



Queensland Recreational Boating Facilities Demand Forecasting Study 2017



Mornington Shire Council Assessment



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Definitions

'all-tide' means that a vessel can be realistically launched into or retrieved from the waterway at the site for 100% of the tidal range

'ARI' means average recurrence interval, and refers to the average or expected time period between two occurrences of weather exceeding a certain magnitude

'capacity' means the ability to handle throughput for boat ramps, or the ability to handle multiple vessels at pontoons and floating walkways

'CHMP' means Cultural Heritage Management Plan

'CPM Reg' means the *Coastal Protection and Management Regulation 2003*

'CTU' means 'car-trailer unit', and applies to parking bays suitable for use by a tow vehicle with attached boat trailer

'DEE' means the Department of the Environment and Energy (Commonwealth)

'DEHP' means the Department of Environment and Heritage Protection

'demand' means the current or projected requirement at a given year to service the needs of the recreational boating community – assuming full effectiveness of existing facilities and based on current numbers of registered recreational boats only. Excludes non-registered vessels such as canoes, kayaks, sail-boards, row boats, powered vessels not requiring registration, etc.

'effective capacity' for a boat ramp means the number of lanes for boat ramps after adjusting for usage constraints such as the lack of adequate parking or tidal accessibility, or improvements to efficiency such as floating walkways or pontoons, see Appendix A for additional detail

'effective capacity' for a landing means the number of landings after adjusting for usage constraints caused by tidal and depth restrictions, see Appendix A for additional detail

'EPBC Act' means the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth)

'FHA' means Fish Habitat Area

'GBR' means Great Barrier Reef

'IDAS' means Integrated Development Assessment System

'landings' means jetty and pontoon structures that facilitate direct berthing of non-trailable vessels (keel boats and >8.0m powerboats), transient vessels and/or tenders from larger vessels (where effective anchoring or mooring is available nearby)

'land-side' refers to infrastructure constructed above high water mark

'LGA' means local government area

'MCU' means a material change of use under the planning scheme

'MIIP' means the TMR works program known as the Marine Infrastructure Investment Program, with the government's Marine Infrastructure Fund forming its capital component

'MNES' means matter of national environmental significance under the EPBC Act

'NC Act' means the *Nature Conservation Act 1992*

'near all-tide' means that a vessel can be realistically launched into or retrieved from the waterway at the site for at least 80% of the tidal range

'NNTT' means National Native Title Tribunal

'P Act' means the *Planning Act 2016*

'P Reg' means the *Planning Regulation 2017*

'part-tide' means that a vessel can be realistically launched into or retrieved from the waterway at the site for at least 50% of the tidal range

'registration activation rate' means the percentage of registered vessels liable to be in use on any given good weather weekend day

'shd' means schedule

'shortfall' means the outstanding number of boat ramp lanes or landings as appropriate (assuming announced TMR projects/upgrades at December 2016 have been built) required to satisfy demand at a particular year, after adjustment for actual number and effective capacity considerations. A negative number for shortfall in a table signifies an oversupply

'SPL' means strategic port land

'Study' means this document including appendices and the state-wide summary

'TMR' means the Department of Transport and Main Roads

'water-side' refers to infrastructure constructed below high water mark

'WHA' means World Heritage Area

means 'number' when used in tables

Executive summary

This study sets out the current and future demand for publicly accessible recreational boating facilities within the Mornington Shire Council area over the next 20 years. The assessment considers facilities for vessels, such as boat ramps and floating walkways, as well as landings for deep-draught vessels. It is intended to be used to inform funding priorities from 2018-19 onwards.

Key issues for Mornington Shire Council

No issues were raised by stakeholders around access to recreational boating facilities in the Mornington Shire Council area.

Demand assessment

The demand assessment is based on boat registrations from within the local government area (LGA) of Mornington and surrounding LGAs. The demand assessment is analysed against existing capacity to produce an outstanding shortfall projection. Key aspects influencing demand considered in the assessment are that:

- The population of Mornington Shire Council is projected to increase from 1,196 persons in 2016 to 1,511 persons in 2036, or by 1.2% per annum, which is below the state-wide five year forecast average of 1.6% (Appendix B)
- There are 31 registered boats in the LGA.
- Trailable and non-trailable vessel registrations within the Mornington LGA are used on the water within the LGA.
- No vessel inflows from outside the LGA are likely.
- The registration activation rate from residents of the LGA is anticipated to be high (14%) as a result of the very remote, island nature of the Mornington Shire Council.

Boat ramps

At present there are no formally recorded boat ramp facilities in the LGA, however there is one known ramp location used by recreational boats consisting of a single ramp lane. Current and future demand is met by this existing facility.

Landings

There is a commercial jetty within the LGA that is assumed to also provide access to recreational vessels. This landing is sufficient to meet current and future demand for a public vessel landing.

Recommendation

After careful consideration of the development needs in the Mornington Shire Council area, it has been determined that the existing unrecorded facilities on the island are sufficient to meet the needs of the community. No additional facilities are recommended.

1. Introduction

1.1 Background

GHD was commissioned by the Department of Transport and Main Roads (TMR) to establish the current and future demand for recreational boating facilities throughout Queensland. This resulting study is the *Recreational Boating Facilities Demand Forecasting Study 2017* (Study) and supersedes the 2011 study of similar name. The study replaces the *Recreational Boating Facilities Demand Forecasting Study 2016* by incorporating the results of the 2016 census.

The Study will be used to inform planning for the development of existing and new recreational boating facilities by a variety of agencies, including TMR, the Gold Coast Waterways Authority, local government, and port and water authorities. The Study is one tool in a broader assessment process to select and prioritise sites for development. Specifically, the Study is not binding in any way on the agencies it is designed to assist. The Study establishes demand and makes informed suggestions as to how the established demand might be addressed. The 2011 study, at December 2016, has had 66% of its recommendations adopted to a greater or lesser extent. A similar recommendation take-up rate may be expected from this Study.

This LGA report is one of a series of reports for the Study comprising LGA and state-wide components. The state-wide report details the Study background and provides an overview of demand for recreational boating facilities over the next 20 years throughout the state. The state-wide report complements individual reports for each local government area (LGA). Each LGA report identifies existing capacity, current and future demand, and potential opportunities for boating infrastructure within the LGA – with appropriate adjustment for interaction with adjacent LGA's.

1.2 Context

This LGA report has been prepared with a focus on in-water recreational facilities and infrastructure comprising boat ramps, floating walkways and landings within each LGA, which are publicly accessible by registered vessels. As car parking can significantly constrain the efficient use of a facility, it has been considered in the assessment. However, facilities used more than 50% of the time for commercial or public passenger transport (e.g. ferry terminals), private facilities (such as yacht clubs and marinas), and general recreational facilities such as canoe ramps and fishing platforms are not included as part of this study.

The types of infrastructure considered in the assessment of capacity are:

- boat ramps used for the launching and retrieval of vessels
- supporting infrastructure for the boat ramp:
 - queuing facilities (floating walkways, pontoons, queuing beaches)
 - parking for car-trailer units (CTUs)
- short-term landings accessible by deep-draught or non-trailable vessels on the outer face, or their tenders (for longer term tying up) on the inner/landward face or ends.

There may be instances where a public pontoon serves multiple purposes – as a short-term landing, as a tender tying up facility, and as a queuing facility for a boat ramp.

2. Local government area overview

The key characteristics and influences on recreational boating within the Mornington Shire Council area are that:

- The LGA is made up of many islands, with the main population centre on Mornington Island.
- The population of Mornington Shire Council is projected to increase from 1,196 persons in 2016 to 1,511 persons in 2036, or by 1.2% per annum, which is below the state-wide five year forecast average of 1.6% (Appendix B).
- Windy weather significantly reduces the annual number of days that are suitable for offshore boating.
- The area is considered to be a very remote LGA under the remoteness measures used by the Australian Bureau of Statistics.

3. Existing facilities

3.1 Overview of existing facilities

There are currently no formally recorded recreational boating facilities recorded in the Mornington Shire Council area. However, stakeholders indicated that there is one boat ramp used for recreational purposes by members of the Mornington Island community. A commercial jetty and barge ramp also service the community.

3.2 Boat ramp capacity

As there are no formal recreational boating facilities recorded, the capacity of existing facilities in the LGA is zero boat ramp lanes and zero landings.

However, given that there is a functioning boat ramp on the island that is used by the community for recreational boating, the capacity of that ramp has been included in this assessment. As no details on the ramp and its tidal access have been made available for this Study, the capacity provided by the ramp has been assessed as one boat ramp lane.

For future reference, the methodology for assessing boat ramp capacity is provided in Appendix A.

3.3 Landing capacity

While there are no recreational vessel landings on the island, there is a commercial jetty at Gununa next to the barge ramp. It has been assumed that this jetty can be accessed for recreational purposes. Water depths in the vicinity of this structure are unknown. Community stakeholders have not indicated that this landing is under pressure, or that there is any demand for a separate public landing in the LGA.

The Mornington Island jetty is sheltered from dominant wind and wave action, and the effective capacity has been assumed as being one landing.

4. Demand assessment

The assessment of demand for recreational boating has been evaluated in terms of facilities for launching and retrieval of vessels (that is, boat ramps), and landings for short-term stays (generally less than a couple of hours). The demand for:

- boat ramps is driven by trailable vessels that can access the ramp
- landing facilities is focussed on providing a network of short term landings that service key land-side destinations (such as shops) of relevance or attraction to the boating community, with a particular focus on larger (non-trailable) vessels.

4.1 Boat ramp demand

The demand for boat ramps has been quantitatively evaluated using vessel registrations as the key indicator. The vessel registrations have been converted to an effective lane demand based on a typical boat ramp lane being able to accommodate 40 launch/retrieval manoeuvres per day.

The following section details the assessment of vessel registrations taking into consideration where vessels are likely to be used relative to where they are registered, and the demographics of the local area.

Vessel registrations recorded for Mornington Shire Council extracted from Appendix B are summarised in Table 1.

Table 1 – Registered vessels, Mornington Shire Council

| Trailable vessel length | | Non-trailable vessels | Total |
|-------------------------|-----------|-----------------------|-------|
| Up to 4.5m | 4.5 to 8m | | |
| 16 | 13 | 2 | 31 |

Anecdotal evidence indicates that there are more vessels on the island, suggesting that there are a significant number of unregistered vessels used in the LGA. No indication of actual numbers of vessels was provided, so for consistency with other areas in the state, only registered vessels have been considered in this analysis.

4.1.1 Registration distribution

People using the boat ramp facilities at a particular location are attracted to that facility by several factors, including:

- proximity to home
- road access (quality and distance)
- proximity to vessel destination (reef, open water, islands, creeks, estuary, fishing grounds, skiing areas, and so on)
- quality of the experience and ease of use (launching/retrieval, parking, security, complementary facilities, and so on).

This means that at many locations and at various times, ramp users will travel out of the LGA in which their vessel is registered to use boat ramp facilities in a different LGA. In some locations,

demand is driven by ramp users from outside of the LGA, particularly if the ramp is in reasonable proximity to desirable boating destinations such as fishing grounds or popular islands.

Additional detail on the determination of the registration distribution is provided in Appendix B.

4.1.2 Registration activation

TMR's approach to the provision of infrastructure for recreational boating is to aim to satisfy average demand rather than peak demand (TMR, 2016)¹.

TMR recognises three levels of demand:

- off-peak demand – to be met in almost all circumstances
- average demand – taken to be demand for a facility on weekends (and for certain regional locations other busy periods)
- peak demand – being demand for a facility at peak holiday periods and for special events such as major fishing competitions.

The qualifier on certain regions and circumstances for average demand recognises that in some areas high numbers of shift workers tend to distribute the demand more evenly across each week.

Provision is not made by TMR for peak boating periods such as Christmas, Easter, school holidays, and long weekends. For facilities provided by them, councils and port/water authority managers may choose to cater for higher than average demand.

Research referenced in the previous demand assessment study (GHD, 2011)² indicated that average to high demand was represented by 8% to 14% of registered vessels seeking to use a boat ramp on a typical weekend. This percentage has been termed as “registration activation” for the purposes of this Study.

To better represent the demand within each local government area, refinement of the registration activation percentage considered the following factors as influencing boating popularity over other recreational opportunities:

- incidence of blue collar employment (based on Census data)
- average age of residents (based on Census data)
- remoteness classification by local government area
- whether the LGA is coastal.

Detail on the process for local refinement of registration activation is provided in Appendix B.

4.1.3 Boat ramp lane demand

As there are no formal boat ramp facilities in the LGA, it has been assumed that all (100%) local registered vessels are used at informal or unrecorded facilities within the LGA. The contribution to demand in the Mornington Shire Council area from other LGAs has been assessed as zero.

Current and future demand for recreational boating facilities within Mornington is low and is met by the existing facility. Assumptions used in the projections for future growth in demand are provided in Appendix B (Economic Associates report).

¹ TMR (2016) Marine Facilities and Infrastructure Plan

² GHD (2011) Recreational Boating Facilities Demand Forecasting Study. Report prepared for TMR, September.

4.2 Deep-draught vessel landing demand

4.2.1 Local usage and network

Within the Mornington LGA, there are no formal recreational deep-draught vessel landings, and there are few facilities available on the mainland to service a landing.

However, there is a commercial jetty on the island that can be used for recreational purposes. Community stakeholders have not indicated that there is any demand for a separate public landing in the LGA.

4.2.2 Landing demand

The projected demand for deep-draught vessel landings within the Mornington Shire Council area was assessed by Economic Associates as being driven by the size of the non-trailable fleet. The assessment indicates that the commercial jetty is sufficient to cater to current and future demand for a vessel landing.

5. Development needs and recommendations

The need for additional recreational boating infrastructure within the Mornington Shire Council area has been identified by comparing the existing capacity within the area with the expected demand.

5.1 Evaluation of needs

5.1.1 Development priorities

The priorities for development are linked to need and funding cycles, as follows:

- Priority 1 (P1) These sites are needed to meet existing demand.
- Priority 2 (P2) Assuming that the priority 1 sites are implemented, these sites are expected to be needed to meet additional demand over the five years ending 2021.
- Priority 3 (P3) Assuming that the priority 1 and 2 sites are implemented, these sites are expected to be needed to meet additional demand over the subsequent five years, that is 2021 to 2026.
- Priority 4 (P4) These sites are those that will meet future demand, but are not expected to be required before 2026 in demand terms but may be brought forward for construction for other reasons.

5.1.2 Quantification of shortfall – boat ramp lanes

Recognising the existing boat ramp facility, there is no shortfall of boat ramp lanes for the Mornington LGA.

5.1.3 Quantification of shortfall – deep-draught vessel landings

The assessment of shortfall in landings indicates that the existing commercial facility is sufficient to cater to current and future demand for a vessel landing.

5.2 Recommended priorities

After careful consideration of the development needs in the Mornington Shire Council area, it has been determined that the existing unrecorded facilities on the island are sufficient to meet the needs of the community. No additional facilities are recommended.

For future reference, the methodology for selecting development priorities is contained in Appendix C.

Appendices

Appendix A – Capacity assessment methodology

Boat ramp capacity

The function of a boat ramp is to provide access for launching and retrieval of trailable vessels into a waterway. Alternative launching facilities such as boat stackers are outside scope for this Study.

Boat ramp capacity evaluation

For the purposes of this Study, boat ramp capacity is measured as “effective” boat ramp lanes. An effective boat ramp is quantitatively characterised as being:

- capable of accommodating 40 launch / retrievals per lane per day (in accordance with Australian Standard AS 3962³ and Economic Associates (2011)⁴)
- supported by landside infrastructure such as queuing and manoeuvring areas
- supported by an appropriate number of CTU parking spaces.

The number of launch / retrievals per lane per day has been selected based on the relevant Australian Standard and Economic Associates (2011)⁴. This latter report summarised research undertaken by SKM (1988)⁵ and Rose et. al (2009)⁶, and stated that a rate of 30 boats per lane per day is considered to provide unhampered overall amenity, whereas a rate of 50 boats per lane per day represents congested operations; thus a midpoint of 40 launches / retrieves per day was selected to represent a balanced scenario.

TMR (2016)⁷ provides guidance on its standard/reference number of CTU spaces to match boat ramp lanes:

- 90 CTUs for four-lane ramps
- 70 CTUs for three-lane ramps
- 45 CTUs for two-lane ramps
- 15 CTUs for one-lane ramps with sealed road access
- 10 CTUs for one-lane ramps with all-weather, unsealed road access.

The above figures indicate an average relationship of 22.5 CTU spaces per “effective” lane. The TMR reference standards differ from the number of CTU spaces recommended for public boat launching ramps by AS 3962. That standard requires between 20 and 60 CTU spaces per ramp lane, depending on whether the ramp is in an urban or rural area, whether it has a queuing structure, and whether it has separate rigging and de-rigging areas. For local reasons, TMR may vary from these reference figures in particular cases.

The actual capacity, or “effectiveness” of a boat ramp is unique for each ramp, and is affected by:

- a reduction in the amount of time a ramp is available for use due to tidal variability, the seaward extent of ramp infrastructure, and navigable depths – at each ramp being measured as the % availability of the tidal range that a vessel can be realistically

³ AS 3962-2001 Guidelines for the design of marinas

⁴ Economic Associates (2011) Recreational Boating Facilities Demand Forecasting Study: Demand Analysis

⁵ SKM (1988) Public Boat Ramps Central Queensland Strategic Plan, Volume One, demand forecasting – Noosa to Yeppoon

⁶ Rose, T., Powell R., & Yu J. (2009) Identification of the Present and Future Recreational Boating Infrastructure in Redland City – A 10 year Infrastructure Plan, Griffith University

⁷ TMR (2016) Marine Facilities and Infrastructure Plan

launched or retrieved – with ramps classified as all-tide (100%), near all-tide (>80%), and part-tide (50%) for access – and the reduction in availability occurring either:

- at the ramp itself, and/or
- in access channels connecting the ramp to the sea/open water (such as at a river mouth or other channel depth constraint)
- the exposure of the ramp to regular, and sometimes major, wave action – these facilities tending to be beach ramps that are generally only suitable for short excursions in small boats in good weather and with suitable tides – accordingly these ramps are considered to be available only 50% of the time
- factors impacting efficient vessel launching and retrieval cycles, which include:
 - provision of queuing facilities such as pontoons, floating walkways or beaches – with such queuing facilities increasing the capacity of a boat ramp by providing a place for a vessel to be secured during vehicle parking or retrieval without blocking a ramp lane, leading to greater throughput
 - constrained or difficult manoeuvring of vehicles and trailers onto the ramp
 - long distances between the boat ramp and CTU parking spaces
- the physical extent of infrastructure provided, such as:
 - the width and number of ramp lanes
 - the number of CTU parking spaces within the facility
 - provision for overflow parking during busy periods.

To calculate effective lanes at a boat ramp, the following adjustments have been applied to water-side infrastructure:

- all-tide – no change (that is, multiplication factor of 1.0)
- near all-tide – available 80% of the time (that is, multiplication factor of 0.8)
- part-tide – available 50% of the time (that is, multiplication factor of 0.5)
- beach ramp – available 50% of the time (that is, multiplication factor of 0.5)
- access to a queuing facility in the form of a floating walkway – increase efficiency by 50% (that is, multiplication factor of 1.5)
- access to a queuing facility such as a gangway-access pontoon – increase efficiency by 20% (that is, multiplication factor of 1.2).

Access to a beach, while convenient, is not suitable for all vessel sizes or preferred by some vessel owners, and therefore has not been considered to improve the capacity of a boat ramp.

As an example, the water-side effective lanes for a near all-tide, two-lane boat ramp with a floating walkway will be calculated as:

| | | | | | | |
|-------|---|-----------------------|---|----------------------|---|--------------------|
| 2 | x | 0.8 | x | 1.5 | = | 2.4 |
| lanes | | tidal availability | | queuing structure | | effective lanes |

To calculate the land-side constraint on effective lanes, the following CTU groupings have been applied:

- 1 to 9 CTU – 0.5 effective lanes
- 10 to 20 CTU – 1 effective lane

- 21 to 29 CTU – 1.5 effective lanes
- 30 to 39 CTU – 1.8 effective lanes
- 40 to 54 CTU – 2 effective lanes
- 55 to 64 CTU – 2.5 effective lanes
- 65 to 75 CTU – 3 effective lanes
- 76 to 83 CTU – 3.5 effective lanes
- 84 to 97 CTU – 4 effective lanes
- 98 to 105 CTU – 4.5 effective lanes
- 106 to 117 CTU – 5 effective lanes
- 118 to 127 CTU – 5.5 effective lanes
- 128 to 140 CTU – 6 effective lanes
- 141 to 149 CTU – 6.5 effective lanes
- 150 to 157 CTU – 7 effective lanes.

Unmarked or unformed parking areas are denoted accordingly. The number of CTU parking bays may also be the limiting factor on effective capacity, owing to the number of bays provided being less than the TMR reference standard.

The effective capacity of a facility is therefore limited by the constraining or “bottlenecking” element, and to realise full capacity a facility must balance the land-side and water-side capacities.

Boat ramp classification

As previously discussed, each boat ramp is subject to a unique set of constraints and opportunities, particularly in relation to tidal accessibility. To understand how well existing boat ramp facilities meet current demand, consideration has also been given to the recreational destination(s) accessed by each facility. Where available, this has been informed by local knowledge on actual usage.

Regardless of the tidal range available at the ramp itself, boat ramps typically seek to cater to one or more of the following destinations:

- access to the sea for fishing, diving, islands, jet skiing, and general recreation
- access to creeks and estuaries for fishing, crabbing, skiing and general recreation
- access to fresh water for fishing, skiing, jet skiing, and general recreation.

However, there are some practical limitations on the usage of a ramp for these purposes. These include:

- vessel size, as:
 - Small vessels are unsuitable for use in open and exposed waters under most conditions, although they may be taken into nearshore waters in calm conditions or for short journeys. These vessels are most suited to use in protected waterways such as creeks and estuaries.
 - Large vessels suited to offshore use may be physically constrained in very narrow or shallow waterways, such as the upstream reaches of creeks or estuaries.
- travel time to destination, as:

- Although navigable access from a boat ramp to open water may be possible, it may not be practical due to the distance travelled by water and/or any speed restrictions that may be in place for the waterway. Most people will seek to launch at the facility that takes the least time to reach their destination. This is particularly the case for offshore destinations where larger volumes of fuel must be paid for and carried to allow for the journey.

Discussions with local government stakeholders throughout the state indicated that vessels longer than 4.5m were generally used to access offshore areas, with smaller vessels tending to be used for creek and estuary access. There will be circumstances where smaller vessels will be used to travel offshore and larger vessels will stay in protected waters.

At facilities where open-water access becomes difficult, the Study assumes that the facility will be more frequently used for accessing local creeks, estuaries, and freshwater areas. Facilities have therefore been classified into one of the following categories to reflect the primary level of accessibility between the ramp and open water:

- open-water access – all-tide access
- depth-limited – access to open-water possible but navigation limited at certain stages of the tide by water depth, for example, crossing a tidal bar, or sand shoals in an estuary
- distance-limited – access to open-water possible but limited by longer travel times between the ramp and open-water, for example due to long distances, or speed restrictions in the waterway – with, in some instances, depth also being a limitation but distance being considered as the main constraint
- infrastructure-limited – access limited by configuration or size or nature of the infrastructure, for example, a low bridge preventing navigation
- beach ramps
- no open-water access – access to open-water is not possible or practical, for example, a facility in a dam, or on the upstream side of a weir, barrage, or waterfall.

Landing capacity for deep-draught vessels

The function of most landings is to provide short-term shore access for deep-draught vessels to facilitate the transfer of passengers, provisions, or to make short excursions to the shore via tender dinghy. Landings may be located on the coast or in navigable river systems within the LGA, but are of little use unless sheltered from on-shore winds and wave action.

For this Study, landings include jetty and pontoon structures that facilitate direct berthing of non-trailable vessels (keel boats and >8.0m powerboats), transient vessels, and/or tenders from larger vessels (where effective anchoring, berthing, or mooring is available nearby).

Capacity evaluation

The measurement of the recreational capacity of a landing is complex, as it is affected by:

- exposure of the landing to wind and wave conditions
- size and condition of the landing
- tidal availability
- the length of stay permitted
- enforcement practices
- competition from non-recreational boating users (such as authorised commercial users).

To accommodate these factors, landing capacity has been considered in the context of each landing's:

- contribution to a network of public landings within the LGA, and within a day's sail of a landing outside the LGA
- proximity to existing private/commercial recreational boat landings that accommodate visitors (such as those provided by yacht clubs)
- ability to service key destinations, such as access to basic provisions, key population areas or recreational destinations
- proximity to existing anchorage or mooring areas
- anecdotal usage.

Appendix B – Demand assessment (Economic Associates)

Recreational Boating Facilities Demand Forecasting Study - 2016 Census Update

Final Report

December 2017



ECONOMIC ASSOCIATES

Recreational Boating Facilities Demand Forecasting Study - 2016 Census Update

Final Report

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1 INTRODUCTION

1.1 Purpose of study

Economic Associates (as a sub consultant to GHD Pty Ltd) were engaged by the Department of Transport and Main Roads (TMR) to undertake an assessment of the demand for recreational boating facilities at the local government area (LGA) level. Demand projections have been prepared at five year intervals to 2036 (that is, 2016, 2021, 2026, 2031 and 2036) and take into account current and future demand for recreational boat ramps and landings.

This study represents an update to the *Recreational Boating Facilities Demand Forecasting Study 2016*, taking into account 2016 Census data.

1.2 Report structure

The report has been structured as follows:

- Section 1: Introduction: Provides an outline of the purpose of the study and report structure
- Section 2: Projected size of recreational boating fleet: Provides an overview of the assumptions utilised in preparing estimates of the projected recreational boating fleet by LGA
- Section 3: Infrastructure demand assessment: Provides an overview of the assumptions utilised in preparing estimates of the demand for new or upgraded boat ramps and landings by LGA
- Section 4: References: Provides a summary of the references utilised in preparing this report.

1.3 Disclaimer

This report is based on the most up to date readily available information. Sources are documented in the report. Economic Associates has applied due professional care and diligence in accordance with generally accepted standards of professional practice in undertaking analysis and interpretation of source information. Economic Associates is not liable for damages arising from any errors or omissions arising from use of these information sources.

As this report involves future projections which can be affected by a number of unforeseen circumstances, it represent our best possible estimates and no warranty is given that these particular projections will eventuate.

2 PROJECTED SIZE OF RECREATIONAL BOATING FLEET

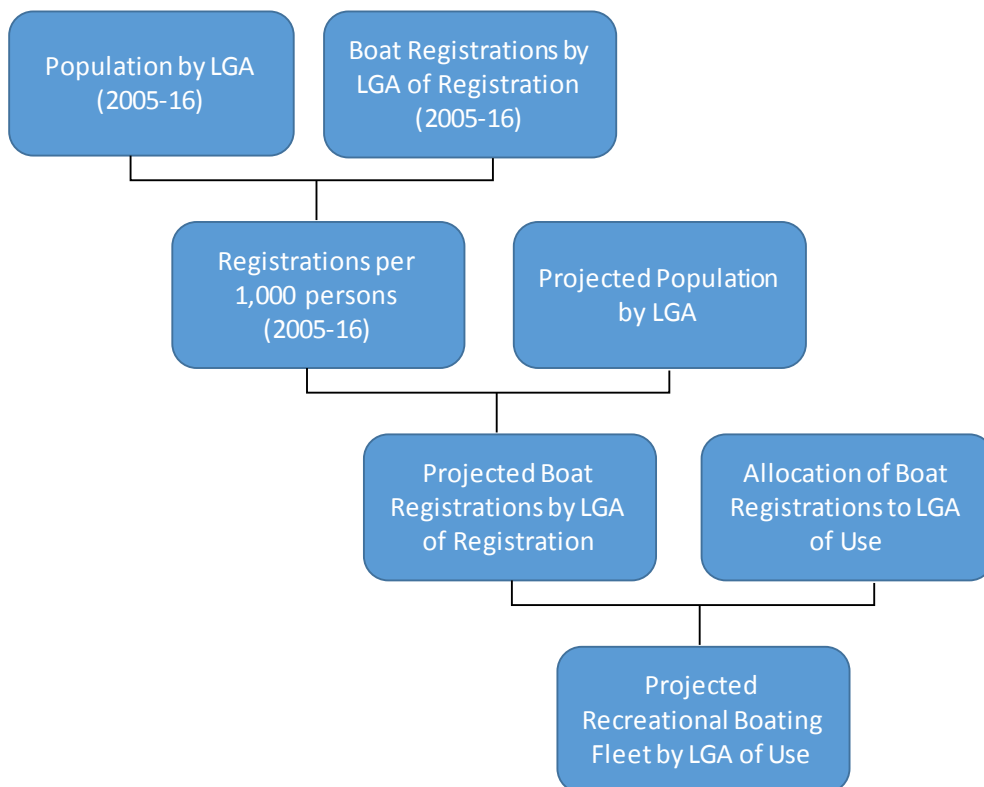
This section of the report provides a summary of the projected size of the recreational boating fleet by LGA, including a detailed explanation relating to the assumptions made in preparing the projections.

2.1 Methodology

In estimating the projected size of the recreational boating fleet, the assessment has made a number of assumptions relating to the current and projected size of the trailable and non-trailable fleet and the relationship between LGA of registration and LGA of waterway/facility use.

Figure 2.1 below outlines the methodology utilised in preparing the projected size of the recreational boating fleet by LGA of use.

Figure 2.1: Methodology utilised in projecting recreational boating fleet by LGA of use



2.2 Assumptions

2.2.1 Current size of recreational boating fleet

TMR provided data relating to historical boat registrations for the 2005 to 2016 period for the following categories:

- sail boats
- boats without sails, including:
 - motor boats without sails
 - speed boats
 - jet skis (or personal watercraft).

The data was provided by LGA of registration. This data was used to generate historical estimates of the size of the trailable and non-trailable boat fleet for each LGA, including the following sub-categories:

- trailable fleet, which comprises the following sub-categories:
 - boats up to 4.5 metres in length (including jet skis)
 - boats 4.5 – 8 metres in length
- non-trailable fleet (vessels most likely to be berthed at marinas or private moorings).

The trailable boat fleet has been estimated for two sub-classes to identify vessels that tend to be used inshore (vessels up to 4.5 metres in length) versus vessels which have the ability to travel offshore (vessels 4.5 – 8 metres in length). The 4.5 metre cut-off length was identified through consultation with LGA and port/water storage officers undertaken by GHD as part of this study, and confirmed by TMR officers as being reasonable and accepted for intended uses of the study.

Table 2.1 below summarises our assumptions in relation to the split of trailable boats and non-trailable boats based on the data provided by TMR. This assessment assumes that all boats greater than eight metres in length are non-trailable and that all jet skis are within the trailable boat fleet.

The incidence of trailable and non-trailable boats eight metres or less in length is consistent with the assumptions made in the *Recreational Boating Facilities Demand Forecasting Study 2011*.

Table 2.1: Estimated proportion of trailable and non-trailable boats, 2005-2016

| Length | Trailable | | Non-trailable | |
|--------------|------------|--------------------|---------------|--------------------|
| | sail boats | Boats without sail | Sail boats | Boats without sail |
| <3 metres | 100.0% | 100.0% | 0.0% | 0.0% |
| 3-5 metres | 90.0% | 100.0% | 10.0% | 0.0% |
| 5-8 metres | 50.0% | 85.0% | 50.0% | 15.0% |
| 8-10 metres | 0.0% | 0.0% | 100.0% | 100.0% |
| 10-12 metres | 0.0% | 0.0% | 100.0% | 100.0% |
| 12-15 metres | 0.0% | 0.0% | 100.0% | 100.0% |
| 15-25 metres | 0.0% | 0.0% | 100.0% | 100.0% |
| >25 metres | 0.0% | 0.0% | 100.0% | 100.0% |

Source: Economic Associates estimates

In 2016, there were 996 vessel registrations that were not assigned to an LGA in Queensland¹, comprising 983 interstate registrations, five overseas registrations and eight unknown registrations. For this assessment, the following assumptions have been made for the allocation of these registrations to the trailable and non-trailable boat fleets:

- *Interstate registrations:* Interstate registrations have been allocated in the manner outlined in Table 2.1 above, as it is considered likely that the majority of interstate registrations of a trailable length are within northern NSW.
- *Overseas and unknown registrations:* The assessment has assumed that all overseas and unknown registrations are of a non-trailable nature.

Based on the assumptions presented in Table 2.1 above and the allocation of interstate, overseas and unknown registrations, the estimated size of the recreational boating fleet in Queensland was 279,586 vessels in 2016, comprising:

- 184,835 trailable boats up to 4.5 metres in length (including jet skis)
- 73,462 trailable boats 4.5 – 8 metres in length
- 21,289 non-trailable boats.

Not surprisingly, the size of the recreational boating fleet was highest in a number of South-east Queensland councils, Mackay Regional Council, Townsville City Council, and Cairns Regional Council.

Table 2.2 below presents the estimated size of the recreational boating fleet in Queensland and each of the component LGAs in 2016.

Table 2.2: Estimated size of recreational boating fleet by LGA, Queensland, 2016

| LGA of registration | Trailable | | Non-trailable | Total |
|-----------------------|------------|--------|---------------|--------|
| | Up to 4.5m | 4.5-8m | | |
| Aurukun (S) | 9 | 9 | 0 | 18 |
| Balonne (S) | 229 | 93 | 14 | 336 |
| Banana (S) | 928 | 371 | 54 | 1,353 |
| Barcaldine (R) | 120 | 46 | 6 | 172 |
| Barcoo (S) | 22 | 7 | 2 | 31 |
| Blackall-Tambo (R) | 73 | 24 | 3 | 100 |
| Boulia (S) | 11 | 2 | 0 | 13 |
| Brisbane (C) | 18,600 | 7,539 | 3,009 | 29,148 |
| Bulloo (S) | 10 | 2 | 0 | 12 |
| Bundaberg (R) | 7,483 | 1,711 | 418 | 9,612 |
| Burdekin (S) | 2,560 | 887 | 123 | 3,570 |
| Burke (S) | 34 | 14 | 2 | 50 |
| Cairns (R) | 6,650 | 3,584 | 996 | 11,229 |
| Carpentaria (S) | 148 | 79 | 14 | 241 |
| Cassowary Coast (R) | 2,718 | 1,576 | 298 | 4,592 |
| Central Highlands (R) | 1,507 | 720 | 120 | 2,347 |
| Charters Towers (R) | 524 | 170 | 23 | 717 |
| Cherbourg (S) | 0 | 1 | 0 | 1 |
| Cloncurry (S) | 125 | 55 | 6 | 186 |
| Cook (S) | 304 | 177 | 67 | 548 |
| Croydon (S) | 11 | 4 | 0 | 15 |
| Diamantina (S) | 6 | 0 | 1 | 7 |

¹ The 996 vessel registrations not registered in an LGA in Queensland accounted for less than 0.4% of the total recreational fleet in 2016.

| LGA of registration | Trailable | | Non-trailable | Total |
|-----------------------------|----------------|---------------|---------------|----------------|
| | Up to 4.5m | 4.5-8m | | |
| Doomadgee (S) | 2 | 2 | 0 | 4 |
| Douglas (S) | 908 | 664 | 175 | 1,747 |
| Etheridge (S) | 38 | 12 | 1 | 51 |
| Flinders (S) | 83 | 30 | 7 | 120 |
| Fraser Coast (R) | 7,252 | 2,902 | 821 | 10,975 |
| Gladstone (R) | 5,148 | 2,435 | 538 | 8,121 |
| Gold Coast (C) | 24,407 | 8,121 | 3,739 | 36,266 |
| Goondiwindi (R) | 659 | 202 | 25 | 886 |
| Gympie (R) | 2,656 | 937 | 235 | 3,828 |
| Hinchinbrook (S) | 1,428 | 635 | 118 | 2,180 |
| Hope Vale (S) | 17 | 14 | 4 | 35 |
| Ipswich (C) | 4,537 | 1,630 | 282 | 6,449 |
| Isaac (R) | 1,381 | 611 | 111 | 2,103 |
| Kowanyama (S) | 8 | 1 | 0 | 9 |
| Livingstone (S) | 2,821 | 1,507 | 504 | 4,831 |
| Lockhart River (S) | 7 | 5 | 4 | 16 |
| Lockyer Valley (R) | 1,285 | 461 | 78 | 1,824 |
| Logan (C) | 8,691 | 3,593 | 789 | 13,074 |
| Longreach (R) | 191 | 59 | 7 | 257 |
| Mackay (R) | 9,909 | 3,515 | 814 | 14,238 |
| McKinlay (S) | 48 | 21 | 4 | 73 |
| Mapoon (S) | 8 | 5 | 0 | 13 |
| Maranoa (R) | 544 | 180 | 22 | 746 |
| Mareeba (S) | 838 | 353 | 79 | 1,270 |
| Moreton Bay (R) | 16,249 | 5,992 | 1,637 | 23,878 |
| Mornington (S) | 16 | 13 | 2 | 31 |
| Mount Isa (C) | 700 | 402 | 43 | 1,145 |
| Murweh (S) | 137 | 46 | 6 | 189 |
| Napranum (S) | 7 | 4 | 0 | 11 |
| Noosa (S) | 2,564 | 1,175 | 290 | 4,029 |
| North Burnett (R) | 633 | 182 | 26 | 841 |
| Northern Peninsula Area (R) | 25 | 46 | 9 | 80 |
| Palm Island (S) | 43 | 37 | 6 | 86 |
| Paroo (S) | 40 | 12 | 2 | 54 |
| Porpuraaw (S) | 3 | 1 | 0 | 4 |
| Quilpie (S) | 32 | 8 | 1 | 41 |
| Redland (C) | 7,692 | 3,897 | 1,473 | 13,061 |
| Richmond (S) | 45 | 20 | 2 | 66 |
| Rockhampton (R) | 3,777 | 1,405 | 292 | 5,473 |
| Scenic Rim (R) | 1,300 | 490 | 122 | 1,912 |
| Somerset (R) | 1,037 | 356 | 68 | 1,461 |
| South Burnett (R) | 1,447 | 450 | 66 | 1,963 |
| Southern Downs (R) | 1,119 | 314 | 42 | 1,475 |
| Sunshine Coast (R) | 12,641 | 4,148 | 1,225 | 18,013 |
| Tablelands (R) | 1,695 | 704 | 150 | 2,548 |
| Toowoomba (R) | 4,522 | 1,593 | 250 | 6,365 |
| Torres (S) | 107 | 172 | 32 | 311 |
| Torres Strait Island (R) | 6 | 9 | 2 | 17 |
| Townsville (C) | 8,289 | 3,998 | 916 | 13,203 |
| Weipa (T) | 230 | 237 | 37 | 504 |
| Western Downs (R) | 1,525 | 643 | 86 | 2,254 |
| Whitsunday (R) | 3,387 | 1,904 | 750 | 6,041 |
| Winton (S) | 32 | 11 | 2 | 45 |
| Woorabinda (S) | 3 | 0 | 0 | 3 |
| Wujal Wujal (S) | 4 | 4 | 0 | 8 |
| Yarrabah (S) | 36 | 25 | 3 | 64 |
| Interstate | 560 | 201 | 223 | 983 |
| Overseas | 0 | 0 | 5 | 5 |
| Unknown | 0 | 0 | 8 | 8 |
| Total | 184,835 | 73,462 | 21,289 | 279,586 |

Note: All registrations with an overseas or unknown address were classified as non-trailable as they were likely to be stored in marinas or dry storage facilities. Source: Economic Associates estimates based on data provided by TMR.

2.2.2 Historical incidence of boat ownership

To determine the projected number of boat registrations in each LGA, the boat registration data, in conjunction with historical population data, has been analysed to calculate the historical incidence of boat ownership (that is, the number of boat registrations per 1,000 persons). The historical incidence of boat ownership was calculated for the trailable and non-trailable fleets, as defined in Section 2.1.1 above.

In the 2005 to 2016 period, the average incidence of boat ownership was as follows:

- trailable boats up to 4.5 metres in length (including jet skis): 0.00 – 140.93 boats/1,000 persons
- trailable boats 4.5 – 8 metres in length: 0.26 – 81.45 boats/1,000 persons
- non-trailable boats: 0.00 – 22.39 boats/1,000 persons.

The historical incidence of boat ownership is highest in coastal communities such as Hinchinbrook Shire, Burdekin Shire, Cook Shire, Douglas Shire, Cassowary Coast, Livingstone Shire, Town of Weipa, and Whitsunday. Of these coastal communities, only Cook Shire recorded a decline in the incidence of boat ownership between 2005 and 2016.

Table 2.3 below summarises the average historical incidence of boat ownership by vessel class in the 2005 to 2016 period, by LGA.

Table 2.3: Historical incidence of boat ownership (registrations / 1,000 persons) by LGA, 2005-2016

| LGA of registration | Trailable | | Non-trailable | Change in incidence of boat ownership, 2005-2016 | | |
|-----------------------|------------|--------|---------------|--|------------------|---------------|
| | Up to 4.5m | 4.5-8m | | Trailable up to 4.5m | Trailable 4.5-8m | Non-trailable |
| Aurukun (S) | 10.04 | 4.02 | 0.38 | Decrease | Decrease | Decrease |
| Balonne (S) | 40.95 | 17.04 | 2.49 | Increase | Increase | Increase |
| Banana (S) | 57.80 | 21.42 | 3.19 | Increase | Increase | Increase |
| Barcaldine (R) | 35.58 | 11.60 | 1.44 | Increase | Increase | Increase |
| Barcoo (S) | 51.88 | 10.19 | 0.79 | Increase | Increase | Increase |
| Blackall-Tambo (R) | 33.64 | 10.24 | 1.24 | Increase | Increase | Increase |
| Boulia (S) | 24.48 | 7.22 | 1.21 | Increase | Decrease | Decrease |
| Brisbane (C) | 15.62 | 6.91 | 2.83 | Decrease | Decrease | Decrease |
| Bulloo (S) | 28.32 | 5.12 | 0.81 | Increase | Increase | Increase |
| Bundaberg (R) | 74.12 | 16.67 | 4.32 | Increase | Increase | Increase |
| Burdekin (S) | 140.93 | 42.78 | 5.86 | Increase | Increase | Increase |
| Burke (S) | 57.71 | 19.99 | 3.16 | Increase | Increase | Increase |
| Cairns (R) | 39.61 | 20.12 | 5.61 | Increase | Increase | Increase |
| Carpentaria (S) | 78.97 | 36.00 | 5.52 | Decrease | Decrease | Increase |
| Cassowary Coast (R) | 89.70 | 47.12 | 9.85 | Increase | Increase | Increase |
| Central Highlands (R) | 49.70 | 23.49 | 3.81 | Increase | Increase | Increase |
| Charters Towers (R) | 40.01 | 11.72 | 1.44 | Increase | Increase | Increase |
| Cherbourg (S) | 0.00 | 0.26 | 0.00 | Decrease | Increase | Decrease |
| Cloncurry (S) | 34.44 | 13.93 | 1.73 | Increase | Increase | Increase |
| Cook (S) | 95.67 | 50.50 | 17.49 | Decrease | Decrease | Decrease |
| Croydon (S) | 52.07 | 18.63 | 1.98 | Increase | Increase | Increase |
| Diamantina (S) | 4.63 | 3.52 | 3.97 | Increase | Decrease | Increase |
| Doomadgee (S) | 0.89 | 0.48 | 0.09 | Increase | Increase | Increase |
| Douglas (S) | 73.99 | 42.56 | 13.53 | Increase | Increase | Increase |
| Etheridge (S) | 37.89 | 10.53 | 1.15 | Increase | Increase | Increase |
| Flinders (S) | 46.87 | 13.61 | 2.29 | Increase | Increase | Increase |

| LGA of registration | Trailable | | Non-trailable | Change in incidence of boat ownership, 2005-2016 | | |
|-----------------------------|-----------|-------|---------------|--|----------|----------|
| | | | | | | |
| Fraser Coast (R) | 66.53 | 26.79 | 7.61 | Increase | Increase | Increase |
| Gladstone (R) | 79.06 | 35.29 | 8.60 | Increase | Increase | Increase |
| Gold Coast (C) | 37.91 | 15.37 | 6.89 | Increase | Decrease | Increase |
| Goondiwindi (R) | 56.75 | 16.61 | 1.96 | Increase | Increase | Increase |
| Gympie (R) | 53.76 | 19.88 | 5.72 | Increase | Decrease | Decrease |
| Hinchinbrook (S) | 127.50 | 47.34 | 8.75 | Increase | Increase | Increase |
| Hope Vale (S) | 9.23 | 12.70 | 2.24 | Increase | Increase | Increase |
| Ipswich (C) | 22.38 | 8.70 | 1.50 | Increase | Decrease | Decrease |
| Isaac (R) | 66.00 | 27.22 | 4.91 | Decrease | Increase | Increase |
| Kowanyama (S) | 12.03 | 1.04 | 0.19 | Increase | Increase | Increase |
| Livingstone (S) | 76.25 | 35.82 | 11.49 | Increase | Increase | Increase |
| Lockhart River (S) | 13.47 | 9.89 | 3.44 | Increase | Increase | Increase |
| Lockyer Valley (R) | 28.06 | 10.09 | 1.64 | Increase | Increase | Increase |
| Logan (C) | 24.97 | 11.89 | 3.11 | Increase | Increase | Decrease |
| Longreach (R) | 44.70 | 11.47 | 1.31 | Increase | Increase | Increase |
| Mackay (R) | 80.15 | 26.34 | 7.12 | Increase | Increase | Increase |
| McKinlay (S) | 44.64 | 21.46 | 2.75 | Increase | Increase | Increase |
| Mapoon (S) | 11.81 | 20.58 | 2.47 | Increase | Increase | Increase |
| Maranoa (R) | 33.16 | 10.21 | 1.05 | Increase | Increase | Increase |
| Mareeba (S) | 41.49 | 15.42 | 3.37 | Decrease | Increase | Increase |
| Moreton Bay (R) | 35.99 | 14.15 | 3.83 | Increase | Increase | Increase |
| Mornington (S) | 13.72 | 8.46 | 0.69 | Increase | Increase | Increase |
| Mount Isa (C) | 34.93 | 16.02 | 1.80 | Increase | Increase | Increase |
| Murweh (S) | 24.34 | 7.78 | 0.96 | Increase | Increase | Increase |
| Napranum (S) | 2.55 | 1.05 | 0.10 | Increase | Increase | Increase |
| Noosa (S) | 49.02 | 20.44 | 5.63 | Increase | Increase | Decrease |
| North Burnett (R) | 56.88 | 14.71 | 2.21 | Increase | Increase | Increase |
| Northern Peninsula Area (R) | 13.50 | 16.20 | 2.89 | Increase | Increase | Increase |
| Palm Island (S) | 16.22 | 10.97 | 1.26 | Increase | Increase | Increase |
| Paroo (S) | 18.54 | 4.45 | 0.68 | Increase | Increase | Increase |
| Pormpuraaw (S) | 8.67 | 1.63 | 0.46 | Increase | Increase | Decrease |
| Quilpie (S) | 31.95 | 4.81 | 1.14 | Increase | Increase | Increase |
| Redland (C) | 45.06 | 25.97 | 9.87 | Increase | Increase | Increase |
| Richmond (S) | 54.01 | 21.46 | 1.50 | Increase | Increase | Increase |
| Rockhampton (R) | 38.81 | 15.38 | 3.87 | Increase | Increase | Increase |
| Scenic Rim (R) | 29.04 | 11.75 | 3.48 | Increase | Decrease | Decrease |
| Somerset (R) | 36.11 | 11.96 | 2.16 | Increase | Increase | Increase |
| South Burnett (R) | 37.61 | 12.34 | 1.85 | Increase | Increase | Increase |
| Southern Downs (R) | 26.78 | 7.78 | 1.01 | Increase | Increase | Increase |
| Sunshine Coast (R) | 39.41 | 14.10 | 4.13 | Increase | Increase | Increase |
| Tablelands (R) | 59.99 | 22.48 | 4.76 | Increase | Increase | Increase |
| Toowoomba (R) | 24.81 | 8.34 | 1.32 | Increase | Increase | Increase |
| Torres (S) | 36.94 | 52.51 | 8.75 | Decrease | Decrease | Decrease |
| Torres Strait Island (R) | 1.24 | 2.16 | 0.38 | Increase | Increase | Increase |
| Townsville (C) | 45.60 | 19.29 | 4.71 | Decrease | Increase | Increase |
| Weipa (T) | 94.96 | 81.45 | 13.46 | Increase | Increase | Increase |
| Western Downs (R) | 39.52 | 16.37 | 2.15 | Increase | Increase | Increase |
| Whitsunday (R) | 95.32 | 47.25 | 22.39 | Increase | Increase | Increase |
| Winton (S) | 26.57 | 7.06 | 1.06 | Increase | Increase | Increase |
| Woorabinda (S) | 17.89 | 4.02 | 0.24 | Increase | Decrease | Decrease |
| Wujal Wujal (S) | 18.41 | 8.76 | 1.27 | Increase | Increase | Increase |
| Yarrabah (S) | 14.68 | 5.85 | 0.80 | Increase | Increase | Increase |

Note: Decrease - a decline in the incidence of boat ownership per 1,000 persons between 2005 and 2016, Increase - an increase in the incidence of boat ownership per 1,000 persons between 2005 and 2016.

Source: Economic Associates estimates based on data provided by TMR

2.2.3 Projected population by LGA

To project boat registrations by LGA, this analysis assumes that the incidence of new boat registrations post 2016 is consistent with the 2005-2016 average (as outlined in Table 2.3 above).

The assessment has relied on the latest projections prepared by the Queensland Government Statistician's office (Queensland Government 2015, Population Projections by LGA, medium series), rebased to take into consideration the 2016 population estimates published by the Australian Bureau of Statistics (released subsequent to the 2016 Census of Population and Housing).

Table 2.4 below outlines the projected population of each LGA in Queensland.

Table 2.4: Projected population by LGA, medium series, 2016-2036

| | 2016 | 2021 | 2026 | 2031 | 2036 |
|-----------------------|-----------|-----------|-----------|-----------|-----------|
| Aurukun (S) | 1,323 | 1,348 | 1,429 | 1,508 | 1,583 |
| Balonne (S) | 4,480 | 4,424 | 4,391 | 4,370 | 4,360 |
| Banana (S) | 14,607 | 14,871 | 15,147 | 15,394 | 15,610 |
| Barcaldine (R) | 2,909 | 2,917 | 2,930 | 2,944 | 2,961 |
| Barcoo (S) | 272 | 260 | 250 | 241 | 233 |
| Blackall-Tambo (R) | 1,924 | 1,936 | 1,957 | 1,978 | 2,004 |
| Boulia (S) | 437 | 431 | 426 | 419 | 413 |
| Brisbane (C) | 1,184,215 | 1,253,917 | 1,313,403 | 1,382,062 | 1,442,700 |
| Bulloo (S) | 360 | 346 | 332 | 319 | 306 |
| Bundaberg (R) | 94,453 | 99,443 | 105,027 | 110,562 | 116,082 |
| Burdekin (S) | 17,313 | 17,584 | 17,932 | 18,237 | 18,482 |
| Burke (S) | 342 | 366 | 390 | 414 | 436 |
| Cairns (R) | 162,451 | 176,549 | 192,763 | 209,532 | 226,125 |
| Carpentaria (S) | 2,051 | 2,066 | 2,088 | 2,112 | 2,136 |
| Cassowary Coast (R) | 29,396 | 29,217 | 29,215 | 29,362 | 29,623 |
| Central Highlands (R) | 28,783 | 30,502 | 32,128 | 33,686 | 35,239 |
| Charters Towers (R) | 12,074 | 12,228 | 12,368 | 12,536 | 12,697 |
| Cherbourg (S) | 1,296 | 1,327 | 1,370 | 1,423 | 1,475 |
| Cloncurry (S) | 3,114 | 3,129 | 3,164 | 3,212 | 3,250 |
| Cook (S) | 4,424 | 4,460 | 4,489 | 4,500 | 4,501 |
| Croydon (S) | 300 | 303 | 311 | 318 | 324 |
| Diamantina (S) | 297 | 290 | 283 | 276 | 270 |
| Doomadgee (S) | 1,474 | 1,554 | 1,639 | 1,724 | 1,811 |
| Douglas (S) | 11,997 | 12,618 | 13,350 | 14,121 | 14,903 |
| Etheridge (S) | 819 | 801 | 797 | 793 | 789 |
| Flinders (S) | 1,569 | 1,523 | 1,482 | 1,443 | 1,409 |
| Fraser Coast (R) | 102,953 | 109,451 | 117,758 | 126,200 | 133,958 |
| Gladstone (R) | 63,288 | 71,179 | 79,595 | 88,257 | 96,407 |
| Gold Coast (C) | 576,918 | 637,516 | 716,113 | 800,916 | 888,608 |
| Goondiwindi (R) | 10,837 | 10,911 | 11,014 | 11,125 | 11,241 |
| Gympie (R) | 50,292 | 52,742 | 55,650 | 58,570 | 61,556 |
| Hinchinbrook (S) | 10,990 | 10,588 | 10,172 | 9,728 | 9,274 |
| Hope Vale (S) | 967 | 1,042 | 1,118 | 1,191 | 1,263 |
| Ipswich (C) | 200,123 | 239,761 | 312,287 | 397,611 | 494,461 |
| Isaac (R) | 21,563 | 22,822 | 24,381 | 26,033 | 27,637 |
| Kowanyama (S) | 984 | 1,016 | 1,049 | 1,082 | 1,115 |
| Livingstone (S) | 37,055 | 40,446 | 44,904 | 49,930 | 55,691 |
| Lockhart River (S) | 747 | 833 | 926 | 1,021 | 1,115 |
| Lockyer Valley (R) | 39,486 | 43,477 | 47,824 | 52,301 | 56,757 |
| Logan (C) | 313,785 | 343,395 | 386,764 | 432,492 | 493,469 |
| Longreach (R) | 3,727 | 3,622 | 3,530 | 3,441 | 3,360 |
| Mackay (R) | 117,703 | 126,031 | 136,237 | 147,596 | 159,564 |
| McKinlay (S) | 810 | 830 | 849 | 865 | 879 |

| | 2016 | 2021 | 2026 | 2031 | 2036 |
|-----------------------------|------------------|------------------|------------------|------------------|------------------|
| Mapoon (S) | 322 | 333 | 345 | 357 | 369 |
| Maranoa (R) | 12,928 | 13,611 | 14,438 | 15,292 | 16,147 |
| Mareeba (S) | 22,157 | 22,293 | 22,459 | 22,581 | 22,684 |
| Moreton Bay (R) | 438,313 | 484,280 | 536,815 | 584,862 | 627,462 |
| Mornington (S) | 1,196 | 1,277 | 1,358 | 1,435 | 1,511 |
| Mount Isa (C) | 19,332 | 20,060 | 20,821 | 21,553 | 22,266 |
| Murweh (S) | 4,391 | 4,306 | 4,235 | 4,167 | 4,109 |
| Napranum (S) | 1,001 | 1,025 | 1,049 | 1,068 | 1,086 |
| Noosa (S) | 54,033 | 55,976 | 58,591 | 60,599 | 62,406 |
| North Burnett (R) | 10,623 | 10,454 | 10,367 | 10,273 | 10,169 |
| Northern Peninsula Area (R) | 2,952 | 3,153 | 3,352 | 3,537 | 3,707 |
| Palm Island (S) | 2,602 | 2,724 | 2,854 | 2,981 | 3,105 |
| Paroo (S) | 1,686 | 1,605 | 1,534 | 1,468 | 1,408 |
| Porpuraaw (S) | 785 | 828 | 874 | 919 | 964 |
| Quilpie (S) | 833 | 798 | 766 | 735 | 706 |
| Redland (C) | 151,987 | 162,352 | 173,030 | 180,987 | 185,065 |
| Richmond (S) | 800 | 761 | 730 | 703 | 680 |
| Rockhampton (R) | 81,589 | 85,694 | 90,105 | 94,555 | 99,104 |
| Scenic Rim (R) | 40,975 | 45,769 | 51,157 | 57,608 | 63,336 |
| Somerset (R) | 25,173 | 27,640 | 30,367 | 33,183 | 35,991 |
| South Burnett (R) | 32,747 | 34,237 | 36,000 | 37,783 | 39,542 |
| Southern Downs (R) | 35,622 | 36,827 | 38,046 | 39,262 | 40,452 |
| Sunshine Coast (R) | 303,389 | 338,162 | 379,049 | 423,122 | 467,945 |
| Tablelands (R) | 25,312 | 26,192 | 27,315 | 28,489 | 29,659 |
| Toowoomba (R) | 164,595 | 173,366 | 183,672 | 194,109 | 204,314 |
| Torres (S) | 3,789 | 3,900 | 4,028 | 4,161 | 4,301 |
| Torres Strait Island (R) | 4,785 | 4,836 | 4,898 | 4,958 | 5,022 |
| Townsville (C) | 192,058 | 211,600 | 233,015 | 255,311 | 278,025 |
| Weipa (T) | 4,024 | 4,373 | 4,646 | 5,008 | 5,347 |
| Western Downs (R) | 34,197 | 35,682 | 37,248 | 38,794 | 40,283 |
| Whitsunday (R) | 34,626 | 37,290 | 40,187 | 42,964 | 45,873 |
| Winton (S) | 1,156 | 1,118 | 1,085 | 1,055 | 1,028 |
| Woorabinda (S) | 992 | 1,014 | 1,045 | 1,077 | 1,114 |
| Wujal Wujal (S) | 296 | 303 | 310 | 316 | 321 |
| Yarrabah (S) | 2,703 | 2,835 | 3,006 | 3,184 | 3,363 |
| Total | 4,848,877 | 5,246,746 | 5,728,030 | 6,240,301 | 6,764,941 |

Source: Queensland Treasury (2016), ABS (2017b)

2.3 Projected size of recreational boating fleet

2.3.1 Projected size of fleet by LGA of registration

Based on the assumptions outlined above, the projected size of the recreational boating fleet registered in Queensland is projected to increase from 279,586 boats in 2016 to 381,988 boats in 2036, with the composition in 2036 anticipated to be as follows:

- 251,600 trailable boats up to 4.5 metres in length
- 100,795 trailable boats 4.5 – 8 metres in length
- 29,594 non-trailable boats.

Growth in the number of registrations is anticipated to be highest in a number of South-east Queensland councils, Cairns Regional Council, Townsville City Council and Mackay Regional Council.

Table 2.5 below summarises the projected size of the recreational boating fleet in Queensland by LGA of registration, between 2016 and 2036.

Table 2.5: Projected size of recreational boating fleet by LGA of registration, 2016-2036

| | Trailable Fleet up to 4.5 metres | | | | | Trailable Fleet 4.5 - 8 metres | | | | | Non-Trailable Fleet | | | | |
|-----------------------|----------------------------------|--------|--------|--------|--------|--------------------------------|-------|--------|--------|--------|---------------------|-------|-------|-------|-------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Aurukun (S) | 9 | 9 | 10 | 11 | 12 | 9 | 9 | 9 | 9 | 10 | 0 | 0 | 0 | 1 | 1 |
| Balonne (S) | 229 | 227 | 225 | 225 | 224 | 93 | 92 | 92 | 91 | 91 | 14 | 14 | 14 | 14 | 14 |
| Banana (S) | 928 | 943 | 959 | 973 | 986 | 371 | 377 | 382 | 388 | 392 | 54 | 55 | 56 | 57 | 57 |
| Barcardine (R) | 120 | 120 | 121 | 121 | 122 | 46 | 46 | 46 | 46 | 47 | 6 | 6 | 6 | 6 | 6 |
| Barcoo (S) | 22 | 21 | 21 | 20 | 20 | 7 | 7 | 7 | 7 | 7 | 2 | 2 | 2 | 2 | 2 |
| Blackall-Tambo (R) | 73 | 73 | 74 | 75 | 76 | 24 | 24 | 24 | 25 | 25 | 3 | 3 | 3 | 3 | 3 |
| Boulia (S) | 11 | 11 | 11 | 11 | 10 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Brisbane (C) | 18,600 | 19,688 | 20,615 | 21,686 | 22,630 | 7,539 | 8,022 | 8,436 | 8,914 | 9,337 | 3,009 | 3,207 | 3,377 | 3,573 | 3,746 |
| Bulloo (S) | 10 | 10 | 9 | 9 | 8 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Bundaberg (R) | 7,483 | 7,853 | 8,267 | 8,677 | 9,086 | 1,711 | 1,794 | 1,887 | 1,980 | 2,072 | 418 | 440 | 464 | 488 | 511 |
| Burdekin (S) | 2,560 | 2,598 | 2,647 | 2,690 | 2,724 | 887 | 899 | 914 | 927 | 937 | 123 | 125 | 127 | 128 | 130 |
| Burke (S) | 34 | 35 | 37 | 38 | 39 | 14 | 14 | 15 | 15 | 16 | 2 | 2 | 3 | 3 | 3 |
| Cairns (R) | 6,650 | 7,208 | 7,850 | 8,514 | 9,172 | 3,584 | 3,867 | 4,194 | 4,531 | 4,865 | 996 | 1,075 | 1,166 | 1,260 | 1,353 |
| Carpentaria (S) | 148 | 149 | 151 | 153 | 155 | 79 | 80 | 81 | 81 | 82 | 14 | 14 | 14 | 14 | 14 |
| Cassowary Coast (R) | 2,718 | 2,702 | 2,702 | 2,715 | 2,739 | 1,576 | 1,567 | 1,567 | 1,574 | 1,586 | 298 | 296 | 296 | 298 | 300 |
| Central Highlands (R) | 1,507 | 1,592 | 1,673 | 1,751 | 1,828 | 720 | 761 | 799 | 836 | 872 | 120 | 126 | 132 | 138 | 144 |
| Charters Towers (R) | 524 | 530 | 536 | 542 | 549 | 170 | 172 | 174 | 176 | 177 | 23 | 23 | 23 | 24 | 24 |
| Cherbourg (S) | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Cloncurry (S) | 125 | 126 | 127 | 128 | 130 | 55 | 55 | 56 | 56 | 57 | 6 | 6 | 6 | 6 | 6 |
| Cook (S) | 304 | 307 | 310 | 311 | 311 | 177 | 179 | 180 | 181 | 181 | 67 | 68 | 68 | 69 | 69 |
| Croydon (S) | 11 | 11 | 12 | 12 | 12 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| Diamantina (S) | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| Doomadgee (S) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Douglas (S) | 908 | 954 | 1,008 | 1,065 | 1,123 | 664 | 691 | 722 | 755 | 788 | 175 | 183 | 193 | 204 | 214 |
| Etheridge (S) | 38 | 37 | 37 | 37 | 37 | 12 | 11 | 11 | 11 | 11 | 1 | 1 | 1 | 1 | 1 |
| Flinders (S) | 83 | 81 | 79 | 77 | 75 | 30 | 30 | 29 | 28 | 28 | 7 | 7 | 7 | 7 | 6 |
| Fraser Coast (R) | 7,252 | 7,685 | 8,237 | 8,799 | 9,315 | 2,902 | 3,076 | 3,299 | 3,525 | 3,733 | 821 | 870 | 933 | 997 | 1,056 |
| Gladstone (R) | 5,148 | 5,772 | 6,437 | 7,122 | 7,766 | 2,435 | 2,713 | 3,010 | 3,316 | 3,604 | 538 | 606 | 679 | 753 | 823 |
| Gold Coast (C) | 24,407 | 26,704 | 29,684 | 32,899 | 36,224 | 8,121 | 9,052 | 10,260 | 11,564 | 12,911 | 3,739 | 4,156 | 4,698 | 5,282 | 5,887 |
| Goondiwindi (R) | 659 | 663 | 669 | 675 | 682 | 202 | 203 | 204 | 206 | 208 | 25 | 26 | 26 | 26 | 26 |
| Gympie (R) | 2,656 | 2,787 | 2,944 | 3,101 | 3,261 | 937 | 986 | 1,044 | 1,102 | 1,161 | 235 | 249 | 266 | 282 | 299 |
| Hinchinbrook (S) | 1,428 | 1,376 | 1,323 | 1,267 | 1,209 | 635 | 616 | 596 | 575 | 553 | 118 | 114 | 111 | 107 | 103 |
| Hope Vale (S) | 17 | 18 | 18 | 19 | 20 | 14 | 15 | 16 | 17 | 18 | 4 | 4 | 4 | 4 | 4 |
| Ipswich (C) | 4,537 | 5,423 | 7,046 | 8,955 | 11,122 | 1,630 | 1,975 | 2,606 | 3,349 | 4,192 | 282 | 342 | 450 | 578 | 723 |
| Isaac (R) | 1,381 | 1,464 | 1,567 | 1,676 | 1,782 | 611 | 646 | 688 | 733 | 777 | 111 | 117 | 124 | 132 | 140 |
| Kowanyama (S) | 8 | 8 | 9 | 9 | 10 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Livingstone (S) | 2,821 | 3,079 | 3,419 | 3,803 | 4,242 | 1,507 | 1,628 | 1,788 | 1,968 | 2,174 | 504 | 543 | 594 | 652 | 718 |
| Lockhart River (S) | 7 | 8 | 9 | 11 | 12 | 5 | 6 | 7 | 8 | 9 | 4 | 4 | 4 | 5 | 5 |
| Lockyer Valley (R) | 1,285 | 1,397 | 1,519 | 1,644 | 1,770 | 461 | 501 | 545 | 590 | 635 | 78 | 85 | 92 | 99 | 106 |
| Logan (C) | 8,691 | 9,431 | 10,514 | 11,655 | 13,178 | 3,593 | 3,945 | 4,461 | 5,005 | 5,730 | 789 | 881 | 1,016 | 1,158 | 1,347 |
| Longreach (R) | 191 | 186 | 182 | 178 | 175 | 59 | 58 | 57 | 56 | 55 | 7 | 6 | 6 | 6 | 6 |
| Mackay (R) | 9,909 | 10,577 | 11,395 | 12,305 | 13,265 | 3,515 | 3,734 | 4,003 | 4,302 | 4,617 | 814 | 873 | 946 | 1,027 | 1,112 |
| McKinlay (S) | 48 | 49 | 50 | 50 | 51 | 21 | 21 | 22 | 22 | 22 | 4 | 4 | 4 | 4 | 4 |
| Mapoon (S) | 8 | 8 | 8 | 8 | 9 | 5 | 5 | 5 | 5 | 6 | 0 | 0 | 1 | 1 | 1 |
| Maranoa (R) | 544 | 567 | 594 | 622 | 651 | 180 | 187 | 196 | 204 | 213 | 22 | 23 | 23 | 24 | 25 |
| Mareeba (S) | 838 | 844 | 851 | 856 | 860 | 353 | 355 | 358 | 360 | 361 | 79 | 79 | 80 | 80 | 80 |

| | Trailable Fleet up to 4.5 metres | | | | | Trailable Fleet 4.5 - 8 metres | | | | | Non-Trailable Fleet | | | | |
|-----------------------------|----------------------------------|----------------|----------------|----------------|----------------|--------------------------------|---------------|---------------|---------------|----------------|---------------------|---------------|---------------|---------------|---------------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Moreton Bay (R) | 16,249 | 17,903 | 19,793 | 21,523 | 23,056 | 5,992 | 6,642 | 7,386 | 8,065 | 8,668 | 1,637 | 1,813 | 2,014 | 2,198 | 2,361 |
| Mornington (S) | 16 | 17 | 18 | 19 | 20 | 13 | 13 | 14 | 15 | 15 | 2 | 2 | 2 | 2 | 2 |
| Mount Isa (C) | 700 | 725 | 752 | 778 | 802 | 402 | 413 | 425 | 437 | 449 | 43 | 45 | 46 | 47 | 49 |
| Murweh (S) | 137 | 135 | 133 | 131 | 130 | 46 | 46 | 45 | 45 | 44 | 6 | 6 | 6 | 5 | 5 |
| Napranum (S) | 7 | 7 | 7 | 7 | 7 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| Noosa (S) | 2,564 | 2,659 | 2,787 | 2,886 | 2,974 | 1,175 | 1,214 | 1,268 | 1,309 | 1,346 | 290 | 301 | 316 | 327 | 338 |
| North Burnett (R) | 633 | 623 | 618 | 613 | 607 | 182 | 180 | 178 | 177 | 175 | 26 | 26 | 25 | 25 | 25 |
| Northern Peninsula Area (R) | 25 | 28 | 30 | 33 | 35 | 46 | 49 | 52 | 55 | 58 | 9 | 10 | 10 | 11 | 11 |
| Palm Island (S) | 43 | 45 | 47 | 49 | 51 | 37 | 38 | 40 | 41 | 42 | 6 | 6 | 6 | 7 | 7 |
| Paroo (S) | 40 | 38 | 37 | 36 | 35 | 12 | 11 | 11 | 11 | 10 | 2 | 2 | 2 | 2 | 2 |
| Pormpuraaw (S) | 3 | 3 | 4 | 4 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Quilpie (S) | 32 | 31 | 30 | 29 | 28 | 8 | 8 | 8 | 8 | 7 | 1 | 1 | 1 | 1 | 1 |
| Redland (C) | 7,692 | 8,159 | 8,640 | 8,998 | 9,182 | 3,897 | 4,166 | 4,444 | 4,650 | 4,756 | 1,473 | 1,575 | 1,680 | 1,759 | 1,799 |
| Richmond (S) | 45 | 43 | 41 | 40 | 39 | 20 | 19 | 18 | 17 | 17 | 2 | 1 | 1 | 1 | 1 |
| Rockhampton (R) | 3,777 | 3,936 | 4,107 | 4,280 | 4,456 | 1,405 | 1,468 | 1,536 | 1,604 | 1,674 | 292 | 307 | 325 | 342 | 359 |
| Scenic Rim (R) | 1,300 | 1,439 | 1,596 | 1,783 | 1,949 | 490 | 547 | 610 | 686 | 753 | 122 | 139 | 157 | 180 | 200 |
| Somerset (R) | 1,037 | 1,126 | 1,224 | 1,326 | 1,428 | 356 | 386 | 419 | 452 | 486 | 68 | 73 | 79 | 85 | 91 |
| South Burnett (R) | 1,447 | 1,503 | 1,569 | 1,636 | 1,702 | 450 | 469 | 490 | 512 | 534 | 66 | 69 | 72 | 75 | 78 |
| Southern Downs (R) | 1,119 | 1,151 | 1,184 | 1,216 | 1,248 | 314 | 323 | 333 | 342 | 351 | 42 | 44 | 45 | 46 | 47 |
| Sunshine Coast (R) | 12,641 | 14,011 | 15,623 | 17,360 | 19,126 | 4,148 | 4,638 | 5,214 | 5,836 | 6,468 | 1,225 | 1,368 | 1,537 | 1,720 | 1,905 |
| Tablelands (R) | 1,695 | 1,748 | 1,815 | 1,885 | 1,956 | 704 | 723 | 749 | 775 | 801 | 150 | 154 | 159 | 165 | 170 |
| Toowoomba (R) | 4,522 | 4,739 | 4,995 | 5,254 | 5,507 | 1,593 | 1,666 | 1,752 | 1,839 | 1,924 | 250 | 262 | 276 | 289 | 303 |
| Torres (S) | 107 | 111 | 116 | 121 | 126 | 172 | 177 | 184 | 191 | 198 | 32 | 33 | 34 | 36 | 37 |
| Torres Strait Island (R) | 6 | 6 | 6 | 6 | 6 | 9 | 9 | 9 | 10 | 10 | 2 | 2 | 2 | 2 | 2 |
| Townsville (C) | 8,289 | 9,180 | 10,156 | 11,173 | 12,209 | 3,998 | 4,375 | 4,788 | 5,218 | 5,656 | 916 | 1,008 | 1,109 | 1,214 | 1,321 |
| Weipa (T) | 230 | 263 | 289 | 323 | 356 | 237 | 265 | 287 | 317 | 344 | 37 | 42 | 46 | 50 | 55 |
| Western Downs (R) | 1,525 | 1,584 | 1,646 | 1,707 | 1,766 | 643 | 667 | 693 | 718 | 743 | 86 | 89 | 92 | 96 | 99 |
| Whitsunday (R) | 3,387 | 3,641 | 3,917 | 4,182 | 4,459 | 1,904 | 2,030 | 2,167 | 2,298 | 2,436 | 750 | 809 | 874 | 936 | 1,002 |
| Winton (S) | 32 | 31 | 30 | 29 | 29 | 11 | 11 | 11 | 10 | 10 | 2 | 2 | 2 | 2 | 2 |
| Woorabinda (S) | 3 | 3 | 4 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wujal Wujal (S) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| Yarrabah (S) | 36 | 38 | 40 | 43 | 46 | 25 | 26 | 27 | 28 | 29 | 3 | 3 | 3 | 3 | 4 |
| Interstate | 560 | 563 | 566 | 570 | 573 | 201 | 202 | 203 | 205 | 206 | 223 | 224 | 226 | 228 | 229 |
| Overseas | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 8 | 8 | 8 |
| Total | 184,835 | 198,834 | 215,790 | 233,554 | 251,600 | 73,462 | 79,223 | 86,171 | 93,430 | 100,795 | 21,289 | 23,068 | 25,180 | 27,382 | 29,594 |

Source: Economic Associates estimate, derived from Table 2.3 and Table 2.4

2.3.2 Allocation of recreational boating fleet to LGA of use

The projected recreational boating fleet estimates presented in Table 2.4 above outline the projected number of boat registrations in each LGA in Queensland, that is, the number of boat registrations by place of residence. However, boat owners may utilise their boat in multiple LGAs, including LGAs other than their place of residence.

In allocating boat registrations to LGA of use, the assessment undertook a review of the distribution of boating infrastructure throughout Queensland and was informed by consultation with LGA and port/water storage officers undertaken by GHD as part of this project.

Two matrices were compiled which outline the distribution of boat registrations to the relevant LGA/s of use, one for trailable boat registrations and the other for non-trailable boat registrations. These two matrices are presented in Appendix A.

In the case of trailable boat registrations, allocations were made only to those LGAs with identified public boating infrastructure. Based on information provided by GHD, the following LGAs in Table 2.6 did not appear to have any public boating infrastructure, and hence were not allocated any boat registrations for use in that LGA.

Table 2.6: LGAs with no boating infrastructure for trailable vessels

| | |
|--------------------|----------------|
| Barcoo (S) | Flinders (S) |
| Blackall-Tambo (R) | Longreach (R) |
| Boulia (S) | Mareeba (S) |
| Bulloo (S) | Paroo (S) |
| Cherbourg (S) | Quilpie (S) |
| Cloncurry (S) | Richmond (S) |
| Croydon (S) | Winton (S) |
| Etheridge (S) | Woorabinda (S) |

Non-trailable boats, on the other hand, were assumed to be used only in the coastal LGAs listed in Table 2.7 below.

Table 2.7: Coastal LGAs capturing non-trailable boat registrations

| | | |
|---------------------|--------------------|-----------------------------|
| Brisbane (C) | Gold Coast (C) | |
| Bundaberg (R) | Gympie (R) | Northern Peninsula Area (R) |
| Burdekin (S) | Hinchinbrook (S) | Palm Island (S) |
| Burke (S) | Hope Vale (S) | Redland (C) |
| Cairns (R) | Isaac (R) | Rockhampton (R) |
| Carpentaria (S) | Livingstone (S) | Sunshine Coast (R) |
| Cassowary Coast (R) | Lockhart River (S) | Torres (S) |
| Cook (S) | Mackay (R) | Torres Strait Island (R) |
| Douglas (S) | Moreton Bay (R) | Townsville (C) |
| Fraser Coast (R) | Mornington (S) | Whitsunday (R) |
| Gladstone (R) | Noosa (S) | Yarrabah (S) |

2.3.3 Projected size of fleet by LGA of use

Based on 2016 data, the size of the recreational boating fleet in Queensland is projected to increase from 272,472 boats in 2016 to 371,328 boats in 2036. The size of the recreational boating fleet in Queensland is approximately 3% lower than total boats registered in Queensland

as a result of vessel registration leakage, predominantly from the Gold Coast to northern New South Wales.

A number of LGAs are anticipated to record significant registration inflows, including:

- Redland City Council (net inflow of 8,740 vessels in 2016, increasing to 14,247 vessels in 2036)
- Gold Coast City Council (net inflow of 4,594 vessels in 2016, increasing to 7,844 vessels in 2036)
- Somerset Regional Council (net inflow of 3,075 vessels in 2016, increasing to 3,697 vessels in 2036)
- Sunshine Coast Regional Council (net inflow of 1,966 vessels in 2016, increasing to 2,314 vessels in 2036)
- Hinchinbrook Shire Council (net inflow of 1,894 vessels in 2016, increasing to 2,858 vessels in 2036)
- Scenic Rim Regional Council (net inflow of 1,559 vessels in 2016, increasing to 1,608 vessels in 2036)
- Cassowary Coast Regional Council (net inflow of 1,131 vessels in 2016, increasing to 1,350 vessels in 2036).

Table 2.8 below summarises the projected size of the recreational boating fleet by LGA of use, between 2016 and 2036.

Table 2.8: Projected Size of Recreational Boating Fleet by LGA of Use, 2016-2036

| | Trailable fleet up to 4.5 metres | | | | | Trailable fleet 4.5 - 8 metres | | | | | Non-trailable fleet | | | | |
|-----------------------|----------------------------------|--------|--------|--------|--------|--------------------------------|--------|--------|--------|--------|---------------------|-------|-------|-------|-------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Aurukun (S) | 9 | 9 | 10 | 11 | 12 | 9 | 9 | 9 | 9 | 10 | 0 | 0 | 0 | 1 | 1 |
| Balonne (S) | 46 | 45 | 45 | 45 | 45 | 19 | 18 | 18 | 18 | 18 | 0 | 0 | 0 | 0 | 0 |
| Banana (S) | 450 | 460 | 471 | 481 | 491 | 184 | 189 | 193 | 197 | 201 | 0 | 0 | 0 | 0 | 0 |
| Barcaldine (R) | 281 | 275 | 269 | 264 | 260 | 91 | 90 | 88 | 87 | 86 | 0 | 0 | 0 | 0 | 0 |
| Barcoo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blackall-Tambo (R) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Boulia (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brisbane (C) | 15,698 | 16,831 | 18,050 | 19,401 | 20,712 | 6,292 | 6,779 | 7,298 | 7,871 | 8,426 | 2,761 | 2,959 | 3,156 | 3,374 | 3,578 |
| Bulloo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bundaberg (R) | 7,454 | 7,837 | 8,267 | 8,695 | 9,118 | 1,810 | 1,906 | 2,013 | 2,119 | 2,224 | 456 | 480 | 508 | 535 | 562 |
| Burdekin (S) | 2,853 | 2,937 | 3,035 | 3,130 | 3,219 | 1,060 | 1,091 | 1,128 | 1,164 | 1,199 | 184 | 191 | 199 | 208 | 216 |
| Burke (S) | 34 | 35 | 37 | 38 | 39 | 14 | 14 | 15 | 15 | 16 | 2 | 2 | 3 | 3 | 3 |
| Cairns (R) | 7,171 | 7,713 | 8,339 | 8,986 | 9,627 | 3,785 | 4,058 | 4,373 | 4,700 | 5,023 | 1,058 | 1,134 | 1,223 | 1,314 | 1,405 |
| Carpentaria (S) | 469 | 478 | 489 | 501 | 512 | 248 | 252 | 257 | 262 | 267 | 65 | 66 | 68 | 69 | 70 |
| Cassowary Coast (R) | 3,447 | 3,460 | 3,496 | 3,546 | 3,605 | 1,878 | 1,883 | 1,899 | 1,922 | 1,950 | 398 | 401 | 406 | 413 | 421 |
| Central Highlands (R) | 927 | 973 | 1,018 | 1,060 | 1,103 | 431 | 453 | 474 | 494 | 513 | 0 | 0 | 0 | 0 | 0 |
| Charters Towers (R) | 347 | 347 | 348 | 349 | 350 | 118 | 118 | 118 | 118 | 118 | 0 | 0 | 0 | 0 | 0 |
| Cherbourg (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cloncurry (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cook (S) | 509 | 514 | 519 | 521 | 523 | 264 | 267 | 269 | 270 | 271 | 11 | 11 | 11 | 11 | 11 |
| Croydon (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diamantina (S) | 6 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Doomadgee (S) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Douglas (S) | 1,388 | 1,450 | 1,523 | 1,599 | 1,675 | 873 | 907 | 947 | 989 | 1,031 | 338 | 354 | 370 | 388 | 406 |
| Etheridge (S) | 0 | 0 | 0 | 0 | 0 | 12 | 11 | 11 | 11 | 11 | 0 | 0 | 0 | 0 | 0 |
| Flinders (S) | 0 | 0 | 0 | 0 | 0 | 30 | 30 | 29 | 28 | 28 | 0 | 0 | 0 | 0 | 0 |
| Fraser Coast (R) | 7,467 | 7,902 | 8,454 | 9,015 | 9,533 | 2,912 | 3,083 | 3,302 | 3,524 | 3,729 | 847 | 897 | 961 | 1,025 | 1,084 |
| Gladstone (R) | 5,514 | 6,108 | 6,743 | 7,396 | 8,011 | 2,499 | 2,760 | 3,039 | 3,326 | 3,597 | 558 | 622 | 690 | 760 | 826 |
| Gold Coast (C) | 26,541 | 29,038 | 32,440 | 36,153 | 40,195 | 9,501 | 10,545 | 11,964 | 13,509 | 15,198 | 4,818 | 5,322 | 5,985 | 6,705 | 7,473 |
| Goondiwindi (R) | 690 | 693 | 698 | 704 | 710 | 219 | 220 | 222 | 223 | 225 | 0 | 0 | 0 | 0 | 0 |
| Gympie (R) | 2,916 | 3,083 | 3,284 | 3,489 | 3,694 | 1,041 | 1,103 | 1,178 | 1,254 | 1,330 | 297 | 316 | 339 | 362 | 386 |
| Hinchinbrook (S) | 2,609 | 2,702 | 2,806 | 2,914 | 3,023 | 1,205 | 1,246 | 1,292 | 1,340 | 1,389 | 260 | 271 | 284 | 297 | 310 |
| Hope Vale (S) | 17 | 18 | 18 | 19 | 20 | 14 | 15 | 16 | 17 | 18 | 4 | 4 | 4 | 4 | 4 |
| Ipswich (C) | 1,179 | 1,410 | 1,832 | 2,328 | 2,892 | 424 | 514 | 678 | 871 | 1,090 | 0 | 0 | 0 | 0 | 0 |
| Isaac (R) | 1,715 | 1,822 | 1,953 | 2,093 | 2,232 | 730 | 772 | 824 | 879 | 934 | 153 | 162 | 173 | 185 | 197 |
| Kowanyama (S) | 8 | 8 | 9 | 9 | 10 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Livingstone (S) | 3,230 | 3,492 | 3,822 | 4,188 | 4,602 | 1,639 | 1,760 | 1,914 | 2,085 | 2,277 | 539 | 578 | 627 | 682 | 743 |
| Lockhart River (S) | 7 | 8 | 9 | 11 | 12 | 5 | 6 | 7 | 8 | 9 | 4 | 4 | 4 | 5 | 5 |
| Lockyer Valley (R) | 450 | 489 | 532 | 576 | 619 | 161 | 175 | 191 | 207 | 222 | 0 | 0 | 0 | 0 | 0 |
| Logan (C) | 2,173 | 2,358 | 2,628 | 2,914 | 3,295 | 898 | 986 | 1,115 | 1,251 | 1,432 | 0 | 0 | 0 | 0 | 0 |
| Longreach (R) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mackay (R) | 9,185 | 9,803 | 10,558 | 11,396 | 12,279 | 3,299 | 3,505 | 3,756 | 4,034 | 4,327 | 787 | 843 | 913 | 989 | 1,069 |
| McKinlay (S) | 48 | 49 | 50 | 50 | 51 | 21 | 21 | 22 | 22 | 22 | 0 | 0 | 0 | 0 | 0 |

| | Traillable fleet up to 4.5 metres | | | | | Traillable fleet 4.5 - 8 metres | | | | | Non-traillable fleet | | | | |
|-----------------------------|-----------------------------------|----------------|----------------|----------------|----------------|---------------------------------|---------------|---------------|---------------|---------------|----------------------|---------------|---------------|---------------|---------------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Mapoon (S) | 8 | 8 | 8 | 8 | 9 | 5 | 5 | 5 | 5 | 6 | 0 | 0 | 1 | 1 | 1 |
| Maranoa (R) | 326 | 340 | 356 | 373 | 390 | 108 | 112 | 117 | 123 | 128 | 0 | 0 | 0 | 0 | 0 |
| Mareeba (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Moreton Bay (R) | 15,743 | 17,253 | 18,933 | 20,506 | 21,904 | 5,804 | 6,395 | 7,053 | 7,669 | 8,216 | 1,649 | 1,814 | 1,997 | 2,169 | 2,322 |
| Mornington (S) | 16 | 17 | 18 | 19 | 20 | 13 | 13 | 14 | 15 | 15 | 2 | 2 | 2 | 2 | 2 |
| Mount Isa (C) | 526 | 544 | 562 | 581 | 598 | 294 | 302 | 311 | 319 | 327 | 0 | 0 | 0 | 0 | 0 |
| Murweh (S) | 263 | 258 | 254 | 250 | 247 | 82 | 81 | 80 | 79 | 78 | 0 | 0 | 0 | 0 | 0 |
| Napranum (S) | 7 | 7 | 7 | 7 | 7 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| Noosa (S) | 2,923 | 3,071 | 3,259 | 3,426 | 3,586 | 1,251 | 1,309 | 1,382 | 1,447 | 1,509 | 339 | 356 | 378 | 397 | 416 |
| North Burnett (R) | 534 | 527 | 523 | 519 | 514 | 156 | 154 | 153 | 152 | 151 | 11 | 11 | 11 | 11 | 11 |
| Northern Peninsula Area (R) | 25 | 28 | 30 | 33 | 35 | 46 | 49 | 52 | 55 | 58 | 9 | 10 | 10 | 11 | 11 |
| Palm Island (S) | 43 | 45 | 47 | 49 | 51 | 37 | 38 | 40 | 41 | 42 | 6 | 6 | 6 | 7 | 7 |
| Paroo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pormpuraaw (S) | 3 | 3 | 4 | 4 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Quilpie (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Redland (C) | 13,870 | 14,948 | 16,310 | 17,667 | 18,993 | 6,030 | 6,549 | 7,187 | 7,805 | 8,389 | 1,901 | 2,062 | 2,256 | 2,437 | 2,602 |
| Richmond (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rockhampton (R) | 4,228 | 4,439 | 4,674 | 4,917 | 5,169 | 1,669 | 1,757 | 1,855 | 1,957 | 2,063 | 418 | 442 | 469 | 496 | 525 |
| Scenic Rim (R) | 2,570 | 2,736 | 2,924 | 3,134 | 3,328 | 901 | 962 | 1,032 | 1,110 | 1,183 | 0 | 0 | 0 | 0 | 0 |
| Somerset (R) | 3,327 | 3,529 | 3,747 | 3,972 | 4,191 | 1,209 | 1,280 | 1,356 | 1,435 | 1,511 | 0 | 0 | 0 | 0 | 0 |
| South Burnett (R) | 1,302 | 1,353 | 1,412 | 1,473 | 1,532 | 406 | 423 | 442 | 462 | 482 | 0 | 0 | 0 | 0 | 0 |
| Southern Downs (R) | 1,319 | 1,373 | 1,433 | 1,494 | 1,554 | 556 | 577 | 601 | 625 | 648 | 0 | 0 | 0 | 0 | 0 |
| Sunshine Coast (R) | 13,897 | 15,342 | 17,026 | 18,808 | 20,593 | 4,685 | 5,209 | 5,820 | 6,465 | 7,110 | 1,397 | 1,551 | 1,730 | 1,920 | 2,110 |
| Tablelands (R) | 678 | 699 | 726 | 754 | 782 | 281 | 289 | 299 | 310 | 321 | 0 | 0 | 0 | 0 | 0 |
| Toowoomba (R) | 904 | 948 | 999 | 1,051 | 1,101 | 319 | 333 | 350 | 368 | 385 | 0 | 0 | 0 | 0 | 0 |
| Torres (S) | 107 | 111 | 116 | 121 | 126 | 172 | 177 | 184 | 191 | 198 | 32 | 33 | 34 | 36 | 37 |
| Torres Strait Island (R) | 6 | 6 | 6 | 6 | 6 | 9 | 9 | 9 | 10 | 10 | 2 | 2 | 2 | 2 | 2 |
| Townsville (C) | 7,073 | 7,785 | 8,566 | 9,379 | 10,207 | 3,359 | 3,660 | 3,990 | 4,333 | 4,683 | 779 | 853 | 933 | 1,017 | 1,103 |
| Weipa (T) | 230 | 263 | 289 | 323 | 356 | 237 | 265 | 287 | 317 | 344 | 0 | 0 | 0 | 0 | 0 |
| Western Downs (R) | 1,095 | 1,132 | 1,173 | 1,215 | 1,255 | 440 | 455 | 471 | 486 | 502 | 0 | 0 | 0 | 0 | 0 |
| Whitsunday (R) | 3,900 | 4,180 | 4,490 | 4,795 | 5,115 | 2,039 | 2,170 | 2,315 | 2,457 | 2,605 | 754 | 814 | 879 | 942 | 1,008 |
| Winton (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Woorabinda (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wujal Wujal (S) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| Yarrabah (S) | 36 | 38 | 40 | 43 | 46 | 25 | 26 | 27 | 28 | 29 | 3 | 3 | 3 | 3 | 4 |
| Total | 179,803 | 193,341 | 209,700 | 226,820 | 244,200 | 71,825 | 77,399 | 84,104 | 91,102 | 98,196 | 20,844 | 22,580 | 24,638 | 26,781 | 28,932 |

Source: Economic Associates estimates, derived from Table 2.5, Table A.1 and Table A.2

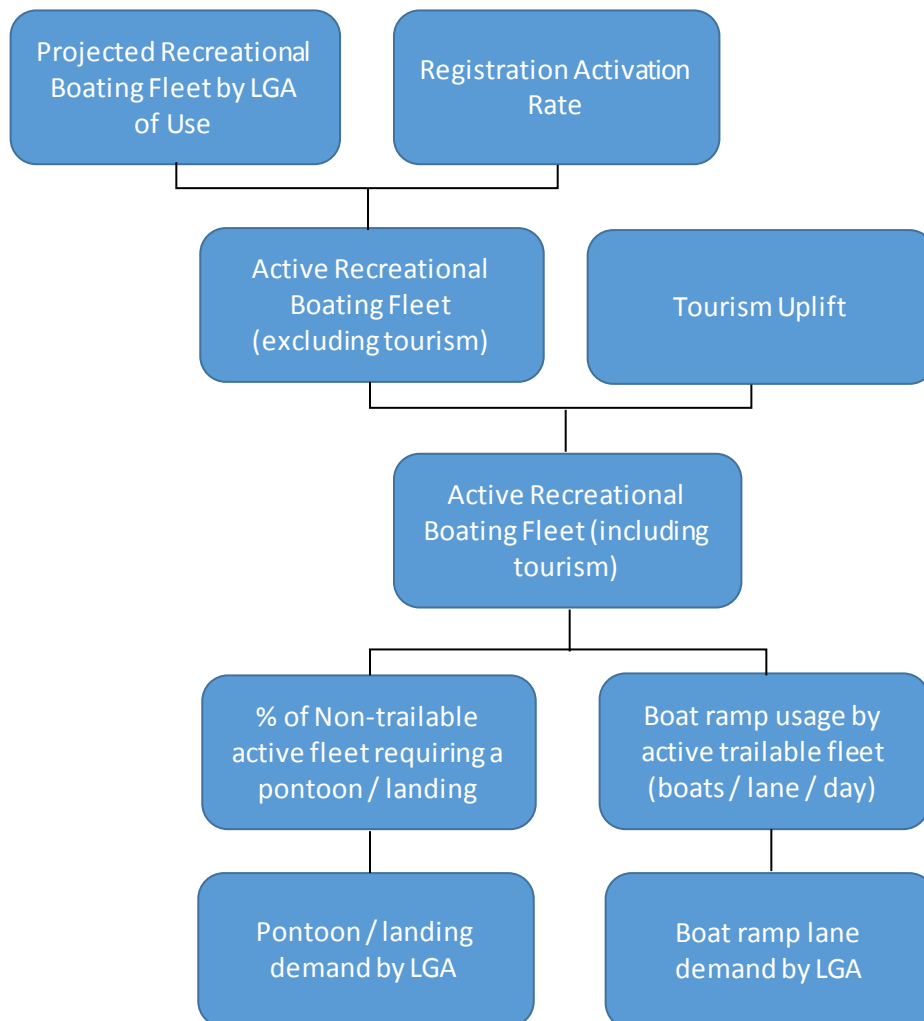
3 INFRASTRUCTURE DEMAND ASSESSMENT

This section converts recreational boating fleet projections into infrastructure demand projections for boat ramp lanes and landings (i.e. publically accessible deep-draught vessel pontoons) at the LGA level.

In determining infrastructure demand, the assessment estimates the likely number of boats being utilised on a day of average demand. This estimate is described as the active fleet. From here, assumptions are made relating to the relationship between trailable boats and boat ramp lane demand, and the relationship between non-trailable boats and likely landings demand.

Figure 3.1 below outlines the methodology utilised to calculate boat ramp lane and landings demand.

Figure 3.1: Methodology to calculate boat ramp lane and landings demand at the LGA level



3.1 Size of active fleet assumptions

3.1.1 Registration activation rate

TMR recognises three levels of demand for marine facilities, namely:

- off-peak demand – typical weekday usage
- average demand – taken to be demand for a facility on weekends (and, for certain regional locations, other busy periods)
- peak demand – demand for a facility at peak holiday periods or for special events.

The *Recreational Boating Facilities Demand Forecasting Study 2011* identified the proportion of the recreational boating fleet likely to use boating facilities for each level of demand (referred to herein as the registration activation rate):

- off-peak demand: 8%
- average demand: 14%
- peak demand: 20%.

TMR policy on catering for marine facility demand is as follows:

TMR expects off-peak demand at a given facility to be met in almost all circumstances. Its program of works is aimed at satisfying average demand.

TMR does not cater for peak demand. This is because funds (provided largely by collection of recreational boat registration fees) are stretched meeting demand for basic marine infrastructure such as dredging, landings, breakwaters and boat ramps around the state, and local managing authorities cannot allocate sufficient resources (land and funds) for peak demand days. Scarce foreshore land is in intense demand for other purposes, as is funding.

An initial assessment of demand identified that applying the average demand activation rate state-wide substantially overestimated the current and projected demand for facilities in some LGAs, based on complaints and observed levels of congestion at various facilities in those LGAs.

Therefore, unlike the *Recreational Boating Facilities Demand Forecasting Study 2011*, this study has considered differing registration activation rates by LGA.

This approach has been taken to recognise that the level of boat usage is likely to differ by LGA, depending on a range of factors, including access to recreational boating facilities, the range of recreational activities other than boating available to the community, the recreational time available to boat users (for example, retirees are likely to have more available time to undertake boating activities than persons employed on a fulltime basis), and nature of employment (for example, persons who finish work in the early afternoon are likely to have more available time to undertake boating activities than persons who finish work in the evening).

The consultation with LGA and port/water storage managers undertaken by GHD as part of this study indicated that recreational boaters typically use their boat to go fishing. A literature review was undertaken to identify the socio-economic and demographic characteristics of persons who participated in recreational fishing.

Ormsby, Jayne (2004) undertook a survey to identify the social, motivational and experiential aspects of recreational fishing by anglers from Queensland. The survey identified that just under

a quarter of respondents were classified as tradespersons and related workers, significantly higher than any other occupational class.

The Australian Bureau of Statistics (ABS) (2010) considers the participation rate of Australians in a number of sports, including fishing. This research identified that the participation rate for fishing was highest for the 55-64 year age cohort, followed by the 45-54 year age cohort. Interestingly, this result directly contradicts the findings of Department of Agriculture and Fisheries (2014), which identifies recreational fishing participation rates as being highest for the 5-14 year age cohort, and lowest for the 60+ year age cohort.

Participation rates in both studies represent the proportion of persons that participate in fishing in a given year, but do not provide insight as to the frequency of participation in that year. This means that while a certain age cohort may have a high participation rate, these persons may only go fishing once a year, while other age cohorts might have lower participation rates but higher frequency of participation. The literature review did not identify any information in relation to the frequency of participation in fishing or recreational boating by age cohort.

Our assessment has assumed that a higher average age is likely to correspond with a higher frequency of recreational boat usage, due to the greater availability of time for recreational pursuits, such as fishing and boating.

Within each LGA, the following factors were considered in refining the appropriate registration activation rate.

- incidence of blue collar employment (based on 2016 Census)
- average age of residents (based on 2016 Census)
- remoteness classification by local government area (Accessibility/Remoteness Index of Australia (ARIA+))
- whether the LGA was coastal.

ARIA+ is an index of remoteness derived from measures of road distances between populated localities to each of five categories of service centre, namely:

- distance between populated locality and population centre of 250,000+ persons
- distance between populated locality and population centre of 48,000-249,999 persons
- distance between populated locality and population centre of 18,000-47,999 persons
- distance between populated locality and population centre of 5,000-17,999 persons
- distance between populated locality and population centre of 1,000-4,999 persons.

The five distance measurements, one to each level of service centre, is recorded for each populated locality and standardised to a ratio. The ratio is calculated by dividing the measured distance for a given locality by the Australian average (mean) for that category. After applying a threshold of three to each of the ratios, all ratios are summed to produce the ARIA+ score for each populated locality across Australia. An interpolation procedure is then used to derive the index values for larger geographic areas such as LGAs.

ARIA+ is the endorsed measure of remoteness utilised by the ABS.

The fit between the ARIA+ remoteness classifications and our classification is summarised in Table 3.1 below.

Table 3.1: Fit between ARIA+ remoteness classification and EA classification

| ARIA+ remoteness classification | EA classification |
|---------------------------------|-------------------|
| Highly accessible / accessible | Metropolitan |
| Moderately accessible | Regional centre |
| Remote | Remote |
| Very remote | Very Remote |

To determine the appropriate registration activation rate, the following steps were taken:

- All LGAs with an ARIA+ classification of highly accessible or accessible (we have called metropolitan) were assigned a registration activation rate of 8%.
- All LGAs with an ARIA+ classification of moderately accessible (we have called regional centre) were assigned a registration activation rate as follows:
 - If the LGA has a higher incidence of blue collar workers and a higher average age than Queensland – registration activation rate is 12%.
 - For all other LGAs – registration activation rate is 10%.
- All LGAs with an ARIA+ classification of remote were assigned a registration activation rate as follows:
 - If the LGA has a higher incidence of blue collar workers and a higher average age than Queensland – registration activation rate is 14%.
 - All other LGAs – registration activation rate is 12%.
- All LGAs with an ARIA+ classification of very remote were assigned a registration activation rate of 14%.

After completing this first assessment, the registration activation rates were then adjusted to reflect whether the LGA was coastal or not. If the LGA was coastal, the registration activation rate remained unchanged. However, if the LGA was non-coastal, the registration activation rate was adjusted downwards by 2% (for example, if the registration activation rate was 12% and the LGA was non-coastal, the adjusted activation rate was 10%). This adjustment was made to reflect the extra travel distance required to access recreational boating facilities relative to persons who resided in coastal LGAs. It is considered that the further a person has to travel to access recreational boating facilities, the less often these facilities will typically be utilised. If the registration activation rate was already 8%, the rate remained unchanged.

A further reduction in activation was applied to a number of coastal LGAs in South-east Queensland with a broad offering of recreational activities, including boating, where it was determined that the appropriate registration activation rate was in the order of 6%-7%.

Based on the above criteria, Table 3.2 below summarises the activation rates applied to each LGA in Queensland.

Table 3.2: Assumed activation rate by LGA, Queensland

| | % Blue collar workers | Average age | Remoteness | Coastal? | Activation rate |
|-----------------------------|-----------------------|-------------|-----------------|----------|-----------------|
| Aurukun (S) | 33.6% | 29.2 | Very Remote | y | 14% |
| Balonne (S) | 35.1% | 38.9 | Remote | n | 12% |
| Banana (S) | 45.5% | 37.5 | Remote | n | 10% |
| Barcaldine (R) | 35.1% | 39.6 | Very Remote | n | 12% |
| Barcoo (S) | 50.0% | 41.4 | Very Remote | n | 12% |
| Blackall-Tambo (R) | 34.7% | 42.9 | Very Remote | n | 12% |
| Boulia (S) | 54.1% | 34.1 | Very Remote | n | 12% |
| Brisbane City | 22.0% | 36.8 | Metropolitan | y | 6% |
| Bulloo (S) | 42.5% | 33.8 | Very Remote | n | 12% |
| Bundaberg (R) | 37.7% | 42.9 | Regional Centre | y | 12% |
| Burdekin (S) | 42.9% | 42.5 | Regional Centre | y | 12% |
| Burke (S) | 38.8% | 39.3 | Very Remote | y | 14% |
| Cairns (R) | 30.5% | 37.3 | Regional Centre | y | 10% |
| Carpentaria (S) | 41.2% | 37.1 | Very Remote | y | 14% |
| Cassowary Coast (R) | 44.1% | 41.7 | Remote | y | 14% |
| Central Highlands (R) | 47.9% | 33.4 | Remote | n | 10% |
| Charters Towers (R) | 40.3% | 39.3 | Remote | n | 12% |
| Cherbourg (S) | 30.0% | 25.2 | Very Remote | n | 12% |
| Cloncurry (S) | 48.8% | 35.6 | Very Remote | n | 12% |
| Cook (S) | 38.3% | 39.1 | Remote | y | 14% |
| Croydon (S) | 40.7% | 35.6 | Very Remote | n | 12% |
| Diamantina (S) | 45.3% | 32.9 | Very Remote | n | 12% |
| Doomadgee (S) | 27.2% | 23.7 | Very Remote | y | 14% |
| Douglas (S) | 35.7% | 41.4 | Regional Centre | y | 12% |
| Etheridge (S) | 43.0% | 39.5 | Very Remote | n | 12% |
| Flinders (S) | 37.2% | 40.5 | Very Remote | n | 12% |
| Fraser Coast (R) | 34.4% | 44.7 | Regional Centre | y | 12% |
| Gladstone (R) | 46.8% | 35.6 | Regional Centre | y | 10% |
| Gold Coast (C) | 29.8% | 39.1 | Metropolitan | y | 6% |
| Goondiwindi (R) | 37.8% | 39.2 | Regional Centre | n | 10% |
| Gympie (R) | 40.1% | 42.9 | Metropolitan | y | 8% |
| Hinchinbrook (S) | 40.9% | 46.1 | Remote | y | 14% |
| Hope Vale (S) | 42.2% | 28.3 | Very Remote | y | 14% |
| Ipswich (C) | 37.7% | 34.2 | Metropolitan | n | 8% |
| Isaac (R) | 55.6% | 32.0 | Remote | y | 12% |
| Kowanyama (S) | 34.8% | 29.8 | Very Remote | y | 14% |
| Livingstone (S) | 38.2% | 40.6 | Very Remote | y | 14% |
| Lockhart River (S) | 35.3% | 25.6 | Very Remote | y | 14% |
| Lockyer Valley (R) | 43.4% | 38.7 | Metropolitan | n | 8% |
| Logan (C) | 40.3% | 35.4 | Metropolitan | n | 8% |
| Longreach (R) | 32.0% | 39.6 | Very Remote | n | 12% |
| Mackay (R) | 43.4% | 37.5 | Regional Centre | y | 10% |
| McKinlay (S) | 40.2% | 36.6 | Very Remote | n | 12% |
| Mapoon (S) | 26.8% | 32.6 | Very Remote | y | 14% |
| Maranoa (R) | 35.4% | 37.4 | Remote | n | 10% |
| Mareeba (S) | 36.6% | 41.4 | Remote | n | 12% |
| Moreton Bay (R) | 33.4% | 38.0 | Metropolitan | y | 7% |
| Mornington (S) | 30.8% | 29.1 | Very Remote | y | 14% |
| Mount Isa (C) | 47.2% | 32.4 | Very Remote | n | 12% |
| Murweh (S) | 37.6% | 38.8 | Very Remote | n | 12% |
| Napranum (S) | 52.3% | 28.7 | Very Remote | y | 14% |
| Noosa (S) | 30.8% | 44.9 | Metropolitan | y | 8% |
| North Burnett (R) | 40.3% | 43.7 | Regional Centre | n | 10% |
| Northern Peninsula Area (R) | 32.3% | 26.0 | Very Remote | y | 14% |
| Palm Island (S) | 28.0% | 27.4 | Very Remote | y | 14% |
| Paroo (S) | 28.0% | 41.2 | Very Remote | n | 12% |
| Pormpuraaw (S) | 33.3% | 30.5 | Very Remote | y | 14% |
| Quilpie (S) | 40.0% | 37.9 | Very Remote | n | 12% |
| Redland (C) | 32.0% | 40.3 | Metropolitan | y | 6% |
| Richmond (S) | 39.6% | 34.9 | Very Remote | n | 12% |
| Rockhampton (R) | 38.1% | 37.5 | Regional Centre | y | 10% |

| | % Blue collar workers | Average age | Remoteness | Coastal? | Activation rate |
|--------------------------|-----------------------|-------------|-----------------|----------|-----------------|
| Scenic Rim (R) | 37.9% | 41.8 | Metropolitan | n | 8% |
| Somerset (R) | 43.1% | 40.4 | Metropolitan | n | 8% |
| South Burnett (R) | 39.2% | 42.5 | Regional Centre | n | 10% |
| Southern Downs (R) | 39.5% | 42.6 | Regional Centre | n | 10% |
| Sunshine Coast (R) | 31.6% | 41.6 | Metropolitan | y | 6% |
| Tablelands (R) | 35.0% | 43.6 | Remote | n | 12% |
| Toowoomba (R) | 34.1% | 39.1 | Metropolitan | n | 8% |
| Torres (S) | 26.6% | 30.6 | Very Remote | y | 14% |
| Torres Strait Island (R) | 30.3% | 27.7 | Very Remote | y | 14% |
| Townsville (C) | 32.2% | 36.0 | Regional Centre | y | 10% |
| Weipa (T) | 56.5% | 30.4 | Very Remote | y | 14% |
| Western Downs (R) | 39.8% | 37.8 | Regional Centre | n | 8% |
| Whitsunday (R) | 43.7% | 38.8 | Remote | y | 14% |
| Winton (S) | 36.2% | 44.2 | Very Remote | n | 12% |
| Woorabinda (S) | 30.4% | 25.3 | Very Remote | n | 12% |
| Wujal Wujal (S) | 25.0% | 32.7 | Remote | y | 12% |
| Yarrabah (S) | 26.6% | 26.8 | Regional Centre | y | 10% |
| Queensland | 31.8% | 38.2 | | | |

Note: Highlighted cells have a higher incidence of blue collar workers / higher average age than Queensland

3.1.2 Tourism Adjustment

The following LGAs were considered to record a significant uplift in boating infrastructure demand as a result of tourism activity:

- first tier LGAs:
 - Douglas Shire
 - Cairns Regional Council
 - Whitsunday Regional Council
- second tier LGAs:
 - Townsville City Council
 - Fraser Coast Council
 - Mackay Regional Council
 - Livingstone Shire Council.

The assumed uplift in boat lane demand was assumed to be as follows:

- first tier LGAs: 20% uplift in boat ramp lane and pontoon/landing demand
- second tier LGAs: 10% uplift in boat ramp lane and pontoon/landing demand.

Consultation also identified that the northern coastal LGAs of Burke, Cook and Carpentaria Shire record significant increases in demand for boating infrastructure during winter, with significant inflows of grey nomads. However, it was also identified that boating infrastructure within these LGAs was more than sufficient to accommodate these inflows.

3.2 Projected size of active fleet

Based on the above assumptions, the projected size of the active fleet in Queensland on a day of average demand is projected to increase from 24,298 vessels in 2016 to 32,524 vessels in 2036.

The size of the active fleet on a day of average demand is anticipated to be largest in the following LGAs, reflecting the large population residing in the South-east Queensland area:

- Gold Coast City Council (2,442 vessels in 2016, increasing to 3,764 vessels in 2036)
- Moreton Bay Regional Council (1,628 vessels in 2016, increasing to 2,268 vessels in 2036)
- Brisbane City Council (1,480 vessels in 2016, increasing to 1,969 vessels in 2036)
- Redland City Council (1,314 vessels in 2016, increasing to 1,803 vessels in 2036)
- Sunshine Coast Regional Council (1,195 vessels in 2016, increasing to 1,783 vessels in 2036).

Table 3.3 below summarises the size of the active fleet on a day of average demand between 2016 and 2036.

Table 3.3: Projected size of active fleet on a day of average demand, 2016-2036

| | Traillable Fleet up to 4.5 metres | | | | | Traillable Fleet 4.5 - 8 metres | | | | | Non-Traillable Fleet | | | | |
|-----------------------|-----------------------------------|-------|-------|-------|-------|---------------------------------|------|------|------|------|----------------------|------|------|------|------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Aurukun (S) | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Balonne (S) | 5 | 5 | 5 | 5 | 5 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Banana (S) | 45 | 46 | 47 | 48 | 49 | 18 | 19 | 19 | 20 | 20 | 0 | 0 | 0 | 0 | 0 |
| Barcaldine (R) | 34 | 33 | 32 | 32 | 31 | 11 | 11 | 11 | 10 | 10 | 0 | 0 | 0 | 0 | 0 |
| Barcoo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blackall-Tambo (R) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Boulia (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brisbane (C) | 942 | 1,010 | 1,083 | 1,164 | 1,243 | 378 | 407 | 438 | 472 | 506 | 160 | 180 | 180 | 200 | 220 |
| Bulloo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bundaberg (R) | 894 | 940 | 992 | 1,043 | 1,094 | 217 | 229 | 242 | 254 | 267 | 60 | 60 | 60 | 60 | 60 |
| Burdekin (S) | 342 | 352 | 364 | 376 | 386 | 127 | 131 | 135 | 140 | 144 | 20 | 20 | 20 | 20 | 20 |
| Burke (S) | 5 | 5 | 5 | 5 | 6 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Cairns (R) | 860 | 925 | 1,001 | 1,079 | 1,156 | 454 | 487 | 524 | 564 | 602 | 120 | 140 | 140 | 160 | 160 |
| Carpentaria (S) | 66 | 67 | 69 | 70 | 72 | 35 | 35 | 36 | 37 | 37 | 0 | 0 | 0 | 0 | 0 |
| Cassowary Coast (R) | 483 | 484 | 489 | 496 | 505 | 263 | 264 | 266 | 269 | 273 | 60 | 60 | 60 | 60 | 60 |
| Central Highlands (R) | 93 | 97 | 102 | 106 | 110 | 43 | 45 | 47 | 49 | 51 | 0 | 0 | 0 | 0 | 0 |
| Charters Towers (R) | 42 | 42 | 42 | 42 | 42 | 14 | 14 | 14 | 14 | 14 | 0 | 0 | 0 | 0 | 0 |
| Cherbourg (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cloncurry (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cook (S) | 71 | 72 | 73 | 73 | 73 | 37 | 37 | 38 | 38 | 38 | 0 | 0 | 0 | 0 | 0 |
| Croydon (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diamantina (S) | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Doomadgee (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Douglas (S) | 200 | 209 | 220 | 230 | 241 | 126 | 131 | 137 | 143 | 149 | 40 | 40 | 40 | 40 | 40 |
| Etheridge (S) | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Flinders (S) | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| Fraser Coast (R) | 986 | 1,043 | 1,115 | 1,190 | 1,258 | 384 | 407 | 436 | 465 | 493 | 120 | 120 | 140 | 140 | 160 |
| Gladstone (R) | 551 | 611 | 674 | 740 | 801 | 250 | 276 | 304 | 333 | 360 | 60 | 60 | 60 | 80 | 80 |
| Gold Coast (C) | 1,592 | 1,742 | 1,946 | 2,169 | 2,412 | 570 | 633 | 718 | 811 | 912 | 280 | 320 | 360 | 400 | 440 |
| Goondiwindi (R) | 69 | 69 | 70 | 70 | 71 | 22 | 22 | 22 | 22 | 23 | 0 | 0 | 0 | 0 | 0 |
| Gympie (R) | 233 | 247 | 263 | 279 | 296 | 83 | 88 | 94 | 100 | 106 | 20 | 20 | 20 | 20 | 40 |
| Hinchinbrook (S) | 365 | 378 | 393 | 408 | 423 | 169 | 174 | 181 | 188 | 194 | 40 | 40 | 40 | 40 | 40 |
| Hope Vale (S) | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 |
| Ipswich (C) | 94 | 113 | 147 | 186 | 231 | 34 | 41 | 54 | 70 | 87 | 0 | 0 | 0 | 0 | 0 |
| Isaac (R) | 206 | 219 | 234 | 251 | 268 | 88 | 93 | 99 | 105 | 112 | 20 | 20 | 20 | 20 | 20 |
| Kowanyama (S) | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Livingstone (S) | 497 | 538 | 589 | 645 | 708 | 252 | 271 | 295 | 321 | 351 | 80 | 80 | 80 | 120 | 120 |
| Lockhart River (S) | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Lockyer Valley (R) | 36 | 39 | 43 | 46 | 50 | 13 | 14 | 15 | 17 | 18 | 0 | 0 | 0 | 0 | 0 |
| Logan (C) | 174 | 189 | 210 | 233 | 264 | 72 | 79 | 89 | 100 | 115 | 0 | 0 | 0 | 0 | 0 |
| Longreach (R) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mackay (R) | 1,010 | 1,078 | 1,162 | 1,254 | 1,351 | 363 | 385 | 414 | 443 | 476 | 80 | 80 | 120 | 120 | 120 |
| McKinlay (S) | 6 | 6 | 6 | 6 | 6 | 2 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| Mapoon (S) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

| | Traillable Fleet up to 4.5 metres | | | | | Traillable Fleet 4.5 - 8 metres | | | | | Non-Traillable Fleet | | | | |
|-----------------------------|-----------------------------------|---------------|---------------|---------------|---------------|---------------------------------|--------------|--------------|--------------|--------------|----------------------|--------------|--------------|--------------|--------------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Maranoa (R) | 33 | 34 | 36 | 37 | 39 | 11 | 11 | 12 | 12 | 13 | 0 | 0 | 0 | 0 | 0 |
| Mareeba (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Moreton Bay (R) | 1,102 | 1,208 | 1,325 | 1,435 | 1,533 | 406 | 448 | 494 | 537 | 575 | 120 | 120 | 140 | 160 | 160 |
| Mornington (S) | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| Mount Isa (C) | 63 | 65 | 67 | 70 | 72 | 35 | 36 | 37 | 38 | 39 | 0 | 0 | 0 | 0 | 0 |
| Murweh (S) | 32 | 31 | 30 | 30 | 30 | 10 | 10 | 10 | 10 | 9 | 0 | 0 | 0 | 0 | 0 |
| Napranum (S) | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Noosa (S) | 234 | 246 | 261 | 274 | 287 | 100 | 105 | 111 | 116 | 121 | 20 | 20 | 40 | 40 | 40 |
| North Burnett (R) | 53 | 53 | 52 | 52 | 51 | 16 | 15 | 15 | 15 | 15 | 0 | 0 | 0 | 0 | 0 |
| Northern Peninsula Area (R) | 4 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| Palm Island (S) | 6 | 6 | 7 | 7 | 7 | 5 | 5 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 |
| Paroo (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pompuraaw (S) | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quilpie (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Redland (C) | 832 | 897 | 979 | 1,060 | 1,140 | 362 | 393 | 431 | 468 | 503 | 120 | 120 | 140 | 140 | 160 |
| Richmond (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rockhampton (R) | 423 | 444 | 467 | 492 | 517 | 167 | 176 | 186 | 196 | 206 | 40 | 40 | 40 | 40 | 60 |
| Scenic Rim (R) | 206 | 219 | 234 | 251 | 266 | 72 | 77 | 83 | 89 | 95 | 0 | 0 | 0 | 0 | 0 |
| Somerset (R) | 266 | 282 | 300 | 318 | 335 | 97 | 102 | 108 | 115 | 121 | 0 | 0 | 0 | 0 | 0 |
| South Burnett (R) | 130 | 135 | 141 | 147 | 153 | 41 | 42 | 44 | 46 | 48 | 0 | 0 | 0 | 0 | 0 |
| Southern Downs (R) | 132 | 137 | 143 | 149 | 155 | 56 | 58 | 60 | 62 | 65 | 0 | 0 | 0 | 0 | 0 |
| Sunshine Coast (R) | 834 | 921 | 1,022 | 1,129 | 1,236 | 281 | 313 | 349 | 388 | 427 | 80 | 100 | 100 | 120 | 120 |
| Tablelands (R) | 81 | 84 | 87 | 90 | 94 | 34 | 35 | 36 | 37 | 38 | 0 | 0 | 0 | 0 | 0 |
| Toowoomba (R) | 72 | 76 | 80 | 84 | 88 | 25 | 27 | 28 | 29 | 31 | 0 | 0 | 0 | 0 | 0 |
| Torres (S) | 15 | 16 | 16 | 17 | 18 | 24 | 25 | 26 | 27 | 28 | 0 | 0 | 0 | 0 | 0 |
| Torres Strait Island (R) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Townsville (C) | 778 | 856 | 943 | 1,032 | 1,123 | 370 | 403 | 439 | 476 | 515 | 80 | 80 | 120 | 120 | 140 |
| Weipa (T) | 32 | 37 | 40 | 45 | 50 | 33 | 37 | 40 | 44 | 48 | 0 | 0 | 0 | 0 | 0 |
| Western Downs (R) | 88 | 91 | 94 | 97 | 100 | 35 | 36 | 38 | 39 | 40 | 0 | 0 | 0 | 0 | 0 |
| Whitsunday (R) | 655 | 702 | 755 | 805 | 859 | 342 | 365 | 389 | 413 | 438 | 120 | 140 | 140 | 160 | 160 |
| Winton (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Woorabinda (S) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wujal Wujal (S) | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yarrabah (S) | 4 | 4 | 4 | 4 | 5 | 2 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| Total | 15,987 | 17,118 | 18,476 | 19,892 | 21,333 | 6,571 | 7,042 | 7,599 | 8,180 | 8,771 | 1,740 | 1,860 | 2,060 | 2,260 | 2,420 |

Source: Economic Associates estimates

3.3 Relationship between active fleet and boating infrastructure demand

3.3.1 Conversion of active trailable fleet to boat ramp lane demand

Converting active trailable fleet estimates into boat ramp lane demand has been undertaken based on throughput rates of ramps. In SKM (1988) and Rose et. al. (2009), a rate of 30 boats per lane per day is considered to provide unhampered overall amenity, whereas a rate of 50 boats per lane per day represents congested operations.

It has been assumed that the midpoint (40) between unhampered overall amenity (30 boats per lane per day) and congested operations (50 boats per lane per day) would represent the ideal scenario, as it balances the needs and wants of trailable boat owners against the costs incurred by local governments, port authorities, water storage managers, state governments and the private sector in providing boat ramps.

This assumption is consistent with the assumption made in the *Recreational Boating Facilities Demand Forecasting Study 2011*.

3.3.2 Relationship between active non-trailable fleet and pontoon/landing demand

The literature review did not uncover any literature relating to public pontoon/landing demand.

Public pontoon/landing demand is driven by the size of the non-trailable fleet. The assessment has assumed that on a given day, an estimated 5% of the active non-trailable fleet is anticipated to demand a public pontoon/landing.

3.4 Projected boat ramp lane demand

Total boat ramp lane demand in Queensland is projected to increase from 563 lanes in 2016 to 757 lanes in 2036 (refer to Table 3.4 below). The LGAs anticipated to record the highest demand for boat ramps are:

- Gold Coast City Council (54 boat ramp lanes in 2016, 83 boat ramp lanes in 2036)
- Moreton Bay Regional Council (38 boat ramp lanes in 2016, 52 boat ramp lanes in 2036)
- Brisbane City Council (33 boat ramp lanes in 2016, 44 boat ramp lanes in 2036)
- Redland City Council (30 boat ramp lanes in 2016, 42 boat ramp lanes in 2036)
- Mackay Regional Council (34 boat ramp lanes in 2016, 46 boat ramp lanes in 2036)
- Fraser Coast Regional Council (34 boat ramp lanes in 2016, 44 boat ramp lanes in 2036)
- Cairns Regional Council (33 boat ramp lanes in 2016, 45 boat ramp lanes in 2036)
- Townsville City Council (29 boat ramp lanes in 2016, 42 boat ramp lanes in 2036)
- Sunshine Coast Regional Council (28 boat ramp lanes in 2016, 42 boat ramp lanes in 2036)
- Bundaberg Regional Council (27 boat ramp lanes in 2016, 34 boat ramp lanes in 2036).

Table 3.4 below identifies that some LGAs have demand for less than one boat ramp lane. These LGAs currently have either little or no public boating infrastructure but recorded vessel registrations.

Table 3.4: Projected boat ramp lane demand by LGA, 2016-2036

| | Trailable Fleet up to 4.5 metres | | | | | Trailable Fleet 4.5 - 8 metres | | | | | Total | | | | |
|-----------------------|----------------------------------|------|------|------|------|--------------------------------|------|------|------|------|-------|------|------|------|------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Aurukun (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Balonne (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Banana (S) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| Barcaldine (R) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Barcoo (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Blackall-Tambo (R) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Boulia (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Brisbane (C) | 24 | 25 | 27 | 29 | 31 | 9 | 10 | 11 | 12 | 13 | 33 | 35 | 38 | 41 | 44 |
| Bulloo (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Bundaberg (R) | 22 | 24 | 25 | 26 | 27 | 5 | 6 | 6 | 6 | 7 | 27 | 30 | 31 | 32 | 34 |
| Burdekin (S) | 9 | 9 | 9 | 9 | 10 | 3 | 3 | 3 | 4 | 4 | 12 | 12 | 12 | 13 | 14 |
| Burke (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Cairns (R) | 22 | 23 | 25 | 26 | 29 | 11 | 12 | 13 | 14 | 16 | 33 | 35 | 38 | 40 | 45 |
| Carpentaria (S) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Cassowary Coast (R) | 12 | 12 | 12 | 12 | 13 | 7 | 7 | 7 | 7 | 7 | 19 | 19 | 19 | 19 | 20 |
| Central Highlands (R) | 2 | 2 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 4 | 4 | 4 |
| Charters Towers (R) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Cherbourg (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Cloncurry (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Cook (S) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Croydon (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Diamantina (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Doomadgee (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Douglas (S) | 5 | 5 | 6 | 6 | 6 | 4 | 4 | 4 | 4 | 4 | 9 | 9 | 10 | 10 | 10 |
| Etheridge (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Flinders (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Fraser Coast (R) | 24 | 26 | 28 | 30 | 32 | 10 | 10 | 11 | 12 | 12 | 34 | 36 | 39 | 42 | 44 |
| Gladstone (R) | 14 | 15 | 17 | 19 | 20 | 6 | 7 | 8 | 8 | 9 | 20 | 22 | 25 | 27 | 29 |
| Gold Coast (C) | 40 | 44 | 49 | 54 | 60 | 14 | 16 | 18 | 20 | 23 | 54 | 60 | 67 | 74 | 83 |
| Goondiwindi (R) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Gympie (R) | 6 | 6 | 7 | 7 | 7 | 2 | 2 | 2 | 3 | 3 | 8 | 8 | 9 | 10 | 10 |
| Hinchinbrook (S) | 9 | 9 | 10 | 10 | 11 | 4 | 4 | 5 | 5 | 5 | 13 | 13 | 15 | 15 | 16 |
| Hope Vale (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Ipswich (C) | 2 | 3 | 4 | 5 | 6 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 7 | 8 |
| Isaac (R) | 5 | 5 | 6 | 6 | 7 | 2 | 2 | 2 | 3 | 3 | 7 | 7 | 8 | 9 | 10 |
| Kowanyama (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Livingstone (S) | 12 | 13 | 14 | 17 | 18 | 7 | 7 | 8 | 8 | 9 | 19 | 20 | 22 | 25 | 27 |
| Lockhart River (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Lockyer Valley (R) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Logan (C) | 4 | 5 | 5 | 6 | 7 | 2 | 2 | 2 | 3 | 3 | 6 | 7 | 7 | 9 | 10 |
| Longreach (R) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Mackay (R) | 25 | 28 | 29 | 32 | 34 | 9 | 10 | 10 | 11 | 12 | 34 | 38 | 39 | 43 | 46 |
| McKinlay (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |

| | Trailable Fleet up to 4.5 metres | | | | | Trailable Fleet 4.5 - 8 metres | | | | | Total | | | | |
|-----------------------------|----------------------------------|------------|------------|------------|------------|--------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 | 2016 | 2021 | 2026 | 2031 | 2036 |
| Mapoon (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Maranoa (R) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Mareeba (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Moreton Bay (R) | 28 | 30 | 33 | 36 | 38 | 10 | 11 | 12 | 13 | 14 | 38 | 41 | 45 | 49 | 52 |
| Mornington (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Mount Isa (C) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Murweh (S) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Napranum (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Noosa (S) | 6 | 6 | 7 | 7 | 7 | 3 | 3 | 3 | 3 | 3 | 9 | 9 | 10 | 10 | 10 |
| North Burnett (R) | 1 | 1 | 1 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 |
| Northern Peninsula Area (R) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Palm Island (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Paroo (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Pormpuraaw (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Quilpie (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Redland (C) | 21 | 22 | 24 | 27 | 29 | 9 | 10 | 11 | 12 | 13 | 30 | 32 | 35 | 39 | 42 |
| Richmond (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Rockhampton (R) | 11 | 11 | 12 | 12 | 13 | 4 | 4 | 5 | 5 | 5 | 15 | 15 | 17 | 17 | 18 |
| Scenic Rim (R) | 5 | 5 | 6 | 6 | 7 | 2 | 2 | 2 | 2 | 2 | 7 | 7 | 8 | 8 | 9 |
| Somerset (R) | 7 | 7 | 8 | 8 | 8 | 2 | 3 | 3 | 3 | 3 | 9 | 10 | 11 | 11 | 11 |
| South Burnett (R) | 3 | 3 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 5 | 5 | 5 |
| Southern Downs (R) | 3 | 3 | 4 | 4 | 4 | 1 | 1 | 2 | 2 | 2 | 4 | 4 | 6 | 6 | 6 |
| Sunshine Coast (R) | 21 | 23 | 26 | 28 | 31 | 7 | 8 | 9 | 10 | 11 | 28 | 31 | 35 | 38 | 42 |
| Tablelands (R) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Toowoomba (R) | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Torres (S) | <1 | <1 | <1 | <1 | <1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Torres Strait Island (R) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Townsville (C) | 20 | 21 | 23 | 25 | 29 | 9 | 10 | 11 | 12 | 13 | 29 | 31 | 34 | 37 | 42 |
| Weipa (T) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Western Downs (R) | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 4 |
| Whitsunday (R) | 17 | 18 | 19 | 20 | 22 | 8 | 10 | 10 | 11 | 11 | 25 | 28 | 29 | 31 | 33 |
| Winton (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Woorabinda (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Wujal Wujal (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Yarrabah (S) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Total | 401 | 425 | 464 | 496 | 536 | 162 | 176 | 190 | 207 | 221 | 563 | 601 | 654 | 703 | 757 |

Note: Economic Associates estimates, derived from Table 3.3

3.5 Projected pontoon/landing demand

In Queensland, total pontoon/landing demand is projected to increase from 87 pontoons/landings in 2016 to 121 pontoons/landings in 2036.

The LGAs anticipated to have the most significant demand for pontoons/landings are Gold Coast City, Brisbane City, Redland City, Sunshine Coast Regional Council, Cairns Regional Council, Fraser Coast Regional Council and Whitsunday Regional Council.

Table 3.5 below summarises the projected pontoon/landing demand by LGA between 2016 and 2036.

Table 3.5: Projected pontoon / landing demand by LGA, 2016-2036

| | 2016 | 2021 | 2026 | 2031 | 2036 |
|-----------------------|------|------|------|------|------|
| Aurukun (S) | 0 | 0 | 0 | 0 | 0 |
| Balonne (S) | 0 | 0 | 0 | 0 | 0 |
| Banana (S) | 0 | 0 | 0 | 0 | 0 |
| Barcaldine (R) | 0 | 0 | 0 | 0 | 0 |
| Barcoo (S) | 0 | 0 | 0 | 0 | 0 |
| Blackall-Tambo (R) | 0 | 0 | 0 | 0 | 0 |
| Boulia (S) | 0 | 0 | 0 | 0 | 0 |
| Brisbane (C) | 8 | 9 | 9 | 10 | 11 |
| Bulloo (S) | 0 | 0 | 0 | 0 | 0 |
| Bundaberg (R) | 3 | 3 | 3 | 3 | 3 |
| Burdekin (S) | 1 | 1 | 1 | 1 | 1 |
| Burke (S) | <1 | <1 | <1 | <1 | <1 |
| Cairns (R) | 6 | 7 | 7 | 8 | 8 |
| Carpentaria (S) | <1 | <1 | <1 | <1 | <1 |
| Cassowary Coast (R) | 3 | 3 | 3 | 3 | 3 |
| Central Highlands (R) | 0 | 0 | 0 | 0 | 0 |
| Charters Towers (R) | 0 | 0 | 0 | 0 | 0 |
| Cherbourg (S) | 0 | 0 | 0 | 0 | 0 |
| Cloncurry (S) | 0 | 0 | 0 | 0 | 0 |
| Cook (S) | <1 | <1 | <1 | <1 | <1 |
| Croydon (S) | 0 | 0 | 0 | 0 | 0 |
| Diamantina (S) | 0 | 0 | 0 | 0 | 0 |
| Doomadgee (S) | 0 | 0 | 0 | 0 | 0 |
| Douglas (S) | 2 | 2 | 2 | 2 | 2 |
| Etheridge (S) | 0 | 0 | 0 | 0 | 0 |
| Flinders (S) | 0 | 0 | 0 | 0 | 0 |
| Fraser Coast (R) | 6 | 6 | 7 | 7 | 8 |
| Gladstone (R) | 3 | 3 | 3 | 4 | 4 |
| Gold Coast (C) | 14 | 16 | 18 | 20 | 22 |
| Goondiwindi (R) | 0 | 0 | 0 | 0 | 0 |
| Gympie (R) | 1 | 1 | 1 | 1 | 2 |
| Hinchinbrook (S) | 2 | 2 | 2 | 2 | 2 |
| Hope Vale (S) | <1 | <1 | <1 | <1 | <1 |
| Ipswich (C) | <1 | <1 | <1 | <1 | <1 |
| Isaac (R) | 1 | 1 | 1 | 1 | 1 |
| Kowanyama (S) | 0 | 0 | 0 | 0 | 0 |
| Livingstone (S) | 4 | 4 | 4 | 6 | 6 |
| Lockhart River (S) | <1 | <1 | <1 | <1 | <1 |
| Lockyer Valley (R) | 0 | 0 | 0 | 0 | 0 |
| Logan (C) | <1 | <1 | <1 | <1 | <1 |
| Longreach (R) | 0 | 0 | 0 | 0 | 0 |
| Mackay (R) | 4 | 4 | 6 | 6 | 6 |
| McKinlay (S) | 0 | 0 | 0 | 0 | 0 |
| Mapoon (S) | 0 | 0 | 0 | 0 | 0 |

| | 2016 | 2021 | 2026 | 2031 | 2036 |
|-----------------------------|-----------|-----------|------------|------------|------------|
| Maranoa (R) | 0 | 0 | 0 | 0 | 0 |
| Mareeba (S) | 0 | 0 | 0 | 0 | 0 |
| Moreton Bay (R) | 6 | 6 | 7 | 8 | 8 |
| Mornington (S) | <1 | <1 | <1 | <1 | <1 |
| Mount Isa (C) | 0 | 0 | 0 | 0 | 0 |
| Murweh (S) | 0 | 0 | 0 | 0 | 0 |
| Napranum (S) | 0 | 0 | 0 | 0 | 0 |
| Noosa (S) | 1 | 1 | 2 | 2 | 2 |
| North Burnett (R) | 0 | 0 | 0 | 0 | 0 |
| Northern Peninsula Area (R) | <1 | <1 | <1 | <1 | <1 |
| Palm Island (S) | <1 | <1 | <1 | <1 | <1 |
| Paroo (S) | 0 | 0 | 0 | 0 | 0 |
| Porpuraaw (S) | 0 | 0 | 0 | 0 | 0 |
| Quilpie (S) | 0 | 0 | 0 | 0 | 0 |
| Redland (C) | 6 | 6 | 7 | 7 | 8 |
| Richmond (S) | 0 | 0 | 0 | 0 | 0 |
| Rockhampton (R) | 2 | 2 | 2 | 2 | 3 |
| Scenic Rim (R) | 0 | 0 | 0 | 0 | 0 |
| Somerset (R) | 0 | 0 | 0 | 0 | 0 |
| South Burnett (R) | 0 | 0 | 0 | 0 | 0 |
| Southern Downs (R) | 0 | 0 | 0 | 0 | 0 |
| Sunshine Coast (R) | 4 | 5 | 5 | 6 | 6 |
| Tablelands (R) | 0 | 0 | 0 | 0 | 0 |
| Toowoomba (R) | 0 | 0 | 0 | 0 | 0 |
| Torres (S) | <1 | <1 | <1 | <1 | <1 |
| Torres Strait Island (R) | <1 | <1 | <1 | <1 | <1 |
| Townsville (C) | 4 | 4 | 6 | 6 | 7 |
| Weipa (T) | <1 | <1 | <1 | <1 | <1 |
| Western Downs (R) | 0 | 0 | 0 | 0 | 0 |
| Whitsunday (R) | 6 | 7 | 7 | 8 | 8 |
| Winton (S) | 0 | 0 | 0 | 0 | 0 |
| Woorabinda (S) | 0 | 0 | 0 | 0 | 0 |
| Wujal Wujal (S) | 0 | 0 | 0 | 0 | 0 |
| Yarrabah (S) | <1 | <1 | <1 | <1 | <1 |
| Total | 87 | 93 | 103 | 113 | 121 |

Source: Economic Associates estimates, derived from Table 3.3

4 REFERENCES

- ABS (2010) *Participation in Sport and Physical Recreation, Australia, 2009-10*, Cat. No. 4177.0, Australian Bureau of Statistics, Canberra
- ABS (2017a) *2016 Census of Population and Housing, Basic Community Profile*, Cat. No. 2001.0, Australian Bureau of Statistics, Canberra
- ABS (2017b) *Estimated Resident Population, Australia, 2015-16*, Cat. No. 3218.0, Australian Bureau of Statistics, Canberra
- Department of Agriculture and Fisheries (2014) *Statewide Recreational Fishing Survey 2013-14 – Key Findings*, <https://www.daf.qld.gov.au/fisheries/monitoring-our-fisheries/statewide-and-regional-recreational-fishing-survey/key-findings>, last accessed 17 October 2016
- Department of Transport and Main Roads (various years) *Recreational Vessels Registrations by Local Government Area, 2005-2016*
- Department of Transport and Main Roads (2013) *Marine Facilities and Infrastructure Plan*, 22 February 2013 version
- Ormsby, Jayne (2004) *A review of the social, motivational and experiential characteristics of recreational anglers from Queensland and the Great Barrier Reef Region*, Research Publication No. 78, prepared on behalf of the Great Barrier Reef Marine Park Authority, Townsville
- Queensland Parks and Wildlife Service (2010)
- Queensland Treasury (2016) *Queensland Government Population Projections by LGA, medium series*, prepared by Queensland Government Statistician's Office
- Rose, T., R. Powell & J. Yu (2009). *Identification of the Present and Future Recreational Boating Infrastructure in Redland City – A 10 Year Infrastructure Plan*- Griffith University
- SKM (1998) *Public Boat Ramps Central Queensland Strategic Plan - Volume One - Demand Forecasting - Noosa to Yeppoon*. Sinclair Knight Merz, March 1998.
- University of Adelaide (2016a) *ARLA (Accessibility/Remoteness Index of Australia)*, available at: https://www.adelaide.edu.au/apmrc/research/projects/category/about_aria.html, last accessed 17 October 2016
- University of Adelaide (2016b) *ARLA+ Scores by 2011 Census Geographic Boundaries*, http://www.spatialonline.com.au/ARIA_2011/default.aspx, last accessed 17 October 2016

APPENDIX A

DISTRIBUTION OF BOAT REGISTRATIONS TO LGAS OF USE

Appendix C – Methodology for selecting priorities

Methodology for selecting priorities

Boat ramp facilities

The selection of recommended works and their priority level has been considered on several levels. The first level of consideration for increasing boat ramp capacity is founded on two main criteria:

- type of access required – open-water or non-open-water
- preference for expansion of existing facilities if suitably located.

Expansion of existing facilities is preferred over the establishment of new facilities in locations where travel times for most users to the existing facilities are not onerous, as road infrastructure for access is already in place and the foreshore is currently allocated to the purpose. TMR's Marine facilities and infrastructure plan (2016)⁸ also guides the prioritisation of boating facilities. This plan states that:

“The department favours proposals for boat launching and landing facilities that give access to the open sea at all tides.

Priority will be given to the provision of sheltered all-tide or near all-tide launching facilities giving access to the open sea on an all-tide or near all-tide basis.

Part-tide facilities (for launching or access) may be provided where there is demand, and dredged access is not feasible. For instance, beach access or open beach ramps may be provided where there is sufficient demand and no suitable nearby sheltered waterway.” (Section 3.1.1 – Coastal locations – guideline).

“Access channels are not normally provided to open beach boat ramps. Beach access and open beach boat ramps are regarded as part-tide facilities.” (Section 6.8 – Dredging of access channels to beach ramps – guideline).

The process used within each LGA identified opportunities to meet the need for ramp lanes for each type of access (open-water/non-open-water) at each of the priority time steps (2016, 2021, 2026 and 2036), is set out in the flowchart in Figure 1. Once the forecast shortfall for ramp lanes for a priority level has been met, further consideration of facilities falls to the next priority level until all forecast shortfall is met.

Deep-draught vessel landings

The criteria for recommended works and priorities for landings comprises:

- the geographical spread of existing facilities
- unserved destinations and popular anchorages
- access to water of sufficient depth
- access to landside services (shops or transportation) for mainland locations.

In some instances, deep water is not available and so provision for access by tenders or at higher tides is made.

In most instances where demand for additional landings is identified, there are very few locations that satisfy all needs. The prioritisation for these facilities is based on stakeholder perceptions of urgency. From a stakeholder perspective, the demand for landings is all current (that is, now). However, the recommendations have matched the timing of new landings to the demand forecast.

⁸ TMR (2016) Marine facilities and infrastructure plan

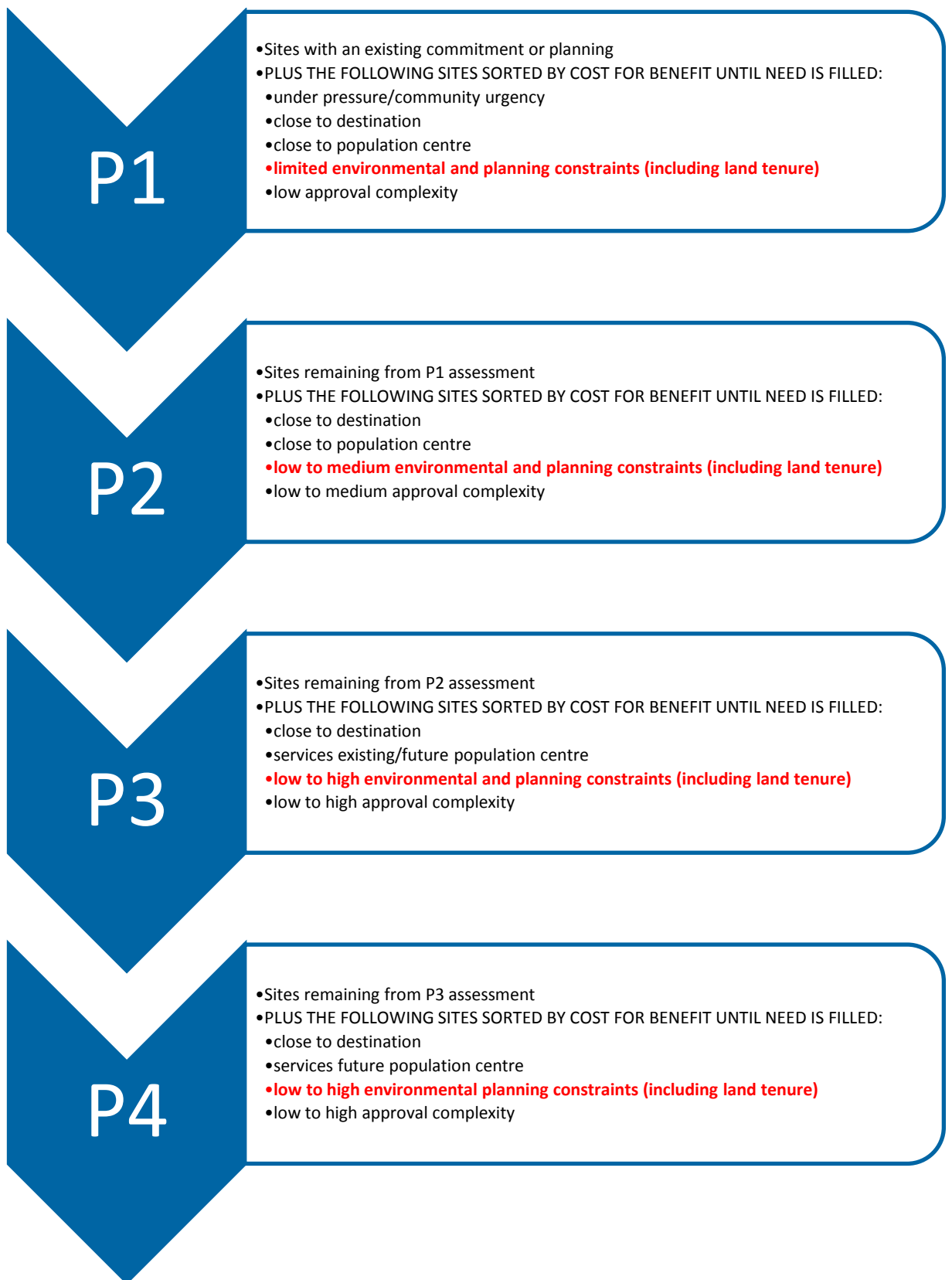


Figure 1 – Priority selection methodology

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Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|----------|-------------------------------|------------------|---|--------------------|---|---------------|
| | | Name | Signature | Name | Signature | Date |
| 0 | M Mikelat K O'Malley-Jones | K O'Malley-Jones |  | S Vivian |  | December 2017 |
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