

Report

Auckland Recreational Boating Study

Prepared for Auckland Council

By Beca Infrastructure Ltd (Beca)

12 April 2012



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1 Introduction

1.1 Background

The Auckland Council is preparing the Auckland Plan, Unitary Plan and a number of supporting plans which will guide Auckland's development over the next 20 to 30 years. The Auckland Plan is the strategy to make Auckland the world's most liveable city by 2040. Population predictions reported in the draft Auckland Plan are for the current population of just under 1.5 million to increase to between 2.2 and 2.5 million by 2040 (AC 2011). Auckland's maritime environment is a principal attraction and value for the region's people with a consequential demand for recreational boating.

Recreational boating generates demand for infrastructure (in the form of boat ramps, moorings, marinas and other land based storage and maintenance facilities) and is a competing use for coastal space, including safe anchorages.

1.2 Scope

The study has been undertaken in two stages:

- i. Undertake a literature review of previous reports, both held in Council's records and provided by the Auckland Council, and through a search of library databases. This review will target information on boating numbers and trends relative to population and other factors which affect recreational boating demand;
- ii. Undertake a series of targeted face-to-face interviews with key industry personal to collect qualitative, and if possible quantitative, information on recreational boating trends. The parties interviewed are listed in Appendix A.

This report synthesises the results of the literature review and interviews and makes predictions on how the number of recreational boats will change over the next 20 to 30 years.

1.3 Setting

The Auckland region's coast has been an attraction for boating activities for centuries. The sheltered waters of the Waitemata Harbour and Hauraki Gulf on the east coast and the Manukau and Kaipara Harbours to the west have been used for commercial and recreational boating activities.

Since Polynesian seafarer Kupe sailed into New Zealand around 950 AD, Dutchman Ablet Tasman of the Dutch East India Company in 1642 and Britain's James Cook in 1769, New Zealanders have had boats in their blood.

There has, historically been little accurate data recorded on the number of boats within the Auckland region, or indeed in New Zealand. There is no single long term quantitative database for recreational boat numbers. Two national census surveys in 1971 and 1981 have been used to estimate boat numbers in New Zealand at those times. Further targeted surveys undertaken both nationally and in the Auckland region, have been used to estimate boat numbers and types at various intervals between 1970 and 2011.

In addition to these surveys, boat numbers can be estimated from surrogates including mooring and marina berth numbers, boat trailer and personal water craft registrations sales data.

Previous investigations, undertaken by Beca and others, have looked at the availability of recreational boating infrastructure in the region. To support the development of its plans Auckland Council is seeking to build on this previous work to forecast future recreational boating trends and demand for supporting infrastructure out to 2040.

2 Historic Boat Ownership Information

2.1 Early records

Early Auckland Harbour Board (AHB) records held at the Auckland Maritime Museum provide some insight to historic boat numbers and the demand for safe mooring facilities within the region. The AHB was established in 1870 (Hopkinson 2001). Archived records document AHB reports and press clippings note that in 1913 St Mary's Bay was gazetted as a protected yacht and launch anchorage; a grid was constructed in 1914 and the St Mary's Bay Jetty was built. Severe easterly gales in 1918 led to local yachtsmen lobbying the AHB for higher levels of protection for their craft. The St Mary's Bay Boat Harbour was developed incrementally from 1924 with a rock breakwater completed by 1926 and further dredging and reclamation by 1939, being the forerunner to Westhaven Marina (AHB Archives 1959-1969). A letter to the AHB in 1935 from a deputation of affected yachtsmen urged the Board to "make available reasonable and very necessary accommodation for part of Auckland's large pleasure fleet of about 600 yachts and 400 motor boats" (AHB Archives: 1927- 1937).

2.2 Auckland Regional Authority Survey, 1970

A telephone survey of recreational boating activity in the Auckland metropolitan area was undertaken by the Planning Division of the Auckland Regional Authority (ARA 1970) over the summer of 1969/70. The boundary of the survey area was limited to the Auckland free telephone calling area and appears to have excluded the areas of the former Rodney and Franklin Districts.

A total of 2,400 households were contacted of which 390 (16.2%) owned at least one pleasure boat. On this basis an estimated 28,800 households in Auckland owned a pleasure boat. A complementary questionnaire was sent to those households identified as owning a boat. An 85% response rate was received. Based on the questionnaire the number of craft by type in Auckland was estimated. Approximately 20% of the households with boats owned more than one. The results of the questionnaire are presented in Table 1 below.

Table 1 - Estimated Pleasure boat type and number in Auckland, 1970 (from ARA 1970)

Boat type	Number of boats in Auckland	% of boat type
Sailing yachts	8,500	24
Inboard Motor Boats	6,400	18
Outboard Motor Boats	13,100	37
Other (row boats, canoes, etc.)	7,500	21
Total	35,500	100

Auckland's population in 1970 was estimated to be 598,000, having increased from 286,000 in 1945. Expressed as a ratio of the number of boats per 1000 population, there were approximately 58 boats per 1000 population in 1970. Boat numbers in the Auckland metropolitan area were forecast to increase annually by 1,200 to 2,000 over the next 10 years.

2.3 National Census data; 1971 and 1981

Census data are available in 1971 and 1981 (NZ Department of Statistics 1971, 1981, cited in O'Connor and Simmons, 1990). The data for these two years are shown in Table 2 below.

Table 2 - Pleasure Boat Ownership in New Zealand (From O'Connor and Simmons 1990)

Year	Household Number	Boat Number	% of Households owning boats
1971	801,686	77,529	9.7
1981	100,113	171,690	17.1

The increase in ten years in proportion to the number of households was 76%. The increase in the number of boats was 122%. Boat ownership was unevenly distributed in New Zealand. The highest boat ownership proportional to household number in 1971 was centred on Whangarei (20%) Auckland (12.6%) and Nelson (13.5%) were also above the national average of 9.7% (NZ Department of Statistics 1971).

Table 3 below sets out the estimated boat numbers in the Auckland region based on the 1971 census (Department of Statistics, 1971). A similar regional breakdown is not provided in the 1981 census. Based on the 1981 census data Foster (1989, cited in O'Connor and Simmons 1990) estimated Auckland boat numbers at 70,000 for 1989.

Table 3 - Pleasure Boat Ownership, Auckland Figures (Department of Statistics, 1971)

Year	Household Number	Boat Number	% of Households owning boats
1971	202,059	25,418	12.6

A breakdown of vessel type is presented in O'Connor and Simmons (1990) based on the 1971 and 1981 census data. These data are presented in Table 4 below.

Table 4 - Pleasure Boat Types in New Zealand (from O'Connor and Simmons 1990)

Year	Boat numbers	Outboard %	Inboard %	Sail %	Paddle %
1971	77529	48.9	24.4	12.9	14.8
1981	171690	40.8	19.5	15.8	24.1

2.4 Pleasure Boat Safety Advisory Group Report, 1999

The Pleasure Boat Safety Advisory Group (the Group), established in 1998 and administered by the Maritime Safety Authority (currently Maritime New Zealand), reported on boat safety issues in 1999 (MSA 1999). The Group reported that boating is important to New Zealanders. Based on a survey for the Group of 13357 New Zealanders in 1997/98 CM Research concluded that 14.6% of New Zealand households own at least one boat and with multiple boat ownership this equated to 241,100 boats in New Zealand. A total of 29% of respondents owned more than one boat. Table 5 below, from this survey, estimates the types of boats making up this fleet.

Table 5 - Types of Pleasure Boats Owned in New Zealand in 1998 (cited in MSA 1999)

Type of Boat	% of Boat Owning Households Owning this Type of Boat	Equivalent Number of Boats	% of Boat Population
Trailer Power Boat	52.0	97,200	40
Dinghy	31.2	58,300	24
Trailer Yacht	15.3	28,600	12
Motor Launch	8.8	16,500	7
Personal Water Craft	5.3	9,900	4
Keel Boat	5.2	9,700	4
Other (Paddle craft)	11.2	20,900	9
Total Number of Boats		241,100	100

Boat ownership for households in Auckland was estimated to be 16% of the number of households. This was equivalent to 58,000 households, being 31% of the national total of 187,000 boat owning households. Based on these data, and assuming the Auckland fleet has a similar boat type composition to the national fleet, Table 6 below provides an estimate of boat numbers in Auckland in 1998. This underestimates the number of motor launches and keel boats as there were approximately 11,500 moorings and marina berths in the Auckland region in 1998 that would have been occupied by these types of vessels.

Table 6 – Estimated Types of Pleasure Boats in Auckland in 1998 (based on data cited in MSA 1999)

Type of Boat	% of Boat Owning Households Owning this Type of Boat	Equivalent Number of Boats	% of Boat Population
Trailer Power Boat	52.0	30,100	40
Dinghy	31.2	18,080	24
Trailer Yacht	15.3	8,870	12
Motor Launch	8.8	5,100	7
Personal Water Craft	5.3	3,070	4
Keel Boat	5.2	3,000	4
Other (Paddle craft)	11.2	6,480	9
Estimated Total Number of Boats in Auckland		74,700	100

In a previous survey in 1996, 41% of the respondents stated they had been out in a pleasure boat during the previous year. The majority of boat owners own trailer power boats, closely followed by dinghies. Over 80% of boats owned by New Zealanders are in these two categories.

2.5 Boating Safety Strategy 2007

Maritime New Zealand, on behalf of the National Pleasure Boat Safety Forum, published a review of the New Zealand Pleasure Boat Safety Strategy in 2008 (MNZ 2008). This report commented that the number of pleasure boats in New Zealand had continued to grow and in 2006 was estimated to be 350,000. This was based on industry reports from the Marine Industry Association (MIA) putting the net increase in vessels, after deducting scrapped vessels, at 12,600 pleasure craft each year between 1998 and 2006.

It was noted that there was a trend towards larger, faster craft on the one hand, and many smaller craft such as kayaks entering the market on the other. The report claims there is no doubt that the number of small craft is increasing rapidly, with up to 10,000 kayaks or canoes being sold each year.

A tendency is noted for boats to be used less for long term cruising and more for day or weekend trips. Consequently the popularity of trailer craft has increased ahead of permanently moored yachts and launches.

However, it is also noted that there is an increasing demand for marina berths indicating a continued demand for larger craft. At that time about 7% of pleasure boats were suitable for living aboard for extended periods. These boats are normally kept in marinas or on permanent moorings.

The ability of relatively small craft to make longer faster voyages safely has also increased, so smaller boats are travelling further afield and often considerable distances out to sea. This trend was reportedly more apparent when taken over a 20 year period.

This report does not provide any Auckland region specific data.

2.6 Industry snapshot for the Auckland Region – Marine Sector, 2009

The Auckland Regional Council prepared a “snapshot” report (ARC 2009) to describe the state of the marine industry in the Auckland region. The report acknowledges that not all of Auckland’s residents utilise marine resources for the same purpose or to the same extent. The marine environment, (beaches, harbour and water activities) is a significant contributor to the wellbeing of its residents. It was estimated in 2006 that 17% of Auckland households owned a boat. There are approximately 169 boat ramps in the region and 105 marine mooring areas. Evidence abounds of the connection between the people and the sea in Auckland, the “City of the Sails”.

The Auckland Regional Council’s Environment Awareness Survey in 2006 included a question on boat ownership. This was a sample survey of approximately 2000 households and is subject to sampling biases. The results of this survey are presented below in Table 7.

Table 7 - Type of boat owned or part owned by Auckland households 2005/2006 (Source: ARC Environment Awareness Survey 2006, cited in ARC 2009)

Boat type (Sample size = 242 survey respondents)	% of boat types
Motor Boat	40
Yacht	15
Launch	14
Dinghy	13
Canoe/ Kayak	7
Runabout	4
Jet ski	3
Sail boat	3

The 2006 census reports a total of 433,647 households in the Auckland region, being 30% of the number of households in New Zealand which was 1,454,103 (Monitor Auckland, www.ARC.govt.nz).

2.7 NZ Marine Industry Association Boat Stock Estimates, 2008 and 2010

Based on their assessment of information provided by Coastguard surveys, Marine Industry surveys, Maritime New Zealand, Yachting New Zealand and their industry knowledge, the New Zealand Marine Industry Association estimated the number of boats in New Zealand in 2008 to be between 420,000 and 470,000 rising to between 450,000 and 500,000 in 2010 (MIA 2008 and 2010). Table 8 below summarises these assessments.

Table 8 - Summary of New Zealand Boating Stock, 2008 and 2010 (MIA 2008 and 2010)

Boat type	Estimated numbers in 2008	% of total fleet in 2008	Estimated numbers in 2010	% of total fleet in 2010
Yachts and launches	22,000	5	22,000	5
Trailer power boats (3.5m to 8.5m)	150,000	35	170,000	36
Personal water craft	10,000	2	10,000	2
Trailer sailing boats (5m to 8.5m)	10,000	3	15,000	3
Dinghy/ canoe/ Lasers/ Optimists/ windsurfers etc.	233,000	55	250,000	53
Commercial boats (Charter, tour and work boats)	Not recorded	-	5,000	1
Total	425,000	100	472,000	100

Of the 22,000 moored boats, i.e. yachts and launches, an estimated 60% or 13,000 are yachts and 40% or 9,000 launches.

2.8 Maritime New Zealand Market Research 2011

Maritime New Zealand commissioned market research to track boat ownership and usage, boating safety behaviour and awareness of its lifejacket safety campaign between 2002 and 2011. A report (MNZ 2011) presents the results of the 2011 survey and re-presents data from 7 other years in the period from 2002 to 2011. The surveys were undertaken by telephone with random samples of New Zealanders aged 15 years and over. Sample sizes ranged between 1000 and 1300 participants for the 8 surveys.

The report notes that the overall level of boat ownership in New Zealand (i.e., whether a person owns one or more boats) has remained relatively steady since 2002, although over the past three surveys boat ownership appears to have increased slightly (19% own at least one boat in 2011 compared to 17% in 2010 and 15% in 2007). Figure 1 below presents the response to the question:

Do you own a boat used for recreational purposes; this could be personally, jointly with another person, or a family boat owned by someone else in your household?

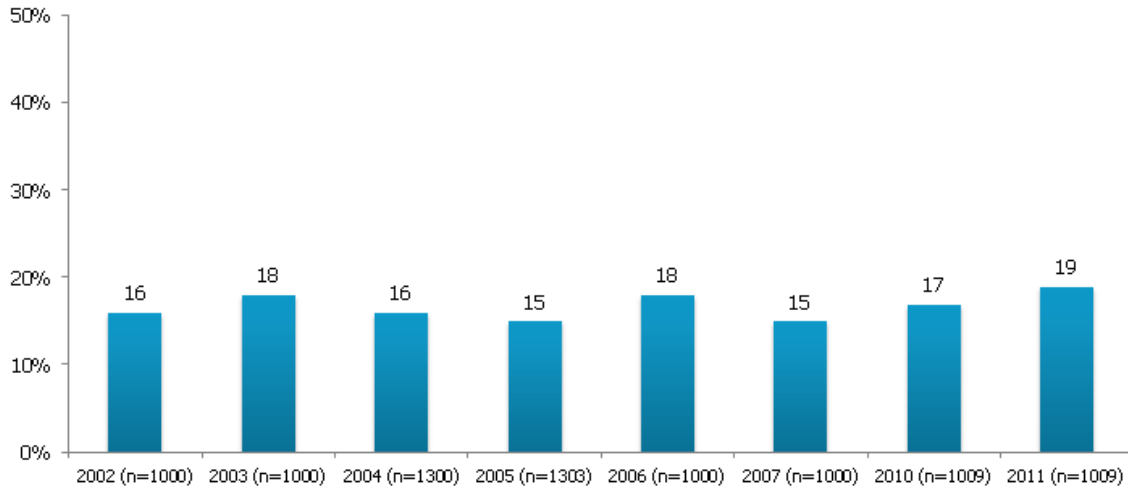


Figure 1: Incidence of Boat Ownership in New Zealand (From MNZ 2011)

There have been few significant shifts in 2011 compared to previous surveys in terms of the types of boats that are owned. Most reported levels of boat ownership for each boat type were similar to 2010 although the level of kayak/ canoe ownership decreased in 2011 following a sharp increase over the previous three years. In 2011, 27% of New Zealanders report owning a kayak/ canoe (this is consistent with the levels seen in 2007, and is down from 40% in 2010). Kayaks/ canoes were reported as the third most commonly owned boat behind trailer boats/ power boats and dinghies. No other changes in ownership by boat type were statistically significant.

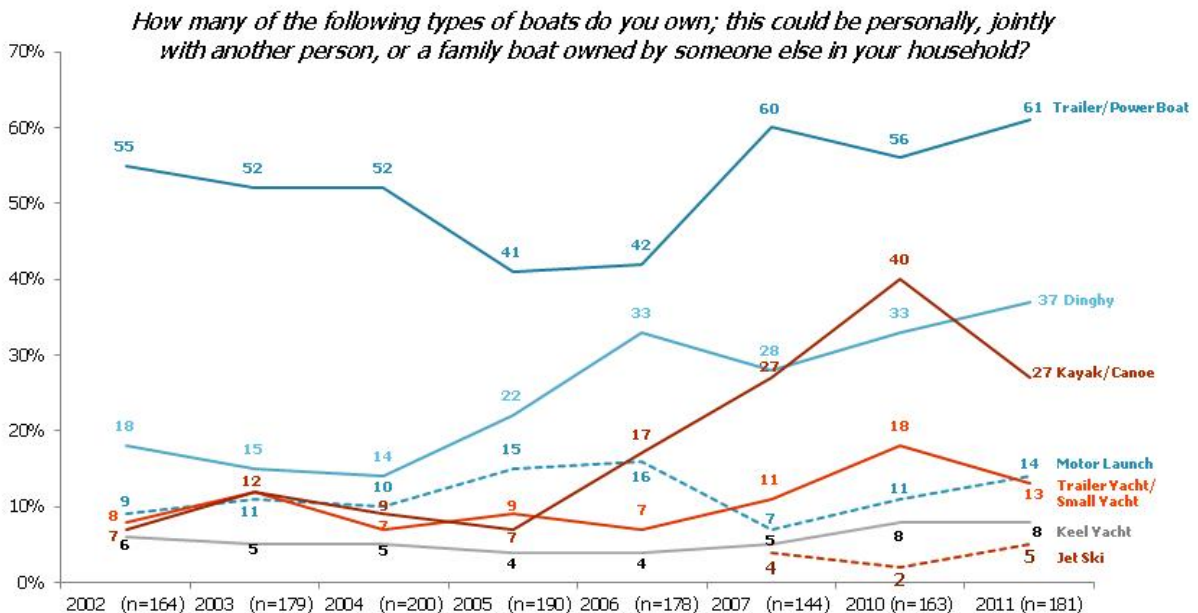


Figure 2: Incidence of boat ownership by type of boat owned (From MNZ 2011)

These data have been used to produce the estimated boat numbers shown in Table 9 below. To obtain the total number of boats by boat type, the number of boats reported by the obtained sample of

1,000 has been divided by 1,000 and multiplied by 1,471,746, which represents the total number of households in New Zealand according to the 2006 census. The report notes that the data may somewhat over estimate the total number of boats in New Zealand as the question asked respondents to include boats that were jointly owned "with another person". The "other person" does not necessarily reside in the respondent's household.

Table 9: Estimated number of boats in New Zealand by type (From MNZ 2011)

	Number of boats in sample of 1000 15+ year olds				Estimated total number in New Zealand				Percentage of total boats			
	2006	2007	2010	2011	2006	2007	2010	2011	2006	2007	2010	2011
Dinghy	78	52	69	95	114,796	76,531	101,550	139,816	30%	19%	19%	23%
Keel Yacht	7	8	17	15	10,302	14,717	25,020	22,076	3%	4%	5%	4%
Trailer Yacht/Small Sail Boat	14	19	36	25	20,604	42,681	52,983	36,794	5%	10%	10%	6%
Trailer Power Boat	82	95	104	127	120,683	139,816	153,062	186,912	32%	35%	29%	31%
Motor Launch	34	11	21	26	50,039	16,189	30,907	38,265	13%	4%	6%	6%
Kayak/Canoe	44	81	108	111	64,757	119,211	158,949	163,364	17%	30%	30%	27%
Jet Ski (not asked in 2006)	-	8	4	9	-	11,774	5,887	13,246	-	3%	1%	2%
TOTAL	259	274	359	408	381,181	420,919	528,358	600,473	100%	100%	100%	100%

3 Surrogate boat number data

Surrogate data are records of items that have a direct and dependant relationship with boat numbers. For example, the number of marina berths (including dry stack berths) and moorings is assumed to be directly related to the number of launches and keelers. While this may not be completely accurate, for the purpose of this exercise it is considered to be a reasonable assumption.

3.1 Moorings

There are 78 Moorings Management Areas (MMA) identified in the Auckland region. These are only located on the east coast, with no MMAs in the Kaipara and Manukau Harbours. A report prepared for the Auckland Regional Council in 2006 (ARC 2006) identified a net reduction in the number of moorings within MMAs between 1995 and 2006 of 1,434 moorings to a total of 4,329.

While the number of swing moorings has declined over this period, the total number of pile moorings has remained constant since the Auckland Regional Plan: Coastal was notified in 1995. In 2006 there were approximately 4,300 to 4,450 moorings (combined number of swing and pile) in the region.

Table 10 below provides a breakdown of these numbers.

Table 10: Total Estimated Number of Swing Moorings as at 2006 (Source ARC 2006)

	Moorings in MMAs	Moorings with Resource Consent	Unregistered Moorings	Total
Great Barrier Island	173	4	50-100	227-277
RDC Area	909		0	909
Waitemata North	840	7	0	847
Waitemata South	516		0	516
Tamaki Estuary	648		0	648
Tamaki Strait	1861	3	10-20	199-209
Waiheke/ Rakino	496	14	325-440	835-950
Manukau Harbour	0	0	100 +	100+
Total	3,768	28	485-660	4,281-4,456

More recent data provided by Auckland Council (AC 2011) gives a total of 4,322 plus a number to be determined in the Wairoa River. Table 11 below sets out the location and registration status of the region's moorings.

Table 11: Total Estimated Number of Swing Moorings as at 2011 (Source AC 2011)

Location	No. registered inside MMAs	No. registered outside MMAs	Unregistered inside MMAs	Unregistered outside MMAs	Consented	Total
Waiheke /Rotoroa /Pakatoa /Ponui	294	192	23	129 (<i>as per tagged in 2009/10 survey</i>)	14	652
GBI	0	0	137	115 (<i>as associated with MMAs/ and moorings not associated with MMAs as surveyed Nov 2010</i>)	4	256
Rodney east coast	1,005		3 (Okura)	55		1,063
Remainder east coast	1,410	634	102	139	10	2,295
Wairoa River			<i>(to be surveyed)</i>	<i>(to be surveyed)</i>		<i>(to be surveyed)</i>
Kaipara (incl. Helensville)			0	4		4
Manukau	0			52 (<i>surveyed June 2011</i>)	0	52
Total	2,709	826	265	494	28	4,322

Given the estimated number of moorings in 2006 was 4,329 and in 2011 there is an estimated 4,322 moorings it appears that the number of moorings in the region between 2006 and 2011 has not changed significantly. Waikato Regional Council records show there are 890 moorings in the Waikato region.

3.2 Marinas

3.2.1 A Brief History

The origins of marinas in Auckland can be traced back to the early 1900s. In 1913 St Mary's Bay was gazetted by the Auckland Harbour Board (AHB) as a protected yacht and launch anchorage. Severe north-easterly gales in early 1918 resulted in significant damage to the moored pleasure craft in St Mary's Bay and prompted pressure from local boat owners to be applied to the AHB to improve the level of protection for moorings in the bay. The St Mary's Bay Boat Harbour, the forerunner to Westhaven Marina, was formed by the construction of a stone breakwater protecting swing moorings and was completed in 1928. Delayed by a lack of funds through the depression years of the early 1930s, dredging and reclamation were completed in 1939. Construction of the Auckland Harbour Bridge (1956 – 1959), coupled with an increasing demand for berths, resulted in further reclamation and dredging and the introduction of pile moorings within the original boat harbour footprint. A system of floating finger berths was first installed at Westhaven in 1963 (AHB Archives, 1959-1969).

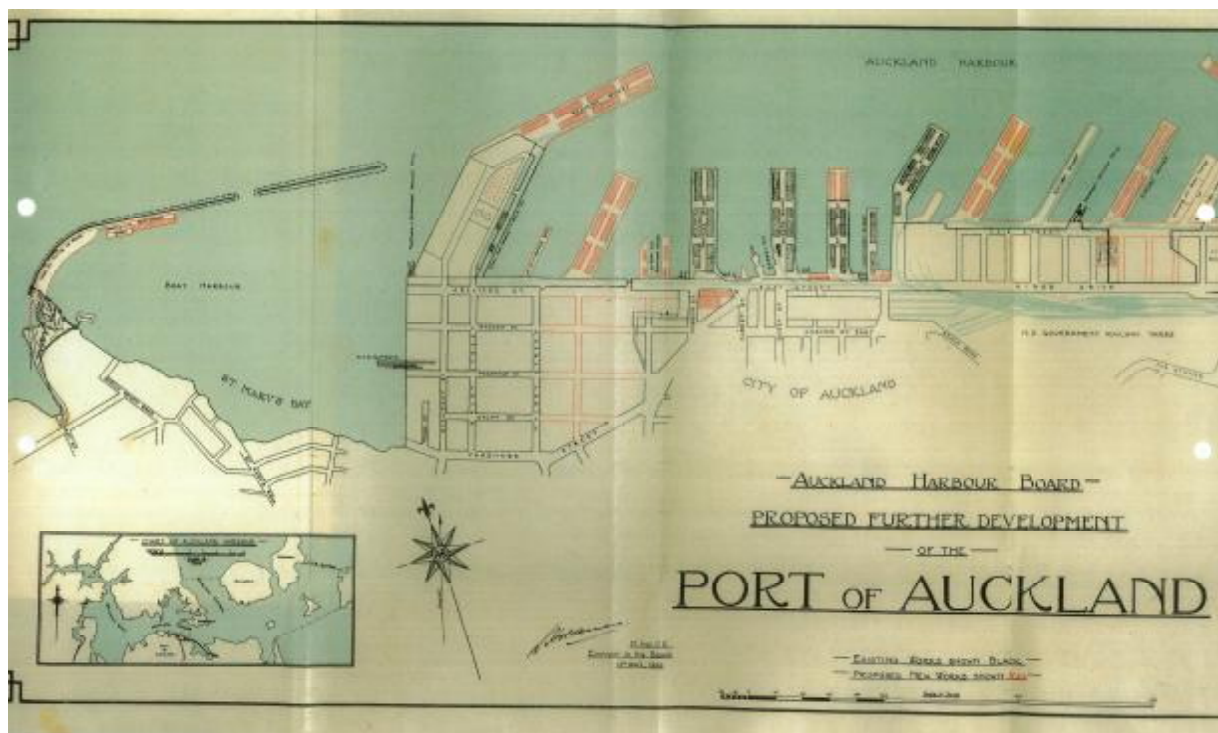


Figure 3: Original Plans showing the foot print of the St mary's Bay Boat Harbour (Currently Westhaven Marina) in 1926 (AHB 1935)

From its days as the St Mary's Bay Boat Harbour accommodating 120 swing moorings in 1934, Westhaven has developed incrementally till today it accommodates in excess of 1,860 vessels. Figures 4 to 7 below show a chronological series of Westhaven Marina's incremental development.



Figure 4: Aerial photo of Westhaven Marina in 1940 (AC website)



Figure 5: Aerial photo of Westhaven Marina in 1959 (AC website)

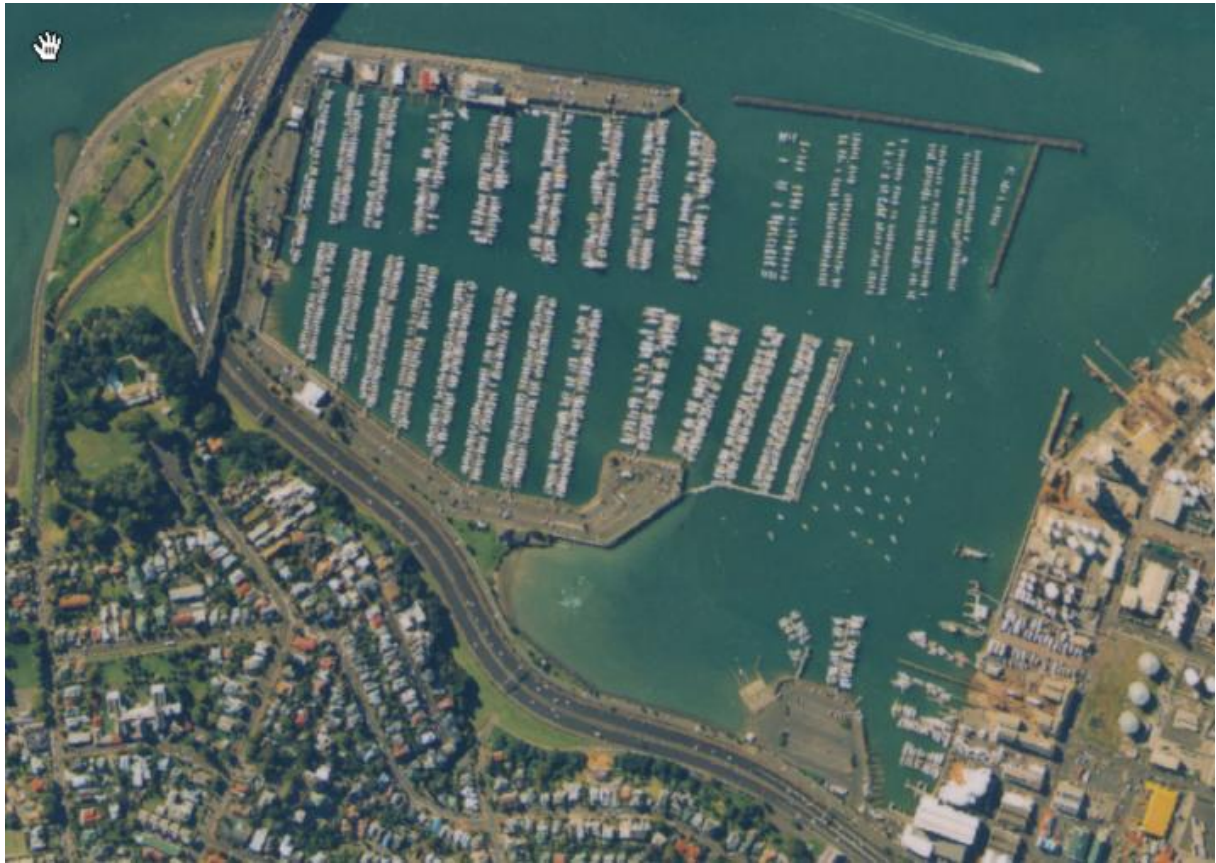


Figure 6: Aerial photo of Westhaven Marina in 1996 (AC website)

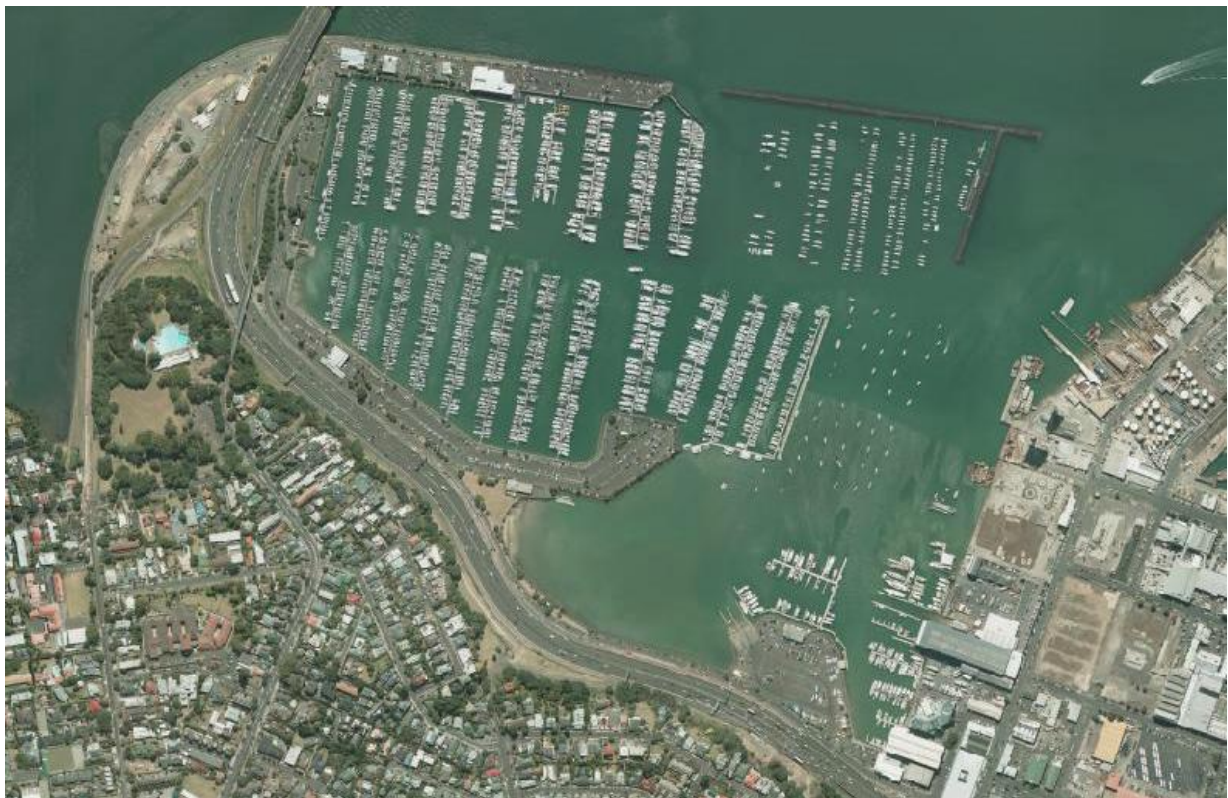


Figure 7: Aerial photo of Westhaven Marina in 2011 (AC website)

Other marinas have been developed to complement the facilities at Westhaven. Milford Marina and Half Moon Bay Marina came “on stream” in the late 1960s and early 1970s. A surge of marina berth development occurred in the decade from 1980 to 1990 during which time West Park Marina, Bucklands Beach Yacht Club Marina, Gulf Harbour Marina and Pine Harbour Marina added over 2,300 berths to the region’s quota (Leersnyder and Leersnyder, 2009). Orakei Marina, completed in 2006 is the only marina to have been developed in the past decade. Continuing the trend of incremental intensification, two dry stack facilities have been developed in central Auckland to complement the marina facilities of Orams and Pier 21. These facilities provide stacking for 510 vessels up to 12m long undercover. Figure 8 below shows an example of this type of facility.



Figure 8: Orams Marine Village Boat Park provides storage for 310 vessels

Figure 9 below shows the incremental increase in marina berth numbers in Auckland. In the majority of cases the marinas have been developed in areas that were previously sheltered swing mooring areas.

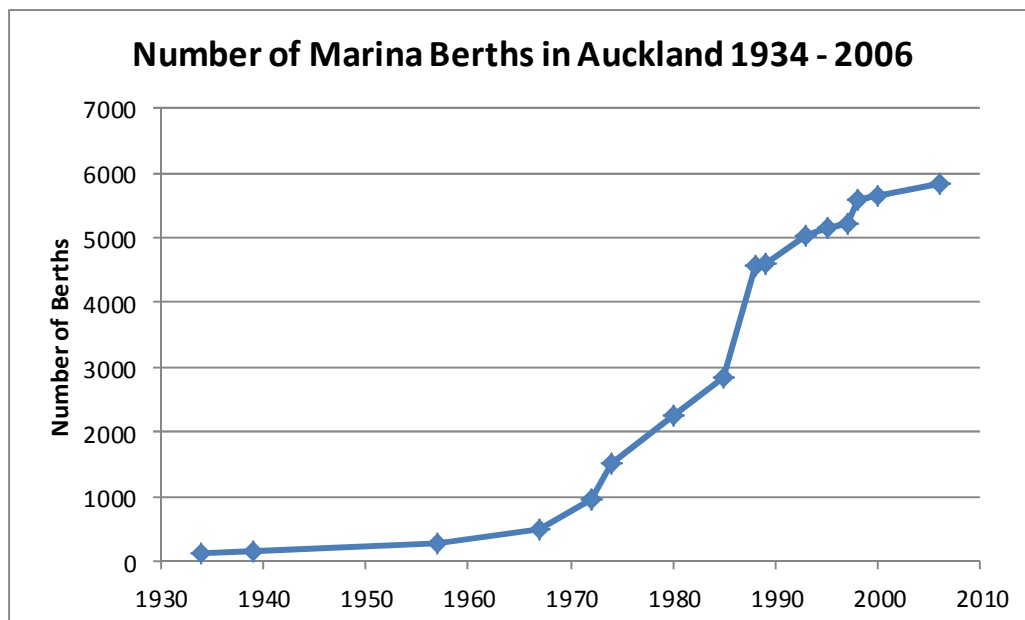


Figure 9: Cumulative development of marina berths in the Auckland region

3.2.2 Current Marina Berth Capacity

There are currently 15 marinas in the Auckland region, including 2 dedicated dry stack facilities. These marinas have a combined total of 6,377 berths, representing 49% of the 12,918 marina berths in New Zealand. Based on historic berth numbers and assuming a constant rate of increase in marina berths Auckland will have approximately 6,900 berths by 2031 and approximately 7,600 by 2041. The current locations of Auckland's marinas are shown below in Figure 10. This figure excludes the Orams and Pier 21 dry stack facilities in the south western corner of the Wynyard Quarter. Consents for a marina at Sandspit (approximately 145 berths) have been recently granted and consents are being sought for a marina at Matiatia, Waiheke Island (approximately 160 berths).

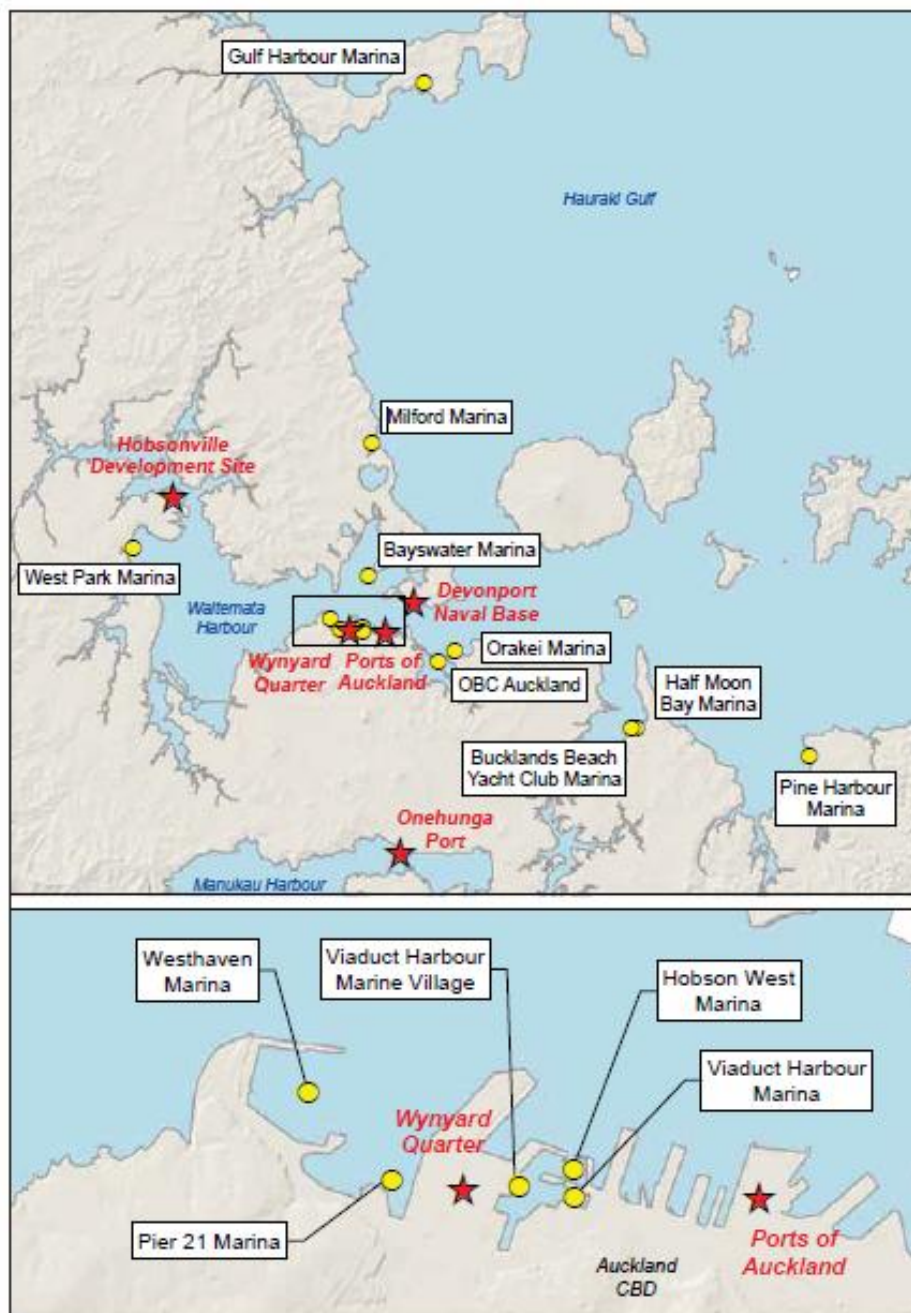


Figure 10: Location of Auckland's marinas and marine activities (Source ARC 2009)

Typically vessels of a size to require a mooring or marina berth are sufficiently seaworthy to cruise between the regions' waters. For example, boats moored in Auckland will cruise to the waters of the Bay of Islands or the Coromandel Peninsula. Conversely, vessels from marinas in the Northland, Waikato and Bay of Plenty regions will cruise to Great Barrier Island and the broader Hauraki Gulf.

The eastern coastlines of the Northland, Auckland, Waikato and Bay of Plenty regions have 27 of the country's 45 marinas and a combined total of 9,332 marina berths representing 72% of the country's total of berths. Figure 11 below shows the split of marina berths in New Zealand by region.

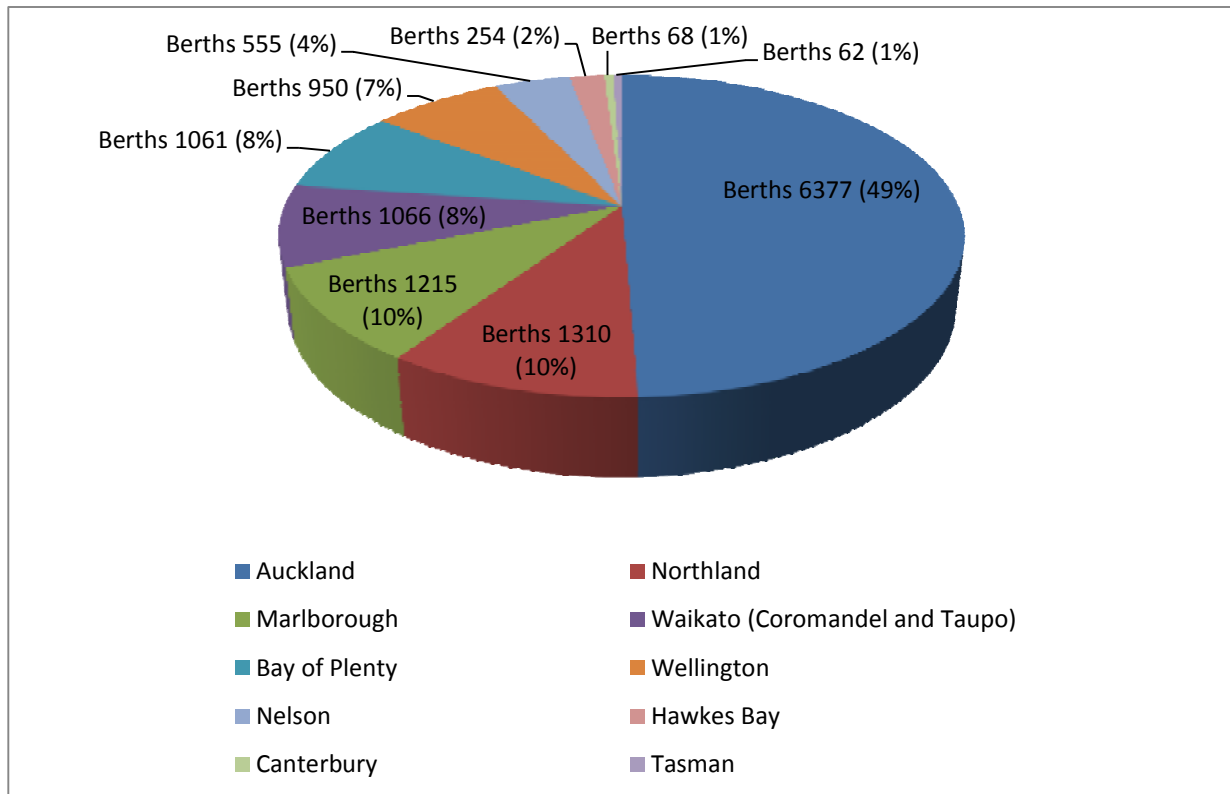


Figure 11: Breakdown of New Zealand marina berth numbers by region.

3.3 Trailer Boats

Boat trailer registrations provide a useful surrogate for the number of trailer boats. In 2011 there were 132,028 registered boat trailers in New Zealand. Of this, nearly 34,000 (26 %) were registered in Auckland. This percentage has remained constant at 26% since 2008. Nearly 60% of registered boat trailers are in the four northern regions of New Zealand.

Total Number of Trailers, 2011

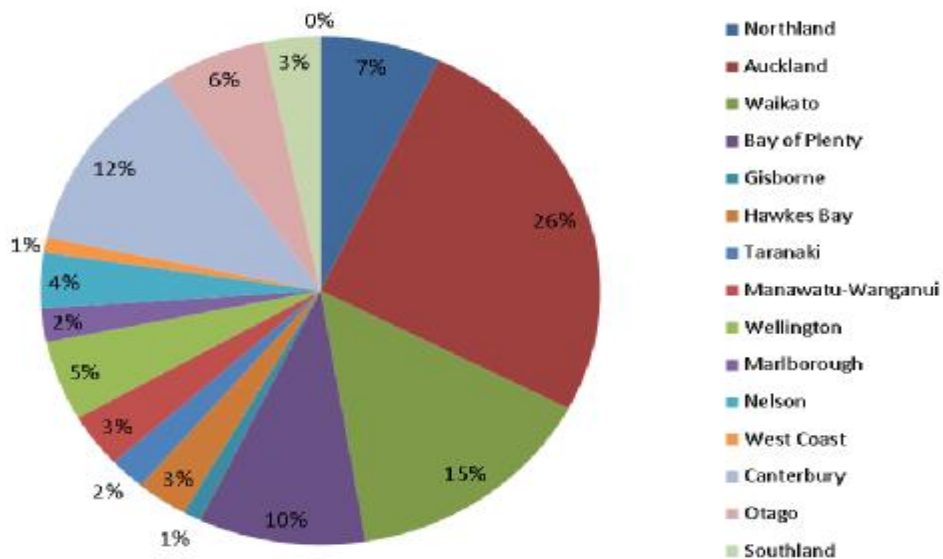


Figure 12: Percentage of total register boat trailers by region.

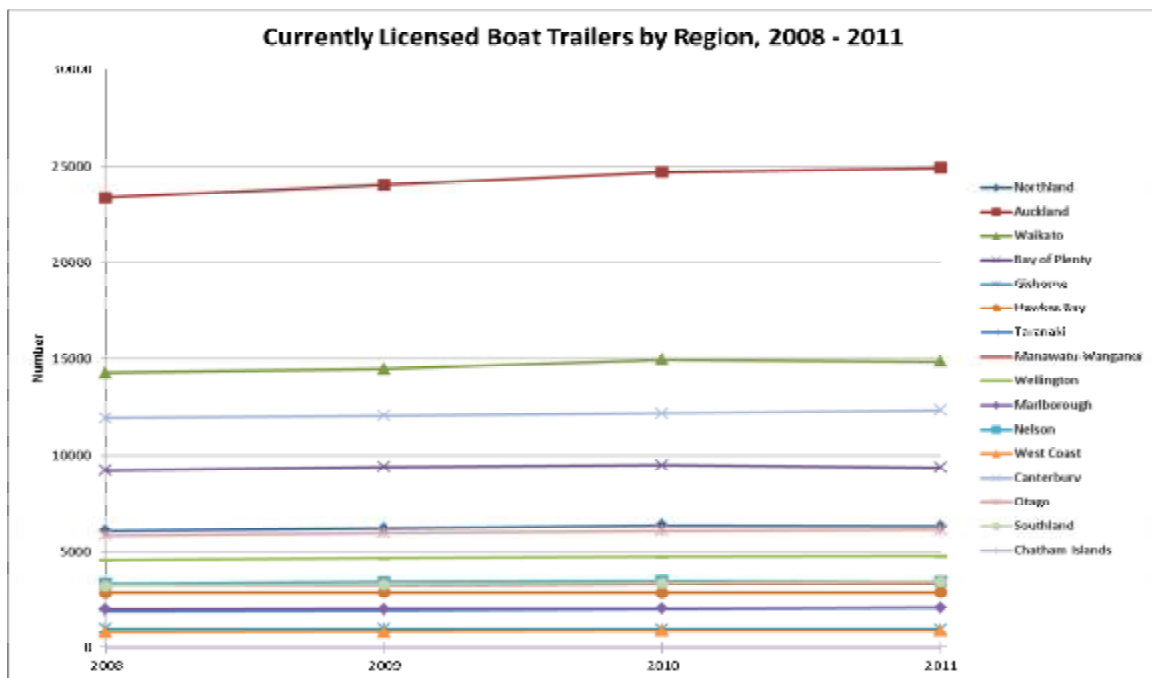


Figure 13: Currently licenced boat trailers by region, 2008 to 2011

The number of new boat trailers registered in New Zealand over the past decade has fluctuated between 5,000 and 7,000 per year of which between 2,000 and 2,300 per year have been in Auckland. The percentage of New Zealand's new boat trailers in Auckland has hovered around 35%, although in the past 4 years this has increased to 40% (Figure 14).

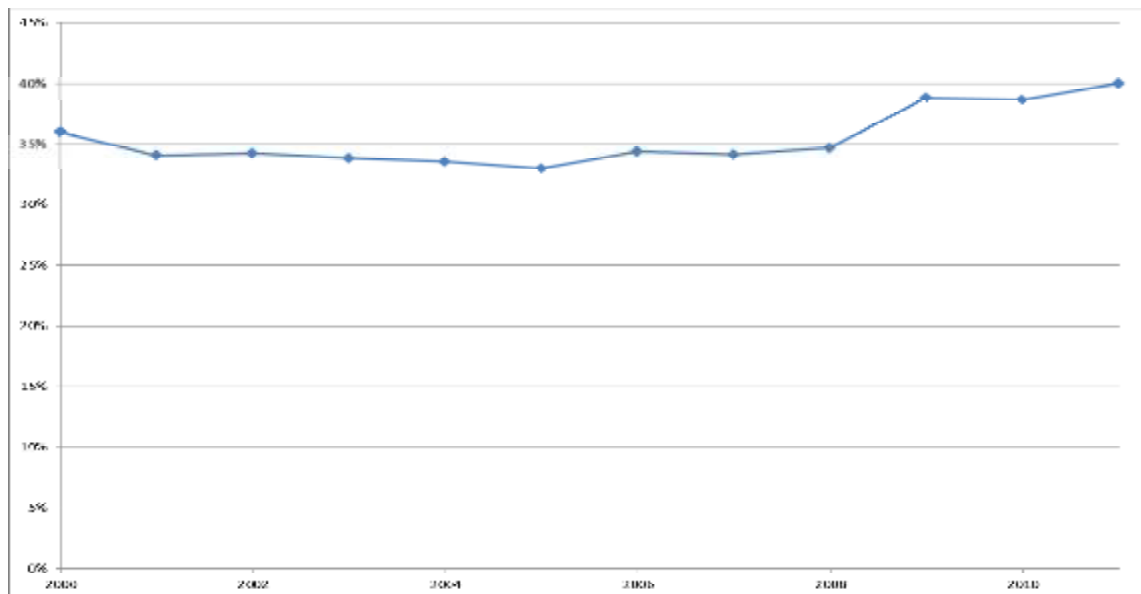


Figure14: Percentage of New Zealand's new boat trailers registered in Auckland

3.4 Personal Water Craft

A personal water craft (PWC), also called water scooter, is a recreational watercraft that the rider rides or stands on, rather than inside of, as in a boat. They are powered with a jet propulsion unit and are often referred by the trademarked brand names 'Jet Ski', 'WaveRunner', or 'Sea-Doo'.

Although they have been on the world market for about 40 years, PWCs have been increasing in popularity in New Zealand since the 1990s. A "one off" registration of PWC has been required by the Auckland Council, and the former Auckland Regional Council, in the Auckland region under a local bylaw since 2004. There are currently 2250 PWC registered in Auckland. An estimated 80 to 90 % of PWC are registered (B. Goff, pers. com. 2012) giving an estimated total number of PWCs in the Auckland region of between 2,500 and 2,800. Registrations have been increasing at a rate of approximately 10% per year since 2004 (Figure 15). A further 1,350 PWCs are registered with the Waikato Regional Council (Kim Parker, pers. com). This rate seems rapid and may be an artefact of the requirement for registration rather than indicating the rate of increase in PWC numbers. Further investigation would be required to more reasonably predict PWC numbers out to 2031 and 2041.

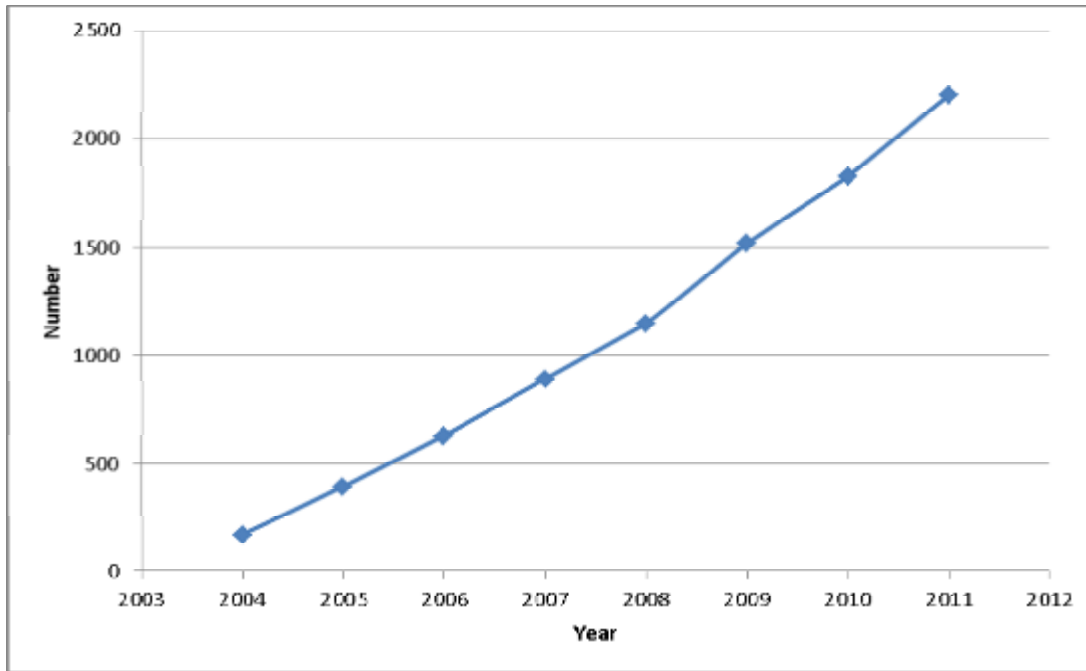


Figure 15: Personal Water Craft Registration in Auckland, 2004 to 2011

3.5 Surrogate boat data Summary

The number of moorings in the region has been fairly constant over the past 6 years at approximately 4,300. There was a net decrease of approximately 1,500 moorings in the region between 1995 and 2006. This change in mooring numbers varied with the location of the mooring area sites. There were reductions in the number of swing moorings in the Waitemata, Tamaki Estuary and Tamaki Strait areas while there have been increases in the Great Barrier Island, Rodney and Waiheke/ Rakino areas. The overall reduction in the number of moorings is likely to have resulted from an increase in the number of marina berths developed in the late 1980s and 1990s (ARC 2006). In addition there has been a significant increase in the number of berths available in dry stack facilities.

Marina berth numbers have increased continuously from the days of the first facilities, being 120 swing moorings in the sheltered St Mary's Bay Boat Harbour in the 1920s to 6,377 berths in the 15 existing marinas. A surge of 2,300 berths came onto the market in 1980s and 1990s. Numbers of berths are still likely to increase, albeit at a slower rate. Two further marinas are currently in the formal planning process with Sandspit Marina (approximately 145 berths) having been recently granted consent and Matiatia Marina on Waiheke Island (approximately 160 berths) seeking approval. Currently there are 6,377 berths in Auckland with this number predicted to increase to 6,900 by 2031 and 7,600 by 2041. The number of marina berths does not equate directly to an increase in launch and keeler numbers as boats previously on moorings may relocate to a marina facility as it comes available. The Auckland region has 49% of the country's marina berths. The east coast of the four northern regions has 72% of the country's marina berths with boating access to the popular cruising grounds of the Bay of Plenty, Hauraki Gulf and Bay of Islands.

In 2011 there were 132,028 registered boat trailers in New Zealand. Of this, nearly 34,000 (26 %) were registered in Auckland. This percentage has remained constant at 26% since 2008. Nearly 60% of registered boat trailers are in the four northern regions of New Zealand. There has been an increase of between 2,000 and 2,300 registered boat trailers per year in Auckland over the past decade. There are some boat trailers that are not registered for road use, for example that may be stored in a marina park such as Westhaven. Therefore the number of boat trailer registrations may underestimate the number of trailer boats.

There are currently 2250 PWC registered in Auckland equating to an estimated total of between 2,500 and 2,800. Registrations have been increasing at a rate of approximately 10% per year since 2004. While there has been a rapid increase in the popularity of these vessels, it is hard to predict whether this level of increase will be sustained.

4 Future predictions

4.1 Demographic Trends

Recreational boat ownership is linked to population and household numbers. The Draft Auckland Plan reports that Auckland's population has grown steadily for many decades. Continued growth and changes in the age profile and ethnic diversity will significantly affect the way Auckland evolves over the next few decades (AC 2011). Half of the population growth in New Zealand between 2001 and 2006 was in Auckland where the current population is now estimated to be 1.5 million: around one third of all New Zealanders. Recent projections suggest that by 2040 Auckland could reach a population of between 2.2 and 2.5 million. These projections are shown below in Figure 16. Auckland's population is growing at a faster rate than that of the country as a whole, and so its proportion of NZ's overall population will also grow (AC 2011).



Source: Statistics NZ and Auckland Council

Figure 16: Auckland's population projections (2006 -2041) (source AC 2011)

A report to the Auckland Regional Council in 2006, Forces Shaping the 21st Century – Demographics (ARC 2006) notes that the last century Auckland's population has grown two of three times faster than the rest of New Zealand. The report predicts that this trend is likely to continue into the 21st Century with Auckland being home to 40% of New Zealanders by 2050.

The population of the Auckland region has been strongly driven by migration, both from other regions within New Zealand and from overseas. As the gateway to New Zealand for most migrants this pattern is likely to continue. ARC 2006 cites climate change, environmental degradation and political instability in other parts of the world as potential factors likely to increase the appeal of New Zealand and Auckland for migration, study and investment.

While Aucklanders are on average younger than other New Zealanders, the proportion of the population over the age of 60 is projected to increase from 10% in 2006 to around 19% by 2040 (AC 2011).

Auckland has a diverse ethnic and cultural composition. In 1986 23% of Auckland’s population was born overseas, and this proportion rose steadily to reach 37% by 2006. Auckland is currently home to over 150 ethnicities. Over two thirds of those in the broad Asian and Pacific ethnic categories live in Auckland.

Auckland’s diversity is likely to continue to increase and the Asian and Pacific proportion of the population is likely to continue to grow most significantly (AC 2011). Figure 17 below represents predicted changes in ethnicity in Auckland.

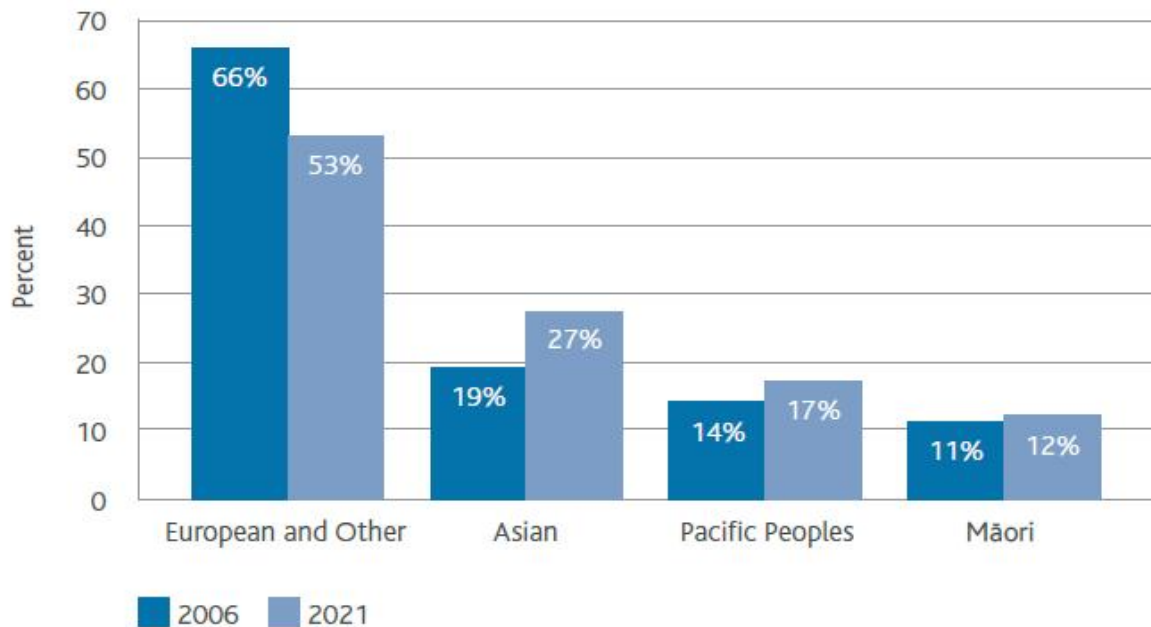


Figure 17: Auckland’s ethnicity (2006-2021) (Source AC 2011)

4.2 Auckland Marine Industry Survey

A survey of individuals working in the maritime industry was prepared for Waterfront Auckland in 2011 (WA 2011) to assist in its projections for Westhaven Marina. Thirty five respondents contributed to the survey and answered questions on the demographics of Westhaven’s berth holders and observable trends in boat size, type and numbers.

The global financial crisis was reported to have had an impact on the sector and upon respondents’ confidence in answering forward looking questions accurately. Many responses reflect the state of uncertainty caused by the global recession and its impact on the marine sector. They do note however that the very top end of the market, including super yachts, the recession has had little impact.

Respondents noted the rising cost of boating as a recreational activity and made the link between that and a general trend towards boat owners being older and wealthier. A common sentiment was that Auckland will always be a “City of Sails”, given the natural advantages the Waitemata Harbour offers when attracting recreational boats.

There is a perceived trend that new vessels are getting larger. In the past a 12m boat was considered to be a large boat, it is now considered average. There is also a trend towards larger trailer boats which are stored on trailers at home, or in dry stack facilities close to the marina. This is expected to reduce the demand for smaller sized berths, but will create an opportunity for marinas to develop land based storage options to serve this market.

There is also a reported trend towards multihull vessels becoming more popular. This is an international trend. Multi-hulls tend to be more stable and easier to control on the water making them attractive to the new boat owner. They also tend to have larger living areas and offer better fuel economy.

The survey report cites the Marine Industry Association estimates of 472,000 boats in New Zealand, half of which are reported to be located in Auckland. Of this trailer boats, including sail boats amount to 185,000 nationwide. Of the estimated 15,200 new boats per annum, only about 100 are yachts and launches. This is well down on the 500 – 600 new boats in the 1980s, and the 200 annually in the period from 1990 to 2008. The report predicts boat stock and boating in general to increase in popularity, especially as the target market for moored boats – the baby boomers- will increase over the next 15 to 20 years.

4.3 Future trends for Auckland's boating

To complement the information collected from various historic reports, surveys and assessments a series of interviews was undertaken with targeted people familiar with the Auckland recreational boating scene. A list of people interviewed is attached as Appendix A and included members of the Auckland Yachting and Boating Association, Marina Operators Association, Harbour Master and Coastal Consent sections of the Auckland Council, Maritime New Zealand, Buckland's Beach Yacht Club and recreational fishing interests. The interviewees were asked questions on:

- Current and predicted boating numbers for in the region, demand for moorings and marinas, waiting lists and constraints to boating
- Trends in boating type and size
- Demand for boat ramps
- Berthing and mooring methods, both on the water and in dry stacks
- Changes in demographics with more intensive urban living, changes in ethnicity etc.

The feedback from these interviews is summarized below:

a. Current and predicted boating numbers for in the region, demand for moorings and marinas, waiting lists and constraints to boating.

The consistent perception among interviewees is that boat numbers are continuing to increase. Different types of vessels are increasing at different rates and the rate is affected by economic factors and the cost of fuel, boat storage and maintenance.

While the overall number of moorings has remained static for the past 5 years, there are areas in the former Rodney District Council area and adjacent to the islands of Kawau, Rakino and Waiheke where there is adjacent land development driving a demand for moorings. This is often in sheltered bays valued as safe anchorages for cruising vessels. There are waiting lists in mooring management areas at these locations.

Demand for marina berths is steady, although not as pronounced as in the 1980s. There is interest in marina development at Sandspit, Matiatia (Waiheke) and a possible expansion of Orakei Marina. Orakei Marina completed in 2006 is an example of intensification of previous mooring areas (Figure 18).



Figure 18: Orakei Marina



Figure 19: Okahu Bay mooring area is adjacent to the Orakei Marina

b. Trends in boating type and size

There is a perception that the size of new cruising boats is increasing. Where in the past an 8 to 10m boat was a “norm”, now a 12 to 14 m boat is more common. One respondent considered 14m to be a size that is at a practical limit for a crew of two people to handle easily and that this size would be a “normal maximum”.

Following overseas trends, there is an increase in the number of multihulls in the cruising fleet. These vessels typically have more “living space” and are easily operated with a limited number of crew. While multihulls occupy more of a footprint than the equivalent length mono-hull, multihulls are shallower in draft, thereby allowing anchoring and mooring in shallower locations.

Improvements in fuel efficiency, engine reliability and navigation equipment such as GPS, chart plotters and radar becoming more affordable and common on cruising vessels and larger trailer boats. As a consequence, boats are travelling further afield to find the secluded bay or fishing spot.

There is a trend for the trailer boat fleet to increase in size. Aluminum and rigid hull inflatable hull boats (RHIBs) trailer boats are more popular. With more powerful towing vehicles and hull materials trailer boats up to 8m in length are increasing in number. The relatively low maintenance of these

vessels, in terms of not requiring painting and antifouling, and the flexibility to transport them to different cruising locations make these vessels attractive in a society with limited discretionary time. These vessels may have “hard-top” cabins and are quite capable of extended overnight journeys in safe anchorages.

The fleet of PWCs is continuing to increase at a significant rate. From the initial introduction as a “fun speed machine”, there is some diversification with an increasing trend for larger PWC set up for fishing.



Figure 20: Personal Water Craft setup for fishing (Source: Jetskifishing.co.nz)

c. Demand for boat ramps

With an increasing number of trailer boats and PWCs there is a corresponding demand for boat ramps. There is considerable pressure on the region’s all tide, all weather boat ramps, particularly during summer weekends. In addition there is pressure on the region’s more exposed boat ramps to be made safer. For example, Gulf Harbour’s boat ramp has recently been made safer with a new breakwater added to provide wave protection. The pressure on boat ramps reflects in the adjacent trailer parking areas. For example, overflow boat trailer parking at the Half Moon Bay boat ramp “spills” onto the adjacent residential streets.



Figure 21: Okahu Bay boat ramp



Figure 22: Boat trailer parking is a constraint at busy boat ramps.

d. Berthing and mooring methods, both on the water and in dry stacks

Marina berths have replaced moorings in a number of locations. There are a relatively fixed number of pile moorings. Pile moorings are seen by their operators as a relatively expensive mooring method to operate due to the capital and replacement costs associated with the piles and tackle.

The ease of access, less maintenance and security associated with marinas is a significant attraction. Most berth holders live in proximity to the marina, this being an important criterion in berth holders selecting a marina.

With the trend towards larger vessels, many of which have a deeper draft, marinas are looking to trailer parks and outside dry stack facilities to provide storage for vessels in the 6m to 8m range, and, in some cases up to 10m.



Figure 23: Pine Harbour Marina Boat Store Facility

Pine Harbour Marina also provides a land based boat storage facility with outside racks storing boats up to 10m long. The vessels are launched and retrieved using a specialised fork lift.

Trailer boats are also being stored in marina trailer parks and commercial storage areas. This trend is likely to increase as the numbers of trailer boats increases. The following figures 24 to 26 provide examples of these types of facility.



Figure 24: Keeler trailer parking at Westhaven Marina



Figure 25: Secure trailer boat Storage facility at Half Moon Bay Marina



Figure 26: Dedicated storage facility being used for boat storage.

e. Changes in demographics with more intensive urban living, changes in ethnicity etc.

The population age distribution identifies the “baby boomers”, born between 1946 and 1964, are moving into their retirement years. These people are key clients of cruising boats and marina berths as they have discretionary time and financial resources to engage in cruising. There was also a sector of the community noted with “younger” participants in their 20s and 30s described as “cash rich and time poor” that participate in fast small boat and keeler sailing.

Dry stack storage is appealing to boat owners as there is less maintenance, no antifouling and no trailer storage and maneuvering required. This suits many urban dwellers in apartment and other higher density housing with limited parking space. With more urban intensification predicted, this method of boat storage is likely to be in demand.

The predicted increase in the proportion of the population with Asian and Pacific Island ethnicity has been noted by respondents. Both these ethnicities appear to be well represented in the recreational fishing and trailer boat owning community.

Along with PWCs, there is an increasing trend in the number of kayaks and paddle boards being used for recreational fishing.

4.4 Synthesis of Auckland boat number predictions

In the absence of a single data base for the number recreational vessels in Auckland a number of sources have been drawn on to estimate the size of Auckland's fleet and how this may change over the next 20 to 30 years.

4.4.1 Boat number annual increases

New Zealand Marine Industry Association (NZ Marine) has estimated annual increases in the various boat types (NZ Marine 2010). These estimates are shown in Table 12 below. The change in boat numbers is also shown as a percentage of the total number for each boat type.

Table 12 - Estimated growth of boat numbers in New Zealand per annum as at 2010

Boat type	Annual change in boat number	Annual % change in boat number
Yachts and launches	100	0.45
Trailer power boats	5,000	2.9
Personal water craft	1,000	10
Trailer sailers	100	0.7
Dinghies/ canoes etc.	15,000	6
Less scrapped boats	-6,000	-1.3
Total	15,200	3.2

The accuracy of estimates for the number of boats in the Auckland region varies between the type of craft and the basis of the surrogate used. To estimate boat numbers in Auckland a suite of assumptions have been made based on the estimates and surrogate data reported in sections 2 and 3 of this report. The estimated numbers and the basis of the estimate are shown above in Table 13.

Table 13: Estimated boat numbers in Auckland as at 2011

Boat type	Auckland's estimated numbers in 2011	% of total Auckland fleet in 2011	Assumption basis
Yachts and launches	11,000	8	The number of moorings and marina berths in the region from AC and industry records. Estimated 60% yacht and 40% launch based on industry intelligence.
Trailer power boats (3.5m to 8.5m)	38,000	29	The number of boat trailers registered in Auckland from NZTA records plus an estimate of 10% for unregistered trailers.
Personal water craft	3,000	2	The number of PWC registered with the AC plus an estimate of 20% for unregistered craft.
Trailer sailing boats (5m to 8.5m)	5,000	4	NZM's national estimate proportioned for Auckland's population being approximately 30% of the national population.
Dinghy/ canoe/ Lasers/ Optimists/ windsurfers etc.	75,000	57	NZM's national estimate proportioned for Auckland's population being approximately 30% of the national population.
Total	132,000	100	

Using the limited suite of boat number estimates for Auckland and plotting these data overtime an estimate can be extrapolated. This prediction is shown below in Figure 27 below. From this chart it is predicted that there will be approximately 160,000 boats in Auckland in 2031 and approximately 183,000 boats in Auckland in 2041.

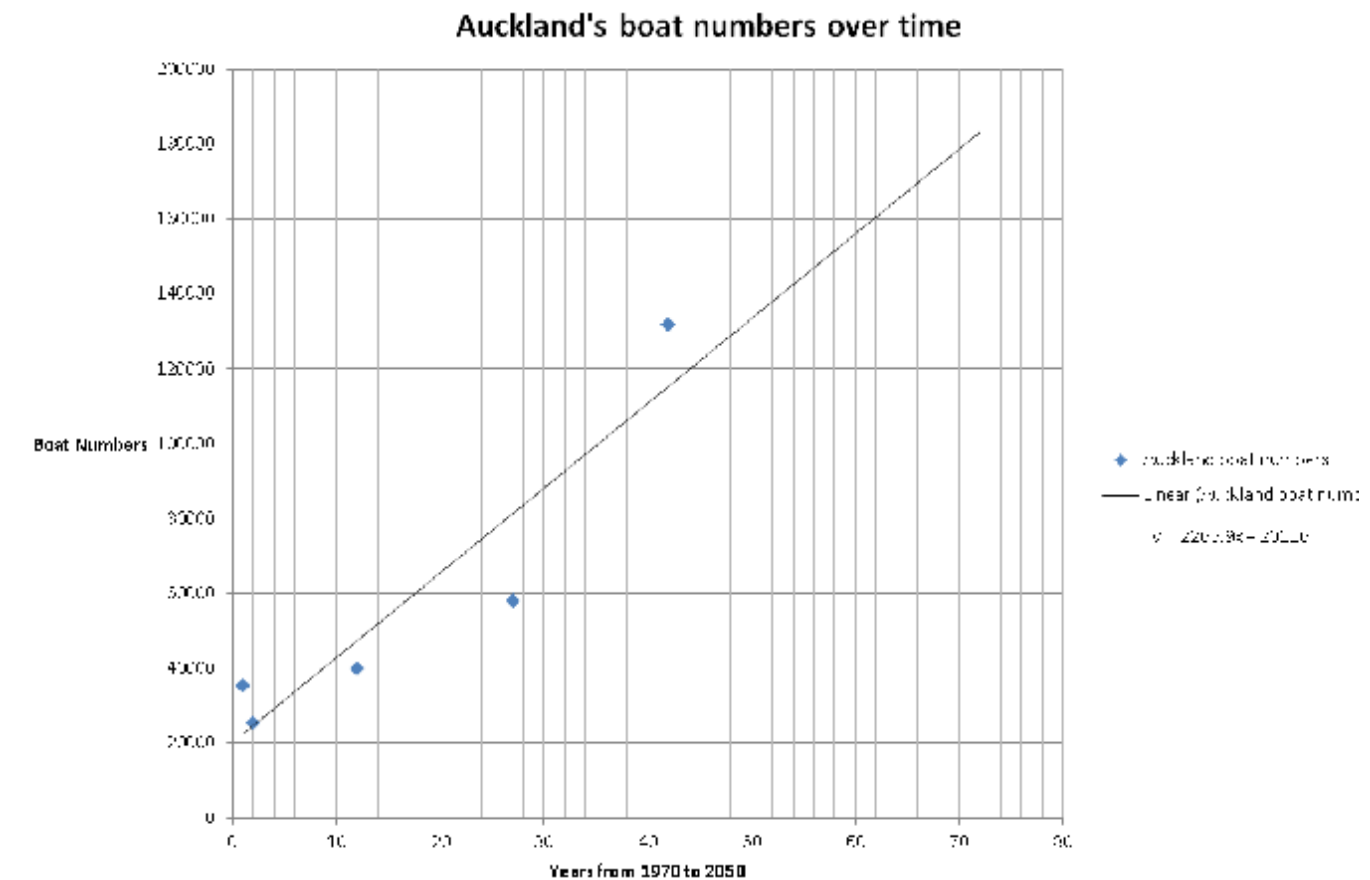


Figure 27: Dedicated storage facility being used for boat storage.

Applying the predicted change in numbers as a compounding increase to the estimated boat numbers for Auckland a prediction has been made for 2031 and 2041. These predictions are shown in Table 14 below. It seems likely that the rates of increase in the PWC numbers and the number of dinghies, canoes windsurfers etc. are too high and will distort the overall boat numbers. Reducing the growth rates for PWC and dinghies, canoes windsurfers etc. by half to 5% and 3% respectively, reduces the total number of boats to approximately 200,000 by 2031. More investigation of the likely growth rates of these classes of boat will enable the accuracy of this prediction to be improved.

On the other hand, the number of marina berths and trailer boats seem reasonable in the context of previous data and industry feedback.

Table 14 – Predicted boat numbers in Auckland to 2031 and 2041

Boat type	Auckland's estimated numbers in 2011	Estimated annual change in number	Estimated annual % change	Auckland's estimated numbers in 2031	Auckland's estimated numbers in 2041
Yachts and launches	11,000	50	0.45	12,000	12,600
Trailer power boats (3.5m to 8.5m)	38,000	1,100	2.9	67,000	90,000
Trailer sailing boats (5m to 8.5m)	5,000	35	0.7	5,700	6,100
Personal water craft	3,000	300	10* (5)	20,000* (8,000)	50,000* (13,000)
Dinghy/ canoe/ Lasers/ Optimists/ windsurfers etc.	75,000	4,500	6* (3)	240,000* (140,000)	430,000* (180,000)
Total	132,000			344,700 (222,700)	588,700 (301,700)

*This recent historical change is unlikely to be sustained. It is considered that the longer term increase will be 50% of these changes, as given in the brackets.

4.4.2 Households owning boats

A limited number of both national and Auckland based surveys have related estimated boat numbers to population and household numbers. In 1970 the ARA (ARA 1970) estimated that 16.2% of households owned at least one boat. The census in 1971 and 1981 estimated the percentage of boat owning households in New Zealand increased from 9.7% to 17.1%. The Auckland estimate in 1971 was 12.6%, being approximately 3% higher than the national estimate of the time. MNZ research in 1997/98 concluded that 14.6% of New Zealand households owned at least one boat while in Auckland this was slightly higher at 16%. The national surveys undertaken by MNZ from 2002 to 2011 indicate between 15% and 19% of households owned boats during this period (See Figure 1).

Given the historical data on the relationship between boat ownership and households in Auckland, the higher than national proportion of marina berths (49% of the country's marina berths) and trailer boat registrations (26% of the country's boat trailer registrations) and the suitability of the Auckland region for recreational boating it seems reasonable to assume that the number of households owning boats in Auckland would be higher than the national average. The number of households in Auckland in 2011 was 515,600. The household number is predicted to increase to 723,000 in 2031. The total estimated number of boats in Auckland in 2011 shown in Table 13 above is 132,000 or 25% of the household number. This percentage is increasing as shown in figure 28 below. Based on these limited data, by 2031 it is predicted that 27 % of households in Auckland will own at least one boat. This equates to approximately 195,000 boats.

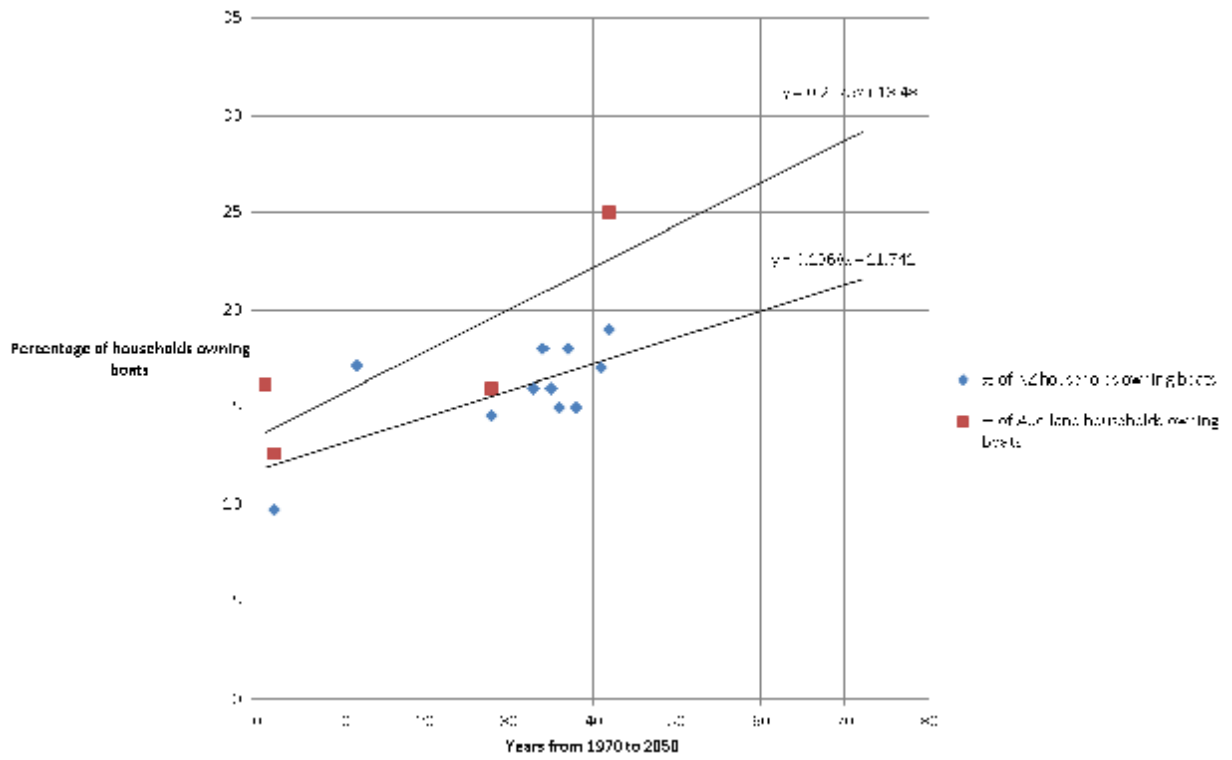


Figure 28: Percentage of households in New Zealand and Auckland owning at least one boat.

5 Conclusion

Population predictions reported in the draft Auckland Plan are for the current population of approximately 1.5 million to increase to between 2.2 and 2.5 million by 2040 (AC 2011). Auckland's maritime environment is a principal attraction and value for the region's people with a consequential demand for recreational boating.

There has, historically, been little accurate data recorded on the number of boats within the Auckland region, or indeed in New Zealand. There is no single long term quantitative database for recreational boat numbers. Two national census surveys in 1971 and 1981 have been used to estimate boat numbers in New Zealand at those times. Further targeted surveys undertaken both nationally and in the Auckland region, have been used to estimate boat numbers and types at various intervals between 1970 and 2011.

In addition to these surveys, boat numbers can be estimated from surrogates including mooring and marina berth numbers, boat trailer and personal water craft registrations and sales data. Based on these data there are approximately 50% of the country's marina berths and 26% of registered boat trailers are in the Auckland region.

The region's marinas have developed incrementally from the construction of the first of the region's marinas, the St Mary's Bay Boat Harbour in 1926. As an example, this site has increased in intensity of use from accommodating 120 swing moorings in its early days to the current Westhaven Marina which occupies the same footprint but accommodates over 1,860 boats in a combination of swing moorings, pile moorings, finger berths and land based storage. Other marinas in the region have typically developed in sheltered areas previously occupied by swing moorings. Continuing this trend in intensification, dry stacks and trailer boat parks are being increasingly used for storage of vessels up to 8m long and in some cases 10m long.

The four northern regions of Northland, Auckland, Waikato and Bay of Plenty account for approximately 72% of the country's marina berths and 60% of registered boat trailers. Boating takes place primarily on the east coast of these four regions. Both cruising boats and trailer boats are used by their owners between regions, particularly in peak summer months, utilising the marinas, mooring areas, boat ramps and anchorages of all these regions.

The percentage of households owning boats in New Zealand has increased from 9.7% in 1971. At that time 12.6% of Auckland households owned a boat. The proportion of households owning boats has approximately doubled in the past 40 years with an estimated 15% to 19% of the country's households owning a boat and an estimated 25% (1 in 4) of Auckland's households owning a boat.

The rate of increase of boats in Auckland varies with boat type. Following a significant growth period in the 1980s and early 1990s, growth in cruising vessels (yachts and launches that might occupy a marina berth or mooring) is estimated to be 0.45% per year. There is localised demand for moorings, but generally there is a trend to move boats to marinas which, although more costly than moorings, offer greater security and ease of access and maintenance. The total number of moorings in the region between 2006 and 2011 has not changed significantly. There are currently approximately 11,000 of cruising vessels in the region with a growth of 1,000 to 1,600 additional boats predicted over the next 20 to 30 years. There is a perceived trend for the size of these vessels to be increasing from a norm of 10m in length to 12m to 14m in length.

There has been significant growth in trailer boat numbers over the past 40 years and their predicted rate of growth is currently approximately 3% per year. Based on the number of registered boat trailers there are currently approximately 38,000 trailer boats in the region. This is predicted to increase to between 67,000 and 90,000 boats over the next 20 to 30 years. There is currently a perceived shortage of all tide/ all-weather boat ramps to accommodate this fleet.

The numbers of personal water craft, kayaks, small yachts and other paddle craft is currently increasing at between 6 and 10% per year. It is difficult to predict how these rates of increase will change over the next 20 to 30 years however it seems unlikely to continue at these rates. While there could be a significant increase in this type of craft, they require little in the way of public infrastructure such as boat ramps or storage facilities. There is a trend for these craft to be increasingly used for recreational fishing.

Overall the total number of boats in the region is estimated to be about 132,000, increasing to an estimated 160,000 to 200,000 boats over the next 20 to 30 years. However, a high proportion of these vessels will be dinghies, canoes, small yachts, kayaks and windsurfers that do not place significant demand on boat storage and launching facilities.

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Appendix 1

List of marine industry interviewees

List of marine industry interviewees

Alan Moore, Team Leader, Coastal, Auckland Council

Alistair Thomson, Marine Safety Inspector, Maritime New Zealand

Andrew Hayton, Auckland Council, Harbour Master

Bruce Goff, Auckland Council, Maritime Officer

David Thatcher, Auckland Council, Maritime Officer

Dima Ivanov, Consultant, New Zealand Marine Industry Association.

Keith Ingram, Bucklands Beach Yacht Club and Ministry of Fisheries Honorary Compliance Officer

Kim Parker, Waikato Regional Council

Mark Hollier, Marina Manager, Half Moon Bay Marina

Peter Busfield, Executive Director, New Zealand Marine Industry Association.

Richard Brown, Auckland Yachting and Boating Association

Russell Mathieson, Waterfront Auckland, Manager; Marina Business Unit and President of the New Zealand Marina Operators' Association