maritime Safety Queensland's Brisbane Region. The entire river system extends more than 30 kilometres inland from the river's mouth at Maroochydore.

The river system divides into two arms at its tidal limit called the North Maroochy River and the South Maroochy River respectively. Below the confluence of these rivers lies the extensive estuary system named the Maroochy River. A number of creeks and waterways flow into the Maroochy River, including Coolum Creek, Petrie Creek and Eudlo Creek.

Ships of various types and sizes operate on the Maroochy River and some of the adjoining creeks and waterways. These are recreational ships, such as speed boats, dinghies, personal watercraft, canoes and kayaks; fishing ships such as beam trawlers, crabbing boats and net dories; and commercial ships, such as hire and drive ships of different types (like sailing boats, dinghies and personal watercraft), as well as larger passenger vessels used for environmental tours.

The level of ship traffic on the Maroochy River system fluctuates greatly according to the time of year, the day of the week, and even the time of day. The mid to lower reaches of the Maroochy River and Eudlo Creek regularly experience very high concentrations of recreational and commercial ship traffic during weekends, public holidays and school holidays, particularly during Christmas and Easter.

The natural features of certain areas of the Maroochy River system, when coupled with high levels of ship traffic, or a particular type of ship operation and activity, may result in situations that compromise marine safety, or worse. Since July 2000, Maritime Safety Queensland has received 58 reports of marine incidents on the river system. Features of the waterway were identified as a contributing factor to 15 of these marine incidents, and excessive speed or wash was identified as a contributing factor to nine.

The Reference Group believes it is timely to review the existing regulatory regime for the operations and activities of ships on the Maroochy River system, with a view to implementing a new marine safety system.

3 Purpose

The purpose of this report is to inform the General Manager so that he may properly exercise his discretion regarding speed limits and water skiing prohibitions for the better management of ships on waters of the Maroochy River system.

In arriving at his decisions, the General Manager must have careful consideration to the objectives of the *Transport Operations (Marine Safety) Act 1994*, in particular, to provide a system that achieves an appropriate balance between —

- a) regulating the maritime industry to ensure marine safety; and
- b) enabling the effectiveness and efficiency of the Queensland maritime industry to be further developed.

4 Scope

This report is confined to matters that affect marine safety.

However, the report identifies some unresolved issues (such as bank instability and erosion) and consequently makes recommendation 8. This recommendation is that the Sunshine Coast Regional Council should consider a proposal for a marine zone, a statutory mechanism that might help local governments manage a combination of marine safety and other issues.

5 Legislation

Some relevant provisions of marine safety legislation for ship operations and activities on the Maroochy River system are:

- section 8 of the Maritime Safety Queensland Act 2002, which sets out the functions and powers of Maritime Safety Queensland
- section 3 of the *Transport Operations (Marine Safety) Act 1994*, which sets out the objectives of marine safety legislation
- section 43 of the *Transport Operations (Marine Safety) Act 1994*, which imposes the general safety obligation to operate a ship safely
- part 9 of the *Transport Operations (Marine Safety) Act 1994*, which deals with aids to navigation
- section 123 of the *Transport Operations (Marine Safety) Act 1994*, which defines a marine incident
- section 206A of the Transport Operations (Marine Safety) Act 1994, which provides the power to fix speed limits for ships
- section 211 of the Transport Operations (Marine Safety) Act 1994, which gives
 effect to the International Regulations for Preventing Collisions at Sea 1972
 (the Collision Regulations)
- rule 6 of the Collision Regulations, which deals with safe speed
- rule 8 of the Collision Regulations, which deals with action to avoid collision
- rule 9 of the Collision Regulations, which deals with narrow channels
- section 127 of the *Transport Operations (Marine Safety) Regulation 2004*, which creates operational speed limits for ships, other than personal watercraft (for example, 6 knots within 30 metres of a ship at anchor)
- section 127A of the Transport Operations (Marine Safety) Regulation 2004, which creates operational speed limits for personal watercraft (for example, 6 knots within 60 metres of the shore, subject to certain conditions)
- section 127B of the Transport Operations (Marine Safety) Regulation 2004, which places a freestyling restriction on personal watercraft if one or more dwelling houses are visible within 100 metres of the shore

- section 128 of the Transport Operations (Marine Safety) Regulation 2004,
 which creates an operational speed limit if a ship's wash is reasonably capable of causing a marine incident or damage to the shoreline
- section 130 of the Transport Operations (Marine Safety) Regulation 2004, which deals with speed signs erected by the general manager
- section 221 of the Transport Operations (Marine Safety) Regulation 2004, which deals with unlawful operations that endanger marine safety (for example, water skiing)
- section 222 of the Transport Operations (Marine Safety) Regulation 2004, which sets out certain water skiing requirements (for example, the personal flotation device (PFD) and observer requirements)
- part 9A of the Transport Operations (Marine Safety) Regulation 2004, which deals with marine zones
- section 226A of the Transport Operations (Marine Safety) Regulation 2004, which deals with signs erected by a government entity or a local government (for example, water skiing signs).

6 Background

Maritime Safety Queensland and its enforcement partners – the Queensland Boating and Fisheries Patrol and the Queensland Police Service (namely the Sunshine Coast District Water Police) – occasionally receive complaints regarding the operations and activities of some types of ships on the Maroochy River system, mainly on the lower reaches of the Maroochy River near Bli Bli and Maroochydore, and also on Eudlo Creek. These complaints are usually information from members of the public regarding excessive speed and wash by speed boats and personal watercraft.

Since April 1998, private consultants have performed surveys of ship traffic at certain locations on the Maroochy River. The most recent survey was conducted on 11 April 2009, which was Easter Saturday. The locations for this survey were the Maroochy River at Maroochydore, the Maroochy River at Bli Bli, and Eudlo Creek at Maroochydore. The survey results suggested a decrease from the levels of ship traffic observed during the survey of 2008, which were very high. The survey also suggested that ship operations were generally consistent with previous years and that passive craft numbers peak in the morning and that numbers of personal watercraft peak in the afternoon. In total, there were more than 870 observations of ships of various types operating on the lower reaches of the river from 6 am to 6 pm on the day of the survey.¹

In July 2005, the Ship Hydrodynamics Centre of the Australian Maritime College produced a report entitled *Vessel Wash Impacts on Bank Erosion* for the Maroochy River. The report proposed certain ship operating criteria based on the energy of a

¹ Sunshine Coast Vessel Activity Survey 2009

maximum wave and a ship's waterline length. The report sets out some useful information about ship operations reasonably capable of causing shoreline damage, and made a number of recommendations for the Maroochy River upstream of the David Low Bridge at Bli Bli, as well as near the Cod Hole at Maroochydore. However, these recommendations did not consider issues that affect marine safety; for example, rule 9 of the Collision Regulations.

Towards the end of 2005, the then Minister for Transport and Main Roads received a letter from the State Member for Nicklin regarding the operations and activities of speed boats towing water skiers on the Maroochy River near Bli Bli. The residents of the four dwelling houses at the northern end of Cook Road at Bli Bli had written to the Member complaining about bank erosion, and excessive speed and noise from speed boats.

The Minister asked Maritime Safety Queensland to ensure that these complaints were investigated and that appropriate action was taken to ensure marine safety. The process was supposed to involve consultation with other government entities, including the Queensland Boating and Fisheries Patrol, the Environmental Protection Agency (as the Department of Environment and Resource Management was then known), and the then Maroochy Shire Council.

In March 2006, Maritime Safety Queensland placed a public notice in a local newspaper regarding ship activities on the Maroochy River. The notice invited public submissions on issues such as speed limits, water skiing, wake boarding and other types of ship use that might affect marine safety on the waterway. The closing date for submissions was 28 April 2006.

By the end of May 2006, Maritime Safety Queensland had received 10 written submissions to its notice. The main areas of public concern seemed to be:

- bank erosion caused by speed boats engaged in water skiing and wake boarding activities
- unsafe activities of personal watercraft
- excessive speed by speed boats and personal watercraft
- excessive noise from speed boats and personal watercraft.

Another area of concern was the interaction of high-speed power-driven ships, like speed boats and personal watercraft, with passive craft, like canoes and kayaks. This was particularly an issue during periods of high ship traffic on weekends, public holidays and school holidays.

Maritime Safety Queensland performed an inspection of the Maroochy River system from Brown's Rocks to the river's mouth during August 2006. The purpose of the inspection was to produce a report on ship activities within the river system, which considered the character of the waterway and reviewed ship activities in terms of marine safety. Other pressing issues meant that production of this report was re-prioritised.

Maritime Safety Queensland performed further inspections of the Maroochy River system from Brown's Rocks to Maroochydore during late 2007, mid 2008 and early 2009. The agency took particular note of the level and type of ship traffic, and the

river's natural features, such as the width of navigable water, bends, hazards and underwater obstructions.

In June 2009, Maritime Safety Queensland released a discussion paper on ship operations and activities on the Maroochy River system. The purpose of the discussion paper was to highlight those operations and activities on certain areas and creeks of the river system, and promote discussion amongst stakeholders and the broader maritime community. Similar to this report, the discussion paper was confined to matters that affect marine safety.

The discussion paper made 20 recommendations about speed limits and water skiing prohibitions, including a suggestion to the Sunshine Coast Regional Council for a marine zone, amongst other things. Maritime Safety Queensland had not made any decisions regarding changes to speed limits and water skiing at that time. The discussion paper was the first phase of a consultation process that could result in regulatory change.

The discussion paper generated considerable public response. Maritime Safety Queensland received 239 written comments and submissions, as well as a large number of enquiries from different groups within the maritime community. There were also more than 40 letters to the Premier and the Minister for Transport, and a number of reports in the Sunshine Coast Daily newspaper. It was clear that two distinct groups held strong and different views on the best way to manage ship operations and activities on the Maroochy River system: the water skiers and the paddlers.

On 4 August 2009, the State Member for Buderim tabled a petition signed by 685 petitioners before the Queensland Parliament. The principle petitioner was the president of the Maroochy River Water Ski Association. The petition requested Maritime Safety Queensland to preserve the existing water skiing regime and to hold unbiased and open discussions with all stakeholders before any decisions are made.

Maritime Safety Queensland hosts regular meetings with its enforcement partners and the Sunshine Coast Regional Council to formally discuss complaints and other marine safety issues on the Maroochy River system. Enforcement operations by shipping inspectors of the Queensland Boating and Fisheries Patrol and Maritime Safety Queensland's Field Compliance Team have successfully targeted the operations of speed boats and personal watercraft on the river from Bli Bli to Maroochydore, including Eudlo Creek.

7 Reference Group

In October 2009, Maritime Safety Queensland formed the Maroochy River Reference Group made up of key stakeholders from the local maritime community. Specifically, the group's membership comprised representatives from:

- Maroochy River Water Ski Association
- Sunshine Coast Kayak Club
- residents of Cook Road at Bli Bli

- Sunshine Coast Regional Council
- Surf Life Saving Queensland
- Department of Environment and Resource Management
- Queensland Boating and Fisheries Patrol
- Queensland Police Service
- Maritime Safety Queensland.

The Reference Group's meetings were chaired by the Director (Maritime Services), a senior executive officer of Maritime Safety Queensland. The meetings were convened in Maritime Safety Queensland's Sunshine Coast office at Mooloolaba.

The principle objective of the Reference Group was to produce this report, which would enable the General Manager of Maritime Safety Queensland to properly exercise discretion in relation to speed limits and water skiing prohibitions. The secondary objective of the Reference Group was to document issues that fall outside the sphere of marine safety, with a view to progressing resolution of those issues through other mechanisms, such as the establishment of a marine zone.

The Reference Group met on eight occasions from November 2009 to July 2011. The group's members carefully considered the comments and submissions from the discussion paper and identified many factors that influenced each other's views on solutions to advance marine safety, including:

- local knowledge and experience of the group's members
- local knowledge of shipping inspectors
- data on natural features of the waterways gathered during the inspections
- marine safety data, including marine incident and ship survey data
- operations of recreational ships, commercial ships and fishing ships
- existing legislative requirements
- speed limits on other Sunshine Coast waterways for example, the Noosa River system
- managing and monitoring compliance with legislative requirements
- historical use of the Maroochy River system
- popularity of certain activities
- competing interests of different groups within the maritime community.

The Reference Group adopted a problem-solving methodology to gain an appreciation of relevant issues before deciding on solutions, which have become the recommendations of this report. The members considered each area of the Maroochy River system, identified and discussed marine safety and other issues, and then carefully considered a range of solutions. The issues and solutions were captured in a series of documents called discussion and solutions templates.

The Reference Group also observed the following principles when considering regulatory solutions:

- regulatory simplification
- minimal regulation to ensure safety
- targeted regulation avoiding regulation if safety risks can be managed in other ways
- respect for different points of view.

The Reference Group was directed to the objectives of marine safety legislation throughout their discussions. Consistent with these objectives, the group makes their recommendations to provide a marine safety system that achieves an appropriate balance between —

- a) regulating ship operations and activities to ensure marine safety; and
- enabling the ongoing use of the Maroochy River system by different groups with competing interests.

The Reference Group also makes recommendation 8 to highlight part 9A of the *Transport Operations (Marine Safety) Regulation 2004*, the mechanism by which the Sunshine Coast Regional Council could propose a marine zone for the Maroochy River system. A marine zone could make ships subject to certain operating requirements, providing those requirements are consistent with the objectives of marine safety legislation. The group remains mindful that isolated problems such as noise, amenity and bank erosion are best managed under local laws or environmental legislation.

Sections 9 to 12 of this report set out detailed information about the Maroochy River system, the existing legislative requirements and the Reference Group's recommendations.

8 Maroochy River system

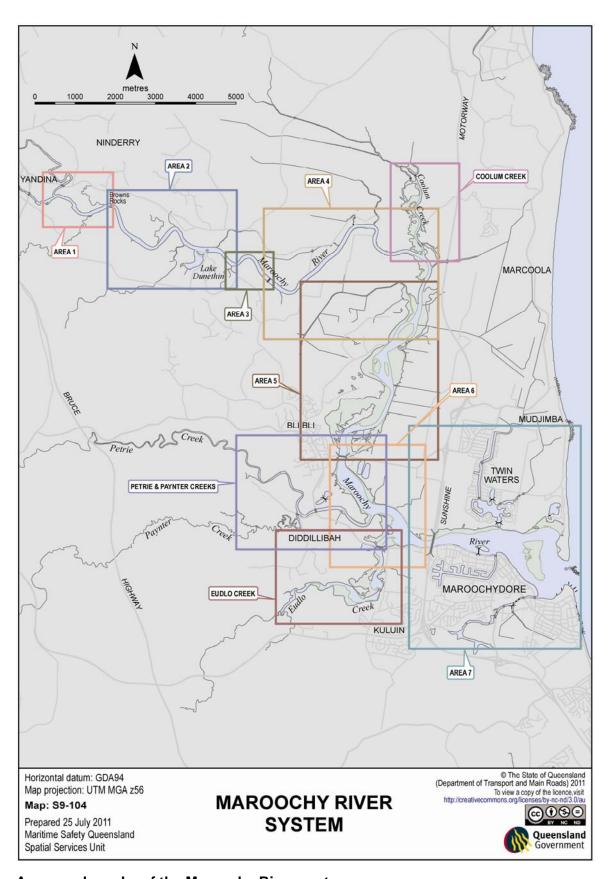
This report sets out information and recommendations in relation to the following waters of the Maroochy River system:

Maroochy River

- downstream of the confluence of the North and South Maroochy Rivers at Yandina to Brown's Rocks at the suburb called Maroochy River (referred to as Area 1)
- downstream of Brown's Rocks to a small unnamed creek immediately downstream of Dunethin Rock at the suburb of Maroochy River (referred to as Area 2)
- downstream of the small unnamed creek immediately downstream of Dunethin Rock to a point approximately 50 metres downstream of the cane train bridge at the suburb of Maroochy River, which is approximately two kilometres downstream of Dunethin Rock (referred to as Area 3)
- downstream of the point approximately 50 metres downstream of the cane train bridge to a point approximately 1,500 metres downstream of the river's confluence with Coolum Creek at Marcoola (referred to as Area 4)
- downstream of the point approximately 1,500 metres downstream of Coolum Creek to the David Low Bridge at Bli Bli (referred to as Area 5)
- downstream of the David Low Bridge to a point approximately 500 metres upstream of the Sunshine Motorway Bridge at Maroochydore (referred to as Area 6)
- downstream of the point approximately 500 metres upstream of the Sunshine Motorway Bridge to the river's mouth at Maroochydore (referred to as Area 7)
- Coolum Creek
- Petrie Creek and Paynter Creek
- Eudlo Creek.

A map that depicts these areas and creeks can be found on page 21.

Maps of each area and creek that depict the existing regulatory regime and the Reference Group's recommendations can be found in relevant sections of the report.



Areas and creeks of the Maroochy River system

9 Maroochy River

The Maroochy River is a major waterway on the Sunshine Coast. It comprises the main part of the Maroochy River system, which begins at the confluence of the North Maroochy River and the South Maroochy River at Yandina and flows into the South Pacific Ocean near Cotton Tree at Maroochydore.

The Maroochy River and navigable waters of all rivers and creeks flowing into it, either directly or indirectly, are waters within the Brisbane pilotage area as provided by section 71 of the *Transport Operations (Marine Safety) Act 1994*. The Regional Harbour Master (Brisbane) is empowered to give directions within the pilotage area in relation to:

- ships and their operations
- owners and masters of ships
- persons in charge of places adjacent to the pilotage area
- persons responsible for obstructions to navigation, amongst other things.

The Maroochy River is subject to tidal influence for its entire length, which is approximately 27 kilometres. The river's upper reaches flow through a level to slightly undulating floodplain, initially being constricted by steep, low hills. However, the river eventually widens and becomes quite expansive once it leaves the hilly terrain. There are several mid-channel islands downstream of Coolum Creek.

The river's lower reaches are a complex and dynamic system of channels, sand banks, intertidal shoals and sand bars. Channel Island and Goat Island divide the river near its mouth into the main and south channels. The river's mouth is migratory, moving to the north and south according to prevailing coastal conditions and weather events, such as floods and cyclones. Pincushion Island is currently separated from the mainland.

Some of the banks of the Maroochy River and its adjoining waterways have been heavily modified with concrete and revetment walls. Furthermore, downstream of the Cod Hole at Maroochydore, the river contains three extensive man-made modifications to the natural waterway: Cornmeal Creek, and the canal systems of Twin Waters and Maroochy Waters.

The main land uses along the banks of the Maroochy River are native vegetation, agriculture and grazing, with small areas of residential, commercial and industrial developments. The dominant agricultural crop for many years was sugar cane. However, ongoing challenges confronting the sugar industry mean that alternative crops are now often considered in its place. Large areas of the river's banks have been cleared of all riparian vegetation. Some areas suffer from severe erosion and bank instability.

The majority of remnant riparian vegetation is found on freehold land. Residential areas, including both urban and rural developments, occupy only a small proportion of the river's banks. Urban residential development comprises the bulk of this, and is concentrated on the river's southern bank downstream of the Sunshine Motorway Bridge at Maroochydore.

Recreational and commercial boating activities are very popular on the Maroochy River, including passive uses like fishing, sailing, environmental tours, canoeing and kayaking; and more active pursuits like water skiing, wake boarding and personal watercraft freestyling. Water skiing has been popular since the 1950s; however, there seems to be a recent trend towards wake boarding. There are currently more than 27,200 registered recreational ships stored at addresses within Maritime Safety Queensland's Sunshine Coast Area.²

A small number of fishing ships, like small beam trawlers, crabbing boats and net dories, operate on certain areas of the Maroochy River and its adjoining waterways. Activities within all commercial fisheries are regulated under fisheries legislation. For example, a person must not possess or use nets to take fish for trade or commerce upstream of the North and South Maroochy Rivers or downstream of the Cod Hole.

Maritime Safety Queensland maintains records of marine incidents. Since July 2000, the agency has received 58 reports of marine incidents on waters of the Maroochy River system. Of these events, six involved collisions between ships, seven involved boats engaged in water skiing, 18 involved collisions with objects or groundings, and three involved collisions of ships with people in the water. Nineteen of these marine incidents caused injuries to 21 people, nine of whom were hospitalised. A summary of some marine incident data from July 2000 to June 2010 may be found at appendix 4.

The most recent hydrographic surveys of the Maroochy River system were conducted during the early part of 2001 by the former Maritime Division of Queensland Transport, as Maritime Safety Queensland was then known. The survey areas included the main channel of the Maroochy River from the river's mouth at Cotton Tree to the confluence of the river's north and south arms at Yandina. The survey data may be found on plan number E305004, sheets 1 to 19, dated 28 February 2001.

Maritime Safety Queensland manages and maintains a series of aids to navigation, regulatory signs and warning signs throughout the Maroochy River and some of the adjoining creeks. The regulatory signs are speed signs and water skiing signs, while the warning signs provide information about obstructions and hazards.

Finally, the Maroochy River and the adjoining creeks and waterways are coastal waters as defined by the *Transport Operations (Marine Pollution) Act 1995*. Any unlawful discharge from a ship of oil, noxious liquid, packaged harmful substances, sewage or garbage is an indictable offence of strict liability. This means that a ship's owner, master and, in certain circumstances, a member of the crew, may be criminally responsible for a pollution incident, even if the discharge happens by mistake or accident.

Sections 9.1 to 9.7 of this report discuss Areas 1 to 7 of the Maroochy River in greater detail.

² Statistics gathered from Maritime Safety Queensland's SafetyData Assist in January 2011