



Recreational Boating Facilities Demand Forecasting Study



Northern Region



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Glossary of terms and abbreviations

Term/Abbreviation	Definition
Access (water)	Issues relating to water access e.g. difficulty launching and retrieving a vessel.
BH	Boat harbour
BICM Program	Boating Infrastructure Capital and Maintenance Program
Boat lane width	TMR's design standard for boating infrastructure has recently been amended to increase lane width from 3.5 metres to 4 metres.
CTU	Car trailer unit
CMP	Coastal Management Plan
DERM	Department of Environment and Resource Management
Delivery Agencies	Key agencies within Queensland responsible for providing infrastructure (both land and water based) for recreational boating including councils, facility owners and managers (SEQwater and Sunwater), port authorities and Transport and Main Roads.
DIP	Department of Infrastructure and Planning (now DLGP)
DLGP	Department of Local Government and Planning
DLGPS	Department of Local Government, Planning and Sport
DLGPSR	Department of Local Government, Planning, Sport and Recreation
Dry Storage	Storage of a boat on land
DTMR	Department of Transport and Main Roads (now TMR)
EPA	Environmental Protection Agency (now DERM)
ERP	Estimated resident population
FNQ	Far North Queensland
FNQRP	Far North Queensland Regional Plan
GIS	Geographic Information Systems
GRDP	Gulf Regional Development Plan
INDEGO	Infrastructure Development Geospatial Options

Term/Abbreviation	Definition
Land based facilities	Facilities provided on land at recreational boating facility sites e.g. car parking, toilets, lighting, washdown facilities, rigging areas, fish cleaning tables, bins, etc.
LGA	Local Government Area
MCA	Multi-Criteria Analysis
MSQ	Maritime Safety Queensland
NWRP	North West Regional Plan
OESR	Office of Economical and Statistical Research
PIFU	Planning Information and Forecasting Unit
RBC	Recreational boating catchment
Recreational boating	Boating undertaken for recreational purposes not involving commercial gain
SKM	Sinclair Knight Merz
TMR	Transport and Main Roads
Trailerable boat	A boat that can be transported by a trailer
TTSP	Townsville-Thuringowa Strategy Plan
VMR	Volunteer Marine Rescue
Wet Berthing	Storage of a boat in the water at a marina



Executive summary

Demand for recreational boating has been increasing throughout Queensland in response to population growth, higher levels of participation by the community and increasing boat ownership. This has exacerbated the pressure on recreational boating facilities particularly in the more popular and populous locations.

This study, commissioned by the Boating Infrastructure and Waterways Management Branch of Transport and Main Roads (TMR), seeks to establish the demand for recreational boating for the state of Queensland. This study¹ has been undertaken for each of the five TMR regions to assist in the identification of the areas of greatest need for additional or upgraded recreational boating facilities now and in the future.

Details of the Study purpose, scope, limitations and assumptions are provided in section 1 of this report.

Regional overview

The Northern Region comprises of the area extending from the Torres Strait islands in the north, Flinders, McKinlay and Bowen Shires in the south, and bounded by the Northern Territory border to the west and the coast to the east.

The key characteristics and influences on recreational boating activity in the Northern Region can be summarised as:

- ▶ The Northern Region is experiencing on-going population growth, particularly in the Cairns and Townville areas.
- ▶ There are significant environmental management constraints on the location of boating facilities and associated infrastructure under the State and Regional Coastal Management Plans and other State legislation relevant to this region.
- ▶ Identified growth areas such as the Mount Peter Master Planned Area in Far North Queensland (FNQ) will place an increased demand on recreational boating facilities and infrastructure. Future growth areas will need to be considered when assessing future recreational boating facility requirements.

Recreational boating catchments

For the purposes of this study, sixteen recreational boating catchments (RBCs) have been defined in conjunction with TMR, using former local government area (LGA) boundaries and taking into consideration the five TMR regions in Queensland². The RBCs within Queensland are shown on Figure 8.

¹ This document will be used by delivery agencies as one tool in a broader assessment process to choose and prioritise sites for development. This document will also be used by delivery agencies (in partnership with council and port authorities) as a guide for the allocation of funding. Submissions for funding will be considered outside of the recommendations of this study and will be assessed on a case by case basis.

² It is recognised that boat owners may travel outside their recreational boating catchment to access facilities. However, discussions with TMR determined that the recreational boating catchments defined above were the most appropriate.



Catchments for recreational boating infrastructure are typically influenced by:

- ▶ road transport infrastructure to the facility;
- ▶ natural and man-made barriers;
- ▶ the location and scale of existing facilities in the area; and
- ▶ psychological barriers, such as driving time and perceptions of distance.

The RBCs located within the Northern Region are:

- ▶ Cape York
- ▶ North West Queensland
- ▶ Cairns
- ▶ Townsville.

Consultation outcomes

Stakeholder consultation was an integral part of the project and was delivered across Queensland over a six month period, from March to August 2010. Feedback from this consultation process informed the inventory, needs assessment, and prioritisation of sites, providing a qualitative and structured assessment from the perspective of key and other stakeholders, and the community.

Consultation activities

Consultation method	Participation
Surveys	<p>The community of Queensland was invited to provide feedback on recreational boating facilities by participating in an online survey, via the Queensland Government’s ‘Get Involved’ website. The survey was structured as a variety of open and multiple answer questions.</p> <p>Of the 664 responses received from around the State, 62 surveys were from residents of the Northern Region representing 9.3% of the total sample.</p>
Workshops	<p>Stakeholder workshops were conducted as round table discussions to provide attendees with the opportunity to ‘have their say’ on current use patterns, limitations and potential opportunities associated with recreational boating facilities at a local level.</p> <p>Stakeholder workshops were held in seven locations across the Northern Region and approximately 34% of invitees attended the workshops.</p>
Phone and email	<p>A 1800 number and email address were operational throughout the consultation process.</p>
Brisbane Boat Show	<p>The community survey was available as part of the Brisbane Boat Show held on the 26-29 August 2010. This process was supported by MSQ representatives.</p>

The biggest issues facing recreation boating in the Northern Region identified through the consultation were safety, maintenance, capacity, and accessibility.

Safety is a particular concern at existing facilities where there are no pontoons or floating walkways largely due to the risk from crocodiles. In some areas, such as Bramston Beach, there are resident crocodiles which are known to regular users of facilities.

The Northern Region experiences usage rates influenced by seasonal tourism at many facilities, especially in the Cape York area which is generally inaccessible during the wet season. During the dry 'tourist' season, many facilities are placed under pressure and capacity is an issue.

According to stakeholders, there is a shortage of facilities within the Townsville area, with the majority of the existing facilities generally concentrated within the port area. It was acknowledged that additional all tide facilities are required in the northern area in the short term. Townsville stakeholders are increasingly becoming frustrated with the capacity, access and safety of existing facilities.

The following table provides a summary of the most liked, disliked and used boat ramps in the Northern Region as identified by survey respondents.

Survey respondents feedback – existing recreational boating facilities

Catchment where respondents reside	Most liked boat ramp	Most disliked boat ramp	Most used boat ramp
Cairns	<ul style="list-style-type: none"> Dungeness boat ramp³, Lucinda Road (Hinchinbrook Shire Council) 	<ul style="list-style-type: none"> Tingira Street boat ramp (Cairns Regional Council) 	<ul style="list-style-type: none"> Dungeness boat ramp³, Lucinda Road (Hinchinbrook Shire Council)
Townsville	<ul style="list-style-type: none"> Cardwell boat ramp⁴, opp Sheridan Street (Cassowary Coast Regional Council) 	<ul style="list-style-type: none"> Mourilyan Harbour boat ramp⁴ (Cassowary Coast Regional Council) Nelly Bay Harbour boat ramp (Townsville City Council) 	<ul style="list-style-type: none"> Nelly Bay Harbour boat ramp Barnicle Street boat ramp, Ross River (Townsville City Council)
Cape York	No responses recorded	<ul style="list-style-type: none"> Charlotte Street boat ramp, Cooktown (downstream) (Cook Shire Council) 	No responses recorded

³ Respondents from the Cairns RBC identified the Dungeness boat ramp, located in the Townsville RBC, as the ramp they like and use the most.

⁴ Respondents from the Townsville RBC identified the Cardwell boat ramp and the Mourilyan Harbour boat ramp, both of which are located in the Cairns RBC, as ramps they like the most.

Catchment where respondents reside	Most liked boat ramp	Most disliked boat ramp	Most used boat ramp
North West Qld	No responses recorded		

Demand assessment

The recreational boating facilities demand assessment has been used as a tool in this project to determine current and future demand and the areas within the state where the demand for recreational boating facilities is the greatest. This process guides, along with the consultation outcomes and site assessment, the identification of priorities for investment in recreational boating infrastructure. The recreational boating demand assessment is contained in section 5 and Appendix A of this report.

Trailerable boat fleet

Trailerable boat ownership is the most significant demand driver for boat ramps. The composition of a region's boating fleet determines the quantity of boat ramps demanded. Therefore, to estimate demand for boat ramp lanes within each catchment in Queensland, it was necessary to estimate the size and composition of the boat fleet within each catchment area. Boat registrations represent the best source of data for estimating the size of the boat fleet.

The projected fleet size in each catchment has been estimated by applying the projected boat ownership ratio to the projected increase in population for the catchment area and then adding the projected growth in boat registrations to 2009 boat registrations.

Boat registrations are projected to be highest in the Townsville and Cairns RBCs, with these two comprising approximately 90% of the project boat registrations within the Region in 2031 (refer to table below).

Projected boat registrations – base case scenario 2010-2031

RBC	2010	2011	2016	2021	2026	2031
Total boats						
Townsville	18,086	18,420	20,536	22,179	23,479	24,641
Cairns	17,989	18,091	19,342	20,503	21,692	22,965
North West QLD	1,839	1,922	1,852	1,853	1,891	1,952
Cape York	1,798	1,799	1,859	1,933	2,017	2,099
Total	39,712	40,232	43,589	46,468	49,079	51,657

To estimate the projected size of the trailerable boat fleet it has been assumed that the incidence of boats requiring a boat ramp remains constant throughout the projection

period. As detailed in the following table, for the base case scenario between 2010 and 2031, the largest increase in boats requiring a boat ramp is projected to occur in the Townsville and Cairns RBCs.

Projected boats requiring a boat ramp – base case scenario 2010-2031

RBC	2010	2011	2016	2021	2026	2031	Change
Townsville	17,098	17,415	19,419	20,976	22,207	23,308	6,210
Cairns	16,640	16,735	17,899	18,979	20,084	21,268	4,629
North West QLD	1,777	1,857	1,790	1,790	1,827	1,887	109
Cape York	1,660	1,661	1,717	1,785	1,863	1,939	279
Total	39,185	39,679	42,841	45,551	48,007	50,433	11,227

In order to determine the demand for recreational boating facilities, estimates have been made based on literature for off-peak demand and peak demand on a single weekend throughout the year. TMR recognises three levels of demand:

- ▶ Off-peak demand – the department expects off-peak demand to be met in almost all circumstances.
- ▶ Average demand – is taken to be demand for a facility on weekends (and for certain regional locations other busy periods).
- ▶ Peak demand – is demand for a facility at peak holiday periods and for special events.

TMR’s program of works is aimed at satisfying average demand, where funds from recreational vessel registration fees allow.

Based on the above findings, and the TMR levels of demand, three scenarios estimating boat ramp lane demand have been provided:

- ▶ Off-peak demand – 8% of boats demanding a boat lane on any given weekend;
- ▶ Average demand – 14% of boats demanding a boat lane on any given weekend.
- ▶ Peak demand – 20% of boats demanding a boat lane on any given weekend.

Average demand scenario has been adopted for the purposes of this study as it will provide the most representative demand for the Northern Region.

In estimating average demand on a weekend in Table 19 (refer to section 5.7), it was noted that on 35 of the 52 weekends, usage was estimated at 2% of the trailerable boat fleet. However, this figure is likely to be higher on certain weekends, for example when weather is particularly favourable, on other public holidays (e.g. show holiday), long weekends resulting from a pupil free day at their child’s school, or consecutive ‘leave’ days.

The following table identifies the boat ramp lane demand for the high demand scenario between 2010 and 2031. The number of existing lanes in each RBC (both TMR and non-TMR) has been identified and the projected demand for boat ramp lanes to 2031 has been calculated based on a rate of 40 boats/lane/day for the base case scenario. Several other alternative scenarios have been assessed with this detailed in section 5.7.3 and Appendix A of this report.

Boat lane demand – base case scenario 2010-2031

RBC	Existing number of lanes	2010	2011	2016	2021	2026	2031
Average demand							
Townsville	52	60	61	68	73	78	82
Cairns	67	58	59	63	66	70	74
Cape York	23	6	6	6	6	7	7
North West QLD	9	6	7	6	6	6	7
Total	151	130	133	143	151	161	170

Note: The numbers identified in red indicate that the current number of boat ramp lanes does not meet demand.

To refine the demand calculations outlined in the table above, consideration has also been given to whether a boat ramp is full or part time accessible, and if there is a pontoon or floating walkway to assist in improving the efficiency of the boat ramp.

For the purposes of this assessment a part tide boat ramp is considered to be equivalent to 70% of the capacity of a full tide boat ramp, while the addition of a pontoon is considered to increase the capacity of the facility by 50% of a boat ramp lane. Based on this information, the projected boat lane demand incorporating tide accessibility and pontoons and floating walkways is outlined in the table below.

Demand incorporating tide accessibility and pontoons/floating walkways

RBC	Total lanes	2010	2011	2016	2021	2026	2031
Average demand scenario							
Townsville	47	60	61	68	73	78	82
Cairns	63.5	58	59	63	66	70	74
Cape York	23	6	6	6	6	7	7
North West QLD	11	6	7	6	6	6	7

RBC	Total lanes	2010	2011	2016	2021	2026	2031
Total	144.5	130	133	143	151	161	170

Note: The numbers identified in red indicate that the current number of boat ramp lanes does not meet demand.

RBC demand

The findings of the demand assessment for the Northern Region have been used as the basis of identification of those RBCs across Queensland having the highest daily demand. The categorisation criteria for determining the low, medium and high demand RBCs are:

- Low demand RBC (green) – demand of 5 lanes or less.
- Medium demand RBC (yellow) – demand of between 5 and 15 lanes.
- High demand RBC (orange) – demand of 15 lanes or greater.

The boat ramp lane demand numbers are based on the existing lanes with the underlying assumption that no new lanes will be added to these catchments within the planning timeframe. If new or expanded facilities are provided the total lane demand numbers will reduce accordingly.

The Townsville RBC is the only medium/high demand RBC within the Northern Region, with demand expected to increase significantly by 2016.

Cairns RBC has low demand; while the RBCs of Cape York and North West QLD do not have any projected demand for additional boat ramp lanes (refer to table below).

The Cape York RBC has a significant surplus of boat ramp lanes with this projected to continue past the projected project timeframe.

RBC demand categorisation – 40 boats/lane/day

RBC	Existing lanes	2010	Lane demand*	2016	Lane demand*	2021	Lane demand*
Townsville	47	60	13	68	21	73	26
Cairns	63.5	58	-5	63	0	66	3
Cape York	23	6	-17	6	-17	6	-17
North West QLD	11	6	-5	6	-5	6	-5
Total	144.5	130	-14	143	-1	151	7

* Rounded down to nearest whole number.



Identification of priorities

To assist in the process of identification of priorities for the provision of recreational boating facilities in the Northern Region, the site specific information collected through the consultation process was collated. The feedback included that obtained from the community survey, thorough workshops, and information provided by key and other stakeholders.

This information, along with the other information available for each of the facilities, was collated and potential new sites and priority sites were identified. These sites then provided the targeted locations for the spatial analysis component of the study. GIS analysis was undertaken to determine the suitability of potential new sites as well as the potential for upgrades at existing sites.

Suitable sites are prioritised into:

- ▶ Priority 1 sites;
- ▶ Priority 2 sites;
- ▶ Priority 3 sites; and
- ▶ Priority 4 sites.

The recreational boating priorities and recommendations for the Northern Region are summarised in the following table.

Northern Region priorities

Priority	Recommendations	RBC
Priority 1	Boat ramp 5th – 7th Avenue South Townsville – new facility	Townsville
	Boat ramp Saunders Beach – upgrade existing facility	Townsville
	Boat ramp Cairns Tingira Street - upgrade existing facility	Cairns
	Boat ramps Ross Creek BH Townsville downstream and upstream - upgrade existing facility	Townsville
	Boat ramp Dungeness – upgrade existing facility	Townsville
Priority 2	Boat ramp Taylors Beach – upgrade existing facility	Townsville
	Boat ramp Bellenden Ker - upgrade existing facility	Cairns
	Boat ramp Edmonton Thompson Road downstream - upgrade existing facility	Cairns
	Boat ramp Bramston Beach Joyce Creek - upgrade existing facility	Cairns

Priority	Recommendations	RBC
	Boat ramp Deeral Ross Road – upgrade existing facility	Cairns
Priority 3	Boat ramp Clump Point north of Mission Beach - upgrade existing facility	Cairns
	Boat ramp Redbank Creek Pine Creek Road - upgrade existing facility	Cairns
	Boat ramp Ross Creek East – new facility	Townsville
	Boat ramp Hell Hole Landing Hodder Road - upgrade existing facility	Townsville
	Boat ramp Kewarra Beach – new facility	Cairns
Priority 4	Boat ramp Tully Heads Mosquito Creek – upgrade existing facility	Cairns
	Boat ramp Barramundi Creek Morris Creek Road – upgrade existing facility	Townsville
	Boat ramp Mona Road – new facility	Townsville
	Boat ramp Forrest Beach – upgrade existing facility	Townsville
	Boat ramp Hull River Heads Tully-Hull Road - upgrade existing facility	Cairns
	Boat ramp Boundary Street – new facility	Townsville

Demand following facility construction

The priority recommendations will assist in catering for the projected lane demand for the Northern Region. The construction of additional lanes and/or pontoons/floating walkways will increase the capacity of boat ramps and therefore contribute to a reduction in the demand for lanes across the region. The table below identifies the projected lane demand following the construction of the priorities as follows:

- ▶ Existing lanes - the number of lanes available at that time e.g. existing lanes at 2016 includes the lanes constructed as part of the 2010-2014 BICM program and the recommended Priority 1 sites.
- ▶ Lane requirements – the number of lanes required as forecasted in the demand analysis process.
- ▶ Lane demand – the difference between the number of existing lanes and lane requirements, being either a surplus or shortfall of boat ramp lanes.

Boat ramp lane demand following construction of priorities

RBC	Existing lanes at 2010	Lane requirements 2010 (forecast)	Lane demand 2010*	Existing lanes at 2016	Lane requirements 2016 (forecast)	Lane demand 2016*	Existing lanes at 2021	Lane requirements 2021 (forecast)	Lane demand 2021*
Townsville	47	60	13	71.5	68	-3	79.5	73	-6
Cairns	65	58	-7	71	63	-8	76.5	66	-10
Cape York	24	6	-18	26.5	6	-20	26.5	6	-20
North West QLD	12	6	-6	13	6	-7	13	6	-7
Total	148	130	-18	182	143	-38	195.5	151	-43

* Rounded down to the nearest whole number.

1. Introduction

Demand for recreational boating has been increasing throughout Queensland in response to population growth, higher levels of participation by the community and increasing boat ownership. This has exacerbated the pressure on recreational boating facilities particularly in the more popular and populous locations.

GHD and Economic Associates were commissioned by Transport and Main Roads (TMR) to undertake a recreational boating demand forecasting project for the state of Queensland. This study has been undertaken for each of the five TMR regions to assist in the identification of the areas of greatest need for additional or upgraded recreational boating facilities within a three to ten year timeframe. In addition, the regional priorities have been further assessed in order to identify the priorities on a state wide basis.

This report describes the findings of the recreational boating facilities demand forecasting study for the Northern Region of Queensland and is one of five reports prepared to address demand for recreational boating facilities across Queensland.

1.1 Study purpose

The purpose of this Study is to assist in planning for the development of existing and new recreational boating facilities across Queensland. The Study is for the consideration of delivery agencies as **one** tool in a broader assessment process to choose and prioritise sites for development. Other considerations will include (but are not be limited to):

- ▶ land availability;
- ▶ detailed engineering feasibility studies;
- ▶ affordability of the particular proposal against available funds and equity considerations;
- ▶ detailed environmental feasibility and concurrence agency feedback;
- ▶ agreement from land-side partners (councils and port authorities) who are willing to commit resources;
- ▶ state-wide equity when deciding priority;
- ▶ state-wide need when assessing priority against available funds; and
- ▶ the need to exercise the “commonwealth” concept whereby more densely populated areas subsidise more remote locations (meaning that there has never been and will not be an exact correlation between boat registration fees collected in an area and the funds invested).

The recommendations detailed in this report are intended to assist the strategic planning for the provision of recreational boating facilities in the Northern Region. The report provides a framework to guide more in-depth investigations by State and Local



Government in future, and recommends the need for further investigations. Further work required would include preparation of detailed design and construction plans, full cost estimates, stakeholder consultation and other technical research required to assess the potential of existing facilities for upgrades and expansion, and/or the potential of new sites for recreational boating facilities.

It is recognised that not all the recommended priorities are likely to be completed within this period due to funding availability and other factors influencing priorities at a given time. The plan is intended to provide delivery agencies with a strategic guide for the potential development of existing and new facilities which will be reviewed and adjusted, to respond to new opportunities and challenges as they arise.

1.2 In scope

The scope of the Study is as follows:

- ▶ overview of regional boating activity and facilities
- ▶ consultation activities and outcomes
- ▶ recreational boating demand analysis
- ▶ identification of needs
- ▶ determination of needs.

1.3 Out of scope

The following factors were considered 'out of scope' for this Study:

- ▶ Dredging - development of existing, and identification of potential new sites, that require dredging.
- ▶ Facilities intended primarily for marine passenger transport or other commercial use.
- ▶ Common use (recreational/commercial) facilities where the projected recreational usage is less than 50%.
- ▶ Maintenance of recreational boating facilities except where reconstruction or expansion of an existing facility is proposed.
- ▶ Direct surveys to individual members of recreational vessels by mail and consultation with users at boat ramps.
- ▶ Private recreational boating infrastructure not accessible by the general boating community.
- ▶ Land acquisition.

1.4 Limitations and assumptions

The limitations and assumptions of this study agreed at inception were:



- ▶ The report is not intended to be used as the sole tool in the allocation of future recreational boating facilities in any region.
- ▶ The report did not consider the development of existing and potential new sites that require dredging (based on desktop analysis of sites).
- ▶ The consultation is not designed to be inclusive of all stakeholders, but instead to allow the managers and peak bodies representing recreational boat users to provide their feedback. The consultation process is one of the elements of the project that contributed to the identification of priorities and provided valuable information for the project team.
- ▶ Wave or hydrodynamic modelling, hydrographic surveys, geotechnical investigations and other detailed engineering and environmental assessments have not been carried out as part of this study.
- ▶ The development of the recommended priorities will be subject to a number of factors including, but not limited to:
 - availability of funds to deliver projects
 - cooperation and agreement between delivery agencies
 - state-wide equity
 - sufficient depth of water in the vicinity of the existing/new site
 - tidal range and water depths in the channels leading to the existing/new site
 - wave climate (average and storm/cyclone)
 - environmental suitability
 - development approvals.
- ▶ Should the recommended priorities require dredging following detailed hydrographic survey and sediment sampling, the sites will be developed as recommended if considered viable on the grounds of funding and approvals.
- ▶ It is recognised that the recommended priorities may no longer be considered suitable for development following detailed site investigations. As a result, alternative sites will need to be investigated (including existing and new sites not identified in this Study) in order to cater for projected demand.

1.5 Methodology

The tasks performed within scope are as follows:

1. **Overview of regional boating activity and facilities** - the general characteristics of each of the five regions and the influences on recreational boating activity were identified. The overview of facilities is based on the following:
 - A literature review including relevant legislation, coastal management plans, local and regional planning initiatives;
 - A review of available data sources relating to recreational boating and facility demand in Queensland; and



- Information gained during initial consultation with TMR representatives.
- 2. **Consultation activities and outcomes** – consultation was undertaken with peak marine bodies, clubs and state government, councils and port authority entities at all levels in the form of workshops, project email and telephone, fact sheet, online community survey and the Brisbane Boat show. Consultation with the public was limited to feedback via the online community survey, the Brisbane boat show and/or through peak representative bodies. Details of the consultation methodology is provided section 4 of this report.
- 3. **Recreational boating demand analysis** – a demand analysis was undertaken to determine current and future demand and the areas within the state where the demand for recreational boating facilities is the greatest. The demand analysis identified high, medium and low demand recreational boating catchments for each region. Details of the demand analysis methodology are provided in section 5 of this report.
- 4. **Identification of needs** – the need for recreational boating facilities in the Northern Region were identified based on the outcomes of the consultation process and the demand analysis process. These sites then provided the targeted locations to conduct a spatial analysis. An assessment of the suitability of existing facilities for upgrades and potential new sites was undertaken using INDEGO (Geographic Information System (GIS) multi criteria analysis tool). This process allowed the consideration of a variety of environmental, physical, social and built environment criteria while simultaneously supporting a range of inputs from project stakeholders at the same time. A detailed methodology is provided in Appendix B.
- 5. **Determination of priorities** – Priorities and recommendations have been identified based on the results of the consultation, demand forecasting and GIS analysis. A detailed methodology of the process to determine the priorities is provided in section 7.

2. Regional overview

2.1 Location

For the purposes of this study, the Northern Region refers to that area extending from the Torres Strait islands in the north, Flinders, McKinlay and Whitsunday Shires in the south, and bounded by the Northern Territory border to the west and the coast to the east (Figure 1).

2.2 Regional planning

Development, planning and population growth in the Northern Region is managed through the regional planning process with the following plans applicable to this region:

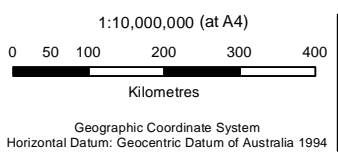
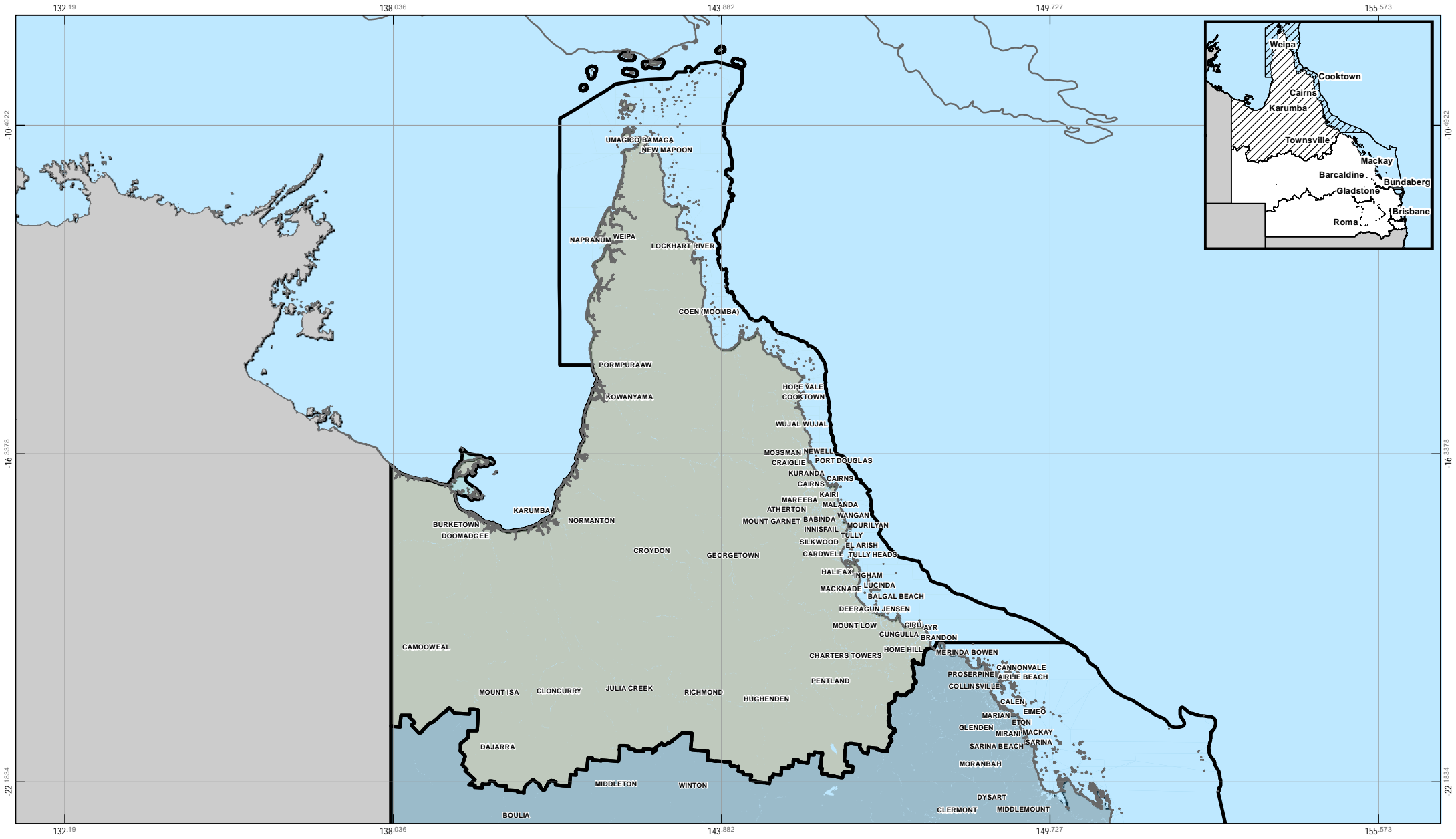
- ▶ Far North Queensland Regional Plan (FNQRP) – this plan applies to an area comprising of Cairns Regional Council, Cassowary Coast Regional Council, Tablelands Regional Council, Wujal Wujal Aboriginal Shire Council and the Yarrabah Aboriginal Shire Council. This plan was established to guide and manage the region’s development over the next 20 years and address key regional environmental, social, economic and urban objectives (DIP, 2009).
- ▶ Townsville – Thuringowa Strategy Plan (TTSP) – the strategy was developed to provide a framework for managing population growth and dealing with the social, environmental and economic issues in the Townsville – Thuringowa area (DLGPSR, 2007). This is now the area that forms Townsville City Council.
- ▶ Gulf Regional Development Plan (GRDP) – this plan applies to an area that extends east from the Northern Territory - Queensland border to include the shires of Burke, Mornington, Carpentaria, Croydon and Etheridge and the Aboriginal councils of Doomadgee and Kowanyama. Development in the region is aided by the GRDP which is a Government and community initiative to assist in the development of a comprehensive Regional Plan (GRPAC, 2000).
- ▶ North West Regional Plan 2010 (NWRP) - the NWRP was released in August 2010, and incorporates five LGAs, Cloncurry Shire Council, Flinders Shire Council, McKinlay Shire Council, Mount Isa City Council, and Richmond Shire Council. It recognises the link between the region's prosperity and the continued exploitation of mineral resources and the need to invest in other industries to help build an economically sustainable future (DIP, 2010).

The State Policy for Coastal Management (management policy) is currently being prepared under the Coastal Protection and Management Act 1995 (Coastal Act). The purpose of the management policy will be to provide direction and guidance about the management of coastal land in Queensland to achieve the objectives of the Coastal Act. The management policy recognises the Recreational Boating Facilities Demand Forecasting Study as an important tool in identifying new locations for the development of minor public maritime infrastructure.

Regional Coastal Management Plans (CMPs) have been developed to manage Queensland's coastline within the framework established by the *State Coastal Management Plan - Queensland's Coastal Policy* (State Coastal Plan). Coastal areas in the Northern Region are managed through the following CMPs:

- ▶ Cardwell Hinchinbrook Regional Coastal Management Plan (Cardwell Hinchinbrook Regional CMP) – This management area extends along the coast from Forrest Beach in the south to South Mission Beach in the north, including LGAs of Hinchinbrook Shire, Cassowary Coast Regional Council and part of the Tablelands Regional Council (Figure 2).
- ▶ Wet Tropical Coast Regional Coastal Management Plan (Wet Tropical Coast Regional CMP) – This CMP extends along the coast from Mission Beach to the Bloomfield River, including the LGAs of Johnstone Shire, Cairns Regional, Wujal Wujal Aboriginal Shire and part of Cassowary Coast Regional Council and the Yarrabah Aboriginal Shire (Figure 3).

These documents all form part of the overview of the region and are addressed in detail in the following sections.



LEGEND

TMR Region	Central	SEQ - South
Drainage	Northern	Southern
	SEQ - North	



Recreational Boating Facilities
Demand Forecasting Study

Job Number 41-22459
Revision A
Date 25 AUG 2011

Overview Region Map
Northern

Figure 1

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Data source: TMR Region, DTMR, (2010) Populated Places Coastline, State, GA, (2007), Drainage, DERM, (2010). Created by: MS, EA, WW, MW

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Figure 2 Cardwell-Hinchinbrook Region CMP (EPA, 2003a)

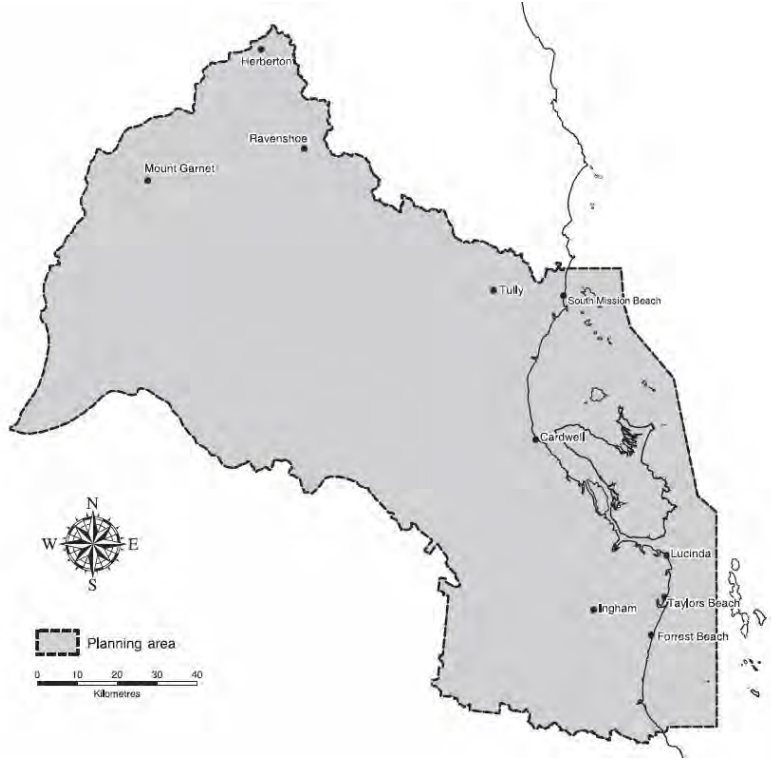
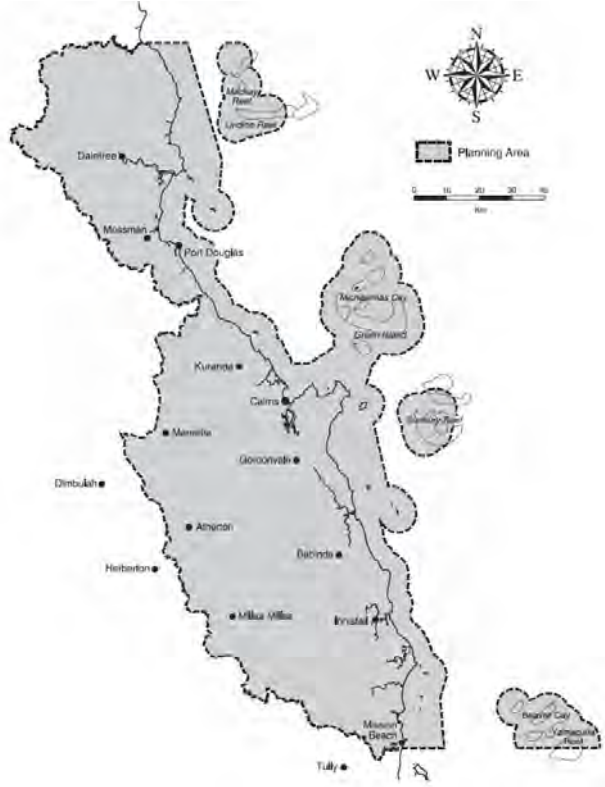


Figure 3 Wet Tropical Coast Region (EPA, 2003c)





2.3 Population and demographics

Population growth contributes significantly to the economic, social and urban development of communities in the Northern Region and is a major contributor to the current and predicted future development of the region.

2.3.1 Northern Region population

The estimated resident population of the Northern Region was 504,539 in 2007, which was approximately 12% of the state's population. Population projections indicate that the population of the Northern Region is expected to increase to approximately 646,516 by 2026 (OESR, 2009).

2.3.2 Sub-regional population

Far North Queensland

The FNQ region had a population of approximately 229,996 in 2007 and made up an estimated 31% of the Northern Region's total population (OESR, 2009). The population of FNQ is projected to increase by nearly 100,000 people, in a high growth scenario over the next 20 years, while for a medium growth scenario the expected population increase is approximately 67,000 people. The population increases will be reflected in the growth of urban settlements, with resulting increasing demand for urban services and infrastructure (DIP, 2009).

Visitors, and in particular tourists, comprise a significant portion of the region's population as FNQ is one of the most popular tourist destinations in Australia. In 2001, 18% of the FNQ region's population were visitors with around 80% of visitors staying in the Cairns Regional Council area, primarily at Cairns and Port Douglas (DIP, 2009). Fly in-fly out mine workers, including those working overseas; also contribute to the non-resident population of the region.

It is anticipated that the greatest proportion of growth in the region will occur in the Cairns area, with the Mount Peter Master Planned Area accommodating the majority of new growth in this region. The Mount Peter Master Planned Area is located between Edmonton and Gordonvale and represents some of the last remaining developable land in the Cairns area that has relatively few natural constraints (DIP, 2009). Approximately two thirds of the region's population growth, or around 70 000 people, will be accommodated within Cairns, with up to 50,000 of this population living in the Mount Peter area (DIP, 2009).

Townsville region

The Townsville region contains the State's largest concentration of population outside South East Queensland (Queensland Government, 2007). In June 2008, the estimated resident population for Townsville City Council was 175,542, an increase of 3% over the previous year (Townsville City Council, 2009). Population projections produced by the Department of Local Government and Planning in 2006 indicate that the population of Townsville City will increase to 220,136 in 2026 (Townsville City Council, 2009).



Gulf region

At the time of preparation of the GRDP in 2000, the Gulf region had a total population of approximately 7,000 (GRPAC, 2000). The population was largely located within the Carpentaria Shire and the towns of Normanton and Karumba (GRPAC, 2000). By 2007 the region's population had declined to 6201, however, population growth is projected to increase slightly by 2026⁵ (OESR, 2007 and DIP, 2008).

North West Queensland

The resident population of the North West planning area was estimated at 28,301 in June 2007, accounting for just 0.7% of the Queensland total (OESR, 2009b). The population of the area is expected to grow to 32,500 people by 2031, with the majority of the growth occurring in Mount Isa (DIP, 2010). The other LGAs of the region are not projected to grow, due largely to population ageing and the likely distribution of mines with non-resident workforces.

The mining industry has had a significant impact on population growth in this part of the Northern Region, with an influx of non-resident workers employed in the mining sector. The total mining workforce of the region was estimated to be 6956 in September 2009, with Non-resident workers making up just over one third of this workforce (DIP, 2010).

2.4 Development and land use

With substantial population growth expected to continue in the coastal sections of the Northern Region, development and land use patterns must be sustainably managed to support continued economic, social and urban development. Regional planning within the region provides the framework for the management of this growth.

2.4.1 Far North Queensland

The FNQ regional planning area is expected to experience significant growth over the next 20 years, with associated benefits from an increase in business activity and diversity, improved employment opportunities and self-containment, and an increased capacity to support major new services and facilities (DIP, 2009). However, the potential negative impacts such as environmental degradation, the depletion of natural resources, increased social problems, diminished liveability and amenity and higher costs in infrastructure will require management.

According to the FNQRP, the tourism economy is innovative, diversified and equitably distributed and the region continues to be recognised as a world class ecologically sustainable tourism destination (DIP, 2009).

Population growth in the region, particularly around Cairns, is placing pressure on coastal resources by increasing demands for residential development, urban infrastructure, tourism facilities and recreation facilities (EPA, 2003a).

⁵ population figures exclude Kowanyama



Development trends and pressures are also placing pressure on the coastal environment in the Cardwell Hinchinbrook area, including:

- ▶ urban expansion and tourism development at Wongaling Beach to South Mission Beach;
- ▶ development of a marina, residential subdivision and tourist facilities at Port Hinchinbrook;
- ▶ development of tourist accommodation at Dungeness;
- ▶ urban expansion and tourism development at Forrest Beach; and
- ▶ agricultural intensification (EPA, 2003a).

Through the coastal management plans it has been identified that future urban development is not appropriate on or within erosion prone areas, riparian areas, or areas of state significance (natural resources) (EPA, 2003a). Therefore, it is important that future development in coastal areas is compatible with existing land uses and does not adversely affect the environmental values of the coastline.

With the region's population and tourism expected to increase, it is anticipated that the demand for sufficient boat launching facilities, particularly in Cairns, Port Douglas, Mossman and Mission Beach will also increase. Maritime infrastructure such as marinas, jetties, boat ramps and other marine transport facilities contribute to the tourism industry in the area and provide recreational facilities for people living and visiting the area.

2.4.2 Townsville

The Townsville City area is expected to experience significant growth in the next 20 years and the TTSP was developed to provide a framework for to managing population growth and dealing with the social, environmental and economic issues in the Townsville City region (former Townsville-Thuringowa Region).

At the time of preparation of the TTSP, it was indicated that the region was entering another economically driven growth phase based on natural resources such as fisheries and extractive minerals, environmental assets and tourism activities.

The fishery resources in the region are nationally and internationally recognised for the quality of the recreational fishing they provide, and are a substantial attraction to tourists (Queensland Government, 2007). Therefore, the strategy has identified a number of policies to assist with the development of the fisheries industry, tourism and recreation based activities to support the economic development of the region.

A key policy established to encourage recreation activities and tourism in the Townsville City region was the provision of improved access to recreation activities, ranging from high levels of access and facilities for core recreational areas to limited access and facilities in "wilderness" areas, and including access for water and land based fishing opportunities and recreational boating (Queensland Government, 2007).

Transport was also identified as a key policy area in the TTSP with the aim to provide transport services and facilities to effectively cater for population growth in the region



and meet the economic and social needs of the community. One of the objectives identified to achieve this policy area was to investigate additional sites for new transport and maritime infrastructure and facilities to meet recreational fishing and boating needs (Queensland Government, 2007).

The Port of Lucinda is identified as an area of state significance in the Townsville region and incompatible uses adjacent to this area could adversely affect the operations of the port. The Cardwell-Hinchinbrook Regional CMP identifies that the preferred land uses and activities for areas neighbouring the strategic port land include maintenance of adjoining land in an undeveloped or natural state, maritime facilities (i.e. a public boat ramp) and industrial development that is compatible with the operations of the port and the port infrastructure (EPA, 2003d).

2.4.3 Gulf Region

The Gulf Region continues to develop however, at the time of preparation of the GRDP, the region was experiencing increasing pressures associated with growth in industries such as eco-tourism and mining, as well as seeing restructuring in established industries such as pastoralism and commercial fishing (GRPAC, 2000).

Over the years, pastoral land, retail, hospitality and tourism sectors have increasingly made significant contributions to the economy of the Gulf region, and there is significant potential for the expansion of ecotourism in the region (DERM, 2009).

The Gulf tourism industry is built largely on nature based activities such as sightseeing, camping, bird watching, bushwalking, fishing, heritage and fossicking, and it has been estimated that between 80,000 and 100,000 people visit the Gulf region annually (DERM, 2009). Tourism in the Gulf has grown rapidly over the past ten years as a result of conservation and promotion of natural and cultural resources accompanied by improvements to the regional road network.

Karumba is has been identified as a key location for tourist recreational fishing as it has the easiest road access from centres outside the region (GRPAC, 2000).

2.4.4 North West Region

Economic development in the North West region is vital to supporting growth and prosperity with the economy primarily reliant on mining and agricultural production.

The region is characterised by distinct rural and natural landscapes which support a range of uses and provide significant environmental, economic and social benefits to the region (DIP, 2010). Therefore, future development must be effectively managed to protect the region's natural assets.

The NWRP highlights the need to protect renewable energy and mineral resources, water catchments and areas set aside for rural production and outdoor recreation (DIP, 2010).

The region's diverse environment provides a range of recreation opportunities and provides high scenic values which have the potential to make a substantial contribution to local and regional economy through nature-based tourism (DIP, 2010).

2.5 Regional overview

The key characteristics and influences on recreational boating activity in the Northern Region can be summarised as follows:

- ▶ The Northern Region is experiencing on-going population growth, particularly in the Cairns and Townsville areas.
- ▶ There are significant environmental management constraints on the location of boating facilities and associated infrastructure under the State and Regional Coastal Management Plans and other State legislation relevant to this region.
- ▶ Identified growth areas such as the Mount Peter Master Planned Area in FNQ will place an increased demand on recreational boating facilities and infrastructure. Future growth areas will need to be considered when assessing future recreational boating facility requirements.

3. Recreational boating facilities

3.1 Introduction

The current recreational boating facilities of the Northern Region incorporate both TMR facilities, and facilities that are owned and managed by other organisations such as local governments. This section identifies the current recreational boating facilities available to the public within the region.

3.2 Overview of current facilities

In order to support regional development and cater for future population growth in the Northern Region, it is important to establish and maintain adequate recreational boating infrastructure and land based facilities. These facility numbers and locations also form the basis of the demand assessment undertaken for this project and detailed in section 5 of this report.

Table 1 details the existing TMR recreational boating facilities located in the Northern Region, by LGA, while Table 2 details facilities owned by other entities, such as local government.

Table 1 TMR owned recreational boating infrastructure

Local government	Facilities					
	Boat ramps	Boat ramp lanes	Pontoon	Floating walkway	State boat harbour	Jetty
Burdekin Shire Council	8	11	-	1	-	1
Burke Shire Council	1	1	-	-	-	1
Cairns Regional Council	18	35	4	1	1	5
Carpentaria Shire Council	2	3	-	1	-	-
Cassowary Coast Regional Council	13	18	1	1	-	2
Cook Shire Council	8	8*	-	-	-	-
Hinchinbrook Shire Council	3	6	1	-	-	-
Mapoon Aboriginal Shire Council	1	1*	-	-	-	-
Northern Peninsula Area Regional Council	3	3	-	-	-	-

* Number of lanes unknown. Assumed each boat ramp is a single lane



Local government	Facilities					
	Boat ramps	Boat ramp lanes	Pontoon	Floating walkway	State boat harbour	Jetty
Tablelands Regional Council	2	2				
Torres Strait Island Regional Council	2	6	1	-	-	-
Townsville City Council	11	27	3	-	1	4
Weipa Town Council	2	4	1	-	-	-
TOTAL	74	125	11	4	2	13

Table 2 Other recreational boating infrastructure⁶

Local government	Facilities					
	Boat ramps	Boat ramp lanes	Pontoon	Floating walkway	Boat harbour	Jetty
Burdekin Shire Council	2	4	-	-	-	-
Cairns Regional Council	1	4	-	-	-	2
Carpentaria Shire Council	1	1	-	1	-	-
Cassowary Coast Regional Council	3	4	1	-	-	6
Charters Towers Regional Council	1	1	-	-	-	-
Hinchinbrook Shire Council	1	2	-	1	-	1
Mount Isa Shire Council	1	1	-	-	-	-
Tablelands Regional Council	3	4	-	-	-	-
Torres Strait Island Regional Council	2	3	-	-	-	3
Townsville City Council	2	2	-	-	-	-
TOTAL	17	26	1	2	0	12

⁶ Information in this table has been obtained from 2009 and 2010 data provided by TMR and from other sources such as local government. Please note that there may be some omissions in the information available



3.3 Northern Region localities and recreational boating

3.3.1 Far North Queensland

Recreational boating is a major activity in the region with the demand for boat launching facilities exceeding the number of existing boat ramps (EPA, 2003c). Maritime infrastructure provides essential support to the Wet Tropical Coast Region's recreational and tourism activities. Maritime infrastructure in the region includes:

- ▶ Cairns Seaport and the Mourilyan Harbour;
- ▶ marinas at Dicksons Inlet, Yorkeys Knob (Half Moon Bay) and the mouth of Trinity Inlet;
- ▶ jetties at Palm Cove, Green Island, Fitzroy Island, on the Russell River near Bellenden Ker, Boat Bay, Newell Beach, Mourilyan and Innisfail; and
- ▶ a number of public boat ramps (EPA, 2003c).

There are a number of boat ramp facilities located in the regional towns of the FNQ region. The centres of Mareeba, Atherton, Innisfail, and to a lesser extent Tully are currently experiencing growth (DIP, 2009). Lake Tinaroo is located approximately 5 kilometres from the town of Tinaroo provides recreational boating access for the community. TMR have upgraded and widened the existing boat ramp at Tinaburra on Tinaroo Dam, and constructed new single lane boat ramps at Black Gully Road and Bruce Road, Tinaroo, as part of the Boating Infrastructure Capital and Maintenance Program 2008-2009.

3.3.2 Townsville

There are approximately 40 recreational boating facilities in the Townsville City region, including 29 boat ramp lanes available for public access.

A prefeasibility analysis was undertaken by Maunsell in 2009 to identify existing public boating facilities in the Townsville City Area and review the feasibility of single or multiple new locations for major public boat ramp facilities in the area. This study identified suitable sites based on constraints relating to:

- ▶ operational requirements
- ▶ environmental
- ▶ geological
- ▶ social
- ▶ economic
- ▶ engineering requirements
- ▶ political considerations (Maunsell, 2009).

The study investigated 12 sites and identified potential boat sites for a long term solution and potential sites for an interim increase in capacity respectively. The report recommended that the sites listed in Table 3 be given further investigation (Maunsell, 2009).

Table 3 Recommended sites for further investigation

Potential sites for long-term solution	
1	Ross River South Bank (Site 5)
2	Pallarenda and Rowes Bay Location (Sites 10, 11 & 12)
3	Barnicle Street Boat ramp (Sites 7, 8 and 9)
4	Ross River West Bank (Site 6)
Potential for interim increase in capacity	
1	Barnicle Street Boat ramp (Site 8)
2	Ross River/ Boundary Street (Site 4)
3	Ross Creek Boat ramp (Site 1)
4	Ross Creek South (Site 2)
5	Existing Pallarenda Boat ramp (Site 11)

(Maunsell, 2009)

In addition to the study undertaken by Maunsell, Townsville City Council developed a strategic planning document for recreational all-tide protected weather boating facilities for 2020. The purpose of this document was to identify the land side requirements for parking and corresponding ramps for the waterside to meet the need for all-tide protected weather recreational ramp facilities in the Townsville for the next 10 years (van Tubbergh, 2009).

The report identifies 13 potential sites for the location of recreational boating facilities. These sites have been evaluated by TCC, resulting in 8 of the 13 sites being considered unsuitable due to environmental, land use planning or economic constraints. The sites identified as suitable for recreational boating facilities will be assessed as part of this study to determine the potential for inclusion as priorities for the Northern Region.

As part of the *Queensland Transport's Boating Infrastructure Capital and Maintenance Program* between December 2008 and December 2009, maintenance repairs were undertaken on the Ross Creek Boat ramp. In addition, these sites have also been considered and assessed as part of this project, the details of which are addressed further in section 7 of this report.

3.3.3 Gulf Region

In order to support growth and development in the Gulf Region, it is expected that there will be a need for the long-term establishment of additional facilities and ensure that existing facilities are maintained.



There are currently three boat ramps located in Karumba, one located at Karumba Point and two located along the Norman River. Karumba is home to recreational fishing events such as the Karumba Community Anglers Classic, which last year attracted almost 400 adult fishermen and 150 children (ABC, 2009).

According to the GDRP, land based fishing and access to the river at the Port of Karumba are limited to the boat ramp. Most people need to acquire a boat in order to access fishing in the river. In this regard, the GDRP highlighted the need for the provision of a public wharf or jetty at the Port of Karumba to achieve this objective (GRPAC, 2000).

A *Suitability Investigation of Proposed Public Boat ramp Sites in the Cook Shire* was undertaken in 2000. This investigation was a suitability assessment for a public boat ramp at five potential locations within the Cook Shire. The identified site and their suitability assessment is detailed in Table 4.

Table 4 Suitability of public boat ramp sites in the Cook Shire

Site	Suitability
Marton	This site is not recommended as being suitable to install a public boat ramp facility due to the high instability of the site.
Eight Mile Creek	Based on visual inspections of the site, this location could be made suitable for a public boat ramp facility. The report recommends that the user demand for this site be investigated to determine need and potential usage.
Quarantine Bay	The report states that the site is not ideally suitable for a boat ramp due to its high exposure and dynamic beach profile.
Archer Point	The report states that this site is not an ideal launching boat ramp site as it is considered that the potential patronage would not justify the expense and effort.
Annan River	The report identifies this site as ideally suited for a public boat ramp.

(Queensland Transport, 2000)

Since the release of this report a boat ramp has been established at the Annan River location as it was identified as the most suitable location for a public boat ramp in the Cook Shire. In addition, a suitable location was also found at the Marton location and a new boat ramp has since been established.

3.3.4 North West Region

There are limited boating facilities located in the North West Region. However, two dams located within close proximity to Mount Isa have the potential to provide a range of recreation opportunities for the area. Lake Moondarra is located approximately 16 kilometres north of Mount Isa town centre; and Lake Julius is located approximately 70 kilometres north east of Mount Isa.



Information collected as part of this study has identified that a boat ramp facility is located at Lake Julius and is owned by SunWater.

3.4 Boating Infrastructure Capital and Maintenance Program

Across the entire Northern Region, a number of boat launching facilities have been established or upgraded recently as part of the TMR *Boating Infrastructure Capital and Maintenance Program* (BICM Program) between December 2008 and December 2010 (TMR, 2010). The recent projects are as follows:

- ▶ new single lane boat ramp at Cullen Point at Mapoon;
- ▶ widen existing boat ramp at Tinaburra (Tinaroo Dam);
- ▶ construct new single lane boat ramp Black Gully Road, Tinaroo;
- ▶ construct new single lane boat ramp Bruce Road, Tinaroo;
- ▶ upgrade boat ramp at Dungeness (Lucinda Road);
- ▶ new single lane boat ramp at Maria Creek (Kurrimine Beach);
- ▶ reconstruction of boat ramp at Saunders Beach;
- ▶ Marina Plains boat ramp (new) – Cape York Peninsular;
- ▶ Daintree River, Cape Tribulation Road boat ramp widening;
- ▶ Flying Fish Point boat ramp (Innisfail) – reconstruct; and
- ▶ Brampton Island Jetty repairs.

The following projects are on the current program, with the view to be completed by the end of 2014:

- ▶ floating walkway/pontoon at Barramundi Creek;
- ▶ floating walkway/pontoon at Barron River Stratford Greenbank Road;
- ▶ floating walkway at Inlet Street, Port Douglas;
- ▶ floating walkway/pontoon at Newell Rankin Street;
- ▶ new boat ramp, breakwater and pontoon at Mourilyan Harbour;
- ▶ floating walkway/pontoon at Fern Avenue, Coconut Point (Johnstone River);
- ▶ new boat ramp at charters Towers Weir, Burdekin River;
- ▶ new boat ramp at Starcke River;
- ▶ reconstruction of Charlotte Street boat ramp, Cooktown;
- ▶ floating walkway at Dungeness (Herbert River);
- ▶ boat ramp at Toomulla, Salwater Creek;
- ▶ floating walkway/pontoon at Nelly Bay Harbour;
- ▶ reconstruction of boat ramp at Barnicle Street, Railway Estate Townsville; and
- ▶ Ross River recreational boating park – multiple lane boat ramp and pontoon.

4. Consultation activities and outcomes

4.1 Introduction

Stakeholder consultation was an integral part of the project and was delivered across Queensland over a six month period, from March to August 2010. Feedback from this consultation process informed the inventory, needs assessment, and prioritisation of sites, providing a qualitative and structured assessment from the perspective of key and other stakeholders, and the community. This section outlines the consultation activities undertaken as part of this study and the key findings from this engagement process.

4.2 Consultation activities

To maximise opportunities for community and stakeholder feedback, a range of consultation activities were delivered, including awareness raising tools, stakeholder workshops and surveys. Activity details, timing and participation rates are discussed below.

4.2.1 Project website

The establishment of a project page featured on the MSQ website (www.msq.qld.gov.au) provided a mechanism through which the boating community could obtain up to date information on the Recreational Boating Demand Forecasting Project, and make a submission.

The website provided the community and stakeholders with access to specific information about:

- ▶ the project aims and objectives;
- ▶ the consultation process;
- ▶ how to contact the study team to provide input and/ or obtain information; and
- ▶ a link to the survey.

4.2.2 Project email and telephone information line

A dedicated project email address (recboating@ghd.com) and free call 1800 telephone information hotline (1800 086 640) were established and widely promoted on the website and communication materials for the duration of the project.

Through this avenue, stakeholders and the wider community were able to contact the study team directly to raise project-related issues or obtain information.

4.2.3 Fact sheet

A fact sheet was developed in May 2010 to provide a project overview for stakeholders and the public. The fact sheet was available through the project website and was distributed to the key and other stakeholders prior to the workshops and meetings.



4.2.4 Community survey (Get Involved website)

The community of Queensland was invited to provide feedback on recreational boating facilities by participating in an online survey, via the Queensland Government's 'Get Involved' website (www.getinvolved.qld.gov.au). Hard copies of the community survey were also distributed to individuals who preferred to provide written feedback.

The survey was structured as a variety of open and multiple answer questions to gain users' feedback on:

- ▶ recreational boating activity patterns;
- ▶ utilisation and satisfaction with existing recreational boating facilities;
- ▶ upgrades needed to existing facilities; and
- ▶ new facility needs and suggested sites/ localities.

The Community Survey was conducted for a period of three months from June to August 2010. A number of Councils and peak bodies for recreational boating and fishing also promoted the Project and survey on their websites during this period.

At the completion of the Community Survey, a total of 664 submissions were received from around the State, 62 of which were received from residents of the Northern Region.

4.2.5 Stakeholder workshops

A series of workshops were conducted throughout Queensland with key and other stakeholders to discuss recreational boating needs and current issues in each region. Stakeholders were identified in collaboration with MSQ, through desk-based research and reference to MSQ databases.

The workshops were conducted as round table discussions to provide attendees with the opportunity to 'have their say' on current use patterns, limitations and potential opportunities associated with recreational boating facilities at a local level. Consultation with these groups was used to inform and provide validation for the demand forecasts.

4.2.6 Brisbane Boat Show

The community survey was available as part of the Brisbane Boat Show held on the 26-29 August 2010. This process was supported by MSQ representatives.

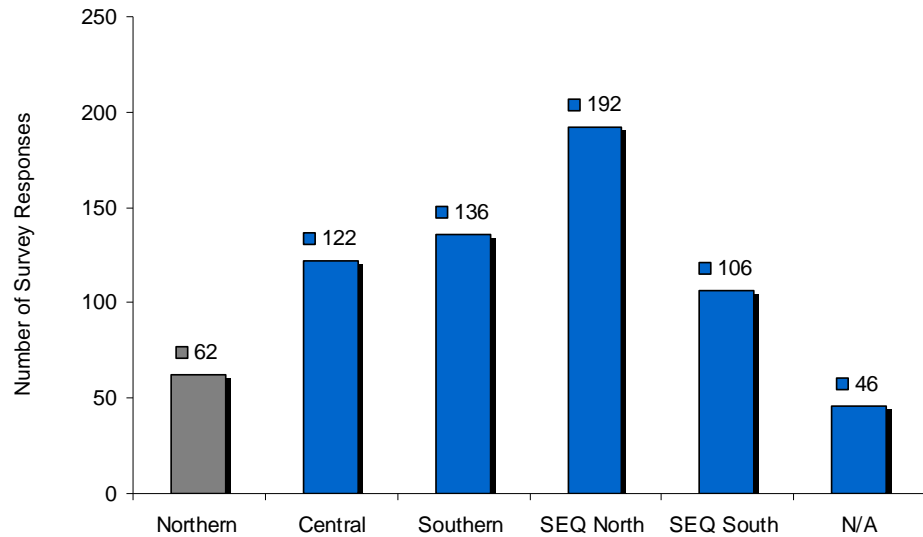
4.3 Community survey results

4.3.1 Sample characteristics

Survey response

Of the 664 responses received from around the State, 62 surveys were from residents of the Northern Region representing 9.3% of the total sample (Figure 4).

Figure 4 Survey representation



Place of residence

The geographic spread of survey respondents in the Northern Region is shown in the table below. Greatest interest came from Townsville City, followed by Burdekin Shire and the Cairns Region (Table 5).

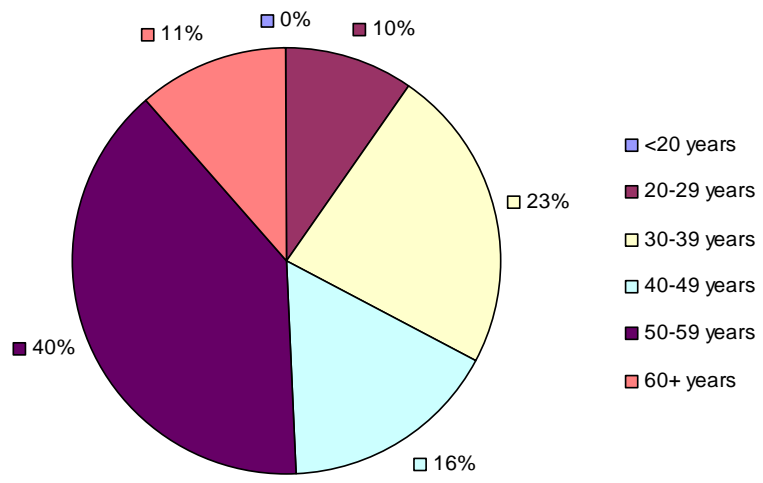
Table 5 Survey response by LGA

LGA	Respondents	% of TMR region	% of Qld
Townsville City Council	22	35.5%	3.3%
Burdekin Shire Council	15	24.2%	2.3%
Cairns Regional Council	12	19.4%	1.8%
Charters Towers Regional Council	10	16.1%	1.5%
Cassowary Coast Regional Council	3	4.8%	0.5%
Total	62	100.0%	9.3%

Age of respondents

As shown in Figure 5, the majority of survey respondents in the Northern Region were aged 50-59 years old (40%), followed by 30-39 year olds (23%). There were no responses from people aged less than 20, and only 10% of the responses were received from respondents aged 20-29 years.

Figure 5 Age profile of survey respondents

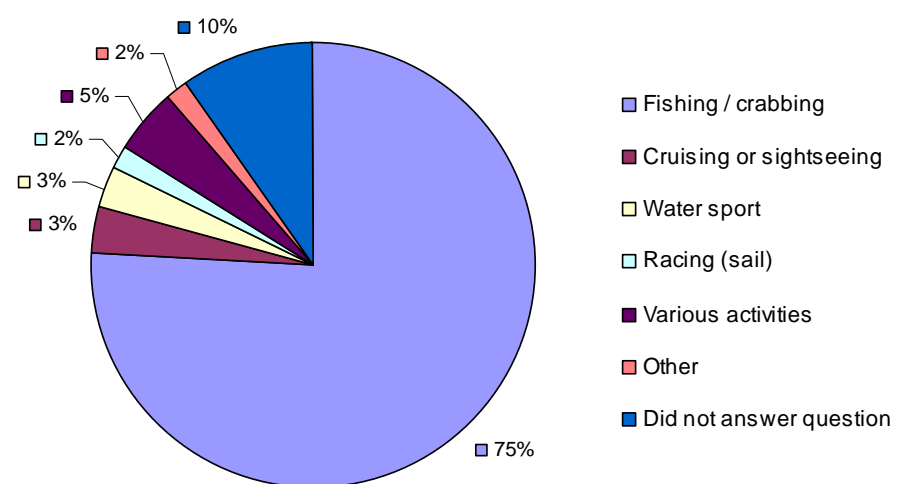


4.3.2 Recreational boating activity

Type of activity

Responses from the Northern Region indicate 'fishing / crabbing' is the most common activity for a given vessel, representing 75.8% of the activities undertaken by the respondents in the area (Figure 6).

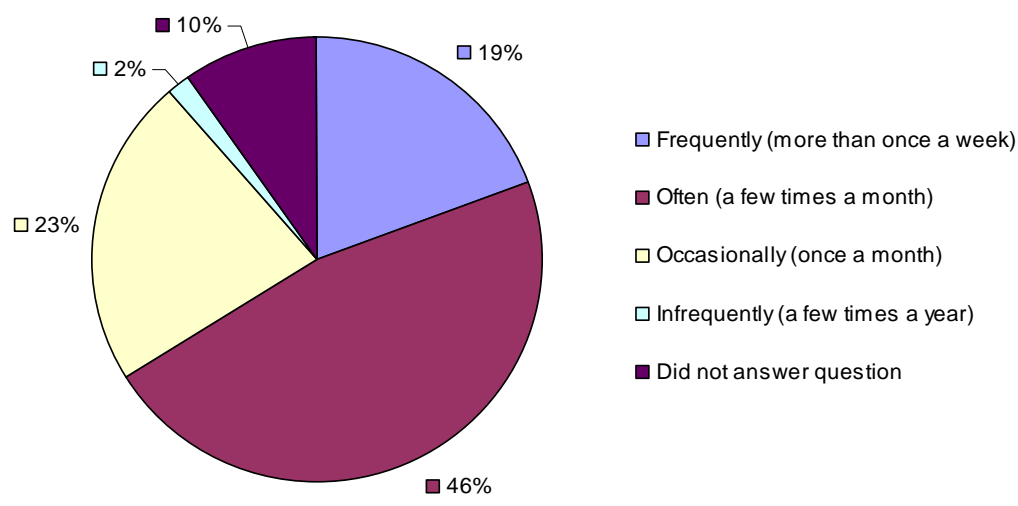
Figure 6 Most common activity for a given vessel



Activity frequency

Of the responses received from the Northern region, 65% indicated that they participated in recreational boating activities either 'frequently' (more than once a week) or 'often' (a few times a month).

Figure 7 Frequency of recreational boating activity



4.3.3 Level of satisfaction with existing facilities

Survey respondents were asked to provide feedback on facilities they use in terms of ‘likes’ and ‘dislikes’. Respondents’ answers have been grouped into common themes and are provided in Table 6.

Table 6 Level of satisfaction with existing facilities

Three most common reasons for liking a facility		
Reason	Frequency	Explanation
Access (water)	Mentioned in 20 responses	Detailed analysis of survey results show that respondents’ most common reason for ‘liking’ a facility was for the easy access it provides to the water. Most respondents specified they like boat ramps with pontoons to allow for easy and safe loading and unloading of passengers. Similarly, when respondents from the Northern Region considered a boat ramp they did not like, most specified reasons such as the lack of a pontoon and safe loading facilities.
Parking and congestion	Mentioned in 10 responses	Respondents rated parking facilities and lack of congestion very highly when considering a boat ramp they enjoy using. Many respondents identified that they enjoyed using a facility where parking spots are easy to secure.
Land based facilities	Mentioned in 8 responses	Many respondents noted they liked a facility due to the provision of land based facilities. In particular, respondents liked facilities with well-maintained toilets, bins and wash down areas.

Three most common reasons for disliking a facility		
Reason	Frequency	Explanation
Access (water)	Mentioned in 18 responses	Analysis of the reasons provided by respondents from the Northern region show the most common reason for disliking a facility was because of its poor water access. Many respondents stated they avoided a boating facility because it was too difficult and dangerous to launch their boat and / or load and unload passengers.
Structural	Mentioned in 18 responses	Respondents also noted structural problems as reasons for disliking particular facilities. More specifically, respondents disliked a boat ramp because it was too steep, poorly designed or impossible to use during some tidal conditions.
Parking and congestion	Mentioned in 16 responses	Lack of parking and high congestion was one of the most common reasons for respondents to dislike a facility. A number of respondents expressed disappointment in a lack of car and trailer parks at certain facilities and year-round congestion.

Comments received in relation to particular facilities within the Southern Region are presented in Table 7.

4.4 Stakeholder workshops

4.4.1 Participation

Stakeholder workshops were held in seven locations across the Northern Region. The location of the workshops and attendance is detailed in Table 8.

Table 7 Survey respondents' feedback - existing recreational boating facilities

Recreational boating catchment	Most liked boat ramp	Comments	Most disliked boat ramp	Comments	Most used boat ramp	Comments
Cairns	Boat ramp Dungeness* Lucinda Road (Hinchinbrook Shire Council)	<ul style="list-style-type: none"> ▶ all weather access ▶ ample parking ▶ floating walkway ▶ good lighting ▶ boat ramp surface is in good condition. 	Boat ramp Cairns Tingira Street (Cairns Regional Council)	<ul style="list-style-type: none"> ▶ insufficient parking ▶ poor lighting and ▶ needs upgrading with more lanes, pontoon and more parking. 	Boat ramp Dungeness* Lucinda Road (Hinchinbrook Shire Council)	<ul style="list-style-type: none"> ▶ good boat ramp ▶ additional floating walkway required.
Townsville	Boat ramp Cardwell* opp Sheridan Street (Cassowary Coast Regional Council)	<ul style="list-style-type: none"> ▶ good pontoon which is long and double sided ▶ ample parking ▶ needs more rigging areas and a washdown facility. 	Boat ramp Mourilyan Harbour* (Cassowary Coast Regional Council)	<ul style="list-style-type: none"> ▶ no pontoon ▶ insufficient parking ▶ no rigging lanes or washdown facility. 	Boat ramp Nelly Bay Harbour (Townsville City Council)	<ul style="list-style-type: none"> ▶ good all weather boat ramp ▶ no sandy beach nearby, pontoon or floating walkway ▶ boat ramp is slippery and unsafe to use ▶ excellent parking facilities, and is the only all tide, all weather boat ramp on Magnetic Island.
			Boat ramp Nelly Bay Harbour	<ul style="list-style-type: none"> ▶ good all weather boat ramp however 	Boat ramp Ross River Barnicle Street	<ul style="list-style-type: none"> ▶ existing pontoon is too small

* Respondents from the Cairns RBC identified the Dungeness boat ramp, located in the Townsville RBC, as the ramp they like and use the most.

* Respondents from the Townsville RBC identified the Cardwell boat ramp and the Mourilyan Harbour boat ramp, both of which are located in the Cairns RBC, as ramps they like the most.

Recreational boating catchment	Most liked boat ramp	Comments	Most disliked boat ramp	Comments	Most used boat ramp	Comments
			(Townsville City Council)	no safe launch/retrieve facility ▶ no sandy beach nearby, pontoon or floating walkway ▶ boat ramp is slippery and unsafe to use.	(Townsville City Council)	▶ two of the four lanes need to be resurfaced ▶ boat ramp needs to be extended.
Cape York	No responses recorded		Boat ramp Cooktown Charlotte Street downstream (Cook Shire Council)	▶ too narrow ▶ tide affected ▶ no pontoon – required for safety ▶ needs widening.	No responses recorded	
North West Queensland	No responses recorded					

Table 8 Stakeholder workshops – Northern Region

Meeting	Date	Venue	Invitees	Attendees	GHD & TMR representatives
Cairns - key stakeholders	23/06/2010	Cairns Library, Cairns	14	7	3
Cairns – other stakeholders	22/06/2010	Cairns Library, Cairns	24	3	2
Townsville - key stakeholders	13/07/2010	Mayoral Reception Room, Townsville	16	7	5
Townsville – other stakeholders	13/07/2010	Mayoral Reception Room, Townsville	20	13	4
Weipa - combined	7/07/2010	The Western Cape Conferencing Centre, Weipa	10	3	3
Cooktown – combined	1/07/2010	Cook Shire Council Offices Boardroom, Cooktown	11	4	3
Mission Beach – key stakeholders	28/06/2010	Mission Beach Resort, Mission Beach	6	1	4
Mission Beach – other stakeholders	28/06/2010	Mission Beach Resort, Mission Beach	8	3	4
Thursday Island – combined	18/06/2010	Port Kennedy Association Hall, Thursday Island	8	4	3
Karumba – key stakeholders	15/07/2010	Karumba Civic Centre, Karumba	14	1	4
Karumba – other stakeholders	14/07/2010	Karumba Civic Centre, Karumba	6	0	4
Total attendees			137	46	39

4.5 Key issues and hotspots

4.5.1 Introduction

The biggest issues identified through the consultation process for the Northern Region are safety, maintenance, capacity, and accessibility. These issues, along with some specific to locations, are addressed below.

4.5.2 Safety

Safety is a particular concern at existing facilities where there are no pontoons or floating walkways mainly due to the risk presented by crocodiles. In some areas, such as Bramston Beach, there are resident crocodiles which are known to regular users of facilities.

In communities such as Hopevale where there are no formal facilities at present, people launch off the most convenient section of riverbank. In Hopevale, safety has been identified as an issue, with launching boats occurring while crocodiles sit on the opposite river bank and children swim nearby in the river. A facility with a pontoon or floating walkway would provide for improved safety to all river users and reduce or eliminate the need to spend time in the water when using the boat ramps. Hopevale Aboriginal Shire Council is currently working with TMR to identify a suitable location to enable a feasibility study to be undertaken.

There have been a few incidents with crocodiles in the Endeavour River system near Cooktown, particularly at the Marton boat ramp. This river system is located within crocodile habitat and the risk of a possible incident is high.

Marine stingers were also raised as an issue at the Cooktown workshop in relation to the existing facilities in the township. A pontoon or walkway was requested at this location to address this safety issue.

TMR acknowledges that safety is a particular issue at facilities within the Northern Region and is investigating the funding of a pontoon or floating walkway at the existing facilities to improve safety. A number of locations are already programmed to have a pontoon installed, such as at Dungeness and the Barron River.



Annan River, Cooktown (person in river)



Coral Sea Drive boat ramp, Cardwell



In Aurukun there is no formal boat ramp facility with vessels launching directly from a 70-80m wide section of the foreshore which is also used for barge landings during the wet season.

At the Weipa workshop, safety in this location was identified as a critical issue and a request for a facility to be constructed at Aurukun prior to any other investment in the area was supported with this requested as a matter of urgency.

In addition to safety issues posed by crocodiles, the current condition of some facilities pose safety risks. For example, stakeholders at the Cairns User Group Workshop identified that the Machans Beach boat ramp is not used as it is steep and there is a drop-off at the end. The boat ramps at Bramston Beach, Deeral Pine Creek and Bellenden Ker have also been identified as having drop-offs as a result of toe-wash.

“This (Bramston Beach) boat ramp needs extending – drops off and loses trailers. Users need to then get in creek to recover – this causes a croc safety issue. This needs to be addressed.” (Stakeholder, Cairns Key Stakeholders Workshop)

Thompson Road boat ramp in the Cairns area is an existing two-lane boat ramp of which one lane is “out of action because it has collapsed”. Other boat ramps have been identified as being difficult to use due to sand or mud build-up and slippery surfaces. It was discussed at the workshops that where these are multi-lane facilities, not all the lanes get used.

4.5.3 Capacity

The Northern Region experiences usage rates influenced by seasonal tourism at many facilities, especially in the Cape York area which is generally inaccessible during the wet season. During the dry ‘tourist’ season, many facilities are placed under pressure and capacity is an issue. The existing Clump Point facility was highlighted as one which has restricted parking, conflict between recreational and commercial use, and increasing recreational demand. The specific issues associated with Clump Point are known to TMR which is addressing this facility separately at present.

“More and more visitors are coming for 3-4 months at a time.” (Stakeholder, Mission Beach User Groups Workshop)

“Population swells from 3,000 to 35,000 from April to November. As soon as the roads open the tourists flood in – 50% of them have boats.” (Stakeholder, Weipa Combined Stakeholders Workshop)

Stakeholders and community representatives from Karumba again highlighted the seasonal impact on recreational boating facilities in this part of the region with both boat ramps in the town being very popular and subject to sustained high demand particularly in the peak season from March – September.



Parking at Clump Point



Commercial users at Clump Point



Karumba Point – site suggested by stakeholders for new boat ramp (two lanes)



Karumba Point – car park is located in between existing beach boat ramp and proposed site

Stakeholders present at the Thursday Island Workshop identified that dinghy mooring facilities are the greatest need as dinghies are the main mode of transport and pontoons become the ‘parking areas’ for people accessing other islands for work, etc. A new pontoon is planned for Thursday Island to increase dinghy capacity and improve tidal access, whereas there is currently no public facility on Horn Island.

*“There is nowhere for the dinghies to tie-up to (on Horn Island). There is a boat ramp and commercial facilities, dinghies are being tied up to commercial facilities.”
(Stakeholder, Thursday Island Combined Workshop)*

Due to constraints at Horn Island a solution is not readily available. A potential area is shallow and other areas are exposed to the weather during the monsoon season.



Existing pontoon at Thursday Island



Existing boat ramp at Horn Island

At the Townsville workshops it was identified that there is a shortage of facilities within the Townsville area and that all facilities are generally concentrated within the port area. It was acknowledged that additional facilities will be provided as part of the port re-development plan, but there was a lot of frustration regarding the timing of this.

*“The ‘3 years time boat ramp’ we have been told is coming is now 5 years away – Townsville will have grown by 30,000 people by then. What can be done now?”
(Stakeholder, Townsville User Group Workshop)*

With rapid development occurring in the northern suburbs and Council looking at opening up further areas for development in the northern area, the workshop participants highlighted that identification of suitable all-tide sites in the northern parts of the city is required. Discussions with DERM and GBRMPA highlight that considerable multi-agency planning will be required in determining sites for any new facilities in the Townsville area.

4.6 Stakeholder priorities

Stakeholders that participated in the Northern Region workshops identified the following key sites as priorities for future development and/ or upgrade (Table 9). Each of these sites have been assessed as part of this project and addressed further, along with the regional priorities, in section 7 of this report.

Table 9 Stakeholder priorities

Locality	New/ Upgrade	Summary
Aurukun	New pontoon and boat ramp	<ul style="list-style-type: none"> ▶ New pontoon and boat ramp required due to lack of existing facilities and major public safety issues.
Wujal Wujal	Boat ramp upgrade	<ul style="list-style-type: none"> ▶ Upgrade boat ramp and provide floating pontoon to improve user safety.
Palm Cove	New boat ramp	<ul style="list-style-type: none"> ▶ New two lane boat ramp required to address demand generated by local population growth and tourism industry. ▶ Potential sites identified on northern side of jetty or at Taylor’s Point.
Mission Beach	New boat ramps	<ul style="list-style-type: none"> ▶ Additional all-tide facilities required.
Clump Point	Land based facilities	<ul style="list-style-type: none"> ▶ Additional parking required. ▶ Address conflict between recreation and commercial users.
Dungeness	Boat ramp upgrade	<ul style="list-style-type: none"> ▶ Upgrade boat ramp in response to high demand. ▶ Floating walkway required to facilitate queuing.

Locality	New/ Upgrade	Summary
Horn Island	Other facility	<ul style="list-style-type: none"> ▶ Dinghy mooring facility required as marine vessels are effectively 'cars' being the main mode of transport between islands.
Townsville	New boat ramps	<ul style="list-style-type: none"> ▶ Additional facilities required as soon as possible, with adequate provisions for parking. ▶ Frustration with ongoing delays in progressing development within the Port area.
Karumba	Boat ramp upgrades	<ul style="list-style-type: none"> ▶ Upgrade Karumba Boat ramp (Gilbert Street) – additional lanes, separate uses, car parking strategy. ▶ Upgrade Karumba Point boat ramp.
	New boat ramp	<ul style="list-style-type: none"> ▶ New boat ramps required at Karumba (off Riverview Dr) and Karumba Point to address resident and tourist population demands.
Dayman Point	Boat ramp upgrades	<ul style="list-style-type: none"> ▶ Ramp is an ocean foreshore ramp and is subject to erosion issues/complaints. ▶ Needs upgrading as it is old, unsafe and cannot handle the volume of boats and vehicles that use it.

5. Recreational boating facilities demand analysis

5.1 Introduction

Recreational boating has experienced significant growth over the past twenty years with demand for boat ramps and associated facilities, in many instances, exceeding the capacity of the existing infrastructure.

Boat ownership is the most significant demand driver for marine infrastructure, namely boat ramps, marina berths (both wet and dry), moorings and pontoons. The composition of a region's boating fleet will determine the quantity and type of marine infrastructure demanded. The recreational boating market refers to those boat owners who use their boat to take recreational day trips, cruising in relatively protected waters as opposed to the open sea.

The recreational boating facilities demand analysis is the tool used in this project to determine current and future demand and the areas within the state where the demand for recreational boating facilities is the greatest. This process then guides, along with the consultation outcomes, the identification of priorities for investment in recreational boating infrastructure.

This recreational boating facilities demand analysis:

- ▶ defines regional recreational boating catchments throughout Queensland;
- ▶ provides a socio-economic overview of each of the identified regional recreational boating catchments;
- ▶ provides recreational boating fleet projections relevant to the demand for boat ramps for each of the regional recreational boating catchments; and
- ▶ provides boat ramp lane demand projections for each recreational boating catchments.

5.2 Recreational boating industry overview

5.2.1 Introduction

Boat ownership is the most significant demand driver for marine infrastructure, namely boat ramps, marina berths (both wet and dry), moorings and pontoons. The composition of a region's boating fleet will determine the quantity and type of marine infrastructure demanded. The recreational boating market refers to those boat owners who use their boat to take recreational day trips, cruising in relatively protected waters as opposed to the open sea.

MSQ maintains detailed monthly statistics on boat registrations by LGA, with boat registration data collected for various vessel types and length. Available electronic records for boat registrations by length date back to 1999. Within the boat registration data sets, the various boat categories include:

- ▶ sail boats;

- ▶ boats without sails, including:
 - motor boats without sails;
 - speed boats; and
 - jet skis (or personal recreation vehicles).

Jet skis are not commonly found in marinas, and as such do not represent a major demand driver for marina berths, but can have significant implications for the demand for boat ramps.

Smaller boats can be easily towed on trailers. Industry consultations undertaken by Economic Associates previously reveal that the suitability for towing varies between boat types (i.e. boats with sails and boats without sails).

Similarly, the suitability of vessels for dry storage depends on type and length of vessel. Dry storage is most suitable for vessels with shallow drafts. Therefore, dry storage is most suitable for smaller sail boats (i.e. sail boats up to eight metres) and boats without sails up to around ten metres.

Wet berthing a boat represents a much greater expense than trailing or dry berthing. Therefore, wet berths are generally used only by larger vessels, such as sail boats over five metres and boats without sails over eight metres.

5.2.2 Industry characteristics and trends

International Marina Consultants Pty Ltd (2006) undertook an overview of the changing characteristics within the recreational boating industry. The major trends noted in this overview for marina-stored boats are as follows:

- ▶ The average size of marina-stored boats is increasing – The average length has increased from about 10 metres to 13.5 metres over the last ten years. There is little demand for eight metre berths which can be found in some older marinas, with vessels of this size typically being towed. The report suggests the minimum marina size in most new marinas should be 12 metres. However, if the marina will mainly be occupied by power boats, the minimum marina size should be larger than 12 metres.
- ▶ Boats are being used less frequently – The number of boats being used at any one time has not increased at the same rate as the number of boat registrations. The damage to the marine environment as a result of the rapid rise in boat registration is likely to be less than anticipated.
- ▶ Larger boats are being placed in rack and storage buildings – Dry storage buildings are being designed in Australia and overseas to cater for boats up to 12 metres in length. Currently, the demand for dry storage in Australia is quite low. However, the demand for dry storage is expected to increase significantly as the price of marina berths increases in line with strong demand. There are a number of advantages associated with dry storage including potentially significant cost savings (in cases where reduced boat maintenance costs outweigh the additional costs of lifting boats in and out of the water), protection from UV damage and reduced need for dredging as the boats do not require water space for berths. However, racked dry

storage creates a significant visual impact due to the size of the storage and as a result is unlikely to be included in association with residential development. Dry storage could be included in boat harbours and working marinas.

- ▶ Marina sized boats which are used infrequently are parked on hardstands – There has been a growing trend towards storage of power boats and yachts on hardstands due to lower usage and lack of available marina berths. The rates associated with hardstand storage are also less than for boats moored in a floating marina.
- ▶ The growth in boat registrations is occurring throughout Queensland – There has been significant growth in boat ownership in Queensland and thus demand for marina berths. Currently, virtually all marinas throughout Queensland are fully occupied indicating a need for additional berthing throughout the state.
- ▶ Increasing demand for boat repair facilities – There is an increasing demand for boat repair facilities as a result of an increase in the number of recreational boats and the reduced effectiveness of anti-fouling paints. Only a limited number of boat repair facilities are being constructed, and residential type marinas are not planned to include boat repair facilities.

The trends highlighted above indicate that the demand for marine infrastructure throughout the state is anticipated to grow significantly.

Industry consultations previously undertaken by Economic Associates reveal a growing number of new boats purchased in the growth category of motor boats between five and eight metres are manufactured in, or for, the North American market. These boats are generally half cabin cruiser, and appeal to the recreational boating market. Their appeal is largely based on favourable exchange rates which has resulted in North American market vessels being around 30% less expensive than Australian made boats.

The growing popularity of North American market half cabin cruisers has significant implications for boat storage. In Queensland, the maximum width of a trailerable boat is 2.5 metres, but cruisers designed for the North American market are frequently wider than 2.5 metres, particularly those cruisers over five metres. As a result, the most appropriate storage solution for these boats is dry storage at a major marina or boat harbour. It is anticipated that as the popularity of these boats grows, so too will demand for dry boat storage.

5.2.3 Characteristics of recreational boat owners

MSQ (2004) conducted a boating survey in 2003 to gain an insight into the range, location of and investment in, recreational boating activities on Queensland waters. There were 3,500 responses used in the survey analysis. The major findings of this analysis are as follows:

- ▶ The most common types of vessels operated by respondents were dinghies (45%) and speedboats (27%).

- ▶ Respondents operated vessels with motors between 7 and 15 horsepower (20%), 16-50 horsepower (36%) or 51-100 horsepower (19%).
- ▶ Almost all respondents were male (95.5%) with 40% of all respondents being 55 years and over in age.
- ▶ The predominant boating activity is fishing (82.2% daytime, 24.9% overnight), with cruising also a popular recreational boat use (28.4%).
- ▶ The majority of boat owners launched their vessel either two to three times per month (40.5%) or every two to three months (31.5%).
- ▶ Estuaries, rivers and bays were nominated as the preferred location to operate their vessel.
- ▶ A significant share of respondents (16%) travel more than 50 kilometres from their residential address to their preferred boat ramp/mooring site.

5.3 Recreational boating catchments

Catchments for recreational boating infrastructure are typically influenced by:

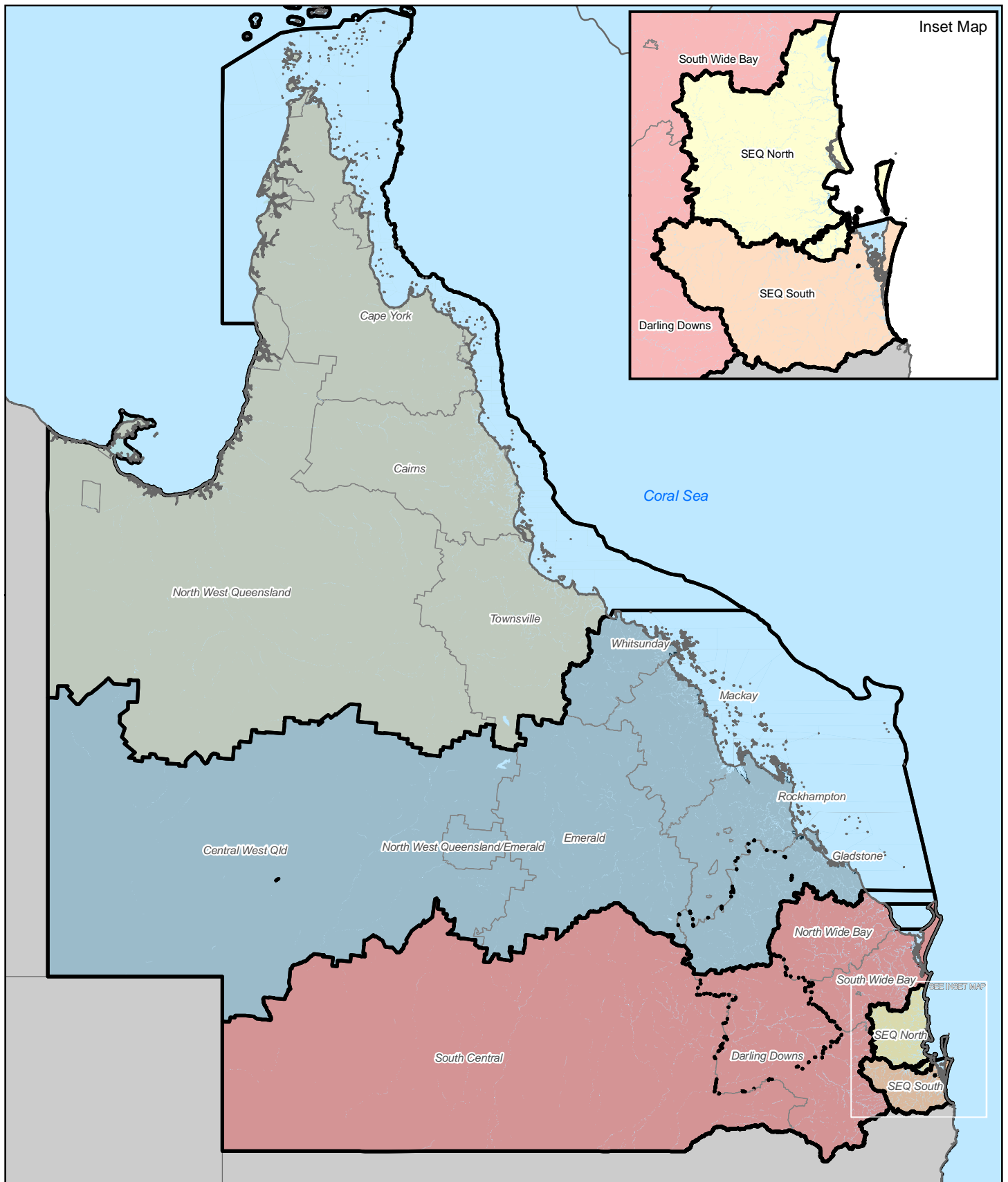
- ▶ road transport infrastructure to the facility;
- ▶ natural and man-made barriers;
- ▶ the location and scale of existing facilities in the area; and
- ▶ psychological barriers, such as driving time and perceptions of distance.

Consultation with Marine Queensland, marina operators and yacht clubs consistently indicates that the main catchment for major pieces of marine infrastructure generally corresponds with a one hour driving time from the infrastructure. This is supported by the survey results from MSQ (2004) which indicates a significant share of boat owners travel over 50 kilometres to their preferred boat ramp / mooring. This is not to say that boat owners will not travel for more than an hour to access popular locations, however these would represent exceptions to normal practice and would include major events, special trips and boating holidays.

The RBCs were defined in conjunction with the TMR, using former LGA boundaries and taking into consideration the five TMR regions in Queensland⁷.

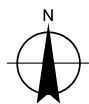
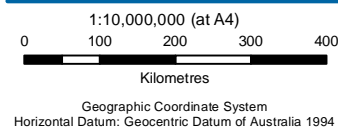
For the purposes of this study, sixteen RBCs have been defined (Figure 8). The RBCs located within the Northern Region and the associated LGA are identified in Table 10.

⁷ It is recognised that boat owners may travel outside of their recreational boating catchment to access facilities. However, discussions with TMR determined that the recreational boating catchments defined above were the most appropriate.



LEGEND

- Coastline
- Adjacent State
- Drainage
- Catchment Region
- DTMR Region
- Central
- Northern
- SEQ - North
- SEQ - South
- Southern



Recreational Boating Facilities
Demand Forecasting Study

Job Number 41-22459
Revision A
Date 01 SEP 2011

Recreational Boating Catchments Figure 8

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Data source: DTMR Region, DTMR Catchments, DTMR, (2010) Coastline, State, GA, (2007), Drainage, DERM, (2010). Created by: MS, EA, WW

Table 10 Northern Region RBCs

RBC	LGA
Cape York	<ul style="list-style-type: none"> ▶ Aurukun Shire Council ▶ Cook Shire Council ▶ Torres Shire Council ▶ Torres Strait Island Regional Council ▶ Weipa Town Council ▶ Northern Peninsular Area Regional Council ▶ Lockhart River Aboriginal Council ▶ Napranum Aboriginal Shire Council ▶ Wujal Wujal Aboriginal Shire Council ▶ Mapoon Aboriginal Shire Council ▶ Kowanyama Aboriginal Shire Council ▶ Pompuraaw Aboriginal Shire Council ▶ Hopevale Aboriginal Shire Council
North West Queensland	<ul style="list-style-type: none"> ▶ Burke Shire Council ▶ Carpentaria Shire Council ▶ Cloncurry Shire Council ▶ Croydon Shire Council ▶ Etheridge Shire Council ▶ McKinlay Shire Council ▶ Mornington Island Shire Council ▶ Mount Isa City Council ▶ Richmond Shire Council
Cairns	<ul style="list-style-type: none"> ▶ Cairns Regional Council ▶ Cassowary Coast Regional Council ▶ Tablelands Regional Council ▶ Yarrabah Aboriginal Shire Council
Townsville	<ul style="list-style-type: none"> ▶ Burdekin Shire Council ▶ Charters Towers Regional Council ▶ Hinchinbrook Shire Council ▶ Townsville City Council

5.3.1 Socio-economic profile of the Northern Region RBCs

A socio-economic profile of the Northern Region RBCs as at the 1996, 2001 and 2006 Censuses of Population and Housing, benchmarked against Queensland was undertaken and is provided in Table 3.1 and Table 3.2 of the report contained in Appendix A.

5.4 Historical fleet size

5.4.1 Introduction

Boat ownership is the principal demand driver for recreational boating infrastructure. The composition of a region's boating fleet will determine the quantity and type of recreational boating infrastructure demanded.

TMR maintains detailed monthly statistics on boat registrations by pre-amalgamated LGA. Boat registrations data is collected for various vessel types and length. Available electronic records for boat registrations date back to 1999.

The scope for towing boats is an important defining factor in terms of the nature of recreational boating infrastructure required. Industry consultations revealed that the suitability for towing varies between boat types (i.e. boats with sails and boats without sails). For example, sail boats with keels become difficult to tow, especially if they do not have a retractable keel, at around five metres in length, whereas motorboats can generally be towed up to around eight metres. The Perth Recreational Boating Facilities Study (2008) identifies that at about 7.5 metres in length there is a transition from storage of boats on trailers to water-based pens or moorings.

Similarly, the suitability of vessels for dry storage depends on type and length of vessel. Dry storage is most suitable for vessels with shallow drafts. Therefore, dry storage is most suitable for smaller sail boats (i.e. sail boats up to eight metres) and boats without sails up to around ten metres.

Wet berthing a boat represents a much greater expense than trailing or dry berthing. Therefore, wet berths are generally used only by larger vessels, i.e. as sail boats over five metres and boats without sails over eight metres.

For the purposes of this study, a five year time series by boat length and type for each of the recreational boating catchments has been analysed. This section of the report provides an overview of the growth in the total recreational boat fleet and the estimated size of the recreational boat fleet between 2005 and 2009.

More detailed estimates, including the distribution of the size of registered boats by type in each recreational boating catchment, have been provided in the Economic Associates report contained within Appendix A.

5.4.2 Boat registrations by RBC

Between 2005 and 2009 the Northern Region recorded an increase in the number of sail boats and motor boats registered (Table 11).

Townsville and Cairns experienced a significant increase in boat registrations during this period with these RBCs also recording the highest rate of growth outside of the SEQ regions.

In all RBCs within the Northern Region, the majority of sail boat registrations were between five and fifteen metres in length, whereas the majority of motor boats were three to five meters in length.

Table 11 Boat registrations by RBC – 2005-2009

RBC	2005	2006	2007	2008	2009	Growth
Boats with sail						
Cairns	469	478	516	561	576	22.8%
Townsville	365	385	405	400	386	5.8%
Cape York	38	40	35	46	49	28.9%
North West QLD	8	8	9	9	10	25.0%
Total	880	911	965	1016	1021	
Boats without sail						
Cairns	14,802	15,289	16,231	16,788	17,311	17.0%
Townsville	14,648	15,289	16,017	16,859	17,372	18.6%
North West QLD	1,597	1,611	1,710	1,743	1,750	9.6%
Cape York	1,503	1,482	1,294	1,741	1,748	16.3%
Total	32,550	33,671	35,252	37,131	38,181	
Total boats						
Cairns	15,271	15,767	16,747	17,349	17,887	17.1%
Townsville	15,013	15,674	16,422	17,259	17,758	18.3%
North West QLD	1,605	1,619	1,719	1,752	1,760	9.7%
Cape York	1,541	1,522	1,329	1,787	1,797	16.6%
Total	33,430	34,582	36,217	38,147	39,202	

Source: ABS (2010), MSQ (various years)

5.5 Trailerable boat fleet

To estimate the size of the trailerable boat fleet, assumptions have been made regarding the proportion of boats that fall within this category. The following assumptions have been made:

- ▶ No boat over ten metres in length is trailerable.
- ▶ The incidence of trailerable boats declines significantly for boats over five metres in length.
- ▶ For boats registered in Queensland but with international ownership, it has been assumed that they are kept in marinas, and are hence not part of the trailerable boat fleet.

The proportion of the boat fleet that is assessed as being trailerable (by type and length) is summarised in Table 12.

Table 12 Trailerable proportion of recreation boat fleet

Length	Sail boats	Boats without sail
<3 metres	100.0%	100.0%
3-5 metres	90.0%	100.0%
5-8 metres	50.0%	85.0%
8-10 metres	25.0%	50.0%
10-12 metres	0.0%	0.0%
12-15 metres	0.0%	0.0%
15-25 metres	0.0%	0.0%
>25 metres	0.0%	0.0%

Source: Economic Associates estimates

Across Queensland it is estimated that the trailerable boat fleet accounts for between approximately 86% and 99% of all boats. However, the proportion of boats that were trailerable declined between 2005 and 2009 (from 92.7% of total boats in 2005 to 92.2% of total boats in 2009).

In the Northern Region, the rate of growth in the size of the trailerable boat fleet was estimated to be highest in the Townsville RBC (16.2%), with Cape York and Cairns RBCs both experiencing growth of greater than 14% over the five year period (Table 13).

Table 13 Estimated size of trailerable boat fleet – 2005-2009

RBC	2005	2006	2007	2008	2009	Growth
Trailerable boat fleet						
Townsville	14,279	14,873	15,541	16,319	16,788	17.6%
Cairns	14,273	14,717	15,594	16,088	16,545	15.9%
North West QLD	1,555	1,569	1,662	1,693	1,701	9.4%
Cape York	1,433	1,406	1,232	1,651	1,660	15.8%
Total	31,540	32,565	34,029	35,751	36,694	
Proportion of total boats						
North West QLD	96.9%	96.9%	96.7%	96.6%	96.6%	-
Townsville	95.1%	94.9%	94.6%	94.6%	94.5%	-
Cairns	93.5%	93.3%	93.1%	92.7%	92.5%	-
Cape York	93.0%	92.4%	92.7%	92.4%	92.4%	-

Source: Economic Associates estimates

5.6 Trailerable boat fleet projections

5.6.1 Introduction

Trailerable boat ownership is the most significant demand driver for boat ramps. The composition of a region's boating fleet will determine the quantity of boat ramps demanded. Therefore, to estimate demand for boat ramp lanes within each catchment in Queensland, it is necessary to estimate the size and composition of the boat fleet within each catchment area. Boat registrations represent the best source of data for estimating the size of the boat fleet. While it is recognised that unregistered craft may also make use of boat ramps, there are no data sets available to assess this impact on boat ramp lane demand, but it is unlikely to be significant.

Boats are frequently used in LGAs outside of where they are registered, however the catchments have been defined to minimise the incidence of trailerable boats being utilised outside the catchment in which they are registered.

5.6.2 Methodology

In order to prepare trailerable fleet projections, assumptions are made regarding the following factors:

- ▶ projected population by catchment (PIFU medium series projections used);
- ▶ projected incidence of boat ownership (boat registrations per 1,000 persons); and

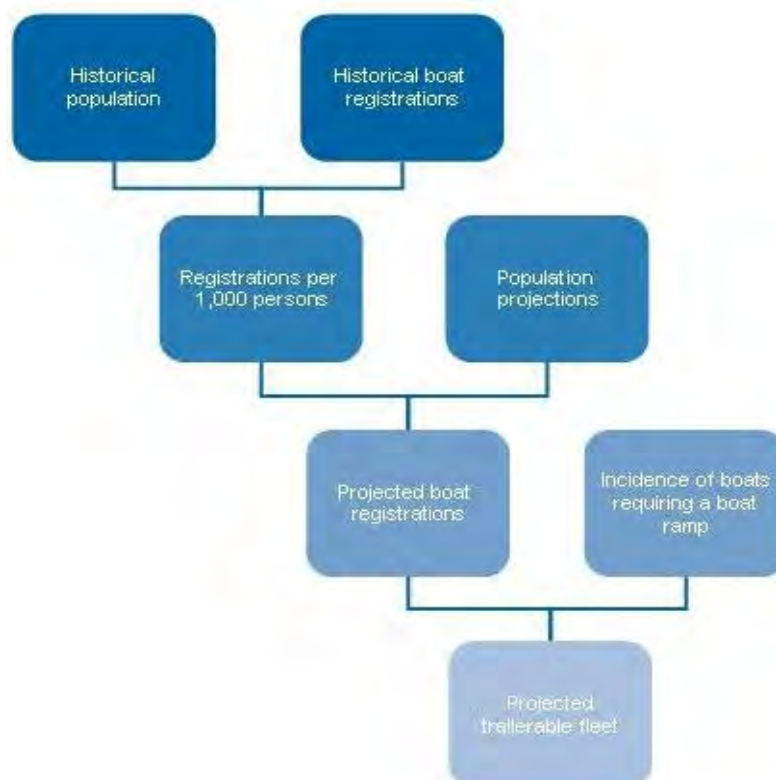
- ▶ projected incidence of boats requiring a boat ramp (informed by historical data trends).

Analysis has been undertaken for two scenarios, namely the base case (or trend scenario) and the increased incidence of boat ownership scenario:

- ▶ Base case scenario – The base case scenario assumes that the incidence of boat ownership per 1,000 persons remains at the average level recorded between 2005 and 2009. The incidence of boat ownership is also kept constant throughout the projection period. This scenario is considered to be the most likely occurrence, based on recent trends and has therefore been included as the preferred scenario within this report.
- ▶ Increasing incidence of boat ownership scenario – The increasing incidence of boat ownership scenario assumes that the incidence of boat ownership per 1,000 persons continues to increase throughout the projection period, taking into account historical trends in the incidence of boat ownership. This scenario has been presented to take into account the findings of MSQ (2004), which highlighted that over 40% of recreational boat users surveyed were 55 years or over in age. As the proportion of persons aged 55 years and over increases throughout the projection period, it is anticipated that the incidence of boat ownership would also increase, ultimately impacting boat ramp lane demand. The outcomes of this scenario are included within the report contained in Appendix A.

Figure 9 outlines the methodology for preparing trailerable fleet projections.

Figure 9 Methodology for preparing trailerable fleet projections



5.6.3 Historical population and boat registration

Analysis of each boating RBCs estimated resident population (ERP) and boat registrations between 2005 and 2009 indicates a clear relationship between the two variables. The report contained within Appendix A provides detailed tables in regards to ERP and boat registrations by type for each catchment between 2005 and 2009.

Boat ownership was significantly higher in the coastal catchments than inland catchments. The highest incidence of boat ownership in the Northern Region was in the Townsville RBC, with an average of 76.06 registrations per 1,000 persons, followed by the Cairns RBC with an average of 72.81 boat registrations per 1,000 persons (Table 14).

Table 14 Registrations per 1,000 persons - 2005-2009

RBC	2005	2006	2007	2008	2009	Average	Average annual change 2005-09
Sail boats							
Cairns	2.18	2.17	2.27	2.39	2.38	2.28	2.2%
Townsville	1.78	1.83	1.88	1.81	1.70	1.80	-1.2%
Cape York	1.39	1.45	1.24	1.60	1.69	1.48	5.0%
North West QLD	0.24	0.24	0.27	0.26	0.29	0.26	5.1%
Boats without sails							
Townsville	71.52	72.84	74.37	76.15	76.41	74.26	1.7%
Cairns	68.89	69.28	71.48	71.41	71.62	70.54	1.0%
Cape York	55.14	53.85	45.83	60.45	60.42	55.14	2.3%
North West QLD	48.18	48.50	51.17	51.00	51.54	50.08	1.7%
Total boats							
Townsville	73.30	74.67	76.25	77.96	78.11	76.06	1.6%
Cairns	71.07	71.45	73.76	73.80	74.00	72.81	1.0%
Cape York	56.54	55.30	47.07	62.05	62.12	56.62	2.4%
North West QLD	48.42	48.74	51.44	51.27	51.84	50.34	1.7%

Note: A negative or positive average annual change figure represents a decrease or increase in the incidence of boat ownership within the catchment

Source: ABS (2010), MSQ (various years)

5.6.4 Population projections

The population projects for the RBCs for the Northern Region rely on the latest edition of the PIFUs medium series population projections.

All RBCs within this region are anticipated to record positive population growth between 2010 and 2031, however the population growth in the Cape York and North West QLD RBCs are projected to be less than 1% per annum to 2031 (Table 15).

Table 15 Population projections – 2010-2031

RBC	2010	2011	2016	2021	2026	2031	Average annual growth
Townsville	231,647	236,035	263,827	285,419	302,488	317,753	1.5%
Cairns	243,111	244,516	261,689	277,620	293,929	311,411	1.2%
North West QLD	35,525	37,172	35,787	35,789	36,551	37,771	0.3%
Cape York	28,946	28,964	30,024	31,322	32,811	34,262	0.8%
Total	541,239	548,698	593,343	632,171	667,805	703,228	

5.6.5 Projected total boat fleet

The projected fleet size in each catchment is estimated by applying the projected boat ownership ratio to the projected increase in population for the catchment area and then adding the projected growth in boat registrations to 2009 boat registrations.

Projections have not been undertaken for overseas based owners of boats registered in Queensland, as it has been assumed that these boats would be kept in marinas, hence having no impact on boat ramp demand. Furthermore, overseas boats account for only a marginal proportion of total boat registrations in Queensland⁸.

For the base case scenario, it has been assumed that persons per boat registration remains constant at the average 2005 to 2009 level throughout the projection period.

Boat registrations are projected to be highest in the Townsville and Cairns RBCs, with these two comprising approximately 90% of the project boat registrations within the Region in 2031 (Table 16).

⁸ Boat registrations for overseas residents account for less than 0.01% of total boat registrations in Queensland.

Table 16 Projected boat registrations by type – base case scenario 2010-2031

RBC	2010	2011	2016	2021	2026	2031
Estimated boats with sail						
Cairns	579	582	622	658	695	735
Townsville	394	402	452	490	521	549
Cape York	49	49	51	53	55	57
North West QLD	10	11	10	10	11	11
Total	1032	1044	1135	1211	1282	1352
Estimated boats without sail						
Townsville	17,692	18,018	20,084	21,689	22,957	24,092
Cairns	17,410	17,509	18,721	19,845	20,996	22,230
North West QLD	1,829	1,911	1,842	1,842	1,880	1,941
Cape York	1,749	1,750	1,808	1,880	1,962	2,042
Total	38,680	39,188	42,455	45,256	47,795	50,305
Total boats						
Townsville	18,086	18,420	20,536	22,179	23,479	24,641
Cairns	17,989	18,091	19,342	20,503	21,692	22,965
North West QLD	1,839	1,922	1,852	1,853	1,891	1,952
Cape York	1,798	1,799	1,859	1,933	2,017	2,099
Total	39,712	40,232	43,589	46,468	49,079	51,657

5.6.6 Projected trailerable boats

To estimate the projected size of the trailerable boat fleet, the proportions as outlined in Table 17 have been applied to total fleet projections. It has been assumed that the incidence of boats requiring a boat ramp remains constant throughout the projection period. The incidence of boats requiring a boat ramp is based on the proportions presented in Table 12 and applied to the boat fleet of the RBC.

In all RBCs, a higher incidence of boats without sail require a boat ramp compared to boats with sail. The incidence of all boats requiring a boat ramp in the Northern Region RBCs (i.e. those not stored in a wet marina berth) range from 92.4% in the Cape York RBC to 96.6% in the North West QLD RBC (Table 17).

Table 17 Incidence of boats requiring a boat ramp

RBC	Boats with sail	Boats without sail	All boats
North West QLD	27.5%	97.0%	96.6%
Townsville	26.1%	96.1%	94.5%
Cairns	23.6%	94.8%	92.5%
Cape York	23.6%	94.3%	92.4%

For the base case scenario between 2010 and 2031, the largest increase in boats requiring a boat ramp is projected to occur in the Townsville and Cairns RBCs (Table 18).

Table 18 Projected boats requiring a boat ramp – base case scenario 2010-2031

RBC	2010	2011	2016	2021	2026	2031	Change
Townsville	17,098	17,415	19,419	20,976	22,207	23,308	6,210
Cairns	16,640	16,735	17,899	18,979	20,084	21,268	4,629
North West QLD	1,777	1,857	1,790	1,790	1,827	1,887	109
Cape York	1,660	1,661	1,717	1,785	1,863	1,939	279
Total	39,185	39,679	42,841	45,551	48,007	50,433	11,227

Source: Economic Associates estimates

5.7 Infrastructure demand assessment

5.7.1 Literature review

Behaviour of recreational boaters

The boating behaviour of recreational boaters was surveyed by the National Maritime Safety Committee in 2009. In relation to identifying peak periods, some key findings include:

- ▶ 95% of boaters use their boats in December and January. Only one third of boaters use their boats in June and July.
- ▶ Weekends are the most popular times for operating a boat with 70% of boaters operating their boat on Saturdays and 83% of boaters operating their boats on Sundays.
- ▶ Almost half of respondents use their boats between 6am and 10am.
- ▶ The most popular holiday period for operating a boat is Christmas/New Year with 73% of boaters operating during the holiday period. Easter is the next most popular holiday with 48% of boaters using their boats during the holiday.

- ▶ Almost 40% of boaters use their boats 2-3 times per month. 20% of boaters use their boats once a week.
- ▶ Almost half of respondents spend 3-5 hours on the water when they use their boats.

Levels of demand

Due to the varying levels of boat usage, it is considered that there are also varying levels of demand for facilities. On this basis, TMR recognises three levels of demand:

- ▶ Off-peak demand – the department expects off-peak demand to be met in almost all circumstances.
- ▶ Average demand – is taken to be demand for a facility on weekends (and for certain regional locations other busy periods).
- ▶ Peak demand – is demand for a facility at peak holiday periods and for special events.

TMR's program of works is aimed at satisfying average demand, where funds from recreational vessel registration fees allow.

Peak demand and capacity

The Perth Recreational Boating Facilities Study (Department for Planning and Infrastructure WA, 2009) and the Redland City study (Rose et. al., 2009) have identified the use of boat ramps during the peak usage period of public-holiday long-weekends through counts undertaken at boat ramps. The Perth study identified the total peak number of car/trailer units recorded at 32 public boat launching sites in January 2005 of 1,944 (Department for Planning and Infrastructure WA, 2009). Taking a percentage of the total 38,970 registered recreational boats (under 7.5 metres) in January 2005, a usage rate of 5% of Perth's public boat launching facilities on a peak boating day is derived.

While the Redland City study did not undertake this calculation directly, the study counted a total peak number of car/trailer units of 1,220 at 16 public boat ramps in May 2009 (Rose et. al., 2009). From the report, total boat registrations in May 2009 in Redlands were 10,551, giving a usage rate of 11.5%. However, boat registrations were not defined by the size of the vessel nor specific to May 2009.

A launching facility's ability to cope with peak demand can be affected by many factors including location and the number of ramp lanes available. Surveyed recreational boat users identify that they choose a particular ramp because it is either close to home (48%) or close to the destination (42%) (McNamara, 1984).

Below are some key points regarding boat ramp capacity (Department of Harbours and Marine, 1980):

- ▶ Ramps are essentially used for 6.5 hours per day.
- ▶ The hourly launch or retrieval rate therefore is 15 boats per hour (based on an average launch or retrieval time of 4 minutes).
- ▶ Capacity is approximately 50 boats per lane per day.

- ▶ One boat ramp lane is required for every 250 registered trailer boats.
- ▶ Peak usage on an individual day is expected to be 20% of all registered trailer boats.

National Marine Safety Committee (2009) presented estimates of recreational boating usage in Australia during peak periods. Boat usage varied significantly, ranging between 2% of respondents during other public holidays and non-peak periods to 73% of respondents over the Christmas / New Year break (Table 19).

Table 19 Operating time by holiday period

Holiday	Proportion of respondents using boat
Christmas / New Year	73%
Easter	48%
School holidays	37%
Queen's Birthday	30%
Labour Day	29%
Other public holidays / non-peak periods	2%

Off-peak demand

Off-peak demand has been estimated using the data presented in Table 19 above. Assumptions have been made regarding frequency of usage over holiday periods which extended over more than one weekend (i.e. Christmas / New Year, school holidays and other public holidays / non-peak periods) (Table 20).

Overall, it has been estimated that off-peak demand for recreational boating facilities on a weekend is 8%.

Table 20 Estimated demand on a weekend

Holiday	Usage	Weekends included	Times used per period	Usage / weekend
Christmas / New Year	73%	2	1.5	55%
Easter	48%	1	1	48%
School holidays	37%	12	5	15%
Queen's Birthday	30%	1	1	30%
Labour Day	29%	1	1	29%
Other public holidays / non-peak periods	2%	35	1.5	0%

MSQ does not cater for peak demand, such as holiday long weekends, Christmas and Easter periods or demand for boat ramps for special events like Brisbane's Riverfire. This is because funds, driven largely by collection of recreational boat registration fees, are stretched, making it difficult for state and local authorities to allocate sufficient funds for infrastructure for peak demand days. Land availability along the foreshore is also affects the State's ability to cater for peak demand as it is scarce and in intense demand for other uses.

5.7.2 Infrastructure demand

In order to determine the demand for recreational boating facilities, estimates have been made based on the literature detailed above for off-peak demand and peak demand on a single weekend throughout the year. Based on the above findings, three scenarios estimating boat ramp lane demand have been provided:

- ▶ Off-peak demand – 8% of boats demanding a boat lane on any given weekend.
- ▶ Average demand – 14% of boats demanding a boat lane on any given weekend.
- ▶ Peak demand – 20% of boats demanding a boat lane on any given weekend.

In estimating average demand on a weekend in Table 19, it was noted that on 35 of the 52 weekends, usage was estimated at 2% of the trailerable boat fleet. However, this figure is likely to be higher on certain weekends, for example when weather is particularly favourable, on other public holidays (e.g. show holiday), long weekends resulting from a pupil free day at their child's school, or consecutive 'leave' days.

The average demand scenario has been presented as a midpoint between the estimated off-peak demand on a typical two day weekend and the peak demand (Table 21).

Table 21 Boats demanding a boat lane – off-peak, average and peak demand scenarios 2010 - 2031

RBC	2010	2011	2016	2021	2026	2031
Off-peak demand						
Townsville	1,368	1,393	1,554	1,678	1,777	1,865
Cairns	1,331	1,339	1,432	1,518	1,607	1,701
North West QLD	142	149	143	143	146	151
Cape York	133	133	137	143	149	155
Total	2,974	3,014	3,266	3,482	3,679	3,872

RBC	2010	2011	2016	2021	2026	2031
Average demand						
Townsville	2,394	2,438	2,719	2,937	3,109	3,263
Cairns	2,330	2,343	2,506	2,657	2,812	2,978
North West QLD	249	260	251	251	256	264
Cape York	232	233	240	250	261	271
Total	5,205	5,274	5,716	6,095	6,438	6,776
Peak demand						
Townsville	3,420	3,483	3,884	4,195	4,441	4,662
Cairns	3,328	3,347	3,580	3,796	4,017	4,254
North West QLD	355	371	358	358	365	377
Cape York	332	332	343	357	373	388
Total	7,435	7,533	8,165	8,706	9,196	9,681

Source: Economic Associates estimates

5.7.3 Boat ramp lane demand

Converting average demand estimates into boat ramp lane demand has been undertaken based on throughput rates of boat ramps. In SKM (1988) and Redland City Council (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 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 trailerable boat owners against the costs incurred by local governments, state governments and the private sector in providing boat ramps. The results for the throughput rates of boat ramps for both scenarios are presented in the Economic Associates report (Appendix A).

Table 22 identifies the boat ramp lane demand for the off-peak, average and peak demand scenarios, between 2010 and 2031. The number of existing lanes in each RBC (both TMR and non-TMR) has been identified and the projected demand for boat ramp lanes to 2031 has been calculated based on a rate of 40 boats/lane/day for the base case scenario. The numbers identified in red indicate that the current number of boat ramp lanes does not meet demand.

Table 22 Boat lane demand – base case scenario 2010 - 2031

RBC	Existing number of lanes ⁹	2010	2011	2016	2021	2026	2031
Off-peak demand							
Townsville	52	34	35	39	42	44	47
Cairns	67	33	33	36	38	40	43
Cape York	23	3	3	3	4	4	4
North West QLD	9	4	4	4	4	4	4
Total	151	74	75	82	88	92	98
Average demand							
Townsville	52	60	61	68	73	78	82
Cairns	67	58	59	63	66	70	74
Cape York	23	6	6	6	6	7	7
North West QLD	9	6	7	6	6	6	7
Total	151	130	133	143	151	161	170
Peak demand							
Townsville	52	85	87	97	105	111	117
Cairns	67	83	84	89	95	100	106
Cape York	23	8	8	9	9	9	10
North West QLD	9	9	9	9	9	9	9
Total	151	185	188	204	218	229	242

TMR expects off-peak demand to be met in almost all circumstances. When providing recreational boating facilities TMR's program of works is aimed at satisfying average demand.

On this basis, the average demand scenario has been adopted for the purposes of this study as it will provide the most representative demand for the Northern Region.

⁹ Includes both TMR and non-TMR boat ramp lanes

5.8 Impact on boat lane demand – tides, pontoons and floating walkways

The recreational boating boat ramp demand forecasting has been prepared on the basis of each boat ramp having full capacity of 40 boats/lane/per day. To refine this demand calculation consideration needs to be given to whether a boat ramp is full or part time accessible, and if there is a pontoon or floating walkway to assist in improving the efficiency of the boat ramp.

For the purposes of this assessment a part tide boat ramp will be assigned 70% of the capacity of a full tide boat ramp, while the additional of a pontoon will increase the capacity of the facility by 50% of a boat ramp lane.

The location of the full and part tide boat ramps and the pontoons within the Northern Region are detailed in Table 23, along with the calculation of the impact of these on the total available boat ramp lanes.

Table 23 Tide accessibility and pontoons/floating walkways

RBC	Full tide lanes	Part tide lanes	Reduction in lanes for part tide ¹⁰	Pontoons / floating walkways	Additional lanes for pontoons/ floating walkways	Total lanes
Cairns	39.5	29	-9	8	4	63.5
Townsville	27	25	-8	6	3	47
Cape York	17	7	-2	2	1	23
North West QLD	10	0	0	2	1	11
Total	93.5	61	-19	18	9	144.5

The demand forecasting based on the revised total number of boat ramp lanes, factoring in part tide accessibility and the provision on pontoons, is detailed in Table 24. The numbers identified in red indicate that the current number of boat ramp lanes does not meet demand. This calculation of total lanes has been used in the RBC demand categorisation (Table 25).

¹⁰ Rounded to the nearest whole number

Table 24 Demand incorporating tide accessibility and pontoons/floating walkways

RBC	Existing lanes	2010	2011	2016	2021	2026	2031
Average demand scenario							
Townsville	47	60	61	68	73	78	82
Cairns	63.5	58	59	63	66	70	74
Cape York	23	6	6	6	6	7	7
North West QLD	11	6	7	6	6	6	7
Total	144.5	130	133	143	151	161	170

5.9 RBC demand

The recreational boating facilities demand assessment undertaken for the Northern Region has been used as the basis of identification of those RBCs across Queensland that have the highest daily demand. The categorisation criteria for determining the low, medium and high demand RBCs are:

- ▶ Low demand RBC (green) – demand of 5 lanes or less.
- ▶ Medium demand RBC (yellow) – demand of between 5 and 15 lanes.
- ▶ High demand RBC (orange) – demand of 15 lanes or greater.

The boat ramp lane demand numbers are based on the existing lanes with the underlying assumption that no new lanes will be added to these catchments within the planning timeframe. If new or expanded facilities are provided the total lane demand numbers will reduce accordingly.

The Townsville RBC is the only medium/high demand RBC within the Northern Region, with demand expected to increase significantly by 2016.

Cairns RBC has low demand, while the RBCs of Cape York and North West QLD do not have any projected demand for additional boat ramp lanes for the time frame of this study (Table 25 and Figure 10).

The Cape York RBC has a significant surplus of boat ramp lanes with this projected to continue past 2021.

Table 25 RBC demand categorisation – 40 boats/lane/day

RBC	Existing lanes	2010	Lane demand*	2016	Lane demand*	2021	Lane demand*
Townsville	47	60	13	68	21	73	26
Cairns	63.5	58	-5	63	-0	66	3
Cape York	23	6	-17	6	-17	6	-17
North West QLD	11	6	-5	6	-5	6	-5
Total	144.5	130	-14	143	-1	151	7

5.9.1 Limitations on projected demand

As identified in Table 25, there is a shortfall in the provision of boat ramp lanes in the Townsville RBC and by 2021 in the Cairns RBC.

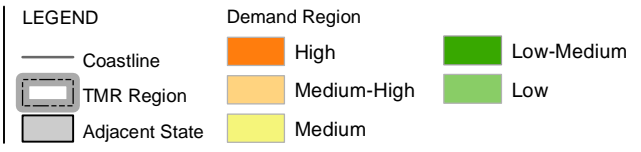
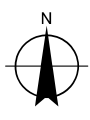
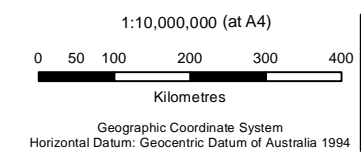
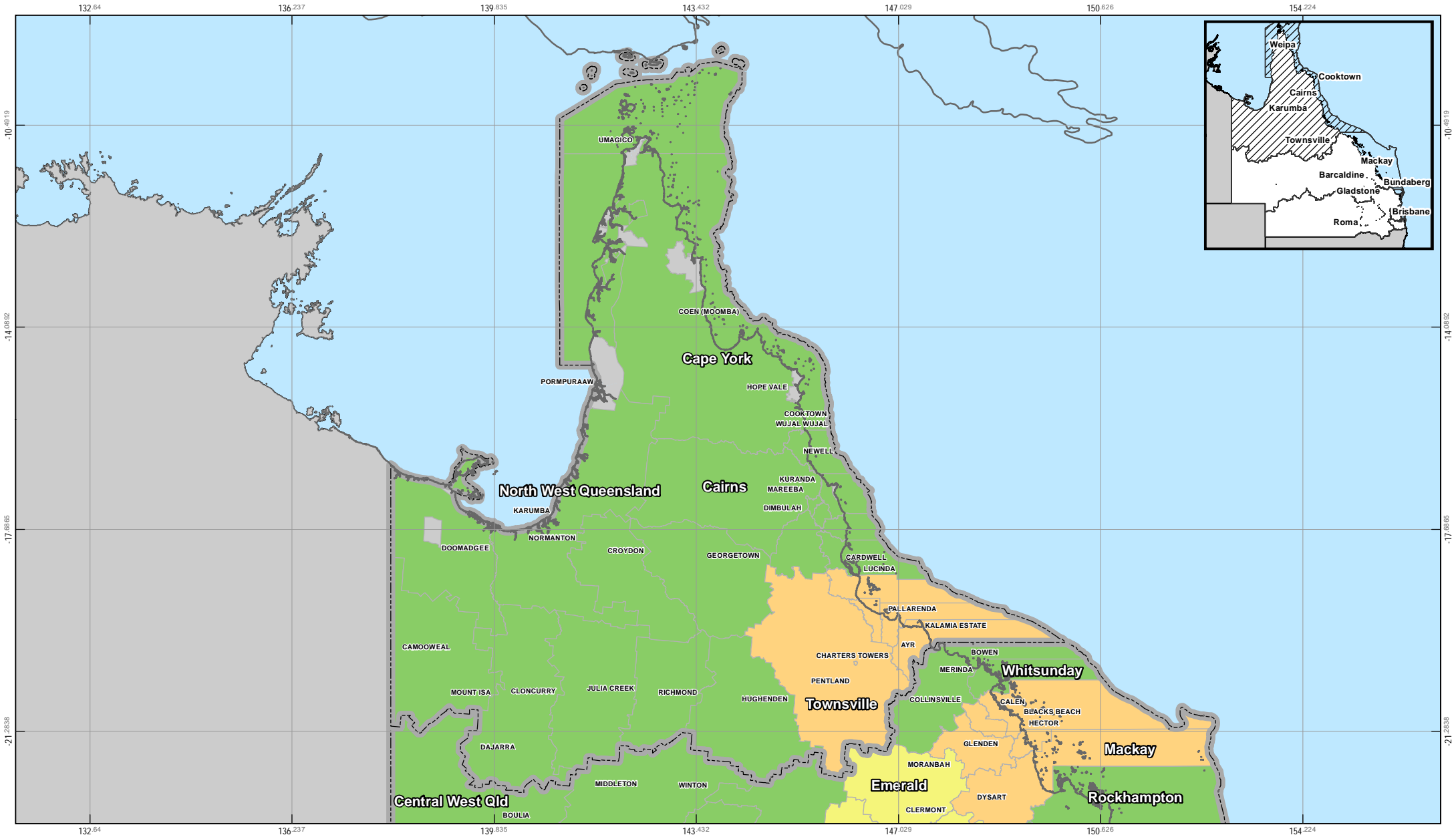
It is intended that the priorities recommended in this study will assist in achieving the projected lane demand for these RBC's; however there are a number of factors influencing the ability of delivery agencies to satisfy the projected future demand.

These factors include:

- ▶ the availability of sites for the development of recreational boating facilities;
- ▶ suitability of sites for recreational boating facilities;
- ▶ funding arrangements;
- ▶ approvals;
- ▶ distribution of funding (state-wide equity); and
- ▶ ability of local governments to fund and maintain associated land based infrastructure.

Furthermore, the provision of additional lanes to improve access is constrained by the ability of the waterway to provide for the additional number of boats using it. Waterway congestion is therefore also considered to be a limiting factor in the provision of additional facilities. Waterway congestion also has the potential to result in impacts on the marine environment, water quality and user safety.

* Rounded down to nearest whole number.



Recreational Boating Facilities
Demand Forecasting Study

Job Number | 41-22459
Revision | B
Date | 26 AUG 2011

Northern Region
High Demand RBC's

Figure 10

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Data source: DTMR Region, Demand Region, DTMR, (2010) Populated Places Coastline, State, GA, (2007), Drainage, DERM, (2010). Created by: MS, EA, WW

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6. Identification of needs

6.1 Introduction

The process of prioritisation of the sites incorporates:

- ▶ the outcomes of the demand forecasting component of the project;
- ▶ the feedback gained through the consultation process; and
- ▶ the spatial analysis undertaken for each of the existing and new sites.

The process for determining priorities within for the Northern Region is depicted in Figure 11 and described in the following sections.

6.2 RBC demand

As detailed in section 5, the assessment of current and future boat ramp lane demand by RBC is based on the identification of high, medium and low demand catchments. For the Northern Region these have been identified in Table 25.

The focus of the provision of recreational boating facilities for the Northern Region is on the Townsville and Cairns RBCs.

6.3 Identification of potential sites – consultation process

To assist in the process of identification of priorities for the provision of recreational boating facilities in the Northern Region the site specific information collected through the consultation process was collated. The feedback included that obtained from the community survey, stakeholder workshops, and information provided by key and other stakeholders.

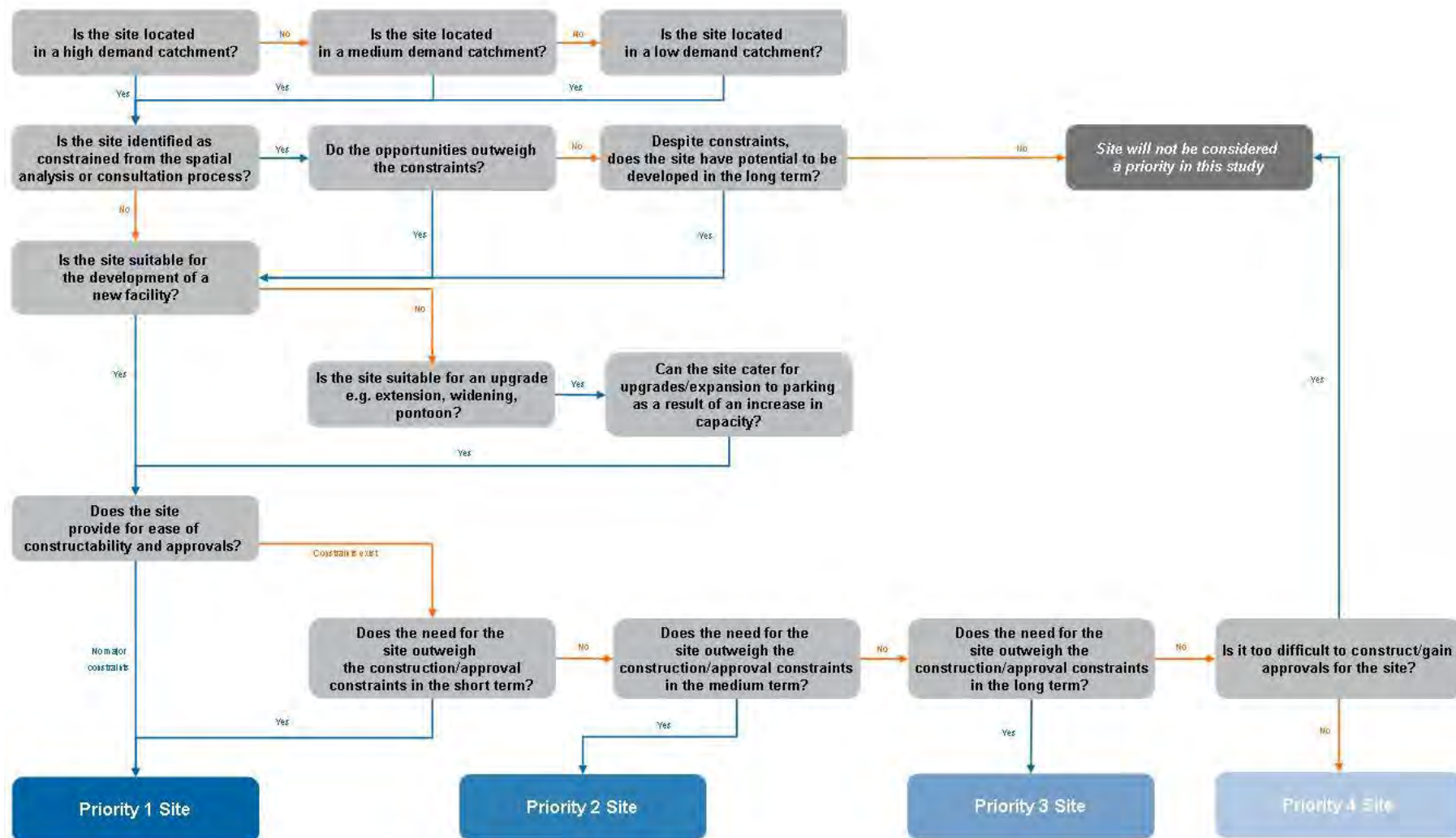
This information, along with the other information available for each of the facilities, was collated and potential new sites and priority sites identified. These sites then provided the targeted locations for the spatial analysis component of the project.

6.4 GIS multi criteria analysis

6.4.1 Introduction

GHD has applied a systematic and transparent approach to assess the suitability of the study area for the purpose of constructing boating facilities using a Multi-Criteria Analysis (MCA) methodology combined with desktop-based Geographic Information Systems (GIS) technology to undertake the analysis required by the project scope. This methodology is referred to as the Infrastructure Development Geospatial Options (INDEGO) method.

Figure 11 Prioritisation process





6.4.2 Methodology

To assess the suitability of the study area, GHD adopted the INDEGO method. This process allowed the consideration of a variety of environmental, physical, social and built environment criteria while supporting a range of inputs from project stakeholders at the same time.

The INDEGO method provides an integrative approach by combining the constraints and opportunities identified in the natural and built environment combined with social and cultural heritage criteria. The results of this process produce a suitability surface where it is possible to observe the cumulative effects of constraints and opportunities in order to identify optimum locations for boating facility development. These constraints and opportunities were combined in order to develop the site suitability surface which formed the basis for the codification and prioritisation of sites.

Each site was assigned a priority score based on the summation of the suitability surface values within a 250m radius of a proposed site location. Following the codification of the site locations the planning team assessed the sites in the context of aerial imagery and in relation to the non-spatial factors that were identified during the course of the demand study. The spatial datasets utilised for the port location suitability assessment are sourced from TMR or DERM Holdings and from those currently licensed to, or acquired by GHD.

6.4.3 Deliverables

The primary goal of utilising a GIS based multi-criteria analysis for the project was to provide tabular and visual outputs to help prioritise development efforts while minimising potential impacts related to environmental constraints.

For this project, a 540,000 sq km study area was selected based on a 100km by 150km grid system, composed of 36 tiles and constructed around the distribution of existent boating infrastructure facilities.

A number of deliverables are generated during the process of performing an INDEGO analysis. Due to the size of the study area the constraints and suitability surface mapping was developed in an interactive digital mapping environment. All of the deliverables are an integral part of understanding the model outputs, verifying the accuracy of the results and producing a quality product that provides a rigorous information resource to support decision making processes.

6.4.4 Performance rating

The outcome of running INDEGO over a region of interest is a constraints map, which shows the overall suitability of land against specific selection criteria. Options that are most suitable against the selection criteria can then be considered in more detail through the integration of additional spatial data relating to those sites.



The performance rating reflects the importance of each criterion in siting the infrastructure and identifies a selection of themes that define opportunities to develop the recreational boating infrastructure in relation to existing infrastructure.

This is an important part of the process as poorly rated criteria have the potential to skew the model results. All attributes of a criterion within the “area of interest” are considered during the performance rating process. While past ratings can be used to inform the analysis team, each criterion requires a review in the context of the proposed infrastructure. The agreed performance ratings are recorded in a performance rating spreadsheet.

The standard rating schema established for the INDEGO model is grouped into five categories (highly unsuitable, highly constrained, moderately constrained, highly suitable and neutral (absence of constraints)).



7. Determination of priorities

7.1 Introduction

The purpose of this study is to identify priorities for the provision of new recreation boating facilities or upgrade of existing facilities to cater for current and future demand.

A priority is defined as:

a site that is located in a high demand (or medium demand) RBC, having sufficient land available for the development/expansion of land based facilities, suitable water access and currently has high levels of use.

Based on the results of the consultation, demand forecasting and GIS analysis, sites (both new and existing) have been prioritised based on the criteria detailed in section 6.

7.2 Stakeholder priorities

As identified in section 6, the process for prioritisation of the sites combines the outcomes of the demand forecasting, the feedback gained from key stakeholders and the spatial analysis undertaken for existing and potential new sites.

The stakeholder priorities (refer to section 4.6) identified during the consultation phase of the project have been assessed as part of the prioritisation process. Table 26 provides an overview of the stakeholder priorities and the rationale behind their exclusion/inclusion as priorities for this study.

As a result of the assessment process the development or upgrading potential of some of the sites identified through the consultation are not feasible for construction due to factors such as cost, approvals, land availability, demand and inclusion on current program.

Table 26 Stakeholder priorities

Site	Stakeholder comments	RBC	Rationale
Aurukun	▶ New boat ramp required due to absence of existing facilities and public safety issues.	Cape York <i>low demand RBC</i>	Cape York is a low demand RBC and therefore a new boat ramp at this site is not considered a regional priority.
Weipa	▶ New boat ramp and pontoon required at Evans Landing.	Cape York <i>low demand RBC</i>	Cape York is a low demand RBC and therefore a new boat ramp at this site is not considered a regional priority.
Wujal Wujal	▶ Upgrade boat	Cape York	Cape York is a low demand



Site	Stakeholder comments	RBC	Rationale
	ramp and provide floating pontoon to improve user safety.	<i>low demand RBC</i>	RBC, and while a floating pontoon at this location will improve safety there is currently no demand in this RBC.
Palm Cove	<ul style="list-style-type: none"> ▶ New two lane boat ramp required to address demand - potential sites identified on northern side of jetty or at Taylor's Point. 	Cairns <i>low demand RBC</i>	Upgrade and expansion of the existing Palm Cove boat ramp has been identified as a priority for the Northern Region.
Mission Beach	<ul style="list-style-type: none"> ▶ More all-tide facilities required. 	Cairns <i>low demand RBC</i>	No sites have been able to be identified for the provision of an all-tide facility.
Clump Point	<ul style="list-style-type: none"> ▶ Additional parking required. ▶ Address conflict between recreation and commercial users.. 	Cairns <i>low demand RBC</i>	Upgrading of the existing Clump Point boat ramp is recommended as a priority for this region.
Dungeness	<ul style="list-style-type: none"> ▶ Upgrade boat ramp in response to high demand. ▶ Floating walkway required. 	Townsville <i>Medium-high demand RBC</i>	The provision of a pontoon/floating walkway is included in BICMP 2011-2014.
Thursday Island	<ul style="list-style-type: none"> ▶ Dinghy mooring facility required as marine vessels are effectively 'cars' being the main mode of transport between islands. 	Cape York <i>low demand RBC</i>	<p>A new mooring facility has recently been constructed at Engineers Jetty.</p> <p>Cape York is a low demand RBC and therefore this facility is not considered a regional priority.</p>
Townsville	<ul style="list-style-type: none"> ▶ Additional facilities required with adequate parking. 	Townsville <i>Medium-high demand RBC</i>	Townsville is a high demand RBC and therefore two new facilities have been identified in the recommended priorities, and several sites have also been identified for upgrades/expansion to existing facilities.



Site	Stakeholder comments	RBC	Rationale
Karumba	<ul style="list-style-type: none"> upgrade Karumba boat ramp (Gilbert Street) upgrade Karumba Point boat ramp New boat ramps required at Karumba (off Riverview Dr) and Karumba Point 	Cape York <i>low demand RBC</i>	<p>Upgrades to the Karumba Point boat ramp are included in the BICMP 2011-2014.</p> <p>Cape York is a low demand catchment and therefore the provision of additional facilities is not considered a regional priority.</p>
Dayman Point	<ul style="list-style-type: none"> Ramp is an ocean foreshore ramp and is subject to erosion issues/complaints. Needs upgrading as it is old, unsafe and cannot handle the volume of boats and vehicles that use it. 	Cape York <i>low demand RBC</i>	<p>This facility is located in a low demand catchment and therefore the provision of additional facilities is not considered a regional priority.</p> <p>However, it is recognised that there are safety issues associated with this ramp and it requires attention.</p>

7.3 Recommended priorities

Suitable sites determined through the analysis process detailed in the previous sections are prioritised into:

- Priority 1 sites;
- Priority 2 sites;
- Priority 3 sites; and
- Priority 4 sites.

The prioritisation of sites is based on the potential of a site to cater for demand in the region. For example, Priority 1 sites are those which have the most potential to cater for demand, are of high importance to stakeholders and are in most cases, the least constrained. It is important to note that the priority allocation does not denote a timeframe for development. Priority 1 sites are considered highest in terms catering for demand. However, Priority 1 sites will not necessarily be developed first. Development of the priority sites will be determined by a number of factors such as funding, constructability, and approvals.

The recommendations included within this report incorporate existing TMR facilities only and new locations where the recreational boating infrastructure is likely to be funded by delivery agencies (in partnership with council and port authorities). Opportunities

for the provision of new sites or upgrading of non-TMR facilities that fall outside this framework are addressed in section 7.9.

The priorities for the Northern Region are summarised in Table 27.

Table 27 Northern Region priorities

Priority	Recommendations	RBC
Priority 1	Boat ramp 5th – 7th Avenue South Townsville – new facility	Townsville
	Boat ramp Saunders Beach – upgrade existing facility	Townsville
	Boat ramp Cairns Tingira Street - upgrade existing facility	Cairns
	Boat ramps Ross Creek BH Townsville downstream and upstream - upgrade existing facility	Townsville
	Boat ramp Dungeness – upgrade existing facility	Townsville
Priority 2	Boat ramp Taylors Beach – upgrade existing facility	Townsville
	Boat ramp Bellenden Ker - upgrade existing facility	Cairns
	Boat ramp Edmonton Thompson Road downstream - upgrade existing facility	Cairns
	Boat ramp Bramston Beach Joyce Creek - upgrade existing facility	Cairns
	Boat ramp Deeral Ross Road – upgrade existing facility	Cairns
Priority 3	Boat ramp Clump Pt north of Mission Bch - upgrade existing facility	Cairns
	Boat ramp Redbank Creek Pine Creek Road - upgrade existing facility	Cairns
	Boat ramp Ross Creek East – new facility	Townsville
	Boat ramp Hell Hole Landing Hodder Road - upgrade existing facility	Townsville
	Boat ramp Kewarra Beach – new facility	Cairns
Priority 4	Boat ramp Tully Heads Mosquito Creek – upgrade existing facility	Cairns
	Boat ramp Barramundi Creek Morris Creek Road	Townsville



Priority	Recommendations	RBC
	– upgrade existing facility	
	Boat ramp Mona Road – new facility	Townsville
	Boat ramp Forrest Beach – upgrade existing facility	Townsville
	Boat ramp Hull River Heads Tully-Hull Road - upgrade existing facility	Cairns
	Boat ramp Boundary Street – new facility	Townsville

7.4 Demand following construction of priorities

The priorities identified above have been recommended to assist in catering for the projected lane demand for the Northern Region, as detailed in section 5.9. Proposed works for each of the priorities include the construction of additional lanes, pontoons/floating walkways, and/or land based facilities. The construction of additional lanes and/or pontoon/floating walkways will increase the capacity of boat ramps and therefore contribute to a reduction in the demand for lanes across the region. Table 28 identifies the project lane demand prior to the construction of the priorities.

Table 29 identifies the projected lane demand following the construction of the priorities as follows:

- ▶ Existing lanes - the number of lanes available at that time e.g. existing lanes at 2016 includes the lanes constructed as part of the 2010-2014 BICMP program and the recommended Priority 1 sites.
- ▶ Lane requirements - the number of lanes required as forecasted in the demand analysis process.
- ▶ Lane demand – the difference between the number of existing lanes and lane requirements, being either a surplus or shortfall of boat ramp lanes.

7.5 Facilities for non-trailerable boat fleet

The focus of this study has been on the provision of recreational boating facilities that will provide for the majority of the recreational boating fleet, that being trailerable boats. Through the consultation process and the identification of priorities, consideration has also be given to the demands of the remainder of the fleet, in particular boats that are kept in the water and would use facilities such as landings and pontoon to access shore based facilities.

Within the Townsville RBC, the demand of the trailerable boat fleet has been identified as being as being medium-high, with the focus of the priorities therefore being on the provision of facilities to cater for the current and projected future demand in the trailerable boat fleet.

Table 28 Boat ramp lane demand prior to construction of priorities

RBC	Existing lanes	2010	Lane demand*	2016	Lane demand*	2021	Lane demand*
Townsville	47	60	13	68	21	73	26
Cairns	63.5	58	-5	63	0	66	3
Cape York	23	6	-17	6	-17	6	-17
North West QLD	11	6	-5	6	-5	6	-5
Total	144.5	130	-14	143	-1	151	7

Table 29 Boat ramp lane demand after construction of priorities

RBC	Existing lanes at 2010	Lane requirements 2010 (forecast)	Lane demand 2010*	Existing lanes at 2016	Lane requirements 2016 (forecast)	Lane demand 2016*	Existing lanes at 2021	Lane requirements 2021 (forecast)	Lane demand 2021*
Townsville	47	60	13	71.5	68	-3	79.5	73	-6
Cairns	65	58	-7	71	63	-8	76.5	66	-10
Cape York	24	6	-18	26.5	6	-20	26.5	6	-20
North West QLD	12	6	-6	13	6	-7	13	6	-7
Total	148	130	-18	182	143	-38	195.5	151	-43

* Rounded down to the nearest whole number.



7.6 Priority 1 sites

The feedback received during the consultation process highlighted a severe shortage of recreational boating facilities within the Townsville LGA. The Townsville RBC has been identified as a high demand catchment by 2016, further highlighting the shortage of facilities in the catchment as a whole. As a result, the priorities for the Northern Region are focused on the Townsville RBC, and where possible has identified priorities located within the Townsville LGA, to assist in catering for current and projected future demand.

The sites identified as Priority 1 for implementation include both upgrading of facilities at existing locations and the construction of new facilities. Table 30 to Table 34 provide details on the five Priority 1 sites including site characteristics, consultation feedback, proposed works rationale and indicative cost.

It is important to note that the works proposed are concept only and actual works undertaken will be dependent on detailed site assessments and available funding.

7.6.1 Indicative costs

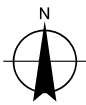
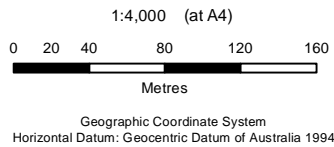
The indicative capital costs provided for the Priority 1 sites are based on cost indices from Rawlinsons and rates from similar projects. No topographical survey, bathymetrical survey or geotechnical investigations have been carried out. The area required for car parking has been estimated from the attached drawings and lengths of ramps have been estimated assuming that they extend from Highest Astronomical Tide (HAT) to Lowest Astronomical Tide (LAT). The costs include allowances for design, construction preliminaries such as establishment on site and Client supervision. An allowance of 40% contingency has also been included.

Although the indicative costs used are deemed to be adequate for the purposes of comparison, GHD has no control over the cost of labour, materials, equipment or services furnished by others, neither has it control over contractors' methods for determining prices, competitive bidding or market conditions. The opinion of probable construction cost produced by GHD has been made on the basis of best judgement as an experienced and qualified engineering consultant familiar with the construction industry. As GHD is not a qualified Quantity Surveyor, nor does it employ quantity surveyors, GHD cannot and will not guarantee that any tenders or actual construction costs will not vary from this opinion of construction cost.



Table 30 Priority 1 site - boat ramp 5th – 7th Avenue South Townsville

Site name	Boat ramp 5th – 7th Avenue South Townsville
Location	5th – 7th Avenue, South Townsville (Ross River)
RBC	Townsville (medium-high demand RBC)
Full tide or Part tide	Full tide
Site characteristics	<p>The site is 6.8 hectares and has been identified as a site for a multi-lane recreational boating facility. The site is located on the Ross River.</p> <p>Site is located upstream of the Townsville Port Access Road which will potentially limit the clearance of trailer yachts at the HAT.</p>
Consultation feedback	Stakeholders identified a shortage of facilities within the Townsville area. More facilities are required to cater for current demand.
Proposed works	<ul style="list-style-type: none"> ▶ provision of four boat ramps – 16 boat ramp lanes ▶ provision of pontoon/floating walkway on each ramp ▶ construction of car park ▶ destination landing ▶ provision of land based facilities including toilets, wash down facility, fish cleaning tables, and lighting. <p>A constraints plan is provided on Figure 12.</p>
Rationale	<p>Townsville currently and into the future has a shortage of boat ramp lanes resulting in it being a high demand catchment. This site at 5th – 7th Avenue South Townsville, provides good access to open water, and has the potential to be developed for a large, regional facility and provide Townsville with a site which will assist in catering for current and future needs.</p> <p>It is recommended that TMR undertake discussions with TCC and the Port of Townsville to determine a strategy for joint funding and construction of this facility.</p>



LEGEND

- Site Location
- Cadastre
- Site Location Buffer (250m)

Suitability Surface

- | | |
|---|--|
| 1 - 2 | 4 - 6 |
| 2 - 3 | 6 - 10 |
| 3 - 4 | |



Recreational Boating Facilities
Demand Forecasting Study

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Date 25 AUG 2011

Site Constraints
Priority 1 Site - 5th-7th Avenue,
South Townsville

Figure 12

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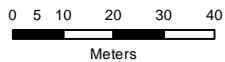


Table 31 Priority 1 site - boat ramp Saunders Beach

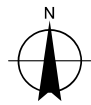
Site name	Boat ramp Saunders Beach	
Asset number	20057042	
Location	Saunders Beach	
RBC	Townsville (medium-high demand RBC)	
Full tide or part tide	Part tide	
Site characteristics	<p>The Saunders Beach boat ramp has two lanes and is located at the end of Saunders Boat Ramp Road, providing access to Althaus Creek (which leads to open water).</p> <p>The site is tide restricted and there are no supporting land based facilities</p>	
Consultation feedback	This site was identified through consultation as a potential location for a new facility	
Proposed works	<ul style="list-style-type: none"> ▶ installation of floating walkway/pontoon ▶ expansion of the car parking ▶ provision of supporting land based facilities including lighting and toilets. <p>The indicative site layout is shown on Figure 13.</p>	
Rationale	<p>This site is well located for expansion. The current boat ramp provides opportunities for expansion and has sufficient space to accommodate additional parking.</p> <p>An increase in capacity at this boat ramp will help to relieve some of the medium term pressure on other boat ramps within the Cairns region.</p>	
Indicative cost (excluding GST)	Water based infrastructure	\$230,000
	Land based infrastructure	\$1,030,000



1:1,500 (at A4)



Geographic Coordinate System
Horizontal Datum: Geocentric Datum of Australia 1994



LEGEND

- Indicative Site Plan
- Turning Circle
- Cadastre Boundaries
- Proposed Site Footprint
- Proposed Parking (45 Lots)



Recreational Boating Facilities
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Indicative Site Plan
Priority 1 Site - Saunders Beach **Figure 13**

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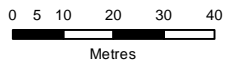


Table 32 Priority 1 site - boat ramp Tingira Street, Cairns

Site name	Boat ramp Cairns Tingira Street	
Asset number	20052853	
Location	Smiths Creek	
RBC	Cairns (low demand RBC)	
Full tide or part tide	Full tide	
Site characteristics	<p>The Tingira Street boat ramp is a 5 lane boat ramp with a pontoon, and is located on Smiths Creek in Cairns.</p> <p>The boat ramp has a large car parking area and is a popular facility in the area as it is all tide and supported by water, lighting and toilet facilities.</p>	
Consultation feedback	<p>The community feedback has indicated that this site is regarded as a good facility.</p> <p>The site is crowded on weekends and a larger pontoon is required to cater for current use, the provision of additional parking is also required.</p>	
Proposed works	<ul style="list-style-type: none"> ▶ widen existing boat ramp to include an additional lane ▶ addition of a floating walkway ▶ provision of additional CTU parking. <p>The indicative site layout is shown on Figure 14.</p>	
Rationale	<p>The Tingira Street boat ramp is a popular facility servicing the Cairns area. There are minimal constraints associated with the site and surrounding area and was identified as a high priority by stakeholders.</p> <p>As a result, there is considerable potential to increase the capacity of the existing boat ramp and expand the car park to cater for increased users.</p>	
Indicative cost (excluding GST)	Water based infrastructure	\$780,000
	Land based infrastructure	\$1,330,000

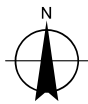


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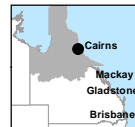
Geographic Coordinate System

Horizontal Datum: Geocentric Datum of Australia 1994



LEGEND

- Site Design Sketch
- Existing Parking (97 Lots)
- Proposed Site Footprint
- Existing Site Footprint
- Proposed Car Park (84 Lots)
- Cadastre Boundaries



Recreational Boating Facilities
Demand Forecasting Study

Job Number 41-22459
Revision A
Date 25 AUG 2011

Indicative Site Plan
Priority 1 Site - Tingira Street

Figure 14

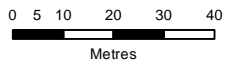


Table 33 Priority 1 site - boat ramps Ross Creek, Townsville

Site name	Boat ramps Ross Creek BH Townsville downstream and upstream	
Asset numbers	20052729 20052728	
Location	Western Breakwater - Ross Creek	
RBC	Townsville (medium-high demand RBC)	
Full tide or part tide	Full tide	
Site characteristics	<p>The Ross Creek boat ramps each have four lanes and are located at the mouth of Ross Creek off Sir Leslie Thiess Drive, and opposite the Breakwater Marina on the north bank of Ross Creek.</p> <p>The boat ramps are supported by land based facilities including water, lighting and toilets.</p>	
Consultation feedback	<p>These boat ramps are regarded by stakeholders as the only decent boat ramps in town. However more parking is required and both boat ramps need a structural upgrade. Currently partially tide affected as there is a drop off the end of the boat ramp at low tide.</p>	
Proposed works	<ul style="list-style-type: none"> ▶ undertake maintenance upgrading of both boat ramps ▶ provision of a floating walkway on both ramps. <p>The indicative site layout is shown on Figure 15.</p>	
Rationale	<p>The Ross Creek boat ramps are currently very popular boat ramps in Townsville. However, stakeholders have raised concerns regarding the structural condition of the boat ramps as well as a lack of car parking. Car parking is severely constrained and it would be difficult to expand car park in this location. Therefore future expansion of the number of lanes in this locality is restricted.</p> <p>There is potential to undertake maintenance upgrading of both boat ramps and install a pontoon to improve safety and useability of the boat ramps.</p>	
Indicative cost (excluding GST)	Water based infrastructure	\$1,500,000
	Land based infrastructure	N/A



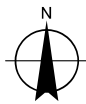
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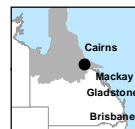
Geographic Coordinate System

Horizontal Datum: Geocentric Datum of Australia 1994



LEGEND

- Indicative Site Plan
- Existing Parking (93 Lots)
- Cadastre Boundaries
- Existing Site Footprint
- Proposed Site Footprint
- Existing Car Park (93 Lots)



Recreational Boating Facilities
Demand Forecasting Study

Job Number | 41-22459
Revision | B
Date | 25 AUG 2011

Indicative Site Plan
Priority 1 Site - Ross Creek

Figure 15

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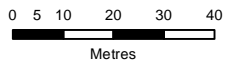


Table 34 Priority 1 site - boat ramp Dungeness

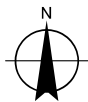
Site name	Boat ramp Dungeness Road Lucinda	
Asset numbers	20052706	
Location	Herbert River entrance	
RBC	Townsville (medium-high demand RBC)	
Full tide or part tide	Full tide	
Site characteristics	<p>The Dungeness boat ramp is a three lane boat ramp located at the mouth of the Herbert River at the end of Dungeness Road, Lucinda.</p> <p>The boat ramp provides full tide access with a pontoon and land based facilities including water, lighting, toilets and picnic areas.</p> <p>A floating walkway is proposed to be installed at this ramp as part of the current program (2011-2014).</p>	
Consultation feedback	<p>Stakeholders identified upgrades to this boat ramp as a high priority for the region. According to stakeholders, the boat ramp has ample parking and the surface is in good condition. The pontoon is deteriorating so a floating walkway would be well used at this boat ramp. Navigation aids are required to mark channel.</p>	
Proposed works	<ul style="list-style-type: none"> ▶ upgrade boat ramp to include an additional lane ▶ expand car park to include additional CTUs ▶ improve signage. <p>The indicative site layout is shown on Figure 16.</p>	
Rationale	<p>There are minimal constraints associated with this site and surrounding area and the boat ramp was identified as a high priority by stakeholders.</p> <p>As a result, there is considerable potential to increase the capacity of the existing boat ramp and expand the car park to cater for increased users.</p>	
Indicative cost (excluding GST)	Water based infrastructure	\$250,000
	Land based infrastructure	\$850,000



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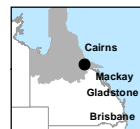


Geographic Coordinate System
Horizontal Datum: Geocentric Datum of Australia 1994



LEGEND

- Indicative Site Plan
- Cadastre Boundaries
- Existing Site Footprint
- Existing Parking (58 Lots)
- Proposed Site Footprint
- Existing Car Park (68 Lots)



Recreational Boating Facilities
Demand Forecasting Study

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Revision | A
Date | 25 AUG 2011

Indicative Site Plan
Priority 1 Site - Dungeness

Figure 16

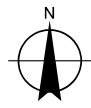
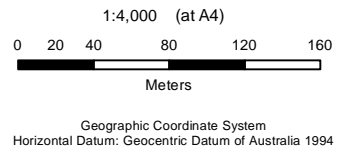


7.7 Priority 2 sites

The sites identified as Priority 2 for implementation include upgrading of facilities at existing locations. The sites are described in detail in Table 35 to Table 39 below.

Table 35 Priority 2 site - boat ramp Edmonton downstream

Site name	Boat ramp Edmonton Thompson Road downstream
Location	Downstream boat ramp
RBC	Cairns (low demand RBC)
Full tide or part tide	Part Tide
Site characteristics	The Edmonton Thompson Road boat ramp is a two lane boat ramp located within the Cairns region. It is tide affected and has water and lighting available.
Consultation feedback	Stakeholder feedback indicated that this is a well-used facility with ample parking and good lighting. Issues were raised regarding the sand build up that occurs at the boat ramp, it was suggested that this boat ramp needs additional maintenance and dredging.
Proposed works	<ul style="list-style-type: none"> ▶ removal of sand ▶ construction of a floating walkway/pontoon ▶ expansion to the boat ramp to include an additional lane ▶ additional car parking to increase capacity. <p>The site constraints are shown on Figure 17.</p>
Rationale	The Edmonton boat ramp is a popular facility in the Cairns area and has significant potential for expansion. It is anticipated that the site will become the main area for launching vessels for South Cairns. Therefore, upgrading of this facility will assist in catering for future demand.



LEGEND

- Site Location
- ▭ Cadastre
- ⌈ ⌋ Site Location Buffer (250m)

Suitability Surface

- | | |
|---|--|
| 1 - 2 | 4 - 6 |
| 2 - 3 | 6 - 10 |
| 3 - 4 | |



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Demand Forecasting Study

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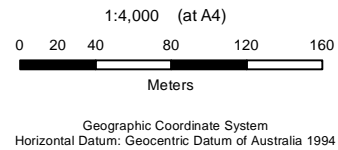
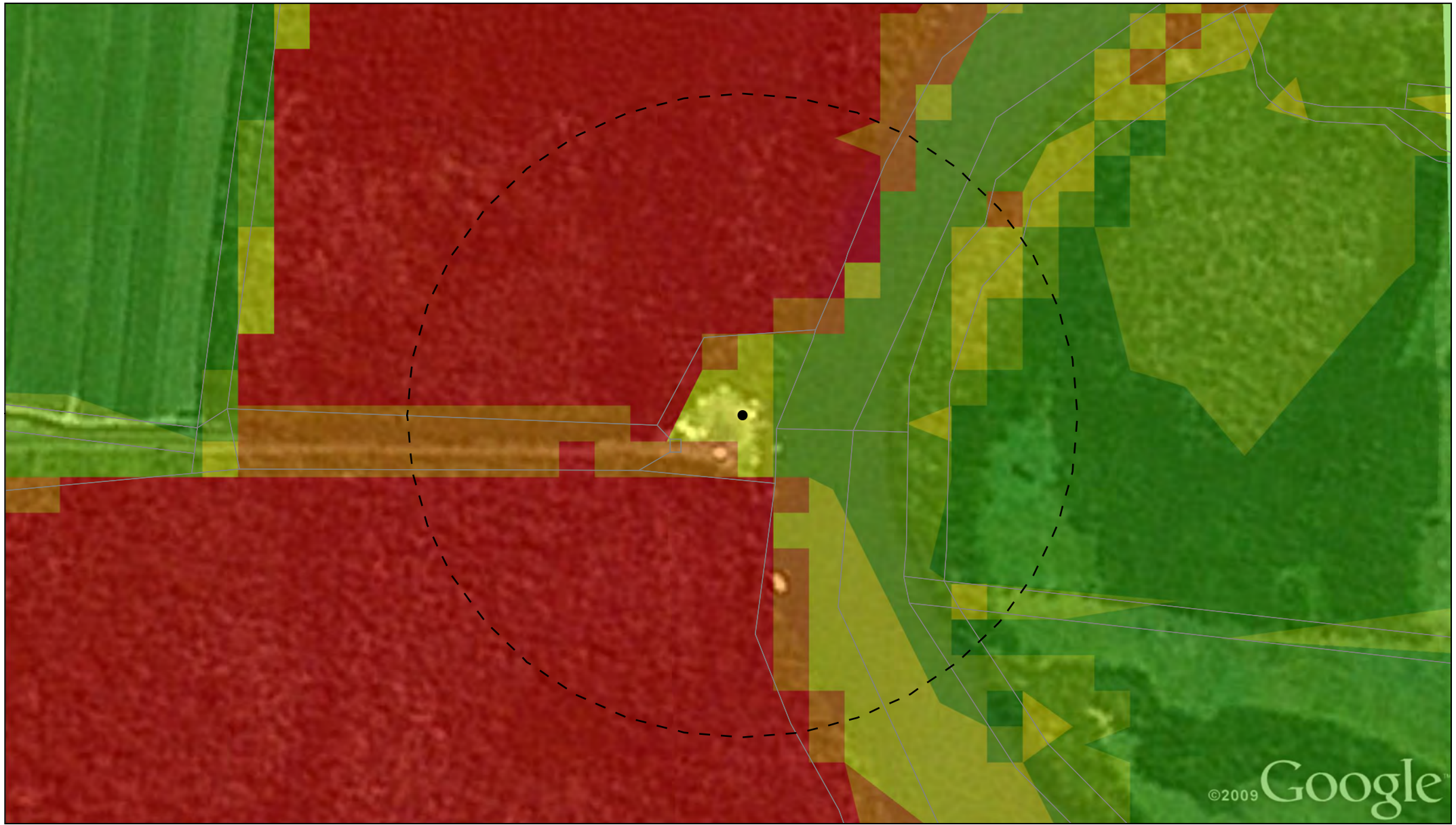
Site Constraints
Priority 2 Site - Edmonton

Figure 17



Table 36 Priority 2 site - boat ramp Bellenden Ker Russell River Road

Site name	Boat ramp Bellenden Ker Russell River Road
Asset number	20052713
Location	North bank of Russell River
RBC	Cairns (low demand RBC)
Full tide or part tide	Part tide
Site characteristics	<p>The Bellenden Ker boat ramp is a two lane part tide ramp located on the north bank of the Russell River.</p> <p>The boat ramp has adequate land based facilities including water, lighting, toilets facilities and picnic areas.</p>
Consultation feedback	<p>Feedback suggests that this boat ramp has excellent facilities, with some work required as the boat ramp is eroding at the toe. Stakeholders have identified the need for repairs to be undertaken in the short term.</p> <p>Parking was also raised as an issue as there is presently insufficient parking for the number of users of the site.</p>
Proposed works	<ul style="list-style-type: none"> ▶ maintenance works on the boat ramp ▶ expansion of the car parking ▶ construct additional lane in the longer term. <p>The site constraints are shown on Figure 18.</p>
Rationale	<p>Stakeholders have identified the Bellenden Ker boat ramp as an excellent facility servicing the Cairns area. However, repairs and upgrades will improve the boat ramp.</p> <p>There is considerable opportunity to repair and upgrade this boat ramp in the medium term with further potential to expand the car park and construct an additional lane when demand increases.</p>



LEGEND

- Site Location
- Site Location Buffer (250m)
- Cadastre

Suitability Surface

- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 6
- 6 - 10



Recreational Boating Facilities
Demand Forecasting Study

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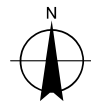
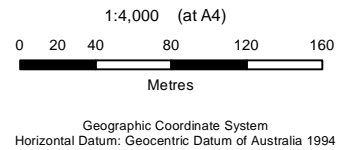
Site Constraints
Priority 2 Site - Bellenden Ker

Figure 18



Table 37 Priority 2 site - boat ramp Taylors Beach

Site name	Boat ramp Taylors Beach
Asset number	20057042
Location	Taylors Beach via Groper Street
RBC	Townsville (medium-high demand RBC)
Full tide or part tide	Part tide
Site characteristics	<p>The Taylors Beach boat ramp is a two lane boat ramp located off Groper Street. The boat ramp is tide restricted and is subject to wave action</p> <p>The land based facilities include ample car parking with a washdown facility, toilets, water, lighting and picnic facilities.</p>
Consultation feedback	Stakeholders have advised that this boat ramp is a good facility with a great washdown facility. A pontoon is needed at this boat ramp to improve launch and retrieval.
Proposed works	<ul style="list-style-type: none"> ▶ installation of a pontoon/floating walkway ▶ expansion of the car park to include additional CTUs ▶ provision of an additional lane in the long term. <p>The site constraints are shown on Figure 19.</p>
Rationale	<p>The current boat ramp provides opportunities for expansion and has sufficient space to accommodate additional parking.</p> <p>To enhance the utilisation of this facility the provision of a floating walkway/pontoon will improve launching and retrieval.</p>

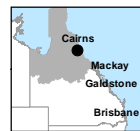


LEGEND

- Site Location
- ▭ Cadastre
- ⌈ ⌋ Site Location Buffer (250m)

Suitability Surface

- | | |
|---|--|
| 1 - 2 | 4 - 6 |
| 2 - 3 | 6 - 10 |
| 3 - 4 | |



Recreational Boating Facilities
Demand Forecasting Study

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Site Constraints
Priority 2 Site - Taylors Beach

Figure 19

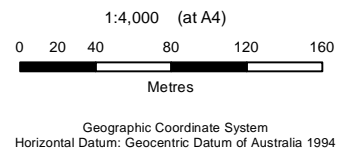
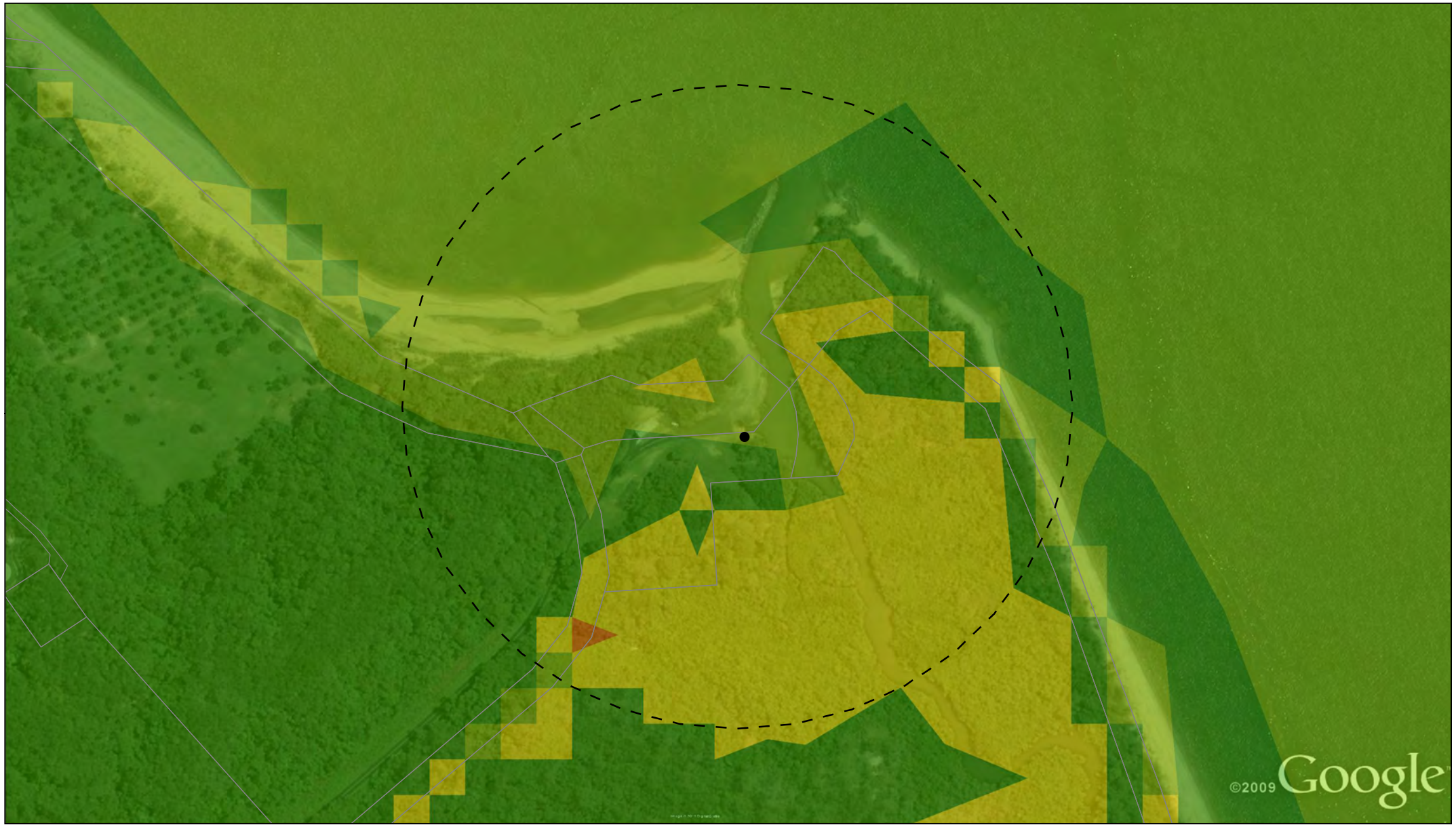
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Table 38 Priority 2 site - boat ramp Bramston Beach

Site name	Boat ramp Bramston Beach Joyce Creek
Asset number	20052712
Location	North bank of Joyce Creek - Rocky Point
RBC	Cairns (low demand RBC)
Full tide or part tide	Part tide
Site characteristics	<p>The Bramston Beach boat ramp has one lane and is located on Joyce Creek near Bramston Beach. Joyce Creek is home to crocodiles which is a safety issue during launching and retrieval.</p> <p>The boat ramp is tide restricted and has no land based facilities.</p>
Consultation feedback	<p>Safety at this facility was the main priority identified from stakeholder feedback, particularly in relation to silt on the boat ramp and crocodiles in the creek.</p> <p>Some re-engineering of boat ramp may be required, and future expansion of the boat ramp to 2 lanes would be desirable.</p>
Proposed works	<ul style="list-style-type: none"> ▶ undertaken maintenance work on existing boat ramp ▶ provision of a pontoon/floating walkway ▶ expansion of existing car park ▶ provision of land based facilities including toilets and lighting ▶ provision of an additional lane in the longer term. <p>The indicative site layout is shown on Figure 20</p>
Rationale	<p>Repairs are required as the boat ramp has been identified as being unsafe. The boat ramp also needs a pontoon as crocodiles are prevalent in Joyce Creek and it is currently unsafe for users to launch and retrieve as standing in the water is required.</p> <p>There are minimal constraints associated with the site and surrounding areas and there is land availability for expansion of the car park.</p> <p>The boat ramp has potential to be upgraded to a two lane boat ramp when demand increases.</p>



LEGEND

- Site Location
- ▭ Cadastre
- [- -] Site Location Buffer (250m)

Suitability Surface

- | | |
|---|--|
| 1 - 2 | 4 - 6 |
| 2 - 3 | 6 - 10 |
| 3 - 4 | |



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Demand Forecasting Study

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Date	26 AUG 2011

Site Constraints
Priority 2 Site - Bramston Beach **Figure 20**

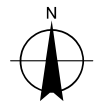
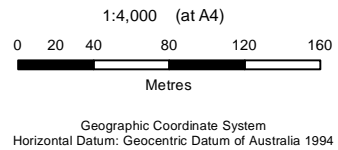
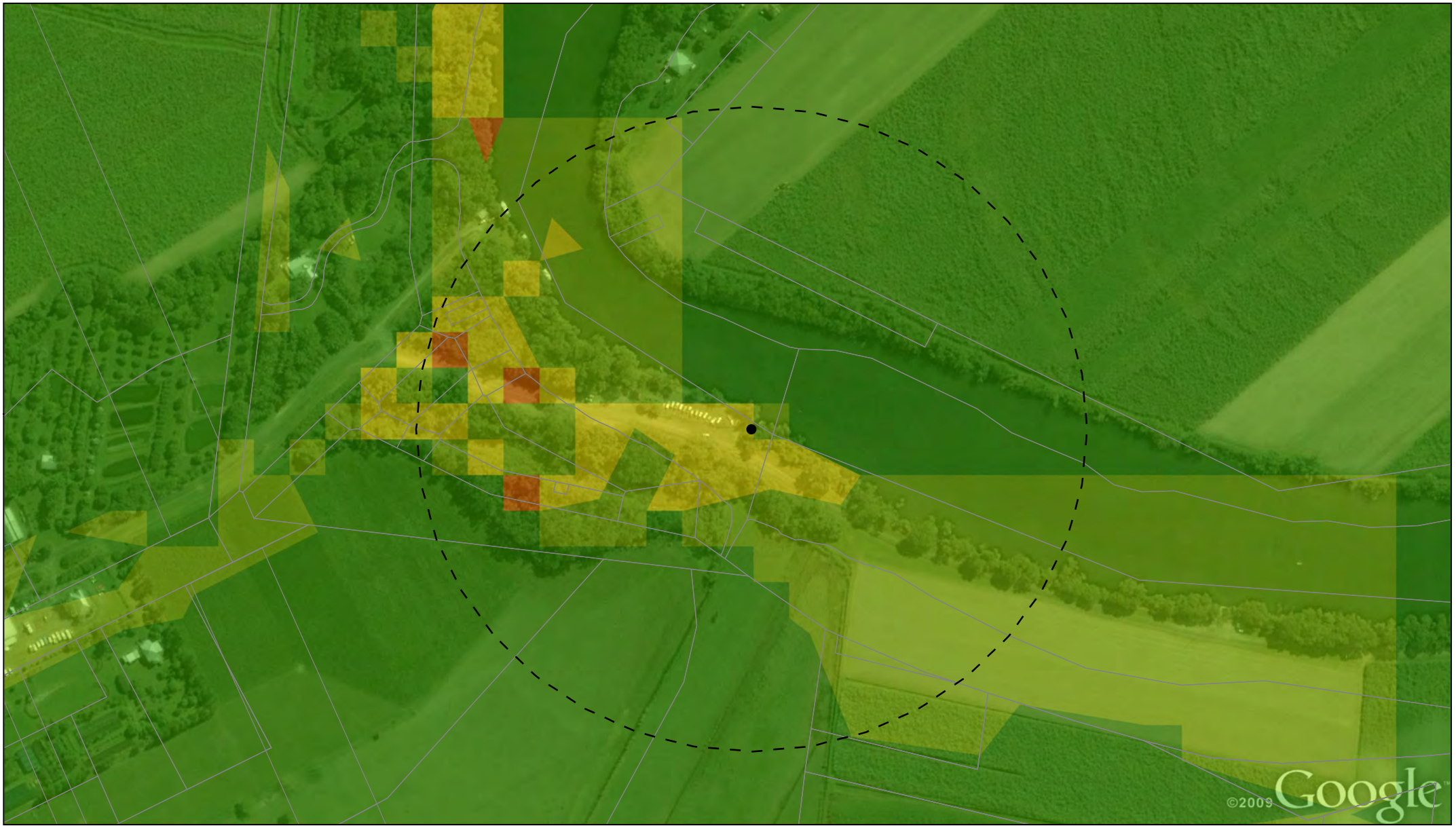
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Table 39 Priority 2 site - boat ramp Deeral Ross Road

Site name	Boat ramp Deeral Ross Road
Asset number	20052685
Location	South bank of Mulgrave River
RBC	Cairns (low demand RBC)
Full tide or part tide	Full tide
Site characteristics	<p>Deeral Ross Road is a three lane boat ramp with a concrete pontoon. This facility has adequate facilities with access to water, lighting, and toilets.</p> <p>The boat ramp is partially impacted at low tide but is not affected by cross currents.</p>
Consultation feedback	<p>Feedback received during the consultation process highlighted that users were pleased with the pontoon facilities however the site is currently over used and has insufficient parking. The boat ramp is partially affected at low tide.</p>
Proposed works	<ul style="list-style-type: none"> ▶ expansion of car parking on adjoining site. ▶ upgrading of existing signage ▶ improve manoeuvring and establish rigging areas. <p>The site constraints are shown on Figure 21.</p>
Rationale	<p>This site is well located for expansion as vacant land in the vicinity of the boat ramp has space to accommodate new parking.</p> <p>Improvement to the car parking at this boat ramp will help to relieve pressure on other boat ramps within the Cairns region.</p>



LEGEND

- Site Location
- Cadastre
- [- -] Site Location Buffer (250m)

Suitability Surface

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| 1 - 2 | 4 - 6 |
| 2 - 3 | 6 - 10 |
| 3 - 4 | |



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Site Constraints
Priority 2 Site - Deeral Ross Road Figure 21

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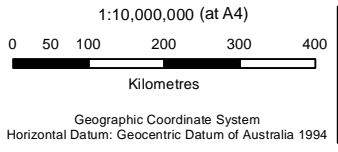
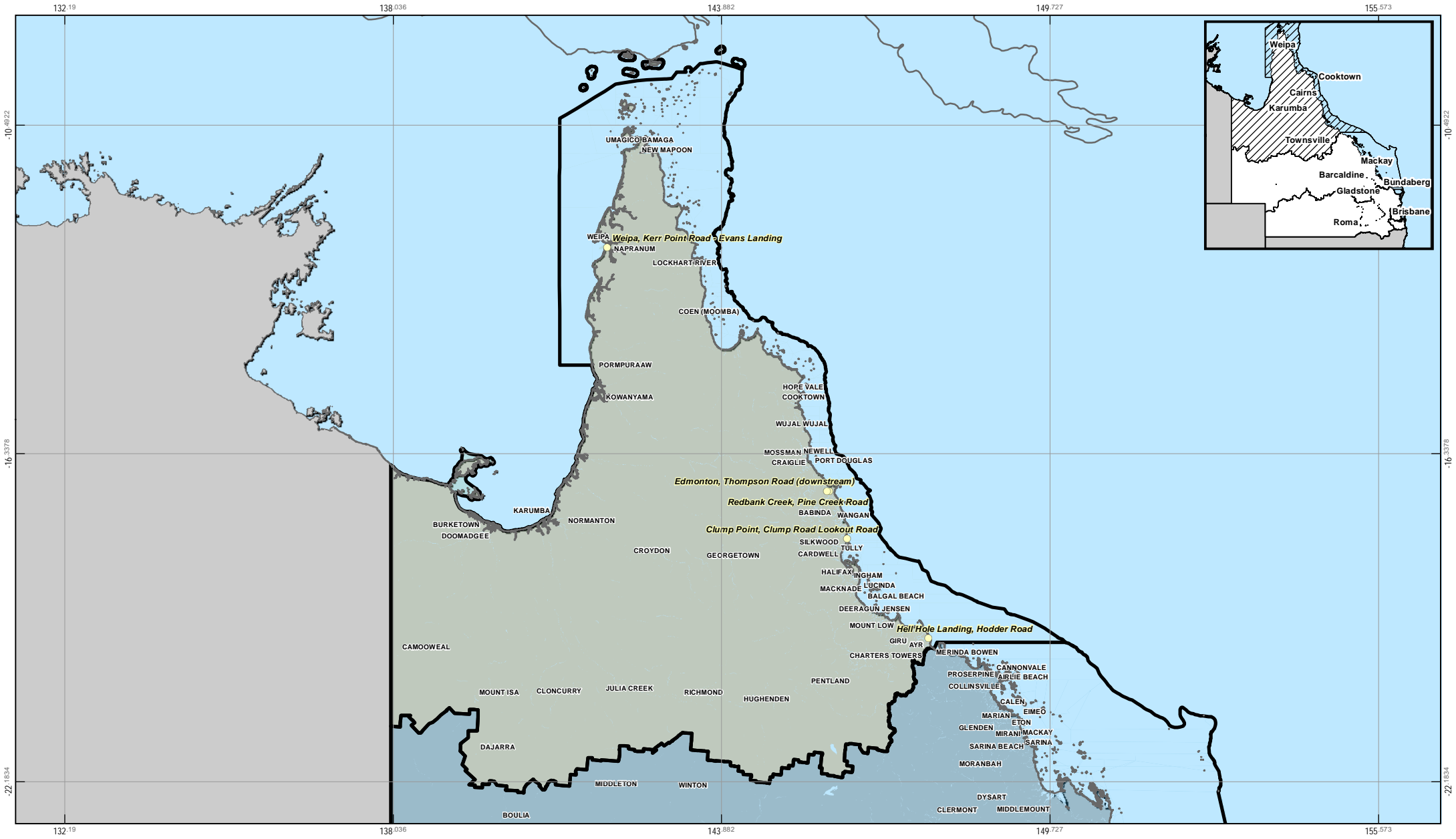
7.8 Priority 3 sites

The sites identified as Priority 3 for implementation include upgrading of facilities at existing locations. The Priority 3 sites for this region are detailed in Table 40 and shown on Figure 22.

Table 40 Priority 3 sites

Asset number	Facility	Location	RBC	Full tide or part tide	Rationale
20052849	Boat ramp Clump Point north of Mission Bch	North of Mission Beach	Cairns <i>low demand RBC</i>	Full tide	<ul style="list-style-type: none"> Clump Point boat ramp is a two lane boat ramp and floating walkway located just north of Mission Beach. The boat ramp is not tide restricted but has poor land based facilities, with only lighting available. Stakeholder feedback indicates that the facility is well liked and there is ample car parking. Commercial operators also use this facility. In the long term, this boat ramp is well suited for an upgrade of land based facilities and the extension of the boat ramp. An additional lane, more car parking and wash down facilities will enable this boat ramp to cater for demand requirements.
20052714	Boat ramp Redbank Creek Pine Creek Road	via Kamma	Cairns <i>low demand RBC</i>	Full tide	<ul style="list-style-type: none"> The Pine Creek Road boat ramp is a single lane boat ramp with poor land based facilities. The site has water available and a boat storage facility. Stakeholder feedback suggests that a pontoon would be well suited to this boat ramp due to the deep water. This site is suited to future expansion with potential for an additional lane, car parking and the installation of a pontoon at this location.

Asset number	Facility	Location	RBC	Full tide or part tide	Rationale
	Boat ramp Ross Creek East	Ross Street, east bank of Ross Creek	Townsville <i>medium-high demand RBC</i>	Full tide	<ul style="list-style-type: none"> • The Ross Creek east site is a potential new site that has been identified by Townsville City Council. • The site comprises of two parcels of land, with the parcel on the west side of Ross Street suitable for overflow car parking. • The site is currently owned by Port of Townsville and is being used for port activities. • The site is considered suitable for a recreational boating facility as it is located on the Ross Creek, which provides all-tide protected-weather access for boating. • This site would be suitable for the provision of a minimum of 6 lanes.
20052691	Boat ramp Hell Hole Landing Hodder Road	Rita Island	Townsville <i>medium-high demand RBC</i>	Part tide	<ul style="list-style-type: none"> • Hodder Road is a two lane boat ramp located on Rita Island. The boat ramp is tide affected and has no land based facilities. • This boat ramp currently services the local community. When demand increases this site has potential be expanded and relieve pressure from other boat ramps in this region. • The provision of an additional lane, formal car parking, water, toilets and lighting is recommended for this site.
N/A	Boat ramp Kewarra Beach	Taylors Point	Cairns <i>low demand RBC</i>	Full tide	<ul style="list-style-type: none"> • Potential new site located at Taylors Point identified by Cairns Regional Council. • This site has potential to be developed for a sheltered ramp to service the Kewarra Beach area. • The site has limited constraints. However, it is recommended that a feasibility assessment be undertaken to determine the suitability of this site for a recreational boating facility.



LEGEND			
	Priority 3 Sites		Central
	SEQ - South		Northern
	TMR Region		Southern
	Drainage		SEQ - North



Recreational Boating Facilities
Demand Forecasting Study

Job Number 41-22459
Revision B
Date 26 AUG 2011

**Northern Region
Priority 3 Sites**

Figure 22

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Data source: Boating Infrastructure, DTMR Region, DTMR, (2010) Populated Places Coastline, State, GA, (2007), Drainage, DERM, (2010). Created by: MS, EA, WW

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7.9 Priority 4 sites

The sites identified as Priority 4 for implementation include both upgrading of facilities at existing locations and the construction of new facilities. The Priority 4 sites for this region are detailed in Table 41.

Table 41 Priority 4 sites

Asset number	Site	Location	RBC	Rationale
20053046	Boat ramp Tully Heads Mosquito Creek	Mosquito Creek, off Tully River	Cairns <i>low demand RBC</i>	<ul style="list-style-type: none"> Site has minimal constraints. Potential to include an additional lane to cater for demand.
20052692	Boat ramp Barramundi Creek Morris Creek Road	via Hodel Road	Townsville <i>medium-high demand RBC</i>	<ul style="list-style-type: none"> Ample area for upgrade to include additional lane and car parking.
N/A	Boat ramp Mona Road	Mona Road, Murray River	Townsville <i>medium-high demand RBC</i>	<ul style="list-style-type: none"> Potential for provision of formal facility with two lanes, car park and land based facilities. Feasibility study required.
20052699	Boat ramp Hull River Heads Tully-Hull Road	South Bank of Hull River upstream of Hull Heads	Cairns <i>low demand RBC</i>	<ul style="list-style-type: none"> The current boat ramp is in need of an upgrade. The site has ample space to accommodate new parking.
20052645	Boat ramp Forrest Beach	Sheoak Street, via Allingham	Townsville <i>medium-high demand RBC</i>	<ul style="list-style-type: none"> Forrest Beach boat ramp is tidal dependant and is affected by waves. The site has a good washdown facility but the boat ramp needs to be extended. The provision of an additional lane, extension to the



Asset number	Site	Location	RBC	Rationale
				boat ramp and an expansion of car park is recommended for this site.
N/A	Boat ramp Boundary Street	Boundary Street, Townsville	Townsville <i>medium-high demand RBC</i>	<ul style="list-style-type: none"> ▶ A potential new site for a recreational boating facility has been identified at Boundary Street in Townsville. ▶ The site is currently used for port activities and is owned by the Port of Townsville. ▶ This site provides good access to open water, and has the potential to provide a facility with a minimum of four lanes with supporting land based infrastructure.

7.10 Further recommendations

7.10.1 Dams

As part of the prioritisation process, a number of boat ramps on dams were identified as having opportunity for upgrade or expansion. The boat ramps located on dams in the region are predominantly owned and/or managed by SunWater, and therefore have not been identified as priorities for this study. However, it is important to consider the potential upgrades/expansion of these boat ramps as they provide access to freshwater for fishing and recreational activities such as water skiing. These boat ramps also have the potential to capture some of the demand for the region.

Table 42 identifies the boat ramps on dams that have potential for upgrade/expansion. It is recommended that TMR coordinate with SunWater to establish the needs for the region and establish upgrading opportunities to meet future demand.

Table 42 Upgrading opportunities – dams

Boat ramp	Location	RBC	Opportunities
Boat ramp Julius Dam	Mt Isa	North West Queensland <i>low demand RBC</i>	The Julius Dam boat ramp is a single lane located near Mount Isa and is the main recreational boating facility servicing this area. As demand increases, this site has the potential to be upgraded to include an additional lane.
Boat ramp Tinaroo	Bruce Road Tinaroo	Cairns <i>low demand RBC</i>	The Tinaroo boat ramp is a single lane boat ramp located off Bruce Road near Tinaroo. This boat ramp has been identified as a long term priority by stakeholder and has the potential to be upgraded when demand increases.

7.10.2 Further studies

Building on this state-wide framework for recreational boating infrastructure across TMR's five regions, it is recommended that a detailed local area analysis be conducted for the Townsville LGA to further investigate hotspots of existing or potential future demand. This includes investigating opportunities for additional sites for all tide facilities and other infrastructure measures outside the scope this study e.g. dredging.

7.10.3 Funding and coordination

A major issue that has been raised throughout the duration of this study is coordination between state and local government in terms of decision making and funding for recreational boating facilities.

Feedback from local government has highlighted concerns regarding the funding land based facilities to support recreational boating facilities. Currently, the funding arrangement for recreational boating facilities relies on TMR funding for the water based infrastructure and Council funding for the land based facilities. This arrangement is affecting the quality, operation and level of use of boating facilities as in some instances there is lack of available funding from local government to enable the provision of adequate land based facilities such as car parking, toilets, lighting, access roads, washdown and fish cleaning facilities.

Following discussions with delivery agencies throughout this study, it is recommended that they consider innovation in funding for the provision of land-side facilities. Such innovation is particularly needed by smaller delivery agencies to reduce the need for relatively high levels of capital input over short periods.



8. References

- ABC (2009). *Fishing Classic Best Ever*. Retrieved from http://blogs.abc.net.au/queensland/north_west_qld_breakfast/
- ABS (2010). *Regional Population Growth, Australia, 2008-09*. Cat. No. 3218.0. Australian Bureau of Statistics: Canberra.
- Boating Industry Association of Queensland [BIAQ] (2003). *The Size of the Boating Industry in Queensland*. The Boating Industry Association of Queensland Limited: Brisbane.
- Department of Environment and Resource Management. (2009). *ClimateQ: toward a greener Queensland*. Queensland Government: Brisbane.
- Department of Infrastructure and Planning, (DIP) (2009). *Far North Queensland Regional Plan 2009-2031: Planning for a stronger, more liveable and sustainable community*. Queensland Government: Brisbane.
- Department of Infrastructure and Planning, (DIP) (2010). *North West Regional Plan 2009-2031: Planning for a stronger, more liveable and sustainable community*. Queensland Government: Brisbane.
- Department of Local Government, Planning, Sport and Recreation (DLGPSR,) (2007). *Townsville-Thuringowa Strategy Plan: Framework for managing growth and development*. Queensland Government: Queensland.
- Department for Planning and Infrastructure WA (2009). *The Perth Recreational Boating Facilities Study, Fremantle*. DPIWA: Perth.
- Department of Transport and Main Roads (DTMR) (2009). *Recreational Boating Facilities Information by Local Authority*. DTMR: Brisbane.
- Department of Transport and Main Roads (DTMR) (2008). *Recreation Vessel Registration June 2008*. DTMR: Brisbane.
- Department of Transport and Main Roads (DTMR) (2009). *Recreation Vessel Registration December 2009*. DTMR: Brisbane.
- Department of Transport and Main Roads (DTMR) (2008a). *Tidebook – Facilities Check 2008*. DTMR: Brisbane.
- Economic Associates. (2011). *Recreational Boating Demand Forecasting Project: Demand Analysis*. Economic Associates: Brisbane
- Environmental Protection Agency (EPA) (2003a). *Cardwell-Hinchinbrook Regional Coastal Management Plan*. Queensland Government: Brisbane.
- Environmental Protection Agency (EPA) (2003b). *State Coastal Management Plan*. Queensland Government: Brisbane.
- Environmental Protection Agency (EPA) (2003c). *Wet Tropical Coast Regional Coastal Management Plan*. Queensland Government: Brisbane.



- Gulf Regional Planning Advisory Committee (GRPAC) (2000). *Gulf Regional Development Plan*. Queensland Government: Cairns.
- International Marina Consultants Pty Ltd (2006). *Overview of Recreational Boating in Queensland*. Brisbane: Australia.
- Maritime Safety Queensland (2004). *Recreational Boating Survey Report 2003*. Queensland Government: Brisbane.
- Maunsell Aecom (2009). *Public Boat ramp Investigations - Prefeasibility Analysis – Port of Townsville*. Maunsell Aecom: Townsville.
- McNamara, Cameron.(1984). *Strategic Plan - Public Boat Launching Facilities - Moreton Region*. Department of Harbours and Marine: Brisbane.
- Office of Economic and Statistical Research (OESR) (2009b). *Queensland Regional Profiles: Northern Region*. Queensland Treasury: Profile generated online at www.oesr.qld.gov.au
- PIFU (2009). *Population Projections by Former Local Government Area – Medium Series*. Planning Information & Forecasting Unit: Brisbane.
- Queensland Transport (200). *Suitability Investigation of Proposed Public Boat ramp Sites in the Cook Shire*. Queensland Government: Queensland.
- Rose, T., R. Powell & J. Yu (2009). *Identification of the Present and Future Recreational Boating Infrastructure in Redland City – A 10 Year Infrastructure Plan-Griffith University*. Griffith University: Brisbane.
- SKM (1998). *Public Boat Ramps Central Queensland Strategic Plan - Volume One - Demand Forecasting - Noosa to Yeppoon*. Sinclair Knight Merz: Queensland.
- Sunwater (2010). *Recreation Information*. Retrieved from <http://www.sunwater.com.au/recreation.htm>
- Van Tubbergh, B. (for Townsville City Council) (2009). *Recreational all-tide protected weather boating facilities for Townsville City strategic planning for 2020*. Townsville City Council.: Townsville.



Appendix A

Recreational Boating Facilities Demand Forecasting Study: Demand Analysis

Recreational Boating Facilities
Demand Forecasting Study:
Demand Analysis

Final Report

May 2011



ECONOMIC ASSOCIATES

Recreational Boating Facilities Demand Forecasting Study: Demand Analysis

Final Report

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1 INTRODUCTION

Recreational boating has experienced significant growth over the past twenty years with demand for boat ramps and associated facilities exceeding the capacity of existing infrastructure. In response to growing demand for recreational boating infrastructure, the Department of Transport and Main Roads commissioned GHD Pty Ltd, in association with Economic Associates Pty Ltd to undertake the Recreational Boating Demand Forecasting Project. Economic Associates Pty Ltd was engaged by GHD Pty Ltd to prepare recreational boating infrastructure demand projections, specifically for boat ramps.

This report:

- Provides a brief discussion of the recreational boating industry in Queensland;
- Defines a number of regional recreational boating catchments throughout Queensland;
- Provides a socio-economic overview of each of the identified regional recreational boating catchments;
- Provides recreational boating fleet projections relevant to the demand for boat ramps for each of the regional recreational boating catchments; and
- Provides boat ramp demand projections for each regional recreational boating catchment.

2 RECREATIONAL BOATING INDUSTRY OVERVIEW

Boat ownership is the most significant demand driver for marine infrastructure, namely boat ramps, marina berths (both wet and dry), moorings and pontoons. The composition of a region's boating fleet will determine the quantity and type of marine infrastructure demanded.

The recreational boating market refers to those boat owners who use their boat to take recreational day trips, cruising in relatively protected waters as opposed to the open sea.

Maritime Safety Queensland maintains detailed monthly statistics on boat registrations by local government area (LGA). Boat registrations data is collected for various vessel types and length. Available electronic records for boat registrations by length date back to 1999. Within the boat registration data sets, the various boat categories include:

- Sail boats;
- Boats without sails, including:
 - Motor boats without sails;
 - Speed boats; and
 - Jet Skis (or personal recreation vehicles).

Jet skis are not commonly found in marinas, and as such do not represent a major demand driver for marina berths, but can have significant implications for the demand for boat ramps.

Smaller boats can be easily towed on trailers. Industry consultations undertaken by Economic Associates previously reveal that the suitability for towing varies between boat types (i.e. boats with sails and boats without sails). For example, sail boats with keels become difficult to tow, especially if they do not have a retractable keel, at around five metres in length, whereas motorboats can generally be towed up to around eight metres.

Similarly, the suitability of vessels for dry storage depends on type and length of vessel. Dry storage is most suitable for vessels with shallow drafts. Therefore, dry storage is most suitable for smaller sail boats (i.e. sail boats up to eight metres) and boats without sails up to around ten metres.

Wet berthing a boat represents a much greater expense than trailing or dry berthing. Therefore, wet berths are generally used only by larger vessels, such as sail boats over five metres and boats without sails over eight metres.

2.1 Industry Size

The exact size and contribution of the recreational boating industry is not regularly assessed, however BIAQ (2003) estimated the overall size of the boating and related industries in Queensland as at June 2003¹. This was undertaken through a self-completion questionnaire, with a total of 253 responses collected from BIAQ members. In 2002-03, there were an estimated 6,785 persons employed in boating and related industries in Queensland, with employment

¹ Related industries include boat charter, boat manufacturing, boat repair, chandlery, club or sailing school, finance and insurance, marine, marine brokerage, marine construction, marine electronics, marine engines, media, retail, supply of raw materials, trailer / accessories / other manufacturing and wholesale, distribution or import.

concentrated in boat manufacturing (2,365 employees), retail (845 employees) and other related manufacturing (840 employees). Employment in the industry increased by 4.5% between 2001 and 2003.

Turnover of the boating industry was estimated at \$1,324 million in 2002/03, being highest for boat manufacturing (\$269 million), wholesale, distribution and import (\$235 million) and repair / chandlery (\$167 million). Turnover in the industry was estimated to have increased by 10.5% since 2001.

The industry recorded high levels of turnover growth from overseas exports, almost doubling from \$110 million in 2001 to \$200 million in 2002-03.

The BIAQ survey highlights the significance of boating and related industries to the Queensland economy, and the importance of providing sufficient supporting marine infrastructure.

Recreational Boating & Industry-Gold Coast Cluster Case Example

The Gold Coast has built a reputation as a national and international producer of pleasure craft and as a place for storing, servicing and using these vessels. The Gold Coast marine cluster comprises over 400 businesses, employing an estimated 4,200 persons and generating \$550 million annually in income (Department of State Development, 2006). In 2003, the Gold Coast Marine Precinct exported goods valued at more than \$120 million to more than 30 countries (Gold Coast City Council, 2006). Estimates of exports attributable to the Gold Coast marine industry prepared in 2006 valued those exports at approximately \$250 million per annum. However, Blackman and Hurd (2009) estimate that as a result of the global economic downturn in 2008-09, the Gold Coast marine industry cluster was estimated to contract by approximately 30%-35%. Blackman and Hurd (2009) estimated that the annual revenue of the Gold Coast marine industry in 2008-09 was \$769.0 million, down approximately 22% from the previous year's estimate of \$985.5 million. As at June 2009, employment within the Gold Coast marine industry was estimated at approximately 4,550 full time equivalent employees. While this estimate was down on the previous year's estimate, employment remained well above 2006 levels.

Based on this information, the Gold Coast is the currently one of the major centres for recreational boating activity in Queensland, and is a regionally significant economic and employment centre. Once again this highlights the significance of the marine industry at the state and regional levels and the importance of providing infrastructure to support its ongoing development.

2.2 Industry Characteristics & Trends

International Marina Consultants Pty Ltd (2006) undertook an overview of the changing characteristics within the recreational boating industry. The major trends noted in recreational boating are as follows:

- *The average size of recreational boats is increasing* – The average length has increased from about 10 metres to 13.5 metres over the last ten years. There is little demand for eight metre berths which can be found in some older marinas, with vessels of this size typically being towed. The report suggests the minimum marina size in most new marinas should be 12 metres. However, if the marina will mainly be occupied by power boats, the minimum marina size should be larger than 12 metres.

- *Boats are being used less frequently* – The number of boats being used at any one time has not increased at the same rate as the number of boat registrations. The damage to the marine environment as a result of the rapid rise in boat registration is likely to be less than anticipated.
- *Larger boats are being placed in rack and storage buildings* – Dry storage buildings are being designed in Australia and overseas to cater for boats up to 12 metres in length. Currently, the demand for dry storage in Australia is quite low. However, the demand for dry storage is expected to increase significantly as the price of marina berths increases in line with strong demand. There are a number of advantages associated with dry storage including potentially significant cost savings (in cases where reduced boat maintenance costs outweigh the additional costs of lifting boats in and out of the water), protection from UV damage and reduced need for dredging as the boats do not require water space for berths. However, racked dry storage creates a significant visual impact due to the size of the storage and as a result is unlikely to be included in association with residential development. Dry storage could be included in boat harbours and working marinas.
- *Marina sized boats which are used infrequently are parked on hardstands* – There has been a growing trend towards storage of power boats and yachts on hard stands due to lower usage and lack of available marina berths. The rates associated with hardstand storage are also less than for boats moored in a floating marina.
- *The growth in boat registrations is occurring throughout Queensland* – There has been significant growth in boat ownership in Queensland and thus demand for marina berths. Currently, virtually all marinas throughout Queensland are fully occupied indicating a need for additional berthing throughout the state.
- *Increasing demand for boat repair facilities* – There is an increasing demand for boat repair facilities as a result of an increase in the number of recreational boats and the reduced effectiveness of anti-fouling paints. Only a limited number of boat repair facilities are being constructed, with at least one existing facility at Hope Harbour expected to be shut down. Residential type marinas are not planned to include boat repair facilities.

The trends highlighted above indicate that the demand for marine infrastructure throughout the state is anticipated to grow significantly.

Industry consultations previously undertaken by Economic Associates reveal a growing number of new boats purchased in the growth category of motor boats between five and eight metres are manufactured in, or for, the North American market. These boats are generally half cabin cruiser, and appeal to the recreational boating market. Their appeal is largely based on favourable exchange rates which have resulted in these North American market vessels being around 30% less expensive than Australian made boats.

The growing popularity of North American market half cabin cruisers has significant implications for boat storage. In Queensland, the maximum width of a trailerable boat is 2.5 metres, but cruisers designed for the North American market are frequently wider than 2.5 metres, particularly those cruisers over five metres. As a result, the most appropriate storage solution for these boats is dry storage at a major marina or boat harbour. It is anticipated that as the popularity of these boats grows, so too will demand for dry boat storage.

2.3 Characteristics of Recreational Boat Owners

Maritime Safety Queensland (2004) conducted a boating survey in 2003 to gain an insight into the range, location of and investment in, recreational boating activities on Queensland waters.

There were 3,500 responses used in the survey analysis. The major findings of this analysis are as follows:

- The most common types of vessels operated by respondents were dinghies (45%) and speedboats (27%);
- The majority of respondents operated vessels with motors between 7 and 15 horsepower (20%), 16-50 horsepower (36%) or 51-100 horsepower (19%);
- Almost all respondents were male (95.5%) with 40% of all respondents being 55 years and over in age;
- The predominant boating activity is fishing (82.2% daytime, 24.9% overnight), with cruising also a popular recreational boat use (28.4%);
- The majority of boat owners launched their vessel either two to three times per month (40.5%) or every two to three months (31.5%);
- Estuaries, rivers and bays were nominated as the preferred location to operate their vessel; and
- A significant share of respondents (16%) travel more than 50 kilometres from their residential address to their preferred boat ramp / mooring site.

3 RECREATIONAL BOATING CATCHMENTS

3.1 Catchment Definition

Catchments for recreational boating infrastructure are typically influenced by:

- Road transport infrastructure to the facility;
- Natural and man-made barriers;
- The location and scale of existing facilities in the area; and
- Psychological barriers, such as driving time and perceptions of distance.

Consultation with BIAQ, marina operators and yacht clubs consistently indicates that the main catchment for major pieces of marine infrastructure generally corresponds with a one hour driving time from the infrastructure. This is supported by the survey results from Maritime Safety Queensland (2004) which indicates a significant share of boat owners travel over 50 kilometres to their preferred boat ramp / mooring. This is not to say that boat owners will not travel for more than an hour to access popular locations, however these would represent exceptions to normal practice and would include major events, special trips and boating holidays.

The recreational boating catchments were defined in conjunction with the Department of Transport & Main Roads, using former local government area boundaries and taking into consideration the five Main Roads regions in Queensland².

For the purposes of this study, sixteen recreational boating catchments have been defined, these being:

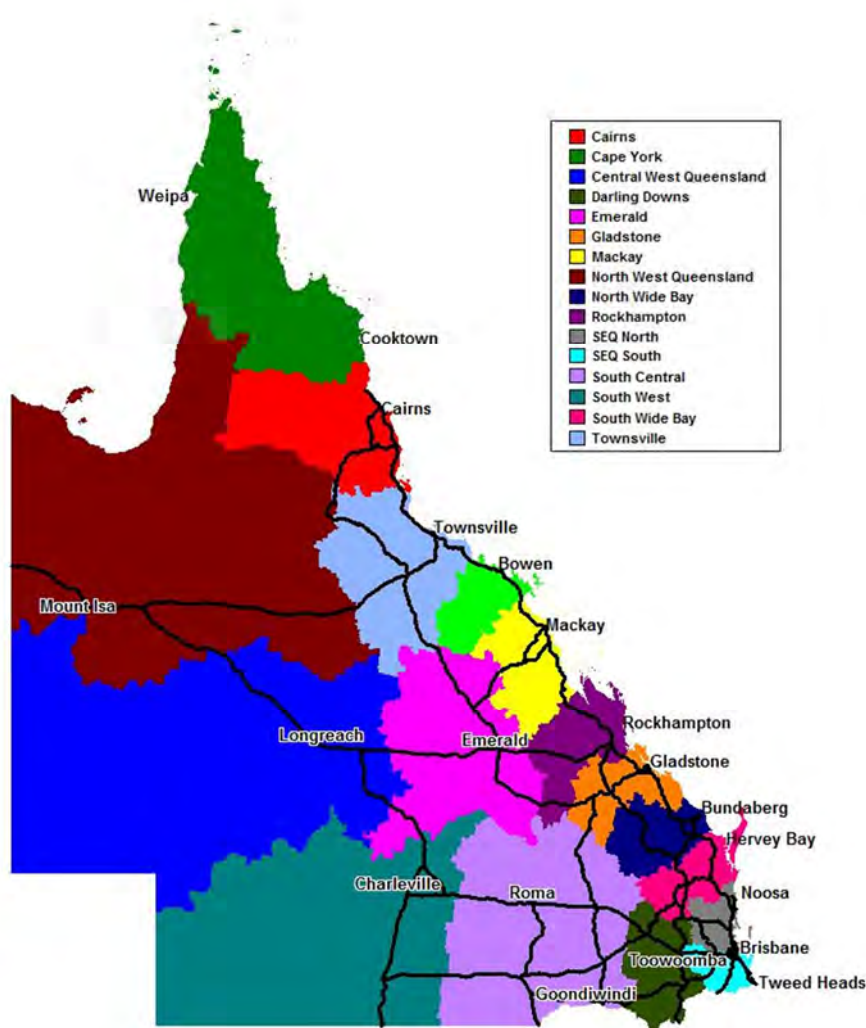
- *Cape York* – Aurukun, Cook and Torres LGAs;
- *North West QLD* – Burke, Carpentaria, Cloncurry, Croydon, McKinlay, Mount Isa, Richmond, Mornington, Etheridge and Flinders LGAs;
- *Cairns* – Atherton, Cairns, Cardwell, Douglas, Eacham, Herberton, Johnstone and Mareeba LGAs;
- *Townsville* – Burdekin, Dalrymple, Hinchinbrook, Thuringowa, Townsville and Charters Towers LGAs;
- *Central West QLD* – Aramac, Barcaldine, Barcoo, Blackall, Boulia, Diamantina, Ilfracombe, Isisford, Longreach and Winton LGAs;
- *Emerald* – Belyando, Jericho, Peak Downs, Bauhinia, Tambo and Emerald LGAs;
- *Mackay* – Broadsound, Mackay, Mirani, Nebo and Sarina LGAs;
- *Whitsunday* – Whitsunday and Bowen LGAs;
- *Gladstone* – Banana, Calliope, Miriam Vale and Gladstone LGAs;
- *Rockhampton* – Duaringa, Fitzroy, Livingstone, Mount Morgan and Rockhampton LGAs;

² It is recognised that boat owners may travel outside of their recreational boating catchment to access facilities, particularly in the case of residents in the SEQ North and SEQ South catchments, but discussions with the Department of Transport & Main Roads determined that the recreational boating catchments defined above were the most appropriate.

- *North Wide Bay* – Burnett, Eidsvold, Isis, Biggenden, Mundubbera, Gayndah, Kolan, Monto, Perry and Bundaberg LGAs;
- *South Wide Bay* – Cooloola, Hervey Bay, Kilkivan, Kingaroy, Maryborough, Murgon, Nanango, Tiaro, Wondai and Woocoo LGAs;
- *Darling Downs* – Cambooya, Clifton, Crow's Nest, Inglewood, Jondaryan, Millmerran, Pittsworth, Rosalie, Stanthorpe, Toowoomba, Wambo, Warwick and Dalby LGAs;
- *South Central* – Balonne, Bendemere, Booringa, Bungil, Chinchilla, Murilla, Tara, Taroom, Waggamba, Warroo, Roma and Goondiwindi LGAs;
- *SEQ North* – Brisbane, Caboolture, Caloundra, Esk, Kilcoy, Maroochy, Noosa, Pine Rivers and Redcliffe LGAs; and
- *SEQ South* – Beaudesert, Boonah, Laidley, Gatton, Gold Coast, Ipswich, Logan and Redland LGAs.

Figure 3.1 below provides a geographical representation of the recreational boating catchments in Queensland.

Figure 3.1: Recreational Boating Catchments in Queensland



3.2 Socio-Economic Profile of Catchments

A socio-economic profile of the recreational boating catchments as at the 1996, 2001 and 2006 Censuses of Population and Housing, benchmarked against Queensland is provided in Table 3.1 and Table 3.2. A number of key points can be drawn from this profile, these points being:

- In 2006, there were an estimated 3,973,960 persons living in Queensland including
 - 1,588,324 persons in SEQ North;
 - 1,031,517 persons in SEQ South;
 - 221,667 persons in Cairns;
 - 199,461 persons in Townsville;
 - 189,840 persons in Darling Downs;
 - 159,140 persons in South Wide Bay;
 - 113,045 persons in Mackay;
 - 110,209 persons in Rockhampton;
 - 94,488 persons in North Wide Bay;
 - 66,124 persons in Gladstone;
 - 40,325 person in South Central;
 - 35,699 persons in Emerald;
 - 35,657 persons in Whitsunday;
 - 34,910 persons in North West QLD;
 - 11,740 persons in Central West QLD;
 - 9,174 persons in Cape York; and
 - 8,611 persons in South West Central.
- Between 2001 and 2006, Cape York, North West QLD, Central West QLD and South West QLD experienced negative average annual population growth. The highest average annual population growth was recorded in Emerald, Mackay and South Wide Bay;
- At the time of the last Census Cape York, North West QLD, Emerald and Gladstone had a reasonably less mature population compared with Queensland, while Central West QLD, Whitsunday, North Wide Bay and South Wide Bay had a relatively more mature population;
- In 2006, the highest incidence of couple families with children was recorded in Emerald, Mackay and Gladstone. Single parent families were most prevalent in North Wide Bay, South Wide Bay and SEQ South;
- At the time of the last census, the incidence of fully owned households was highest in Central West QLD, North Wide Bay, South Wide Bay and South West QLD and lowest in Cape York and North West QLD;
- At the time of the 2006 Census, average weekly household incomes were highest in Emerald and North West QLD. The lowest income levels were recorded in North Wide Bay, South Wide Bay and South West QLD, with each of these catchments recording weekly household's income below \$1000/week;

- In 2006, average monthly housing loan repayments and weekly rent payments were highest in SEQ North and SEQ South. Cairns and Whitsunday also recorded rents over \$200/week;
- At the time of the 2006 Census, Central West QLD and Emerald recorded low unemployment rates while South Wide Bay and North Wide Bay experienced high unemployment rates;
- North Wide Bay, South Central and South West QLD recorded low proportions of residents with post-school qualifications, while SEQ North recorded a high proportion of residents with post-school qualifications. In 2006, Emerald and Gladstone recorded a high proportion of residents with a certificate;
- North West QLD, Emerald, Mackay and Gladstone, experienced a significantly low proportion of lower and upper white collar professions. North West QLD, Emerald and South West Queensland recorded a significantly high proportion of lower blue collar professions; and
- In 2006 there was a high proportion of persons (over 20%) employed in the agriculture, forestry and fishing industry in Central West SD, South Central. and South West Queensland. There was a also a high proportion of persons employed in the mining industry in North West QLD and Emerald.

	Cape York			North West QLD			Cairns			Townsville			Central West QLD			Emerald			Mackay			Whitsunday			QLD		
	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006
Accommodation & food services	7.5%	9.0%	8.4%	6.0%	6.5%	5.6%	11.2%	11.2%	10.0%	6.5%	6.7%	6.6%	6.1%	5.8%	6.4%	5.7%	5.6%	5.8%	6.9%	6.7%	6.6%	16.9%	15.2%	14.6%	7.2%	7.4%	7.0%
Transport, postal & warehousing	6.5%	5.0%	4.5%	5.1%	5.4%	4.7%	5.9%	6.1%	6.2%	4.8%	5.2%	4.8%	5.2%	4.6%	4.1%	4.4%	4.8%	3.9%	7.4%	6.5%	6.0%	7.0%	7.7%	6.7%	5.1%	5.2%	5.1%
Information media & telecommunications	1.0%	0.9%	1.3%	1.1%	0.6%	0.7%	1.4%	1.3%	1.0%	1.8%	1.7%	1.4%	1.1%	0.9%	0.8%	0.7%	0.6%	0.5%	1.6%	1.1%	0.8%	1.0%	0.9%	0.7%	2.1%	1.9%	1.4%
Financial & insurance services	0.8%	0.6%	0.3%	1.3%	1.0%	0.8%	2.2%	2.0%	2.0%	2.0%	1.8%	1.8%	1.7%	1.0%	0.9%	1.3%	1.3%	1.2%	2.3%	1.9%	1.7%	1.9%	1.8%	1.7%	3.0%	2.8%	2.9%
Rental, hiring & real estate services	0.8%	0.8%	0.9%	0.9%	1.3%	1.2%	2.1%	1.9%	2.1%	1.4%	1.4%	1.6%	0.5%	0.8%	0.4%	1.1%	1.1%	1.3%	1.5%	1.5%	1.7%	1.8%	1.9%	2.2%	2.0%	2.0%	2.1%
Professional, scientific & technical services	2.1%	2.2%	1.4%	2.2%	2.2%	1.6%	4.3%	4.1%	4.2%	4.2%	3.8%	4.1%	2.5%	2.0%	2.4%	2.7%	2.8%	2.8%	3.7%	4.0%	4.3%	2.8%	3.0%	3.7%	5.5%	5.4%	5.6%
Administrative & support services	2.1%	2.4%	1.8%	1.6%	2.8%	2.2%	3.5%	3.8%	3.6%	2.2%	2.8%	2.6%	1.4%	2.0%	1.4%	1.3%	2.0%	1.9%	1.8%	2.6%	2.3%	2.3%	2.9%	3.2%	2.7%	3.2%	3.0%
Public administration & safety	11.3%	22.6%	22.5%	7.2%	7.0%	8.0%	5.6%	5.8%	7.1%	10.3%	11.2%	10.9%	9.7%	7.9%	12.1%	4.0%	3.5%	4.4%	3.1%	3.4%	3.9%	3.3%	3.3%	3.5%	6.3%	6.2%	6.7%
Education & training	8.7%	9.6%	7.6%	5.9%	6.3%	6.5%	6.3%	7.2%	7.1%	8.4%	8.6%	8.1%	7.8%	7.1%	7.2%	5.9%	6.5%	5.8%	6.5%	7.1%	6.2%	4.9%	5.4%	4.7%	7.5%	8.0%	7.6%
Health care & social assistance	19.6%	9.4%	14.0%	6.3%	6.4%	7.3%	7.7%	8.5%	9.5%	9.1%	9.7%	10.7%	6.5%	6.9%	8.8%	4.0%	4.5%	4.5%	7.0%	7.7%	7.5%	5.4%	6.2%	6.2%	9.2%	9.5%	10.2%
Arts & recreation services	0.9%	1.2%	1.3%	0.9%	1.0%	0.5%	1.7%	1.7%	1.6%	2.1%	1.3%	1.1%	1.1%	1.2%	1.0%	0.5%	0.5%	0.3%	0.7%	0.8%	0.5%	1.0%	1.0%	0.9%	1.5%	1.5%	1.4%
Other services	2.4%	2.9%	1.6%	2.8%	3.5%	2.5%	4.1%	3.6%	3.7%	3.9%	3.7%	3.5%	2.4%	2.6%	2.5%	2.7%	3.5%	4.0%	4.2%	4.7%	4.4%	3.2%	3.2%	3.0%	4.3%	4.0%	3.7%

Source: Australian Bureau of Statistics (2007)

Table 3.2: Socio-Economic Overview, Recreational Boating Catchments (Gladstone to SEQ South) and Queensland, 1996-2006

	Gladstone			Rockhampton			North Wide Bay			South Wide Bay			Darling Downs			South Central			South West QLD			SEQ North			SEQ South			QLD			
	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	
Population	57,980	59,798	66,124	104,105	103,545	110,209	84,845	87,670	94,488	134,688	139,814	159,140	171,228	179,935	189,840	38,655	40,186	40,325	9,498	9,188	8,611	1,284,239	1,416,896	1,588,324	820,925	915,531	1,031,517	3,319,186	3,585,639	3,973,960	
Ave. Annual Population Growth (%)	-	0.6%	2.0%	-	-0.1%	1.3%	-	0.7%	1.5%	-	0.7%	2.6%	-	1.0%	1.1%	-	0.8%	0.1%	-	-0.7%	-1.3%	-	2.0%	2.3%	-	2.2%	2.4%	-	1.6%	2.1%	
Age Distribution																															
0-14 years	25.3%	24.4%	23.2%	23.3%	22.3%	21.5%	23.1%	21.7%	20.4%	22.7%	21.3%	20.1%	23.8%	22.9%	22.3%	24.9%	23.7%	22.6%	22.7%	21.8%	20.3%	20.0%	19.7%	19.2%	22.7%	22.1%	21.0%	21.9%	21.3%	20.4%	
15-24 years	13.3%	12.7%	12.6%	15.5%	14.5%	14.0%	12.0%	11.4%	11.1%	11.4%	10.7%	10.3%	15.4%	14.5%	13.9%	11.5%	11.1%	11.0%	12.5%	11.7%	10.6%	15.5%	14.4%	14.3%	14.7%	13.8%	13.8%	14.8%	13.8%	13.6%	
25-34 years	15.7%	13.7%	13.4%	14.3%	12.8%	11.9%	12.9%	11.1%	9.5%	12.0%	10.5%	9.5%	13.6%	12.9%	11.5%	15.7%	14.6%	12.7%	17.1%	14.8%	12.3%	15.3%	14.9%	14.1%	15.0%	13.9%	13.1%	15.2%	14.2%	13.3%	
35-44 years	16.7%	16.7%	15.7%	14.7%	14.4%	13.9%	14.3%	14.0%	13.2%	14.3%	13.7%	12.7%	14.0%	14.1%	13.3%	15.0%	15.4%	14.8%	15.0%	15.4%	15.1%	14.8%	14.9%	14.8%	15.2%	15.0%	14.6%	15.0%	14.9%	14.6%	
45-54 years	13.0%	14.0%	14.6%	11.7%	13.3%	14.0%	13.0%	13.7%	13.9%	13.1%	14.0%	14.0%	12.0%	13.0%	13.4%	12.8%	13.2%	13.8%	11.9%	12.9%	15.1%	12.8%	13.7%	13.5%	12.9%	13.9%	13.7%	12.7%	13.7%	13.7%	
55-64 years	8.1%	9.6%	10.8%	8.6%	9.7%	11.1%	10.4%	12.2%	14.0%	11.0%	12.8%	14.9%	8.4%	9.5%	11.3%	9.7%	10.5%	12.0%	9.5%	11.2%	12.6%	8.3%	9.4%	11.0%	7.9%	9.5%	11.4%	8.4%	9.7%	11.4%	
65+ years	7.8%	8.9%	9.6%	11.8%	13.0%	13.7%	14.2%	15.9%	18.0%	15.6%	16.9%	18.4%	12.7%	13.1%	14.3%	10.4%	11.5%	13.1%	11.3%	12.2%	14.0%	13.1%	12.9%	13.1%	11.5%	11.8%	12.5%	12.0%	12.4%	13.0%	
Average age (years)	33.0	34.5	35.5	34.9	36.4	37.5	37.1	39.0	40.8	38.0	39.8	41.3	35.2	36.2	37.6	34.8	36.0	37.5	35.3	36.8	38.9	36.4	37.1	37.7	34.9	36.1	37.2	35.5	36.6	37.6	
Household Type (% of dwellings)																															
Couple families with children	39.0%	35.7%	33.8%	34.3%	30.6%	28.9%	34.3%	29.7%	26.9%	32.7%	28.0%	26.9%	35.1%	32.8%	30.4%	37.5%	33.6%	30.3%	32.6%	29.2%	25.9%	32.1%	30.1%	29.3%	35.4%	32.0%	30.8%	33.7%	30.7%	29.4%	
Couple families without children	24.7%	26.0%	26.8%	24.4%	25.0%	26.1%	29.9%	30.4%	31.9%	30.5%	31.5%	32.9%	26.0%	26.7%	28.3%	26.0%	26.5%	27.9%	22.5%	22.7%	24.1%	24.7%	25.4%	25.7%	25.2%	24.9%	25.5%	25.0%	25.3%	26.0%	
Single parent family	8.2%	9.2%	8.8%	10.3%	11.3%	11.0%	10.7%	11.9%	12.2%	10.9%	12.1%	12.2%	9.2%	9.8%	10.1%	7.6%	7.5%	7.8%	9.4%	8.7%	7.7%	10.0%	10.6%	10.2%	10.8%	12.1%	11.7%	9.9%	10.8%	10.5%	
Lone person households	17.5%	19.2%	18.8%	20.8%	22.8%	21.9%	21.7%	24.0%	23.4%	22.0%	23.8%	23.6%	22.3%	23.4%	23.2%	21.2%	22.3%	22.8%	22.1%	24.6%	26.7%	22.5%	23.3%	22.0%	18.3%	19.8%	19.2%	20.6%	21.8%	21.0%	
Average Household size	2.8	2.7	2.7	2.8	2.7	2.7	2.7	2.6	2.5	2.7	2.5	2.5	2.8	2.7	2.6	2.7	2.7	2.6	2.9	2.7	2.6	2.7	2.6	2.6	2.8	2.7	2.7	2.8	2.6	2.6	
Household Finances																															
% of households fully owning home	36.4%	36.7%	29.7%	40.6%	39.4%	33.3%	47.6%	44.7%	40.0%	47.7%	45.8%	41.1%	44.4%	41.6%	35.8%	47.0%	44.8%	37.2%	46.6%	45.4%	40.3%	39.6%	37.2%	30.1%	34.9%	33.3%	27.5%	38.7%	36.6%	30.4%	
% of households purchasing home	29.4%	27.3%	34.6%	22.1%	24.2%	29.3%	21.0%	22.3%	26.4%	21.8%	22.0%	27.5%	22.8%	24.9%	30.5%	16.7%	16.8%	24.1%	14.5%	13.9%	19.8%	25.3%	26.7%	32.0%	29.3%	28.7%	34.5%	24.8%	25.8%	31.4%	
% of households renting	33.0%	30.7%	28.4%	33.1%	30.9%	29.4%	26.7%	27.6%	25.9%	25.4%	26.0%	24.5%	28.9%	28.7%	27.7%	31.3%	31.6%	30.3%	33.4%	33.3%	30.6%	30.8%	31.0%	30.3%	30.9%	31.6%	29.2%	31.8%	31.6%	30.0%	
Average weekly household income	-	\$922	\$1,326	-	\$847	\$1,129	-	\$699	\$898	-	\$679	\$881	-	\$815	\$1,035	-	\$823	\$1,049	-	\$792	\$922	-	\$963	\$1,288	-	\$889	\$1,177	-	\$905	\$1,202	
Average weekly family income	\$960	\$1,234	\$1,667	\$867	\$1,112	\$1,441	\$709	\$881	\$1,132	\$665	\$852	\$1,102	\$803	\$1,055	\$1,322	\$715	\$1,044	\$1,334	\$700	\$1,058	\$1,250	\$991	\$1,271	\$1,601	\$878	\$1,135	\$1,464	\$918	\$1,175	\$1,499	
Average monthly housing loan repayment	\$801	\$892	\$1,325	\$762	\$815	\$1,196	\$683	\$665	\$1,066	\$687	\$738	\$1,095	\$737	\$839	\$1,188	\$701	\$811	\$1,085	\$544	\$661	\$791	\$914	\$1,053	\$1,599	\$890	\$974	\$1,522	\$870	\$977	\$1,475	
Average weekly rent payment	\$103	\$120	\$170	\$103	\$120	\$160	\$102	\$114	\$159	\$106	\$120	\$171	\$105	\$123	\$164	\$77	\$86	\$116	\$65	\$78	\$82	\$140	\$169	\$239	\$147	\$170	\$245	\$130	\$154	\$218	
Labour Market																															
Full-time employment (% labour force)	65.8%	61.6%	66.1%	61.0%	58.4%	62.7%	57.5%	55.5%	57.1%	55.3%	53.8%	56.0%	63.9%	60.3%	62.2%	69.4%	67.4%	67.4%	70.1%	70.3%	69.5%	61.1%	58.8%	61.6%	59.7%	57.6%	60.9%	61.4%	58.9%	61.8%	
Part-time employment (% labour force)	20.0%	23.6%	22.7%	23.8%	26.0%	25.9%	24.0%	27.2%	29.2%	24.1%	27.4%	29.7%	23.8%	26.7%	27.6%	19.3%	21.0%	23.1%	17.3%	17.4%	19.5%	25.1%									

3.3 Historical Fleet Size

Boat ownership is the principal demand driver for recreational boating infrastructure. The composition of a region's boating fleet will determine the quantity and type of recreational boating infrastructure demanded.

Queensland Transport maintains detailed monthly statistics on boat registrations by pre-reformed local government area (LGA). Boat registrations data is collected for various vessel types and length. Available electronic records for boat registrations date back to 1999. Within the boat registration data sets, the various boat categories include:

- Sail boats;
- Boats without sails, including:
 - Motor boats without sails;
 - Speed boats; and
 - Jet Skis (or personal recreation vehicles).

The scope for towing boats is an important defining factor in terms of the nature of recreational boating infrastructure required. Industry consultations revealed that the suitability for towing varies between boat types (i.e. boats with sails and boats without sails). For example, sail boats with keels become difficult to tow, especially if they do not have a retractable keel, at around five metres in length, whereas motorboats can generally be towed up to around eight metres. The Perth Recreational Boating Facilities Study (2008) identifies that at about 7.5 metres in length there is a transition from storage of boats on trailers to water-based pens or moorings.

Similarly, the suitability of vessels for dry storage depends on type and length of vessel. Dry storage is most suitable for vessels with shallow drafts. Therefore, dry storage is most suitable for smaller sail boats (i.e. sail boats up to eight metres) and boats without sails up to around ten metres.

Wet berthing a boat represents a much greater expense than trailing or dry berthing. Therefore, wet berths are generally used only by larger vessels, i.e. as sail boats over five metres and boats without sails over eight metres.

For the purposes of this study, a five year time series by boat length and type for each of the recreational boating catchments has been analysed. This section of the report provides an overview of the growth in the total recreational boat fleet and the estimated size of the recreational boat fleet between 2005 and 2009.

More detailed estimates, including the distribution of the size of registered boats by type in each recreational boating catchment, have been provided in Appendix A.

3.3.1 Boundary Changes

For the purposes of this study, a five year time series by boat length and type for each of the recreational boating catchments has been analysed. This section of the report provides an overview of the growth in the total recreational boat fleet and the estimated size of the recreational boat fleet between 2005 and 2009.

Boat registrations for 2008 and 2009 were provided at the regional council level, resulting in some regional councils being contained in multiple recreational boating catchments. As a result, estimations for the split of boat registrations by type and length were undertaken based on

historical data at the LGA level. The recreational boating catchments affected by Council boundary changes were:

- Central West QLD;
- Emerald;
- Mackay;
- Rockhampton;
- Gladstone;
- South Central; and
- Darling Downs.

Table 3.3 below summaries the regional council areas contained within multiple recreational boating catchments.

Table 3.3: Regional Councils contained within Multiple Recreational Boating Catchments

Regional Council within Multiple Recreational Boating Catchments	Recreational Boating Catchments Affected by Change
Barcardine Regional Council	<ul style="list-style-type: none"> • Central West QLD • Emerald
Issac Regional Council	<ul style="list-style-type: none"> • Emerald • Mackay
Central Highlands Regional Council	<ul style="list-style-type: none"> • Emerald • Rockhampton
Blackall Regional Council	<ul style="list-style-type: none"> • Central West QLD • Emerald
Banana Shire Council	<ul style="list-style-type: none"> • Gladstone • South Central
Western Downs Regional Council	<ul style="list-style-type: none"> • Darling Downs • South Central
Goondiwindi Regional Council	<ul style="list-style-type: none"> • Darling Downs • South Central

Source: Report of the Local Government Reform Commission (2007), Economic Associates estimates

3.3.2 Boat Registrations by Catchment

In the 2005-2009 period, all regions recorded an increase in the number of sail boats and motor boats registered, with the exception of sail boats in the South Central catchment.

Boat registrations in the SEQ North and SEQ South catchments account for approximately half of all boat registrations, with Cairns and Townsville also recording significant boat registrations.

The rate of growth in total boat registrations was highest in the South West QLD and Gladstone catchments. There was also significant growth in the number of boats registered in Queensland by overseas owners in the 2005 to 2009 period.

Table 3.4 below summarises the number of boat registrations by type and catchment.

Table 3.4: Number of Boat Registrations by Type and Recreational Boating Catchment, 2005-2009

	2005	2006	2007	2008	2009	Growth
<u>Boats with Sail</u>						
Cape York	38	40	35	46	49	28.9%
North West QLD	8	8	9	9	10	25.0%
Cairns	469	478	516	561	576	22.8%
Townsville	365	385	405	400	386	5.8%
Central West QLD	2	3	1	2	4	100.0%
Emerald	18	21	21	20	18	0.0%
Mackay	256	282	290	294	277	8.2%
Whitsunday	369	376	377	388	398	7.9%
Gladstone	173	169	185	192	195	12.7%
Rockhampton	200	218	220	209	216	8.0%
North Wide Bay	149	170	209	225	228	53.0%
South Wide Bay	411	435	448	494	494	20.2%
Darling Downs	40	54	51	54	65	62.5%
South Central	10	9	9	7	9	-10.0%
South West QLD	0	0	0	0	1	-
SEQ North	2,361	2,494	2,517	2,590	2,592	9.8%
SEQ South	1,418	1,474	1,544	1,623	1,607	13.3%
Interstate	74	72	95	100	101	36.5%
Overseas	-	-	-	-	-	-
Queensland	6,361	6,688	6,932	7,214	7,226	13.6%
<u>Boats without Sail</u>						
Cape York	1,503	1,482	1,294	1,741	1,748	16.3%
North West QLD	1,597	1,611	1,710	1,743	1,750	9.6%
Cairns	14,802	15,289	16,231	16,788	17,311	17.0%
Townsville	14,648	15,289	16,017	16,859	17,372	18.6%
Central West QLD	352	384	417	429	431	22.4%
Emerald	2,055	2,190	2,289	2,354	2,515	22.4%
Mackay	10,504	11,249	11,969	12,413	12,817	22.0%
Whitsunday	3,864	4,075	4,354	4,604	4,765	23.3%
Gladstone	6,136	6,574	7,198	7,510	7,804	27.2%
Rockhampton	6,809	7,218	7,661	8,057	8,354	22.7%
North Wide Bay	7,335	7,713	8,198	8,567	8,898	21.3%
South Wide Bay	11,606	12,166	12,881	13,524	13,940	20.1%
Darling Downs	5,866	6,030	6,204	6,498	6,859	16.9%
South Central	1,682	1,818	1,886	1,980	2,064	22.7%
South West QLD	139	159	169	219	239	71.9%
SEQ North	52,959	54,967	57,068	59,275	60,616	14.5%
SEQ South	45,261	47,523	49,518	51,983	53,542	18.3%
Interstate	478	528	548	618	613	28.2%
Overseas	7	5	1	5	5	-28.6%
Queensland	187,596	196,265	205,612	215,162	221,638	18.1%
<u>Total Boats</u>						
Cape York	1,541	1,522	1,329	1,787	1,797	16.6%
North West QLD	1,605	1,619	1,719	1,752	1,760	9.7%
Cairns	15,271	15,767	16,747	17,349	17,887	17.1%
Townsville	15,013	15,674	16,422	17,259	17,758	18.3%
Central West QLD	354	387	418	431	435	22.9%
Emerald	2,073	2,211	2,310	2,374	2,533	22.2%
Mackay	10,760	11,531	12,259	12,707	13,094	21.7%
Whitsunday	4,233	4,451	4,731	4,992	5,163	22.0%
Gladstone	6,309	6,743	7,383	7,702	7,999	26.8%
Rockhampton	7,009	7,436	7,881	8,266	8,570	22.3%
North Wide Bay	7,484	7,883	8,407	8,792	9,126	21.9%
South Wide Bay	12,017	12,601	13,329	14,018	14,434	20.1%
Darling Downs	5,906	6,084	6,255	6,552	6,924	17.2%
South Central	1,692	1,827	1,895	1,987	2,073	22.5%

	2005	2006	2007	2008	2009	Growth
South West QLD	139	159	169	219	240	72.7%
SEQ North	55,320	57,461	59,585	61,865	63,208	14.3%
SEQ South	46,679	48,997	51,062	53,606	55,149	18.1%
Interstate	552	600	643	718	714	29.3%
Overseas	7	5	1	5	5	-28.6%
Queensland	193,957	202,953	212,544	222,376	228,864	18.0%

Source: ABS (2010), Maritime Safety Queensland (various years)

In all recreational boating catchments, the majority of sail boat registrations were between five and fifteen metres in length, whereas the majority of motor boats were three to five metres in length.

Trailerable Boat Fleet

To estimate the size of the trailerable boat fleet, assumptions have been made in regards to the proportion of boats trailered by type and length, as summarised in Table 3.5 below. It has been assumed that no boat over ten metres in length is trailerable and the incidence of trailerable boats declines significantly for boats over five metres in length.

For boats registered in Queensland but with international ownership, it has been assumed that all of these boats are kept in marinas, and are hence not part of the trailerable boat fleet.

Table 3.5: Estimated Proportion of Trailerable Boats, 2005-09

	Sail Boats	Boats without Sail
<3 metres	100.0%	100.0%
3-5 metres	90.0%	100.0%
5-8 metres	50.0%	85.0%
8-10 metres	25.0%	50.0%
10-12 metres	0.0%	0.0%
12-15 metres	0.0%	0.0%
15-25 metres	0.0%	0.0%
>25 metres	0.0%	0.0%

Source: Economic Associates estimates

It is estimated that the trailerable boat fleet accounts for between approximately 86% and 99% of all boats within the recreational boat catchments. However, the proportion of boats that were trailerable declined between 2005 and 2009 (from 92.7% of total boats in 2005 to 92.2% of total boats in 2009).

The rate of growth in the size of the trailerable boat fleet was estimated to be highest in South West Queensland and Gladstone. All catchments recorded a decrease in the incidence of trailerable boats between 2005 and 2009.

Table 3.6: Estimated Size of the Trailerable Boat Fleet, 2005-2009

	2005	2006	2007	2008	2009	Growth
<u>Trailable Boat Fleet</u>						
Cape York	1,433	1,406	1,232	1,651	1,660	15.8%
North West QLD	1,555	1,569	1,662	1,693	1,701	9.4%
Cairns	14,273	14,717	15,594	16,088	16,545	15.9%
Townsville	14,279	14,873	15,541	16,319	16,788	17.6%
Central West QLD	346	377	409	421	421	21.6%
Emerald	1,992	2,118	2,203	2,270	2,414	21.2%
Mackay	10,200	10,883	11,531	11,931	12,296	20.5%
Whitsunday	3,670	3,845	4,085	4,305	4,456	21.4%
Gladstone	5,948	6,360	6,947	7,239	7,507	26.2%
Rockhampton	6,554	6,940	7,333	7,682	7,951	21.3%
North Wide Bay	7,202	7,576	8,052	8,407	8,724	21.1%
South Wide Bay	11,296	11,817	12,471	13,071	13,460	19.2%
Darling Downs	5,730	5,876	6,041	6,313	6,662	16.3%
South Central	1,645	1,774	1,842	1,930	2,008	22.1%
South West QLD	136	156	165	213	232	70.1%
SEQ North	50,780	52,555	54,398	56,431	57,644	13.5%
SEQ South	41,920	43,902	45,761	47,984	49,467	18.0%
Interstate	407	437	448	506	512	25.7%
Overseas	-	-	-	-	-	-
Queensland	179,366	187,180	195,715	204,451	210,445	17.3%
<u>Proportion of Total Boats</u>						
Cape York	93.0%	92.4%	92.7%	92.4%	92.4%	-
North West QLD	96.9%	96.9%	96.7%	96.6%	96.6%	-
Cairns	93.5%	93.3%	93.1%	92.7%	92.5%	-
Townsville	95.1%	94.9%	94.6%	94.6%	94.5%	-
Central West QLD	97.8%	97.5%	97.8%	97.6%	96.8%	-
Emerald	96.1%	95.8%	95.4%	95.6%	95.3%	-
Mackay	94.8%	94.4%	94.1%	93.9%	93.9%	-
Whitsunday	86.7%	86.4%	86.3%	86.2%	86.3%	-
Gladstone	94.3%	94.3%	94.1%	94.0%	93.8%	-
Rockhampton	93.5%	93.3%	93.0%	92.9%	92.8%	-
North Wide Bay	96.2%	96.1%	95.8%	95.6%	95.6%	-
South Wide Bay	94.0%	93.8%	93.6%	93.2%	93.3%	-
Darling Downs	97.0%	96.6%	96.6%	96.4%	96.2%	-
South Central	97.2%	97.1%	97.2%	97.1%	96.9%	-
South West QLD	98.1%	98.0%	97.3%	97.4%	96.6%	-
SEQ North	91.8%	91.5%	91.3%	91.2%	91.2%	-
Interstate	89.8%	89.6%	89.6%	89.5%	89.7%	-
SEQ South	73.8%	72.8%	69.7%	70.4%	71.7%	-
Overseas	-	-	-	-	-	-
Queensland	92.7%	92.5%	92.4%	92.2%	92.2%	-

Source: Economic Associates estimates

4 TRAILERABLE FLEET PROJECTIONS

Trailerable boat ownership is the most significant demand driver for boat ramps. The composition of a region's boating fleet will determine the quantity of boat ramps demanded. Therefore, to estimate demand for boat ramp lanes within each catchment in Queensland, it is necessary to estimate the size and composition of the boat fleet within each catchment area. Boat registrations represent the best source of data for estimating the size of the boat fleet. While it is recognised that unregistered craft may also make use of boat ramps, there are no data sets available to assess this impact on boat ramp lane demand, but it is unlikely to be significant.

Boats are frequently used in local government areas outside of where they are registered, however the catchments have been defined to minimise the incidence of trailerable boats being utilised outside the catchment in which they are registered³.

4.1 Methodology for Preparing Trailerable Fleet Projections

In order to prepare trailerable fleet projections, assumptions are made regarding the following factors:

- Projected population by catchment (PIFU medium series projections used);
- Projected incidence of boat ownership (boat registrations per 1,000 persons); and
- Projected incidence of boats requiring a boat ramp (informed by historical data trends).

Analysis has been undertaken for two scenarios, namely the base case (or trend scenario) and the increased incidence of boat ownership scenario:

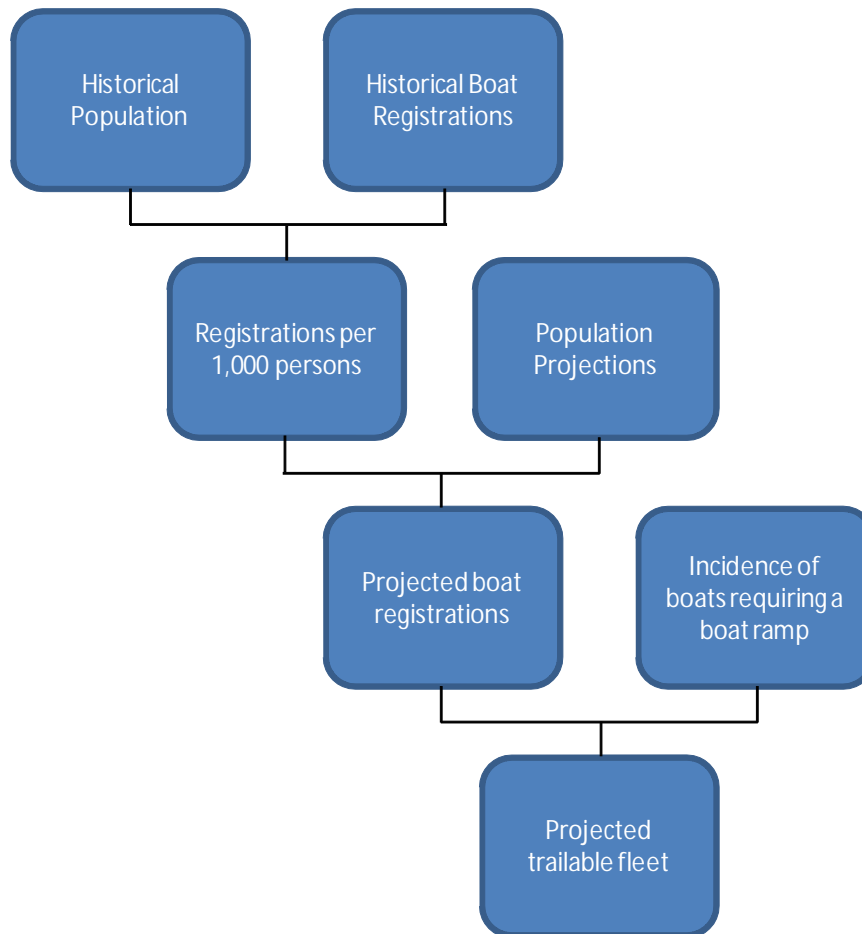
- *Base case scenario* – The base case scenario assumes that the incidence of boat ownership per 1,000 persons remains at the average level recorded between 2005 and 2009. The incidence of boat ownership is also kept constant throughout the projection period; and
- *Increasing incidence of boat ownership scenario* – The increasing incidence of boat ownership scenario assumes that the incidence of boat ownership per 1,000 persons continues to increase throughout the projection period, taking into account historical trends in the incidence of boat ownership.

The increasing incidence of boat ownership scenario has been presented to take into account the findings of Maritime Safety Queensland (2004), which highlighted that over 40% of recreational boat users surveyed were 55 years or over in age. As the proportion of persons aged 55 years and over increases throughout the projection period, it is anticipated that the incidence of boat ownership would also increase, ultimately impacting boat lane demand.

Figure 4.1 below outlines the methodology for preparing trailerable fleet projections.

³ It is recognised that the incidence of trailerable boats in the SEQ North catchment utilising facilities in the SEQ South catchment is likely to be higher than for other catchments.

Figure 4.1: Methodology for Preparing Trailerable Fleet Projections



4.2 Historical Population & Boat Registrations

Analysis of the catchment area's estimated resident population (ERP) and boat registrations between 2005 and 2009 indicates a clear relationship between the two variables. Appendix A provides detailed tables in regards to ERP and boat registrations by type for each catchment between 2005 and 2009.

Boat ownership was significantly higher in the coastal catchments than inland catchments. On average, the highest incidence of boat ownership was in the following catchments:

- Whitsunday (145.80 boat registrations per 1,000 persons);
- Gladstone (103.55 boat registrations per 1,000 persons);
- Mackay (100.44 boat registrations per 1,000 persons);
- North Wide Bay (81.45 boat registrations per 1,000 persons); and
- South Wide Bay (78.35 boat registrations per 1,000 persons).

Overall, the incidence of boat ownership per 1,000 persons has increased in Queensland, with growth highest in South West Queensland (incidence of boat ownership increased at an average annual rate of 15.6% per annum).

Boat ownership was particularly low in the South West QLD catchment, averaging 22.39 boat registrations per 1,000 persons between 2005 and 2009. The incidence of motor boat ownership was significantly higher than sail boat ownership in all catchments.

Table 4.1 below summarises the number of boat registrations per 1,000 persons in the recreational boating catchments between 2005 and 2009.

Table 4.1: Registrations per 1,000 Persons, Recreational Boating Catchments, 2005-2009

	2005	2006	2007	2008	2009	Average	Ave. Ann. Change 2005-09
Sail Boats							
Cape York	1.39	1.45	1.24	1.60	1.69	1.48	5.0%
North West QLD	0.24	0.24	0.27	0.26	0.29	0.26	5.1%
Cairns	2.18	2.17	2.27	2.39	2.38	2.28	2.2%
Townsville	1.78	1.83	1.88	1.81	1.70	1.80	-1.2%
Central West QLD	0.18	0.27	0.09	0.19	0.37	0.22	20.1%
Emerald	0.59	0.67	0.66	0.62	0.54	0.61	-2.3%
Mackay	2.27	2.40	2.41	2.38	2.19	2.33	-1.0%
Whitsunday	12.08	11.99	11.73	11.67	11.64	11.82	-0.9%
Gladstone	2.62	2.49	2.66	2.68	2.65	2.62	0.2%
Rockhampton	1.75	1.86	1.83	1.71	1.74	1.78	-0.2%
North Wide Bay	1.53	1.70	2.05	2.15	2.13	1.91	8.6%
South Wide Bay	2.59	2.65	2.65	2.83	2.74	2.69	1.4%
Darling Downs	0.20	0.27	0.25	0.26	0.30	0.25	11.0%
South Central	0.24	0.22	0.21	0.17	0.21	0.21	-3.4%
South West QLD	0.00	0.00	0.00	0.00	0.12	0.02	n.a.
SEQ North	1.47	1.52	1.50	1.50	1.47	1.49	-0.1%
SEQ South	1.37	1.38	1.40	1.43	1.37	1.39	0.2%
Interstate	0.00	0.00	0.01	0.01	0.01	0.01	6.3%
Total	1.59	1.63	1.65	1.67	1.63	1.64	0.6%
Boats without Sail							
Cape York	55.14	53.85	45.83	60.45	60.42	55.14	2.3%
North West QLD	48.18	48.50	51.17	51.00	51.54	50.08	1.7%
Cairns	68.89	69.28	71.48	71.41	71.62	70.54	1.0%
Townsville	71.52	72.84	74.37	76.15	76.41	74.26	1.7%
Central West QLD	31.57	35.05	38.46	39.89	40.15	37.03	6.2%
Emerald	67.40	69.88	71.79	72.45	75.30	71.36	2.8%
Mackay	93.22	95.91	99.65	100.62	101.16	98.11	2.1%
Whitsunday	126.51	129.96	135.52	138.52	139.35	133.97	2.4%
Gladstone	93.09	96.91	103.66	104.90	106.09	100.93	3.3%
Rockhampton	59.44	61.60	63.87	66.08	67.11	63.62	3.1%
North Wide Bay	75.25	77.22	80.23	81.94	83.05	79.54	2.5%
South Wide Bay	73.17	74.09	76.16	77.57	77.32	75.66	1.4%
Darling Downs	29.35	29.60	30.04	30.99	32.03	30.40	2.2%
South Central	40.59	43.50	44.95	46.69	48.22	44.79	4.4%
South West QLD	16.37	19.00	20.61	26.71	29.12	22.36	15.5%
SEQ North	33.00	33.54	33.98	34.39	34.27	33.84	0.9%
SEQ South	43.57	44.55	45.02	45.89	45.81	44.97	1.3%
Interstate	0.03	0.03	0.03	0.04	0.03	0.03	4.7%
Total	46.96	47.98	49.00	49.94	50.09	48.79	1.6%
All Boats							
Cape York	56.54	55.30	47.07	62.05	62.12	56.62	2.4%
North West QLD	48.42	48.74	51.44	51.27	51.84	50.34	1.7%
Cairns	71.07	71.45	73.76	73.80	74.00	72.81	1.0%
Townsville	73.30	74.67	76.25	77.96	78.11	76.06	1.6%
Central West QLD	31.75	35.32	38.56	40.08	40.52	37.25	6.3%
Emerald	67.99	70.55	72.45	73.06	75.84	71.98	2.8%
Mackay	95.49	98.31	102.06	103.01	103.35	100.44	2.0%

	2005	2006	2007	2008	2009	Average	Ave. Ann. Change 2005-09
Whitsunday	138.59	141.96	147.25	150.19	150.99	145.80	2.2%
Gladstone	95.72	99.40	106.32	107.58	108.74	103.55	3.2%
Rockhampton	61.18	63.46	65.71	67.80	68.84	65.40	3.0%
North Wide Bay	76.78	78.93	82.28	84.10	85.18	81.45	2.6%
South Wide Bay	75.76	76.74	78.81	80.40	80.06	78.35	1.4%
Darling Downs	29.55	29.87	30.28	31.25	32.33	30.66	2.3%
South Central	40.83	43.72	45.16	46.85	48.43	45.00	4.4%
South West QLD	16.37	19.00	20.61	26.71	29.24	22.39	15.6%
SEQ North	34.47	35.06	35.48	35.89	35.74	35.33	0.9%
SEQ South	44.94	45.93	46.42	47.32	47.18	46.36	1.2%
Interstate	0.03	0.04	0.04	0.04	0.04	0.04	4.9%
Total	48.55	49.61	50.65	51.61	51.72	50.43	1.6%

Note: A positive (negative) average annual change figure represents an increase (decrease) in the incidence of boat ownership within the catchment.

Source: ABS (2010), Maritime Safety Queensland (various years)

4.3 Projected Size of Trailerable Boat Fleet

4.3.1 Population Projections

Both the base case scenario and the increasing incidence of boat ownership scenario rely on the latest edition of the Planning Information and Forecasting Unit's medium series population projections.

All recreational boating catchments are anticipated to record positive population growth between 2010 and 2031, with the rate of population growth anticipated to be highest in:

- SEQ South (2.4% per annum);
- Gladstone (2.0% per annum);
- Emerald (1.9% per annum);
- Mackay (1.7% per annum).

Table 4.2 below summarises the projected population growth by recreational boating catchment between 2010 and 2031.

Table 4.2: Population Projections by Recreational Boating Catchment, 2010-2031

	2010	2011	2016	2021	2026	2031	Ave. Ann. Growth 2010-2031
Cape York	28,946	28,964	30,024	31,322	32,811	34,262	0.8%
North West QLD	35,525	37,172	35,787	35,789	36,551	37,771	0.3%
Cairns	243,111	244,516	261,689	277,620	293,929	311,411	1.2%
Townsville	231,647	236,035	263,827	285,419	302,488	317,753	1.5%
Central West QLD	10,721	10,708	10,982	11,214	11,537	11,968	0.5%
Emerald	34,494	35,627	39,633	43,452	47,087	50,744	1.9%
Mackay	131,770	137,049	157,401	172,813	182,252	189,300	1.7%
Whitsunday	34,745	35,303	39,389	42,840	45,551	48,041	1.6%
Gladstone	75,380	77,244	85,191	93,540	102,982	113,104	2.0%
Rockhampton	127,449	130,476	139,989	149,482	159,391	169,268	1.4%
North Wide Bay	107,752	108,374	116,158	124,089	133,294	143,632	1.4%
South Wide Bay	183,399	186,561	204,573	220,404	236,065	251,526	1.5%
Darling Downs	217,879	221,666	239,394	258,455	276,637	294,999	1.5%
South Central	42,903	43,002	44,408	45,995	47,181	48,083	0.5%

	2010	2011	2016	2021	2026	2031	Ave. Ann. Growth 2010-2031
South West QLD	8,155	8,103	8,101	8,138	8,163	8,183	0.0%
SEQ North	1,788,569	1,808,711	1,969,757	2,098,534	2,197,490	2,277,537	1.2%
SEQ South	1,193,271	1,218,202	1,394,019	1,579,602	1,771,029	1,966,300	2.4%
Queensland	4,495,717	4,567,713	5,040,323	5,478,708	5,884,440	6,273,882	1.6%
Interstate	17,797,209	18,065,385	19,416,815	20,773,900	22,111,609	23,399,444	1.3%

Source: PIFU (2009)

4.3.2 Projected Recreational Boat Fleet

The projected fleet size in each catchment is estimated by applying the projected boat ownership ratio to the projected increase in population for the catchment area and then adding the projected growth in boat registrations to 2009 boat registrations.

Projections have not been undertaken for overseas based owners of boats registered in Queensland, as it has been assumed that these boats would be kept in marinas, hence having no impact on boat ramp demand. Furthermore, overseas boats account for only a marginal proportion of total boat registrations in Queensland⁴ (less than 0.01% of total registrations in Queensland).

Base Case Scenario

In the base case scenario, it has been assumed that persons per boat registration remains constant at the average 2005 to 2009 level throughout the projection period.

The SEQ North and SEQ South catchments are anticipated to have the highest number of boat registrations in Queensland, with Cairns and Townsville also recording significant registrations. The rate of growth in boat registrations is projected to be highest in the SEQ South, Gladstone, Emerald and Mackay catchments.

Table 4.3 below summarises the projected boat registrations within each recreational boating catchment between 2010 and 2031.

Table 4.3: Projected Boat Registrations by Type - Base Case Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031
<u>Estimated Boats with Sail</u>						
Cape York	49	49	51	53	55	57
North West QLD	10	11	10	10	11	11
Cairns	579	582	622	658	695	735
Townsville	394	402	452	490	521	549
Central West QLD	4	4	4	4	4	4
Emerald	19	19	22	24	26	29
Mackay	289	301	349	385	407	423
Whitsunday	404	411	459	500	532	562
Gladstone	200	205	226	247	272	299
Rockhampton	221	227	244	260	278	296
North Wide Bay	229	230	245	261	278	298
South Wide Bay	502	511	559	602	644	686
Darling Downs	66	67	71	76	81	86
South Central	9	9	9	10	10	10
South West QLD	1	1	1	1	1	1

⁴ Boat registrations for overseas residents account for less than 0.01% of total boat registrations in Queensland.

	2010	2011	2016	2021	2026	2031
SEQ North	2,622	2,652	2,892	3,084	3,232	3,351
SEQ South	1,641	1,676	1,920	2,179	2,445	2,717
Interstate	102	104	111	118	125	132
Queensland	7,342	7,460	8,247	8,963	9,618	10,244
<u>Estimated Boats without Sail</u>						
Cape York	1,749	1,750	1,808	1,880	1,962	2,042
North West QLD	1,829	1,911	1,842	1,842	1,880	1,941
Cairns	17,410	17,509	18,721	19,845	20,996	22,230
Townsville	17,692	18,018	20,084	21,689	22,957	24,092
Central West QLD	431	430	440	449	461	477
Emerald	2,593	2,674	2,960	3,233	3,493	3,754
Mackay	13,316	13,834	15,833	17,347	18,274	18,967
Whitsunday	4,839	4,914	5,462	5,925	6,289	6,623
Gladstone	7,988	8,176	8,980	9,824	10,779	11,802
Rockhampton	8,542	8,735	9,341	9,946	10,577	11,206
North Wide Bay	8,947	8,997	9,617	10,248	10,981	11,805
South Wide Bay	14,175	14,415	15,779	16,978	18,164	19,335
Darling Downs	6,972	7,087	7,627	8,207	8,760	9,319
South Central	2,068	2,073	2,136	2,207	2,260	2,301
South West QLD	238	237	237	237	238	238
SEQ North	61,290	61,972	67,424	71,783	75,133	77,843
SEQ South	54,641	55,763	63,675	72,026	80,640	89,427
Interstate	622	631	675	720	764	806
Queensland	225,342	229,126	252,641	274,387	294,610	314,208
<u>Total Boats</u>						
Cape York	1,798	1,799	1,859	1,933	2,017	2,099
North West QLD	1,839	1,922	1,852	1,853	1,891	1,952
Cairns	17,989	18,091	19,342	20,503	21,692	22,965
Townsville	18,086	18,420	20,536	22,179	23,479	24,641
Central West QLD	435	434	444	453	465	481
Emerald	2,612	2,694	2,982	3,257	3,519	3,783
Mackay	13,604	14,135	16,182	17,732	18,681	19,390
Whitsunday	5,243	5,325	5,921	6,425	6,821	7,184
Gladstone	8,188	8,381	9,206	10,072	11,051	12,101
Rockhampton	8,764	8,962	9,585	10,206	10,855	11,502
North Wide Bay	9,176	9,227	9,862	10,509	11,259	12,103
South Wide Bay	14,678	14,926	16,338	17,580	18,808	20,021
Darling Downs	7,038	7,154	7,698	8,283	8,841	9,404
South Central	2,077	2,082	2,145	2,217	2,270	2,311
South West QLD	239	238	238	238	239	239
SEQ North	63,912	64,624	70,316	74,867	78,365	81,194
SEQ South	56,282	57,438	65,595	74,205	83,085	92,144
Interstate	724	734	786	838	889	938
Queensland	232,684	236,586	260,888	283,349	304,227	324,453

Note: Projected boat registrations do not include overseas owned boats.

Source: PIFU (2009), Maritime Safety Queensland (various years), Economic Associates estimates

Increased Incidence of Boat Ownership Scenario

In the increased incidence of boat ownership scenario, it has been assumed that the growth in boat registrations per 1,000 persons continues to increase, but at a lower rate than recorded in the 2005-2009 period.

For the purposes of this assessment, the average annual increase in the incidence of boat registrations per 1,000 persons is assumed to be:

- 75% of the 2005-09 average annual growth rate between 2009 and 2021; and

- 50% of the 2005-09 average annual growth rate between 2021 and 2031.

By 2031, under the increased incidence of boat ownership scenario, the total number of boats in Queensland is projected to be 28.4% higher than under the base case scenario.

Table 4.4: Projected Boat Registrations by Type - Increased Incidence of Boat Ownership Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031
<u>Estimated Boats with Sail</u>						
Cape York	51	53	66	82	97	114
North West QLD	11	12	14	16	19	22
Cairns	589	602	699	806	901	1,008
Townsville	390	394	420	435	447	455
Central West QLD	4	4	4	4	5	5
Emerald	18	19	19	19	20	20
Mackay	286	295	327	347	357	362
Whitsunday	402	405	437	458	476	491
Gladstone	200	206	229	254	281	310
Rockhampton	221	226	241	256	272	287
North Wide Bay	244	261	380	552	726	958
South Wide Bay	508	522	603	685	759	838
Darling Downs	71	78	125	198	273	375
South Central	9	9	8	7	7	6
South West QLD	1	1	1	1	1	1
SEQ North	2,619	2,647	2,872	3,049	3,185	3,293
SEQ South	1,951	1,995	2,298	2,621	2,952	3,292
Interstate	107	114	154	207	256	314
Queensland	7,682	7,841	8,896	9,995	11,030	12,150
<u>Estimated Boats without Sail</u>						
Cape York	1,779	1,811	2,045	2,324	2,576	2,848
North West QLD	1,854	1,965	2,015	2,147	2,287	2,465
Cairns	17,538	17,768	19,720	21,695	23,532	25,543
Townsville	17,922	18,489	21,988	25,309	27,952	30,598
Central West QLD	436	440	480	520	557	602
Emerald	2,652	2,796	3,450	4,196	4,871	5,623
Mackay	13,536	14,295	17,724	21,007	23,311	25,477
Whitsunday	4,930	5,100	6,229	7,415	8,372	9,376
Gladstone	8,195	8,605	10,722	13,300	15,878	18,911
Rockhampton	8,749	9,162	11,010	13,167	15,138	17,333
North Wide Bay	9,116	9,339	10,977	12,860	14,687	16,827
South Wide Bay	14,327	14,726	17,002	19,288	21,380	23,576
Darling Downs	7,093	7,335	8,597	10,071	11,382	12,815
South Central	2,136	2,211	2,681	3,260	3,720	4,217
South West QLD	240	242	257	274	286	298
SEQ North	61,734	62,873	70,940	78,302	83,950	89,084
SEQ South	60,330	62,170	74,552	88,525	102,394	117,281
Interstate	644	676	861	1,092	1,300	1,540
Queensland	233,212	240,005	281,249	324,751	363,574	404,413
<u>Total Boats</u>						
Cape York	1,830	1,864	2,110	2,406	2,673	2,962
North West QLD	1,865	1,977	2,029	2,163	2,306	2,487
Cairns	18,127	18,370	20,420	22,500	24,433	26,550
Townsville	18,312	18,883	22,408	25,743	28,398	31,054
Central West QLD	440	444	484	525	562	607
Emerald	2,670	2,815	3,469	4,215	4,890	5,643
Mackay	13,822	14,591	18,051	21,354	23,668	25,839
Whitsunday	5,331	5,506	6,665	7,873	8,848	9,867
Gladstone	8,395	8,810	10,950	13,554	16,159	19,221
Rockhampton	8,969	9,388	11,250	13,423	15,409	17,620

	2010	2011	2016	2021	2026	2031
North Wide Bay	9,360	9,600	11,357	13,412	15,413	17,785
South Wide Bay	14,835	15,248	17,605	19,973	22,139	24,414
Darling Downs	7,165	7,414	8,721	10,269	11,654	13,189
South Central	2,145	2,220	2,689	3,268	3,727	4,224
South West QLD	241	243	258	275	287	299
SEQ North	64,354	65,520	73,812	81,350	87,135	92,377
SEQ South	62,281	64,165	76,849	91,146	105,345	120,573
Interstate	751	790	1,015	1,298	1,556	1,854
Queensland	240,894	247,846	290,144	334,746	374,604	416,563

Note: Projected boat registrations do not include overseas owned boats.

Source: PIFU (2009), Maritime Safety Queensland (various years), Economic Associates estimates

4.3.3 Projected Trailerable Fleet

To estimate the projected size of the trailerable boat fleet, the proportions as outlined in Table 4.5 below have been applied to total fleet projections. Under both scenarios, it has been assumed that the incidence of boats requiring a boat ramp remains constant throughout the projection period.

The incidence of boats requiring a boat ramp is based on the proportions presented in Table 3.5, applied to the boat fleet of each individual catchment.

It has been assumed that 92.0% of boats registered in Queensland require a boat ramp, comprising 25.8% of boats with sail and 94.1% of boats without sail.

The incidence of boats requiring a boat ramp (i.e. those not stored in a wet marina berth) was highest in Central West Queensland, South Central and North West Queensland and lowest in Whitsunday and for interstate boats.

In all recreational boating catchments, a higher incidence of boats without sail would require a boat ramp than sail boats.

Table 4.5: Incidence of Boats Requiring a Boat Ramp, Recreational Boating Catchments

	Boats with Sail	Boats within Sail	All Boats
Cape York	23.6%	94.3%	92.4%
North West QLD	27.5%	97.0%	96.6%
Cairns	23.6%	94.8%	92.5%
Townsville	26.1%	96.1%	94.5%
Central West QLD	45.0%	97.3%	96.8%
Emerald	29.5%	95.8%	95.3%
Mackay	24.8%	95.4%	93.9%
Whitsunday	16.4%	92.1%	86.3%
Gladstone	22.9%	95.6%	93.9%
Rockhampton	26.9%	96.6%	92.8%
North Wide Bay	23.2%	97.4%	95.6%
South Wide Bay	26.9%	95.6%	93.2%
Darling Downs	26.9%	96.8%	96.2%
South Central	26.9%	97.0%	96.7%
South West QLD	26.9%	96.6%	96.3%
SEQ North	26.9%	94.0%	91.2%
SEQ South	28.4%	91.5%	89.7%
Interstate	12.7%	81.4%	71.7%
Queensland	25.8%	94.1%	92.0%

Source: Economic Associates estimates

Base Case Scenario

Between 2010 and 2031, the largest increases in boats requiring a boat ramp are projected to occur in:

- SEQ South (additional 32,148 boats);
- SEQ North (additional 15,798 boats);
- Townsville (additional 6,209 boats); and
- Mackay (additional 5,449 boats).

The Central West Queensland and South West QLD catchments are not anticipated to record significant demand growth between 2010 and 2031.

Table 4.6: Projected Boats Requiring a Boat Ramp - Base Case Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031	Change
Cape York	1,660	1,661	1,717	1,785	1,863	1,939	279
North West QLD	1,777	1,857	1,790	1,790	1,827	1,887	109
Cairns	16,640	16,735	17,899	18,979	20,084	21,268	4,629
Townsville	17,098	17,415	19,419	20,976	22,207	23,308	6,209
Central West QLD	421	420	430	439	450	466	45
Emerald	2,490	2,568	2,844	3,107	3,357	3,609	1,120
Mackay	12,777	13,276	15,204	16,664	17,558	18,225	5,449
Whitsunday	4,525	4,595	5,111	5,546	5,888	6,202	1,677
Gladstone	7,685	7,867	8,642	9,457	10,379	11,367	3,682
Rockhampton	8,131	8,315	8,895	9,474	10,078	10,680	2,549
North Wide Bay	8,772	8,821	9,429	10,049	10,769	11,577	2,805
South Wide Bay	13,684	13,916	15,223	16,397	17,534	18,679	4,995
Darling Downs	6,767	6,879	7,403	7,968	8,505	9,049	2,282
South Central	2,009	2,013	2,075	2,144	2,196	2,235	226
South West QLD	230	229	229	230	230	231	1
SEQ North	58,316	58,967	64,105	68,331	71,488	74,114	15,798
SEQ South	50,482	51,519	58,831	66,549	74,510	82,631	32,148
Interstate	519	526	563	600	637	672	153
Queensland	213,983	217,581	239,809	260,483	279,559	298,139	84,156

Source: Economic Associates estimates

Increased Incidence of Boat Ownership Scenario

Between 2010 and 2031, the largest increases in boats requiring a boat ramp are projected to occur in:

- SEQ South (additional 52,512 boats);
- SEQ North (additional 25,956 boats);
- Townsville (additional 12,234 boats); and
- Mackay (additional 11,461 boats).

The Central West QLD and South West QLD catchments are anticipated to record limited growth in boats requiring a boat ramp between 2010 and 2031.

Table 4.7: Projected Boats Requiring a Boat Ramp - Increased Incidence of Boat Ownership Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031	Change
Cape York	1,689	1,720	1,943	2,210	2,452	2,712	1,023
North West QLD	1,802	1,910	1,959	2,088	2,224	2,398	596
Cairns	16,765	16,987	18,870	20,777	22,550	24,491	7,726
Townsville	17,319	17,866	21,245	24,450	27,000	29,553	12,234
Central West QLD	426	431	469	509	545	589	163
Emerald	2,546	2,685	3,314	4,031	4,680	5,403	2,858
Mackay	12,987	13,717	17,010	20,161	22,371	24,448	11,461
Whitsunday	4,609	4,767	5,816	6,916	7,804	8,735	4,126
Gladstone	7,883	8,278	10,314	12,793	15,272	18,188	10,305
Rockhampton	8,327	8,720	10,479	12,532	14,407	16,496	8,169
North Wide Bay	8,940	9,162	10,790	12,669	14,495	16,639	7,699
South Wide Bay	13,828	14,213	16,396	18,629	20,635	22,780	8,952
Darling Downs	6,886	7,122	8,346	9,808	11,080	12,517	5,631
South Central	2,075	2,148	2,605	3,168	3,615	4,098	2,024
South West QLD	233	234	248	265	277	289	57
SEQ North	58,717	59,798	67,401	74,446	79,770	84,674	25,956
SEQ South	55,779	57,475	68,895	81,777	94,566	108,290	52,512
Interstate	538	565	719	913	1,088	1,289	752
Queensland	220,976	227,039	264,321	303,608	338,443	375,130	154,154

Source: Economic Associates estimates

5 INFRASTRUCTURE DEMAND ASSESSMENT

The demand for boating infrastructure will be determined by both the size of the trailerable fleet within the catchment and the likelihood of this population using their boats during peak periods.

5.1 Literature Findings

5.1.1 Behaviour of Recreational Boaters

The boating behaviour of recreational boaters was surveyed by the National Maritime Safety Committee in 2009. In relation to identifying peak periods, some key findings include:

- 95% of boaters use their boats in December and January. Only one third of boaters use their boats in June and July.
- Weekends are the most popular times for operating a boat with 70% of boaters operating their boat on Saturdays and 83% of boaters operating their boats on Sundays.
- Almost half of respondents use their boats between 6am and 10am.
- The most popular holiday period for operating a boat is Christmas/New Year with 73% of boaters operating during the holiday period. Easter is the next most popular holiday with 48% of boaters using their boats during this holiday period.
- Almost 40% of boaters use their boats 2-3 times per month. An additional 20% of boaters use their boats once a week.
- Almost half of respondents spend 3-5 hours on the water when they use their boats.

5.1.2 Peak Demand & Capacity

A Perth study and a Redland City study have been identified as endeavouring to count the use of boat ramps during the peak usage period of public-holiday long-weekends. The Perth study identified the total peak number of car/trailer units recorded at 32 public boat launching sites in January 2005 of 1,944 (Department for Planning and Infrastructure WA, 2009). Taking a percentage of the total 38,970 registered recreational boats (under 7.5 metres) in January 2005, a usage rate of 5% of Perth's public boat launching facilities on a peak boating day is derived. While the Redland City study did not undertake this calculation directly, the study counted a total peak number of car/trailer units of 1,220 at 16 public boat ramps in May 2009 (Rose *et. al.*, 2009). From the report, total boat registrations in May 2009 in Redlands were 10,551, giving a usage rate of 11.5%. However, boat registrations were not defined by the size of the vessel nor specific to May of 2009.

A launching facility's ability to cope with peak demand can be affected by many factors including location and the number of ramp lanes available. Surveyed recreational boat users identify that they choose a particular ramp because it is either close to home (48%) or close to the destination (42%) (Cameron McNamara, 1984).

Below are some key points regarding boat ramp capacity (Department of Harbours and Marine, 1980):

- Ramps are essentially used for 6.5 hours per day;

- The hourly launch or retrieval rate therefore is 15 boats per hour (based on an average launch or retrieval time of 4 minutes);
- Capacity is approximately 50 boats per lane per day; and
- One boat ramp lane is required for every 250 registered trailer boats; and
- Peak usage on an individual day is expected to be 20% of all registered trailer boats.

National Marine Safety Committee (2009) presented estimates of recreational boating usage in Australia during peak periods. Boat usage varied significantly, ranging between 2% of respondents during other public holidays and non peak periods to 73% of respondents over the Christmas / New Year break.

Table 5.1: Operating Time by Holiday Period, Australia

Holiday	Proportion of Respondents Using Boat
Xmas / New Year	73%
Easter	48%
School Holidays	37%
Queen's Birthday	30%
Labour Day	29%
Other Public Holidays / Non Peak Periods	2%

Source: National Marine Safety Committee (2009)

5.1.3 Average Demand

In order to determine the demand for boat ramps, estimates have been made regarding the average demand on a given weekend, consistent with Maritime Safety Queensland policy:

When providing boating facilities the Queensland Government caters for average demand, which is taken to be demand for a facility on ordinary two-day weekends. Where funding and circumstances permit, the government caters for a degree of high demand, which is taken to be demand for a facility on three-day long weekends.

Average demand has been estimated using the data presented in Table 5.1 above. Assumptions have been made regarding frequency of usage over holiday periods which extended over more than one weekend (i.e. Xmas / New Year, school holidays and other public holidays / non peak periods).

Overall, it has been estimated that average demand for recreational boating facilities on a weekend is 8% (refer to Table 5.2).

Table 5.2: Estimated Average Demand on a Weekend

Holiday	Usage	Weekends Included	Times used per period	Usage / Weekend
Xmas / New Year	73%	2	1.5	55%
Easter	48%	1	1	48%
School Holidays	37%	12	5	15%
Queen's Birthday	30%	1	1	30%
Labour Day	29%	1	1	29%
Other Public Holidays / Non Peak Periods	2%	35	1.5	0%
Total		52		8%

Source: National Marine Safety Committee (2009), Economic Associates estimates

Maritime Safety Queensland does not cater for peak demand, such as holiday long weekends, Christmas and Easter periods or demand for boat ramps for special events like Brisbane's Riverfire. This is because funds (driven largely by collection of recreational boat registration fees) are stretched meeting demand for basic boating 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.

5.2 Infrastructure Demand

The literature findings above have outlined average demand and peak demand on a single weekend throughout the year. Based on the above findings, three scenarios estimating boat ramp lane demand have been provided:

- Average demand – 8% of boats demanding a boat lane on any given weekend;
- High demand – 14% of boats demanding a boat lane on any given weekend; and
- Peak demand – 20% of boats demanding a boat lane on any given weekend.

In estimating average demand on a weekend in Table 5.2, it was noted that on 35 of the 52 weekends, usage was estimated at 2% of the trailerable boat fleet. However, this figure is likely to be higher on certain weekends, for example when weather is particularly favourable, on other public holidays (e.g. Exhibition holidays), or long weekends resulting from a pupil free day at their child's school.

The high demand scenario has been presented as a midpoint between the estimated average demand on a typical two day weekend against peak demand.

5.2.1 Average Demand Scenario

Boats Demanding a Boat Lane

Based on the assumption of 8% of boats demanding a boat lane on any given weekend, demand is projected to be highest in:

- SEQ North (5,929 to 6,774 boats by 2031);
- SEQ South (6,610 to 8,663 boats by 2031);
- Townsville (1,865 to 2,364 boats by 2031); and
- Cairns (1,701 to 1,959 boats by 2031).

Table 5.3 below summarises the estimated demand in each of the recreational boating catchments in Queensland under average demand scenario.

Table 5.3: Boats Demanding a Boat Lane - Average Demand Scenario, Recreational Boating Catchments, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	133	133	137	143	149	155
North West QLD	142	149	143	143	146	151
Cairns	1,331	1,339	1,432	1,518	1,607	1,701
Townsville	1,368	1,393	1,554	1,678	1,777	1,865
Central West QLD	34	34	34	35	36	37
Emerald	199	205	227	249	269	289
Mackay	1,022	1,062	1,216	1,333	1,405	1,458
Whitsunday	362	368	409	444	471	496
Gladstone	615	629	691	757	830	909
Rockhampton	650	665	712	758	806	854
North Wide Bay	702	706	754	804	861	926
South Wide Bay	1,095	1,113	1,218	1,312	1,403	1,494
Darling Downs	541	550	592	637	680	724
South Central	161	161	166	172	176	179
South West QLD	18	18	18	18	18	18
SEQ North	4,665	4,717	5,128	5,466	5,719	5,929
SEQ South	4,039	4,122	4,706	5,324	5,961	6,610
Interstate	42	42	45	48	51	54
Queensland	17,119	17,406	19,185	20,839	22,365	23,851
Increasing Incidence of Boats Scenario						
Cape York	135	138	155	177	196	217
North West QLD	144	153	157	167	178	192
Cairns	1,341	1,359	1,510	1,662	1,804	1,959
Townsville	1,385	1,429	1,700	1,956	2,160	2,364
Central West QLD	34	34	38	41	44	47
Emerald	204	215	265	322	374	432
Mackay	1,039	1,097	1,361	1,613	1,790	1,956
Whitsunday	369	381	465	553	624	699
Gladstone	631	662	825	1,023	1,222	1,455
Rockhampton	666	698	838	1,003	1,153	1,320
North Wide Bay	715	733	863	1,014	1,160	1,331
South Wide Bay	1,106	1,137	1,312	1,490	1,651	1,822
Darling Downs	551	570	668	785	886	1,001
South Central	166	172	208	253	289	328
South West QLD	19	19	20	21	22	23
SEQ North	4,697	4,784	5,392	5,956	6,382	6,774
SEQ South	4,462	4,598	5,512	6,542	7,565	8,663
Interstate	43	45	58	73	87	103
Queensland	17,708	18,224	21,346	24,651	27,587	30,687

Source: Economic Associates estimates

Boat Ramp Lane Demand

Converting peak demand 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 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 trailerable boat owners against the costs incurred by local governments, state governments and the private sector in providing boat ramps.

The results for the throughput rates of ramps under the unhampered overall amenity and congested operations scenarios have been presented in Appendix C.

By 2031, it is estimated that boat ramp lane demand will increase to between 596 lanes and 767 lanes, with SEQ North and SEQ South the key drivers of boat ramp lane demand.

Table 5.4 below provides a summary of boat ramp lane demand by recreational boating catchment under the average demand scenario between 2010 and 2031.

Table 5.4: Boat Ramp Lane Demand by Recreational Boating Catchment –Average Demand Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	3	3	3	4	4	4
North West QLD	4	4	4	4	4	4
Cairns	33	33	36	38	40	43
Townsville	34	35	39	42	44	47
Central West QLD	1	1	1	1	1	1
Emerald	5	5	6	6	7	7
Mackay	26	27	30	33	35	36
Whitsunday	9	9	10	11	12	12
Gladstone	15	16	17	19	21	23
Rockhampton	16	17	18	19	20	21
North Wide Bay	18	18	19	20	22	23
South Wide Bay	27	28	30	33	35	37
Darling Downs	14	14	15	16	17	18
South Central	4	4	4	4	4	4
South West QLD	0	0	0	0	0	0
SEQ North	117	118	128	137	143	148
SEQ South	101	103	118	133	149	165
Interstate	1	1	1	1	1	1
Queensland	428	435	480	521	559	596
Increasing Incidence of Boat Ownership Scenario						
Cape York	3	3	4	4	5	5
North West QLD	4	4	4	4	4	5
Cairns	34	34	38	42	45	49
Townsville	35	36	42	49	54	59
Central West QLD	1	1	1	1	1	1
Emerald	5	5	7	8	9	11
Mackay	26	27	34	40	45	49
Whitsunday	9	10	12	14	16	17
Gladstone	16	17	21	26	31	36
Rockhampton	17	17	21	25	29	33
North Wide Bay	18	18	22	25	29	33
South Wide Bay	28	28	33	37	41	46
Darling Downs	14	14	17	20	22	25
South Central	4	4	5	6	7	8
South West QLD	0	0	0	1	1	1
SEQ North	117	120	135	149	160	169
SEQ South	112	115	138	164	189	217
Interstate	1	1	1	2	2	3
Queensland	443	456	534	616	690	767

Source: Economic Associates estimates

5.2.2 High Demand Scenario

Boats Demanding a Boat Lane

Based on the assumption of 14% of boats demanding a boat lane on any given weekend, demand is projected to be highest in (see Table 5.5):

- SEQ North (10,376 to 11,854 boats by 2031);
- SEQ South (11,568 to 15,161 boats by 2031);
- Townsville (3,263 to 4,137 boats by 2031); and
- Cairns (2,978 to 3,429 boats by 2031).

Table 5.5 below summarises the estimated demand in each of the recreational boating catchments in Queensland under the high demand scenario.

Table 5.5: Boats Demanding a Boat Lane - High Demand Scenario, Recreational Boating Catchments, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	232	233	240	250	261	271
North West QLD	249	260	251	251	256	264
Cairns	2,330	2,343	2,506	2,657	2,812	2,978
Townsville	2,394	2,438	2,719	2,937	3,109	3,263
Central West QLD	59	59	60	61	63	65
Emerald	349	359	398	435	470	505
Mackay	1,789	1,859	2,129	2,333	2,458	2,552
Whitsunday	634	643	715	776	824	868
Gladstone	1,076	1,101	1,210	1,324	1,453	1,591
Rockhampton	1,138	1,164	1,245	1,326	1,411	1,495
North Wide Bay	1,228	1,235	1,320	1,407	1,508	1,621
South Wide Bay	1,916	1,948	2,131	2,296	2,455	2,615
Darling Downs	947	963	1,036	1,116	1,191	1,267
South Central	281	282	290	300	307	313
South West QLD	32	32	32	32	32	32
SEQ North	8,164	8,255	8,975	9,566	10,008	10,376
SEQ South	7,068	7,213	8,236	9,317	10,431	11,568
Interstate	73	74	79	84	89	94
Queensland	29,958	30,461	33,573	36,468	39,138	41,739
Increasing Incidence of Boats Scenario						
Cape York	237	241	272	309	343	380
North West QLD	252	267	274	292	311	336
Cairns	2,347	2,378	2,642	2,909	3,157	3,429
Townsville	2,425	2,501	2,974	3,423	3,780	4,137
Central West QLD	60	60	66	71	76	82
Emerald	356	376	464	564	655	756
Mackay	1,818	1,920	2,381	2,823	3,132	3,423
Whitsunday	645	667	814	968	1,093	1,223
Gladstone	1,104	1,159	1,444	1,791	2,138	2,546
Rockhampton	1,166	1,221	1,467	1,754	2,017	2,309
North Wide Bay	1,252	1,283	1,511	1,774	2,029	2,329
South Wide Bay	1,936	1,990	2,295	2,608	2,889	3,189
Darling Downs	964	997	1,168	1,373	1,551	1,752
South Central	290	301	365	444	506	574
South West QLD	33	33	35	37	39	40
SEQ North	8,220	8,372	9,436	10,422	11,168	11,854
SEQ South	7,809	8,047	9,645	11,449	13,239	15,161
Interstate	75	79	101	128	152	181

	2010	2011	2016	2021	2026	2031
Queensland	30,988	31,892	37,355	43,140	48,276	53,702

Source: Economic Associates estimates

Boat Ramp Lane Demand

Converting peak demand 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 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 trailerable boat owners against the costs incurred by local governments, state governments and the private sector in providing boat ramps.

The results for the throughput rates of ramps under the unhampered overall amenity and congested operations scenarios have been presented in Appendix C.

By 2031, it is estimated that boat ramp lane demand will increase to between 1,043 lanes and 1,343 lanes, with SEQ North and SEQ South the key drivers of boat ramp lane demand.

Table 5.6 below provides a summary of boat ramp lane demand by recreational boating catchment under the high demand scenario between 2010 and 2031.

Table 5.6: Boat Ramp Lane Demand by Recreational Boating Catchment - Medium Infrastructure Demand Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	6	6	6	6	7	7
North West QLD	6	7	6	6	6	7
Cairns	58	59	63	66	70	74
Townsville	60	61	68	73	78	82
Central West QLD	1	1	2	2	2	2
Emerald	9	9	10	11	12	13
Mackay	45	46	53	58	61	64
Whitsunday	16	16	18	19	21	22
Gladstone	27	28	30	33	36	40
Rockhampton	28	29	31	33	35	37
North Wide Bay	31	31	33	35	38	41
South Wide Bay	48	49	53	57	61	65
Darling Downs	24	24	26	28	30	32
South Central	7	7	7	8	8	8
South West QLD	1	1	1	1	1	1
SEQ North	204	206	224	239	250	259
SEQ South	177	180	206	233	261	289
Interstate	2	2	2	2	2	2
Queensland	749	762	839	912	978	1,043
Increasing Incidence of Boat Ownership Scenario						
Cape York	6	6	7	8	9	9
North West QLD	6	7	7	7	8	8
Cairns	59	59	66	73	79	86
Townsville	61	63	74	86	94	103
Central West QLD	1	2	2	2	2	2
Emerald	9	9	12	14	16	19
Mackay	45	48	60	71	78	86

	2010	2011	2016	2021	2026	2031
Whitsunday	16	17	20	24	27	31
Gladstone	28	29	36	45	53	64
Rockhampton	29	31	37	44	50	58
North Wide Bay	31	32	38	44	51	58
South Wide Bay	48	50	57	65	72	80
Darling Downs	24	25	29	34	39	44
South Central	7	8	9	11	13	14
South West QLD	1	1	1	1	1	1
SEQ North	206	209	236	261	279	296
SEQ South	195	201	241	286	331	379
Interstate	2	2	3	3	4	5
Queensland	775	797	934	1,078	1,207	1,343

Source: Economic Associates estimates

5.2.3 Peak Demand Scenario

Boats Demanding a Boat Lane

Based on the assumption of 20% of boats demanding a boat lane on any given weekend, demand is projected to be highest in:

- SEQ North (14,823 to 16,935 boats by 2031);
- SEQ South (16,526 to 21,658 boats by 2031);
- Townsville (4,662 to 5,911 boats by 2031); and
- Cairns (4,254 to 4,898 boats by 2031).

Table 5.7 below summarises the estimated demand in each of the recreational boating catchments in Queensland under the peak demand scenario.

Table 5.7: Boats Demanding a Boat Lane - Peak Demand Scenario, Recreational Boating Catchments, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	332	332	343	357	373	388
North West QLD	355	371	358	358	365	377
Cairns	3,328	3,347	3,580	3,796	4,017	4,254
Townsville	3,420	3,483	3,884	4,195	4,441	4,662
Central West QLD	84	84	86	88	90	93
Emerald	498	514	569	621	671	722
Mackay	2,555	2,655	3,041	3,333	3,512	3,645
Whitsunday	905	919	1,022	1,109	1,178	1,240
Gladstone	1,537	1,573	1,728	1,891	2,076	2,273
Rockhampton	1,626	1,663	1,779	1,895	2,016	2,136
North Wide Bay	1,754	1,764	1,886	2,010	2,154	2,315
South Wide Bay	2,737	2,783	3,045	3,279	3,507	3,736
Darling Downs	1,353	1,376	1,481	1,594	1,701	1,810
South Central	402	403	415	429	439	447
South West QLD	46	46	46	46	46	46
SEQ North	11,663	11,793	12,821	13,666	14,298	14,823
SEQ South	10,096	10,304	11,766	13,310	14,902	16,526
Interstate	104	105	113	120	127	134
Queensland	42,797	43,516	47,962	52,097	55,912	59,628

	2010	2011	2016	2021	2026	2031
Increasing Incidence of Boats Scenario						
Cape York	338	344	389	442	490	542
North West QLD	360	382	392	418	445	480
Cairns	3,353	3,397	3,774	4,155	4,510	4,898
Townsville	3,464	3,573	4,249	4,890	5,400	5,911
Central West QLD	85	86	94	102	109	118
Emerald	509	537	663	806	936	1,081
Mackay	2,597	2,743	3,402	4,032	4,474	4,890
Whitsunday	922	953	1,163	1,383	1,561	1,747
Gladstone	1,577	1,656	2,063	2,559	3,054	3,638
Rockhampton	1,665	1,744	2,096	2,506	2,881	3,299
North Wide Bay	1,788	1,832	2,158	2,534	2,899	3,328
South Wide Bay	2,766	2,843	3,279	3,726	4,127	4,556
Darling Downs	1,377	1,424	1,669	1,962	2,216	2,503
South Central	415	430	521	634	723	820
South West QLD	47	47	50	53	55	58
SEQ North	11,743	11,960	13,480	14,889	15,954	16,935
SEQ South	11,156	11,495	13,779	16,355	18,913	21,658
Interstate	108	113	144	183	218	258
Queensland	44,269	45,559	53,364	61,628	68,966	76,718

Source: Economic Associates estimates

Boat Ramp Lane Demand

Converting peak demand 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 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 trailerable boat owners against the costs incurred by local governments, state governments and the private sector in providing boat ramps.

The results for the throughput rates of ramps under the unhampered overall amenity and congested operations scenarios have been presented in Appendix C.

By 2031, it is estimated that boat ramp lane demand will increase to between 1,491 lanes and 1,918 lanes, with SEQ North and SEQ South the key drivers of boat ramp lane demand.

Table 5.8 below provides a summary of boat ramp lane demand by recreational boating catchment under the peak demand scenario between 2010 and 2031.

Table 5.8: Boat Ramp Lane Demand by Recreational Boating Catchment - Peak Demand Scenario, 2010-2031

	2010	2011	2016	2021	2026	2031
Base Case Scenario						
Cape York	8	8	9	9	9	10
North West QLD	9	9	9	9	9	9
Cairns	83	84	89	95	100	106
Townsville	85	87	97	105	111	117
Central West QLD	2	2	2	2	2	2
Emerald	12	13	14	16	17	18
Mackay	64	66	76	83	88	91
Whitsunday	23	23	26	28	29	31
Gladstone	38	39	43	47	52	57

	2010	2011	2016	2021	2026	2031
Rockhampton	41	42	44	47	50	53
North Wide Bay	44	44	47	50	54	58
South Wide Bay	68	70	76	82	88	93
Darling Downs	34	34	37	40	43	45
South Central	10	10	10	11	11	11
South West QLD	1	1	1	1	1	1
SEQ North	292	295	321	342	357	371
SEQ South	252	258	294	333	373	413
Interstate	3	3	3	3	3	3
Queensland	1,070	1,088	1,199	1,302	1,398	1,491
Increasing Incidence of Boat Ownership Scenario						
Cape York	8	9	10	11	12	14
North West QLD	9	10	10	10	11	12
Cairns	84	85	94	104	113	122
Townsville	87	89	106	122	135	148
Central West QLD	2	2	2	3	3	3
Emerald	13	13	17	20	23	27
Mackay	65	69	85	101	112	122
Whitsunday	23	24	29	35	39	44
Gladstone	39	41	52	64	76	91
Rockhampton	42	44	52	63	72	82
North Wide Bay	45	46	54	63	72	83
South Wide Bay	69	71	82	93	103	114
Darling Downs	34	36	42	49	55	63
South Central	10	11	13	16	18	20
South West QLD	1	1	1	1	1	1
SEQ North	294	299	337	372	399	423
SEQ South	279	287	344	409	473	541
Interstate	3	3	4	5	5	6
Queensland	1,107	1,139	1,334	1,541	1,724	1,918

Source: Economic Associates estimates

6 REFERENCES

- ABS (2010). Regional Population Growth, Australia, 2008-09. Cat. No. 3218.0. Australian Bureau of Statistics, Canberra.
- BIAQ (2003). The Size of the Boating Industry in Queensland. The Boating Industry Association of Queensland Limited, Brisbane.
- Blackman and Hurd (2009). Gold Coast Key Industries Business Performance: Marine Industry. prepared for Gold Coast City Council.
- Department for Planning and Infrastructure WA (2009). The Perth Recreational Boating Facilities Study, Fremantle.
- Department of Harbours and Marine (1980). Townsville Region - Survey of Boat Ramp Facilities and Needs, Small Craft Facilities Branch, Brisbane.
- Cameron McNamara (1984). Strategic Plan - Public Boat Launching Facilities - Moreton Region, prepared for Department of Harbours and Marine, Brisbane.
- Department of State Development (2006). Gold Coast Marine Industry. http://www.dtrdi.qld.gov.au/dsdweb/v3/guis/templates/content/gui_cue_cntnhtml.cfm?id=10303. 21st October 2007.
- Gold Coast City Council (2006). Gold Coast Business Online. http://www.goldcoast.qld.gov.au/t_standard.aspx?pid=220. 21st October 2007.
- International Marina Consultants Pty Ltd (2006). Overview of Recreational Boating in Queensland. Brisbane, Australia.
- Maritime Safety Queensland (2004). Recreational Boating Survey Report 2003. Queensland Government, Brisbane.
- Maritime Safety Queensland (various years). Recreational Vessels Registrations by Local Government Area, 2005-2009.
- National Marine Safety Committee (2009). National Boating Usage Study Preliminary Survey Report.
- PIFU (2009). Population Projections by Former Local Government Area – Medium Series. Planning Information & Forecasting Unit, Brisbane.
- Rose, T., R. Powell & J. Yu (2009). Identification of the Present and Future Recreational Boating Infrastructure in Redland City – A 10 Year Infrastructure Plan- Griffith University.
- SKM (1998). Public Boat Ramps Central Queensland Strategic Plan - Volume One - Demand Forecasting - Noosa to Yeppoon. Sinclair Knight Merz, March 1998.

APPENDIX A

HISTORICAL BOAT REGISTRATIONS BY LENGTH

Table A.1: Historical Boat Registrations by Type, Length and Catchment, 2005-2009

	2005			2006			2007			2008			2009			Weighted Average		
	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total
CAPE YORK																		
< 3m	0	17	17	0	18	18	0	19	19	0	23	23	0	18	18	0.0%	1.2%	1.2%
3-5m	0	1,099	1,099	0	1,046	1,046	0	930	930	1	1,223	1,224	2	1,228	1,230	1.4%	71.1%	69.3%
5-8m	11	353	364	11	379	390	10	318	328	12	451	463	13	460	473	27.4%	25.2%	25.3%
8-10m	12	17	29	12	23	35	8	12	20	9	24	33	13	22	35	26.0%	1.3%	1.9%
10-12m	8	7	15	9	8	17	10	9	19	14	11	25	13	9	22	26.0%	0.6%	1.2%
12-15m	5	10	15	5	8	13	4	6	10	9	8	17	6	9	15	13.9%	0.5%	0.9%
15-25m	2	0	2	3	0	3	3	0	3	1	1	2	2	2	4	5.3%	0.0%	0.2%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	38	1,503	1,541	40	1,482	1,522	35	1,294	1,329	46	1,741	1,787	49	1,748	1,797	100.0%	100.0%	100.0%
NORTH WEST QLD																		
< 3m	0	60	60	0	61	61	0	59	59	0	57	57	0	49	49	0.0%	3.4%	3.4%
3-5m	1	1,281	1,282	0	1,274	1,274	0	1,348	1,348	1	1,361	1,362	0	1,368	1,368	4.5%	78.8%	78.5%
5-8m	2	247	249	4	270	274	5	294	299	3	317	320	5	328	333	43.2%	17.3%	17.4%
8-10m	1	4	5	0	4	4	1	4	5	1	6	7	1	4	5	9.1%	0.3%	0.3%
10-12m	2	2	4	2	1	3	0	2	2	0	0	0	1	0	1	11.4%	0.1%	0.1%
12-15m	1	1	2	1	0	1	2	2	4	2	0	2	2	0	2	18.2%	0.0%	0.1%
15-25m	1	2	3	1	1	2	1	1	2	2	1	3	1	1	2	13.6%	0.1%	0.1%
>25m	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0.0%	0.0%	0.0%
Total	8	1,597	1,605	8	1,611	1,619	9	1,710	1,719	9	1,743	1,752	10	1,750	1,760	100.0%	100.0%	100.0%
CAIRNS																		
< 3m	3	524	527	2	496	498	1	485	486	1	483	484	2	463	465	0.3%	3.0%	3.0%
3-5m	25	11,082	11,107	26	11,389	11,415	28	11,936	11,964	32	12,172	12,204	37	12,432	12,469	5.7%	73.4%	71.3%
5-8m	144	2,905	3,049	144	3,096	3,240	154	3,478	3,632	152	3,778	3,930	138	4,034	4,172	28.2%	21.5%	21.7%
8-10m	114	143	257	114	149	263	116	168	284	129	167	296	126	171	297	23.0%	1.0%	1.7%
10-12m	109	69	178	112	66	178	117	63	180	139	74	213	145	83	228	23.9%	0.4%	1.2%
12-15m	59	54	113	60	62	122	75	62	137	83	72	155	107	84	191	14.8%	0.4%	0.9%
15-25m	15	23	38	20	30	50	25	37	62	25	42	67	21	44	65	4.1%	0.2%	0.3%
>25m	0	2	2	0	1	1	0	2	2	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	469	14,802	15,271	478	15,289	15,767	516	16,231	16,747	561	16,788	17,349	576	17,311	17,887	100.0%	100.0%	100.0%
TOWNSVILLE																		
< 3m	2	397	399	3	384	387	3	364	367	3	363	366	3	361	364	0.7%	2.3%	2.3%
3-5m	27	11,920	11,947	28	12,339	12,367	28	12,801	12,829	25	13,311	13,336	27	13,615	13,642	7.0%	79.8%	78.1%
5-8m	111	2,142	2,253	109	2,356	2,465	117	2,613	2,730	111	2,933	3,044	105	3,130	3,235	28.5%	16.4%	16.7%
8-10m	81	78	159	86	86	172	87	92	179	95	94	189	83	101	184	22.3%	0.6%	1.1%
10-12m	92	59	151	101	66	167	111	72	183	101	77	178	105	76	181	26.3%	0.4%	1.0%
12-15m	45	39	84	51	47	98	51	57	108	59	59	118	56	63	119	13.5%	0.3%	0.6%
15-25m	7	12	19	7	11	18	8	17	25	6	19	25	7	23	30	1.8%	0.1%	0.1%
>25m	0	1	1	0	0	0	0	1	1	0	3	3	0	3	3	0.0%	0.0%	0.0%

	2005			2006			2007			2008			2009			Weighted Average		
	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total
Total	365	14,648	15,013	385	15,289	15,674	405	16,017	16,422	400	16,859	17,259	386	17,372	17,758	100.0%	100.0%	100.0%
CENTRAL WEST QLD																		
< 3m	0	34	34	0	34	34	0	33	33	0	33	33	0	32	32	0.0%	8.2%	8.2%
3-5m	1	274	275	1	300	301	1	329	330	1	334	335	2	330	332	50.0%	77.8%	77.7%
5-8m	0	44	44	0	50	50	0	54	54	0	62	62	0	67	67	0.0%	13.8%	13.7%
8-10m	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0%	0.0%	0.0%
10-12m	1	0	1	2	0	2	0	0	0	0	0	0	1	0	1	33.3%	0.0%	0.2%
12-15m	0	0	0	0	0	0	0	1	1	1	0	1	1	1	2	16.7%	0.1%	0.2%
15-25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	2	352	354	3	384	387	1	417	418	2	429	431	4	431	435	100.0%	100.0%	100.0%
EMERALD																		
< 3m	0	95	95	0	96	96	0	98	98	0	91	91	0	89	89	0.0%	4.1%	4.1%
3-5m	2	1,543	1,545	3	1,618	1,621	2	1,658	1,660	4	1,693	1,697	2	1,784	1,786	13.3%	72.8%	72.2%
5-8m	5	404	409	7	460	467	6	511	517	7	558	565	6	625	631	31.6%	22.4%	22.5%
8-10m	5	11	16	4	12	16	5	13	18	2	8	10	2	9	11	18.4%	0.5%	0.6%
10-12m	5	0	5	5	1	6	6	5	11	5	1	6	5	1	6	26.5%	0.1%	0.3%
12-15m	1	1	2	2	2	4	2	3	5	2	2	4	3	3	6	10.2%	0.1%	0.2%
15-25m	0	1	1	0	1	1	0	1	1	0	1	1	0	4	4	0.0%	0.1%	0.1%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	18	2,055	2,073	21	2,190	2,211	21	2,289	2,310	20	2,354	2,374	18	2,515	2,533	100.0%	100.0%	100.0%
MACKAY																		
< 3m	0	399	399	0	397	397	0	409	409	0	392	392	0	378	378	0.0%	3.4%	3.3%
3-5m	13	8,390	8,403	14	8,879	8,893	16	9,237	9,253	13	9,488	9,501	15	9,739	9,754	5.1%	77.6%	75.9%
5-8m	88	1,528	1,616	88	1,746	1,834	91	2,063	2,154	88	2,259	2,347	85	2,403	2,488	31.5%	17.0%	17.3%
8-10m	56	85	141	58	103	161	60	114	174	56	122	178	51	135	186	20.1%	0.9%	1.4%
10-12m	62	52	114	80	59	139	76	77	153	85	71	156	75	75	150	27.0%	0.6%	1.2%
12-15m	32	39	71	35	50	85	40	50	90	46	60	106	48	64	112	14.4%	0.4%	0.8%
15-25m	5	9	14	7	14	21	7	17	24	6	20	26	3	22	25	2.0%	0.1%	0.2%
>25m	0	2	2	0	1	1	0	2	2	0	1	1	0	1	1	0.0%	0.0%	0.0%
Total	256	10,504	10,760	282	11,249	11,531	290	11,969	12,259	294	12,413	12,707	277	12,817	13,094	100.0%	100.0%	100.0%
WHITSUNDAY																		
< 3m	0	114	114	0	104	104	0	113	113	0	108	108	0	108	108	0.0%	2.5%	2.3%
3-5m	7	2,821	2,828	6	2,940	2,946	6	3,091	3,097	5	3,221	3,226	4	3,322	3,326	1.5%	71.1%	65.4%
5-8m	74	746	820	68	816	884	73	909	982	82	1,011	1,093	79	1,071	1,150	19.7%	21.0%	20.9%
8-10m	105	63	168	105	83	188	94	86	180	83	100	183	89	100	189	24.9%	2.0%	3.9%
10-12m	107	50	157	111	56	167	107	65	172	118	68	186	118	62	180	29.4%	1.4%	3.7%
12-15m	57	45	102	65	51	116	73	58	131	72	59	131	83	57	140	18.3%	1.2%	2.6%
15-25m	18	24	42	20	24	44	23	31	54	27	36	63	24	43	67	5.9%	0.7%	1.1%
>25m	1	1	2	1	1	2	1	1	2	1	1	2	1	2	3	0.3%	0.0%	0.0%
Total	369	3,864	4,233	376	4,075	4,451	377	4,354	4,731	388	4,604	4,992	398	4,765	5,163	100.0%	100.0%	100.0%

	2005			2006			2007			2008			2009			Weighted Average		
	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total
ROCKHAMPTON																		
< 3m	0	268	268	0	276	276	0	263	263	0	254	254	1	246	247	0.1%	3.4%	3.3%
3-5m	12	5,204	5,216	13	5,462	5,475	10	5,744	5,754	9	5,958	5,967	11	6,140	6,151	5.2%	74.8%	72.9%
5-8m	60	1,157	1,217	62	1,290	1,352	59	1,434	1,493	59	1,596	1,655	58	1,704	1,762	28.0%	18.8%	19.1%
8-10m	51	89	140	62	94	156	68	103	171	68	117	185	67	119	186	29.7%	1.4%	2.1%
10-12m	45	59	104	52	60	112	52	72	124	44	83	127	48	86	134	22.7%	0.9%	1.5%
12-15m	30	30	60	27	33	60	30	39	69	28	44	72	29	52	81	13.5%	0.5%	0.9%
15-25m	2	2	4	2	3	5	1	6	7	1	5	6	2	7	9	0.8%	0.1%	0.1%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	200	6,809	7,009	218	7,218	7,436	220	7,661	7,881	209	8,057	8,266	216	8,354	8,570	100.0%	100.0%	100.0%
GLADSTONE																		
< 3m	1	249	250	1	252	253	1	272	273	2	279	281	0	288	288	0.5%	3.8%	3.7%
3-5m	7	4,746	4,753	7	5,086	5,093	9	5,488	5,497	11	5,691	5,702	13	5,852	5,865	5.1%	76.3%	74.5%
5-8m	51	1,042	1,093	46	1,119	1,165	48	1,302	1,350	46	1,397	1,443	44	1,511	1,555	25.7%	18.1%	18.3%
8-10m	39	49	88	42	61	103	42	73	115	42	72	114	44	76	120	22.9%	0.9%	1.5%
10-12m	40	22	62	40	25	65	43	28	71	46	26	72	53	32	85	24.3%	0.4%	1.0%
12-15m	29	23	52	29	25	54	38	29	67	40	37	77	36	37	73	18.8%	0.4%	0.9%
15-25m	6	5	11	4	6	10	4	6	10	5	8	13	5	8	13	2.6%	0.1%	0.2%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	173	6,136	6,309	169	6,574	6,743	185	7,198	7,383	192	7,510	7,702	195	7,804	7,999	100.0%	100.0%	100.0%
NORTH WIDE BAY																		
< 3m	0	275	275	0	290	290	0	298	298	0	273	273	0	281	281	0.0%	3.5%	3.4%
3-5m	10	6,283	6,293	15	6,600	6,615	17	6,993	7,010	18	7,294	7,312	18	7,545	7,563	8.0%	85.3%	83.5%
5-8m	49	693	742	48	735	783	55	814	869	52	905	957	50	972	1,022	25.9%	10.1%	10.5%
8-10m	25	31	56	28	34	62	34	36	70	43	36	79	47	37	84	18.0%	0.4%	0.8%
10-12m	37	23	60	44	24	68	59	25	84	65	24	89	64	26	90	27.4%	0.3%	0.9%
12-15m	22	21	43	27	22	49	36	22	58	38	26	64	39	28	67	16.5%	0.3%	0.7%
15-25m	5	8	13	7	6	13	7	7	14	8	6	14	9	8	17	3.7%	0.1%	0.2%
>25m	1	1	2	1	2	3	1	3	4	1	3	4	1	1	2	0.5%	0.0%	0.0%
Total	149	7,335	7,484	170	7,713	7,883	209	8,198	8,407	225	8,567	8,792	228	8,898	9,126	100.0%	100.0%	100.0%
SOUTH WIDE BAY																		
< 3m	1	402	403	2	387	389	1	407	408	1	418	419	1	412	413	0.3%	3.2%	3.1%
3-5m	33	9,225	9,258	32	9,614	9,646	34	10,088	10,122	35	10,521	10,556	34	10,844	10,878	7.4%	78.4%	76.0%
5-8m	137	1,741	1,878	145	1,908	2,053	137	2,085	2,222	151	2,249	2,400	151	2,335	2,486	31.6%	16.1%	16.6%
8-10m	100	130	230	103	131	234	110	153	263	120	165	285	118	165	283	24.1%	1.2%	2.0%
10-12m	88	59	147	99	72	171	100	77	177	113	84	197	111	88	199	22.4%	0.6%	1.3%
12-15m	48	33	81	47	37	84	56	51	107	63	66	129	69	73	142	12.4%	0.4%	0.8%
15-25m	4	16	20	7	16	23	10	19	29	11	20	31	10	22	32	1.8%	0.1%	0.2%
>25m	0	0	0	0	1	1	0	1	1	0	1	1	0	1	1	0.0%	0.0%	0.0%
Total	411	11,606	12,017	435	12,166	12,601	448	12,881	13,329	494	13,524	14,018	494	13,940	14,434	100.0%	100.0%	100.0%
DARLING DOWNS																		
< 3m	0	375	375	0	365	365	0	348	348	0	340	340	0	335	335	0.0%	5.6%	5.6%

	2005			2006			2007			2008			2009			Weighted Average		
	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total
3-5m	6	4,657	4,663	7	4,781	4,788	6	4,932	4,938	8	5,123	5,131	6	5,394	5,400	12.5%	79.1%	78.6%
5-8m	20	792	812	24	822	846	22	863	885	21	966	987	28	1,059	1,087	43.6%	14.3%	14.6%
8-10m	7	15	22	9	21	30	9	18	27	10	18	28	11	21	32	17.4%	0.3%	0.4%
10-12m	6	14	20	9	20	29	10	21	31	10	27	37	11	23	34	17.4%	0.3%	0.5%
12-15m	1	9	10	5	17	22	4	17	21	5	15	20	9	16	25	9.1%	0.2%	0.3%
15-25m	0	4	4	0	4	4	0	5	5	0	9	9	0	11	11	0.0%	0.1%	0.1%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	40	5,866	5,906	54	6,030	6,084	51	6,204	6,255	54	6,498	6,552	65	6,859	6,924	100.0%	100.0%	100.0%
SOUTH CENTRAL																		
< 3m	1	129	130	1	129	130	1	118	119	2	122	124	2	122	124	15.9%	6.6%	6.6%
3-5m	2	1,307	1,309	2	1,396	1,398	1	1,464	1,465	1	1,527	1,528	1	1,567	1,568	15.9%	77.0%	76.7%
5-8m	4	235	239	3	284	287	5	297	302	3	321	324	5	365	370	45.5%	15.9%	16.1%
8-10m	2	7	9	2	5	7	2	5	7	1	6	7	1	6	7	18.2%	0.3%	0.4%
10-12m	0	1	1	0	2	2	0	1	1	0	2	2	0	1	1	0.0%	0.1%	0.1%
12-15m	1	2	3	1	1	2	0	0	0	0	1	1	0	2	2	4.5%	0.1%	0.1%
15-25m	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0.0%	0.1%	0.1%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	10	1,682	1,692	9	1,818	1,827	9	1,886	1,895	7	1,980	1,987	9	2,064	2,073	100.0%	100.0%	100.0%
SOUTH WEST QLD																		
< 3m	0	18	18	0	17	17	0	20	20	0	22	22	0	23	23	0.0%	10.8%	10.8%
3-5m	0	103	103	0	121	121	0	127	127	0	167	167	1	176	177	100.0%	75.0%	75.1%
5-8m	0	18	18	0	21	21	0	20	20	0	28	28	0	37	37	0.0%	13.4%	13.4%
8-10m	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0.0%	0.3%	0.3%
10-12m	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0.0%	0.3%	0.3%
12-15m	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0%	0.1%	0.1%
15-25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
>25m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	0	139	139	0	159	159	0	169	169	0	219	219	1	239	240	100.0%	100.0%	100.0%
SEQ NORTH																		
< 3m	8	3,359	3,367	9	3,287	3,296	10	3,156	3,166	9	3,057	3,066	7	2,991	2,998	0.3%	5.6%	5.3%
3-5m	129	38,312	38,441	137	39,415	39,552	131	40,722	40,853	144	42,088	42,232	148	42,902	43,050	5.5%	71.4%	68.6%
5-8m	760	9,564	10,324	795	10,375	11,170	787	11,155	11,942	824	11,985	12,809	792	12,543	13,335	31.5%	19.5%	20.0%
8-10m	497	703	1,200	508	755	1,263	505	782	1,287	515	838	1,353	526	843	1,369	20.3%	1.4%	2.2%
10-12m	555	530	1,085	585	580	1,165	619	628	1,247	598	627	1,225	610	638	1,248	23.6%	1.1%	2.0%
12-15m	339	370	709	384	411	795	383	457	840	416	485	901	431	483	914	15.6%	0.8%	1.4%
15-25m	70	110	180	73	133	206	79	155	234	80	182	262	76	204	280	3.0%	0.3%	0.4%
>25m	3	11	14	3	11	14	3	13	16	4	13	17	2	12	14	0.1%	0.0%	0.0%
Total	2,361	52,959	55,320	2,494	54,967	57,461	2,517	57,068	59,585	2,590	59,275	61,865	2,592	60,616	63,208	100.0%	100.0%	100.0%
SEQ SOUTH																		
< 3m	8	3,833	3,841	10	3,695	3,705	13	3,630	3,643	13	3,561	3,574	10	3,477	3,487	0.7%	7.3%	7.1%
3-5m	78	28,448	28,526	90	29,783	29,873	103	31,127	31,230	127	32,732	32,859	122	34,151	34,273	6.8%	63.0%	61.4%
5-8m	474	10,241	10,715	502	11,084	11,586	527	11,714	12,241	535	12,477	13,012	502	12,661	13,163	33.1%	23.5%	23.8%

	2005			2006			2007			2008			2009			Weighted Average		
	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total	Sail	W/O Sail	Total
8-10m	297	1,089	1,386	297	1,172	1,469	311	1,200	1,511	327	1,217	1,544	345	1,240	1,585	20.6%	2.4%	2.9%
10-12m	296	814	1,110	308	857	1,165	315	868	1,183	340	944	1,284	345	930	1,275	20.9%	1.8%	2.4%
12-15m	202	609	811	208	643	851	216	655	871	224	690	914	229	710	939	14.1%	1.3%	1.7%
15-25m	61	199	260	58	255	313	59	291	350	57	325	382	54	340	394	3.8%	0.6%	0.7%
>25m	2	28	30	1	34	35	0	33	33	0	37	37	0	33	33	0.0%	0.1%	0.1%
Total	1,418	45,261	46,679	1,474	47,523	48,997	1,544	49,518	51,062	1,623	51,983	53,606	1,607	53,542	55,149	100.0%	100.0%	100.0%
INTERSTATE																		
< 3m	0	30	30	0	27	27	0	27	27	0	33	33	0	35	35	0.0%	5.5%	4.7%
3-5m	0	263	263	1	291	292	2	303	305	1	337	338	2	349	351	1.4%	55.4%	48.0%
5-8m	9	114	123	10	119	129	14	109	123	15	130	145	15	123	138	14.3%	21.4%	20.4%
8-10m	17	17	34	13	17	30	18	25	43	19	24	43	14	21	35	18.3%	3.7%	5.7%
10-12m	22	24	46	24	27	51	30	23	53	29	22	51	35	24	59	31.7%	4.3%	8.1%
12-15m	23	18	41	23	25	48	29	34	63	31	35	66	29	29	58	30.5%	5.1%	8.6%
15-25m	3	9	12	1	20	21	2	25	27	5	35	40	6	31	37	3.8%	4.3%	4.2%
>25m	0	3	3	0	2	2	0	2	2	0	2	2	0	1	1	0.0%	0.4%	0.3%
Total	74	478	552	72	528	600	95	548	643	100	618	718	101	613	714	100.0%	100.0%	100.0%
OVERSEAS																		
< 3m		0	0		0	0		0	0		1	1		1	1		8.7%	8.7%
3-5m		7	7		3	3		1	1		2	2		2	2		65.2%	65.2%
5-8m		0	0		1	1		0	0		2	2		1	1		17.4%	17.4%
8-10m		0	0		0	0		0	0		0	0		0	0		0.0%	0.0%
10-12m		0	0		0	0		0	0		0	0		1	1		4.3%	4.3%
12-15m		0	0		0	0		0	0		0	0		0	0		0.0%	0.0%
15-25m		0	0		1	1		0	0		0	0		0	0		4.3%	4.3%
>25m		0	0		0	0		0	0		0	0		0	0		0.0%	0.0%
Total		7	7		5	5		1	1		5	5		5	5		100.0%	100.0%
QUEENSLAND																		
< 3m	24	10,578	10,602	28	10,315	10,343	30	10,119	10,149	31	9,910	9,941	26	9,709	9,735	0.4%	4.9%	4.8%
3-5m	353	136,965	137,318	382	142,337	142,719	394	148,319	148,713	436	154,243	154,679	445	158,740	159,185	5.8%	72.2%	70.0%
5-8m	1,999	33,966	35,965	2,066	36,931	38,997	2,110	40,033	42,143	2,161	43,425	45,586	2,076	45,429	47,505	30.2%	19.5%	19.8%
8-10m	1,409	2,531	3,940	1,443	2,750	4,193	1,470	2,885	4,355	1,520	3,015	4,535	1,538	3,072	4,610	21.4%	1.4%	2.0%
10-12m	1,475	1,785	3,260	1,583	1,924	3,507	1,655	2,037	3,692	1,707	2,142	3,849	1,740	2,156	3,896	23.7%	1.0%	1.7%
12-15m	895	1,304	2,199	970	1,434	2,404	1,039	1,543	2,582	1,119	1,659	2,778	1,177	1,712	2,889	15.1%	0.7%	1.2%
15-25m	199	425	624	210	526	736	229	619	848	234	711	945	220	771	991	3.2%	0.3%	0.4%
>25m	7	49	56	6	53	59	5	58	63	6	62	68	4	54	58	0.1%	0.0%	0.0%
Total	6,361	187,603	193,964	6,688	196,270	202,958	6,932	205,613	212,545	7,214	215,167	222,381	7,226	221,643	228,869	100.0%	100.0%	100.0%

Source: Maritime Safety Queensland

Table A.2: Estimated Size of the Trailerable Boat Fleet, 2005-2009

	Proportion Trailerable		2005			2006			2007			2008			2009		
	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Total	
CAPE YORK																	
< 3m	100%	100%	0	17	17	0	18	18	0	19	19	0	23	23	0	18	18
3-5m	90%	85%	0	934	934	0	889	889	0	791	791	1	1,040	1,040	2	1,044	1,046
5-8m	50%	50%	6	177	182	6	190	195	5	159	164	6	226	232	7	230	237
8-10m	25%	0%	3	0	3	3	0	3	2	0	2	2	0	2	3	0	3
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			9	1,128	1,136	9	1,097	1,105	7	969	976	9	1,288	1,297	12	1,292	1,303
NORTH WEST QLD																	
< 3m	100%	100%	0	60	60	0	61	61	0	59	59	0	57	57	0	49	49
3-5m	90%	85%	1	1,089	1,090	0	1,083	1,083	0	1,146	1,146	1	1,157	1,158	0	1,163	1,163
5-8m	50%	50%	1	124	125	2	135	137	3	147	150	2	159	160	3	164	167
8-10m	25%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			2	1,272	1,275	2	1,279	1,281	3	1,352	1,355	3	1,372	1,375	3	1,376	1,379
CAIRNS																	
< 3m	100%	100%	3	524	527	2	496	498	1	485	486	1	483	484	2	463	465
3-5m	90%	85%	23	9,420	9,442	23	9,681	9,704	25	10,146	10,171	29	10,346	10,375	33	10,567	10,601
5-8m	50%	50%	72	1,453	1,525	72	1,548	1,620	77	1,739	1,816	76	1,889	1,965	69	2,017	2,086
8-10m	25%	0%	29	0	29	29	0	29	29	0	29	32	0	32	32	0	32
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			126	11,396	11,522	126	11,725	11,851	132	12,370	12,502	138	12,718	12,856	136	13,047	13,183
TOWNSVILLE																	
< 3m	100%	100%	2	397	399	3	384	387	3	364	367	3	363	366	3	361	364
3-5m	90%	85%	24	10,132	10,156	25	10,488	10,513	25	10,881	10,906	23	11,314	11,337	24	11,573	11,597
5-8m	50%	50%	56	1,071	1,127	55	1,178	1,233	59	1,307	1,365	56	1,467	1,522	53	1,565	1,618
8-10m	25%	0%	20	0	20	22	0	22	22	0	22	24	0	24	21	0	21
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Proportion Trailerable		2005			2006			2007			2008			2009		
	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Total	
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total			102	11,600	11,702	104	12,050	12,154	108	12,551	12,660	105	13,144	13,249	101	13,499	13,599
CENTRAL WEST QLD																	
< 3m	100%	100%	0	34	34	0	34	34	0	33	33	0	33	33	0	32	32
3-5m	90%	85%	1	233	234	1	255	256	1	280	281	1	284	285	2	281	282
5-8m	50%	50%	0	22	22	0	25	25	0	27	27	0	31	31	0	34	34
8-10m	25%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			1	289	290	1	314	315	1	340	341	1	348	349	2	346	348
EMERALD																	
< 3m	100%	100%	0	95	95	0	96	96	0	98	98	0	91	91	0	89	89
3-5m	90%	85%	2	1,312	1,313	3	1,375	1,378	2	1,409	1,411	4	1,439	1,443	2	1,516	1,518
5-8m	50%	50%	3	202	205	4	230	234	3	256	259	4	279	283	3	313	316
8-10m	25%	0%	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			6	1,609	1,614	7	1,701	1,709	6	1,763	1,769	8	1,809	1,817	5	1,918	1,923
MACKAY																	
< 3m	100%	100%	0	399	399	0	397	397	0	409	409	0	392	392	0	378	378
3-5m	90%	85%	12	7,132	7,143	13	7,547	7,560	14	7,851	7,866	12	8,065	8,077	14	8,278	8,292
5-8m	50%	50%	44	764	808	44	873	917	46	1,032	1,077	44	1,130	1,174	43	1,202	1,244
8-10m	25%	0%	14	0	14	15	0	15	15	0	15	14	0	14	13	0	13
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			70	8,295	8,364	71	8,817	8,888	75	9,292	9,367	70	9,586	9,656	69	9,858	9,926
WHITSUNDAY																	
< 3m	100%	100%	0	114	114	0	104	104	0	113	113	0	108	108	0	108	108
3-5m	90%	85%	6	2,398	2,404	5	2,499	2,504	5	2,627	2,633	5	2,738	2,742	4	2,824	2,827
5-8m	50%	50%	37	373	410	34	408	442	37	455	491	41	506	547	40	536	575
8-10m	25%	0%	26	0	26	26	0	26	24	0	24	21	0	21	22	0	22
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Proportion Trailerable		2005			2006			2007			2008			2009		
	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Total	
Total			70	2,885	2,954	66	3,011	3,077	65	3,195	3,260	66	3,351	3,418	65	3,467	3,533
ROCKHAMPTON																	
< 3m	100%	100%	0	268	268	0	276	276	0	263	263	0	254	254	1	246	247
3-5m	90%	85%	11	4,423	4,434	12	4,643	4,654	9	4,882	4,891	8	5,064	5,072	10	5,219	5,229
5-8m	50%	50%	30	579	609	31	645	676	30	717	747	30	798	828	29	852	881
8-10m	25%	0%	13	0	13	16	0	16	17	0	17	17	0	17	17	0	17
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			54	5,270	5,323	58	5,564	5,622	56	5,862	5,918	55	6,116	6,171	57	6,317	6,374
GLADSTONE																	
< 3m	100%	100%	1	249	250	1	252	253	1	272	273	2	279	281	0	288	288
3-5m	90%	85%	6	4,034	4,040	6	4,323	4,329	8	4,665	4,673	10	4,837	4,847	12	4,974	4,986
5-8m	50%	50%	26	521	547	23	560	583	24	651	675	23	699	722	22	756	778
8-10m	25%	0%	10	0	10	11	0	11	11	0	11	11	0	11	11	0	11
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			43	4,804	4,847	41	5,135	5,175	44	5,588	5,631	45	5,815	5,860	45	6,018	6,062
NORTH WIDE BAY																	
< 3m	100%	100%	0	275	275	0	290	290	0	298	298	0	273	273	0	281	281
3-5m	90%	85%	9	5,341	5,350	14	5,610	5,624	15	5,944	5,959	16	6,200	6,216	16	6,413	6,429
5-8m	50%	50%	25	347	371	24	368	392	28	407	435	26	453	479	25	486	511
8-10m	25%	0%	6	0	6	7	0	7	9	0	9	11	0	11	12	0	12
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			40	5,962	6,002	45	6,268	6,312	51	6,649	6,700	53	6,925	6,978	53	7,180	7,233
SOUTH WIDE BAY																	
< 3m	100%	100%	1	402	403	2	387	389	1	407	408	1	418	419	1	412	413
3-5m	90%	85%	30	7,841	7,871	29	8,172	8,201	31	8,575	8,605	32	8,943	8,974	31	9,217	9,248
5-8m	50%	50%	69	871	939	73	954	1,027	69	1,043	1,111	76	1,125	1,200	76	1,168	1,243
8-10m	25%	0%	25	0	25	26	0	26	28	0	28	30	0	30	30	0	30
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			124	9,114	9,238	129	9,513	9,642	128	10,024	10,152	138	10,485	10,623	137	10,797	10,934

	Proportion Trailerable		2005			2006			2007			2008			2009		
	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Total	
DARLING DOWNS																	
< 3m	100%	100%	0	375	375	0	365	365	0	348	348	0	340	340	0	335	335
3-5m	90%	85%	5	3,958	3,964	6	4,064	4,070	5	4,192	4,198	7	4,355	4,362	5	4,585	4,590
5-8m	50%	50%	10	396	406	12	411	423	11	432	443	11	483	494	14	530	544
8-10m	25%	0%	2	0	2	2	0	2	2	0	2	3	0	3	3	0	3
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			17	4,729	4,747	21	4,840	4,860	19	4,972	4,990	20	5,178	5,198	22	5,449	5,472
SOUTH CENTRAL																	
< 3m	100%	100%	1	129	130	1	129	130	1	118	119	2	122	124	2	122	124
3-5m	90%	85%	2	1,111	1,113	2	1,187	1,188	1	1,244	1,245	1	1,298	1,299	1	1,332	1,333
5-8m	50%	50%	2	118	120	2	142	144	3	149	151	2	161	162	3	183	185
8-10m	25%	0%	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			5	1,357	1,363	5	1,458	1,462	5	1,511	1,516	5	1,580	1,585	6	1,636	1,642
SOUTH WEST QLD																	
< 3m	100%	100%	0	18	18	0	17	17	0	20	20	0	22	22	0	23	23
3-5m	90%	85%	0	88	88	0	103	103	0	108	108	0	142	142	1	150	151
5-8m	50%	50%	0	9	9	0	11	11	0	10	10	0	14	14	0	19	19
8-10m	25%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			0	115	115	0	130	130	0	138	138	0	178	178	1	191	192
SEQ NORTH																	
< 3m	100%	100%	8	3,359	3,367	9	3,287	3,296	10	3,156	3,166	9	3,057	3,066	7	2,991	2,998
3-5m	90%	85%	116	32,565	32,681	123	33,503	33,626	118	34,614	34,732	130	35,775	35,904	133	36,467	36,600
5-8m	50%	50%	380	4,782	5,162	398	5,188	5,585	394	5,578	5,971	412	5,993	6,405	396	6,272	6,668
8-10m	25%	0%	124	0	124	127	0	127	126	0	126	129	0	129	132	0	132
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			628	40,706	41,335	657	41,977	42,634	648	43,347	43,995	679	44,824	45,504	668	45,729	46,397

	Proportion Trailerable		2005			2006			2007			2008			2009		
	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	Sail	W/O Sail	Total	Sail	W/O Sail	W/O Sail	Total
SEQ SOUTH																	
< 3m	100%	100%	8	3,833	3,841	10	3,695	3,705	13	3,630	3,643	13	3,561	3,574	10	3,477	3,487
3-5m	90%	85%	70	24,181	24,251	81	25,316	25,397	93	26,458	26,551	114	27,822	27,937	110	29,028	29,138
5-8m	50%	50%	237	5,121	5,358	251	5,542	5,793	264	5,857	6,121	268	6,239	6,506	251	6,331	6,582
8-10m	25%	0%	74	0	74	74	0	74	78	0	78	82	0	82	86	0	86
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			389	33,134	33,524	416	34,553	34,969	447	35,945	36,392	477	37,622	38,098	457	38,836	39,293
INTERSTATE																	
< 3m	100%	100%	0	30	30	0	27	27	0	27	27	0	33	33	0	35	35
3-5m	90%	85%	0	224	224	1	247	248	2	258	259	1	286	287	2	297	298
5-8m	50%	50%	5	57	62	5	60	65	7	55	62	8	65	73	8	62	69
8-10m	25%	0%	4	0	4	3	0	3	5	0	5	5	0	5	4	0	4
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			9	311	319	9	334	343	13	339	352	13	384	398	13	393	406
OVERSEAS																	
< 3m	100%	100%	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
3-5m	90%	85%	0	6	6	0	3	3	0	1	1	0	2	2	0	2	2
5-8m	50%	50%	0	0	0	0	1	1	0	0	0	0	1	1	0	1	1
8-10m	25%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-12m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			0	6	6	0	3	3	0	1	1	0	4	4	0	3	3
QUEENSLAND																	
< 3m			24	10,578	10,602	28	10,315	10,343	30	10,119	10,149	31	9,910	9,941	26	9,709	9,735
3-5m			318	116,420	116,738	344	120,986	121,330	355	126,071	126,426	392	131,107	131,499	401	134,929	135,330
5-8m			1,000	16,983	17,983	1,033	18,466	19,499	1,055	20,017	21,072	1,081	21,713	22,793	1,038	22,715	23,753
8-10m			352	0	352	361	0	361	368	0	368	380	0	380	385	0	385
10-12m			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-15m			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-25m			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>25m			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			1,693	143,981	145,675	1,766	149,767	151,533	1,807	156,207	158,014	1,884	162,729	164,613	1,849	167,353	169,202

APPENDIX B

PROJECTED BOAT REGISTRATIONS BY LENGTH

Table B.1: Projected Boat Registrations by Type, Length and Catchment, Base Case Scenario, 2010-2031

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
CAPE YORK								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	1.4%	2	2	2	2	2	2
5-8 metres	13	27.4%	13	13	13	14	15	15
8-10 metres	13	26.0%	13	13	13	14	14	15
10-12 metres	13	26.0%	13	13	13	14	14	15
12-15 metres	6	13.9%	6	6	6	6	7	7
15-25 metres	2	5.3%	2	2	2	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	49	100.0%	49	49	51	53	55	57
<i>Boats w/o sails</i>								
<3 metres	18	1.2%	18	18	19	20	21	22
3-5 metres	1,228	71.1%	1,229	1,229	1,271	1,322	1,380	1,437
5-8 metres	460	25.2%	460	460	475	493	514	534
8-10 metres	22	1.3%	22	22	23	24	25	26
10-12 metres	9	0.6%	9	9	9	10	10	11
12-15 metres	9	0.5%	9	9	9	10	10	11
15-25 metres	2	0.0%	2	2	2	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,748	100.0%	1,749	1,750	1,808	1,880	1,962	2,042
<i>Total Boats</i>								
<3 metres	18	1.2%	18	18	19	20	21	22
3-5 metres	1,230	69.3%	1,231	1,231	1,273	1,324	1,383	1,440
5-8 metres	473	25.3%	473	474	489	507	529	549
8-10 metres	35	1.9%	35	35	36	38	39	41
10-12 metres	22	1.2%	22	22	23	24	25	26
12-15 metres	15	0.9%	15	15	16	16	17	18
15-25 metres	4	0.2%	4	4	4	4	4	5
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,797	100.0%	1,798	1,799	1,859	1,933	2,017	2,099
NORTH WEST QLD								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	0	4.5%	0	0	0	0	0	0
5-8 metres	5	43.2%	5	5	5	5	5	5
8-10 metres	1	9.1%	1	1	1	1	1	1
10-12 metres	1	11.4%	1	1	1	1	1	1
12-15 metres	2	18.2%	2	2	2	2	2	2
15-25 metres	1	13.6%	1	1	1	1	1	1
>25 metres	0	0.0%	0	0	0	0	0	0
Total	10	100.0%	10	11	10	10	11	11
<i>Boats w/o sails</i>								
<3 metres	49	3.4%	52	54	52	52	53	56
3-5 metres	1,368	78.8%	1430	1495	1441	1441	1471	1519
5-8 metres	328	17.3%	342	356	344	344	351	361
8-10 metres	4	0.3%	4	4	4	4	4	5
10-12 metres	0	0.1%	0	0	0	0	0	0
12-15 metres	0	0.0%	0	0	0	0	0	0
15-25 metres	1	0.1%	1	1	1	1	1	1
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,750	100.0%	1,829	1,911	1,842	1,842	1,880	1,941
<i>Total Boats</i>								
<3 metres	49	3.4%	52	54	52	52	53	56

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	1,368	78.5%	1,430	1,495	1,441	1,441	1,471	1,519
5-8 metres	333	17.4%	347	361	349	349	356	367
8-10 metres	5	0.3%	5	5	5	5	5	6
10-12 metres	1	0.1%	1	1	1	1	1	1
12-15 metres	2	0.1%	2	2	2	2	2	2
15-25 metres	2	0.1%	2	2	2	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,760	100.0%	1,839	1,922	1,852	1,853	1,891	1,952

CAIRNS
Sail Boat

<3 metres	2	0.3%	2	2	2	2	2	3
3-5 metres	37	5.7%	37	37	40	42	44	46
5-8 metres	138	28.2%	139	140	151	161	172	183
8-10 metres	126	23.0%	127	127	137	145	153	163
10-12 metres	145	23.9%	146	147	156	165	174	183
12-15 metres	107	14.8%	107	108	114	119	125	130
15-25 metres	21	4.1%	21	21	23	24	26	27
>25 metres	0	0.0%	0	0	0	0	0	0
Total	576	100.0%	579	582	622	658	695	735

Boats w/o sails

<3 metres	463	3.0%	466	469	506	540	575	613
3-5 metres	12,432	73.4%	12,504	12,577	13,467	14,292	15,136	16,042
5-8 metres	4,034	21.5%	4,055	4,077	4,337	4,579	4,826	5,092
8-10 metres	171	1.0%	172	173	185	196	208	220
10-12 metres	83	0.4%	83	84	89	94	99	105
12-15 metres	84	0.4%	84	85	90	95	99	104
15-25 metres	44	0.2%	44	44	47	50	52	55
>25 metres	0	0.0%	0	0	0	0	0	0
Total	17,311	100.0%	17,410	17,509	18,721	19,845	20,996	22,230

Total Boats

<3 metres	465	3.0%	468	471	508	543	578	615
3-5 metres	12,469	71.3%	12,542	12,614	13,506	14,333	15,180	16,088
5-8 metres	4,172	21.7%	4,194	4,216	4,488	4,740	4,998	5,274
8-10 metres	297	1.7%	299	300	321	341	361	382
10-12 metres	228	1.2%	229	230	245	259	273	288
12-15 metres	191	0.9%	192	193	204	214	224	235
15-25 metres	65	0.3%	65	66	70	74	78	82
>25 metres	0	0.0%	0	0	0	0	0	0
Total	17,887	100.0%	17,989	18,091	19,342	20,503	21,692	22,965

TOWNSVILLE
Sail Boat

<3 metres	3	0.7%	3	3	3	4	4	4
3-5 metres	27	7.0%	28	28	32	34	36	38
5-8 metres	105	28.5%	107	109	124	135	144	151
8-10 metres	83	22.3%	85	86	98	106	113	119
10-12 metres	105	26.3%	107	109	122	132	141	148
12-15 metres	56	13.5%	57	58	65	70	74	78
15-25 metres	7	1.8%	7	7	8	9	9	10
>25 metres	0	0.0%	0	0	0	0	0	0
Total	386	100.0%	394	402	452	490	521	549

Boats w/o sails

<3 metres	361	2.3%	368	376	424	462	491	518
3-5 metres	13,615	79.8%	13,870	14,131	15,779	17,060	18,072	18,977
5-8 metres	3,130	16.4%	3,183	3,236	3,576	3,839	4,048	4,234
8-10 metres	101	0.6%	103	105	116	125	132	139
10-12 metres	76	0.4%	77	79	88	95	100	105
12-15 metres	63	0.3%	64	65	72	77	81	85
15-25 metres	23	0.1%	23	24	26	27	29	30

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
>25 metres	3	0.0%	3	3	3	3	4	4
Total	17,372	100.0%	17,692	18,018	20,084	21,689	22,957	24,092

Total Boats

<3 metres	364	2.3%	372	379	428	465	495	522
3-5 metres	13,642	78.1%	13,898	14,159	15,811	17,094	18,108	19,016
5-8 metres	3,235	16.7%	3,290	3,346	3,699	3,974	4,191	4,385
8-10 metres	184	1.1%	188	191	214	232	246	258
10-12 metres	181	1.0%	184	188	210	227	241	253
12-15 metres	119	0.6%	121	123	137	147	156	163
15-25 metres	30	0.1%	30	31	34	36	38	40
>25 metres	3	0.0%	3	3	3	3	4	4
Total	17,758	100.0%	18,086	18,420	20,536	22,179	23,479	24,641

CENTRAL WEST

Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	50.0%	2	2	2	2	2	2
5-8 metres	0	0.0%	0	0	0	0	0	0
8-10 metres	0	0.0%	0	0	0	0	0	0
10-12 metres	1	33.3%	1	1	1	1	1	1
12-15 metres	1	16.7%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	4	100.0%	4	4	4	4	4	4

Boats w/o sails

<3 metres	32	8.2%	32	32	33	33	34	36
3-5 metres	330	77.8%	330	329	337	344	353	366
5-8 metres	67	13.8%	67	67	68	69	71	73
8-10 metres	1	0.0%	1	1	1	1	1	1
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	431	100.0%	431	430	440	449	461	477

Total Boats

<3 metres	32	8.2%	32	32	33	33	34	36
3-5 metres	332	77.7%	332	331	339	346	355	368
5-8 metres	67	13.7%	67	67	68	69	71	73
8-10 metres	1	0.0%	1	1	1	1	1	1
10-12 metres	1	0.2%	1	1	1	1	1	1
12-15 metres	2	0.2%	2	2	2	2	2	2
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	435	100.0%	435	434	444	453	465	481

EMERALD

Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	13.3%	2	2	3	3	3	3
5-8 metres	6	31.6%	6	6	7	8	9	9
8-10 metres	2	18.4%	2	2	3	3	4	4
10-12 metres	5	26.5%	5	5	6	7	7	8
12-15 metres	3	10.2%	3	3	3	4	4	4
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	18	100.0%	19	19	22	24	26	29

Boats w/o sails

<3 metres	89	4.1%	92	96	107	119	129	140
3-5 metres	1,784	72.8%	1,841	1,900	2,108	2,307	2,496	2,686

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
5-8 metres	625	22.4%	643	661	725	786	844	903
8-10 metres	9	0.5%	9	10	11	12	14	15
10-12 metres	1	0.1%	1	1	1	2	2	2
12-15 metres	3	0.1%	3	3	3	4	4	4
15-25 metres	4	0.1%	4	4	4	5	5	5
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,515	100.0%	2,593	2,674	2,960	3,233	3,493	3,754
<i>Total Boats</i>								
<3 metres	89	4.1%	92	96	107	119	129	140
3-5 metres	1,786	72.2%	1,843	1,902	2,111	2,309	2,499	2,689
5-8 metres	631	22.5%	649	667	732	794	853	912
8-10 metres	11	0.6%	11	12	14	15	17	19
10-12 metres	6	0.3%	6	6	7	8	9	10
12-15 metres	6	0.2%	6	6	7	7	8	8
15-25 metres	4	0.1%	4	4	4	5	5	5
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,533	100.0%	2,612	2,694	2,982	3,257	3,519	3,783
MACKAY								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	15	5.1%	16	16	19	20	22	22
5-8 metres	85	31.5%	89	93	108	119	126	131
8-10 metres	51	20.1%	53	56	65	73	77	80
10-12 metres	75	27.0%	78	82	94	104	110	114
12-15 metres	48	14.4%	50	51	58	63	67	69
15-25 metres	3	2.0%	3	3	4	5	6	6
>25 metres	0	0.0%	0	0	0	0	0	0
Total	277	100.0%	289	301	349	385	407	423
<i>Boats w/o sails</i>								
<3 metres	378	3.4%	395	412	479	530	561	584
3-5 metres	9,739	77.6%	10,126	10,528	12,079	13,253	13,973	14,510
5-8 metres	2,403	17.0%	2,488	2,576	2,915	3,171	3,329	3,446
8-10 metres	135	0.9%	140	145	164	178	187	193
10-12 metres	75	0.6%	78	81	92	101	106	110
12-15 metres	64	0.4%	66	69	77	84	88	91
15-25 metres	22	0.1%	23	23	26	28	30	31
>25 metres	1	0.0%	1	1	1	2	2	2
Total	12,817	100.0%	13,316	13,834	15,833	17,347	18,274	18,967
<i>Total Boats</i>								
<3 metres	378	3.3%	395	412	479	530	561	584
3-5 metres	9,754	75.9%	10,141	10,544	12,098	13,274	13,994	14,532
5-8 metres	2,488	17.3%	2,576	2,668	3,022	3,290	3,454	3,577
8-10 metres	186	1.4%	193	200	229	251	264	274
10-12 metres	150	1.2%	156	162	186	205	216	224
12-15 metres	112	0.8%	116	120	136	148	155	160
15-25 metres	25	0.2%	26	27	31	33	35	36
>25 metres	1	0.0%	1	1	1	2	2	2
Total	13,094	100.0%	13,604	14,135	16,182	17,732	18,681	19,390
WHITSUNDAY								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	4	1.5%	4	4	5	5	6	6
5-8 metres	79	19.7%	80	82	91	99	105	111
8-10 metres	89	24.9%	91	92	104	114	122	130
10-12 metres	118	29.4%	120	122	136	148	157	166
12-15 metres	83	18.3%	84	85	94	102	108	113
15-25 metres	24	5.9%	24	25	28	30	32	34
>25 metres	1	0.3%	1	1	1	1	1	1

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
Total	398	100.0%	404	411	459	500	532	562
<i>Boats w/o sails</i>								
<3 metres	108	2.5%	110	112	126	137	146	155
3-5 metres	3,322	71.1%	3,374	3,428	3,817	4,146	4,405	4,642
5-8 metres	1,071	21.0%	1,086	1,102	1,217	1,315	1,391	1,461
8-10 metres	100	2.0%	101	103	114	123	130	137
10-12 metres	62	1.4%	63	64	72	78	83	88
12-15 metres	57	1.2%	58	59	66	71	76	80
15-25 metres	43	0.7%	44	44	48	51	54	57
>25 metres	2	0.0%	2	2	2	2	2	3
Total	4,765	100.0%	4,839	4,914	5,462	5,925	6,289	6,623
<i>Total Boats</i>								
<3 metres	108	2.3%	110	112	126	137	146	155
3-5 metres	3,326	65.4%	3,378	3,432	3,822	4,152	4,411	4,649
5-8 metres	1,150	20.9%	1,167	1,184	1,309	1,414	1,497	1,573
8-10 metres	189	3.9%	192	195	218	238	253	267
10-12 metres	180	3.7%	183	186	208	226	241	254
12-15 metres	140	2.6%	142	144	160	173	184	193
15-25 metres	67	1.1%	68	69	76	81	86	90
>25 metres	3	0.0%	3	3	3	4	4	4
Total	5,163	100.0%	5,243	5,325	5,921	6,425	6,821	7,184
GLADSTONE								
<i>Sail Boat</i>								
<3 metres	0	0.5%	0	0	0	0	0	1
3-5 metres	13	5.1%	13	13	15	16	17	18
5-8 metres	44	25.7%	45	46	52	57	64	71
8-10 metres	44	22.9%	45	46	51	56	62	68
10-12 metres	53	24.3%	54	55	60	66	72	78
12-15 metres	36	18.8%	37	38	42	46	51	56
15-25 metres	5	2.6%	5	5	6	6	7	8
>25 metres	0	0.0%	0	0	0	0	0	0
Total	195	100.0%	200	205	226	247	272	299
<i>Boats w/o sails</i>								
<3 metres	288	3.8%	295	302	333	365	401	440
3-5 metres	5,852	76.3%	5992	6136	6749	7393	8121	8901
5-8 metres	1,511	18.1%	1544	1578	1724	1876	2049	2234
8-10 metres	76	0.9%	78	80	87	95	104	114
10-12 metres	32	0.4%	33	33	36	40	43	47
12-15 metres	37	0.4%	38	39	42	46	50	54
15-25 metres	8	0.1%	8	8	9	10	11	12
>25 metres	0	0.0%	0	0	0	0	0	0
Total	7,804	100.0%	7,988	8,176	8,980	9,824	10,779	11,802
<i>Total Boats</i>								
<3 metres	288	3.7%	295	302	333	365	402	441
3-5 metres	5,865	74.5%	6,006	6,150	6,764	7,408	8,138	8,920
5-8 metres	1,555	18.3%	1,590	1,625	1,776	1,934	2,113	2,305
8-10 metres	120	1.5%	123	126	138	151	166	181
10-12 metres	85	1.0%	87	89	97	105	115	125
12-15 metres	73	0.9%	75	76	84	92	100	110
15-25 metres	13	0.2%	13	14	15	16	18	19
>25 metres	0	0.0%	0	0	0	0	0	0
Total	7,999	100.0%	8,188	8,381	9,206	10,072	11,051	12,101
ROCKHAMPTON								
<i>Sail Boat</i>								
<3 metres	1	0.1%	1	1	1	1	1	1
3-5 metres	11	5.2%	11	12	12	13	14	15
5-8 metres	58	28.0%	59	61	66	70	75	80

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
8-10 metres	67	29.7%	69	70	75	80	85	91
10-12 metres	48	22.7%	49	50	54	58	62	66
12-15 metres	29	13.5%	30	30	33	35	37	40
15-25 metres	2	0.8%	2	2	2	2	2	3
>25 metres	0	0.0%	0	0	0	0	0	0
Total	216	100.0%	221	227	244	260	278	296
<i>Boats w/o sails</i>								
<3 metres	246	3.4%	252	259	280	301	322	344
3-5 metres	6,140	74.8%	6,281	6,425	6,879	7,331	7,804	8,274
5-8 metres	1,704	18.8%	1,740	1,776	1,890	2,004	2,123	2,242
8-10 metres	119	1.4%	122	124	133	141	149	158
10-12 metres	86	0.9%	88	90	95	101	107	113
12-15 metres	52	0.5%	53	54	57	60	64	67
15-25 metres	7	0.1%	7	7	8	8	8	9
>25 metres	0	0.0%	0	0	0	0	0	0
Total	8,354	100.0%	8,542	8,735	9,341	9,946	10,577	11,206
<i>Total Boats</i>								
<3 metres	247	3.3%	253	260	281	302	323	345
3-5 metres	6,151	72.9%	6,292	6,437	6,891	7,344	7,818	8,289
5-8 metres	1,762	19.1%	1,799	1,837	1,956	2,075	2,198	2,322
8-10 metres	186	2.1%	190	194	208	221	235	249
10-12 metres	134	1.5%	137	140	150	159	169	179
12-15 metres	81	0.9%	83	84	90	95	101	107
15-25 metres	9	0.1%	9	9	10	10	11	11
>25 metres	0	0.0%	0	0	0	0	0	0
Total	8,570	100.0%	8,764	8,962	9,585	10,206	10,855	11,502
NORTH WIDE BAY								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	18	8.0%	18	18	19	21	22	24
5-8 metres	50	25.9%	50	51	54	58	63	68
8-10 metres	47	18.0%	47	47	50	53	56	60
10-12 metres	64	27.4%	64	65	69	73	78	83
12-15 metres	39	16.5%	39	39	42	44	47	51
15-25 metres	9	3.7%	9	9	10	10	11	12
>25 metres	1	0.5%	1	1	1	1	1	1
Total	228	100.0%	229	230	245	261	278	298
<i>Boats w/o sails</i>								
<3 metres	281	3.5%	283	284	306	328	354	382
3-5 metres	7,545	85.3%	7,587	7,629	8,158	8,696	9,321	10,023
5-8 metres	972	10.1%	977	982	1,045	1,109	1,183	1,266
8-10 metres	37	0.4%	37	37	40	43	46	49
10-12 metres	26	0.3%	26	26	28	30	32	35
12-15 metres	28	0.3%	28	28	30	32	34	36
15-25 metres	8	0.1%	8	8	9	9	10	10
>25 metres	1	0.0%	1	1	1	1	2	2
Total	8,898	100.0%	8,947	8,997	9,617	10,248	10,981	11,805
<i>Total Boats</i>								
<3 metres	281	3.4%	283	284	306	328	354	382
3-5 metres	7,563	83.5%	7,605	7,647	8,177	8,717	9,343	10,047
5-8 metres	1,022	10.5%	1,027	1,033	1,099	1,167	1,246	1,334
8-10 metres	84	0.8%	84	85	90	96	102	109
10-12 metres	90	0.9%	90	91	97	103	110	118
12-15 metres	67	0.7%	67	68	72	76	81	87
15-25 metres	17	0.2%	17	17	18	19	21	22
>25 metres	2	0.0%	2	2	2	2	3	3
Total	9,126	100.0%	9,176	9,227	9,862	10,509	11,259	12,103

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
SOUTH WIDE BAY								
<i>Sail Boat</i>								
<3 metres	1	0.3%	1	1	1	1	1	2
3-5 metres	34	7.4%	35	35	39	42	45	48
5-8 metres	151	31.6%	154	156	172	185	198	212
8-10 metres	118	24.1%	120	122	134	144	154	164
10-12 metres	111	22.4%	113	115	126	135	145	154
12-15 metres	69	12.4%	70	71	77	82	88	93
15-25 metres	10	1.8%	10	10	11	12	13	14
>25 metres	0	0.0%	0	0	0	0	0	0
Total	494	100.0%	502	511	559	602	644	686
<i>Boats w/o sails</i>								
<3 metres	412	3.2%	419	427	470	508	545	582
3-5 metres	10,844	78.4%	11,029	11,216	12,286	13,227	14,157	15,076
5-8 metres	2,335	16.1%	2,373	2,411	2,631	2,824	3,015	3,203
8-10 metres	165	1.2%	168	171	186	200	214	228
10-12 metres	88	0.6%	89	91	99	106	113	120
12-15 metres	73	0.4%	74	75	80	85	90	95
15-25 metres	22	0.1%	22	23	25	26	28	30
>25 metres	1	0.0%	1	1	1	1	1	1
Total	13,940	100.0%	14,175	14,415	15,779	16,978	18,164	19,335
<i>Total Boats</i>								
<3 metres	413	3.1%	420	428	471	509	547	584
3-5 metres	10,878	76.0%	11,063	11,252	12,325	13,269	14,202	15,124
5-8 metres	2,486	16.6%	2,527	2,568	2,803	3,009	3,213	3,415
8-10 metres	283	2.0%	288	293	320	344	368	392
10-12 metres	199	1.3%	202	206	225	241	258	274
12-15 metres	142	0.8%	144	146	158	168	178	188
15-25 metres	32	0.2%	32	33	36	38	41	43
>25 metres	1	0.0%	1	1	1	1	1	1
Total	14,434	100.0%	14,678	14,926	16,338	17,580	18,808	20,021
DARLING DOWNS								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	6	12.5%	6	6	7	7	8	9
5-8 metres	28	43.6%	28	29	31	33	35	37
8-10 metres	11	17.4%	11	11	12	13	14	15
10-12 metres	11	17.4%	11	11	12	13	14	15
12-15 metres	9	9.1%	9	9	10	10	10	11
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	65	100.0%	66	67	71	76	81	86
<i>Boats w/o sails</i>								
<3 metres	335	5.6%	341	348	378	411	442	473
3-5 metres	5,394	79.1%	5484	5575	6001	6460	6898	7340
5-8 metres	1,059	14.3%	1075	1092	1169	1252	1331	1411
8-10 metres	21	0.3%	21	22	23	25	27	28
10-12 metres	23	0.3%	23	24	26	27	29	31
12-15 metres	16	0.2%	16	17	18	19	20	22
15-25 metres	11	0.1%	11	11	12	12	13	14
>25 metres	0	0.0%	0	0	0	0	0	0
Total	6,859	100.0%	6,972	7,087	7,627	8,207	8,760	9,319
<i>Total Boats</i>								
<3 metres	335	5.6%	341	348	378	411	442	473
3-5 metres	5,400	78.6%	5,490	5,581	6,008	6,468	6,906	7,348
5-8 metres	1,087	14.6%	1,104	1,121	1,200	1,285	1,366	1,448
8-10 metres	32	0.4%	33	33	35	38	40	43
10-12 metres	34	0.5%	35	35	38	40	43	46

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
12-15 metres	25	0.3%	25	26	27	29	31	33
15-25 metres	11	0.1%	11	11	12	12	13	14
>25 metres	0	0.0%	0	0	0	0	0	0
Total	6,924	100.0%	7,038	7,154	7,698	8,283	8,841	9,404

SOUTH CENTRAL
Sail Boat

<3 metres	2	15.9%	2	2	2	2	2	2
3-5 metres	1	15.9%	1	1	1	1	1	1
5-8 metres	5	45.5%	5	5	5	5	5	6
8-10 metres	1	18.2%	1	1	1	1	1	1
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	0	4.5%	0	0	0	0	0	0
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	9	100.0%	9	9	9	10	10	10

Boats w/o sails

<3 metres	122	6.6%	122	123	127	131	135	138
3-5 metres	1,567	77.0%	1,570	1,574	1,622	1,677	1,718	1,749
5-8 metres	365	15.9%	366	366	376	388	396	403
8-10 metres	6	0.3%	6	6	6	6	7	7
10-12 metres	1	0.1%	1	1	1	1	1	1
12-15 metres	2	0.1%	2	2	2	2	2	2
15-25 metres	1	0.1%	1	1	1	1	1	1
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,064	100.0%	2,068	2,073	2,136	2,207	2,260	2,301

Total Boats

<3 metres	124	6.6%	124	125	129	134	137	140
3-5 metres	1,568	76.7%	1,571	1,575	1,623	1,678	1,719	1,750
5-8 metres	370	16.1%	371	371	382	393	402	408
8-10 metres	7	0.4%	7	7	7	8	8	8
10-12 metres	1	0.1%	1	1	1	1	1	1
12-15 metres	2	0.1%	2	2	2	2	2	2
15-25 metres	1	0.1%	1	1	1	1	1	1
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,073	100.0%	2,077	2,082	2,145	2,217	2,270	2,311

SOUTH WEST QLD
Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	1	100.0%	1	1	1	1	1	1
5-8 metres	0	0.0%	0	0	0	0	0	0
8-10 metres	0	0.0%	0	0	0	0	0	0
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	0	0.0%	0	0	0	0	0	0
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1	100.0%	1	1	1	1	1	1

Boats w/o sails

<3 metres	23	10.8%	23	23	23	23	23	23
3-5 metres	176	75.0%	175	174	174	175	175	176
5-8 metres	37	13.4%	37	37	37	37	37	37
8-10 metres	1	0.3%	1	1	1	1	1	1
10-12 metres	1	0.3%	1	1	1	1	1	1
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	239	100.0%	238	237	237	237	238	238

Total Boats

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
<3 metres	23	10.8%	23	23	23	23	23	23
3-5 metres	177	75.1%	176	175	175	176	176	177
5-8 metres	37	13.4%	37	37	37	37	37	37
8-10 metres	1	0.3%	1	1	1	1	1	1
10-12 metres	1	0.3%	1	1	1	1	1	1
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	240	100.0%	239	238	238	238	239	239

SEQ NORTH
Sail Boat

<3 metres	7	0.3%	7	7	8	9	9	10
3-5 metres	148	5.5%	150	151	164	175	183	190
5-8 metres	792	31.5%	801	811	887	947	994	1031
8-10 metres	526	20.3%	532	538	587	626	656	680
10-12 metres	610	23.6%	617	624	681	726	761	789
12-15 metres	431	15.6%	436	440	478	508	531	549
15-25 metres	76	3.0%	77	78	85	91	95	99
>25 metres	2	0.1%	2	2	2	3	3	3
Total	2,592	100.0%	2,622	2,652	2,892	3,084	3,232	3,351

Boats w/o sails

<3 metres	2,991	5.6%	3,029	3,066	3,370	3,612	3,799	3,949
3-5 metres	42,902	71.4%	43,383	43,870	47,764	50,877	53,269	55,204
5-8 metres	12,543	19.5%	12,675	12,808	13,872	14,723	15,377	15,906
8-10 metres	843	1.4%	852	862	937	997	1,043	1,080
10-12 metres	638	1.1%	645	652	710	756	791	820
12-15 metres	483	0.8%	488	494	536	569	595	616
15-25 metres	204	0.3%	206	208	223	235	244	251
>25 metres	12	0.0%	12	12	13	14	15	16
Total	60,616	100.0%	61,290	61,972	67,424	71,783	75,133	77,843

Total Boats

<3 metres	2,998	5.3%	3,036	3,074	3,378	3,621	3,808	3,959
3-5 metres	43,050	68.6%	43,533	44,022	47,928	51,052	53,452	55,394
5-8 metres	13,335	20.0%	13,476	13,619	14,759	15,670	16,371	16,938
8-10 metres	1,369	2.2%	1,384	1,400	1,524	1,623	1,699	1,760
10-12 metres	1,248	2.0%	1,262	1,276	1,391	1,482	1,552	1,609
12-15 metres	914	1.4%	924	934	1,013	1,077	1,126	1,165
15-25 metres	280	0.4%	283	286	308	326	339	350
>25 metres	14	0.0%	14	14	16	17	18	19
Total	63,208	100.0%	63,912	64,624	70,316	74,867	78,365	81,194

SEQ SOUTH
Sail Boat

<3 metres	10	0.7%	10	10	12	14	16	18
3-5 metres	122	6.8%	124	127	143	161	179	197
5-8 metres	502	33.1%	513	525	606	691	780	870
8-10 metres	345	20.6%	352	359	409	463	517	573
10-12 metres	345	20.9%	352	359	411	465	520	577
12-15 metres	229	14.1%	234	239	273	309	347	385
15-25 metres	54	3.8%	55	57	66	76	86	96
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,607	100.0%	1,641	1,676	1,920	2,179	2,445	2,717

Boats w/o sails

<3 metres	3,477	7.3%	3,558	3,640	4,221	4,834	5,467	6,112
3-5 metres	34,151	63.0%	34,844	35,551	40,539	45,804	51,235	56,775
5-8 metres	12,661	23.5%	12,919	13,182	15,040	17,000	19,022	21,085
8-10 metres	1,240	2.4%	1,266	1,293	1,482	1,681	1,887	2,097
10-12 metres	930	1.8%	950	970	1,110	1,259	1,413	1,569
12-15 metres	710	1.3%	725	740	845	957	1,072	1,189

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
15-25 metres	340	0.6%	346	353	398	445	494	544
>25 metres	33	0.1%	34	34	40	45	51	57
Total	53,542	100.0%	54,641	55,763	63,675	72,026	80,640	89,427

Total Boats

<3 metres	3,487	7.1%	3,568	3,651	4,233	4,848	5,483	6,130
3-5 metres	34,273	61.4%	34,968	35,678	40,682	45,965	51,414	56,972
5-8 metres	13,163	23.8%	13,432	13,707	15,645	17,691	19,802	21,955
8-10 metres	1,585	2.9%	1,618	1,652	1,891	2,144	2,405	2,670
10-12 metres	1,275	2.4%	1,302	1,329	1,521	1,724	1,933	2,146
12-15 metres	939	1.7%	958	978	1,118	1,266	1,419	1,574
15-25 metres	394	0.7%	402	409	463	521	580	640
>25 metres	33	0.1%	34	35	40	46	51	57
Total	55,149	100.0%	56,282	57,438	65,595	74,205	83,085	92,144

INTERSTATE

Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	1.4%	2	2	2	2	2	2
5-8 metres	15	14.3%	15	15	16	17	18	19
8-10 metres	14	18.3%	14	15	16	17	18	20
10-12 metres	35	31.7%	35	36	38	40	43	45
12-15 metres	29	30.5%	29	30	32	34	36	38
15-25 metres	6	3.8%	6	6	6	7	7	7
>25 metres	0	0.0%	0	0	0	0	0	0
Total	101	100.0%	102	104	111	118	125	132

Boats w/o sails

<3 metres	35	5.5%	35	36	38	41	43	46
3-5 metres	349	55.4%	354	359	383	408	433	456
5-8 metres	123	21.4%	125	127	136	146	155	164
8-10 metres	21	3.7%	21	22	23	25	27	28
10-12 metres	24	4.3%	24	25	27	29	30	32
12-15 metres	29	5.1%	29	30	32	34	37	39
15-25 metres	31	4.3%	31	32	34	36	37	39
>25 metres	1	0.4%	1	1	1	1	2	2
Total	613	100.0%	622	631	675	720	764	806

Total Boats

<3 metres	35	4.7%	35	36	38	41	43	46
3-5 metres	351	48.0%	356	361	386	410	435	458
5-8 metres	138	20.4%	140	142	153	163	174	184
8-10 metres	35	5.7%	36	36	39	42	45	48
10-12 metres	59	8.1%	60	61	65	69	73	77
12-15 metres	58	8.6%	59	60	64	69	73	77
15-25 metres	37	4.2%	37	38	40	42	44	47
>25 metres	1	0.3%	1	1	1	1	2	2
Total	714	100.0%	724	734	786	838	889	938

QUEENSLAND

Sail Boat

<3 metres	26	0.4%	26	27	30	33	37	39
3-5 metres	445	6.2%	452	459	505	548	588	626
5-8 metres	2,076	28.7%	2,111	2,148	2,388	2,607	2,808	3,000
8-10 metres	1,538	21.3%	1,563	1,588	1,756	1,909	2,049	2,183
10-12 metres	1,740	24.1%	1,767	1,795	1,981	2,148	2,300	2,444
12-15 metres	1,177	16.3%	1,194	1,212	1,330	1,437	1,534	1,627
15-25 metres	220	3.0%	224	227	252	276	297	318
>25 metres	4	0.1%	4	4	5	5	6	6
Total	7,226	100.0%	7,342	7,460	8,247	8,963	9,618	10,244

Boats w/o sails

<3 metres	9,708	4.4%	9,891	10,077	11,291	12,446	13,542	14,611
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	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	158,738	71.6%	161,404	164,127	180,854	196,212	210,416	224,153
5-8 metres	45,428	20.5%	46,153	46,894	51,577	55,956	60,063	64,056
8-10 metres	3,072	1.4%	3,125	3,179	3,536	3,878	4,205	4,525
10-12 metres	2,155	1.0%	2,192	2,230	2,485	2,729	2,962	3,189
12-15 metres	1,712	0.8%	1,740	1,769	1,962	2,148	2,325	2,498
15-25 metres	771	0.3%	782	794	871	947	1,019	1,090
>25 metres	54	0.0%	55	56	64	71	78	86
Total	221,638	100.0%	225,342	229,126	252,641	274,387	294,610	314,208
<i>Total Boats</i>								
<3 metres	9,734	4.3%	9,917	10,104	11,321	12,480	13,578	14,651
3-5 metres	159,183	69.6%	161,855	164,586	181,360	196,760	211,004	224,779
5-8 metres	47,504	20.8%	48,265	49,041	53,964	58,562	62,870	67,056
8-10 metres	4,610	2.0%	4,688	4,768	5,293	5,787	6,254	6,708
10-12 metres	3,895	1.7%	3,960	4,026	4,466	4,877	5,261	5,633
12-15 metres	2,889	1.3%	2,935	2,981	3,292	3,584	3,859	4,126
15-25 metres	991	0.4%	1,006	1,021	1,124	1,222	1,316	1,408
>25 metres	58	0.0%	59	60	68	76	84	92
Total	228,864	100.0%	232,684	236,586	260,888	283,349	304,227	324,453

Source: Economic Associates estimates

Table B.2: Projected Boat Registrations by Type, Length and Catchment, Increasing Incidence of Boat Ownership Scenario, 2010-2031

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
CAPE YORK								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	1.4%	2	2	2	2	3	3
5-8 metres	13	27.4%	14	14	18	22	26	31
8-10 metres	13	26.0%	13	14	17	22	25	30
10-12 metres	13	26.0%	13	14	17	22	25	30
12-15 metres	6	13.9%	6	7	8	11	13	15
15-25 metres	2	5.3%	2	2	3	4	5	5
>25 metres	0	0.0%	0	0	0	0	0	0
Total	49	100.0%	51	53	66	82	97	114
<i>Boats w/o sails</i>								
<3 metres	18	1.2%	18	19	22	25	28	31
3-5 metres	1,228	71.1%	1,250	1,273	1,439	1,637	1,817	2,010
5-8 metres	460	25.2%	468	476	535	605	669	738
8-10 metres	22	1.3%	22	23	26	29	32	36
10-12 metres	9	0.6%	9	9	11	12	14	15
12-15 metres	9	0.5%	9	9	11	12	13	15
15-25 metres	2	0.0%	2	2	2	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,748	100.0%	1,779	1,811	2,045	2,324	2,576	2,848
<i>Total Boats</i>								
<3 metres	18	1.2%	18	19	22	25	28	31
3-5 metres	1,230	69.3%	1,252	1,275	1,441	1,640	1,820	2,013
5-8 metres	473	25.3%	481	490	552	627	695	768
8-10 metres	35	1.9%	36	37	43	51	58	66
10-12 metres	22	1.2%	23	23	28	34	39	45
12-15 metres	15	0.9%	15	16	19	23	26	30
15-25 metres	4	0.2%	4	4	5	6	7	8
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,797	100.0%	1,830	1,864	2,110	2,406	2,673	2,962
NORTH WEST QLD								

NORTH WEST QLD

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	0	4.5%	0	0	0	0	0	1
5-8 metres	5	43.2%	5	6	7	8	9	10
8-10 metres	1	9.1%	1	1	1	2	2	2
10-12 metres	1	11.4%	1	1	1	2	2	2
12-15 metres	2	18.2%	2	2	3	3	4	4
15-25 metres	1	13.6%	1	1	2	2	2	3
>25 metres	0	0.0%	0	0	0	0	0	0
Total	10	100.0%	11	12	14	16	19	22
<i>Boats w/o sails</i>								
<3 metres	49	3.4%	53	56	58	62	67	73
3-5 metres	1,368	78.8%	1450	1538	1577	1681	1791	1931
5-8 metres	328	17.3%	346	365	374	397	421	452
8-10 metres	4	0.3%	4	5	5	5	5	6
10-12 metres	0	0.1%	0	0	0	0	0	0
12-15 metres	0	0.0%	0	0	0	0	0	0
15-25 metres	1	0.1%	1	1	1	1	1	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,750	100.0%	1,854	1,965	2,015	2,147	2,287	2,465
<i>Total Boats</i>								
<3 metres	49	3.4%	53	56	58	62	67	73
3-5 metres	1,368	78.5%	1,450	1,538	1,577	1,681	1,792	1,932
5-8 metres	333	17.4%	351	371	381	404	430	462
8-10 metres	5	0.3%	5	6	6	7	7	8
10-12 metres	1	0.1%	1	1	2	2	2	3
12-15 metres	2	0.1%	2	2	3	3	4	4
15-25 metres	2	0.1%	2	2	3	3	4	4
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1,760	100.0%	1,865	1,977	2,029	2,163	2,306	2,487
CAIRNS								
<i>Sail Boat</i>								
<3 metres	2	0.3%	2	2	2	3	3	3
3-5 metres	37	5.7%	38	38	44	50	55	62
5-8 metres	138	28.2%	142	145	173	203	229	260
8-10 metres	126	23.0%	129	132	154	179	201	225
10-12 metres	145	23.9%	148	151	175	200	223	248
12-15 metres	107	14.8%	109	111	125	141	155	171
15-25 metres	21	4.1%	22	22	26	30	34	39
>25 metres	0	0.0%	0	0	0	0	0	0
Total	576	100.0%	589	602	699	806	901	1,008
<i>Boats w/o sails</i>								
<3 metres	463	3.0%	470	477	536	597	653	714
3-5 metres	12,432	73.4%	12,599	12,767	14,200	15,649	16,997	18,472
5-8 metres	4,034	21.5%	4,083	4,132	4,552	4,977	5,372	5,804
8-10 metres	171	1.0%	173	176	195	215	233	253
10-12 metres	83	0.4%	84	85	94	102	110	119
12-15 metres	84	0.4%	85	86	94	102	110	118
15-25 metres	44	0.2%	44	45	49	54	58	62
>25 metres	0	0.0%	0	0	0	0	0	1
Total	17,311	100.0%	17,538	17,768	19,720	21,695	23,532	25,543
<i>Total Boats</i>								
<3 metres	465	3.0%	472	479	540	602	659	722
3-5 metres	12,469	71.3%	12,640	12,813	14,274	15,756	17,133	18,642
5-8 metres	4,172	21.7%	4,224	4,277	4,722	5,174	5,593	6,053
8-10 metres	297	1.7%	301	305	340	375	407	443
10-12 metres	228	1.2%	231	234	258	282	305	330
12-15 metres	191	0.9%	193	195	213	231	248	266

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
15-25 metres	65	0.3%	66	67	74	81	87	94
>25 metres	0	0.0%	0	0	0	0	0	1
Total	17,887	100.0%	18,127	18,370	20,420	22,500	24,433	26,550

TOWNSVILLE
Sail Boat

<3 metres	3	0.7%	3	3	3	3	3	4
3-5 metres	27	7.0%	27	28	29	30	31	32
5-8 metres	105	28.5%	106	107	115	119	122	125
8-10 metres	83	22.3%	84	85	91	94	97	98
10-12 metres	105	26.3%	106	107	114	118	121	123
12-15 metres	56	13.5%	57	57	61	63	64	65
15-25 metres	7	1.8%	7	7	8	8	8	8
>25 metres	0	0.0%	0	0	0	0	0	0
Total	386	100.0%	390	394	420	435	447	455

Boats w/o sails

<3 metres	361	2.3%	374	387	469	546	608	669
3-5 metres	13,615	79.8%	14,054	14,507	17,298	19,948	22,057	24,169
5-8 metres	3,130	16.4%	3,220	3,314	3,888	4,434	4,868	5,303
8-10 metres	101	0.6%	104	107	127	146	161	175
10-12 metres	76	0.4%	78	81	96	111	122	134
12-15 metres	63	0.3%	65	67	78	89	98	107
15-25 metres	23	0.1%	24	24	28	31	34	37
>25 metres	3	0.0%	3	3	3	4	4	4
Total	17,372	100.0%	17,922	18,489	21,988	25,309	27,952	30,598

Total Boats

<3 metres	364	2.3%	377	390	472	549	611	673
3-5 metres	13,642	78.1%	14,081	14,534	17,328	19,979	22,088	24,201
5-8 metres	3,235	16.7%	3,326	3,421	4,003	4,553	4,990	5,428
8-10 metres	184	1.1%	188	192	218	239	257	274
10-12 metres	181	1.0%	184	188	210	228	243	257
12-15 metres	119	0.6%	121	124	139	152	162	172
15-25 metres	30	0.1%	31	31	35	39	42	45
>25 metres	3	0.0%	3	3	3	4	4	4
Total	17,758	100.0%	18,312	18,883	22,408	25,743	28,398	31,054

CENTRAL WEST
Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	50.0%	2	2	2	2	2	2
5-8 metres	0	0.0%	0	0	0	0	0	0
8-10 metres	0	0.0%	0	0	0	0	0	0
10-12 metres	1	33.3%	1	1	1	1	1	1
12-15 metres	1	16.7%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	4	100.0%	4	4	4	4	5	5

Boats w/o sails

<3 metres	32	8.2%	32	33	36	39	42	46
3-5 metres	330	77.8%	334	337	368	400	428	463
5-8 metres	67	13.8%	68	68	74	79	84	90
8-10 metres	1	0.0%	1	1	1	1	1	1
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	431	100.0%	436	440	480	520	557	602

Total Boats

<3 metres	32	8.2%	32	33	36	39	42	46
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	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	332	77.7%	336	339	370	402	431	465
5-8 metres	67	13.7%	68	68	74	79	84	90
8-10 metres	1	0.0%	1	1	1	1	1	1
10-12 metres	1	0.2%	1	1	1	1	1	1
12-15 metres	2	0.2%	2	2	2	2	2	2
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	435	100.0%	440	444	484	525	562	607

EMERALD
Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	13.3%	2	2	2	2	2	2
5-8 metres	6	31.6%	6	6	6	6	6	7
8-10 metres	2	18.4%	2	2	2	2	2	2
10-12 metres	5	26.5%	5	5	5	5	5	5
12-15 metres	3	10.2%	3	3	3	3	3	3
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	18	100.0%	18	19	19	19	20	20

Boats w/o sails

<3 metres	89	4.1%	95	101	127	158	186	217
3-5 metres	1,784	72.8%	1,884	1,989	2,464	3,007	3,498	4,045
5-8 metres	625	22.4%	656	688	835	1,002	1,153	1,322
8-10 metres	9	0.5%	10	10	13	17	20	23
10-12 metres	1	0.1%	1	1	2	2	3	3
12-15 metres	3	0.1%	3	3	4	5	5	6
15-25 metres	4	0.1%	4	4	5	5	6	6
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,515	100.0%	2,652	2,796	3,450	4,196	4,871	5,623

Total Boats

<3 metres	89	4.1%	95	101	127	158	186	217
3-5 metres	1,786	72.2%	1,886	1,991	2,467	3,009	3,500	4,047
5-8 metres	631	22.5%	662	694	841	1,008	1,160	1,329
8-10 metres	11	0.6%	12	12	16	19	22	26
10-12 metres	6	0.3%	6	6	7	7	8	9
12-15 metres	6	0.2%	6	6	7	8	8	9
15-25 metres	4	0.1%	4	4	5	5	6	6
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,533	100.0%	2,670	2,815	3,469	4,215	4,890	5,643

MACKAY
Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	15	5.1%	15	16	18	19	19	19
5-8 metres	85	31.5%	88	91	101	107	110	112
8-10 metres	51	20.1%	53	55	61	65	67	68
10-12 metres	75	27.0%	77	80	89	94	97	98
12-15 metres	48	14.4%	49	51	55	58	59	60
15-25 metres	3	2.0%	3	3	4	4	5	5
>25 metres	0	0.0%	0	0	0	0	0	0
Total	277	100.0%	286	295	327	347	357	362

Boats w/o sails

<3 metres	378	3.4%	402	428	542	652	730	802
3-5 metres	9,739	77.6%	10,297	10,886	13,546	16,093	17,880	19,560
5-8 metres	2,403	17.0%	2,525	2,654	3,235	3,792	4,183	4,550
8-10 metres	135	0.9%	142	149	182	213	235	255
10-12 metres	75	0.6%	79	83	103	121	134	147
12-15 metres	64	0.4%	67	71	86	101	111	120
15-25 metres	22	0.1%	23	24	29	33	37	40

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
>25 metres	1	0.0%	1	1	2	2	2	3
Total	12,817	100.0%	13,536	14,295	17,724	21,007	23,311	25,477

Total Boats

<3 metres	378	3.3%	402	428	542	652	730	802
3-5 metres	9,754	75.9%	10,312	10,902	13,563	16,111	17,899	19,579
5-8 metres	2,488	17.3%	2,613	2,745	3,336	3,899	4,293	4,662
8-10 metres	186	1.4%	195	204	243	278	302	323
10-12 metres	150	1.2%	157	163	191	215	231	245
12-15 metres	112	0.8%	117	121	141	159	170	181
15-25 metres	25	0.2%	26	27	33	38	41	44
>25 metres	1	0.0%	1	1	2	2	2	3
Total	13,094	100.0%	13,822	14,591	18,051	21,354	23,668	25,839

WHITSUNDAY

Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	4	1.5%	4	4	5	5	5	5
5-8 metres	79	19.7%	80	80	87	91	94	97
8-10 metres	89	24.9%	90	91	99	104	109	112
10-12 metres	118	29.4%	119	120	129	136	141	145
12-15 metres	83	18.3%	84	84	90	94	97	100
15-25 metres	24	5.9%	24	24	26	28	29	29
>25 metres	1	0.3%	1	1	1	1	1	1
Total	398	100.0%	402	405	437	458	476	491

Boats w/o sails

<3 metres	108	2.5%	112	116	145	175	199	224
3-5 metres	3,322	71.1%	3,439	3,560	4,362	5,205	5,885	6,599
5-8 metres	1,071	21.0%	1,106	1,141	1,379	1,628	1,829	2,040
8-10 metres	100	2.0%	103	107	129	153	172	192
10-12 metres	62	1.4%	64	67	82	99	112	126
12-15 metres	57	1.2%	59	61	75	90	102	114
15-25 metres	43	0.7%	44	45	54	62	69	77
>25 metres	2	0.0%	2	2	2	3	3	3
Total	4,765	100.0%	4,930	5,100	6,229	7,415	8,372	9,376

Total Boats

<3 metres	108	2.3%	112	116	145	175	199	224
3-5 metres	3,326	65.4%	3,443	3,564	4,367	5,210	5,891	6,604
5-8 metres	1,150	20.9%	1,185	1,222	1,465	1,719	1,924	2,137
8-10 metres	189	3.9%	193	197	228	257	280	304
10-12 metres	180	3.7%	183	187	212	235	253	271
12-15 metres	140	2.6%	143	145	165	184	199	214
15-25 metres	67	1.1%	68	70	80	90	98	106
>25 metres	3	0.0%	3	3	4	4	4	5
Total	5,163	100.0%	5,331	5,506	6,665	7,873	8,848	9,867

GLADSTONE

Sail Boat

<3 metres	0	0.5%	0	0	0	0	0	1
3-5 metres	13	5.1%	13	14	15	16	17	19
5-8 metres	44	25.7%	45	47	53	59	66	74
8-10 metres	44	22.9%	45	46	52	57	64	70
10-12 metres	53	24.3%	54	56	61	67	74	81
12-15 metres	36	18.8%	37	38	42	47	52	58
15-25 metres	5	2.6%	5	5	6	7	7	8
>25 metres	0	0.0%	0	0	0	0	0	0
Total	195	100.0%	200	206	229	254	281	310

Boats w/o sails

<3 metres	288	3.8%	303	318	399	497	595	711
3-5 metres	5,852	76.3%	6,150	6,463	8,077	10,044	12,010	14,323

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
5-8 metres	1,511	18.1%	1,582	1,656	2,039	2,505	2,972	3,520
8-10 metres	76	0.9%	80	84	103	128	152	180
10-12 metres	32	0.4%	33	35	43	53	62	74
12-15 metres	37	0.4%	39	40	50	61	72	85
15-25 metres	8	0.1%	8	9	11	13	16	18
>25 metres	0	0.0%	0	0	0	0	0	0
Total	7,804	100.0%	8,195	8,605	10,722	13,300	15,878	18,911

Total Boats

<3 metres	288	3.7%	303	319	399	497	596	711
3-5 metres	5,865	74.5%	6,163	6,476	8,092	10,060	12,028	14,342
5-8 metres	1,555	18.3%	1,627	1,703	2,091	2,564	3,038	3,594
8-10 metres	120	1.5%	125	130	155	185	216	251
10-12 metres	85	1.0%	88	91	104	120	136	155
12-15 metres	73	0.9%	76	78	92	108	124	142
15-25 metres	13	0.2%	14	14	17	20	23	26
>25 metres	0	0.0%	0	0	0	0	0	0
Total	7,999	100.0%	8,395	8,810	10,950	13,554	16,159	19,221

ROCKHAMPTON

Sail Boat

<3 metres	1	0.1%	1	1	1	1	1	1
3-5 metres	11	5.2%	11	12	12	13	14	15
5-8 metres	58	28.0%	59	61	65	69	74	78
8-10 metres	67	29.7%	68	70	74	79	84	88
10-12 metres	48	22.7%	49	50	54	57	61	64
12-15 metres	29	13.5%	30	30	32	34	37	39
15-25 metres	2	0.8%	2	2	2	2	2	3
>25 metres	0	0.0%	0	0	0	0	0	0
Total	216	100.0%	221	226	241	256	272	287

Boats w/o sails

<3 metres	246	3.4%	260	274	337	411	479	554
3-5 metres	6,140	74.8%	6,435	6,744	8,127	9,741	11,216	12,858
5-8 metres	1,704	18.8%	1,778	1,856	2,205	2,611	2,983	3,396
8-10 metres	119	1.4%	124	130	155	185	212	242
10-12 metres	86	0.9%	90	94	111	131	150	171
12-15 metres	52	0.5%	54	56	66	77	87	99
15-25 metres	7	0.1%	7	7	9	10	11	12
>25 metres	0	0.0%	0	0	0	0	0	0
Total	8,354	100.0%	8,749	9,162	11,010	13,167	15,138	17,333

Total Boats

<3 metres	247	3.3%	261	275	338	412	480	555
3-5 metres	6,151	72.9%	6,446	6,756	8,139	9,755	11,230	12,873
5-8 metres	1,762	19.1%	1,838	1,917	2,270	2,680	3,056	3,474
8-10 metres	186	2.1%	193	200	230	264	296	330
10-12 metres	134	1.5%	139	144	165	189	211	235
12-15 metres	81	0.9%	84	87	98	111	124	137
15-25 metres	9	0.1%	9	10	11	12	14	15
>25 metres	0	0.0%	0	0	0	0	0	0
Total	8,570	100.0%	8,969	9,388	11,250	13,423	15,409	17,620

NORTH WIDE BAY

Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	18	8.0%	19	21	30	44	58	76
5-8 metres	50	25.9%	54	58	89	134	179	239
8-10 metres	47	18.0%	50	53	74	105	137	179
10-12 metres	64	27.4%	68	73	106	153	200	264
12-15 metres	39	16.5%	42	44	64	92	121	159
15-25 metres	9	3.7%	10	10	15	21	27	36
>25 metres	1	0.5%	1	1	2	3	4	5

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
Total	228	100.0%	244	261	380	552	726	958
<i>Boats w/o sails</i>								
<3 metres	281	3.5%	289	296	353	419	483	557
3-5 metres	7,545	85.3%	7,731	7,921	9,318	10,923	12,482	14,306
5-8 metres	972	10.1%	994	1,017	1,182	1,373	1,558	1,774
8-10 metres	37	0.4%	38	39	46	54	62	71
10-12 metres	26	0.3%	27	27	32	38	43	50
12-15 metres	28	0.3%	29	29	34	40	45	51
15-25 metres	8	0.1%	8	8	10	11	13	15
>25 metres	1	0.0%	1	1	2	2	2	3
Total	8,898	100.0%	9,116	9,339	10,977	12,860	14,687	16,827
<i>Total Boats</i>								
<3 metres	281	3.4%	289	296	353	419	483	557
3-5 metres	7,563	83.5%	7,750	7,942	9,348	10,967	12,539	14,382
5-8 metres	1,022	10.5%	1,048	1,075	1,272	1,507	1,737	2,013
8-10 metres	84	0.8%	88	92	120	159	199	250
10-12 metres	90	0.9%	95	100	138	191	244	314
12-15 metres	67	0.7%	70	74	98	132	166	211
15-25 metres	17	0.2%	18	19	24	32	40	51
>25 metres	2	0.0%	2	2	3	5	6	8
Total	9,126	100.0%	9,360	9,600	11,357	13,412	15,413	17,785
SOUTH WIDE BAY								
<i>Sail Boat</i>								
<3 metres	1	0.3%	1	1	1	2	2	2
3-5 metres	34	7.4%	35	36	42	48	54	59
5-8 metres	151	31.6%	155	160	185	211	235	260
8-10 metres	118	24.1%	121	125	144	164	182	201
10-12 metres	111	22.4%	114	117	135	154	170	188
12-15 metres	69	12.4%	71	72	83	93	102	112
15-25 metres	10	1.8%	10	11	12	14	15	16
>25 metres	0	0.0%	0	0	0	0	0	0
Total	494	100.0%	508	522	603	685	759	838
<i>Boats w/o sails</i>								
<3 metres	412	3.2%	424	437	509	581	647	716
3-5 metres	10,844	78.4%	11,148	11,460	13,246	15,039	16,680	18,402
5-8 metres	2,335	16.1%	2,397	2,461	2,828	3,196	3,532	3,886
8-10 metres	165	1.2%	169	174	201	227	251	277
10-12 metres	88	0.6%	90	93	106	120	132	145
12-15 metres	73	0.4%	75	76	85	95	103	112
15-25 metres	22	0.1%	23	23	26	30	33	36
>25 metres	1	0.0%	1	1	1	1	1	2
Total	13,940	100.0%	14,327	14,726	17,002	19,288	21,380	23,576
<i>Total Boats</i>								
<3 metres	413	3.1%	425	438	510	582	649	718
3-5 metres	10,878	76.0%	11,183	11,496	13,288	15,087	16,733	18,462
5-8 metres	2,486	16.6%	2,553	2,621	3,013	3,407	3,767	4,145
8-10 metres	283	2.0%	291	299	345	391	433	478
10-12 metres	199	1.3%	204	210	242	273	302	333
12-15 metres	142	0.8%	145	149	168	187	205	224
15-25 metres	32	0.2%	33	34	38	43	48	52
>25 metres	1	0.0%	1	1	1	1	1	2
Total	14,434	100.0%	14,835	15,248	17,605	19,973	22,139	24,414
DARLING DOWNS								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	6	12.5%	7	8	13	23	32	45
5-8 metres	28	43.6%	31	34	54	86	119	163

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
8-10 metres	11	17.4%	12	13	21	34	47	65
10-12 metres	11	17.4%	12	13	21	34	47	65
12-15 metres	9	9.1%	10	10	14	21	28	37
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	65	100.0%	71	78	125	198	273	375

Boats w/o sails

<3 metres	335	5.6%	348	362	432	515	588	669
3-5 metres	5,394	79.1%	5579	5771	6769	7935	8972	10106
5-8 metres	1,059	14.3%	1093	1127	1308	1519	1706	1911
8-10 metres	21	0.3%	22	22	26	30	34	39
10-12 metres	23	0.3%	24	25	29	34	38	43
12-15 metres	16	0.2%	17	17	20	24	27	30
15-25 metres	11	0.1%	11	11	13	14	16	17
>25 metres	0	0.0%	0	0	0	0	0	0
Total	6,859	100.0%	7,093	7,335	8,597	10,071	11,382	12,815

Total Boats

<3 metres	335	5.6%	348	362	432	515	588	669
3-5 metres	5,400	78.6%	5,586	5,779	6,782	7,958	9,004	10,150
5-8 metres	1,087	14.6%	1,123	1,161	1,362	1,605	1,825	2,074
8-10 metres	32	0.4%	34	36	48	65	82	104
10-12 metres	34	0.5%	36	38	50	68	85	108
12-15 metres	25	0.3%	26	27	35	45	55	67
15-25 metres	11	0.1%	11	11	13	14	16	17
>25 metres	0	0.0%	0	0	0	0	0	0
Total	6,924	100.0%	7,165	7,414	8,721	10,269	11,654	13,189

SOUTH CENTRAL

Sail Boat

<3 metres	2	15.9%	2	2	2	2	2	2
3-5 metres	1	15.9%	1	1	1	1	1	1
5-8 metres	5	45.5%	5	5	4	4	4	4
8-10 metres	1	18.2%	1	1	1	1	1	0
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	0	4.5%	0	0	0	0	0	0
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	9	100.0%	9	9	8	7	7	6

Boats w/o sails

<3 metres	122	6.6%	127	132	163	201	231	264
3-5 metres	1,567	77.0%	1,623	1,680	2,042	2,488	2,842	3,225
5-8 metres	365	15.9%	377	388	463	556	629	708
8-10 metres	6	0.3%	6	6	8	10	11	13
10-12 metres	1	0.1%	1	1	1	2	2	3
12-15 metres	2	0.1%	2	2	2	3	3	3
15-25 metres	1	0.1%	1	1	1	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,064	100.0%	2,136	2,211	2,681	3,260	3,720	4,217

Total Boats

<3 metres	124	6.6%	129	134	164	202	233	265
3-5 metres	1,568	76.7%	1,624	1,681	2,043	2,489	2,843	3,226
5-8 metres	370	16.1%	381	393	468	560	633	712
8-10 metres	7	0.4%	7	7	9	10	12	13
10-12 metres	1	0.1%	1	1	1	2	2	3
12-15 metres	2	0.1%	2	2	2	3	3	3
15-25 metres	1	0.1%	1	1	1	2	2	2
>25 metres	0	0.0%	0	0	0	0	0	0
Total	2,073	100.0%	2,145	2,220	2,689	3,268	3,727	4,224

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
SOUTH WEST QLD								
<i>Sail Boat</i>								
<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	1	100.0%	1	1	1	1	1	1
5-8 metres	0	0.0%	0	0	0	0	0	0
8-10 metres	0	0.0%	0	0	0	0	0	0
10-12 metres	0	0.0%	0	0	0	0	0	0
12-15 metres	0	0.0%	0	0	0	0	0	0
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	1	100.0%	1	1	1	1	1	1
<i>Boats w/o sails</i>								
<3 metres	23	10.8%	23	23	25	27	28	29
3-5 metres	176	75.0%	177	178	189	202	211	221
5-8 metres	37	13.4%	37	37	39	42	43	45
8-10 metres	1	0.3%	1	1	1	1	1	1
10-12 metres	1	0.3%	1	1	1	1	1	1
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	239	100.0%	240	242	257	274	286	298
<i>Total Boats</i>								
<3 metres	23	10.8%	23	23	25	27	28	29
3-5 metres	177	75.1%	178	179	190	203	212	222
5-8 metres	37	13.4%	37	37	39	42	43	45
8-10 metres	1	0.3%	1	1	1	1	1	1
10-12 metres	1	0.3%	1	1	1	1	1	1
12-15 metres	1	0.1%	1	1	1	1	1	1
15-25 metres	0	0.0%	0	0	0	0	0	0
>25 metres	0	0.0%	0	0	0	0	0	0
Total	240	100.0%	241	243	258	275	287	299
SEQ NORTH								
<i>Sail Boat</i>								
<3 metres	7	0.3%	7	7	8	9	9	9
3-5 metres	148	5.5%	149	151	163	173	181	186
5-8 metres	792	31.5%	801	809	880	936	979	1013
8-10 metres	526	20.3%	532	537	583	619	646	668
10-12 metres	610	23.6%	616	623	676	718	750	776
12-15 metres	431	15.6%	435	440	475	502	523	540
15-25 metres	76	3.0%	77	78	84	90	94	97
>25 metres	2	0.1%	2	2	2	3	3	3
Total	2,592	100.0%	2,619	2,647	2,872	3,049	3,185	3,293
<i>Boats w/o sails</i>								
<3 metres	2,991	5.6%	3,053	3,117	3,565	3,975	4,289	4,575
3-5 metres	42,902	71.4%	43,701	44,514	50,274	55,532	59,565	63,232
5-8 metres	12,543	19.5%	12,761	12,984	14,559	15,996	17,099	18,101
8-10 metres	843	1.4%	858	874	985	1,086	1,164	1,235
10-12 metres	638	1.1%	650	662	747	824	884	938
12-15 metres	483	0.8%	492	500	563	620	664	703
15-25 metres	204	0.3%	207	210	232	253	268	282
>25 metres	12	0.0%	12	12	14	16	17	18
Total	60,616	100.0%	61,734	62,873	70,940	78,302	83,950	89,084
<i>Total Boats</i>								
<3 metres	2,998	5.3%	3,060	3,124	3,573	3,984	4,298	4,584
3-5 metres	43,050	68.6%	43,850	44,665	50,438	55,705	59,746	63,418
5-8 metres	13,335	20.0%	13,562	13,793	15,439	16,932	18,078	19,114
8-10 metres	1,369	2.2%	1,390	1,411	1,568	1,705	1,811	1,903
10-12 metres	1,248	2.0%	1,266	1,285	1,423	1,542	1,634	1,714

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
12-15 metres	914	1.4%	927	940	1,038	1,122	1,187	1,243
15-25 metres	280	0.4%	284	288	317	342	362	379
>25 metres	14	0.0%	14	15	17	18	20	21
Total	63,208	100.0%	64,354	65,520	73,812	81,350	87,135	92,377

SEQ SOUTH
Sail Boat

<3 metres	10	0.7%	12	13	15	17	19	22
3-5 metres	122	6.8%	145	148	169	191	213	236
5-8 metres	502	33.1%	616	630	731	838	948	1060
8-10 metres	345	20.6%	416	425	487	554	622	692
10-12 metres	345	20.9%	417	426	490	557	626	698
12-15 metres	229	14.1%	277	284	326	372	418	466
15-25 metres	54	3.8%	67	69	80	92	105	118
>25 metres	0	0.0%	0	0	0	0	1	1
Total	1,607	100.0%	1,951	1,995	2,298	2,621	2,952	3,292

Boats w/o sails

<3 metres	3,477	7.3%	3,975	4,110	5,020	6,046	7,064	8,157
3-5 metres	34,151	63.0%	38,431	39,590	47,396	56,206	64,949	74,335
5-8 metres	12,661	23.5%	14,255	14,686	17,593	20,873	24,129	27,624
8-10 metres	1,240	2.4%	1,402	1,446	1,742	2,075	2,407	2,762
10-12 metres	930	1.8%	1,051	1,084	1,304	1,553	1,800	2,065
12-15 metres	710	1.3%	801	825	990	1,177	1,362	1,561
15-25 metres	340	0.6%	379	389	460	539	618	703
>25 metres	33	0.1%	38	39	47	56	66	75
Total	53,542	100.0%	60,330	62,170	74,552	88,525	102,394	117,281

Total Boats

<3 metres	3,487	7.1%	3,988	4,123	5,034	6,063	7,083	8,179
3-5 metres	34,273	61.4%	38,576	39,739	47,565	56,396	65,162	74,571
5-8 metres	13,163	23.8%	14,871	15,317	18,324	21,711	25,076	28,684
8-10 metres	1,585	2.9%	1,818	1,871	2,229	2,629	3,028	3,454
10-12 metres	1,275	2.4%	1,468	1,510	1,794	2,110	2,426	2,762
12-15 metres	939	1.7%	1,078	1,109	1,317	1,549	1,780	2,027
15-25 metres	394	0.7%	446	458	540	631	723	820
>25 metres	33	0.1%	38	39	47	57	66	76
Total	55,149	100.0%	62,281	64,165	76,849	91,146	105,345	120,573

INTERSTATE
Sail Boat

<3 metres	0	0.0%	0	0	0	0	0	0
3-5 metres	2	1.4%	2	2	3	3	4	5
5-8 metres	15	14.3%	16	17	23	30	37	45
8-10 metres	14	18.3%	15	16	24	33	42	53
10-12 metres	35	31.7%	37	39	52	68	84	103
12-15 metres	29	30.5%	31	33	45	61	76	94
15-25 metres	6	3.8%	6	6	8	10	12	14
>25 metres	0	0.0%	0	0	0	0	0	0
Total	101	100.0%	107	114	154	207	256	314

Boats w/o sails

<3 metres	35	5.5%	37	38	49	61	73	86
3-5 metres	349	55.4%	366	384	486	614	730	863
5-8 metres	123	21.4%	130	136	176	225	270	321
8-10 metres	21	3.7%	22	23	30	39	47	56
10-12 metres	24	4.3%	25	27	35	45	54	64
12-15 metres	29	5.1%	31	32	42	53	64	76
15-25 metres	31	4.3%	32	34	42	52	61	71
>25 metres	1	0.4%	1	1	2	3	3	4
Total	613	100.0%	644	676	861	1,092	1,300	1,540

Total Boats

	2009 Regos	Proportion	2010	2011	2016	2021	2026	2031
<3 metres	35	4.7%	37	38	49	61	73	86
3-5 metres	351	48.0%	368	386	489	618	734	868
5-8 metres	138	20.4%	145	153	199	255	307	366
8-10 metres	35	5.7%	37	40	54	72	89	109
10-12 metres	59	8.1%	62	66	86	113	138	167
12-15 metres	58	8.6%	61	65	87	114	140	170
15-25 metres	37	4.2%	39	40	50	62	73	85
>25 metres	1	0.3%	1	1	2	3	3	4
Total	714	100.0%	751	790	1,015	1,298	1,556	1,854
QUEENSLAND								
<i>Sail Boat</i>								
<3 metres	26	0.4%	29	29	33	36	40	43
3-5 metres	445	6.2%	475	485	552	623	692	769
5-8 metres	2,076	28.7%	2,223	2,271	2,590	2,923	3,237	3,576
8-10 metres	1,538	21.3%	1,633	1,666	1,886	2,113	2,327	2,555
10-12 metres	1,740	24.1%	1,840	1,877	2,126	2,385	2,628	2,892
12-15 metres	1,177	16.3%	1,243	1,267	1,428	1,596	1,754	1,925
15-25 metres	220	3.0%	236	241	275	311	345	381
>25 metres	4	0.1%	4	4	5	7	8	9
Total	7,226	100.0%	7,682	7,841	8,896	9,995	11,030	12,150
<i>Boats w/o sails</i>								
<3 metres	9,708	4.4%	10,395	10,724	12,787	14,987	16,989	19,095
3-5 metres	158,738	71.6%	166,646	171,563	201,180	232,345	260,012	289,121
5-8 metres	45,428	20.5%	47,874	49,188	57,263	65,809	73,500	81,586
8-10 metres	3,072	1.4%	3,283	3,377	3,975	4,613	5,199	5,816
10-12 metres	2,155	1.0%	2,308	2,374	2,797	3,248	3,663	4,098
12-15 metres	1,712	0.8%	1,828	1,878	2,202	2,549	2,868	3,203
15-25 metres	771	0.3%	819	839	971	1,113	1,244	1,382
>25 metres	54	0.0%	59	61	73	87	100	113
Total	221,638	100.0%	233,212	240,005	281,249	324,751	363,574	404,413
<i>Total Boats</i>								
<3 metres	9,734	4.3%	10,423	10,753	12,821	15,026	17,032	19,142
3-5 metres	159,183	69.6%	167,125	172,055	201,762	233,026	260,785	289,998
5-8 metres	47,504	20.8%	50,096	51,458	59,850	68,726	76,729	85,151
8-10 metres	4,610	2.0%	4,914	5,041	5,851	6,708	7,500	8,336
10-12 metres	3,895	1.7%	4,146	4,249	4,913	5,614	6,263	6,952
12-15 metres	2,889	1.3%	3,070	3,144	3,624	4,133	4,604	5,105
15-25 metres	991	0.4%	1,055	1,080	1,245	1,420	1,583	1,756
>25 metres	58	0.0%	63	65	79	94	108	122
Total	228,864	100.0%	240,894	247,846	290,144	334,746	374,604	416,563

Source: Economic Associates estimates

Table B.3: Projected Size of Trailerable Boat Fleet, Base Case Scenario, 2010-2031

	Proportion	2010	2011	2016	2021	2026	2031
CAPE YORK							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	2
5-8 metres	50.0%	7	7	7	7	7	8
8-10 metres	25.0%	3	3	3	3	4	4
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	23.6%	12	12	12	12	13	13
<i>Boats w/o sails</i>							
<3 metres	100.0%	18	18	19	20	21	22
3-5 metres	100.0%	1,229	1,229	1,271	1,322	1,380	1,437
5-8 metres	85.0%	391	391	404	419	437	454
8-10 metres	50.0%	11	11	11	12	12	13
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.3%	1,649	1,650	1,705	1,773	1,850	1,926
<i>Total Boats</i>							
<3 metres	100.0%	18	18	19	20	21	22
3-5 metres	100.0%	1,230	1,231	1,273	1,324	1,382	1,439
5-8 metres	84.0%	398	398	411	426	444	462
8-10 metres	40.7%	14	14	15	15	16	17
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.4%	1,660	1,661	1,717	1,785	1,863	1,939
NORTH WEST QLD							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	0	0	0	0	0	0
5-8 metres	50.0%	3	3	3	3	3	3
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	27.5%	3	3	3	3	3	3
<i>Boats w/o sails</i>							
<3 metres	100.0%	52	54	52	52	53	56
3-5 metres	100.0%	1,430	1,495	1,441	1,441	1,471	1,519
5-8 metres	85.0%	290	303	292	292	298	307
8-10 metres	50.0%	2	2	2	2	2	2
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.0%	1,774	1,854	1,787	1,787	1,824	1,884
<i>Total Boats</i>							
<3 metres	100.0%	52	54	52	52	53	56



	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	100.0%	1,430	1,495	1,441	1,441	1,471	1,519
5-8 metres	84.5%	293	305	295	295	301	310
8-10 metres	45.1%	2	2	2	2	2	3
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.6%	1,777	1,857	1,790	1,790	1,827	1,887

CAIRNS

Sail Boat

<3 metres	100.0%	2	2	2	2	2	3
3-5 metres	90.0%	33	34	36	37	39	41
5-8 metres	50.0%	69	70	75	81	86	91
8-10 metres	25.0%	32	32	34	36	38	41
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	23.6%	137	137	147	157	166	176

Boats w/o sails

<3 metres	100.0%	466	469	506	540	575	613
3-5 metres	100.0%	12,504	12,577	13,467	14,292	15,136	16,042
5-8 metres	85.0%	3,447	3,465	3,687	3,892	4,102	4,328
8-10 metres	50.0%	86	86	92	98	104	110
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.8%	16,503	16,598	17,752	18,822	19,918	21,092

Total Boats

<3 metres	100.0%	468	471	508	543	578	615
3-5 metres	100.0%	12,538	12,611	13,502	14,329	15,176	16,083
5-8 metres	83.8%	3,516	3,535	3,762	3,973	4,188	4,419
8-10 metres	39.4%	118	118	127	134	142	151
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.5%	16,640	16,735	17,899	18,979	20,084	21,268

TOWNSVILLE

Sail Boat

<3 metres	100.0%	3	3	3	4	4	4
3-5 metres	90.0%	25	25	28	31	33	34
5-8 metres	50.0%	54	55	62	67	72	76
8-10 metres	25.0%	21	22	24	27	28	30
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.1%	103	105	118	129	137	144

Boats w/o sails

<3 metres	100.0%	368	376	424	462	491	518
3-5 metres	100.0%	13,870	14,131	15,779	17,060	18,072	18,977
5-8 metres	85.0%	2,705	2,751	3,039	3,263	3,441	3,599
8-10 metres	50.0%	51	52	58	63	66	69
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
>25 metres	0.0%	0	0	0	0	0	0
Total	96.1%	16,995	17,310	19,301	20,847	22,070	23,163
<i>Total Boats</i>							
<3 metres	100.0%	372	379	428	465	495	522
3-5 metres	100.0%	13,895	14,156	15,807	17,091	18,105	19,012
5-8 metres	83.9%	2,759	2,805	3,101	3,331	3,512	3,675
8-10 metres	38.7%	73	74	83	89	94	99
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.5%	17,098	17,415	19,419	20,976	22,207	23,308
CENTRAL WEST							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	2
5-8 metres	50.0%	0	0	0	0	0	0
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	45.0%	2	2	2	2	2	2
<i>Boats w/o sails</i>							
<3 metres	100.0%	32	32	33	33	34	36
3-5 metres	100.0%	330	329	337	344	353	366
5-8 metres	85.0%	57	57	58	59	60	62
8-10 metres	50.0%	0	0	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.3%	419	419	428	437	448	464
<i>Total Boats</i>							
<3 metres	100.0%	32	32	33	33	34	36
3-5 metres	99.9%	331	331	339	346	355	367
5-8 metres	85.0%	57	57	58	59	60	62
8-10 metres	50.0%	0	0	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.8%	421	420	430	439	450	466
EMERALD							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	3	3	3
5-8 metres	50.0%	3	3	4	4	4	5
8-10 metres	25.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	29.5%	6	6	7	7	8	9
<i>Boats w/o sails</i>							
<3 metres	100.0%	92	96	107	119	129	140
3-5 metres	100.0%	1,841	1,900	2,108	2,307	2,496	2,686



	Proportion	2010	2011	2016	2021	2026	2031
5-8 metres	85.0%	546	562	616	668	718	768
8-10 metres	50.0%	5	5	6	6	7	7
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.8%	2,484	2,562	2,837	3,100	3,349	3,600
<i>Total Boats</i>							
<3 metres	100.0%	92	96	107	119	129	140
3-5 metres	100.0%	1,843	1,902	2,110	2,309	2,498	2,689
5-8 metres	84.7%	549	565	620	672	722	772
8-10 metres	45.4%	5	5	6	7	8	8
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.3%	2,490	2,568	2,844	3,107	3,357	3,609
MACKAY							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	14	15	17	18	19	20
5-8 metres	50.0%	44	46	54	59	63	65
8-10 metres	25.0%	13	14	16	18	19	20
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	24.8%	72	75	87	96	102	106
<i>Boats w/o sails</i>							
<3 metres	100.0%	395	412	479	530	561	584
3-5 metres	100.0%	10,126	10,528	12,079	13,253	13,973	14,510
5-8 metres	85.0%	2,114	2,189	2,477	2,696	2,829	2,929
8-10 metres	50.0%	70	72	82	89	93	97
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.4%	12,705	13,202	15,117	16,568	17,456	18,120
<i>Total Boats</i>							
<3 metres	100.0%	395	412	479	530	561	584
3-5 metres	100.0%	10,140	10,543	12,096	13,272	13,992	14,530
5-8 metres	83.8%	2,159	2,235	2,531	2,755	2,892	2,995
8-10 metres	43.1%	83	86	98	107	113	117
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	93.9%	12,777	13,276	15,204	16,664	17,558	18,225
WHITSUNDAY							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	4	4	4	5	5	6
5-8 metres	50.0%	40	41	46	50	53	56
8-10 metres	25.0%	23	23	26	29	31	32
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
Total	16.4%	66	68	76	83	89	94
<i>Boats w/o sails</i>							
<3 metres	100.0%	110	112	126	137	146	155
3-5 metres	100.0%	3,374	3,428	3,817	4,146	4,405	4,642
5-8 metres	85.0%	924	937	1,035	1,118	1,183	1,242
8-10 metres	50.0%	51	51	57	62	65	69
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.1%	4,459	4,528	5,035	5,463	5,799	6,108
<i>Total Boats</i>							
<3 metres	100.0%	110	112	126	137	146	155
3-5 metres	100.0%	3,378	3,431	3,822	4,151	4,410	4,648
5-8 metres	82.6%	964	978	1,080	1,167	1,235	1,298
8-10 metres	38.2%	73	75	83	90	96	101
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	86.3%	4,525	4,595	5,111	5,546	5,888	6,202
GLADSTONE							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	1
3-5 metres	90.0%	12	12	13	14	15	17
5-8 metres	50.0%	23	23	26	29	32	35
8-10 metres	25.0%	11	12	13	14	15	17
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	22.9%	46	47	52	57	63	69
<i>Boats w/o sails</i>							
<3 metres	100.0%	295	302	333	365	401	440
3-5 metres	100.0%	5,992	6,136	6,749	7,393	8,121	8,901
5-8 metres	85.0%	1,313	1,342	1,465	1,595	1,742	1,899
8-10 metres	50.0%	39	40	44	47	52	57
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.6%	7,639	7,820	8,590	9,400	10,316	11,297
<i>Total Boats</i>							
<3 metres	100.0%	295	302	333	365	402	441
3-5 metres	100.0%	6,004	6,148	6,762	7,407	8,136	8,918
5-8 metres	84.0%	1,335	1,365	1,491	1,624	1,774	1,934
8-10 metres	40.8%	50	51	56	61	67	74
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	93.9%	7,685	7,867	8,642	9,457	10,379	11,367
ROCKHAMPTON							
<i>Sail Boat</i>							
<3 metres	100.0%	1	1	1	1	1	1
3-5 metres	90.0%	10	10	11	12	13	14
5-8 metres	50.0%	30	30	33	35	38	40

	Proportion	2010	2011	2016	2021	2026	2031
8-10 metres	25.0%	17	18	19	20	21	23
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	58	59	64	68	73	78
<i>Boats w/o sails</i>							
<3 metres	100.0%	252	259	280	301	322	344
3-5 metres	100.0%	6,281	6,425	6,879	7,331	7,804	8,274
5-8 metres	85.0%	1,479	1,509	1,607	1,703	1,805	1,905
8-10 metres	50.0%	61	62	66	70	75	79
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.6%	8,073	8,256	8,831	9,406	10,005	10,603
<i>Total Boats</i>							
<3 metres	100.0%	253	260	281	302	323	345
3-5 metres	100.0%	6,291	6,436	6,890	7,343	7,816	8,288
5-8 metres	83.8%	1,508	1,540	1,639	1,739	1,842	1,946
8-10 metres	40.9%	78	80	85	90	96	102
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.8%	8,131	8,315	8,895	9,474	10,078	10,680
NORTH WIDE BAY							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	16	16	17	19	20	21
5-8 metres	50.0%	25	25	27	29	31	34
8-10 metres	25.0%	12	12	13	13	14	15
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	23.2%	53	54	57	61	65	70
<i>Boats w/o sails</i>							
<3 metres	100.0%	283	284	306	328	354	382
3-5 metres	100.0%	7,587	7,629	8,158	8,696	9,321	10,023
5-8 metres	85.0%	830	835	888	942	1,005	1,076
8-10 metres	50.0%	19	19	20	21	23	25
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.4%	8,719	8,767	9,372	9,988	10,703	11,507
<i>Total Boats</i>							
<3 metres	100.0%	283	284	306	328	354	382
3-5 metres	100.0%	7,603	7,646	8,175	8,715	9,341	10,045
5-8 metres	83.3%	856	860	915	972	1,037	1,110
8-10 metres	36.0%	30	31	33	35	37	40
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.6%	8,772	8,821	9,429	10,049	10,769	11,577

	Proportion	2010	2011	2016	2021	2026	2031
SOUTH WIDE BAY							
<i>Sail Boat</i>							
<3 metres	100.0%	1	1	1	1	1	2
3-5 metres	90.0%	31	32	35	38	41	43
5-8 metres	50.0%	77	78	86	93	99	106
8-10 metres	25.0%	30	31	33	36	39	41
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	135	137	137	162	162	184
<i>Boats w/o sails</i>							
<3 metres	100.0%	419	427	470	508	545	582
3-5 metres	100.0%	11,029	11,216	12,286	13,227	14,157	15,076
5-8 metres	85.0%	2,017	2,050	2,236	2,400	2,563	2,723
8-10 metres	50.0%	84	85	93	100	107	114
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.6%	13,549	13,778	15,086	16,235	17,372	18,495
<i>Total Boats</i>							
<3 metres	100.0%	420	428	471	509	547	584
3-5 metres	100.0%	11,060	11,248	12,321	13,265	14,198	15,119
5-8 metres	82.9%	2,094	2,128	2,322	2,493	2,662	2,829
8-10 metres	39.6%	114	116	127	136	146	155
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	93.2%	13,684	13,916	15,223	16,397	17,534	18,679
DARLING DOWNS							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	6	6	6	7	7	8
5-8 metres	50.0%	14	14	15	16	17	18
8-10 metres	25.0%	3	3	3	3	3	4
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	18	18	18	21	21	23
<i>Boats w/o sails</i>							
<3 metres	100.0%	341	348	378	411	442	473
3-5 metres	100.0%	5,484	5,575	6,001	6,460	6,898	7,340
5-8 metres	85.0%	914	928	994	1,064	1,131	1,199
8-10 metres	50.0%	11	11	12	12	13	14
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.8%	6,750	6,861	7,385	7,947	8,484	9,026
<i>Total Boats</i>							
<3 metres	100.0%	341	348	378	411	442	473
3-5 metres	100.0%	5,489	5,580	6,008	6,467	6,905	7,348
5-8 metres	84.1%	928	942	1,009	1,081	1,149	1,218
8-10 metres	41.4%	13	14	15	16	17	18
10-12 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres		0	0	0	0	0	0
Total	96.2%	6,767	6,879	7,403	7,968	8,505	9,049

SOUTH CENTRAL
Sail Boat

<3 metres	100.0%	2	2	2	2	2	2
3-5 metres	90.0%	1	1	1	1	1	1
5-8 metres	50.0%	3	3	3	3	3	3
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	2	2	2	3	3	3

Boats w/o sails

<3 metres	100.0%	122	123	127	131	135	138
3-5 metres	100.0%	1,570	1,574	1,622	1,677	1,718	1,749
5-8 metres	85.0%	311	311	320	330	337	342
8-10 metres	50.0%	3	3	3	3	3	3
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.0%	2,007	2,011	2,072	2,141	2,193	2,232

Total Boats

<3 metres	100.0%	124	125	129	134	137	140
3-5 metres	100.0%	1,571	1,575	1,623	1,678	1,719	1,750
5-8 metres	84.5%	313	314	323	332	340	345
8-10 metres	46.4%	3	3	3	4	4	4
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.7%	2,009	2,013	2,075	2,144	2,196	2,235

SOUTH WEST QLD
Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	1	1	1	1	1	1
5-8 metres	50.0%	0	0	0	0	0	0
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	0	0	0	0	0	0

Boats w/o sails

<3 metres	100.0%	23	23	23	23	23	23
3-5 metres	100.0%	175	174	174	175	175	176
5-8 metres	85.0%	31	31	31	31	31	31
8-10 metres	50.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.6%	230	229	229	229	230	230

Total Boats

	Proportion	2010	2011	2016	2021	2026	2031
<3 metres	99.5%	23	23	23	23	23	23
3-5 metres	99.4%	176	175	175	176	176	176
5-8 metres	84.6%	31	31	31	31	31	31
8-10 metres	49.8%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres		0	0	0	0	0	0
>25 metres		0	0	0	0	0	0
Total	96.3%	230	229	229	230	230	231

SEQ NORTH
Sail Boat

<3 metres	100.0%	7	7	8	9	9	10
3-5 metres	90.0%	135	136	148	158	165	171
5-8 metres	50.0%	401	405	443	474	497	516
8-10 metres	25.0%	133	135	147	156	164	170
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.9%	704	712	712	829	829	900

Boats w/o sails

<3 metres	100.0%	3,029	3,066	3,370	3,612	3,799	3,949
3-5 metres	100.0%	43,383	43,870	47,764	50,877	53,269	55,204
5-8 metres	85.0%	10,773	10,887	11,791	12,515	13,071	13,520
8-10 metres	50.0%	426	431	468	498	521	540
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.0%	57,612	58,254	63,393	67,502	70,660	73,214

Total Boats

<3 metres	100.0%	3,036	3,074	3,378	3,621	3,808	3,959
3-5 metres	100.0%	43,518	44,007	47,912	51,034	53,434	55,375
5-8 metres	82.9%	11,174	11,292	12,235	12,988	13,568	14,036
8-10 metres	40.4%	559	565	615	655	685	710
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	91.2%	58,316	58,967	64,105	68,331	71,488	74,114

SEQ SOUTH
Sail Boat

<3 metres	100.0%	10	10	12	14	16	18
3-5 metres	90.0%	112	114	129	145	161	178
5-8 metres	50.0%	257	262	303	346	390	435
8-10 metres	25.0%	88	90	102	116	129	143
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	28.4%	467	477	546	620	696	774

Boats w/o sails

<3 metres	100.0%	3,558	3,640	4,221	4,834	5,467	6,112
3-5 metres	100.0%	34,844	35,551	40,539	45,804	51,235	56,775
5-8 metres	85.0%	10,981	11,205	12,784	14,450	16,169	17,922
8-10 metres	50.0%	633	647	741	841	944	1,048
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	91.5%	50,016	51,043	58,285	65,929	73,814	81,857

Total Boats

<3 metres	100.0%	3,568	3,651	4,233	4,848	5,483	6,130
3-5 metres	100.0%	34,956	35,665	40,668	45,949	51,396	56,952
5-8 metres	83.7%	11,238	11,467	13,087	14,796	16,559	18,357
8-10 metres	44.6%	721	736	843	956	1,073	1,192
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	89.7%	50,482	51,519	58,831	66,549	74,510	82,631

INTERSTATE

Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	2
5-8 metres	50.0%	8	8	8	9	9	10
8-10 metres	25.0%	4	4	4	4	5	5
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	12.7%	13	13	14	15	16	17

Boats w/o sails

<3 metres	100.0%	35	36	38	41	43	46
3-5 metres	100.0%	354	359	383	408	433	456
5-8 metres	85.0%	106	108	116	124	132	140
8-10 metres	50.0%	11	11	12	12	13	14
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	81.4%	506	513	549	585	621	655

Total Boats

<3 metres	100.0%	35	36	38	41	43	46
3-5 metres	99.9%	356	361	385	410	435	458
5-8 metres	81.2%	114	115	124	133	141	149
8-10 metres	40.0%	14	14	16	17	18	19
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	71.7%	519	526	563	600	637	672

QUEENSLAND

Sail Boat

<3 metres	100.0%	26	27	30	33	37	39
3-5 metres	90.0%	407	413	455	493	529	564
5-8 metres	50.0%	1,056	1,074	1,194	1,303	1,404	1,500
8-10 metres	25.0%	391	397	439	477	512	546
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	25.8%	1,896	1,927	2,055	2,324	2,445	2,665

Boats w/o sails

<3 metres	100.0%	9,891	10,077	11,291	12,446	13,542	14,611
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	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	100.0%	161,404	164,127	180,854	196,212	210,416	224,153
5-8 metres	85.0%	39,230	39,860	43,840	47,562	51,053	54,448
8-10 metres	50.0%	1,563	1,590	1,768	1,939	2,102	2,262
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.1%	212,087	215,654	237,754	258,160	277,114	295,474
<i>Total Boats</i>							
<3 metres	100.0%	9,917	10,104	11,321	12,480	13,578	14,651
3-5 metres	100.0%	161,810	164,540	181,309	196,705	210,945	224,716
5-8 metres	83.5%	40,286	40,933	45,034	48,866	52,457	55,948
8-10 metres	41.7%	1,953	1,987	2,207	2,416	2,615	2,808
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.0%	213,983	217,581	239,809	260,483	279,559	298,139

Source: Economic Associates estimates

Table B.4: Projected Size of Trailerable Boat Fleet, Increasing Incidence of Boat Ownership Scenario, 2010-2031

	Proportion	2010	2011	2016	2021	2026	2031
CAPE YORK							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	3
5-8 metres	50.0%	7	7	9	11	13	15
8-10 metres	25.0%	3	3	4	5	6	7
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	23.5%	12	12	15	19	22	26
<i>Boats w/o sails</i>							
<3 metres	100.0%	18	19	22	25	28	31
3-5 metres	100.0%	1,250	1,273	1,439	1,637	1,817	2,010
5-8 metres	85.0%	398	405	455	515	569	627
8-10 metres	50.0%	11	11	13	15	16	18
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.3%	1,677	1,707	1,928	2,192	2,430	2,687
<i>Total Boats</i>							
<3 metres	102.1%	18	19	22	25	28	31
3-5 metres	101.8%	1,252	1,275	1,441	1,640	1,820	2,013
5-8 metres	85.5%	404	412	463	526	582	642
8-10 metres	41.6%	15	15	17	20	23	25
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.3%	1,689	1,720	1,943	2,210	2,452	2,712

NORTH WEST QLD

	Proportion	2010	2011	2016	2021	2026	2031
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	0	0	0	0	0	0
5-8 metres	50.0%	3	3	3	4	4	5
8-10 metres	25.0%	0	0	0	0	0	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	27.5%	3	3	4	5	5	6
<i>Boats w/o sails</i>							
<3 metres	100.0%	53	56	58	62	67	73
3-5 metres	100.0%	1,450	1,538	1,577	1,681	1,791	1,931
5-8 metres	85.0%	294	310	318	337	358	384
8-10 metres	50.0%	2	2	2	3	3	3
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.0%	1,799	1,907	1,955	2,083	2,219	2,392
<i>Total Boats</i>							
<3 metres	100.0%	53	56	58	62	67	73
3-5 metres	100.0%	1,450	1,538	1,577	1,681	1,792	1,932
5-8 metres	84.5%	297	313	321	341	362	389
8-10 metres	45.0%	2	3	3	3	3	3
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.6%	1,802	1,910	1,959	2,088	2,224	2,398
CAIRNS							
<i>Sail Boat</i>							
<3 metres	100.0%	2	2	2	3	3	3
3-5 metres	90.0%	34	35	40	45	50	55
5-8 metres	50.0%	71	73	86	101	115	130
8-10 metres	25.0%	32	33	39	45	50	56
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	23.6%	139	142	167	194	218	245
<i>Boats w/o sails</i>							
<3 metres	100.0%	470	477	536	597	653	714
3-5 metres	100.0%	12,599	12,767	14,200	15,649	16,997	18,472
5-8 metres	85.0%	3,470	3,512	3,869	4,230	4,566	4,933
8-10 metres	50.0%	87	88	97	107	116	126
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.8%	16,626	16,845	18,703	20,583	22,332	24,246
<i>Total Boats</i>							
<3 metres	100.0%	472	479	539	599	656	717
3-5 metres	99.9%	12,633	12,802	14,239	15,694	17,047	18,528
5-8 metres	83.8%	3,541	3,585	3,956	4,331	4,681	5,063
8-10 metres	39.5%	119	121	136	152	167	183
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.5%	16,765	16,987	18,870	20,777	22,550	24,491

TOWNSVILLE
Sail Boat

<3 metres	100.0%	3	3	3	3	3	4
3-5 metres	90.0%	25	25	26	27	28	29
5-8 metres	50.0%	53	54	57	59	61	62
8-10 metres	25.0%	21	21	23	23	24	25
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.1%	102	103	110	114	117	119

Boats w/o sails

<3 metres	100.0%	374	387	469	546	608	669
3-5 metres	100.0%	14,054	14,507	17,298	19,948	22,057	24,169
5-8 metres	85.0%	2,737	2,817	3,305	3,769	4,138	4,508
8-10 metres	50.0%	52	54	63	73	80	88
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.1%	17,217	17,764	21,136	24,336	26,883	29,434

Total Boats

<3 metres	100.0%	377	390	472	549	611	673
3-5 metres	100.0%	14,078	14,531	17,325	19,976	22,085	24,198
5-8 metres	83.9%	2,790	2,870	3,363	3,828	4,199	4,570
8-10 metres	38.8%	73	75	86	96	104	112
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.6%	17,319	17,866	21,245	24,450	27,000	29,553

CENTRAL WEST
Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	2
5-8 metres	50.0%	0	0	0	0	0	0
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	45.0%	2	2	2	2	2	2

Boats w/o sails

<3 metres	100.0%	32	33	36	39	42	46
3-5 metres	100.0%	334	337	368	400	428	463
5-8 metres	85.0%	58	58	63	67	72	77
8-10 metres	50.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.3%	424	429	467	507	543	586

Total Boats

<3 metres	100.0%	32	33	36	39	42	46
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	Proportion	2010	2011	2016	2021	2026	2031
3-5 metres	99.9%	335	339	370	402	430	465
5-8 metres	85.0%	58	58	63	67	72	77
8-10 metres	50.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres		0	0	0	0	0	0
>25 metres		0	0	0	0	0	0
Total	96.8%	426	431	469	509	545	589

EMERALD

Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	2	2	2
5-8 metres	50.0%	3	3	3	3	3	3
8-10 metres	25.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	29.5%	5	5	6	6	6	6

Boats w/o sails

<3 metres	100.0%	95	101	127	158	186	217
3-5 metres	100.0%	1,884	1,989	2,464	3,007	3,498	4,045
5-8 metres	85.0%	557	585	710	852	980	1,124
8-10 metres	50.0%	5	5	7	8	10	12
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.8%	2,540	2,679	3,308	4,025	4,674	5,398

Total Boats

<3 metres	100.0%	95	101	127	158	186	217
3-5 metres	100.0%	1,885	1,991	2,466	3,009	3,500	4,047
5-8 metres	84.7%	560	588	713	855	984	1,127
8-10 metres	45.6%	5	6	7	9	11	12
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres		0	0	0	0	0	0
Total	95.3%	2,546	2,685	3,314	4,031	4,680	5,403

MACKAY

Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	14	14	16	17	17	17
5-8 metres	50.0%	44	45	50	53	55	56
8-10 metres	25.0%	13	14	15	16	17	17
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	24.8%	71	73	81	86	89	90

Boats w/o sails

<3 metres	100.0%	402	428	542	652	730	802
3-5 metres	100.0%	10,297	10,886	13,546	16,093	17,880	19,560
5-8 metres	85.0%	2,146	2,256	2,750	3,223	3,556	3,868
8-10 metres	50.0%	71	75	91	106	117	128
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0



	Proportion	2010	2011	2016	2021	2026	2031
>25 metres	0.0%	0	0	0	0	0	0
Total	95.4%	12,916	13,644	16,929	20,075	22,282	24,357
<i>Total Boats</i>							
<3 metres	100.0%	402	428	542	652	730	802
3-5 metres	100.0%	10,311	10,900	13,562	16,109	17,897	19,577
5-8 metres	83.8%	2,190	2,301	2,800	3,277	3,611	3,924
8-10 metres	43.2%	84	88	106	123	134	145
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.0%	12,987	13,717	17,010	20,161	22,371	24,448
WHITSUNDAY							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	4	4	4	4	5	5
5-8 metres	50.0%	40	40	43	45	47	49
8-10 metres	25.0%	22	23	25	26	27	28
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	16.4%	66	67	72	76	79	81
<i>Boats w/o sails</i>							
<3 metres	100.0%	112	116	145	175	199	224
3-5 metres	100.0%	3,439	3,560	4,362	5,205	5,885	6,599
5-8 metres	85.0%	940	970	1,172	1,384	1,555	1,734
8-10 metres	50.0%	52	53	65	76	86	96
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.1%	4,543	4,700	5,744	6,840	7,725	8,654
<i>Total Boats</i>							
<3 metres	100.0%	112	116	145	175	199	224
3-5 metres	100.0%	3,443	3,564	4,366	5,210	5,890	6,604
5-8 metres	82.6%	980	1,010	1,215	1,429	1,602	1,783
8-10 metres	38.4%	74	76	89	102	113	124
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	86.4%	4,609	4,767	5,816	6,916	7,804	8,735
GLADSTONE							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	1
3-5 metres	90.0%	12	12	13	14	16	17
5-8 metres	50.0%	23	23	26	30	33	37
8-10 metres	25.0%	11	12	13	14	16	18
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	22.9%	46	47	53	59	65	72
<i>Boats w/o sails</i>							
<3 metres	100.0%	303	318	399	497	595	711
3-5 metres	100.0%	6,150	6,463	8,077	10,044	12,010	14,323



	Proportion	2010	2011	2016	2021	2026	2031
5-8 metres	85.0%	1,344	1,407	1,733	2,129	2,526	2,992
8-10 metres	50.0%	40	42	52	64	76	90
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.6%	7,837	8,230	10,261	12,734	15,207	18,116

Total Boats

<3 metres	100.0%	303	319	399	497	596	711
3-5 metres	100.0%	6,162	6,475	8,090	10,058	12,026	14,340
5-8 metres	84.0%	1,367	1,431	1,759	2,159	2,559	3,029
8-10 metres	41.0%	51	53	65	78	92	108
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	93.9%	7,883	8,278	10,314	12,793	15,272	18,188

ROCKHAMPTON

Sail Boat

<3 metres	100.0%	1	1	1	1	1	1
3-5 metres	90.0%	10	10	11	12	12	13
5-8 metres	50.0%	30	30	32	35	37	39
8-10 metres	25.0%	17	17	19	20	21	22
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	58	59	63	67	71	75

Boats w/o sails

<3 metres	100.0%	260	274	337	411	479	554
3-5 metres	100.0%	6,435	6,744	8,127	9,741	11,216	12,858
5-8 metres	85.0%	1,512	1,578	1,874	2,220	2,535	2,887
8-10 metres	50.0%	62	65	78	92	106	121
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.5%	8,269	8,661	10,416	12,465	14,336	16,420

Total Boats

<3 metres	100.0%	261	275	338	412	480	555
3-5 metres	100.0%	6,445	6,755	8,138	9,753	11,228	12,872
5-8 metres	83.9%	1,541	1,608	1,906	2,254	2,572	2,926
8-10 metres	41.1%	79	83	96	112	127	143
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	92.8%	8,327	8,720	10,479	12,532	14,407	16,496

NORTH WIDE BAY

Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	17	19	27	39	52	68
5-8 metres	50.0%	27	29	45	67	89	119
8-10 metres	25.0%	12	13	19	26	34	45
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
Total	24.9%	57	61	90	133	175	233
<i>Boats w/o sails</i>							
<3 metres	100.0%	289	296	353	419	483	557
3-5 metres	100.0%	7,731	7,921	9,318	10,923	12,482	14,306
5-8 metres	85.0%	845	864	1,005	1,167	1,324	1,508
8-10 metres	50.0%	19	19	23	27	31	35
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	99.8%	8,883	9,101	10,699	12,536	14,319	16,407
<i>Total Boats</i>							
<3 metres	100.0%	289	296	353	419	483	557
3-5 metres	100.0%	7,748	7,940	9,345	10,963	12,533	14,375
5-8 metres	83.2%	872	893	1,050	1,234	1,414	1,628
8-10 metres	35.8%	31	33	42	53	65	80
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.5%	8,940	9,162	10,790	12,669	14,495	16,639
SOUTH WIDE BAY							
<i>Sail Boat</i>							
<3 metres	100.0%	1	1	1	2	2	2
3-5 metres	90.0%	32	32	38	43	48	53
5-8 metres	50.0%	78	80	93	106	117	130
8-10 metres	25.0%	30	31	36	41	46	50
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	133	137	137	180	180	220
<i>Boats w/o sails</i>							
<3 metres	100.0%	424	437	509	581	647	716
3-5 metres	100.0%	11,148	11,460	13,246	15,039	16,680	18,402
5-8 metres	85.0%	2,038	2,092	2,404	2,716	3,002	3,303
8-10 metres	50.0%	85	87	100	114	126	138
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	95.6%	13,695	14,076	16,259	18,450	20,455	22,560
<i>Total Boats</i>							
<3 metres	100.0%	425	438	510	582	649	718
3-5 metres	100.0%	11,179	11,493	13,284	15,082	16,728	18,456
5-8 metres	82.9%	2,115	2,172	2,496	2,822	3,120	3,433
8-10 metres	39.6%	115	118	136	155	171	189
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	93.2%	13,828	14,213	16,396	18,629	20,635	22,780
DARLING DOWNS							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	6	7	12	20	29	40
5-8 metres	50.0%	15	17	27	43	59	81

	Proportion	2010	2011	2016	2021	2026	2031
8-10 metres	25.0%	3	3	5	9	12	16
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	19	21	21	52	52	98
<i>Boats w/o sails</i>							
<3 metres	100.0%	348	362	432	515	588	669
3-5 metres	100.0%	5,579	5,771	6,769	7,935	8,972	10,106
5-8 metres	85.0%	929	958	1,112	1,291	1,450	1,625
8-10 metres	50.0%	11	11	13	15	17	19
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.8%	6,867	7,102	8,326	9,756	11,028	12,418
<i>Total Boats</i>							
<3 metres	100.0%	348	362	432	515	588	669
3-5 metres	100.0%	5,585	5,778	6,781	7,956	9,001	10,146
5-8 metres	84.0%	944	975	1,139	1,334	1,510	1,706
8-10 metres	41.0%	14	15	18	24	29	36
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.1%	6,886	7,122	8,346	9,808	11,080	12,517
SOUTH CENTRAL							
<i>Sail Boat</i>							
<3 metres	100.0%	2	2	2	2	2	2
3-5 metres	90.0%	1	1	1	1	1	1
5-8 metres	50.0%	2	2	2	2	2	2
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	2	2	2	2	2	2
<i>Boats w/o sails</i>							
<3 metres	100.0%	127	132	163	201	231	264
3-5 metres	100.0%	1,623	1,680	2,042	2,488	2,842	3,225
5-8 metres	85.0%	320	330	394	472	534	602
8-10 metres	50.0%	3	3	4	5	6	6
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	97.0%	2,073	2,145	2,602	3,166	3,613	4,097
<i>Total Boats</i>							
<3 metres	100.0%	129	134	164	202	233	265
3-5 metres	100.0%	1,624	1,681	2,043	2,489	2,843	3,226
5-8 metres	84.5%	322	333	396	474	536	604
8-10 metres	46.7%	3	3	4	5	6	6
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.7%	2,075	2,148	2,605	3,168	3,615	4,098

	Proportion	2010	2011	2016	2021	2026	2031
SOUTH WEST QLD							
<i>Sail Boat</i>							
<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	1	1	1	1	1	1
5-8 metres	50.0%	0	0	0	0	0	0
8-10 metres	25.0%	0	0	0	0	0	0
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	0	0	0	0	0	0
<i>Boats w/o sails</i>							
<3 metres	100.0%	23	23	25	27	28	29
3-5 metres	100.0%	177	178	189	202	211	221
5-8 metres	85.0%	32	32	33	35	37	38
8-10 metres	50.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.6%	232	234	248	265	277	289
<i>Total Boats</i>							
<3 metres	100.0%	23	23	25	27	28	29
3-5 metres	99.9%	178	179	190	203	212	221
5-8 metres	85.0%	32	32	33	35	37	38
8-10 metres	50.0%	1	1	1	1	1	1
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	96.3%	233	234	248	265	277	289
SEQ NORTH							
<i>Sail Boat</i>							
<3 metres	100.0%	7	7	8	9	9	9
3-5 metres	90.0%	135	136	147	156	162	168
5-8 metres	50.0%	400	405	440	468	489	506
8-10 metres	25.0%	133	134	146	155	162	167
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	26.2%	687	694	694	800	800	864
<i>Boats w/o sails</i>							
<3 metres	100.0%	3,053	3,117	3,565	3,975	4,289	4,575
3-5 metres	100.0%	43,701	44,514	50,274	55,532	59,565	63,232
5-8 metres	85.0%	10,847	11,036	12,375	13,597	14,534	15,386
8-10 metres	50.0%	429	437	493	543	582	617
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.0%	58,030	59,104	66,707	73,646	78,971	83,810
<i>Total Boats</i>							
<3 metres	100.0%	3,060	3,124	3,573	3,984	4,298	4,584
3-5 metres	100.0%	43,835	44,650	50,421	55,687	59,728	63,399
5-8 metres	82.9%	11,247	11,441	12,815	14,065	15,023	15,893
8-10 metres	40.4%	562	571	638	698	744	785
10-12 metres	0.0%	0	0	0	0	0	0

	Proportion	2010	2011	2016	2021	2026	2031
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	91.2%	58,717	59,798	67,401	74,446	79,770	84,674

SEQ SOUTH
Sail Boat

<3 metres	100.0%	12	13	15	17	19	22
3-5 metres	90.0%	131	133	152	172	192	213
5-8 metres	50.0%	308	315	365	419	474	530
8-10 metres	25.0%	104	106	122	138	155	173
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	28.5%	555	568	654	746	841	938

Boats w/o sails

<3 metres	100.0%	3,975	4,110	5,020	6,046	7,064	8,157
3-5 metres	100.0%	38,431	39,590	47,396	56,206	64,949	74,335
5-8 metres	85.0%	12,116	12,483	14,954	17,742	20,510	23,480
8-10 metres	50.0%	701	723	871	1,038	1,203	1,381
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	91.5%	55,223	56,907	68,241	81,031	93,726	107,353

Total Boats

<3 metres	100.0%	3,988	4,123	5,034	6,063	7,083	8,179
3-5 metres	100.0%	38,561	39,724	47,548	56,377	65,141	74,548
5-8 metres	83.6%	12,424	12,799	15,319	18,161	20,983	24,010
8-10 metres	44.3%	805	829	993	1,176	1,359	1,554
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	89.6%	55,779	57,475	68,895	81,777	94,566	108,290

INTERSTATE
Sail Boat

<3 metres	100.0%	0	0	0	0	0	0
3-5 metres	90.0%	2	2	2	3	4	4
5-8 metres	50.0%	8	8	11	15	19	23
8-10 metres	25.0%	4	4	6	8	11	13
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	12.7%	14	14	20	26	33	40

Boats w/o sails

<3 metres	100.0%	37	38	49	61	73	86
3-5 metres	100.0%	366	384	486	614	730	863
5-8 metres	85.0%	110	116	150	191	229	273
8-10 metres	50.0%	11	12	15	19	23	28
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	81.4%	524	550	700	886	1,055	1,249

Total Boats

	Proportion	2010	2011	2016	2021	2026	2031
<3 metres	75.6%	37	38	49	61	73	86
3-5 metres	75.2%	368	386	489	617	734	867
5-8 metres	59.5%	118	124	161	207	248	296
8-10 metres	27.6%	15	16	21	28	34	41
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	71.6%	538	565	719	913	1,088	1,289
QUEENSLAND							
<i>Sail Boat</i>							
<3 metres	100.0%	29	29	33	36	40	43
3-5 metres	90.0%	428	437	496	561	623	692
5-8 metres	50.0%	1,111	1,135	1,295	1,461	1,618	1,788
8-10 metres	25.0%	408	416	472	528	582	639
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	25.7%	1,971	2,012	2,191	2,565	2,756	3,117
<i>Boats w/o sails</i>							
<3 metres	100.0%	10,395	10,724	12,787	14,987	16,989	19,095
3-5 metres	100.0%	166,646	171,563	201,180	232,345	260,012	289,121
5-8 metres	85.0%	40,693	41,810	48,674	55,938	62,475	69,348
8-10 metres	50.0%	1,641	1,689	1,987	2,307	2,600	2,908
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	94.1%	219,375	225,785	264,628	305,576	342,076	380,471
<i>Total Boats</i>							
<3 metres	100.0%	10,423	10,753	12,820	15,024	17,029	19,138
3-5 metres	100.0%	167,074	171,999	201,677	232,906	260,635	289,813
5-8 metres	83.4%	41,804	42,945	49,969	57,399	64,093	71,136
8-10 metres	41.7%	2,050	2,105	2,459	2,835	3,181	3,547
10-12 metres	0.0%	0	0	0	0	0	0
12-15 metres	0.0%	0	0	0	0	0	0
15-25 metres	0.0%	0	0	0	0	0	0
>25 metres	0.0%	0	0	0	0	0	0
Total	91.9%	221,346	227,797	266,819	308,141	344,832	383,588

Source: Economic Associates estimates

APPENDIX C

BOAT LANE DEMAND – UNCONGESTED OPERATIONS VERSUS CONGESTED OPERATIONS

Average Demand Scenario

Table C.1: Boat Lane Demand - Base Case with Average Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	4	4	5	5	5	5
North West QLD	5	5	5	5	5	5
Cairns	44	45	48	51	54	57
Townsville	46	46	52	56	59	62
Central West QLD	1	1	1	1	1	1
Emerald	7	7	8	8	9	10
Mackay	34	35	41	44	47	49
Whitsunday	12	12	14	15	16	17
Gladstone	20	21	23	25	28	30
Rockhampton	22	22	24	25	27	28
North Wide Bay	23	24	25	27	29	31
South Wide Bay	36	37	41	44	47	50
Darling Downs	18	18	20	21	23	24
South Central	5	5	6	6	6	6
South West QLD	1	1	1	1	1	1
SEQ North	156	157	171	182	191	198
SEQ South	135	137	157	177	199	220
Interstate	1	1	2	2	2	2
Queensland	571	580	639	695	745	795
Congested Boat Movements (50 boats / lane / day)						
Cape York	3	3	3	3	3	3
North West QLD	3	3	3	3	3	3
Cairns	27	27	29	30	32	34
Townsville	27	28	31	34	36	37
Central West QLD	1	1	1	1	1	1
Emerald	4	4	5	5	5	6
Mackay	20	21	24	27	28	29
Whitsunday	7	7	8	9	9	10
Gladstone	12	13	14	15	17	18
Rockhampton	13	13	14	15	16	17
North Wide Bay	14	14	15	16	17	19
South Wide Bay	22	22	24	26	28	30
Darling Downs	11	11	12	13	14	14
South Central	3	3	3	3	4	4
South West QLD	0	0	0	0	0	0
SEQ North	93	94	103	109	114	119
SEQ South	81	82	94	106	119	132
Interstate	1	1	1	1	1	1
Queensland	342	348	384	417	447	477

Source: Economic Associates estimates

Table C.2: Boat Lane Demand - Increasing Incidence of Boat Ownership with Average Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	5	5	5	6	7	7
North West QLD	5	5	5	6	6	6
Cairns	45	45	50	55	60	65
Townsville	46	48	57	65	72	79
Central West QLD	1	1	1	1	1	2
Emerald	7	7	9	11	12	14
Mackay	35	37	45	54	60	65
Whitsunday	12	13	16	18	21	23
Gladstone	21	22	28	34	41	49
Rockhampton	22	23	28	33	38	44
North Wide Bay	24	24	29	34	39	44
South Wide Bay	37	38	44	50	55	61
Darling Downs	18	19	22	26	30	33
South Central	6	6	7	8	10	11
South West QLD	1	1	1	1	1	1
SEQ North	157	159	180	199	213	226
SEQ South	149	153	184	218	252	289
Interstate	1	2	2	2	3	3
Queensland	590	607	712	822	920	1,023
Congested Boat Movements (50 boats / lane / day)						
Cape York	3	3	3	4	4	4
North West QLD	3	3	3	3	4	4
Cairns	27	27	30	33	36	39
Townsville	28	29	34	39	43	47
Central West QLD	1	1	1	1	1	1
Emerald	4	4	5	6	7	9
Mackay	21	22	27	32	36	39
Whitsunday	7	8	9	11	12	14
Gladstone	13	13	17	20	24	29
Rockhampton	13	14	17	20	23	26
North Wide Bay	14	15	17	20	23	27
South Wide Bay	22	23	26	30	33	36
Darling Downs	11	11	13	16	18	20
South Central	3	3	4	5	6	7
South West QLD	0	0	0	0	0	0
SEQ North	94	96	108	119	128	135
SEQ South	89	92	110	131	151	173
Interstate	1	1	1	1	2	2
Queensland	354	364	427	493	552	614

Source: Economic Associates estimates

High Demand Scenario

Table C.3: Boat Lane Demand - Base Case with High Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	8	8	8	8	9	9
North West QLD	8	9	8	8	9	9
Cairns	78	78	84	89	94	99
Townsville	80	81	91	98	104	109
Central West QLD	2	2	2	2	2	2
Emerald	12	12	13	14	16	17
Mackay	60	62	71	78	82	85
Whitsunday	21	21	24	26	27	29
Gladstone	36	37	40	44	48	53
Rockhampton	38	39	42	44	47	50
North Wide Bay	41	41	44	47	50	54
South Wide Bay	64	65	71	77	82	87
Darling Downs	32	32	35	37	40	42
South Central	9	9	10	10	10	10
South West QLD	1	1	1	1	1	1
SEQ North	272	275	299	319	334	346
SEQ South	236	240	275	311	348	386
Interstate	2	2	3	3	3	3
Queensland	999	1,015	1,119	1,216	1,305	1,391
Congested Boat Movements (50 boats / lane / day)						
Cape York	5	5	5	5	5	5
North West QLD	5	5	5	5	5	5
Cairns	47	47	50	53	56	60
Townsville	48	49	54	59	62	65
Central West QLD	1	1	1	1	1	1
Emerald	7	7	8	9	9	10
Mackay	36	37	43	47	49	51
Whitsunday	13	13	14	16	16	17
Gladstone	22	22	24	26	29	32
Rockhampton	23	23	25	27	28	30
North Wide Bay	25	25	26	28	30	32
South Wide Bay	38	39	43	46	49	52
Darling Downs	19	19	21	22	24	25
South Central	6	6	6	6	6	6
South West QLD	1	1	1	1	1	1
SEQ North	163	165	179	191	200	208
SEQ South	141	144	165	186	209	231
Interstate	1	1	2	2	2	2
Queensland	599	609	671	729	783	835

Source: Economic Associates estimates

Table C.4: Boat Lane Demand - Increasing Incidence of Boat Ownership with High Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	8	8	9	10	11	13
North West QLD	8	9	9	10	10	11
Cairns	78	79	88	97	105	114
Townsville	81	83	99	114	126	138
Central West QLD	2	2	2	2	3	3
Emerald	12	13	15	19	22	25
Mackay	61	64	79	94	104	114
Whitsunday	22	22	27	32	36	41
Gladstone	37	39	48	60	71	85
Rockhampton	39	41	49	58	67	77
North Wide Bay	42	43	50	59	68	78
South Wide Bay	65	66	77	87	96	106
Darling Downs	32	33	39	46	52	58
South Central	10	10	12	15	17	19
South West QLD	1	1	1	1	1	1
SEQ North	274	279	315	347	372	395
SEQ South	260	268	322	382	441	505
Interstate	3	3	3	4	5	6
Queensland	1,033	1,063	1,245	1,438	1,609	1,790
Congested Boat Movements (50 boats / lane / day)						
Cape York	5	5	5	6	7	8
North West QLD	5	5	5	6	6	7
Cairns	47	48	53	58	63	69
Townsville	48	50	59	68	76	83
Central West QLD	1	1	1	1	2	2
Emerald	7	8	9	11	13	15
Mackay	36	38	48	56	63	68
Whitsunday	13	13	16	19	22	24
Gladstone	22	23	29	36	43	51
Rockhampton	23	24	29	35	40	46
North Wide Bay	25	26	30	35	41	47
South Wide Bay	39	40	46	52	58	64
Darling Downs	19	20	23	27	31	35
South Central	6	6	7	9	10	11
South West QLD	1	1	1	1	1	1
SEQ North	164	167	189	208	223	237
SEQ South	156	161	193	229	265	303
Interstate	2	2	2	3	3	4
Queensland	620	638	747	863	966	1,074

Source: Economic Associates estimates

Peak Demand Scenario

Table C.5: Boat Lane Demand - Base Case with Peak Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	11	11	11	12	12	13
North West QLD	12	12	12	12	12	13
Cairns	111	112	119	127	134	142
Townsville	114	116	129	140	148	155
Central West QLD	3	3	3	3	3	3
Emerald	17	17	19	21	22	24
Mackay	85	89	101	111	117	122
Whitsunday	30	31	34	37	39	41
Gladstone	51	52	58	63	69	76
Rockhampton	54	55	59	63	67	71
North Wide Bay	58	59	63	67	72	77
South Wide Bay	91	93	101	109	117	125
Darling Downs	45	46	49	53	57	60
South Central	13	13	14	14	15	15
South West QLD	2	2	2	2	2	2
SEQ North	389	393	427	456	477	494
SEQ South	337	343	392	444	497	551
Interstate	3	4	4	4	4	4
Queensland	1,427	1,451	1,599	1,737	1,864	1,988
Congested Boat Movements (50 boats / lane / day)						
Cape York	7	7	7	7	7	8
North West QLD	7	7	7	7	7	8
Cairns	67	67	72	76	80	85
Townsville	68	70	78	84	89	93
Central West QLD	2	2	2	2	2	2
Emerald	10	10	11	12	13	14
Mackay	51	53	61	67	70	73
Whitsunday	18	18	20	22	24	25
Gladstone	31	31	35	38	42	45
Rockhampton	33	33	36	38	40	43
North Wide Bay	35	35	38	40	43	46
South Wide Bay	55	56	61	66	70	75
Darling Downs	27	28	30	32	34	36
South Central	8	8	8	9	9	9
South West QLD	1	1	1	1	1	1
SEQ North	233	236	256	273	286	296
SEQ South	202	206	235	266	298	331
Interstate	2	2	2	2	3	3
Queensland	856	870	959	1,042	1,118	1,193

Source: Economic Associates estimates

Table C.6: Boat Lane Demand - Increasing Incidence of Boat Ownership with Peak Demand, 2010 to 2031

	2010	2011	2016	2021	2026	2031
Unhampered Boat Movements (30 boats / lane / day)						
Cape York	11	11	13	15	16	18
North West QLD	12	13	13	14	15	16
Cairns	112	113	126	139	150	163
Townsville	115	119	142	163	180	197
Central West QLD	3	3	3	3	4	4
Emerald	17	18	22	27	31	36
Mackay	87	91	113	134	149	163
Whitsunday	31	32	39	46	52	58
Gladstone	53	55	69	85	102	121
Rockhampton	56	58	70	84	96	110
North Wide Bay	60	61	72	84	97	111
South Wide Bay	92	95	109	124	138	152
Darling Downs	46	47	56	65	74	83
South Central	14	14	17	21	24	27
South West QLD	2	2	2	2	2	2
SEQ North	391	399	449	496	532	564
SEQ South	372	383	459	545	630	722
Interstate	4	4	5	6	7	9
Queensland	1,476	1,519	1,779	2,054	2,299	2,557
Congested Boat Movements (50 boats / lane / day)						
Cape York	7	7	8	9	10	11
North West QLD	7	8	8	8	9	10
Cairns	67	68	75	83	90	98
Townsville	69	71	85	98	108	118
Central West QLD	2	2	2	2	2	2
Emerald	10	11	13	16	19	22
Mackay	52	55	68	81	89	98
Whitsunday	18	19	23	28	31	35
Gladstone	32	33	41	51	61	73
Rockhampton	33	35	42	50	58	66
North Wide Bay	36	37	43	51	58	67
South Wide Bay	55	57	66	75	83	91
Darling Downs	28	28	33	39	44	50
South Central	8	9	10	13	14	16
South West QLD	1	1	1	1	1	1
SEQ North	235	239	270	298	319	339
SEQ South	223	230	276	327	378	433
Interstate	2	2	3	4	4	5
Queensland	885	911	1,067	1,233	1,379	1,534

Source: Economic Associates estimates



Appendix B

GIS Multi Criteria Analysis Methodology



GHD Pty Ltd

Report for Recreational Boating
Facilities Demand Forecasting
Study

GIS MCA Methodology

August 2011



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1. Introduction

GHD and Economic Associates were commissioned by Transport and Main Roads (TMR) to undertake a recreational boating demand forecasting project for the state of Queensland. The effect of building infrastructure on the natural and built environment (including social and cultural heritage) has potential to have a significant environmental and social impact. Consequently, careful investigation of site areas has considerable importance in minimising a range of potential negative environmental impacts while maximising existing complementary infrastructure and environmental dynamics.

Recognising this, TMR requested an investigation to determine demand (high, medium, low) and address viable opportunities to position boating facilities that will maximise positive economic, environmental and social outcomes for the state and region.

In response, GHD has applied a systematic and transparent approach to assess the suitability of the study area for the purpose of constructing boating facilities using a Multi-Criteria Analysis (MCA) methodology combined with desktop-based Geographic Information Systems (GIS) technology to undertake the analysis required by the project scope. This methodology is referred to as the INDEGO (Infrastructure Development Geospatial Options) method.

This report documents the INDEGO MCA methodology used to assess the site suitability of the project study area. A 540,000 sq km study area was selected based on a 100km by 150km grid system, composed of 36 tiles, constructed around the distribution of existent boating infrastructure facilities. A range of constraints and opportunities identified by the project team were developed, using GIS data sets that represent a number of environmental, physical, social and infrastructure themes.

The INDEGO method provides an integrative approach by combining the constraints and opportunities identified in the natural and built environment combined with social and cultural heritage criteria. The results of this process produce a suitability surface where it is possible to observe the cumulative effects of constraints and opportunities in order to identify optimum locations for boating facility development.

These constraints and opportunities were combined in order to develop the site suitability surface which formed the basis for the codification and prioritisation of sites.

The results of the MCA component of the investigations has helped inform the decision making processes related to defining and prioritising suitable locations for the development of new boating facilities or redevelopment of existing boating facilities. The primary goal of utilising a GIS based MCA for the Recreational Boating Facilities Demand Forecasting Project was to provide tabular and visual outputs to help prioritise development efforts while minimising potential impacts related to environmental, social, physical and infrastructure related constraints.



2. INDEGO Methodology

Throughout GHD, multi-criteria analysis using Geographic Information Systems (GIS) has proven valuable in the quantitative assessment and evaluation of issues associated with determining appropriate locations for infrastructure development. GHD uses a methodology known as Infrastructure Development Geospatial Options (INDEGO), which combines MCA with GIS technology to quantitatively assess and evaluate the complex physical, environmental, infrastructure and social issues that are associated with determining appropriate locations for infrastructure development.

INDEGO is a proprietary GIS-based MCA methodology that GHD has developed in order to achieve a basic level of standardisation across the practice to enable the application of a transparent, defensible, robust and rigorous methodology to all projects that utilise a GIS-based MCA.

MCA describes any structured approach used to determine overall preferences among alternative options, where the options accomplish several objectives. In MCA, desirable objectives are specified and corresponding attributes or indicators are identified. The actual measurement of indicators is based on quantitative analysis, achieved via rating and weighting a wide range of impact categories and criteria.

MCA is based on the concept that decision-makers usually attempt to satisfy multiple objectives simultaneously commonly reflected in the triple bottom line approach.

The INDEGO methodology includes all of the inherent advantages of MCA as it:

- ▶ Is capable of accommodating multiple criteria.
- ▶ Can assess mixed data formats (quantitative and qualitative).
- ▶ Allows input from a variety of stakeholders or 'specialists'.
- ▶ Allows justification of consistency of decisions.
- ▶ Involves an integrated and systematic, multidisciplinary approach.
- ▶ Applies a rational method of decision analysis.
- ▶ Provides a robust, and transparent repeatable, quantitative assessment.
- ▶ Permits the development of geographically defined alternative scenarios.
- ▶ Is time and cost effective.
- ▶ Is flexible enough to allow regional and site specific analysis.
- ▶ Provides a record of the decision making process for future reference.

The outcome of running INDEGO over a region of interest is a constraints map, which shows the overall suitability of land against specific selection criteria. Options that are most suitable against the selection criteria can then be considered in more detail through the integration of additional spatial and non-spatial data relating to those sites.

2.1 Overview

The methodology used by GHD combines traditional MCA techniques with desktop-based GIS analysis to generate a site suitability surface using identified key criteria. Within this framework, MCA techniques are used to rate and weight the performance criteria guiding the site suitability modelling process.



To meet the requirements of the study, an initial set of suitability criteria were selected. These criteria were reviewed in a workshop where the criteria were rated and weighted. A matrix-based approach is used to facilitate a group of discipline specific stakeholders to work towards agreement on the relative level of influence that each of the inputs should have on the model. The results were then reviewed by the GHD project team and adjusted as per the advice of GHD's inter-disciplinary team of consultants.

Traditional engineering and infrastructure criteria were assessed in combination with environmental and social criteria. Financial criteria were not considered per se as part of this high-level suitability study. Typically, engineering and infrastructure criteria represent those aspects for which an engineering solution exists, and the main consideration is the cost of implementing that solution. Environmental and social criteria represent aspects that have an indirect financial impact, for example lifestyle and amenity; conservation significance; or time related to approvals processes. The MCA approach allows differing types of criteria to be considered using the same assessment framework, based on the ability to map suitability criteria to available spatial data sources.

The adoption of MCA enabled the site selection process to take a balanced, transparent and traceable approach that considers environmental, social, physical and built environment evaluation criteria while supporting a range of inputs from project stakeholders.

2.2 Data Review and Selection

The spatial datasets utilised for the boating facility location suitability assessment are primarily sourced from TMR or DERM Holdings and from those currently licensed to, or acquired by GHD. The datasets are limited to State and Federal Government geospatial datasets with one locally derived dataset (10 metre contours). While this scale of information is acceptable for high-level options assessment, it is recognised that detailed, large scale datasets available through specific discipline field investigations provide an improved set of information for more detailed options assessments.

2.2.1 Data Selection Criteria

Selection of geospatial datasets for use in the modelling process is determined by a number of factors, including:

- ▶ Representation of criteria, in terms of both constraints and opportunities.
- ▶ A consistent level of coverage across the study area.
- ▶ Availability of data from Local, State and Federal Government sources.
- ▶ Accuracy and currency.

2.2.2 Scale of Inputs and Modelling Resolution

Suitability modelling utilises an overlay approach that requires all data to be converted into cell-based grids. The choice of cell size is determined by a number of factors, including:

- ▶ study objectives;
- ▶ project extent;
- ▶ processing workload / available time; and
- ▶ scale and accuracy of the inputs.



In general, a higher resolution provides improved representation of criteria, but typically at a higher processing cost. However, a balance is required depending on the range of accuracy and capture scales for each geospatial dataset as these can vary significantly. For example, digital cadastral land parcel polygons can be surveyed accurately to within metres, whereas regional ecosystem polygons are typically based on 1:100,000 scale mapping, with uncertainties in the order of 10s to 100s of metres.

For this study, it is desirable to define the environmental criteria and existing infrastructure as accurately as possible. However, the size of the study area combined with the time required to process data layers of higher complexity (i.e. slope) was limiting. While taking into consideration the associated capture scale constraints a medium modelling resolution was considered justified.

A 25m by 25m cell size resolution is a medium modelling resolution that provides for sufficient delineation of linear infrastructure features (roads, utilities) and the spatial characteristics of environmental constraints such as sensitive habitats (e.g. regional ecosystem, wetlands, essential habitat). As a result, a 25 metre resolution was the cell size selected for the raster based analysis.

2.3 MCA Limitations

It should be noted that while the MCA is a powerful desktop tool for screening study areas and generating suitability surfaces, there are a number of specific limitations to this approach, including:

- ▶ Inability to represent all of the aspects that determine suitability for a site in a geographic format.
- ▶ Lack of data at a suitable scale relating to site specific considerations.
- ▶ Accuracy and currency of the data.

This work is based on a high-level assessment and further detailed analysis for specific suitability is recommended. Subsequent field-based investigations and alternatives process are considered necessary to verify and validate the outputs of the MCA, in addition to the various considerations that cannot be represented through this approach. The MCA could be improved via the inclusion of more site-specific data collected during field investigations.

2.4 Performance Rating in the INDEGO Model

Rating and weighting of the input criteria form the basis for the MCA process and has a direct and significant bearing on the output of the site suitability modelling process. Both ratings and weightings reflect the preferences of the decision makers and theoretically are the only subjective elements of the assessment process.

The performance rating reflects the importance of each criterion in siting the infrastructure. This is an important part of the process as poorly rated criteria have the potential to skew the model results. All attributes of a criterion within the “area of interest” are considered during the performance rating process.

While past ratings can be used to inform the analysis team, each criterion requires a review in the context of the proposed infrastructure. The agreed performance ratings are recorded in a performance rating spreadsheet.

The standard rating schema established for the INDEGO model is grouped into five categories (highly unsuitable, highly constrained, moderately constrained, highly suitable and neutral (absence of constraints)). These categories are described in this section.



2.4.1 Highly Unsuitable

The “highly unsuitable” performance rating represents “no-go” areas: lands whose significance to conservation and biodiversity or physical characteristics are such that they should not be disturbed by the proposed project. All areas identified as “Highly unsuitable” are rated highly in the model. This high rating reflects the level of impact of the particular constraint. Higher ratings are indicative of greater impact.

In the current study this includes criteria such as areas of restricted access; access to transport or services greater than 1km; conservation reserves; mining tenure and national parks; endangered regional ecosystem vegetation; essential habitat; dugong protection areas; DOI and RAMSAR wetlands; and a range of conceptual criteria gathered during the demand study that would prevent the development of a boating facility.

2.4.2 Highly Constrained

The performance rating of “highly constrained” is assigned to areas such as: protected areas of moderate conservation that would require special approvals. These lands generally represent habitats of moderate to high integrity and impacts are likely to generate less social and environmental consequences than communities identified as “Highly Unsuitable”. Typically, some commercial resource-exploitation uses are permitted.

In the current study this category includes "of concern" regional ecosystem vegetation; Wetland Protection Area (WPA) trigger areas; Wetland Management Area (WMA) trigger areas; forest and indigenous reserves; access to transport or services between 500m and 1km; Lot area less than 1000 square metres; stream order less than 3; high likelihood of acid sulfate soils; bathymetry greater than 0m; and a range of conceptual criteria gathered during the demand study that would strongly inhibit the development of a boating facility.

2.4.3 Moderately Constrained

The performance rating of “moderately constrained” is assigned to areas of significance that would not prevent or strongly inhibit development but would require minor approvals or mitigation efforts.

In the current study this category includes "Not of Concern" regional ecosystem vegetation. Particular types of tenure such as freehold, forest reserve or lands leased; acid sulfate soils that require mitigation; lot size between 1,000 and 5,000 square metres; access to transport or services between 250m and 500m; stream order ranging between 4 and 6; bathymetry between -3m and 0m; and a range of conceptual criteria gathered during the demand study that would require mitigation.

2.4.4 Absence of Constraints (Neutral)

This performance rating is assigned to all other non-classified lands within the proposed study extent which don't have potential to be adversely impacted upon by the project but haven't been identified as opportunities either. These include areas outside the extent of other constraints identified in the previous sections.



2.4.5 Highly Suitable

This performance rating is assigned to areas within the proposed study extent, which are highly suitable for the placement of the particular type of infrastructure that is in the process of being investigated.

In the current study this category includes criteria such as proximity to transportation; and utilities within 250m; within a 200m buffer of major watercourses and major waterbodies; absence of acid sulfate soil; bathymetry between -10 metres and -3 metres; Less than or equal to 1 Native Title Claim; Marine Zoning designated as "General Use"; Tenure classified as "State Land"; "Easement" or related to "Harbour"; and lot area greater than 5,000 square metres.

2.5 Criteria Weighting in the INDEGO Model

In the modelling process, the relative influence of the criteria performance ratings are modified by the weight. As a result, the application of each criterion weight allows the differentiation between similar performance ratings across themes.

Upon allocation of the ratings, each criterion is considered in relation to each other criterion in a pair-wise comparison. This enables the allocation of the relative importance of each criterion for use in the generation of the constraints and opportunities mapping outcome.

The result is that, if only considering two inputs with the same ratings and all other factors are equal, the model tends to select for an area that is contained within the lower weighting rather than an area with a higher weighting.

While the above is a simplification of what actually takes place in the model, it reflects the underlying logic that is applied simultaneously across all inputs on a grid cell basis when determining the suitability of a site.

2.6 INDEGO Deliverable Products

A number of deliverables are generated during the process of performing an INDEGO analysis. Due to the size of the study area the constraints and suitability surface mapping was developed in an interactive digital mapping environment. The deliverable products are listed as follows:

- ▶ One state scale 'Bio-Catchment' map.
- ▶ Five regional scale 'Demand' maps.
- ▶ Twenty-five 1:1,000 scale maps of 'High Priority' site locations with aerial imagery.
- ▶ Twenty-five 1:2,500 scale maps of 'Medium Priority' site locations with suitability surface and aerial imagery.
- ▶ Five regional scale 'Low Priority' site location maps.
- ▶ A series of theme based tables defining the criteria rating schema.
- ▶ A table summarising the criteria weighting schema.
- ▶ A report documenting the methodology.

All of the deliverables are an integral part of understanding the model outputs, verifying the accuracy of the results and producing a quality product that provides a rigorous information resource to support decision making processes.



3. Site Suitability Surface Construction

Using the methodology outlined in Section 2, criteria were defined, rated and weighted in order to establish the parameters for the construction of a suitability surface. The purpose of the suitability surface is to provide a basis for assessing the relative suitability of proposed and existent site locations for the development or redevelopment boating facilities.

The process of constructing a suitability surface involved the following:

- ▶ Establishing 36 study area locations 100m X 150m based on existent and proposed site distribution.
- ▶ Data collection, merging like data sets (i.e. wetlands), and clipping to individual study extents.
- ▶ Assigning ratings, weights and "suitability" codes (weighted ratings) to the criteria;
- ▶ Converting vector data to raster data based on "suitability" code.
- ▶ Combining raster data layers by performing a sum operation with cell statistics tool.
- ▶ Reclassifying "suitability surface" based on Natural Breaks (Jenks) classification method.
- ▶ Clipping "suitability surface" to a 250 metre buffer of major waterways.

This section provides an overview of the criteria ratings and weightings assigned for the purpose of assessing the suitability of a site location.

3.1 Criteria Performance Rating

While the primary focus is on the aspects that would geographically constrain the suitability of boating facility development, the process also identifies a selection of themes that define opportunities to develop the boating facility infrastructure in relation to existing infrastructure.

Performance ratings identified for each of the suitability criterion are listed as follows:

- ▶ highly Unsuitable (999);
- ▶ highly Constrained (40);
- ▶ moderately Constrained (20);
- ▶ absence of Constraints (Neutral) (10); and
- ▶ highly suitable (1).

In determining the performance ratings, the following issues are considered:

- ▶ Legislative requirements, for example, requirements to obtain permits or environmental approvals.
- ▶ Environmental values and sensitivities and imperative to protect ecosystems, habitats, and species.
- ▶ Social values and sensitivities in relation to residential areas, demand, tourism and land ownership.
- ▶ Construction related physical limitations of boating facility infrastructure.
- ▶ Developable land to facilitate proposed development in site area.
- ▶ Planned and existing transportation corridors for access considerations.
- ▶ Proximity to existing utilities to deliver utility services to the boating facility.



3.2 Site Suitability Criteria

The primary source of data was gathered through a review of State and Federal Government datasets over the study area. However, 10 metre contour data was collected on a local government scale to increase the accuracy of the slope data. Criteria were primarily selected as a basis of the suitability surface based on the Draft State Wide Methodology Future Maritime Development Areas Queensland, Department of Environment and Resource Management.

Criteria related to other relevant factors were identified by the project team as a result of community consultation, engineering factors and planning related experience. This section provides an overview of the specific criteria selected for this study; any issues associated with particular criteria; the characteristics of the criteria and associated ratings that were assigned to the criteria.

3.2.1 Environmental Criteria

Environmental criteria include environmental features that would be impacted by the development of a boating facility. The primary criteria involved in the environmental review were limited to the available data over the entire study area.

The environmental values included in this study are summarised as follows:

- ▶ Essential Habitat, Dugong Protection Areas and Fish Habitat;
- ▶ Regional Ecosystems and High Value Regrowth;
- ▶ Wetlands;
- ▶ Protected Areas of Queensland; and
- ▶ Reserves.

Table 1 provides an overview of the criteria with a description of the ratings as they relate to the characteristics of the particular criterion.

Table 1 Environment Criteria Rating

Mapped Condition	Highly Suitable	Absence of Constraints	Moderately Constrained	Highly Constrained	Highly Unsuitable
	(1)	(10)	(20)	(40)	(999)
Remnant Vegetation & Certified Amendments/High Value Regrowth	Non-native	Non-remnant	Not of concern	Of Concern (dominant and sub-dominant)	Endangered (dominant and sub-dominant)
Essential Habitat, Dugong Protection Area, Fish Habitat					Either Essential Within Dugong Protection Area Management Type A
Wetlands				WPA Buffer WPA Trigger WMA Buffer WMA Trigger	DOI Wetland RAMSAR



Reserves	Water Supply Reserve	Forestry Reserve Indigenous Reserve	Nature Conservation Reserve
Protected Areas of Queensland Estate	State Forests Not Protected Estate		National Parks Forest Reserve Conservation Park Nature Refuge Resources Reserve Timber Reserve

3.2.2 Physical Criteria

Physical criteria include physical landscape features that would affect the constructability of a boating facility. The primary criteria involved in the physical review were limited to the available data over the entire study area.

The physical data layers incorporated into the site assessment process are listed as follows:

- ▶ Bathymetry;
- ▶ Waterways;
- ▶ Potential Acid Sulfate Soils; and
- ▶ Slope.

Due to the size of the study area slope analysis was limited to interpolation based on 10 metre contours and while it was included in the site assessment process it was not integrated into the "Suitability Surface". Table 2 provides an overview of the criteria with a description of the ratings as they relate to the characteristics of the particular criterion.

Table 2 Physical Criteria Rating

Mapped Condition	Highly Suitable	Absence of Constraints	Moderately Constrained	Highly Constrained	Highly Unsuitable
	(1)	(10)	(20)	(40)	(999)
Slope	>5%		5-10%	10-15%	>15%
Watercourses & Water Bodies	Major (200m buffer) 7-9 Stream Order Waterbodies			Minor 4-6 Stream Order	0-3 Stream Order
Potential Acid Sulfate Soils	Low Probability		Medium Probability	High Probability	
Bathymetry	Below -3 metres		-3 - 0 metres	> 0 metres	



3.2.3 Social Criteria

Social criteria include factors that would require consideration or approvals prior to the development of a boating facility. The primary criteria involved in the social impact review were limited to the available data over the entire study area.

The social data layers incorporated into the site assessment process are listed as follows:

- ▶ Native Title Claim;
- ▶ Marine Zoning and Parks;
- ▶ Cultural Heritage;
- ▶ Cadastre – Tenure; and
- ▶ Land Use Planning (QLUMP).

Due to the size of the study area the QLUMP (Queensland Land Use Planning Mapping Project) is the best level of resolution available for review of planning factors. Local Government Planning Schemes would provide a greater level of detail and should be incorporated into future analysis. Table 3 provides an overview of the criteria with a description of the ratings as they relate to the characteristics of the particular criterion.

Table 3 Social Criteria Rating

Mapped Condition	Highly Suitable	Absence of Constraints	Moderately Constrained	Highly Constrained	Highly Unsuitable
	(1)	(10)	(20)	(40)	(999)
Native Title	One Native Title Claim or No Native Title Claim		Two Native Title Claim	Three Native Title Claim	
Heritage Register and World Heritage					Heritage Site
Marine Zoning	General Use		Medium Probability	Buffer Conservation Park Estuarine Conservation Zone	Commonwealth Island Habitat Protection Marine National Park Preservation Scientific Research (Closed to Public Access)
Land Use Planning (QLUMP)	Lake Reservoir/Dam River		Plantation Forestry Cropping Perennial Horticulture Seasonal Horticulture	Grazing Natural Vegetation Production Forestry Intensive Horticulture Intensive	Nature Conservation Managed Resource Protection Other minimal use



Mapped Condition

	Highly Suitable (1)	Absence of Constraints (10)	Moderately Constrained (20)	Highly Constrained (40)	Highly Unsuitable (999)
			Irrigated Plantation Forestry Irrigated Cropping Irrigated Perennial Horticulture Irrigated Seasonal Horticulture	Animal Production Services Utilities	Manufacturing and Industrial Residential Transport and Communication Mining Waste Treatment and Disposal Channel/Aqueduct Marsh/Wetland Estuary/Coastal Waters
DCDB Tenure	Easement Boat Harbours Port and Harbour Boards Reserve State Forest State Land		Freehold Forest Reserve Lands Leased	Profit a Prendre	Commonwealth Acquisition Covenant Housing Land Industrial Estates Main Road Mines Tenure National Park Railway Timber Reserve Water Resource Other

3.2.4 Infrastructure Criteria

Infrastructure criteria include factors that affect the constructability or accessibility to potential boating facility site locations. The primary criteria involved in the infrastructure review were limited to the available data over the entire study area.

The infrastructure data layers incorporated into the site assessment process are listed as follows:

- ▶ Site Accessibility (Road Infrastructure);
- ▶ Utility Services (Pipelines, Powerlines);
- ▶ Cadastre - Lot Size; and
- ▶ Restricted Areas.



Due to the size of the study area and lack of utility service data that consistently covered the study area this criterion was assigned a lower weighting. Table 4 provides an overview of the criteria with a description of the ratings as they relate to the characteristics of the particular criterion.

Table 4 Infrastructure Criteria Rating

Mapped Condition	Highly Suitable	Absence of Constraints	Moderately Constrained	Highly Constrained	Highly Unsuitable
	(1)	(10)	(20)	(40)	(999)
Accessibility	Within 250m of a road reserve		Within 250 - 500m of a road reserve State Controlled Road	Within 500m - 1km of a road reserve	> 1km of a road reserve
Utility Services	Within 250m of utility services		Within 250 - 500m of utility services	Within 500m - 1km of utility services	> 1km of utility services
Restricted Areas					Defence Area Military Training Area Prohibited Area
DCDB - Lot Size	> 5000 sq m		1000 - 5000 sq m	<1000 sq m	<1000 sq m

3.3 Criteria Performance Weighting

In the modelling process, the relative influence of the criteria performance ratings are modified by the criteria weight. As a result, the application of each criterion weight allows the differentiation between similar performance ratings across themes. A group of discipline specific stakeholders groups the criteria into categories and develops consensus on the relative level of influence that each of the inputs should have on the model. The weighting schema established for this particular study is summarised in Table 5.

Table 5 Criteria Weighting

Criteria	Description	Weight	Percentage
Parks and Protected Areas	Queensland Protected Area Estates, Nature Refuges, Marine Zoning, Marine Parks	0.13	13.19%
Wetlands	RAMSAR, WPA/WMA Trigger Areas	0.13	13.19%
Vegetation	Regional Ecosystems and High Value Regrowth	0.12	12.09%
Sensitive Habitat	Essential Habitat, Dugong Protection Area, Fish Habitat	0.09	8.79%
Slope	Interpolated from 10m contours	0.09	8.79%



Criteria	Description	Weight	Percentage
Waterways	Stream Order, Reservoirs, Lakes	0.09	8.79%
Zoning	QLUMP (Queensland Land Use Planning Mapping Project)	0.08	7.69%
Lot Size/Tenure	DCDB	0.07	6.59%
Bathymetry	Bathymetric data (50m resolution)	0.07	6.59%
Heritage	Heritage Register and World Heritage Areas	0.07	6.59%
Site Accessibility	State Controlled Roads, Topographic Road Network	0.04	4.40%
Access to Services	Utility pipelines and powerlines	0.01	1.10%
Land Claim	Native Title Claims	0.01	1.10%
Potential Acid Sulfate Soils	Potential Acid Sulfate Soils (CSIRO)	0.01	1.10%



4. Site Codification

In order to facilitate the process of visually assessing and prioritising the sites a 250 metre buffer was constructed around the existent and proposed site locations and the sites were codified based on the summation of the suitability surface values contained within that buffer. This section provides a brief overview of the processes involved in assigning the prioritisation code to the proposed and existent site locations.

The process of preparing for the interactive visual site assessment involved the following:

- ▶ Converting raster data to vector data based on "suitability" code.
- ▶ Developing a 250 metre buffer around existing and proposed site locations.
- ▶ Clipping the "suitability surface" to individual site buffers.
- ▶ Performing a summary statistic on the data contained within the buffer.
- ▶ Spatially joining the results to the 250m buffers and site locations.
- ▶ Exporting results to a table.

Following the site codification process a visual site assessment was performed in an interactive digital mapping environment where other non-spatial factors were incorporated into the analysis.



5. Summary

To assess the suitability of the study area GHD adopted a methodology, which combines multi-criteria analysis with desktop-based Geographic Information System (GIS) technology. This process allowed the consideration of a variety of environmental, physical, social and built environment criteria while supporting a range of inputs from project stakeholders.

The GHD project team and project stakeholders provide a balanced representation of disciplines in the criteria selection, rating and weighting. Documentation of the process provides a traceable and repeatable process.

The MCA methodology has provided for the generation of a site suitability surface, which was used to assess the suitability of the proposed locations for boating facility development in the state of Queensland. Each site was assigned a priority score based on the summation of the suitability surface values within a 250m radius of a proposed site location. Following the codification of the site locations the planning team assessed the sites in the context of aerial imagery and in relation to the non-spatial factors that were identified during the course of the demand study.

This methodology is based on a high-level assessment and provides the basis for identifying a suitable area in which to undertake a detailed investigation. These subsequent field-based investigations account for criteria not previously considered in this analysis or strongly represented in the model. These influences can alter the location of the site from that identified in this analysis.



Appendix A
Geospatial Data Register



Table 6 Project Data Geospatial Register

Category	Description	Custodian	Used in Suitability Model
Infrastructure	Topographic Road Network	Geosciences Australia (GA)	Yes
	State Controlled Road	Department of Main Roads (DMR)	Yes
	Restricted Areas	Geosciences Australia (GA)	Yes
	DCDB - Lot Size	Department of Environment and Resource Management (DERM)	Yes
	Utilities (Pipeline - Water) (Powerlines)	Geosciences Australia (GA)	Yes

Category	Description	Custodian	Used in Suitability Model
Physical	Watercourses Waterbodies	Department of Environment and Resource Management (DERM)	Yes
	Acid Sulfate Soils	CSIRO	Yes
	Bathymetry	Geosciences Australia (GA)	Yes
	Contours	Dept. of Natural Resources and Water	No

Category	Description	Custodian	Used in Suitability Model
Social	Native Title	Department of Environment and Resource Management (DERM)	Yes
	Heritage Register and World Heritage	Department of Environment and Resource Management (DERM)	Yes
	Marine Zoning	Department of Environment and Resource Management (DERM)	Yes



Category	Description	Custodian	Used in Suitability Model
	Land Use Planning	Department of Environment and Resource Management (DERM)	No
	DCDB Tenure	Department of Environment and Resource Management (DERM)	No

Category	Description	Custodian	Used in Suitability Model
Environment	Remnant Vegetation & Certified Amendments/High Value Regrowth	Department of Environment and Resource Management (DERM)	Yes
	Essential Habitat,	Department of Environment and Resource Management (DERM)	Yes
	Wetlands	Department of Environment and Resource Management (DERM)	No
	Protected Areas of Queensland Estate	Department of Environment and Resource Management (DERM)	Yes
	Dugong Protection Area, Fish Habitat	Department of Primary Industries and Fisheries	Yes



Appendix B
Map Disclaimers



Table 7 Dataset Disclaimer and Copyright Statement

Dataset / Source	Disclaimer Statement	Copyright Statement
<p>Department of Environment and Resource Management</p> <p>Regional Ecosystems v6 (06/11/2009)</p>	<p>Map disclaimer: Regional ecosystem mapping, Version 6.0 Date: 06/11/09. Regional ecosystem line work reproduced at scale greater than 1:100,000, except in designated areas, should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100,000 is 100 metres. Regional ecosystem mapping reproduced with permission of Environmental Protection Agency 2009.</p> <p>While every care is taken to ensure the accuracy of the Information Product, the Environmental Protection Agency makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason. Data must not be used for direct marketing or be used in breach of the privacy laws.</p>	<p>© The State of Queensland. Department of Environment and Resource Management 2010.</p>
<p>Department of Environment and Resource Management</p> <p>Essential Habitat V3.02006. Protected Areas Estate 20 October 2009,</p> <p>High Value Regrowth, (06112009)</p> <p>Protected Areas of Queensland 2010</p> <p>Great Barrier Reef State Marine Park, Zoning 2003, Moreton Bay, Marine Park</p> <p>Queensland Wetlands Data V2.0 2009, Directory of Important Wetlands 2007, RAMSAR 2009, Wetlands HYD, Wetlands WPA Buffer, WPA Trigger, Wetlands WMA Buffer, WMA Trigger.</p> <p>Stream Order (2009)</p> <p>Contours (2009)</p>	<p>While every care is taken to ensure the accuracy of this product, the Environmental Protection Agency makes no representations or warranties about accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>	<p>© The State of Queensland. Department of Environment and Resource Management 2010.</p>
<p>Geoscience Australia</p> <p>Place Names</p> <p>Reserves 2006</p> <p>Watercourses, Lakes, Reservoirs 2006</p> <p>Utilities (Powerlines/Electricity) 2007</p> <p>Heritage</p> <p>Bathymetry 2009</p> <p>Topographic Roads 2007</p> <p>Prohibited Areas 2006</p>	<p>The Commonwealth gives no warranty regarding the Data's accuracy, completeness, currency or suitability for any particular purpose.</p>	<p>© Commonwealth of Australia (Geoscience Australia) 2010.</p>



<p>CSIRO Land & Water Atlas of Australian Acid Sulfate Soils</p>	<p>The Commonwealth gives no warranty regarding the Data's accuracy, completeness, currency or suitability for any particular purpose.</p>	<p>© Commonwealth of Australia (CSIRO) 2006.</p>
<p>The State of Queensland (Department of Infrastructure and Planning) IPA Planning Scheme 2008</p>	<p>The Department of Infrastructure and Planning gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data.</p> <p>Based on or contains data provided by the Department of Infrastructure and Planning, Queensland 2008 which gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data.</p>	<p>© The State of Queensland (Department of Infrastructure and Planning) 2008.</p>
<p>Queensland Transport State Digital Road Network 2008 , State Controlled Roads 2009 Current Boating Infrastructure Localities 2010 DMR Boundaries 2010</p>	<p>While every care is taken to ensure the accuracy of this data, the State of Queensland makes no representations or warranties about its accuracy, reliability completeness or suitability for any particular purpose and disclaims all responsibility and all liabilities (including without limitations, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might have as a result of the data being inaccurate or incomplete in any way and for any reason.</p>	<p>© The State of Queensland through the Department of Main Roads 2008.</p>
<p>Department of Environment and Resource Management Property Boundaries and Tenure (DCDB) 2010 Water bodies 2007 World Heritage Register 2008</p>	<p>While every care is taken to ensure the accuracy of this product, the Department of Environment and Resource Management (DERM) makes no representations or warranties about accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>	<p>The State of Queensland through the Department of Environment and Resource Management 2008.</p> <p>© The State of Queensland. Department of Environment and Resource Management (DERM) 2010.</p>
<p>Queensland Department of Primary Industries and Fisheries Queensland Coastal Wetland Vegetation 2006 Fish Habitat Area 2008 Dugong Protection Areas 2007</p>	<p>Use of the spatial data is by courtesy of the State of Queensland, Australia through the Department of Primary Industries and Fisheries</p>	<p>© Queensland Department of Primary Industries and Fisheries 2010</p>
<p>Department of Natural Resources & Water (NRW) and the Bureau of Rural Sciences (BRS) Zoning (QLUMP) 1999</p>	<p>While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>	<p>© The State of Queensland, Department of Natural Resources and Mines, 2005.</p>
<p>Department of Mines and</p>	<p>The State of Queensland asserts the right to be recognised as author of this material and the right to have</p>	<p>© The State of Queensland (Department of Employment,</p>



Energy Key Resource Area 2007	its material unaltered.	Economic Development and Innovation) 2009.
National Native Title Tribunal Native Title Claims 2010	The Registrar, the National Native Title Tribunal and its staff, members and agents and the Commonwealth (collectively the Commonwealth), accept no liability and give no undertakings, guarantees or warranties concerning the accuracy, completeness or fitness for purpose of the information provided. In return for you receiving this information you agree to release and indemnify the Commonwealth and third party data suppliers in respect of all claims, expenses, losses, damages and costs arising directly or indirectly from your use of the information and the use of the information you obtained by any third party	© Commonwealth of Australia 2008-2010.
Australian Bureau of Statistics – ASGC Australian State Boundaries 2009 Queensland Local Government, Regional, Council Boundaries 2009	Information regarding the underlying concepts of the Australian Standard Geographical Classification and its Structures may be found in the ABS publication Australian Standard Geographical Classification (ASGC) 2009 (cat. no. 1216.0). A publication is produced for each edition of the ASGC and the publication for the ASGC Edition 2009 will be available from 16 September 2009.	© Commonwealth of Australia administered by the ABS, 2009.
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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	M Williams	T Hooper		J Honey		Aug 2011



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Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	C Boon E Dwyer T Hooper M Williams	T Hooper		J Honey		Dec 2010
1	C Boon E Dwyer T Hooper	T Hooper		J Honey		Feb 2011
2	C Boon T Hooper	T Hooper		J Honey		June 2011



Recreational Boating Facilities Demand Forecasting Study

3	C Boon	J Honey		J Honey		Aug 2011
4	C Boon	J Honey		J Honey		Sept 2011