

BATEMANS BAY PARKING STUDY

FOR

EUROBODALLA SHIRE COUNCIL

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CONTENTS

	Page
1. INTRODUCTION	1
2. METHODOLOGY AND KEY ASSUMPTIONS	2
2.1 STUDY AREA	2
2.2 METHODOLOGY	3
2.3 KEY ASSUMPTIONS	4
3. BATEMANS BAY TOWNSHIP PARKING ASSESSMENT	6
3.1 BATEMANS BAY PARKING REQUIREMENTS	6
3.1.1 Future Parking Demand and Expected Supply	6
3.1.2 Northern CBD Off Street Parking Needs Assessment	7
3.1.3 Southern CBD Off Street Parking Needs Assessment	8
3.2 OFF STREET PARKING STRATEGY	8
4. BATEMANS BAY PARKING SURVEY	10
5. DETERMINATION OF THE NEED FOR PAY PARKING.....	12
5.1 EXISTING PAY PARKING	12
5.2 ILLEGAL PARKING AND ENFORCEMENT ISSUES	12
5.3 RTA PAY PARKING CRITERIA	12
5.4 PROPOSED PAY PARKING SCHEME	12
5.5 IMPACTS OF PROPOSED PAY PARKING SCHEME	13
6. RECOMMENDATIONS	14

Tables

Table 2.1:	Batemans Bay Block Details
Table 3.1:	Batemans Bay Parking Requirements (non-residential)
Table 3.2:	Northern CBD Parking Requirements
Table 3.3:	Southern CBD Parking Requirements
Table 3.4:	Batemans Bay Occupancy Surveys
Table 4.1:	Batemans Bay Occupancy Surveys
Table 4.2:	Key Observations from Batemans Bay Parking Surveys

Figures

Figure 2.1:	Parking Zones Used for the Analysis
Figure 3.1:	Batemans Bay Parking Study Area

Appendices

Appendix A:	Batemans Bay Parking Calculation Worksheets
Appendix B:	Batemans Bay Parking Surveys Results

1. INTRODUCTION

Eurobodalla Shire Council has engaged Bitzios Consulting to undertake a parking study of the three major business centres in the shire: Batemans Bay, Moruya and Narooma. The study brief was to provide advice relating to future parking needs, future parking policy requirements and to assess the need for additional pay parking schemes. A key component of these investigations was to identify the need for "consolidated" or shared parking areas rather than only requiring each development to provide site-specific parking.

The use of common parking areas, and generating schemes for developments to contribute towards constructing/upgrading these parking areas will potentially allow better site-specific outcomes to be achieved, particularly for smaller sites and particularly those sites with shop fronts and limited or no on-site parking.

This report covers parking needs for the Batemans Bay town centre based on existing issues, a review of the development potential and the associated development-related parking demands generated. It includes the results of parking occupancy surveys undertaken in November 2010 and January 2011 in order to quantify existing parking demands, and to determine if there is justification for extending the area of coverage of pay parking.

A separate report has previously been provided for Moruya and Narooma town centres.

2. METHODOLOGY AND KEY ASSUMPTIONS

2.1 STUDY AREA

The study area is shown in **Figure 2.1**. It extends from the Clyde River in the north and north east, straddles the Princes Highway near the Clyde River Bridge and extends to the east of the Princes Highway through the town centre to the Old Princes Highway in the south. Details of each block (using the same zone numbering system as the earlier Paramics model prepared for the Batemans Bay CBD Traffic Study) are contained in **Table 2.1** below.

Table 2.1: Batemans Bay Block Details

Block No.	Bounded by roads	LEP zoning	Area (m ²)
10*	Old Princes Hwy, Princes Hwy, Crown St	R3	16,300
11*	Old Princes Hwy (north to Crown St), South Street, recreation reserve	R3	10,530
15*	Old Princes Hwy, Crown St, Orient St	R3	8,510
17*	Orient St, Camp St, Bent St	R3	8,916
18B*	Old Princes Hwy (south to Crown St), recreation reserve, B4zone to north	R3	17,800
35	Princes Hwy, Clyde River, Clyde St	R3 and RE1	20,400
18A	Old Princes Hwy, Museum Pl, R3 zone to south	B4	6,330
22	Soldiers Club, Museum Place, High Street	B4	NA
23A	Orient St, Beach Rd, Flora Crescent (Northern)	B4	7,247
23B	Orient St, Museum Pl, Flora Crescent	B4	7,000
23C	Orient St, Beach Rd, Flora Crescent (Southern)	B4	7,247
24	Orient St, Camp St, Beach Rd,	B4	12,160
28	Beach Rd, Flora Crescent, study area boundary	B4	NA
31	Princes Hwy, North St, Perry St, Beach Rd	B4	27,920
32	Orient St, Beach Rd, Perry St, North St	B4	19,278
33	Orient St, Beach Rd, Clyde River	B4	23,770
34	Princes Hwy, North St, Clyde St	B4	29,780

*In these R3 blocks, only the first residential lots fronting the Old Princes Highway were considered.



Figure 2.1: Study Area and Zoning System

2.2 METHODOLOGY

Each centre was investigated in two parts. Part 1 was the assessment of future parking needs based on Eurobodalla Shire Council Planning Scheme “code” rates. Part 2 provided a broader parking policy and strategy with consideration of the potential need for pay parking in accordance with RTA requirements.

Part 1 of the work involved identifying, under the Local Environment Plan (LEP), changes in floor space allowable in each “block” within each township. Any key development sites already identified were overlaid to establish floor space growth by type of use by block in each study area. In this report, the blocks are

numbered using the same zone numbering system as the earlier Paramics model prepared for the Batemans Bay CBD Traffic Study.

The development parking rates contained in the Eurobodalla Shire Council Planning Scheme were then applied at block level to determine what additional parking will be required under “full development”. This data was then assessed spatially (in GIS) to determine the best strategy of aggregating this supply to key, consolidated parking areas.

This process involved:

- identifying potential sites for parking stations, their area, tenure/ownership (through Council) and access opportunities; and
- based on the location and size of available sites, determining the number of levels of parking required in consolidated parking stations or whether a balance needed to be struck between the amount of parking provided in consolidated off street parking “stations” and what amount should be provided on site for specific developments.

Key outputs for Part 1 for each centre include:

- maps/tables showing recommended sites for consolidated parking and the number of bays each would require (including number of levels if relevant); and
- how to achieve consolidated parking stations, as well as any balance between on-street/off-street parking required. Staging of development/construction of these parking areas was a key consideration.

Part 2 involved the analysis of parking demand and supply data, based on two surveys of parking space occupancy. The first survey was conducted on a ‘normal’ weekday (Thursday 25th November 2010), while the second was conducted on a ‘tourist-peak’ weekday (Thursday 13th January 2011). Both surveys consisted of recording the number of parking spaces occupied in each 30 minute period between 10:00am and 4:00pm, as well as the parking space turnover and extent of over-staying of any parking duration limits. The results of the surveys provided levels of occupancy throughout the day, and indicated the level of need for a pay parking scheme that would increase parking turnover.

2.3 KEY ASSUMPTIONS

From information supplied by Council, and from discussion with Council officers, it is known that six major developments are planned for Batemans Bay, as follows:

- Bridge Plaza – a combination of 9,470m² of retail and 20,680m² of residential (166 apartments) in block 34
- Redevelopment of the Clyde River Motel (including 46 hotel rooms/serviced apartments, 10 residential apartments, a restaurant and a retail shop) in block 34
- Village Centre – 4,785m² of residential (40 apartments) in block 31
- Woolworths – up to 7,000m² of retail in part of block 23
- Soldiers Club/Centrelink – 4510m² for the Centrelink office development (to the south of the Soldiers Club) in block 28.
- Commercial and residential development (31,689 m² in total) in block 22, south of the Soldiers Club/Centrelink development.

In the blocks containing these developments, it was generally assumed that there would be no further major developments in the study time frame (i.e. to 2030). In block 23, however, the area other than the Woolworths development was deemed by Council to have the potential to be developed to 50% of the LEP provisions. In block 34, the 50% of the area other than Bridge Plaza and the Clyde River Motel (labelled block 34B) was deemed by Council to have the potential to be developed with a Floor Space Ratio of 2:1, with the same mix of development types as below.

In other blocks zoned “B4” (Mixed Use), it was assumed that the types of development would be 50% retail, 25% commercial, and 25% residential (most likely in the form of shop-top housing). Generally, it was

assumed that 80% of the total block 'footprint' would be capable of being developed, but in the following blocks Council advised a different proportion or a smaller block area:

- Block 18A – use only 3,200m²
- Block 24 - use only 6,500m² and assume only 20% redevelopment
- Block 32 - use only 14,000m² and assume only 20% redevelopment
- Block 33 - use a Floor Space Ratio of 2:1 and assume only 50% redevelopment

Some of the blocks in Batemans Bay are zoned "R3" (Residential). For these blocks, it was assumed that all future development would be 80% medium density residential (typically 300m² blocks), and 20% motels or similar. The Floor Space Ratio according to the LEP was applied in both the R3 zones, and the B4 zones (except in Block 33 as noted above).

Block 35 is a mixture of R3 and RE1 (recreation) zones, and was excluded from the calculations because the parking requirement is driven primarily by boating activity. It is noted, however, that the parking spaces in this block could be utilised by 'overflow' CBD demand in peak parking periods.

Further, it was assumed in all cases that parking spaces required for residential land use types would be provided on-site due to the practicalities of being able to sell this type of development in an area like Batemans Bay, whereas spaces for other development types could feasibly be provided by a combination of on-site and consolidated public car parking.

3. BATEMANS BAY TOWNSHIP PARKING ASSESSMENT

3.1 BATEMANS BAY PARKING REQUIREMENTS

3.1.1 Future Parking Demand and Expected Supply

The detailed calculations for future parking requirements in Batemans Bay are contained in **Attachment A**. A summary for each block follows in **Table 3.1**.

Table 3.1: Batemans Bay parking requirements

Block No.	LEP zoning	Existing spaces *	Required spaces	Surplus	Deficit	Remarks
10	R3	16	131		115	Existing are on street only
11	R3	22	85		63	Existing are on street only
15	R3	29	69		40	Existing are on street only
17	R3	9	48		39	Existing are on street only
18B	R3	23	143		120	Existing are on street only
18A	B4	52	168		116	
22	B4	0	491		491	Major development. All parking to be provided on site.
23A and 23 C	B4	162	221		59	
23B	B4	54	233		182	Woolworths development. All parking to be provided on site.
24	B4	165	98	67		
28	B4	386	395		9	Soldiers Club/Centrelink. All parking to be provided on site.
31	B4	906	500	406		Village Centre
32	B4	267	210	57		
33	B4	191	570		379	
34A	B4	192	516		324	Bridge Plaza. All parking to be provided on site.
34B	B4	120	157		37	

*The number of existing spaces is based on the November 2010 parking study and includes some private or tenant parking.

As outlined in Section 3, it is assumed that all residential parking will be provided on-site, and so blocks 10 to 18B are not considered further.

The requirement in block 34B does not include the approved DA for the Clyde River Motel. That approval identified a shortfall of 15 parking spaces on site, for which a developer contribution would be charged. Therefore the deficit in block 34B should be increased to 52.

With reference to Table 3.1, the following key development sites should be conditioned to provide all of their required parking on site:

- Block 22 – Commercial & Residential Development south of Soldiers Club/Centrelink
- Block 23B – Proposed Woolworths development in Orient Street south of Beach Road
- Block 28 – Soldiers Club & Centrelink development
- Block 34A – Bridge Plaza site

The remainder of this study concentrates on the other development areas apart from the above.

In seeking to address the deficiencies in the remaining non-residential parking spaces, the ability to share spaces in a common public parking area has been considered. A “rule of thumb” applied in these calculations, in the context of reasonable expectations in Batemans Bay, is that it is reasonable to walk up to a maximum 200 metres between a parking station and the ultimate destination.

Also, it is logical to consider the Batemans Bay CBD in two discrete sectors for assessment of parking demands and supply; namely the northern CBD and the southern CBD, using Beach Road as the east-west dividing line.

3.1.2 Northern CBD Off Street Parking Needs Assessment

This sector comprises blocks 31, 32, 33 and 34B. The requirements are summarised in Table 3.2 below.

Table 3.2: Northern CBD parking requirements

Block No.	LEP zoning	Existing spaces*	Required spaces	Surplus	Deficit	Remarks
31	B4	906	500	406		Village Centre
32	B4	267	210	57		
33	B4	191	570		379	
34B	B4	120	172		52	Non-Bridge Plaza and Clyde River Motel
TOTAL		1484	1452	32		

*The number of existing spaces is based on the November 2010 parking study and includes some private or tenant parking.

It can be seen that there is an overall surplus of 32 spaces, based upon the assumed level of development in these blocks. It should be noted that the above surplus exists mainly due to the 406 surplus spaces provided at the Village Centre (Block 31) as this then provides sufficient supply to cater for the deficits created in Blocks 33 & 34B.

To ensure that the northern CBD sector remains well supplied with parking it is essential that the proposed redevelopment of the Bridge Plaza (Block 34A) provides ALL of their required parking on site. This will then ensure that the surplus created by the Village Centre development continues to provide for the northern sector's parking requirements.

Although a surplus has been calculated as a result of the assumptions made in this study, it should be noted that it is a small surplus. It is recommended that, where feasible, provisions be made for on-site parking as a condition of any redevelopment within the northern sector of the CBD. This will help ensure that this part of the CBD is well catered for, particularly during the busy times of the year.

3.1.3 Southern CBD Off Street Parking Needs Assessment

The southern (non-residential) CBD sector comprises blocks 18A, 23, and 24. Excluding the Woolworths development in block 23B, the requirements are summarised in Table 3.3 below.

Table 3.3: Southern CBD parking requirements

Block No.	LEP zoning	Existing spaces *	Required spaces	Surplus	Deficit	Remarks
18A	B4	52	168		116	
23A and 23C	B4	162	221		59	
24	B4	165	98	67		
TOTAL		379	487		108	

*The number of existing spaces is based on the November 2010 parking study and includes some private or tenant parking.

It can be seen that there is an overall deficit of 108 spaces, based upon the assumed level of development in these blocks. Again it should be noted that this deficit is associated with the non-key development areas only because the key developments are assumed to have provided ALL of their required parking on-site.

Some important factors to note about the southern sector parking are as follows:

- The Council car park located between blocks 22 & 23 has been included in the existing parking for block 23. These existing spaces in this parking area (105 spaces) will need to either remain or be incorporated into the parking provided within the two key developments in Blocks 23B and 22. If this does not occur then the calculated deficit will be increased accordingly.
- The off-street parking spaces currently located adjacent to the Batemans Bay Community Centre (31 spaces) have been included in the existing parking for Block 18A. These existing spaces will either need to remain or be incorporated into any future development located on block 18A. If this does not occur then the calculated deficit will be increased accordingly.
- The Council car park located on the south western side of the intersection of Camp Street and Orient Street has been included in the existing parking for Block 24. This parking (53 spaces) will need to remain either at the current site or elsewhere within the southern sector. If this does not occur then the calculated surplus will be decreased accordingly.
- The calculated figures include the existing on-street parking spaces. Should the amount of on street parking be reduced for any reason in the future then the calculated deficit will be increased accordingly..

3.2 OFF STREET PARKING STRATEGY

In the Northern sector of the CBD it can be seen that, provided the Bridge Plaza provides sufficient parking to meet their needs, parking supply will be catered for into the future. This is based upon the development assumptions made and is mainly due to the existing surplus that has been provided at the Village Centre. To ensure that parking levels are maintained at an adequate level into the future it is recommended that, where feasible, provisions be made for on-site parking as a condition of any redevelopment within the northern sector of the CBD.

In the Southern sector of the CBD a moderate projected shortfall of 108 spaces is predicted, based upon the development assumptions made. The block sizes within the southern sector are small and it is likely that the provision of on-site parking would not be feasible in most circumstances. As a result it is recommended that Council conduct further investigations into the provision of a suitable site that would best provide for this parking need. Due to the availability of land, deck parking options may be the most appropriate solution. Limited potential sites exist for deck parking within the study area but the best option may be utilising the existing Camp Street car park site. To make this site viable for deck parking, Council may need to consider acquiring additional land.

4. BATEMANS BAY PARKING SURVEY

The overall parking occupancy rates from the parking surveys in Batemans Bay are shown in Table 4.1.

Table 4.1: Batemans Bay Occupancy Surveys

Start Time	25 th November Survey (Total Space 2447)			13 th January Survey (Total Space 2379) *			Occupancy Difference November - January	
	Occupied	Vacant	% Occupied	Occupied	Vacant	% Occupied	January +/-	% more in January
10:00	1234	1213	50%	1478	901	62%	244	12%
10:30	1418	1029	58%	1670	709	70%	252	12%
11:00	1455	992	59%	1824	555	77%	369	17%
11:30	1457	990	60%	1913	466	80%	456	21%
12:00	1377	1070	56%	1945	434	82%	568	25%
12:30	1453	994	59%	1955	424	82%	502	23%
13:00	1419	1028	58%	1999	380	84%	580	26%
13:30	1352	1095	55%	1950	429	82%	598	27%
14:00	1265	1182	52%	1956	423	82%	691	31%
14:30	1160	1287	47%	1890	489	79%	730	32%
15:00	1161	1286	47%	1742	637	73%	581	26%
15:30	1065	1382	44%	1617	762	68%	552	24%
TOTAL			54%			77%		23%

* The total parking discrepancy is due to a construction at the Soldiers Club.

It can be seen that the maximum occupancy rate of 84% occurred in the 1:00pm to 1:30pm period of the January survey. The greatest occupancy increase between the two survey sets occurred in the 2:00pm time period. The average occupancy in November was 54% while in January it was 77%. The detailed survey results, shown on maps by time period are shown in Appendix B.

Other key observations from the two parking surveys are shown in Table 4.2.

Table 4.2: Key Observations from Batemans Bay Parking Surveys

Measure	November 2010 survey	January 2011 survey
Occupancy (all areas)	Peak: 60% Average: about 50%	Peak: 83% Average: about 73%
Overstay 1P 2P 3P	6% 4% 14%	8% 15% 13%
Highest occupancy areas	Bridge Plaza CP North Street Perry Street CP Orient Street CP Beach Road CP Camp Street CPs Museum Place CP	Bridge Plaza CP Clyde Street CP Clyde Street angle parking North Street Perry Street CP Orient Street and CP Beach Road CP Visitor Centre CP Camp Street CPs Museum Place CP
Village Centre CP ▪ Busiest hours ▪ Occupancy range (these hours)	1100 to 1300 52% to 55%	1030 to 1430 94% to 103%
Soldiers Club CP ▪ Busiest hours ▪ Occupancy range (these hours)	1130 to 1245 75% to 82%	1130 to 1400 62% to 65%
Overstay areas (ignoring Loading Zones)	Bridge Plaza CP Orient Street north of Beach Road Museum Place CP Visitor Centre CP (1/4P spaces)	Bridge Plaza CP Museum Place CP
Highest turnover areas (shifting spaces)	Bridge Plaza CP North Street Orient Street north of Beach Road Orient Street south of Beach Road	Bridge Plaza CP North Street Perry Street CP Orient Street north of Beach Road Orient Street south of Beach Road

5. DETERMINATION OF THE NEED FOR PAY PARKING

5.1 EXISTING PAY PARKING

The existing pay parking areas in Batemans Bay are as follows:

- Clyde Street off- street car park, near the Clyde River Bridge (in block 34)
- Perry Street off-street car park (in block 32)

The pay parking applies between 8:30 AM and 5:30 PM on Monday to Friday, and from 8:30 AM to 12:00 midday on Saturday. The current rate is \$1.10 per hour (increasing to \$1.20 on 1 July 2011), with no upper time limit.

The current pay parking methodology in both car parks is ticket (pay and display) parking.

5.2 ILLEGAL PARKING AND ENFORCEMENT ISSUES

Council's Senior Ranger was contacted to gather information on the extent of illegal parking and the types of enforcement issues. He provided the following information (in summary form):

- *"There are five rangers and parking enforcement is just one of their many duties so there are often conflicting priorities in terms of how much time they can spend enforcing parking limits across the shire.*
- *Council is contracted to enforce the period parking in the Village Centre car park (850 spaces with a 3 hour limit), but this is very challenging with the limited resources available. It was suggested there needs to be a more strategic approach, and that perhaps advanced technology like number plate recognition could be helpful. It is suspected that many employees of nearby businesses park all day in this car park.*
- *There appears to be inadequate parking in the main part of the CBD. Business operators complain that there is inadequate parking close to their premises, and many of them park in the 1P or 2P areas and run the risk of being infringed. Most do not understand the principle of maximising turnover of parking spaces to encourage parking for shopping.*
- *The lengthy Bus Zone in Clyde Street near North Street is often used illegally by other vehicles. Enforcement is not popular because there are so few buses using the space. Perhaps part of the space could be better used for Loading Zones or 'drop off/pick up' purposes?*
- *The pay parking spaces in Clyde Street car park have not been enforced for the last 18 months due to technical problems with the electronic parking machines. It is likely that these problems will soon be resolved, and a backlash is expected once effective enforcement starts again.*
- *There are issues with parking sign maintenance (for example, faded signs, signs not secure in the ground and able to be rotated), and with tree vegetation obscuring signs.*
- *Court appeals for parking offences almost always result in success for the appellant, which is frustrating for Council staff".*

5.3 RTA PAY PARKING CRITERIA

Clear requirements in the RTA Pay Parking Policy for the justification of pay parking include:

- to provide equitable access;
- for "rationing" on street spaces where demand exceeds supply; or
- to achieve public transport objectives.

The last of these points is not applicable in Batemans Bay due to relatively limited public transport service. However, the introduction of pay parking could help to increase public transport use.

5.4 PROPOSED PAY PARKING SCHEME

From Table 4.1, it is apparent that the demand for parking in Batemans Bay CBD is close to, or slightly exceeding, the available supply during peak holiday periods. This situation can be expected to worsen as

future development takes place. Further, from Figures G.3 and G.4 and Figures H.3 and H.4 in the January 2011 Parking Survey report in Appendix B, there are overstay and turnover issues in the following areas:

- Clyde Street (1/2P) angle parking
- North Street (1P)
- Orient Street (1/2P) between North Street and Beach Road

These parking spaces would be highly valued by both local shoppers and visitors, and they should be rationed to provide equitable access.

The existing pay parking areas (Clyde Street and Perry Street car parks) should be retained.

For consistency and simplicity, the same electronic ticketing machine technology should be used for three new pay parking areas covering the existing 1/2P and 1P spaces in the streets nominated above.

5.5 IMPACTS OF PROPOSED PAY PARKING SCHEME

The introduction of pay parking in Clyde Street, North Street and Orient Street (as proposed in 5.4 above) will have the following likely impacts:

- Some motorists will refuse to pay for parking and will need to seek alternative free spaces, either off-street in the Village Centre, Bridge Plaza or Soldiers Club cars parks, or on-street in the southern CBD precinct.
- Parking space turnover will increase (subject to appropriate enforcement levels), thus increasing short term 'drop-in' shopping trade; and
- Some additional circulating traffic in the northern CBD precinct. Noting that Orient Street is one way southbound between North Street and Beach Road, this means drivers missing a space in this block would need to use either Perry Street or the Princes Highway to return to North Street.

The impacts are probably more likely on visitors (rather than locals). Visitors may not expect to pay for parking in a regional centre, and would not possess local knowledge of the road network (and its traffic restrictions), nor of the off-street parking areas. Consequently, it will be important to ensure that appropriate signposting is installed to guide visitors to the various parking options.

6. RECOMMENDATIONS

In order to address future parking needs in Batemans Bay, Bitzios Consulting recommends that Eurobodalla Shire Council:

1. Require all residential development to provide on-site parking.
2. Where it is feasible, make provisions for on-site parking as a condition of any development within the northern sector of the Batemans Bay CBD.
3. Consider the construction of a suitably located multi-storey car park, in order to address the expected shortfall of parking spaces in the southern sector of Batemans Bay CBD.
4. Retain the existing pay parking areas in Clyde Street and Perry Street car parks.
5. Commence the process of applying to the RTA for agreement to introduce pay parking to:
 - Clyde Street (1/2P) angle parking
 - North Street (1P)
 - Orient Street (1/2P) between North Street and Beach Road.
6. Once approved, apply a uniform rate of \$1.20 per hour to all pay parking areas in Batemans Bay.
7. Review the parking enforcement strategies in order to ensure compliance with the pay parking restrictions.
8. Ensure that adequate and appropriate signposting is installed to inform visitors about parking options and guide them to these parking places.

APPENDIX A

BATEMANS BAY PARKING CALCULATION WORKSHEETS

Batemans Bay parking requirements summary					
Residential (R3) Zones					
Block No.	Zoning	Existing	Required	Deficit	Remarks
z10	R3	16	131	115	Assumed that all R3 parking would be required to be on-site
z11	R3	22	85	63	Assumed that all R3 parking would be required to be on-site
z15	R3	29	69	40	Assumed that all R3 parking would be required to be on-site
z17	R3	9	48	39	Assumed that all R3 parking would be required to be on-site
z18B	R3	23	143	120	Assumed that all R3 parking would be required to be on-site
Mixed Use (B4) Zones					
Block No.	Zoning	Existing	Required	Deficit	Remarks
z18A	B4	52	168	116	
z22	B4	0	491	491	
z23	B4	162	221	59	
z24	B4	165	98	-68	
z28	B4	386	395	9	
z31	B4	906	500	-406	Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)
z32	B4	267	210	-57	
z33	B4	191	570	379	
z34	B4	312	672	360	Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)
TOTAL		2441	3325	884	
Northern CBD (north of Beach Road)					
Block No.	Zoning	Existing	Required	Deficit	Remarks
z31	B4	906	500	-406	Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)
z32	B4	267	210	-57	
z33	B4	191	570	379	
z34	B4	312	672	360	Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)
TOTAL		1676	1952	276	
Southern CBD (south of Beach Road)					
Block No.	Zoning	Existing	Required	Deficit	Remarks
z10	R3	16	131	115	Assumed that all R3 parking would be required to be on-site
z11	R3	22	85	63	Assumed that all R3 parking would be required to be on-site
z15	R3	29	69	40	Assumed that all R3 parking would be required to be on-site
z17	R3	9	48	39	Assumed that all R3 parking would be required to be on-site
z18B	R3	23	143	120	Assumed that all R3 parking would be required to be on-site
z18A	B4	52	168	116	
z22	B4	0	491	491	
z23	B4	162	221	59	
z24	B4	165	98	-68	
z28	B4	386	395	9	
TOTAL	B4	765	1372	607	
(non-residential)					

Town: Batemans Bay Block number: z10
 Block bounded by: Old Princes Hwy, Princes Hwy, Crown St (only properties fronting the Old Princes Highway)

Input - Please Fill in Brackets only

Zoning	R3		
F.S.R	0.85	to	1
Total Footprint	16300	sqm	
GFA Assumption	80	%	
Residential to Other Ratio	80	%	
Existing Estimated Parking	16	Spaces	
Parking Requirement Rate			
Residential	1 per	150	sqm
Other (motels, etc)	1 per	50	sqm

Key assumptions:

applies only to non-residential component
 80% medium density residential and 20% tourist accommodation
 does not include existing off-street spaces

 based on 300 sqm block size (or 2 per dwelling)
 based on 24 sqm room size, plus allowance for manager, circulation, storage, etc spaces

Output

Gross Floor Area	
Other (motels, etc)	2216.8 sqm
Residential	13040 sqm
Total	11084 sqm
Parking Requirements	
Other (motels, etc)	44 Spaces
Residential	87 Spaces
Total	131 Spaces

Assume that these would be required to be on site
 Assume that these would be required to be on site

Parking Analysis

Required Provision	131 Spaces
Existing Provision	16 Spaces
Extra Provision Required	115 Spaces
Net extra required	0

Assume that these would be required to be on site

Town: Batemans Bay Block number: z11
 Block bounded by: Old Princes Hwy (north to Crown St), South Street, recreation reserve

Input - Please Fill in Brackets only

Zoning	<input type="text" value="R3"/>		
F.S.R	<input type="text" value="0.85"/>	to	<input type="text" value="1"/>
Total Footprint	<input type="text" value="10530"/>	sqm	
GFA Assumption	<input type="text" value="80"/>	%	
Residential to Other Ratio	<input type="text" value="80"/>	%	
Existing Estimated Parking	<input type="text" value="22"/>	Spaces	
Parking Requirement Rate			
Residential	1 per	<input type="text" value="150"/>	sqm
Other (motels, etc)	1 per	<input type="text" value="50"/>	sqm

Key assumptions:

applies only to non-residential component
 80% medium density residential and 20% tourist accommodation
 does not include existing off-street spaces

based on 300 sqm block size (or 2 per dwelling)
 based on 24 sqm room size, plus allowance for manager, circulation, storage, etc spaces

Output

Gross Floor Area	
Other (motels, etc)	1432.08 sqm
Residential	8424 sqm
Total	7160.4 sqm
Parking Requirements	
Other (motels, etc)	29 Spaces
Residential	56 Spaces
Total	85 Spaces

Assume that these would be required to be on site
 Assume that these would be required to be on site

Parking Analysis

Required Provision	85 Spaces
Existing Provision	22 Spaces
Extra Provision Required	63 Spaces
Net extra required	0

Assume that these would be required to be on site

Town: Batemans Bay Block number: z15
 Block bounded by: Old Princes Hwy, Crown St, Orient St

Input - Please Fill in Brackets only

Zoning	<input type="text" value="R3"/>		
F.S.R	<input type="text" value="0.85"/>	to	<input type="text" value="1"/>
Total Footprint	<input type="text" value="8510"/>	sqm	
GFA Assumption	<input type="text" value="80"/>	%	
Residential to Other Ratio	<input type="text" value="80"/>	%	
Existing Estimated Parking	<input type="text" value="29"/>	Spaces	
Parking Requirement Rate			
Residential	1 per	<input type="text" value="150"/>	sqm
Other (motels, etc)	1 per	<input type="text" value="50"/>	sqm

Key assumptions:

applies only to non-residential component
 80% medium density residential and 20% tourist accommodation
 does not include existing off-street spaces

based on 300 sqm block size (or 2 per dwelling)
 based on 24 sqm room size, plus allowance for manager, circulation, storage, etc spaces

Output

Gross Floor Area	
Other (motels, etc)	1157.36 sqm
Residential	6808 sqm
Total	5786.8 sqm
Parking Requirements	
Other (motels, etc)	23 Spaces
Residential	45 Spaces
Total	69 Spaces

Assume that these would be required to be on site
 Assume that these would be required to be on site

Parking Analysis

Required Provision	69 Spaces
Existing Provision	29 Spaces
Extra Provision Required	40 Spaces
Net extra required	0

Assume that these would be required to be on site

Town: Batemans Bay Block number: z17
 Block bounded by: Orient St, Camp St, Bent St

Input - Please Fill in Brackets only

Zoning	<input type="text" value="R3"/>		
F.S.R	<input type="text" value="0.85"/>	to	<input type="text" value="1"/>
Total Footprint	<input type="text" value="5910"/>	sqm	
GFA Assumption	<input type="text" value="80"/>	%	
Residential to Other Ratio	<input type="text" value="80"/>	%	
Existing Estimated Parking	<input type="text" value="9"/>	Spaces	
Parking Requirement Rate			
Residential	1 per	<input type="text" value="150"/>	sqm
Other (motels, etc)	1 per	<input type="text" value="50"/>	sqm

Key assumptions:

applies only to non-residential component
 80% medium density residential and 20% tourist accommodation
 does not include existing off-street spaces, and
 excludes car park on corner of Camp and Orient Streets
 based on 300 sqm block size (or 2 per dwelling)
 based on 24 sqm room size, plus allowance for manager, circulation, storage, etc spaces

Output

Gross Floor Area	
Other (motels, etc)	803.76 sqm
Residential	4728 sqm
Total	4018.8 sqm
Parking Requirements	
Other (motels, etc)	16 Spaces
Residential	32 Spaces
Total	48 Spaces

Assume that these would be required to be on site
 Assume that these would be required to be on site

Parking Analysis

Required Provision	48 Spaces
Existing Provision	9 Spaces
Extra Provision Required	39 Spaces
Net extra required	0

Assume that these would be required to be on site

Town: Batemans Bay Block number: z18A
 Block bounded by: Old Princes Hwy, Museum Pl, R3 zone to south

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	3200	sqm	
GFA Assumption	80	%	
Commercial	25	%	
Retail	50	%	
Residential	25	%	
Existing Estimated Parking	52	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		1920	sqm
Retail		3840	sqm
Residential		1920	sqm
Number of units (1 Bed 100sqm)	4	Units	
Number of units (2 Plus Bed 150 sqm)	10	Units	
Total		7680	sqm

Area as advised by Council - 50% of total
 Assumed 80%

Existing Parking from Survey

18A 49

18B 23

Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements	
Commercial	64 Spaces
Retail	128 Spaces
Residential	24 Spaces
Total	192 Spaces
Total non-residential	168 Spaces
Parking Analysis	
Required Provision	168 Spaces
Existing Provision	52 Spaces
Extra Provision Required	116 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z18B
 Block bounded by: Old Princes Hwy (south to Crown St), recreation reserve, B4zone to north

Input - Please Fill in Brackets only

Zoning	<input type="text" value="R3"/>		
F.S.R	<input type="text" value="0.85"/>	to	<input type="text" value="1"/>
Total Footprint	<input type="text" value="17800"/>	sqm	
GFA Assumption	<input type="text" value="80"/>	%	
Residential to Other Ratio	<input type="text" value="80"/>	%	
Existing Estimated Parking	<input type="text" value="23"/>	Spaces	
Parking Requirement Rate			
Residential	1 per	<input type="text" value="150"/>	sqm
Other (motels, etc)	1 per	<input type="text" value="50"/>	sqm

Key assumptions:

applies only to non-residential component
 80% medium density residential and 20% tourist accommodation
 does not include existing off-street spaces

based on 300 sqm block size (or 2 per dwelling)
 based on 24 sqm room size, plus allowance for manager, circulation, storage, etc spaces

Output

Gross Floor Area	
Other (motels, etc)	2420.8 sqm
Residential	14240 sqm
Total	12104 sqm
Parking Requirements	
Other (motels, etc)	48 Spaces
Residential	95 Spaces
Total	143 Spaces

Assume that these would be required to be on site
 Assume that these would be required to be on site

Parking Analysis

Required Provision	143 Spaces
Existing Provision	23 Spaces
Extra Provision Required	120 Spaces
Net extra required	0

Assume that these would be required to be on site

Town: Batemans Bay Block number: z22
 Block bounded by: Soldiers Club, Museum Place, High Street (Albert Ryan Park)

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	N.A.	sqm	
GFA Assumption	80	%	
Existing Estimated Parking	0	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Cinema	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2+ Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial	12272	sqm	
Cinema	2464	sqm	
Residential	10615	sqm	
No. Of Units	69	Units	
1 Bedroom	17	Units	
2 or more Bedrooms	52	Units	
Total Gross Area	25351	sqm	

Assume same rate as Commercial

GFA obtained from Traffic Study Paramics report

15340 by 80%
 3080 by 80%
 13269 by 80%

Number of units and splts are assumed based on area and surroundings.

Output

Parking Requirements	
Commercial	409 Spaces
Cinema	82 Spaces
Residential	121 Spaces
Total	612 Spaces
Total non-residential	491 Spaces
Parking Analysis	
Required Provision	491 Spaces
Existing Provision	0 Spaces
Extra Provision Required	491 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z23
 Block bounded by: Orient St, Museum Pl, Beach Rd, Soldiers Club (but **excluding** Woolworths development)

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	5900	sqm	
GFA Assumption	50	%	
Commercial	25	%	
Retail	50	%	
Residential	25	%	
Existing Estimated Parking	162	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		2212.5 sqm	
Retail		4425 sqm	
Residential		2212.5 sqm	
Number of units (1 Bed 100sqm)	4	Units	
Number of units (2 Plus Bed 150 sqm)	12	Units	
Total		8850 sqm	

Area as advised by Council
 As advised by Council

Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements	
Commercial	74 Spaces
Retail	148 Spaces
Residential	28 Spaces
Total	249 Spaces
Total non-residential	221 Spaces
Parking Analysis	
Required Provision	221 Spaces
Existing Provision	162 Spaces
Extra Provision Required	59 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z24
 Block bounded by: Orient St, Camp St, Beach Rd,

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	6500	sqm	
GFA Assumption	20	%	
Commercial	25	%	
Retail	50	%	
Residential	25	%	
Existing Estimated Parking	165	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		975	sqm
Retail		1950	sqm
Residential		975	sqm
Number of units (1 Bed 100sqm)	2		Units
Number of units (2 Plus Bed 150 sqm)	5		Units
Total		3900	sqm

Area as advised by Council (excluding existing car park)
 Council advised only 20% development likely in 20 years

includes car park on corner of Camp and Orient Streets

Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements	
Commercial	33 Spaces
Retail	65 Spaces
Residential	12 Spaces
Total	110 Spaces
Total non-residential	98 Spaces
Parking Analysis	
Required Provision	98 Spaces
Existing Provision	165 Spaces
Extra Provision Required	-68 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z28
 Block bounded by: Beach Rd, Flora Crescent, study area boundary

Centrelink/Soldiers Club

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	N.A.	sqm	
GFA Assumption	80	%	
Existing Estimated Parking	386	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2+ Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial	11838	sqm	
Retail	0	sqm	
Residential	0	sqm	
No. Of Units	0	Units	
1 Bedroom	0	Units	
2 or more Bedrooms	0	Units	
Total Gross Area	11838	sqm	

from Development Application

GFA obtained from report
 combined Soldiers Club and Centrelink
 3080 by 80%
 13269 by 80%

Number of units and splts are assumed based on area and surroundings.

Output

Parking Requirements	
Commercial	395 Spaces
Cinema	0 Spaces
Residential	0 Spaces
Total	395 Spaces
Total non-residential	395 Spaces
Parking Analysis	
Required Provision	395 Spaces
Existing Provision	386 Spaces
Extra Provision Required	9 Spaces

Non-residential

Town: Batemans Bay Block number: z33
 Block bounded by: Princes Hwy, North St, Perry St, Beach Rd

Village Centre

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	27920	sqm	
GFA Assumption	N.A.	%	
Commercial	N.A.	%	
Retail	N.A.	%	
Residential	N.A.	%	
Existing Estimated Parking	906	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial	N.A.	sqm	
Retail		15000 sqm	
Residential		4785 sqm	
Number of units (1 Bed 100sqm)	12	Units	
Number of units (2 Plus Bed 150 sqm)	28	Units	
Total		19785 sqm	

As advised by Council
 Area determined from MapInfo Blocks

826 under cover and 80 on surface

GFA advised by Council and by LG Super (Brian Churchill) in April 2010
 GFA advised by Council and by LG Super (Brian Churchill) in April 2010
 Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements		
Commercial	N.A.	Spaces
Retail		500 Spaces
Residential		68 Spaces
Total		568 Spaces
Total non-residential		500 Spaces
Parking Analysis		
Required Provision		500 Spaces
Existing Provision		906 Spaces
Extra Provision Required		-406 Spaces

Assume these would be required on site

Non-residential

Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)

Town: Batemans Bay Block number: z32
 Block bounded by: Orient St, Beach Rd, Perry St, North St

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	14000	sqm	
GFA Assumption	20	%	
Commercial	25	%	
Retail	50	%	
Residential	25	%	
Existing Estimated Parking	267	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		2100	sqm
Retail		4200	sqm
Residential		2100	sqm
Number of units (1 Bed 100sqm)	4		Units
Number of units (2 Plus Bed 150 sqm)	11		Units
Total		8400	sqm

Area as advised by Council (excluding Police Station and Court House)
 As advised by Council

247 from survey inventory plus 20 along Perry Lane

Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements	
Commercial	70 Spaces
Retail	140 Spaces
Residential	27 Spaces
Total	237 Spaces
Total non-residential	210 Spaces
Parking Analysis	
Required Provision	210 Spaces
Existing Provision	267 Spaces
Extra Provision Required	-57 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z33
 Block bounded by: Orient St, Beach Rd, Clyde River

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	2	to	1
Total Footprint	22800	sqm	
GFA Assumption	50	%	
Commercial	25	%	
Retail	50	%	
Residential	25	%	
Existing Estimated Parking	191	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2 plus Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		5700	sqm
Retail		11400	sqm
Residential		5700	sqm
Number of units (1 Bed 100sqm)	11	Units	
Number of units (2 Plus Bed 150 sqm)	30	Units	
Total		22800	sqm

As advised by Council
 As advised by Council
 As advised by Council

84 spaces from survey plus 107 spaces on private land

Number of units and splts are assumed based on area and surroundings.
 20% 1 bedroom
 80% 2 bedroom

Output

Parking Requirements	
Commercial	190 Spaces
Retail	380 Spaces
Residential	72 Spaces
Total	642 Spaces
Total non-residential	570 Spaces
Parking Analysis	
Required Provision	570 Spaces
Existing Provision	191 Spaces
Extra Provision Required	379 Spaces

Assume these would be required on site

Non-residential

Town: Batemans Bay Block number: z34
 Block bounded by: Princes Hwy, North St, Clyde St

Bridge Plaza only

(not including approved DA for Clyde River Motel redevelopment)

Input - Please Fill in Brackets only

Zoning	B4		
F.S.R	3	to	1
Total Footprint	29780	sqm	
GFA Assumption	80	%	
Existing Estimated Parking	192	Spaces	
Parking Requirement Rate			
Commercial	1 per	30	sqm
Retail	1 per	30	sqm
Residential (1 Bed)	1 per	1	Unit
Residential (2+ Bed)	1 per	0.5	Unit
Gross Floor Area			
Commercial		sqm	
Retail	9470	sqm	
Residential	20680	sqm	
No. Of Units	166	Units	
1 Bedroom	25	Units	
2 or more Bedrooms	141	Units	
Total Gross Area	30150	sqm	

Area determined from MapInfo Blocks
 Assumed 80%

from survey maps, all 3 hour parking spaces

GFA obtained from letter from LG Super (Brian Churchill) in April 2010

Number of units and splts are assumed based on area and surroundings.

Output

Parking Requirements	
Existing retail	200 Spaces
Retail	316 Spaces
Residential	307 Spaces
Total	823 Spaces
Total non-residential	516
Parking Analysis	
Required Provision	516 Spaces
Existing Provision	192 Spaces
Extra Provision Required	324 Spaces

Based on GFA of 6000 sqm as advised by ESC

Assume these would be required on site

Non-residential

Proposed to provide a total of 1655 spaces for both Bridge Plaza (z34) and Village Centre (z31)

Town: Batemans Bay Block number: z34(2)

Block bounded by: Princes Hwy, North St, Clyde St

Rest of Block 34
(not including Bridge Plaza)
(not including approved DA for Clyde River Motel redevelopment)

Input - Please Fill in Brackets only

Zoning	<input type="text" value="B4"/>		
F.S.R	<input type="text" value="2"/>	to	<input type="text" value="1"/>
Total Footprint	9400	sqm	
GFA Assumption	50	%	
Commercial	<input type="text" value="25"/>	%	
Retail	<input type="text" value="50"/>	%	
Residential	<input type="text" value="25"/>	%	
Existing Estimated Parking	<input type="text" value="120"/>	Spaces	
Parking Requirement Rate			
Commercial	1 per	<input type="text" value="30"/>	sqm
Retail	1 per	<input type="text" value="30"/>	sqm
Residential (1 Bed)	1 per	<input type="text" value="1"/>	Unit
Residential (2+ Bed)	1 per	<input type="text" value="0.5"/>	Unit
Gross Floor Area			
Commercial	2350	sqm	
Retail	4700	sqm	
Residential	2350	sqm	
No. Of Units	<input type="text" value="18"/>	Units	
1 Bedroom	<input type="text" value="5"/>	Units	
2 or more Bedrooms	<input type="text" value="13"/>	Units	
Total Gross Area	9400	sqm	

As advised by Council
As advised by Council
Advised 50% by Council

all on street spaces, plus 12 private spaces at rear of shops
(excludes 29 informal spaces at north of block)

GFA obtained from letter from LG Super (Brian Churchill) in April 2010

Number of units and splts are assumed based on area and surroundings.
20% 1 bedroom
80% 2 bedroom

Output

Parking Requirements	
Retail	157 Spaces
Residential	30 Spaces
Total	186 Spaces
Total non-residential	157
Parking Analysis	
Required Provision	157 Spaces
Existing Provision	120 Spaces
Extra Provision Required	37 Spaces

Assume these would be required on site

Non-residential

APPENDIX B

BATEMANS BAY PARKING SURVEYS

Batemans Bay Parking Study – November Survey Results



Document Control Sheet

Issue History

Report Number	Prepared by	Reviewed by	Issued by	Date
T0106.001R Batemans Bay Parking Study November Survey Report	I. Khanjanasthiti	D. Bitzios		
T0106.002R Batemans Bay Parking Study November Survey Report	I. Khanjanasthiti	F. Stone	F. Stone	14/2/11
T0106.003R Batemans Bay Parking Study November Survey Report	I. Pais	S. Brooke	I. Pais	21/2/11

Contents

	Page
1. INTRODUCTION	1
1.1 BACKGROUND	1
1.2 SCOPE	1
2. METHODOLOGY	2
2.1 SURVEY METHODOLOGY	2
2.2 DATA ACCUMULATION AND PRESENTATION METHODOLOGY	3
3. RESULTS	3
3.1.1 Parking Regulation	3
3.1.2 Occupancy	4
3.1.3 Duration of Stay	5
3.1.4 Overstaying and Understaying Results	5
3.1.5 Number of Vehicles Shifting Spaces	6

Tables

Table 1.1:	Survey Dates and Times
Table 3.1:	Figure Locations of Parking Regulation Survey Results
Table 3.2:	Figure Locations of Average Occupancy Survey Results
Table 3.3:	Table Locations of Occupancy Results for Stocklands Shopping Centre and Soldiers Club
Table 3.4:	Figure Locations of Stay Duration Survey Results
Table 3.5:	Figure Locations of Overstaying and Understaying Survey Results
Table 3.6:	Figure Locations of Vehicles Shifting Spaces Survey Results

Figures

Figure 1.1:	Study Area
Figure 3.1:	Entire Precinct's Parking Space Occupancy
Figure 3.2:	Entire Precinct's Proportion of Overstaying and Understaying Vehicles
Figure 3.3:	Entire Precinct's Number of Vehicles Shifting Spaces

Appendices

Appendix A:	Zones Division Map
Appendix B:	Sample of Parking Bays Map
Appendix C:	Sample of Survey Data Sheet
Appendix D:	Parking Inventory Surveys
Appendix E:	Occupancy Survey Results
Appendix F:	Stay Duration Survey Results
Appendix G:	Overstaying and Understaying Surveys
Appendix H:	Vehicle Shifting Spaces Survey

1. INTRODUCTION

1.1 BACKGROUND

Batemans Bay CBD has been subject to high parking demand in recent years due to the location's significance as the main commercial centre of not only Eurobodalla Shire but also the South Coast Region of New South Wales. The parking demand of the town centre has been increasing due to the following primary reasons:

- recent developments, including the Village in Perry Street and the Foreshore Parkland in Clyde Street; and
- the growing number of visitors, particularly during the warm summer months.

In the coming years, much of the area's commercial land may be redeveloped, and will consequently face difficulties in adequately meeting the future parking demand. In response to the issue, Eurobodalla Shire Council intends to investigate ways in which the increasing parking demands can be consolidated and met in other areas of the CBD.

Traffic Data & Control (TDC) has been commissioned by council to undertake parking surveys in Batemans Bay, Moruya and Narooma. The Moruya and Narooma Surveys are occupancy (only) surveys while the Batemans Bay Survey includes turnover and occupancy. The specified survey periods have been designated to cover both the pre-Christmas holiday period and the post-Christmas holiday period, as shown in Table 1.1.

Table 1.1: Survey Dates and Times

CBD Area	First Survey Date	Second Survey Date	Time
Batemans Bay	Thursday 25 th November 2010	Thursday 13 th January 2011	10:00am – 4:00pm
Moruya	Thursday 2 nd December 2010	Thursday 6 th January 2011	10:00am – 4:00pm
Narooma	Thursday 2 nd December 2010	Thursday 6 th January 2011	10:00am – 4:00pm

This report presents the results of the first survey undertaken on Thursday, 25th November 2010 for the Batemans Bay CBD area.

1.2 SCOPE

The location and survey boundary of the Batemans Bay CBD area is shown in Figure 1.1. The study area, which covers the CBD and its fringe area, includes a number of public off-street car parks as well as a large number of streets with various parking configurations and restrictions.

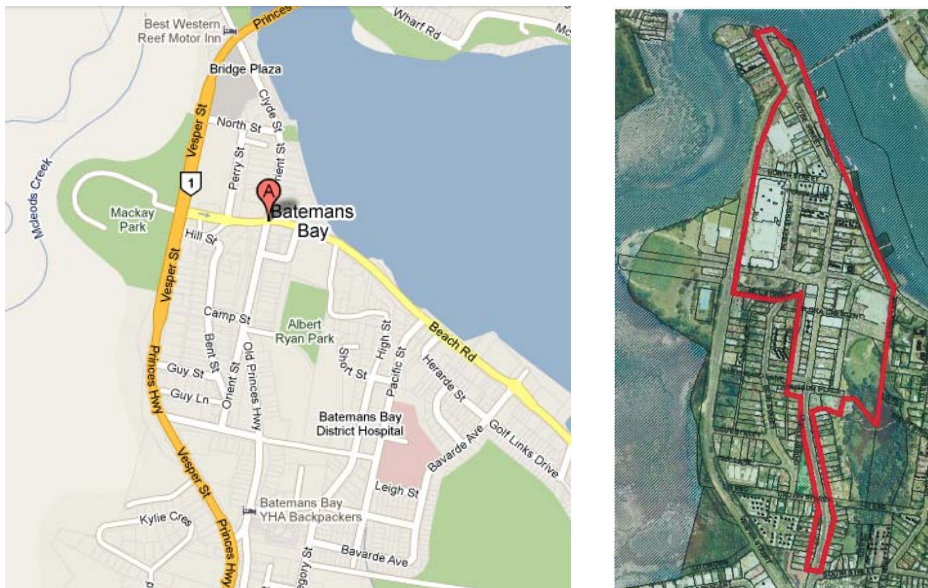


Figure 1.1: Study Area

Source: Google Maps and Eurobodalla Shire Council

Based on the collected survey data, the report presents the following information of the survey study:

- Survey methodology and data accumulation and presentation methodology; and
- Survey results of the following aspects of the study area's parking data:
 - Parking regulation (by types);
 - Average occupancy (by percentage);
 - Average duration of stay (by minutes);
 - Overstaying and understaying (by minutes); and
 - Number of vehicles shifting parking spaces within the area (by number).

2. METHODOLOGY

2.1 SURVEY METHODOLOGY

The survey methodology comprised:

- The study area was separated into eight zones, namely Zone A, B, C, D, E, F, G and H (the zone diagram is attached in Appendix A as Figure A.1);
- All parking bays in the specified zones above, which were to be investigated, were identified and mapped with specific bay numbers for reference by the survey staff (a sample of the mapped parking bays can be found in Appendix B);
- Survey data sheets, which are attached to this report's Appendix C, were prepared to ensure the survey of vehicles and parking regulation would be completed in a uniform manner;
- In 30-minute intervals from 10:00am to 4:00pm, field staff surveyed parked vehicles within the study area by recording the first four characters of the vehicles' number plates;

- In order to ensure privacy, the staff did not record full plate details of the vehicles;
- Whilst some vehicles in “private property” parking areas were included in the survey, the staff ensured they did not intrude into the property without permission;
- To ensure the survey remained uninterrupted, the staff did not have any interaction with pedestrians, cyclists or motorists throughout the duration of the survey; and
- Occupancy data was also collected for Stocklands Shopping Centre and the Soldiers Club car parks:
 - This was done by counting the number of spaces occupied at 10:00am then counting all entry and exit movements in 15-minute increments.

2.2 DATA ACCUMULATION AND PRESENTATION METHODOLOGY

The following steps were taken to accumulate and present the collected parking survey data:

- The number plates data was entered into Excel spreadsheets;
- The data in the spreadsheets was processed to determine the following categories of parking demands:
 - Parking regulation;
 - Average occupancy;
 - Occupancy throughout the day (including Stocklands Shopping Centre and the Soldiers Club);
 - Average duration of stay;
 - Overstaying and understaying (average duration of stay vs parking regulation); and
 - Number of vehicles shifting parking spaces within the area.
- The processed data was input into MapInfo to create thematic maps which spatially and visually display the parking data; and
- Graphs were created in Excel spreadsheets to show average parking occupancy and number of vehicles shifting spaces throughout the day.

3. RESULTS

3.1.1 Parking Regulation

The attained survey results of the site’s parking regulations are attached to Appendix D as shown in Table 3.1.

Table 3.1: Figure Locations of Parking Regulation Survey Results

Location	Figure
Entire Precinct (Overview)	D.1
Zone A	D.2
Zone B & H	D.3
Zone C & D	D.4
Zone E & F	D.5
Zone G	D.6

3.1.2 Occupancy

The entire precinct’s (including Stocklands Shopping Centre and the Soldiers Club) parking occupancy of all types of parking throughout the day is shown in Figure 3.1.

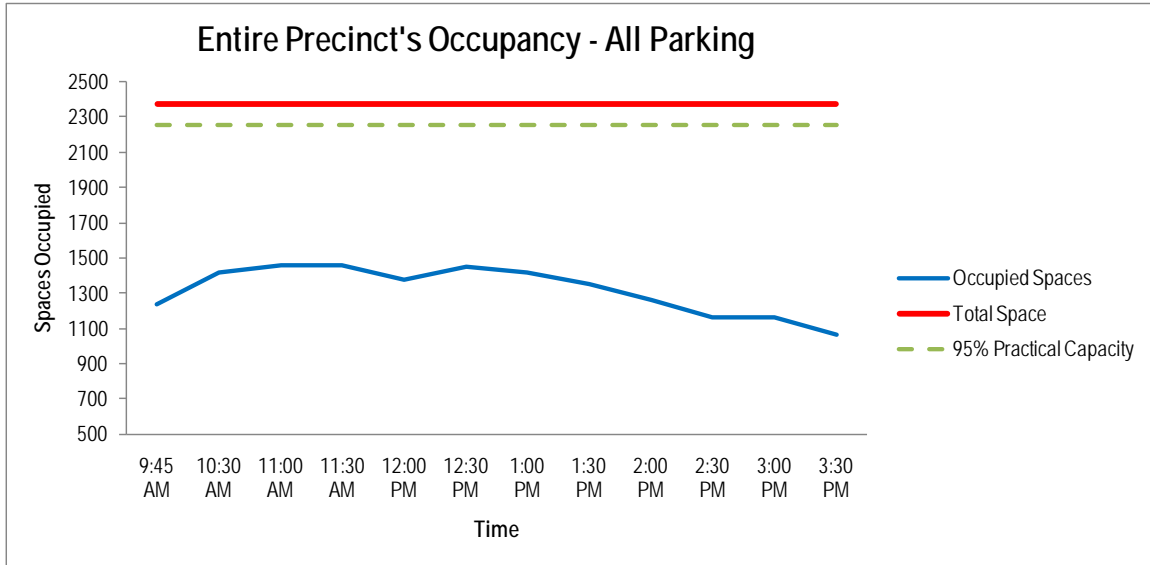


Figure 3.1: Entire Precinct’s Parking Occupancy

The maps showing survey results of parking occupancy are attached to Appendix E as shown in Table 3.2.

Table 3.2: Figure Locations of Average Occupancy Survey Results

Location	Figure
Entire Precinct (Overview)	E.1
Zone A	E.2
Zone B & H	E.3
Zone C & D	E.4
Zone E & F	E.5
Zone G	E.6

The tables which display the occupancy data throughout the day of Stocklands Shopping Centre and the Soldiers Club are also attached to Appendix E as shown in Table 3.3.

Table 3.3: Table Locations of Occupancy Survey Results for Stocklands Shopping Centre and Soldiers Club

Location	Table
Stocklands Shopping Centre	E.1
Soldiers Club	E.2

3.1.3 Duration of Stay

The calculated survey results of average stay duration are attached to Appendix F as shown in Table 3.4.

Table 3.4: Figure Locations of Stay Duration Survey Results

Location	Figure
Entire Precinct (Overview)	F.1
Zone A	F.2
Zone B & H	F.3
Zone C & D	F.4
Zone E & F	F.5
Zone G	F.6

3.1.4 Overstaying and Understaying Results

Figure 3.2 shows the proportion of overstaying and understaying vehicles under the signed time limits.

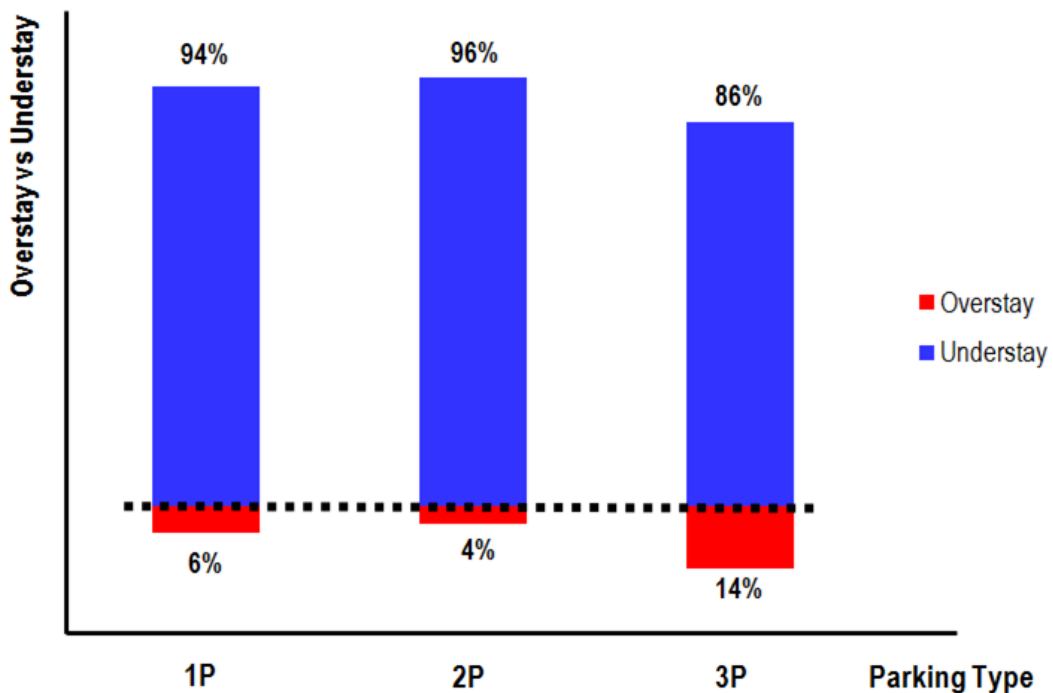


Figure 3.2: Entire Precinct's Proportion of Overstaying and Understaying Vehicles

The survey results of overstaying and understaying (derived from comparing average duration of stay with the specified parking limits) are attached to Appendix G as shown in Table 3.5.

Table 3.5: Figure Locations of Overstaying and Understaying Survey Results

Location	Figure
Entire Precinct (Overview)	G.1
Zone A	G.2
Zone B & H	G.3
Zone C & D	G.4
Zone E & F	G.5
Zone G	G.6

3.1.5 Number of Vehicles Shifting Spaces

Figure 3.2 displays the number of vehicles which shifted parking spaces within the entire precinct at different times of the day.

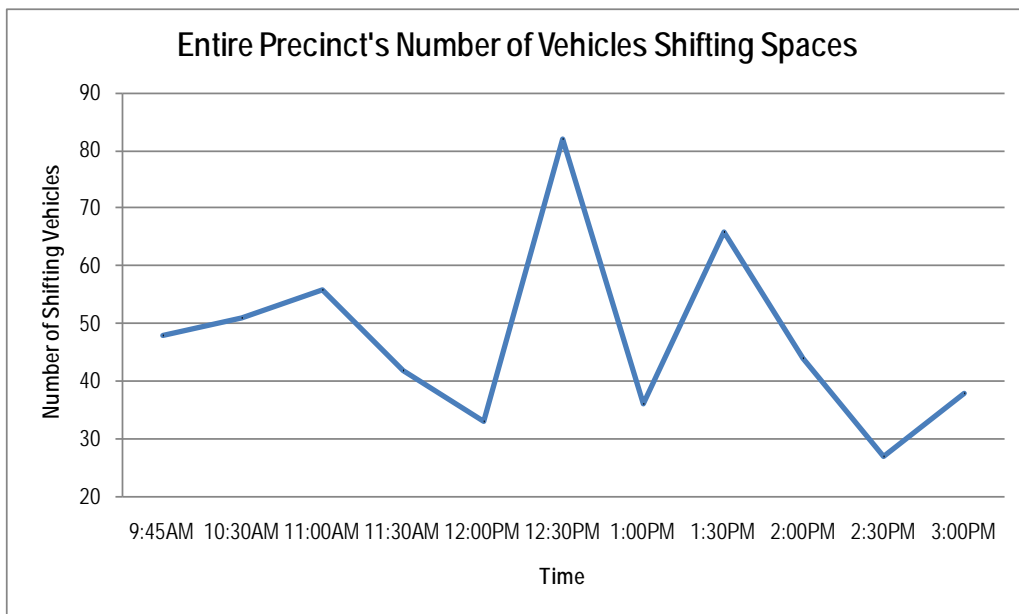


Figure 3.3: Entire Precinct's Number of Vehicles Shifting Spaces

The calculated survey results of vehicles shifting parking spaces within the study area are attached to Appendix H as shown in Table 3.6.

Table 3.6: Figure Locations of Vehicles Shifting Spaces Survey Results

Location	Figure
Entire Precinct (Overview)	H.1
Zone A	H.2
Zone B & H	H.3
Zone C & D	H.4
Zone E & F	H.5
Zone G	H.6