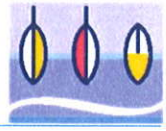


TABLE 2.8 PARKING DEMAND PER MOORING/BERTH USED 1 DECEMBER 2006 to 31 JANUARY 2007: POINT PIPER & ROSE BAY SATURDAYS, SUNDAYS, PUBLIC HOLIDAYS

Berth/Mooring	Boat Usage/Day	Cars/Boat Used	Cars/Mooring or Berth Used
Mooring	0.0814	1.060	0.0864
Berth	0.0700	1.338	0.0935

These figures show a higher boat usage than for Winter and Spring periods. The differences in the cars used per boat are similar to those earlier in the year. While the usage of boats on moorings was higher than that in berths, the differences in the Cars/Boat Used mean that the Cars/Mooring or Berth were marginally higher for the berths, a relationship not evident in the earlier surveys.

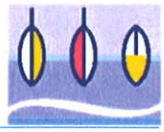
Peak Period Surveys at Double Bay Marina

The Easter 2006 surveys at the Double Bay Marina provide information on the nominally peak time of Easter at the subject Marina. This marina currently has 40 marina berths and 25 swing moorings. The same type of surveys conducted in Rose Bay were conducted in Double Bay. Table 2.9 summarises the results.

TABLE 2.9 SURVEY OF USE OF DOUBLE BAY MARINA, EASTER 2006

Factor	Friday	Saturday	Sunday	Monday	Mean
Boats used/berth	20%	7.5%	10%	7.5%	11%
Avg Group size/berth	4.13	8.67	4.50	6.00	5.82
Cars/Berth Used	1.62	2.33	2.00	2.00	1.99
Cars/Berth Overall	0.325	0.175	0.200	0.150	0.212
Boats used/mooring	40%	20%	40%	32%	33%
Avg Group size/mooring	2.70	2.60	2.40	3.88	2.90
Cars/Mooring used	1.00	1.20	1.00	1.38	1.14
Cars/Mooring Overall	0.400	0.240	0.400	0.440	0.370

At this marina the trend in the figures is consistent with Rose Bay/Point Piper results for Winter and Spring/early Summer:



- Boats on moorings are used more than boats in berths.
- Average group sizes: 5.8 on berths, 2.9 on moorings.
- Cars per berth a bit higher, but tempered by lower usage per berth.
- Cars per berth overall are lower than cars/mooring overall
- If more highly used boats on moorings are replaced with the more typically less used boats in the berths, the traffic generation and parking demand will reduce.

Surveys were also undertaken at Double Bay Marina in December 2006, with Table 2.10 setting out the results. Note that the Mean rates have been calculated directly from the survey data and are not necessarily the averages of the daily figures.

TABLE 2.10 SURVEY OF USE OF DOUBLE BAY MARINA DECEMBER 2006

Factor	Sat 2nd	Sun 3rd	Sat 9th	Sun 10th	Mean
Boats used/berth	0.250	0.125	0.100	0.125	0.150
Avg Group size/berth	1.50	2.80	1.75	4.00	2.33
Cars/Berth Used	0.70	1.00	1.00	1.40	0.96
Cars/Berth Overall	0.175	0.125	0.100	0.175	0.144
Boats used/mooring	0.080	0.200	0.200	0.320	0.200
Av Group size/mooring	1.00	2.40	3.80	5.75	3.95
Cars/Mooring Used	0.50	0.80	1.60	1.50	1.20
Cars/Mooring Overall	0.040	0.160	0.320	0.480	0.240

Putting together all of the survey results from both the 2006 surveys and the previous surveys, Table 2.11 sets out the results.

TABLE 2.11 SUMMARY OF MARINA BOAT USAGE AND PARKING DEMAND – SATURDAYS AND SUNDAYS

Marina	Season	Boats Used per Berth	Parking Demand per Berth	Boats Used per Mooring	Parking Demand per Mooring
RB	Autumn 2000	0.143	0.175	0.193	0.295
RB	Summer 2000/1	0.153	0.238	0.225	0.362
PP	Autumn 2000	0.111	0.114	0.083	0.121
RB+PP	Winter 2006	0.055	0.067	0.068	0.071
RB+PP	Spr-Summ 2006	0.036	0.054	0.072	0.069
RMYC	Winter 2006	0.045	0.048	-	-
DB	Easter 2006 *	0.11	0.212	0.33	0.37
DB	December 2006	0.150	0.144	0.200	0.240
Dolan B	Summer 2000/1	0.236	0.188	0.242	0.197
RB+PP	1/12/06 to 31/1/07 + hols	0.070	0.094	0.081	0.086
RB+PP Mean Summer		0.111	0.166	0.153	0.224

* 4 days, Friday-Monday

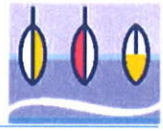
Table 2.9 generally indicates a trend to a higher parking demand for moorings compared to marina berths, although in the December 2006/January 2007 RB + PP data the parking demand per berth is marginally higher. The Mean Rates are simple averages of the rates for Summer at Rose Bay and Point Piper Marinas. They reflect the trend of higher parking demands for boats on moorings compared with boats in berths, for the subject site in Summer.

The results in Table 2.9 reflect a number of factors, including boat usage, mode split, group size. The survey results for the period 20th October 2006 to 31st January 2007 were also reviewed to see trends in mode split. Table 2.10 summarises the results.

TABLE 2.10 Transport Mode of Rose Bay & Point Piper Marina Patrons 20th October 2006 – 31st January 2007

Mode	Car	Taxi	Bus	Bike/Scooter	Walk
Moorings	82.2%	7.5%	0.7%	1.1%	8.5%
Berths	91.3%	6.7%	0%	0.1%	1.9%
All	84.7%	7.3%	0.5%	0.8%	6.7%

The total number of people sampled in Table 2.10 was 2854, so the results are statistically valid. The proportion walking suggests that many people are local residents. Overall, some 15% of boat users do not arrive by private car and hence do not seek parking in the area.



The data also gives the numbers of cars in each group. This indicates that for mooring users, the average car occupancy is 2.39 persons, while for berth users, the average car occupancy is 3.04 persons, with the overall average being 2.55 persons per car. Table 2.10 indicates that users of boats in berths have a slightly higher car usage than users of boats on swing moorings. However this difference is tempered with the higher car occupancies for marina berth boat users. This can be seen:

- Berths 0.300 cars/user (3.33 users per car parked)
- Moorings 0.345 cars/user (2.90 users per car parked)

The data collected reflects the boats that were used over the three month period. This data indicates that the average length of boats on moorings that were used was 33.24 foot. The average length of boats in marina berths that were used was 33.16 foot, a figure insignificantly different to those on moorings. This does not necessarily mean that boats on moorings and in berths are of a similar length, but that of the boats on moorings/berths, the average length of boat actually used is similar, and with the rate of car usage higher for mooring users than for berth users.

2.3 Implications of Boat Length

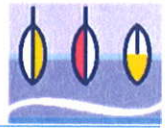
A previous report for the Boating Industry Association presented an analysis of the influence of boat length on parking demand, with the theory being that the bigger the boat, the more people and hence the higher parking demand. The shortfall in the analysis was due to the fact that there were not enough boats in the longer category – over 50 foot – to draw firm conclusions about larger boats.

This issue was addressed in more recent surveys, particularly for boats at RMYC. Table 2.11 presents the results for boats at RMYC, by boat length.

TABLE 2.11 ANALYSIS OF EFFECT OF BOAT LENGTH – RMYC, WINTER 2006 (90 Berths + 18 Swing Moorings)

Length (foot)	Mean Length(ft)	Sample Size	Avg Group	Cars/Boat	Cars/Person in Group
0-29	25.0	4	1.25	1.00	0.88
30-39	35.2	22	3.77	1.09	0.28
40-49	42.5	59	3.78	1.17	0.34
50-59	50.9	22	4.14	0.96	0.25
60-69	61.3	4	4.00	0.75	0.18
70 +	72.7	3	4.67	0.67	0.22
All	-	114	3.79	1.08	0.32

The Cars/Boat column is the key. While group size increases with boat length, the Cars/Person reduces, with the effect that the Cars/Boat remains relatively constant but with a downward trend with larger boats.



Tables 2.12 and 2.13 present equivalent data for Rose Bay + Point Piper Marinas, for marina berths and for swing moorings respectively.

TABLE 2.12 ANALYSIS OF THE EFFECT OF BOAT LENGTH – POINT PIPER + ROSE BAY – BERTHS - WINTER 2006

Length (foot)	Mean Length(ft)	Sample Size	Avg Group	Cars/Boat	Cars/Person in Group
0-29	24.4	28	3.82	1.14	0.30
30-39	33.7	29	3.79	1.24	0.41
40-49	44.3	18	4.17	1.06	0.29
50-59	50.0	2	8.5	3.5	0.42
All	-	77	4.01	1.22	0.34

Apart from the 50-59 foot category, where the sample size was only 2, the trends are similar to those at RMYC.

TABLE 2.13 ANALYSIS OF THE EFFECT OF BOAT LENGTH – POINT PIPER + ROSE BAY – MOORINGS - WINTER 2006

Length (foot)	Mean Length(ft)	Sample Size	Avg Group	Cars/Boat	Cars/Person in Group
0-29	24.4	111	2.47	1.03	0.56
30-39	32.4	96	2.72	1.10	0.54
40-49	46.1	25	1.80	0.72	0.55
50-59	53.8	10	4.00	1.40	0.59
All	-	242	2.56	1.04	0.55

The critical Cars/Boat results show some variations, although not linear. Putting all results together, with the combination of Tables 2.11-2.13, gives the summary results shown in Table 2.14.

TABLE 2.14 SUMMARY OF THE EFFECT OF BOAT LENGTH RMYC + POINT PIPER + ROSE BAY – WINTER 2006 ALL BERTHS AND MOORINGS

Length (foot)	Mean Length(ft)	Sample Size	Avg Group	Cars/Boat	Cars/Person in Group
0-29	24.4	143	2.70	1.05	0.52
30-39	33.1	147	3.09	1.13	0.48
40-49	43.7	102	3.36	1.04	0.38
50-59	51.7	34	4.35	1.24	0.36
60 +	66.1	7	4.29	0.71	0.20

There is a consistent trend in an increasing group size with increasing boat length. At the same time, the number of cars per person in the group reduces consistently with increasing boat length. As noted previously, the Cars/Person in Group averages are taken from the individual survey results, rather than across the page in this table. The key output is the Cars/Boat. While there is a small increase for 50-59 foot, the 40-49 foot figure is lower than the 30-39 foot figure, while the 60 + figure is the lowest of the lot. A sample size of 7 is not as high as the others, but is still of some significance. In summary, there is not a clear pattern of increasing parking numbers with increasing boat length. The difference between the lowest rate – 1.05 cars/boat – and the highest rate – 1.24 cars/boat – is 18%. Even though the rate for boats in excess of 60 foot is lower, a conservative assumption would be for boats in the larger length category to have +18%, say +20% parking demands.

With the surveys undertaken at Rose Bay and Point Piper marinas over the busier period of 20th October 2006 to 31st January 2007, a further analysis of the influence of boat length has been undertaken. The results are set out in Tables 2.15-2.17.

TABLE 2.15 IMPACT OF BOAT LENGTH AT ROSE BAY & POINT PIPER MARINAS, 20th OCTOBER 2006 TO 31st JANUARY 2007 BOATS ON SWING MOORINGS

Factor	<25 ft	26-30	31-35	36-40	41-45	46-50	51-55	56-60	>60
Sample size	151	187	154	51	50	43	0	64	1
Avg length(ft)	22.4	27.7	32.1	36.8	43.1	48.3	-	56.7	68
Group size	2.675	2.818	3.169	3.725	3.400	1.721	-	3.422	2
Cars parked	0.881	0.963	1.084	1.196	1.240	0.953	-	0.906	1

TABLE 2.16 IMPACT OF BOAT LENGTH AT ROSE BAY & POINT PIPER MARINAS, 20th OCTOBER 2006 TO 31st JANUARY 2007 BOATS IN MARINA BERTHS

Factor	<25 ft	26-30	31-35	36-40	41-45	46-50	51-55	56-60	>60
Sample size	26	58	15	42	23	14	0	0	0
Avg length(ft)	23.2	27.7	32.7	37.0	42.9	47.6	-	-	-
Group size	3.923	3.155	4.867	4.738	4.957	6.929	-	-	-
Cars parked	1.269	0.983	1.600	1.452	1.478	2.143	-	-	-

TABLE 2.17 IMPACT OF BOAT LENGTH AT ROSE BAY & POINT PIPER MARINAS, 20th OCTOBER 2006 TO 31st JANUARY 2007 ALL BOATS ON MOORINGS & BERTHS

Factor	<25 ft	26-30	31-35	36-40	41-45	46-50	51-55	56-60	>60
Sample size	177	245	169	93	73	57	0	64	1
Avg length(ft)	22.5	27.7	32.2	36.9	43.1	48.1	-	56.7	68
Group size	2.859	2.898	3.320	4.183	3.890	3.000	-	3.422	2
Cars parked	0.944	0.967	1.130	1.312	1.315	1.246	-	0.906	1

There is a general trend to larger group sizes and car numbers up to 45 foot, but above that, average group sizes reduce as do car numbers. The size range of 56-60 foot has the lowest car usage, even with a sample size of 64 boats.

If the length ranges are aggregated, the following general trends are evident:

0-30 foot	31-40 foot	41-50 foot	51-60 foot	Over 60 foot
0.96 cars/ boat	1.20 cars/ boat	1.29 cars boat	0.91 cars boat	1.0 cars/boat

Again it cannot be assumed that marina changes that result in longer boats will necessarily result in more cars parked, although there is a trend for up to 45 foot lengths. The data is inadequate to make any comments about boats in excess of 60 foot in length, although Table 2.14 reflects the lower parking demand of boats in excess of 60 foot that Table 2.17 suggests for boats over 55 foot.

2.4 Seasonal and Other Factors

Seasonal Factors

We have reviewed all of the boat usage data for both Point Piper and Rose Bay Marinas, for the period 1st July 2006 to 31st January 2007. Table 2.18 shows the total boats used each day, with figures for both marinas added.