Queensland Recreational Boating Facilities Demand Forecasting Study 2017

Gold Coast City Council Assessment

GHD

ECONOMIC ASSOCIATES

December 2017

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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)

‘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 section 4.1.1 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 section 4.2.1 for additional detail

‘DEHP’ means the Department of Environment and Heritage Protection

‘EPBC Act’ means the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)

‘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 Gold Coast City 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 Gold Coast City Council

The primary issues raised by stakeholders around access to recreational boating facilities in the Gold Coast City Council area centred on:

- security of vehicles and vessels
- lack of tender-accessible landings in close proximity to shopping areas
- overcrowding.

Demand assessment

The demand assessment is based on boat registrations from within the local government area (LGA) of Gold Coast 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 include:

- The population of Gold Coast City Council is projected to increase from 576,918 persons in 2016 to 888,608 persons in 2036, or by 2.2% per annum, above the state-wide five year forecast average of 1.6% (Appendix C).
- Boat registrations are highest for boats up to 4.5 metres in length.
- Trailable and non-trailable vessel registrations within the Gold Coast LGA are mostly used on the water within the LGA, with some leakage/export in usage from the LGA to Redland City Council and interstate (i.e. northern New South Wales).
- There are significant vessel inflows from other south-east Queensland LGAs, western LGAs and interstate.
- The registration activation rate from residents of the LGA is anticipated to be low (6%) due to its metropolitan location.

Boat ramps

At present there are 33 boat ramp facilities in the LGA, containing 53 boat ramp lanes, however the lack of parking for car-trailer units (CTU) or limited tidal access at some locations means that the effective capacity of these ramps is 41.9 lanes. This is most evident for facilities that provide open-water access, where there are currently 31 actual lanes but only 24.6 effective lanes.

To address any shortfall between demand and current capacity, existing facilities were further assessed to identify what type of access the facility provides to the two main destinations, being either open-water or non-open-water. This then allows identification of the type of additional facilities needed to address demand.

The projected boat ramp lane shortfall for Gold Coast is shown in Table 1.

Table 1 – Projected boat ramp lane shortfall, Gold Coast City Council

Evaluation category*	Existing effective capacity*	2016		2021		2026		2036	
		Demand	Shortfall	Demand	Shortfall	Demand	Shortfall	Demand	Shortfall
Open-water access	24.1	29.3	5.2	32.8	8.7	36.7	12.6	45.9	21.8
Non-open-water access	17.8	24.7	6.9	27.2	9.4	30.3	12.5	37.1	19.3
Total	**41.9**	**54**	**12.1**	**60**	**18.1**	**67**	**25.1**	**83**	**41.1**

**Refer section 4.1.2 and* Table 6 *for detailed evaluation categories*

**See Appendix B and* Table 6 *for capacity assessment*

Landings

The assessment of capacity and shortfall in landings is shown in Table 2 and Table 3.

Table 2 – Existing landing capacity, Gold Coast City Council

Evaluation category	Existing effective capacity
# of public sheltered mainland landings*	7
# of public island landings*	2
# major private landings*	14
Total	**23**
Facilities not contributing to recreational capacity:	
# of public unsheltered mainland landings	0
# of jetties not used for recreational boating*	3

**public sheltered mainland landings include pontoons at Jacobs Well, Main Beach, The Spit, Paradise Point, Surfers Paradise, and two at Southport*

**public island landings include Tipplers Passage and Dux Anchorage*

**private landings include marinas and clubs, accessible by fee for deep-draught vessels, and by arrangement, limited access for tender dinghies (varies with private entity, some free)*

**jetties not used for recreational boating include Hope Island, Jacobs Well and Labrador*

Table 3 – Projected landing shortfall, Gold Coast City Council

Evaluation category	Existing effective capacity*	2016		2021		2026		2036	
		Demand	Shortfall	Demand	Shortfall	Demand	Shortfall	Demand	Shortfall
# of landings*	23	14	-9	16	-7	18	-5	22	-1

**# of landings consists of public sheltered mainland landings, public island landings and major private landings*

This assessment indicates that at present the public landings network in conjunction with the supplementary capacity provided by commercial or club landings is adequate to cater for existing and forecast demand.

Recommended priorities

Refer to Table 4 for the Gold Coast City Council area recommended priorities.

Recommended priorities to increase capacity and meet demand have been defined over the following time scales:

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.

Table 4 – Recommended priorities to increase capacity, Gold Coast City Council area

Priority	Sites
Priority 1 (as soon as possible)	New facility at Marks Road, Woongoolba – 1-lane ramp with 20 CTU spaces.
	Muriel Henchman Drive, The Spit – additional 2-lanes and floating walkway on both ramps and expand parking by 90 CTU spaces.
	Jacobs Well Road, Jacobs Well – expand ramp to 3-lanes with a floating walkway and relocate pontoon.
	Pacific Motorway, Oxenford – expand ramp by 1-lane, install a floating walkway and expand parking by 21 CTU spaces.
	New facility at Steiglitz Marine Precinct – 4-lane boat ramp with floating walkway and 110 CTU spaces.
	Cabbage Tree Point, Steiglitz – install floating walkway. Additional 20 CTU spaces provided in adjacent Steiglitz Marine Precinct.
	Alberton Road, Alberton – expand ramp by 1-lane, install a pontoon and increase parking by 35 CTU spaces.
Priority 2 (over the next five years)	New facility at Beattie Road, Coomera – 2-lane ramp with a floating walkway and 30 CTU spaces.
	Boykambil Esplanade, Hope Island – expand ramp to 2-lanes with a floating walkway and increase parking by 35 CTU spaces.
	Thrower Dive, Palm Beach – expand ramp to 4-lanes with a floating walkway and expand carpark to 90 CTU spaces.
	Condamine Crescent, Helensvale – expand ramp to 2-lanes and formalise 45 CTU spaces.

Priority	Sites
Priority 3 (over the next five to ten years)	Paterson Road, Yatala – expand ramp to 2-lanes and expand parking to 45 CTU spaces.
	Carrara Road, Carrara – expand parking to achieve 10 CTU spaces.
	New facility at Tallebudgera Drive, Palm Beach– 2-lane ramp with a floating walkway and 45 CTU spaces.
	New facility at Old Tamborine Road, Oxenford – 1-lane ramp with 10 CTU spaces.
	New facility at Coplicks Lane, Tallebudgera – 1-lane ramp with 10 CTU spaces.
	New facility at Kerkin Road North, Pimpama – 1-lane ramp with 10 CTU spaces.
Priority 4 (other)	New facility at Steiglitz Road (South), Steiglitz – establish a major boating facility with 8-lane ramp, 2 floating walkways and 180 CTU spaces.
	New facility at Jacobs Well spent quarries – Potential to modify quarries to create artificial waterways for motorised watersport use.

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 LGAs.

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 Gold Coast City Council area are that:

- The Gold Coast area is the administrative centre of southern south-east Queensland, with general tourism a key industry.
- The population of Gold Coast City Council is projected to increase from 576,918 persons in 2016 to 888,608 persons in 2036, or by 2.2% per annum, above the state-wide five year forecast average of 1.6% (Appendix C).
- Population growth will be dominated by development in the northern corridor around the Bruce Highway (Helensvale and Ormeau) areas.
- Access to the Broadwater is reaching saturation point on flat-water days.
- There is an accepted/known shortfall in boat launching facilities.
- The area is part of the densely populated south-east Queensland region, and is considered to be a metropolitan LGA under the remoteness measures used by the Australian Bureau of Statistics.

3. Existing facilities

3.1 Overview of existing facilities

Within the Gold Coast City Council area, existing recreational boating facilities are owned and managed by several organisations, shown in Table 5.

Table 5 – Recreational boating facilities within Gold Coast City Council area

Infrastructure owner	Boat ramps		Landings	
	Facilities	Lanes	Pontoons	Jetties
Gold Coast Waterways Authority mainland	28	48	7	3
Gold Coast Waterways Authority island	0	0	2	0
Gold Coast City Council	5	5	0	0
Private landings (marinas/clubs)	N/A	N/A	14	0
Total	**33**	**53**	**23**	**3**

A map indicating the location of existing facilities is included as Appendix A.

Appendix B contains a summary capacity assessment of these existing facilities.

Important or popular public boat ramp facilities are located at:

- Muriel Henchman Drive, The Spit (The Broadwater)
- Jacobs Well Road, Jacobs Well
- Broadwater Parklands, Southport (The Broadwater)
- Thrower Drive, Palm Beach (Currumbin Creek).

Existing ramp facilities (including minor ones not mentioned above):

- service the main population areas from the southern Gold Coast, north to the Logan River, and inland to Coomera
- provide open-water access, or access to estuarine reaches of the numerous river and creek systems – many facilities provide access to both, such as Muriel Henchman Drive and Jacobs Well Road.

Research referenced in the previous demand assessment study (GHD, 2011)[1] indicated that boat owners were prepared to travel up to approximately one hour to reach major or preferred marine infrastructure. In many locations, this infrastructure is represented by facilities that provide all-tide, or near all-tide, open-water access.

All-tide, open-water access is provided at many facilities in the Gold Coast area, and most of these are within approximately a one-hour drive of main population areas.

The public deep-draught vessel landings within the LGA comprise:

- pontoons at Tipplers Passage and Dux Anchorage on South Stradbroke Island – both are popular with recreational vessels and commercial vessels
- pontoons at the Jacobs Well Road, Muriel Henchman Drive and Main Beach (Waterways Drive) boat ramps, which also service the adjacent anchorage, and were originally installed as boat ramp queuing facilities
- pontoons at Broadwater Parklands, Southport (Marine Parade) and Paradise Point which service the wider community and nearby anchorages
- a pontoon at Cavill Avenue to provide landing access to Surfers Paradise
- jetties at Hope Island, Jacobs Well and Labrador that have little to nil usage by recreational or commercial vessels and are in use as popular fishing platforms.

Two pontoons in Currumbin Creek are used by small recreational and non-powered vessels. However, the creek is inaccessible to deep-draught vessels due to very low bridges and shallow water depths.

3.2 Key issues and hotspots

The primary issues raised by stakeholders around access to recreational boating facilities in the Gold Coast City Council area are centred on safety and security, accessibility (from land and from water), and capacity.

3.2.1 Safety and security

Security was identified as a major issue at several of the more remote ramps. The main concerns related to a lack of surveillance of car parking areas, with vehicles broken into or vandalised while the owners are out on their vessels.

Concerns were raised regarding vessel security at ramps where some users are forced to park several hundred metres away (such as at Cabbage Tree Point). There is currently no queuing facility at the boat ramp (other than the ramp itself and a beach area), and vehicles are often forced to park large distances away from the ramp. Ramp users are concerned that their vessels may be stolen while they are parking/retrieving their vehicles.

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

At ramps with strong cross currents, launching and retrieval can be difficult, particularly for people on their own. Floating walkways are popularly requested to manage this.

3.2.2 Accessibility

A key issue raised by stakeholders is the lack of pontoons for use by deep-draught vessel tenders to be able to access shops and other commercial areas for more than an hour or so. Many people live on vessels anchored in the Broadwater, and the current allowable mooring times are insufficient to allow basic grocery shopping, or trips into commercial areas for business dealings. Additional facilities close to shopping areas such as Australia Fair in Southport were identified as being highly desirable.

3.2.3 Facilities capacity

Overcrowding and the lack of CTU parking at facilities was raised by many stakeholders. Most of the overcrowding centred on key facilities with Muriel Henchman Drive, Jacobs Well Road, and Cabbage Tree Point being the sites of main concern. Importantly, stakeholders identified that CTU parking at many facilities was also consistently reduced by cars without trailers being parked in CTU bays.

Competition with other recreational uses was also raised at facilities on the Broadwater such as Muriel Henchman Drive, with the CTU parking area sometimes reduced to allow for events such as triathlons.

4. Capacity assessment

4.1 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.

4.1.1 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 3962[2] and Economic Associates (2011)[3])
- supported by landside infrastructure such as queuing and manoeuvring areas
- supported by an appropriate number of CTU parking spaces.

[2] AS 3962-2001 Guidelines for the design of marinas
[3] Economic Associates (2011) Recreational Boating Facilities Demand Forecasting Study: Demand Analysis

The number of launch / retrievals per lane per day has been selected based on the relevant Australian Standard and Economic Associates (2011)[3]. This latter report summarised research undertaken by SKM (1988)[4] and Rose et. al (2009)[5], 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)[6] 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 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

[4] SKM (1988) Public Boat Ramps Central Queensland Strategic Plan, Volume One, demand forecasting – Noosa to Yeppoon
[5] 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
[6] TMR (2016) Marine Facilities and Infrastructure Plan

- 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 calculation is illustrated further in Appendix B, which details the actual and effective lanes for each facility.

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. The capacity assessment in Appendix B also identifies the limiting capacity constraint for each facility.

4.1.2 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.

4.1.3 Existing capacity

The existing boat ramp facilities have been assessed individually to quantify their "effective" lane capacity. This assessment is presented in Appendix B and summarised in Table 6.

Table 6 – Summary of existing boat ramp effective capacity by access type, Gold Coast City Council

Facility accessibility and tidal availability at the ramp	# of facilities	# facilities limited by		Actual # of lanes	Effective lanes
		Water-side infrastructure	Land-side infrastructure		
Open-water access					
All-tide	14	6	8	28	23.1
Near all-tide	2	0	2	2	1
Part-tide	1	1	0	1	0.5
Subtotal	**17**	**7**	**10**	**31**	**24.6**
Depth-limited open-water access					
All-tide	4	2	2	5	4.5
Near all-tide	0	0	0	0	0
Part-tide	0	0	0	0	0
Subtotal	**4**	**2**	**2**	**5**	**4.5**
Distance-limited open-water access					
All-tide	12	4	8	17	12.8
Near all-tide	0	0	0	0	0
Part-tide	0	0	0	0	0
Subtotal	**12**	**4**	**8**	**17**	**12.8**
Infrastructure-limited open-water access	**0**	**0**	**0**	**0**	**0**
Beach ramps	**0**	**0**	**0**	**0**	**0**
No open-water access	**0**	**0**	**0**	**0**	**0**
Total	**33**	**13**	**20**	**53**	**41.9**

Key observations drawn from this analysis include:

- All facilities provide access to open-water, although some are constrained by distance or water depths. All of these facilities also provide access into sheltered waterways such as the Broadwater and southern Moreton Bay, or river/creek systems.
- There are no freshwater facilities.
- Capacity at most facilities is constrained by the availability of sufficient CTU parking to fully support the water-side infrastructure already at the site.
- There are 53 actual lanes but only 41.9 effective lanes at present, reflecting limitations largely imposed by the lack of adequate parking. This is most evident for facilities that provide open-water access, where there are currently 31 actual lanes but only 24.6 effective lanes.

4.2 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).

4.2.1 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.

4.2.2 Existing capacity – deep-draught vessel landings

Within the Gold Coast City Council area, there are 12 public landings that can be accessed by larger and deeper draught vessels for short-term stays (a couple of hours or less), as detailed in section 3.1. As previously mentioned, the two public pontoons in Currumbin Creek are inaccessible to deep-draught vessels.

Key observations indicate that:

- The Gold Coast is well serviced by landings for deep-draught vessels in the northern half of the LGA where waters are sheltered. In the southern half of the LGA the coastline is too exposed to wave action and the creeks too shallow to allow deep-draught vessels to safely navigate into creek systems.
- All nine pontoons are actively used by recreational vessels. The pontoons at Dux Anchorage and Tipplers Passage have no provisions available nearby and are only used by recreational and commercial vessels to access South Stradbroke Island.
- The pontoon at Cavill Avenue provides landing access to Surfers Paradise but does not directly service any particular anchorages.
- The remaining six pontoons are located throughout the Broadwater and southern Moreton Bay and are in varying proximity to basic food provisions. All service anchorages and most have close access to public transport, but have time limitations for mooring that are perceived as being too short by some stakeholders to allow adequate time to access provisions.
- The three jetties at Hope Island, Jacobs Well and Labrador are less functional than pontoons and are used mainly for fishing rather than as a landing for vessels. Anecdotal and observational evidence indicates that they are not used by either recreational or commercial vessels. Their contribution to capacity is therefore considered to be zero.

Although outside the scope of this study, in addition to the extensive network or residential canals with private pontoons for the various residences, there are numerous privately owned modern facilities within the LGA that also actively contribute to landing capacity. Most of these are located on or close to the Broadwater or southern Moreton Bay, and contain small marinas with access to shops or commercial areas in close proximity. Key facilities include:

- Bayview Harbour, Runaway Bay
- The Boat Works Marina, Coomera
- Calypso Bay, Jacobs Well
- Coomera Waters, Coomera
- Couran Cove, South Stradbroke Island
- Gold Coast City Marina, Coomera
- Hope Harbour Marina, Hope Island
- Hope Island Resort Marina, Hope Island
- Horizon Shores, Steiglitz
- Southport Yacht Club, Main Beach
- Sanctuary Cove, Hope Island
- Runaway Bay Marina, Runaway Bay
- Palazzo Versace, Main Beach

- Mariners Cove, Main Beach.

The effective capacity of landings servicing the Gold Coast LGA is summarised in Table 7.

Table 7 – Existing landing capacity, Gold Coast City Council

Evaluation category	Existing effective capacity
# of public sheltered mainland landings	7
# of public island landings	2
# major private landings	14
Total	**23**
Facilities not contributing to recreational capacity:	
# of public unsheltered mainland landings	0
# of jetties not used for recreational boating	3

5. 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.

5.1 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.

5.1.1 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 C. Note that vessel registrations are less in inland LGAs compared to adjacent coastal LGAs.

A summary of the relative geographic contribution of demand to boat ramp facilities located in the Gold Coast City Council area is shown in Table 8 below for 2016 registration data.

5.1.2 Registration activation

GCWA's approach to the provision of infrastructure for recreational boating is in line with TMR's which is to aim to satisfy average demand rather than peak demand (TMR, 2016)[7].

GCWA 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 GCWA 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)[8] 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 C. The adopted parameters for this assessment are summarised in Table 8.

[7] TMR (2016) Marine Facilities and Infrastructure Plan
[8] GHD (2011) Recreational Boating Facilities Demand Forecasting Study. Report prepared for TMR, September.

Table 8 – Contribution to demand for boat ramp facilities, Gold Coast City Council

Contributing LGA	% of contributing LGA using Gold Coast facilities*	# of registered vessels from contributing LGA using Gold Coast facilities	% registration activation	Contribution comment
Gold Coast	70%	22,762	6%	Resident population Older, metropolitan, coastal
Brisbane	20%	2,878	6%	Visitation from nearby coastal LGA Metropolitan, coastal
Goondiwindi	5%	43	10%	Western catchment Blue collar, older, regional centre, non-coastal
Ipswich	35%	2,158	8%	Western catchment Blue collar, metropolitan, non-coastal
Lockyer Valley	10%	175	8%	Western catchment Older, blue collar, metropolitan, non-coastal
Logan	50%	6,142	8%	Hinterland catchment Blue collar, metropolitan, non-coastal
Redland	6%	695	6%	Visitation from adjacent coastal LGA Older, blue collar, metropolitan, coastal
Scenic Rim	25%	448	8%	Hinterland catchment Older, blue collar, metropolitan, non-coastal
Southern Downs	15%	215	10%	Western catchment Older, blue collar, regional centre, non-coastal
Toowoomba	5%	306	8%	Western catchment Older, blue collar, metropolitan, non-coastal
Interstate	30%	228	-	Visitation from interstate

**See Economic Associates Appendix C for percentage estimates*

Key observations relevant to the registration activation include:

- There is a high incidence of older residents compared to the state average outside the Gold Coast LGA.
- Many of the contributing LGAs are classified as metropolitan locations, and therefore have ready access to a wider variety of recreational pursuits than non-metropolitan LGAs.

Key observations regarding boat ramp demand relevant to the contributions from the various sources include:

- Population areas within the Gold Coast LGA are largely constrained to the coast by the Great Dividing Range. Most (70%) Gold Coast residents are considered to use facilities within the LGA. The remaining 30% are considered to use facilities in Redland LGA or interstate (New South Wales).

- Demand for tidal facilities from inland population areas is partly funnelled into Gold Coast by virtue of the road network (Logan Motorway)
- Boat ramp facilities are close to the boundaries of Gold Coast LGA with Logan City Council. Most of the demand from Logan is expected to be directed to the Gold Coast, with very little demand passing from the Gold Coast to Logan.
- Facilities at the northern end of the LGA attract high visitation from other LGAs due to the close proximity to plentiful fishing areas and sheltered waters.

5.1.3 Demand classifications

The demand by registered vessels has been sub-classified to better align with differing types of destinations:

- Smaller vessels (less than 4.5m in length) are considered to be generally used to access protected waters such as creeks and estuaries, and to venture into nearshore waters during good weather conditions.
- Larger vessels (between 4.5 and 8m in length) are considered to be generally used to access offshore waters, but seek protected waters during poor weather conditions. Depending on the location, some larger vessels are unable to use more tidally restricted facilities in creeks and estuaries.

5.1.4 Boat ramp lane demand

Applying the registration distribution and activation factors to vessel registration data results in an effective quantitative demand for boat ramp lanes within the catchment. This is summarised in Table 9, and shown in terms of small and large vessel demand. Assumptions used in the projections for future growth in demand are provided in Appendix C (Economic Associates report).

Table 9 – Boat ramp lane demand projections, Gold Coast City Council

Vessel length	Boat ramp lanes				
	2016	2021	2026	2031	2036
0 to 4.5m	40	44	49	54	60
4.5 to 8m	14	16	18	20	23
Total	**54**	**60**	**67**	**74**	**83**

Key observations relevant to the catchment demand include:

- The majority of demand on facilities originates from Gold Coast City Council residents, and a substantial amount of demand is generated by other LGAs.
- demand from small boats is nearly three times that of larger boats
- growth is forecast to be strong and relatively consistent over the next 20 years.

5.2 Deep-draught vessel landing demand

5.2.1 Local usage and network

Along with private marina facilities, the Broadwater and southern Moreton Bay pontoons form part of a network of mainland landings accessible by deep-draught vessels cruising the Queensland coast. Approaching from the south, it is approximately 20 nautical miles from the public landing in the Tweed River (New South Wales) to Southport, 14 nautical miles from Southport to Jacobs Well, and another 12 nautical miles from Jacobs Well to the landing in Redland Bay. Depending on the weather conditions and seasonal trade winds, all these facilities are within a day's sail of each other.

Given the Gold Coast's status as a tourist destination in its own right, visiting vessels tend to stay for more than one night, and therefore will need to seek an overnight protected berth or mooring. Commercial marina facilities cater to this demand, providing landing facilities for their members and for casual visitors. Moorings or berths are generally available at one of the many private facilities in the Broadwater and southern Moreton Bay. The area also contains extensive anchorages which contain many live-aboards.

The pontoons in the Broadwater and at Jacobs Well are used occasionally by deep-draught vessels but more frequently by tenders associated with vessels moored or anchored nearby. The tenders tend to tie up to the landward side of the pontoon for several hours, leaving the front face of the pontoon available for other vessels. Recreational anglers also use the pontoons, however most give way to vessels during berthing manoeuvres. Stakeholders have not indicated that these pontoons are overloaded in demand terms. The Jacobs Well pontoon also serves as a queuing facility for the adjacent boat ramp.

Community stakeholders have indicated a desire for public landings with longer usage times, or positioned immediately adjacent to major shopping developments such as Australia Fair. The existing allowable mooring times are perceived as being insufficient to allow users time to do their weekly shopping, including return travel from the landing to the shops.

The two South Stradbroke Island landings are used more for day use access rather than forming part of the travelling recreational network. Neither of these facilities is considered to be overloaded by stakeholders.

5.2.2 Landing demand

The projected demand for deep-draught vessel landings within the Gold Coast City Council area was assessed by Economic Associates as being driven by the size of the non-trailable fleet. A key difficulty with this assessment is understanding how long visits lasts. It was assumed that demand comprises 5% of the active non-trailable fleet seeking to access a landing. The assessment is shown in Table 10.

Table 10 – Landing demand projections, Gold Coast City Council

Evaluation category	Landings				
	2016	2021	2026	2031	2036
# of landings	14	16	18	20	22

6. Development needs and opportunities

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

6.1 Evaluation of needs

6.1.1 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.

6.1.2 Quantification of shortfall – boat ramp lanes

The overall demand for boat ramp lanes compared to the effective capacity provided by existing facilities is summarised in Table 11.

Table 11 – Projected boat ramp lane shortfall, Gold Coast City Council

Evaluation category	Existing effective capacity	2016		2021		2026		2036	
		Demand	Shortfall	Demand	Shortfall	Demand	Shortfall	Demand	Shortfall
All vessels, all facilities	41.9	54	12.1	60	18.1	67	25.1	83	41.1

However, the provision of additional boat ramp lanes needs to cater to the type of demand to appropriately address that demand. This realistically translates to:

- large (that is 4.5 to 8m) vessels seeking access to open-water
- small (that is <4.5m) vessels not seeking access to open-water.

As there will be some small vessels seeking access to open-water, and some larger vessels not seeking access to open-water, an envelope of projected need has been developed. The best estimate represents the average need within the envelope.

This analysis is shown in Table 12 for facilities classified as providing unhindered open-water access from all-tide or near all-tide facilities, with the envelope of projected need in the Gold Coast LGA based on the following:

upper bound = 100% larger vessels + 50% smaller vessels

lower bound = 90% larger vessels + 30% smaller vessels

Table 12 – Projected boat ramp lane shortfall, open-water access facilities, Gold Coast City Council

Evaluation	Existing effective capacity	2016		2021		2026		2036	
		Demand *	Need	Demand	Need	Demand	Shortfall	Demand	Need
Best estimate	**24.1**	**29.3**	**5.2**	**32.8**	**8.7**	**36.7**	**12.6**	**45.9**	**21.8**
Upper bound	24.1	34	9.9	38	13.9	42.5	18.4	53	28.9
Lower bound	24.1	24.6	0.5	27.6	3.5	30.9	6.8	38.7	14.6

**Example of demand calculation: Upper bound 2016 – 100% of larger vessels (Table 9) + 50% of smaller vessels (Table 9) = 14 + 20 = 34*

The analysis was also conducted for facilities classified as not providing open-water access, or where water depth or the on-water travel time meant that the facility could not reliably or realistically provide access to open-water (see Table 13). In this analysis, the envelope of projected need in the Gold Coast LGA was based on the following:

upper bound = 70% smaller vessels + 10% larger vessels

lower bound = 50% smaller vessels + 0% larger vessels

Table 13 – Projected boat ramp lane shortfall, non-open-water access facilities, Gold Coast City Council

Evaluation category	Existing effective capacity	2016		2021		2026		2036	
		Demand	Shortfall	Demand	Shortfall	Demand	Shortfall	Demand	Shortfall
Best estimate	**17.8**	**24.7**	**6.9**	**27.2**	**9.4**	**30.3**	**12.5**	**37.1**	**19.3**
Upper bound	17.8	29.4	11.6	32.4	14.6	36.1	18.3	44.3	26.5
Lower bound	17.8	20	2.2	22	4.2	24.5	6.7	30	12.2

There will be some facilities that have been calculated as a “non-open-water access” facility that can, under some circumstances, provide open-water access. However, for the majority of users, access into the local waterway is the primary destination. This also applies to “open-water access” facilities in waterways, where some users will travel upstream into the waterway rather than going offshore.

Given that the majority of demand is driven by Gold Coast City Council residents, the location of additional or upgraded facilities should be targeted to service the main population areas around:

- Southport and central Gold Coast
- Coomera and northern development areas
- southern Gold Coast suburbs.

6.1.3 Quantification of shortfall – deep-draught vessel landings

The assessment of shortfall in landings is shown in Table 14. This assessment indicates that at present the public network in conjunction with the supplementary capacity provided by commercial or club landings is adequate to cater for existing and projected demand.

Table 14 – Projected landing shortfall, Gold Coast City Council

Evaluation category	Existing effective capacity	2016		2021		2026		2036	
		Demand	Shortfall	Demand	Shortfall	Demand	Shortfall	Demand	Shortfall
# of landings*	23	14	-9	16	-7	18	-5	22	-1

**# of landings consists of public sheltered mainland landings, public island landings and major private landings*

6.2 Identified stakeholder opportunities

Table 15 summarises the key facilities and sites identified by stakeholders during consultation activities as requiring consideration.

Table 15 – Stakeholder identified opportunities to increase capacity, Gold Coast City Council

Facility	Stakeholder comments	Study comments
Alberton Road, Alberton	Well-used facility. Estuarine access. Open-water access limited by distance. Parking limited. Options to expand parking.	Expansion of ramp to 2-lanes, installation of a pontoon and expansion of the parking by 35 CTU spaces is recommended
Pacific Motorway, Oxenford	Estuarine access. Open-water access limited by distance. Potential future development area. Options for facility expansion.	Expansion of ramp by 1-lane, installation of a floating walkway and expansion of the parking by 21 CTU spaces is recommended.
Ray Street, Runaway Bay	Well-used facility. Open-water access limited by bridge height – smaller vessels only. Potential for alternative site upstream.	Bridge height greatly limits the size of vessel that can use the facility. Alternative location would likely involve land purchase. Upgrade to facility not currently recommended.

Facility	Stakeholder comments	Study comments
Marine Parade, Harley Park, Southport	Excellent open-water access. Popular, well-used facility. Limited options for parking expansion. Increase in facility capacity desirable.	The expansion of land-side infrastructure is constrained by road infrastructure. Expansion of water-side infrastructure could not be supported by an increase in parking, resulting in no increase in capacity. Upgrade to facility not currently recommended.
Cabbage Tree Point, Steiglitz	Popular, well-used facility. Good access to southern Moreton Bay, open-water access dependent on conditions at Jumpinpin Bar. Floating walkway desirable. Major expansion of facility desirable.	New facility consisting of a 4-lane ramp with a floating walkway and 90 CTU spaces is recommended. Installation of a floating walkway at the existing facility and an additional 20 CTU spaces at the new facility is also recommended.
Jacobs Well Road, Jacobs Well	Popular, well-used facility. Good access to southern Moreton Bay, open-water access dependent on conditions at Jumpinpin Bar. Alternative queuing structure desirable. Increase of water-side capacity desirable.	Expansion of ramp to 3-lanes with a floating walkway and relocation of the pontoon is recommended.
Boykambil Esplanade, Hope Island	Well-used facility. Good open-water access. Options for expansion of facility.	Expansion of ramp to 2-lanes installation of a floating walkway and expansion of parking by 35 CTU spaces is recommended.
Muriel Henchman Drive, The Spit	Popular, well-used facility. Parking is limited. CTU spaces can become limited due to competing non-boating users parking in facility spaces. Expansion of facility desirable. Parking increase desirable. Floating walkways desirable.	The addition of 2-lanes and a floating walkway to each of the two existing ramps and the expansion of the parking by 90 CTU spaces is recommended.
Thrower Drive, Palm Beach	Popular, well-used facility. Estuarine access. Queuing structure desirable.	Expansion of ramp to 4-lanes with a floating walkway and expansion of the parking area to 90 CTU spaces is recommended.
Marks Road, Woongoolba	Currently informal launch and retrieval location Potential site for a new facility.	1-lane ramp with 20 CTU spaces is recommended

7. Development priorities

7.1 Methodology for selecting priorities

7.1.1 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.

While recognising that facilities in the Gold Coast LGA are largely owned by the GCWA, additional guidance is provided by TMR's Marine Facilities and Infrastructure Plan (2016)[9] which contains provisions on 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.

7.1.2 Deep-draught vessel landings

The criteria for recommended works and priorities for landings comprises:

- the geographical spread of existing facilities
- unserviced destinations and popular anchorages
- access to water of sufficient depth
- access to land-side 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.

[9] TMR (2016) Marine Facilities and Infrastructure Plan

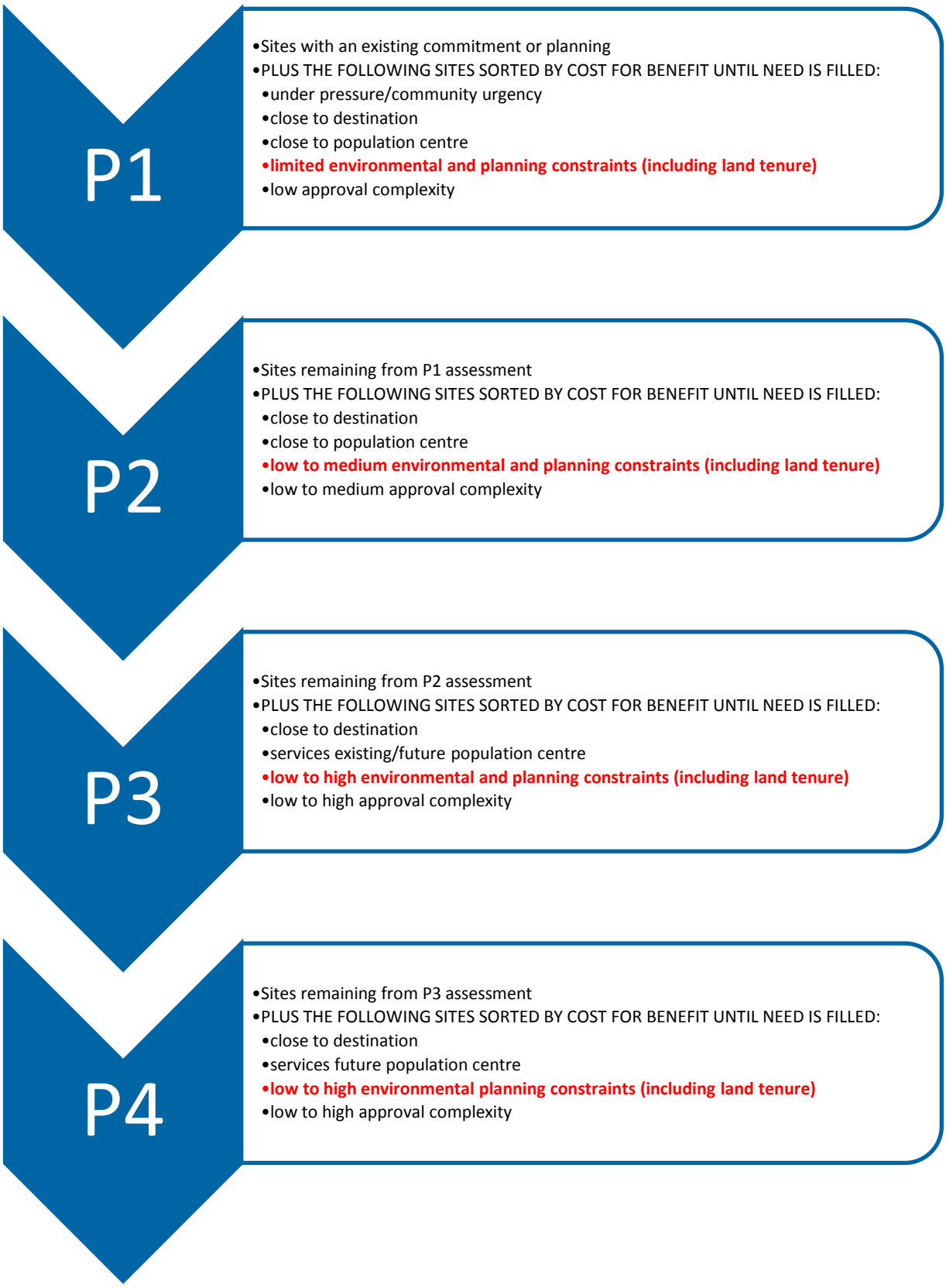


Figure 1 – Priority selection methodology

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.

7.2 Recommended priorities

Table 16 – Recommended priorities to increase capacity, Gold Coast City Council area

Priority	Sites
Priority 1 (as soon as possible)	New facility at Marks Road, Woongoolba – 1-lane ramp with 20 CTU spaces.
	Muriel Henchman Drive, The Spit – additional 2-lanes and floating walkway on both ramps and expand parking by 90 CTU spaces.
	Jacobs Well Road, Jacobs Well – expand ramp to 3-lanes with a floating walkway and relocate pontoon.
	Pacific Motorway, Oxenford – expand ramp by 1-lane, install a floating walkway and expand parking by 21 CTU spaces.
	New facility at Steiglitz Marine Precinct – 4-lane boat ramp with floating walkway and 110 CTU spaces.
	Cabbage Tree Point, Steiglitz – install floating walkway. Additional 20 CTU spaces provided in adjacent Steiglitz Marine Precinct.
	Alberton Road, Alberton – expand ramp by 1-lane, install a pontoon and increase parking by 35 CTU spaces.
Priority 2 (over the next five years)	New facility at Beattie Road, Coomera – 2-lane ramp with a floating walkway and 30 CTU spaces.
	Boykambil Esplanade, Hope Island – expand ramp to 2-lanes with a floating walkway and increase parking by 35 CTU spaces.
	Thrower Dive, Palm Beach – expand ramp to 4-lanes with a floating walkway and expand carpark to 90 CTU spaces.
	Condamine Crescent, Helensvale – expand ramp to 2-lanes and formalise 45 CTU spaces.
Priority 3 (over the next five to ten years)	Paterson Road, Yatala – expand ramp to 2-lanes and expand parking to 45 CTU spaces.
	Carrara Road, Carrara – expand parking to achieve 10 CTU spaces.
	New facility at Tallebudgera Drive, Palm Beach– 2-lane ramp with a floating walkway and 45 CTU spaces.
	New facility at Old Tamborine Road, Oxenford – 1-lane ramp with 10 CTU spaces.
	New facility at Coplicks Lane, Tallebudgera – 1-lane ramp with 10 CTU spaces.
	New facility at Kerkin Road North, Pimpama – 1-lane ramp with 10 CTU spaces.

Priority	Sites
Priority 4 (other)	New facility at Steiglitz Road (South), Steiglitz – establish a major boating facility with 8-lane ramp, 2 floating walkways and 180 CTU spaces.
	New facility at Jacobs Well spent quarries – Potential to modify quarries to create artificial waterways for motorised watersport use.

7.3 Additional recommendations

Although the capacity and demand assessment for landings has not identified the need for additional landings, consideration should be given to extending mooring times for tenders at landings frequently used for accessing provisions, such as in the southern portion of the Broadwater.

Signage to discourage cars from parking in CTU bays or define sharing arrangements is suggested at key facilities.

7.4 Capacity evaluation incorporating development priorities

The effective lane capacity has been reassessed to incorporate the delivery of the recommended development priorities as shown in Table 17, and described in detail in the following sections. The increase in effective lanes gained by each recommendation is shown in the relevant table for that recommendation.

Note that much of the demand for non-open-water access facilities is also met by open-water access facilities such as those at Jacobs Well and Muriel Henchman Drive.

Table 17 – Effective lane and landing capacity after delivery of recommended priorities, Gold Coast City Council

Evaluation category	Existing effective capacity*	2016		2021		2026		2036	
		Demand	Post-delivery effective capacity	Demand	Post-delivery effective capacity	Demand	Post-delivery effective capacity	Demand	Post-delivery effective capacity
Open-water access	23.5	29	34.5	33	35.5	37	35.5	46	43.5
Non-open-water access	18	25	20	27	24.5	30	31	37	31
All vessels, all facilities	41.5	54	54.5	60	60	67	66.5	83	74.5
# of landings*	23	14	23	16	23	18	23	22	23

**Effective capacities are reported to the nearest 0.5 of a lane*

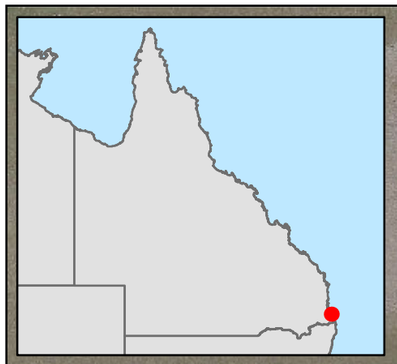
**# of landings consists of public sheltered mainland landings, public island landings and major private landings*

7.5 Priority 1 sites

Table 18 – Priority 1 – Marks Road, Woongoolba

Site name	Marks Road, Woongoolba
Existing formal facility?	No
Location	South bank of the Logan River, at the north-western end of Marks Road, Woongoolba
Current tidal status	All-tide, open-water access
Site characteristics	This site is located 3.8km (2 nautical miles) upstream of the mouth of the Logan River. It is currently used informally as a boat ramp. The site straddles road reserve, easement and freehold land. The freehold parcel is used as a prawn farm however the shape of the allotment has left this corner vacant and fenced off from the remainder of the facility. The riverbank is an easement over state land and is well vegetated. The remainder of the site is largely cleared and adjoins bunded ponds. The Logan River is navigable by recreational motor craft in the vicinity of the boat ramp, and access to open-water via southern Moreton Bay is possible. The site is exposed to flood flows, but is sheltered from large waves by the proximity of islands and sand banks.
Proposed works	New 1-lane boat ramp, parking for 20 CTU
Increase in effective lanes provided by works	1 effective lane
Rationale	The demand for access to southern Moreton Bay and the Broadwater from facilities on the Gold Coast is high. This site is already used as an informal facility. Formalisation of a boat ramp at Marks Road will assist in easing congestion at existing facilities at Steiglitz and Jacobs Well.
Environmental and planning constraints	Category B remnant vegetation mapped over site, being least concern regional ecosystem (RE) 12.1.3. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Marine plants are located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the extractive industry zone and rural zone of the Gold Coast City Plan. A utility installation is exempt from assessment against the City Plan in the extractive industry zone. A landing and a utility installation is

Site name	Marks Road, Woongoolba	
	exempt from assessment against the City Plan in the rural zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Freehold tenure and unallocated state land.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$290,000
	Land-based infrastructure	$920,000



MARKS ROAD

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Marks Road, Woongoolba

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; TMR: Facilities/2016, Imagery (2013-2016); GE: Imagery extracted 11/08/2016. Created by: AJMS

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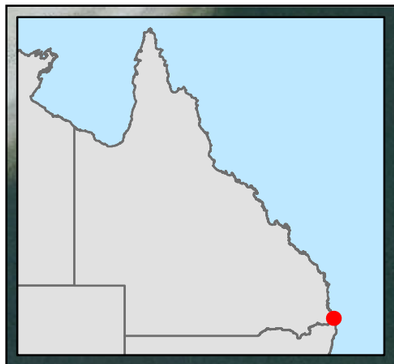
Table 19 – Priority 1 – Muriel Henchman Drive, The Spit

Site name	Muriel Henchman Drive, The Spit	
Existing formal facility?	Yes	
Location	Western shoreline of the Gold Coast Spit, on Muriel Henchman Drive	
Current tidal status	All-tide, open-water access	
Site characteristics	This existing facility provides access into the Gold Coast Broadwater, and is located on Reserve land on the Gold Coast Spit, approximately 1.7km (1 nautical mile) south of the Gold Coast Seaway. The facility comprises two 2-lane boat ramps, supported by parking for 89 CTU and a pontoon. The adjacent beach is sandy and used as a queuing beach. The remainder of the site is well vegetated with native dune species. The pontoon is used as a landing for many vessels anchored nearby in the Broadwater. The site is exposed to westerly winds, but is sheltered from wave action from most other directions. The site is very popular and is routinely used by other users, including staff at the adjacent Sea World Resort, and for events such as triathlons. No signage is in place to discourage car only parking in CTU spaces.	
Proposed works	Add 2-lanes and a floating walkway to each of the two existing boat ramps, expand CTU parking by 90 spaces.	
Increase in effective lanes provided by works	4 effective lanes	
Rationale	This facility is arguably the most popular on the Gold Coast, and provides excellent and easy access into the Broadwater. Expansion of this facility will make a major contribution to addressing the current shortfall in facilities on the Gold Coast.	
Environmental and planning constraints	Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). Works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$1,970,000
	Land-based infrastructure	$2,440,000



SEAWORLD DRIVE

MURIEL HENCHMAN DRIVE

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Muriel Henchman Drive, The Spit

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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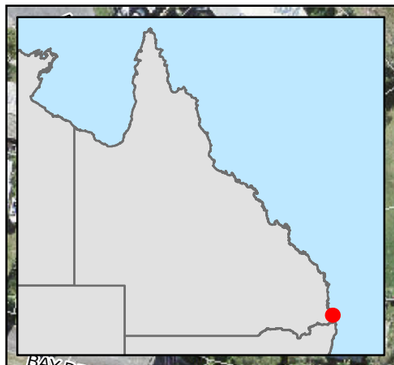
Table 20 – Priority 1 – Jacobs Well Road, Jacobs Well

Site name	Jacobs Well Road, Jacobs Well
Existing formal facility?	Yes
Location	Southern Moreton Bay, at the eastern end of Stapylton-Jacobs Well Road
Current tidal status	All-tide, open-water access
Site characteristics	This existing facility is in the township of Jacobs Well and contains a 3-lane boat ramp, a pontoon, a jetty and parking for 105 CTU. The entire site is on Reserve land. The site is exposed to easterly winds, but is sheltered from larger waves due to the extensive network of islands and sand banks in southern Moreton Bay. The site is routinely congested and is one of the most popular on the Gold Coast.
Proposed works	Add a floating walkway and a replacement ramp lane, relocate pontoon.
Increase in effective lanes provided by works	0.9 effective lanes
Rationale	The existing pontoon at the boat ramp is very small but located too close to the jetty, restricting functional usage by ramp users and deep draught vessels. Replacing the pontoon with a larger structure to the south of the boat ramp will reduce this congestion, and provide a dedicated facility for deep-draught vessels. Adding a floating walkway in the centre of the ramp will improve the efficiency of the ramp and reduce the incidence of ramp rage by allowing access during launching and retrieval from both sides. A new ramp lane is required to replace the ramp lane lost through construction of the floating walkway.
Environmental and planning constraints	Ramsar wetland and nationally important wetland located approximately 150m from site boundary and may cause potential impacts during construction. Works are located in a previously disturbed area. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Within high risk flora trigger area. Developed area considered to be not 'in the wild' – flora survey not required. Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone.

Site name	Jacobs Well Road, Jacobs Well	
	The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$1,220,000
	Land-based infrastructure	$ -



BAY DRIVE

Existing pontoon structure to be removed

PIMPAMA JACOBS WELL ROAD

ESPLANADE

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Floating Walkway
- Pontoon
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Jacobs Well Road, Jacobs Well

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Data source: GHD: Layout/2916; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; TMR: Facilities/2016, Imagery (2013-2016). Created by: AJ/MS

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Table 21 – Priority 1 – Pacific Motorway, Oxenford

Site name	Pacific Motorway, Oxenford	
Existing formal facility?	Yes	
Location	On the southern bank of the Coomera River, immediately upstream of the Pacific Motorway	
Current tidal status	All-tide, distance-limited open-water access	
Site characteristics	This site contains an existing 2-lane boat ramp supported by 49 CTU parking spaces. Located on freehold land, the boat ramp forms part of Damian Leeding Memorial Park, which includes a major non-motorised water sports facility (for rowing, sailing etc.), walking and cycling tracks, open space and a playground area.	
Proposed works	Addition of 1 boat ramp lane and a floating walkway, expansion of CTU parking by 21 spaces.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	This facility is increasing in popularity and is well located to service demand from the growing Coomera/Oxenford area. Expansion of pavement at the site has also been identified to support usage during the 2018 Commonwealth Games; following the Games the expanded pavement area could be re-purposed as permanent CTU parking. Note that the location of the pavement expansion for the Commonwealth Games has not been provided, therefore the location shown in the attached sketch should be regarded as indicative only.	
Environmental and planning constraints	Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The adjacent Lot 201 SP224933 is mapped as a low impact (green) waterway. If the works impact this waterway then an Operational Works for waterway barrier works under P Act may be triggered. Operational works for the taking or interfering with water from a watercourse may apply depending on the works involved. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Adjoins both open space and community facilities zones of the Gold Coast City Plan. A landing and utility installations are exempt from assessment against the City Plan in the open space zone and the community facilities zone. Freehold tenure and unallocated state land.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$680,000
	Land-based infrastructure	$290,000

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	B
Date	15 Dec 2016

Boating facility
Pacific Motorway, Oxenford

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; TMR: Facilities/2016, Imagery (2013-2016). Created by: AJ/MS

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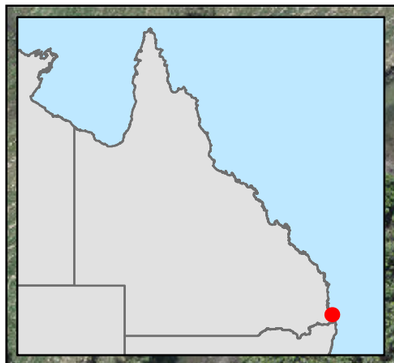
Table 22 – Priority 1 – Steiglitz Marine Precinct

Site name	Steiglitz Marine Precinct	
Existing formal facility?	No	
Location	North of Cabbage Tree Point Road, Steiglitz	
Current tidal status	All-tide, open-water access	
Site characteristics	The site is immediately north of the existing Cabbage Tree Point boat ramp, and is an undeveloped freehold block. The land is generally flat and grassed with no trees. Part of the site is low lying and colonised by mangroves, this portion has not been identified to contain any works. Two residential properties adjoin the site.	
Proposed works	Construction of a new 4-lane boat ramp, a floating walkway and parking for 110 CTU.	
Increase in effective lanes provided by works	4 effective lanes	
Rationale	This site has been identified by several studies as being an ideal location for a regional scale boating facility. Demand for facilities in this area is high, and this site presents an opportunity to meet the existing shortfall in facilities. There is also sufficient space on this site for 20 additional CTU spaces to support the adjacent Cabbage Tree Point boat ramp.	
Environmental and planning constraints	Ramsar wetland and nationally important wetland Moreton Bay within 50m from site boundary and may cause potential impacts during construction. Works are located in a previously disturbed area. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the waterfront and marine industry zone of the Gold Coast City Plan. A landing triggers a code assessable MCU application in this zone. A utility installation is exempt from assessment against the City Plan in this zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Cabbage Tree Point Conservation Park on the northern site boundary. Freehold tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$1,780,000
	Land-based infrastructure	$4,520,000

Table 23 – Priority 1 – Cabbage Tree Point Road, Steiglitz

Site name	Cabbage Tree Point Road, Steiglitz	
Existing formal facility?	Yes	
Location	At the eastern end of Cabbage Tree Point Road, Steiglitz	
Current tidal status	All-tide, open-water access	
Site characteristics	This existing facility comprises a 3-lane boat ramp supported by 18 formal CTU spaces and a small number of informal spaces. The site is a popular alternative to the very crowded Jacobs Well site, however parking is severely limited. The site is located on freehold land and land-side expansion of the facility is constrained by the proximity of residential dwellings.	
Proposed works	Install a floating walkway, and expand parking at the proposed adjacent Steiglitz Marine Precinct by 20 CTU spaces.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	Replacing one ramp lane with a floating walkway will improve the efficient use of the remaining 2 boat ramp lanes. As no space is presently available at the facility for additional formal parking, parking capacity has been increased through the provision of additional CTU spaces at the adjacent proposed Steiglitz Marine Precinct site.	
Environmental and planning constraints	Ramsar wetland and nationally important wetland Moreton Bay within 50m from site boundary and may cause potential impacts during construction. Works are located in a previously disturbed area. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the waterfront and marine industry zone of the Gold Coast City Plan. A landing triggers a code assessable MCU application in this zone. A utility installation is exempt from assessment against the City Plan in this zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Unallocated state land (waterway component).	
Consultation feedback	None received.	
Indicative cost (excl. GST)	Water-based infrastructure	$380,000

Site name	Cabbage Tree Point Road, Steiglitz	
(to ±50%)	Land-based infrastructure (included in Steiglitz Marine Precinct priority)	$ -



CABBAGE TREE POINT ROAD
KOALA STREET
CORAL STREET
BANGALOW DRIVE
HIBISCUS STREET
WARANA AVENUE

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Breakwater
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Cabbage Tree Point Road, Steiglitz

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; TMR: Facilities/2016, Imagery (2013-2016). Created by: AJ/MS

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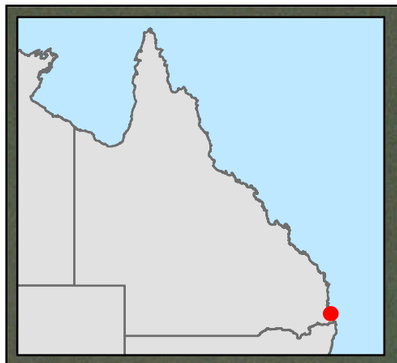
Table 24 – Priority 1 – Alberton Road, Alberton

Site name	Alberton Road, Alberton	
Existing formal facility?	Yes	
Location	On the south bank of the Logan River, at the northern end of Alberton Road, Alberton.	
Current tidal status	All-tide, distance-limited open-water access	
Site characteristics	This site is on Reserve land adjoining the Logan River. It comprises mowed grassland with riparian vegetation along the river bank. Surrounding properties are rural in nature. The site contains an existing 1-lane boat ramp and parking for 10 CTU. There is ample space for expansion of the facility.	
Proposed works	Addition of 1 ramp lane, a pontoon and 35 CTU spaces.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	This site has been growing in popularity and is known to exceed formal parking capacity. Expansion of the site to increase capacity in the area will assist in meeting the current shortfall in demand. Installation of a pontoon provides a flood resilient queuing facility to maximise efficient launching and retrieval practices.	
Environmental and planning constraints	Category B remnant vegetation mapped over site, being of concern RE 12.3.11 and least concern 12.3.6. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$650,000
	Land-based infrastructure	$1,120,000



Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Pontoon
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number 41-30098
Revision A
Date 15 Dec 2016

Boating facility
Alberton Road, Alberton

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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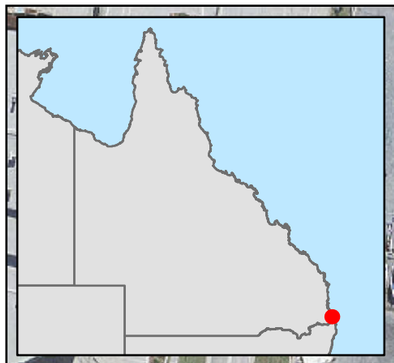
7.6 Priority 2 sites

Table 25 – Priority 2 – Beattie Road, Coomera

Site name	Beattie Road, Coomera
Existing formal facility?	No
Location	On the Coomera River, at the eastern end of Beattie Road.
Current tidal status	All-tide, distance-limited open-water access
Site characteristics	This site is a made road within a light industrial area of Coomera. The adjoining properties use the road for access. The site is wide enough to accommodate CTU parking as well as the road carriageway. The area has been flagged as part of a major marine industry precinct. The river is already extensively used by recreational vessels, with anchorages nearby, and waterfront residential properties on the opposite side of the river. Access to the northern Broadwater is 10km (5.4 nautical miles) downstream.
Proposed works	Construction of a 2-lane boat ramp, floating walkway, and parking for 30 CTU.
Increase in effective lanes provided by works	1.5 effective lanes
Rationale	An additional boating facility would assist in servicing the expanding population area of Coomera. This would also assist in reducing pressure at facilities such as Jacobs Well. This location also aligns with the future use of the wider area as a marine industry precinct.
Environmental and planning constraints	Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The adjacent lot 101/SP136089 is mapped as a low impact (green) waterway. Any works on this lot may trigger Operational Works for waterway barrier works under P Act. No works are proposed on this lot. Operational works for the taking or interfering with water from a watercourse may apply depending on the works involved. The works are located in the waterfront and marine industry zone of the Gold Coast City Plan. A landing triggers a code assessable MCU application in this zone. A utility installation is exempt from assessment against the City Plan in this zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Reserve tenure.
Consultation feedback	None received.

Site name	Beattie Road, Coomera	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$920,000
	Land-based infrastructure	$670,000



MCPHAIL ROAD

BEATTIE ROAD

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Beattie Road, Coomera

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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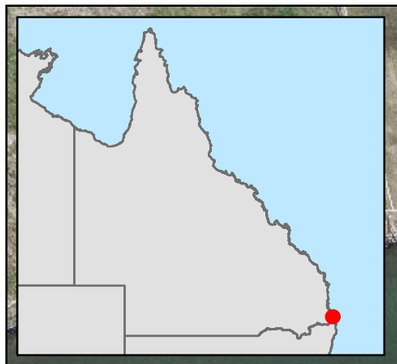
Table 26 – Priority 2 – Boykambil Esplanade, Hope Island

Site name	Boykambil Esplanade, Hope Island	
Existing formal facility?	Yes	
Location	At the northern end of Boykambil Esplanade, at the confluence of Coombabah Creek and the south branch of the Coomera River.	
Current tidal status	All tide, open-water access	
Site characteristics	This existing facility contains a 1-lane boat ramp supported by 13 CTU parking spaces and a sandy beach. It adjoins the mowed and sparsely treed park containing a children's playground and amenity block. The road and park are all located on a single freehold allotment. The surrounding area is residential development. There are numerous deep-draught vessels moored in Coombabah Creek immediately south of the ramp. The position of the site provides ready access into the northern Broadwater.	
Proposed works	Add 1-lane, a floating walkway and 35 CTU parking spaces.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	This site provides excellent access into the Broadwater and has room for expansion. The suggested increase in CTU spaces still retains an expansive area of parkland for use by the wider community.	
Environmental and planning constraints	Nationally important wetland – Lake Coombabah. Works are located in a previously disturbed area. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in an unzoned area of the Gold Coast City Plan. The adjacent land zoning is open space and the sport and recreation zone. A landing and a utility installation are exempt from assessment against the City Plan in these zones. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Unzoned, open space, sport and recreation zone. Freehold tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$490,000
	Land-based infrastructure	$700,000



NELSON AVENUE

POOL STREET

CRESCENT AVENUE

BERT HOOD STREET

COOMBE AVENUE

BOYKAMBIL ESPLANADE SOUTH

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number 41-30098
Revision A
Date 15 Dec 2016

Boating facility
Boykambil Esplanade, Hope Island

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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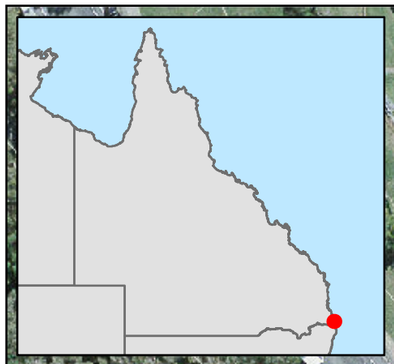
Table 27 – Priority 2 – Thrower Drive, Palm Beach

Site name	Thrower Drive, Palm Beach
Existing formal facility?	Yes
Location	On the northern bank of Currumbin Creek, immediately downstream of the Thrower Drive Bridge.
Current tidal status	All-tide, depth-limited open-water access
Site characteristics	This existing facility contains a 2-lane boat ramp and parking for 45 CTU. Located approximately 1.8km (1 nautical mile) upstream of the Creek mouth, this facility largely provides access into Currumbin Creek. While access to open-water is possible, traversing the bar at the mouth of the Creek is dangerous and is not encouraged. This facility can be very popular at certain times of the year.
Proposed works	Addition of 2 ramp lanes, a floating walkway, and expansion of the car park by 45 CTU spaces.
Increase in effective lanes provided by works	2 effective lanes
Rationale	Pressure on this facility is expected to increase as it is only one of four servicing the southern Gold Coast. The Creek is navigable for several kilometres upstream, and while access to open-water is possible it is not recommended. Expansion of this facility would contribute to meeting future demand for estuarine access.
Environmental and planning constraints	Potential threatened ecological community – Temperate and Coastal Saltmarsh (consistent with RE 12.1.2) – potential MNES. Flora survey required. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Category B remnant vegetation mapped over site, being of concern RE12.1.1 and being least concern RE 12.1.2. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Within high risk flora trigger area. Low disturbance area. Site survey required per EHP Flora Survey Guidelines- Protected Plants and report submitted to EHP prior to construction. If clearing is to be undertaken within the road reserve and if it is undertaken by TMR, an NC Act clearing permit will not be required. If clearing is to occur outside of the road reserve, an NC Act clearing permit will be required. TMR's 'Species Management Program for Tampering with Animal Breeding Places' and 'Protected plant exemption' agreement may apply depending on works. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a

Site name	Thrower Drive, Palm Beach	
	year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). FHA boundary B adjoining site. B Operational work completely or partly in a declared fish habitat area is assessable development, unless the work is accepted development under shd 7, part 3, section 7 of the P Reg. The works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$780,000
	Land-based infrastructure (includes reclamation)	$1,710,000



THROWER DRIVE

DURINGAN STREET

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number 41-30098
Revision A
Date 15 Dec 2016

Boating facility
Thrower Drive, Palm Beach

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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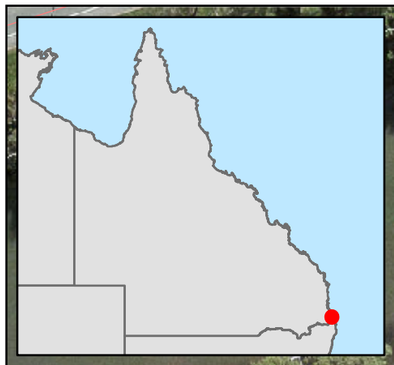
Table 28 – Priority 2 – Condamine Crescent, Helensvale

Site name	Condamine Crescent, Helensvale
Existing formal facility?	Yes
Location	On the southern bank of Saltwater Creek, Helensvale, immediately upstream of the railway bridge
Current tidal status	All tide, distance-limited open-water access
Site characteristics	This site is located approximately 5.4km upstream of Coombabah Creek, and 10km (5.4 nautical miles) upstream of the Broadwater. The existing facility consists of a 1-lane boat ramp and informal parking. The site is made up of Council owned freehold land and a leasehold corridor for the railway. A park containing a children's playground and amenities shares the boat ramp access. The Creek is navigable by motor boats, and is bordered by riparian vegetation, residential development, golf course and mangrove areas. The site is immediately adjacent to a railway bridge.
Proposed works	Addition of 1 boat ramp lane and formalisation of 45 CTU spaces.
Increase in effective lanes provided by works	1 effective lane
Rationale	This site provides estuarine access for the local Helensvale community, and to upstream and downstream reaches of the Creek. Demand for these local ramps is expected to continue to grow, and will act to ease the pressure on major facilities. Duplication of the railway bridge into this area may impact on the available space for ramp and/or parking expansion, and would need to be considered as part of any planning for this site.
Environmental and planning constraints	Category B remnant vegetation mapped over site, being least concern RE 12.1.3. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken

Site name	Condamine Crescent, Helensvale	
	by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Freehold tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$180,000
	Land-based infrastructure	$980,000



CONDAMINE CRESCENT

MONTEREY KEYS DRIVE

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Condamine Crescent, Helensvale

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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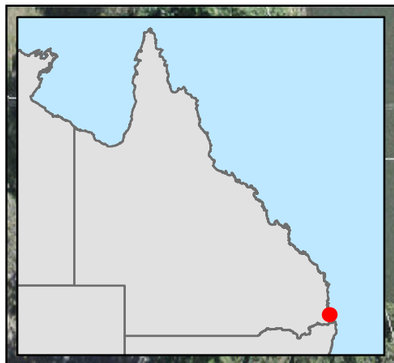
7.7 Priority 3 sites

Table 29 – Priority 3 – Paterson Road, Yatala

Site name	Paterson Road, Yatala	
Existing formal facility?	Yes	
Location	On the eastern bank of the Albert River, at Paterson Road, Yatala	
Current tidal status	All-tide, distance-limited open-water access	
Site characteristics	This existing facility contains a 1-lane boat ramp with parking for 10 CTU. The ramp is on the road reserve and the parking area is situated on a large Reserve. The parking area also acts as a bus turnaround area. Rivermount College is immediately downstream of the Reserve. A footbridge crosses the River immediately upstream of the ramp, but there is sufficient overhead clearance for navigation by small vessels other than during flooding.	
Proposed works	Construction of an additional boat ramp lane, expansion of parking to 45 CTU. Re-establishment of bus stop within expanded facility.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	This site provides access to the Albert River for the local Yatala community, and is the only ramp providing direct access to the Albert River. Demand for these local ramps from tinnies wanting to access the river rather than the estuaries is expected to continue to grow with the population.	
Environmental and planning constraints	Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site as the river is tidal. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Unallocated state land, Reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$180,000
	Land-based infrastructure	$1,230,000



RIVERMOUNT DRIVE

PATERSON ROAD

GLEN OSMOND ROAD

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number 41-30098
Revision A
Date 15 Dec 2016

Boating facility
Paterson Road, Yatala

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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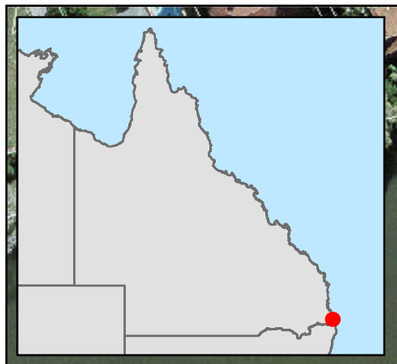
Table 30 – Priority 3 – Carrara Road, Carrara

Site name	Carrara Road, Carrara	
Existing formal facility?	Yes	
Location	On the western bank of the Nerang River at Carrara Road	
Current tidal status	All-tide, distance-limited open-water access	
Site characteristics	This facility is located on road reserve and a small adjacent Reserve. It comprises a 1-lane boat ramp supported by parking for 6 CTU. The surrounding area is residential and the Nerang River is lined with private pontoons. This is the most upstream access point in the heavily canalised section of the River, and is mainly used for access to skiing areas.	
Proposed works	Expansion of parking to achieve 10 CTU spaces.	
Increase in effective lanes provided by works	0.5 effective lanes	
Rationale	This small facility in a very urbanised area could be more efficiently used if the parking was reconfigured to improve traffic flow and accommodate additional CTU.	
Environmental and planning constraints	Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). The works are located in the road reserve and open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Road reserve and reserve tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$ -
	Land-based infrastructure	$480,000



CARRARA ROAD

BENOWA ROAD

WITT AVENUE

FITZWILLIAM STREET

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- Carpark
- State controlled road
- Cadastre

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Carrara Road, Carrara

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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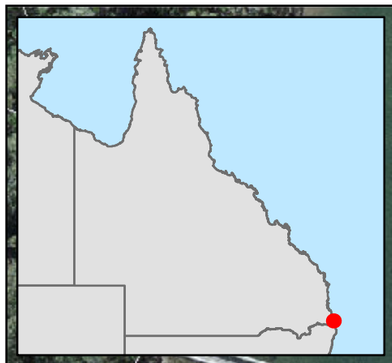
Table 31 – Priority 3 – Tallebudgera Drive, Palm Beach

Site name	Tallebudgera Drive, Palm Beach
Existing formal facility?	No
Location	On the southern bank of Tallebudgera Creek, immediately downstream of the Pacific Motorway bridge.
Current tidal status	All-tide, depth-limited open-water access
Site characteristics	The site is located approximately 3.2km (1.7 nautical miles) upstream of the mouth of Tallebudgera Creek. The proposed ramp is positioned at the end of the road reserve, and parking is proposed on the edge of the adjacent National Park (Tallebudgera Creek Regional Park), in the vicinity of an existing pedestrian walkway. The park in this area is not densely vegetated and is more open closer to residential properties. The Creek has sufficient depth to permit access by vessels, but access to open-water is constrained by extensive shoals in the Creek and the bar at the mouth of the Creek. Traversing the bar is dangerous and is not encouraged.
Proposed works	Construction of a new 2-lane boat ramp, a floating walkway and parking for 45 CTU. The existing pedestrian walkway would need to be relocated slightly to the north.
Increase in effective lanes provided by works	2 effective lanes
Rationale	There are not many facilities servicing the southern end of the Gold Coast. In the future, additional capacity is expected to be required in this area to service this demand, particularly as travel time by road to larger facilities at the northern end of the LGA will be expected to increase due to increasing road congestion. Establishment of this facility would contribute to meeting future demand for estuarine access.
Environmental and planning constraints	Protected area Tallebudgera Creek Regional Park northern area of site. Category B remnant vegetation mapped over site, being of concern RE 12.1.1 and least concern Res 12.1.3 and 12.3.5a. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Within high risk flora trigger mapping area. Minimal disturbance. Site survey required per EHP Flora Survey Guidelines- Protected Plants and report submitted to EHP prior to construction. If clearing is to be undertaken within the road reserve and if it is undertaken by TMR, an NC Act clearing permit will not be required. If clearing is to occur outside of the road reserve, an NC Act clearing permit will be required. TMR's 'Species Management Program for Tampering with Animal Breeding Places' and 'Protected plant exemption' agreement may apply depending on works. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the

Site name	Tallebudgera Drive, Palm Beach	
	removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the conservation zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the conservation zone The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Road reserve and national park tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$920,000
	Land-based infrastructure	$980,000



TALLEBUDGERA DRIVE

JAPONICA DRIVE

PACIFIC HIGHWAY ON RAMP

PACIFIC HIGHWAY

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Floating Walkway
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number 41-30098
Revision A
Date 15 Dec 2016

Boating facility
Tallebudgera Drive, Palm Beach

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Table 32 – Priority 3 – Old Tamborine Road, Oxenford

Site name	Old Tamborine Road, Oxenford	
Existing formal facility?	No	
Location	On the Coomera River, at the southern end of Old Tamborine Road, Oxenford	
Current tidal status	All-tide, distance-limited open-water access	
Site characteristics	This site is positioned at the upstream navigable end of the Coomera River, immediately adjacent to the Coomera River Causeway. There is an existing informal boat ramp used to access the River on the road reserve. The boat ramp is adjoined by grassed parkland on a combination of Reserve and freehold tenure. Water depths in the River at the launching site are unknown, however debris that may be associated with the causeway is visible in some aerial imagery. Immediately downstream of the site the river is navigable by motor boats.	
Proposed works	New 1-lane boat ramp with parking spaces for 10 CTU.	
Increase in effective lanes provided by works	1 effective lane	
Rationale	The population in this area is expected to continue to increase. A boat ramp in this location will assist in meeting demand and reducing future pressure on the existing nearby boat ramps at Gawler Place and Pacific Motorway, Oxenford.	
Environmental and planning constraints	Within high risk flora trigger area. Disturbed area not considered to be 'in the wild' - flora survey not required. Major impact (purple) waterway and may therefore trigger Operational Works for waterway barrier works under P Act for the ramp. Operational works for the taking or interfering with water from a watercourse may apply depending on the works involved. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located in the road reserve and open space zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the open space zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Unallocated state land, road reserve, freehold and reserve tenures.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$220,000
	Land-based infrastructure	$480,000

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Old Tamborine Road, Oxenford

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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Table 33 – Priority 3 – Coplicks Lane, Tallebudgera

Site name	Coplicks Lane, Tallebudgera
Existing formal facility?	No
Location	On the southern bank of Tallebudgera Creek, at Coplicks Lane
Current tidal status	All-tide, depth-limited open-water access
Site characteristics	This site is positioned on road reserve immediately upstream of the Tallebudgera Connection Road bridge. Surrounded by rural properties and the Tallebudgera Golf Course, it is well vegetated with an existing vehicle track to the river immediately beside the bridge approach. The site is 10km (5.3 nautical miles) upstream of the mouth of Tallebudgera Creek. No hydrographic survey information for the Creek in this location is available, although some sand shoals are visible in the Creek immediately upstream of the site. Access to open-water is also not expected due to distance. Bridge crossings of the Creek provide sufficient overhead clearance for navigation by small vessels other than during flooding.
Proposed works	New 1-lane boat ramp with informal parking for 10 CTU.
Increase in effective lanes provided by works	1 effective lanes
Rationale	The population in this area is expected to continue to increase. A boat ramp in this location will assist in meeting demand by improving access to upper reaches of the Creek for small vessels. It is possible that this site is close to the tidal limit of the waterway, and may even provide limited access to fresh water.
Environmental and planning constraints	Within high risk flora trigger area. Riparian vegetation which may be considered to be 'in the wild'. Site survey required per EHP Flora Survey Guidelines- Protected Plants and report submitted to EHP prior to construction. If clearing is to be undertaken within the road reserve and if it is undertaken by TMR, an NC Act clearing permit will not be required. If clearing is to occur outside of the road reserve, an NC Act clearing permit will be required. TMR's 'Species Management Program for Tampering with Animal Breeding Places' and 'Protected plant exemption' agreement may apply depending on works. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants are located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg. Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). The works are located adjacent to rural zoning in the Gold Coast City Plan. A landing and a utility installation is exempt from assessment against the City Plan in the rural zone.

Site name	Coplicks Lane, Tallebudgera	
	The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Road reserve and unallocated state land.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$220,000
	Land-based infrastructure	$260,000 (unsealed)

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Coplicks Lane, Tallebudgera

C:\Users\ihamilton\Desktop\GIS\30098\MXDROADS\41_30098_107_Coplicks_RevA.mxd

Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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Table 34 – Priority 3 – Kerkin Road North, Pimpama

Site name	Kerkin Road North, Pimpama
Existing formal facility?	No
Location	On the north bank of the Pimpama River, at the Kerkin Road North bridge, Pimpama
Current tidal status	All-tide, distance-limited open-water access
Site characteristics	This site is an existing informal facility immediately downstream of the Kerkin Road North bridge. The site straddles the road reserve and freehold land. The surrounding land is extensively low lying but generally above tidal levels. The road has been constructed on a causeway. The riverbank has been partially cleared and hardened over time due to vehicles accessing this area for boat launching and retrieval. No hydrographic survey data is available for the river in this area.
Proposed works	New 1-lane boat ramp with parking spaces for 10 CTU.
Increase in effective lanes provided by works	1 effective lane
Rationale	This small facility is intended to cater for vessels wishing to access the estuarine reaches of the river rather than the Broadwater/Southern Moreton Bay. It will assist in meeting demand and reduce pressure on the ramps at Jacobs Well and Steiglitz.
Environmental and planning constraints	Ramsar wetland – Moreton Bay. Nationally important wetland Moreton Bay immediately outside of the site boundary. If the works are likely to impact on MNES, a referral under the EPBC Act must be made to DEE. Essential habitat and category B remnant vegetation mapped over site, being of least concern RE 12.1.3. Exemptions apply for clearing native vegetation on land generally that is clearing for the construction or maintenance of community infrastructure mentioned in Shd 21, Part 1, Section 14 (b) of P Reg that is government supported transport infrastructure. Within high risk flora trigger area. Site includes vegetation which may be considered to be 'in the wild'. Site survey required per EHP Flora Survey Guidelines- Protected Plants and report submitted to EHP prior to construction. If clearing is to be undertaken within the road reserve and if it is undertaken by TMR, an NC Act clearing permit will not be required. If clearing is to occur outside of the road reserve, an NC Act clearing permit will be required. TMR's 'Species Management Program for Tampering with Animal Breeding Places' and 'Protected plant exemption' agreement may apply depending on works. Operational Works for tidal works or works within a coastal management district is triggered under P Act for the works in the tidal area. Works are considered accepted development under the P Reg Shd 7 Part 3, Item 10 (b) for tidal works that is undertaken by GCWA. Accepted development works are to comply with the requirements for the work prescribed under the Coastal Act, Section 167(5)(b). Marine plants may be located within the site. Removal of marine plants will require an Operational Works permit for the removal, destruction or damage of marine plants under P Act (Shd 10 Part 17 Item 28 of P Reg). May be accepted development if works can comply with the requirements under Shd 7 Item 8 of the P Reg.

Site name	Kerkin Road North, Pimpama	
	Environmental Relevant Activity 16 extracting and screening activities for dredging more than 1000 tonnes of material in a year may be triggered depending on works (P Reg Shd 10, Part 5, Div 2, Item 1). FHA management area B is located in the site area. Operational work completely or partly in a declared fish habitat area is assessable development, unless the work is accepted development under shd 7, part 3, section 7 of the P Reg. The works are located in the conservation zone of the Gold Coast City Plan. A landing and a utility installation are exempt from assessment against the City Plan in the conservation zone. The operational works are exempt from assessment against the local planning scheme as the works would be undertaken by or on behalf of a public sector entity (GCWA) (Shd 6 Part 3, Section 8 of P Reg). Matters of local environmental significance – biodiversity area and priority species. Road reserve and freehold tenure.	
Consultation feedback	None received.	
Indicative cost (excl. GST) (to ±50%)	Water-based infrastructure	$250,000
	Land-based infrastructure	$530,000

Paper Size A3

0 5 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre
- Carpark
- Boat Ramp

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	15 Dec 2016

Boating facility
Kerkin Road North, Pimpama

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; GHD: Layout/2016; TMR: Facilities/2016, Imagery (2013-2016); Created by: AJ/MS/JCM

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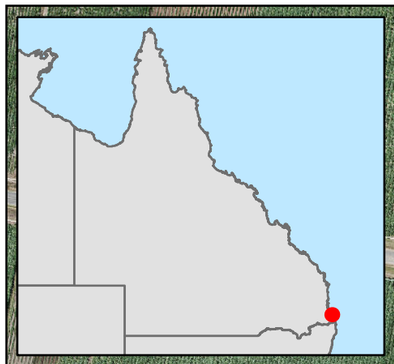
7.8 Priority 4 sites

Table 35 – Priority 4 – Steiglitz Road (South), Steiglitz

Site name	Steiglitz Road (South), Steiglitz
Existing formal facility?	No
Location	In the vicinity of Steiglitz Road, Steiglitz
Current tidal status	All tide, open-water access
Site characteristics	The shoreline of southern Moreton Bay in the vicinity of Steiglitz Road is currently backed by large, rural properties, including a sugar cane farm. Areas to the north and south contain commercial, marine-related businesses, including a private marina. The adjacent channels are a popular anchorage, and the site has excellent access to southern Moreton Bay, the Broadwater and open-water at Jumpinpin.
Proposed works	Establishment of a major boating facility containing 8 boat ramp lanes, 2 floating walkways and parking for 180 CTU. Depending on land size, additional infrastructure could be included.
Increase in effective lanes provided by works	8 effective lanes
Rationale	Cane farmers in the area have publicly indicated that use of the land for that purpose is no longer profitable. An opportunity exists to purchase this waterfront land with a view to establishing a major public marine facility in the area to meet future demand.



STEIGLITZ ROAD

KLEINSCHMIDT ROAD

RUDY MAAS JETTY ROAD

Paper Size A3

0 12.5 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Populated Places
- State controlled road
- Cadastre

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	A
Date	16 Dec 2016

Boating facility
Steiglitz Road South, Steiglitz

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Data source: GHD: Layout/2016; DNRM: Roads/2015, Populated Places, Local Government Area/2016, Cadastre/2016; TMR: Facilities/2016, Imagery (2013-2016). Created by: AJ/MS

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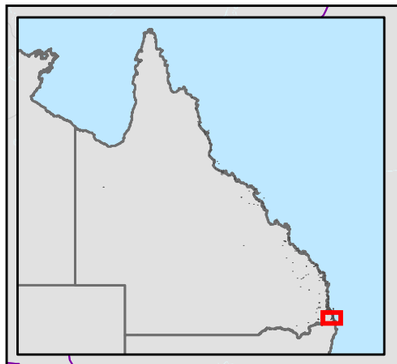
Table 36 – Priority 4 – Jacobs Well Spent Quarries

Site name	Jacobs Well Spent Quarries
Existing formal facility?	No
Location	Various
Current tidal status	No open-water access
Site characteristics	There are a number of sand and gravel quarries in the Jacobs Well/Stapylton area that are reaching exhaustion. These facilities could be modified to create an artificial waterway for motorised watersport use.
Proposed works	Various
Increase in effective lanes provided by works	Varies
Rationale	Rehabilitation or development of newly exhausted sand and gravel quarries will be an issue over the next decade. These sites present an opportunity to be used for motorised watersports such as jetskis and wakeboarding. These sports are generally incompatible with other waterway users (such as swimmers or canoeing), and can contribute to bank erosion. Providing dedicated facilities for these activities will have positive benefits for natural waterways and their users. The timing for provision of these facilities will be dependent on the cessation of commercial use and any rehabilitation works associated with decommissioning.

Appendices

Appendix A – Locality plan, existing facilities



RUSSELL-MACLEAY ISLANDS
BEENLEIGH
LOGAN VILLAGE
JACOBS WELL
JIMBOOMBA
SANTA BARBARA
HOPE ISLAND
BOYKAMBIL
OXENFORD
NORTH TAMBORINE
EAGLE HEIGHTS
HELENSVALE
MOUNT TAMBORINE
BEAUDESERT
NERANG
GOLD COAST
CANUNGRA
KOORALBYN
TWEED HEADS
RATHDOWNEY
TUMBULGUM

Paper Size A3

0 5 10

Kilometres

Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

N

LEGEND

- Boating Facilty
- State controlled road
- Local Government Area
- Water

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

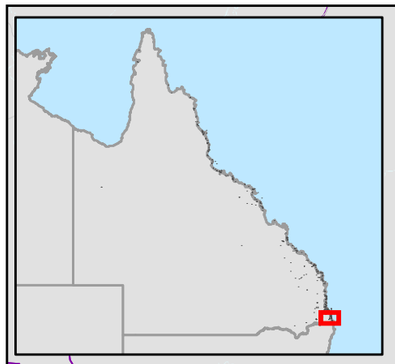
Job Number	41-30098
Revision	C
Date	20 Dec 2016

Gold Coast City Council

G:\41\30098\GIS\Maps\MXD\41_30098_165_LGA_Ramps_RevC.mxd

Data source: DNRM: Cadastre/2016, Populated Places, Local Government Area/2016; TMR: Facilities/2016, GA Mainland, Islands/2007. DTMR: State Controlled Road/2015. Created By: IH

145 Ann Street Brisbane QLD 4000 Australia **T** 61 7 3316 3000 **F** 61 7 3316 3333 **E** bnemail@ghd.com **W** www.ghd.com



RUSSELL-MACLEAY ISLANDS
BEENLEIGH
LOGAN VILLAGE
JACOBS WELL
JIMBOOMBA
SANTA BARBARA
HOPE ISLAND
BOYKAMBIL
OXENFORD
NORTH TAMBORINE
EAGLE HEIGHTS
HELENSVALE
MOUNT TAMBORINE
NERANG
GOLD COAST
BEAUDESERT
CANUNGRA
KOORALBYN
TWEED HEADS
RATHDOWNEY
TUMBULGUM

Paper Size A3

0 5 10

Kilometres

Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

N

LEGEND

- Deep-draught/tender landing
- State controlled road
- Local Government Area
- Water

Department of Transport and Main Roads
Queensland Recreational Boating Demand Study

Job Number	41-30098
Revision	C
Date	21 Dec 2016

Gold Coast City Council

G:\41\30098\GIS\Maps\MXD\41_30098_166_LGA_Landings_RevC.mxd

Data source: DNRM: Cadastre/2016, Populated Places, Local Government Area/2016; TMR: Facilities/2016, GA Mainland, Islands/2007. DTMR: State Controlled Road/2015. Created By: IH

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Appendix B – Capacity assessment, existing facilities

Facility ID	Facility name*	Tidal access (at ramp)	# Existing lanes	Queuing facility	Effective lanes after tidal access adjustment	# CTU	Effective lanes after adjustment for tidal access, queuing facility and # CTUs		Constraint
							Waterside	CTU	
	Open-water access								
AB11	Boykambil Esplanade, Hope Island	All-tide	1	Beach	1	13	1	1	Waterside
AB23	Jacobs Well Road, Jacobs Well	All-tide	3	Pontoon	3	105	3.6	4.5	Waterside
AB32	Cabbage Tree Point Road, Steiglitz	All-tide	3	No	3	18	3	1	CTU
GB11	Waterways Drive, Main Beach	All-tide	2	Floating walkway	2	21	3	1.5	CTU
GB21	Southern Ramp, Muriel Henchman Drive, The Spit	All-tide	2	Beach	2	46	2	2	Waterside
GB22	Northern Ramp, Muriel Henchman Drive, The Spit	All-tide	2	Pontoon	2	43	2.4	2	CTU
GB41	Marine Parade, Labrador	All-tide	2	No	2	20	2	1	CTU
GB62	Marine Parade, Harley Park, Southport	All-tide	2	Floating walkway	2	33	3	1.5	CTU
GB71	Ray Street, Runaway Bay	All-tide	1	No	1	13	1	1	Waterside
GB91	Drake Avenue, Paradise Point	All-tide	3	Floating walkway	3	46	4.5	2	CTU
GC41	Naples Avenue, Surfers Paradise	All-tide	1	Beach	1	6	1	0.5	CTU
GC61	Birt Avenue, Surfers Paradise	All-tide	1	Beach	1	14	1	1	Waterside
GB86	Howard Street, Hollywell	All-tide	1	Beach	1	13	1	1	Waterside
ADD15	Broadwater Parklands, Southport	All-tide	4	Floating walkway	4	90	6	4	CTU
GB84	Holly Avenue, Hollywell	Near all-tide	1	Beach	0.8	4	0.8	0.5	CTU
GB81	Jasmine Avenue, Hollywell	Near all-tide	1	Beach	0.8	7	0.8	0.5	CTU
AB17	Colman Road, Coomera	Part-tide	1	Beach	0.5	unmarked	0.5	Unmarked	Waterside
	SUBTOTAL		***31***		***30.1***		***36.6***	***25****	

Facility ID	Facility name*	Tidal access (at ramp)	# Existing lanes	Queuing facility	Effective lanes after tidal access adjustment	# CTU	Effective lanes after adjustment for tidal access, queuing facility and # CTUs		Constraint
							Waterside	CTU	
	Depth-limited open-water access								
GC15	Thrower Drive, Palm Beach	All-tide	2	Beach	2	45	2	2	Waterside
GC21	Murlong Crescent, Palm Beach	All-tide	1	Floating walkway	1	12	1.5	1	CTU
GC25	Awoonga Avenue, Burleigh Heads	All-tide	1	Beach	1	6	1	0.5	CTU
GC16	Winders Park, Currumbin	All-tide	1	No	1	unmarked	1	Unmarked	Waterside
	SUBTOTAL		***5***		***5***		***5.5***	***3.5****	
	Distance-limited open-water access								
AB12	Pinnaroo Street, Hope Island	All-tide	2	No	2	22	2	1.5	CTU
AB72	Alberton Road, Alberton	All-tide	1	No	1	10	1	1	Waterside
AC22	Arthur Earle Park, Nerang	All-tide	2	No	2	10	2	1	CTU
AC23	Carrara Road, Carrara	All-tide	1	No	1	6	1	0.5	CTU
AC24	Tallawood Road, Coomera	All-tide	1	Pontoon	1	9	1.2	0.5	CTU
GB16	T E Peters Drive, Broadbeach Waters	All-tide	2	Beach	2	11	2	1	CTU
GB92	The Esplanade, Coombabah	All-tide	1	No	1	13	1.5	1	CTU
GB93	Oxley Drive, Paradise Point	All-tide	2	No	2	30	2	1.8	CTU
GC28	Pacific Motorway, Oxenford	All-tide	2	No	2	49	2	2	Waterside
AB50	Paterson Road, Yatala	All-tide	1	No	1	10	1	1	Waterside
GC75	Gawler Place, Upper Coomera	All-tide	1	No	1	8	1	0.5	CTU
GC78	Condamine Crescent, Helensvale	All-tide	1	No	1	Unmarked	1	Unmarked	Waterside
	SUBTOTAL		***17***		***17***		***17.7***	***11.8****	
			Total effective capacity				***41.9****		

**CTU calculation does not include unformed or unmarked parking spaces.*

**The effective capacity of each facility is shaded.*

Appendix C – 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

Prepared for:

GHD Pty Ltd
145 Ann Street
Brisbane QLD 4000

Prepared by:

Economic Associates Pty Ltd
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PO Box 541 Spring Hill QLD 4004
Telephone: (07) 3839 1011
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December 2017

16042

ECONOMIC ASSOCIATES

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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

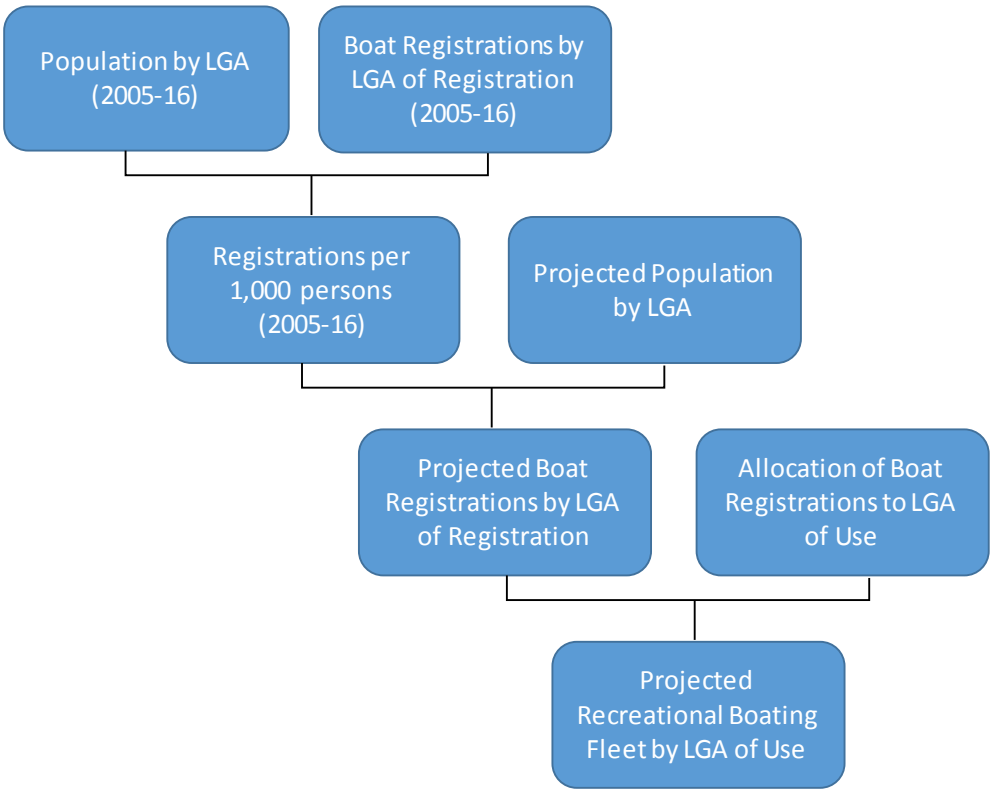
This section of the report provides a summary of the projected size of the recreational boating fleet by LGA, including a detailed explanation relating to the assumptions made in preparing the projections.

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 Queensland[1], 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
Pormpuraaw (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
Pormpuraaw (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
Barcaldine (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

	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**
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

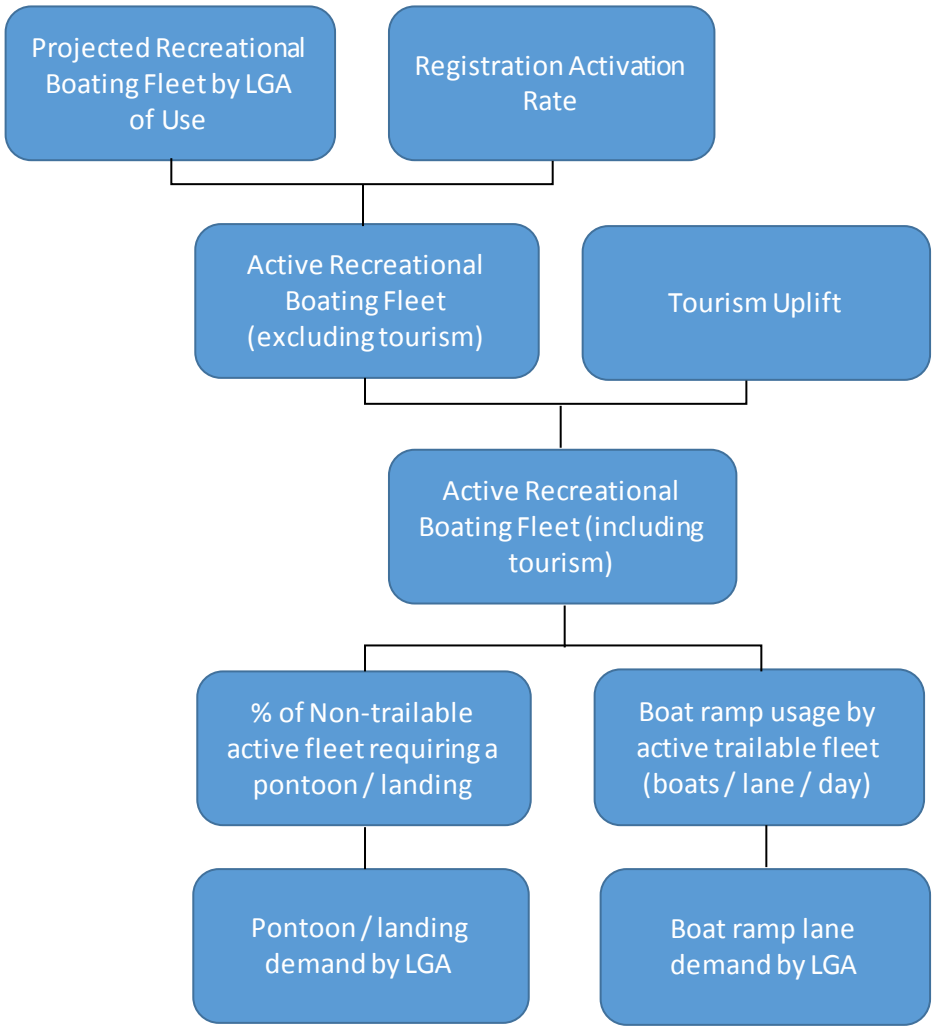
3 INFRASTRUCTURE DEMAND ASSESSMENT

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

	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)	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

	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**
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
Pormpuraaw (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
Pormpuraaw (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

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APPENDIX A

DISTRIBUTION OF BOAT REGISTRATIONS TO LGAS OF USE

Table A.1: Distribution of boat registrations to LGAs of use, trailable boat registrations

| | LGA Registration Address | | |

Table A.2: Distribution of boat registrations to LGAs of use, non-trailable boat registrations

| | LGA Registration Address | | |

GHD

145 Ann Street Brisbane QLD 4000
GPO Box 668 Brisbane QLD 4001
T: (07) 3316 3000 F: (07) 3316 3333 E: bnemail@ghd.com

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