NOWRA CBD PARKING REVIEW
STAGE 2 PARKING STRATEGY REPORT

FOR

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EXECUTIVE SUMMARY

Overview

The Nowra CBD Parking Review study has been undertaken to investigate parking in the Nowra CBD by identifying existing trends, demand for parking, number and location of parking and review of parking policy and strategy.

The parking review was conducted in two stages:

- *Stage 1 of the Nowra CBD Parking Review (existing conditions) assessed the existing parking situation (existing conditions) based on 15 random parking surveys undertaken from November 2012 to March 2013, adjusted to account for seasonality in accordance with AUSTROADS and RMS requirements.*
- *This report, Stage 2 of the Nowra CBD Parking Review (parking strategy) considered the outcome of Stage 1, comparing supply/demand analysis with DCP and Contributions Plan requirements, the impacts of existing and forecast parking demands, included an infringement analysis, identified parking opportunities to address theoretical DCP demand deficits in the short term, and make recommendations for longer term parking strategies for the Nowra CBD.*

The two approaches to examining parking adequacy in town centres were considered:

- *Compliance with policy (DCP demand) where theoretical rates are applied to town centre floor areas to determine car parking demands, and*
- *Actual supply/demand analysis (with seasonal variations) where an assessment is undertaken to seasonally adjust car parking demands in accordance with AUSTROADS and RMS standards.*

Often there will be differences in the two methods because DCP rates are theoretical and generic and are generally the minimum required off street parking levels, where as traditional supply/demand surveys consider all parking supply (on and off street). In both cases actual spaces can be counted (supply) to assess where the parking supply levels sit in relation to the parking demands.

The supply/demand analysis indicated parking levels are adequate where there is a current DCP demand (theoretical) deficit. A view should not be formed that DCP rates should be decreased. This is primarily because the supply/demand analysis includes all parking (including on street parking) whereas the DCP rates are to provide an appropriate level of off street parking only.

The Stage 1 report indicates that parking levels are generally satisfactory. However it is clear from the Stage 1 report that without "on-street" parking the current off-street supply would not meet the required level under the DCP, and further, if all informal and illegal parking were displaced to off-street public parking capacity would be exceeded. Therefore it is appropriate to maintain the current DCP rates with the intent to provide satisfactory off-street parking.

In 2015, the parking inventory summary for parking in Nowra CBD is as follows:

- *On Street > 1478 spaces*
- *Off Street > 5590 spaces (including Off Street Public > 1994 spaces (36%) & Off Street Private > 3596 (64%)*
- *Total > 7068 spaces*

**Note this includes the off street vacant lots and is based on the Actual Parking Capacity for these areas which is based on the maximum surveyed parking quantum. If using the maximum space provision of parking on these areas was adopted (ie Potential Capacity) this would increase the parking supply by a further 588 spaces from the smaller private areas and 449 spaces from the larger off-street vacant lots. The Actual Parking Capacity of all of the off-street vacant lots was 386 spaces and the Potential Capacity was 835 spaces.*

The Stage 1 report further identified that the 85th%ile supply/demand analysis assessed parking supply as adequate (71% occupancy), if considering the whole of Nowra CBD, and if <u>all</u> parking supply is taken into consideration (on and off street). This means that annual parking levels only exceed the 71% occupancy level for 15% of the year.

The DCP analysis assessed the current off street parking provisions based on the theoretical DCP demand. Based on this assessment a deficiency of 186 car parking spaces was identified, however this does not include existing on-street parking provisions.

If Council decides to nullify the theoretical DCP demand deficit for off-street parking based on the current GFA of business operations in the CBD, the study has identified where these spaces could be provided (cost effective at grade parking) around the CBD in the short term (within the next 5 years).

In addition to the current theoretical DCP demand deficit of 186 spaces (excluding on-street parking provisions), "future demands" forecast within the CBD were also considered. The future demands were forecast to be 570 spaces further detailed as follows:

- *An addition 140 spaces required as a result of car parking contributions received from CBD related developments;*
- *An allowance to cater for the current imbalance (or over supply) in the East Sector, of 220 spaces (on the basis that those spaces may not be available in the longer term for employees on the western side of the Highway); and*
- *An allowance for an estimated accumulative loss of on street parking (210 spaces), as a result of competing demands for other road reserve use over time.*

Whilst Future Demands need to be continually reviewed over time to monitor the actual versus predicted parking forecasts, the following is the current recommended medium-long term strategy.

Recommended Action Strategy

The recommended action strategy was categorised as short, medium and long term priorities, listed as follows:

Short Term (3-5 years)

- *Construct the "short term" at grade car parking in the broader Nowra CBD to satisfy the current theoretical DCP demand deficit (assessed as part of this review to be 186 car parking spaces, excluding consideration of existing on-street parking). Seven (7) locations are identified which sum to provide 192 spaces as indicated in Table ES.4, however noting that almost half of that (92 spaces) is in Marriott Park. Refer to Section 8.1.5 for additional discussion regarding the Marriott Park proposal;*
- *Finalise planning for the proposed Berry/Worrigee multi-level car park; and*
- *Update the Nowra DCP and Contributions Plan taking into account the findings and recommendations of this report.*

Medium Term (5-15 years)

- *Undertake further planning and investigations for the "medium-long term" options identified. Six (6) locations have been identified as indicated in Table ES.4 (sum to an additional 149 at grade spaces);*
- *Consider amending existing off street car parking layouts to optimise car parking potential (identified increase in parking supply to change from current DCP dimensions to AS2890 dimensions). It is recommended this be considered in conjunction with car park resealing or rehabilitation. Six (6) locations have been identified as indicated in Table ES.4 (sum to an additional 51 at grade spaces, ie a combined total of 200 additional at grade spaces);*
- *Undertake further surveys and updating this Nowra Car Parking Review; and*
- *Consider construction of the proposed Berry-Worrigee multi-level car park if future demands warrant within this period.*

Long Term (>15 years)

- *Address any outstanding items from above, and further actions subject to a future review.*

Key Analysis Findings

Current Demand (from the Stage 1 report)

Stage 1 of the review examined actual supply/demand and found generally that there is adequate parking when all parking supply is taken into consideration in the broader CBD. Parking in Nowra CBD is at 71 percent capacity when considering all of the parking spaces available both on street and off street throughout the CBD – however there is little spare capacity in some premium parking areas.

Stage 1 also found that when informal and illegal parking was taken into consideration (to test displaced parking) there is still adequate parking, albeit only marginal and only when the supply of on-street parking is taken into consideration in the broader CBD. This highlights the importance of on-street parking and the importance of compensating for any future losses of on-street parking in the long term.

Existing Supply/Demand Analysis (from the Stage 1 report)

To account for parking demand seasonality, 85th percentile parking demands were adopted which to align with the approach suggested in Austroads. Parking occupancies for an average of the Thursdays factored to 85th percentiles revealed that whilst there are individual parking areas that are regularly close to fully occupied in peak parking periods, when the entire Nowra CBD study area is taken into consideration (off-street plus on-street), the existing parking supply is adequate to cater for the existing demand.

Analysis of the key off-street parking areas also identified that higher demand areas closer to the central area were at capacity whilst some of the more outlying car parking areas were underutilised. Survey analysis and site observations identified a high number of commuters using vacant lots for all day parking. Once the vacant lots within the CBD are developed, there is likely to be an increased shortfall in all day parking, which should to be factored into Council's strategic planning. Given that is it unlikely that there is sufficient practical capacity available to absorb all the displaced car parking off-street, it is likely that the demand would spread into on-street parking areas where there is still some capacity in periphery around the town centre.

These are important study findings and some planning attention needs to be drawn to the high occupancy levels, in particular the latent demand assessment (assessment of additional demand potential from displaced parking currently on vacant lands), as it is expected that the redistribution of parking from these vacant lots (if/when these are developed) could be largely displaced to off-street all day (unrestricted) parking areas.

Stage 1 found that when this occurs (test of displaced informal and illegal parking) there is still adequate parking, albeit only marginal. This highlights the importance of on-street parking and the importance of compensating for any future losses of on-street parking.

Parking Adequacy (Current Theoretical DCP Demand Deficit and Future Demand)

Stage 2 of the review considered the 2007 study findings and updated it to 2015 conditions to review the current parking adequacy (DCP versus supply/demand) and also future demand. The Stage 2 assessment revealed:

- *The next 3-5 years will require the provision of an additional186 parking bays CBD wide to reduce the off-street theoretical parking deficit (ie excluding consideration of the availability of on-street parking). 192 parking bays have been identified which could be provided in the short term at-grade (see Table ES.4). If all of these can be provided this will address the current DCP demand deficit (+ 6 spaces). Also during this time a focus will be managing the existing parking spaces effectively.*
- *Over time we will see increasing development and parking demands in the Nowra CBD. Some losses of vacant land (currently used for parking) may be experienced, as well as competing demands for road reserve space currently used for on street parking (potential upgrading of intersections, improvements to mid-block capacity for traffic around the CBD, street scape improvements and requests for public transport and improved loading and other service provisions in the CBD may all combine to gradually deplete some on street parking stock over time. In addition to the 186 assessed current theoretical DCP demand deficit these additional changes are expected to require a further 570 spaces to address future demand (note: 564 spaces will be required when taking into account the short term over supply of + 6 spaces)*
- *Of the 564 additional spaces required over the longer term to meet future demand, the report identifies a further 200 spaces (medium – long term at-grade around the CBD) can be provided and a net increase of + 424 spaces*

at the site of the proposed Berry/Worrigee multi-level car park, if the current proposal is developed. This will result in an overall surplus of + 60 spaces CBD wide. (see Table ES.5)

Accordingly, if the Berry/Worrigee multi-level parking station is approved and constructed in the long term, there is no need (based on current floor area projections and forward estimates) to provide any more than that one multistorey parking station in the long term. Additional multistorey parking stations may be considered by Council in the CBD core (e.g. at Egans Lane or Stewart Place) as part of redevelopments of those lands but these would not have to provide surplus parking for the CBD.

Given there is an assumption to absorb 210 on-street parking bay losses into the car parking strategy, and this is likely to be gradual over a long period of time, there is also no need at this point in time to rely on the medium-longer term parking opportunities identified around the CBD as detailed in Table ES.4. Nonetheless it is useful for Council to understand the locations where parking could be provided in future if / when additional parking is required and prior to any additional multi-storey car parking stations being required.

Additional Parking Survey Analysis

The parking surveys were further analysed as part of Stage 2 to identify shortfall areas. Table ES.1 and Table ES.2 summarise the average of each surveyed Thursday factored to 85th percentile demands for seven sectors within the Nowra CBD.

Table ES.1: Sector Average Thursday Parking Occupancy Analysis (including on-street)

Sector	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal (*demand only*))		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
Central	747	863	87%	750	863	87%
North-West	746	1230	61%	790	1230	64%
North-East	673	932	72%	706	932	76%
South-East	683	982	70%	683	982	70%
South-West	818	1017	80%	821	1017	81%
East	724	1096	66%	850	1096	78%
North	267	403	66%	328	403	81%
CBD Total	4658	6522	71%	4928	6522	76%

Table ES.2: Sector Average Thursday Parking Occupancy Analysis (excluding on-street)

Sector	Average 85th Percentile Thursday Analysis (Off-street)			Average 85th Percentile Thursday Analysis (Off-street + Informal (*demand only*))		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
Central	634	728	87%	636	728	87%
North-West	596	873	68%	640	873	73%
North-East	510	673	76%	543	673	81%
South-East	564	780	72%	564	780	72%
South-West	627	734	85%	630	734	86%
East	673	981	69%	799	981	81%
North	262	376	70%	323	376	86%
CBD Total	3866	5145	75%	4135	5145	80%

The sector analysis shows that the Central sector has the highest occupancy followed by the South-West sector and the informal parking demands have the most significant impact on the East and North sectors. The parking occupancies for the each parking areas in the Nowra CBD are shown in Figure ES.1.

Figure ES.1: 85th Percentile Thursday Parking Occupancies

Parking Infringement Analysis

Parking infringement data was obtained from 1 July 2009 to 30 June 2014 for the following eight (8) Council areas which were identified based on their similar sizes or regional status: Shoalhaven City Council; Wollongong City

Council; Wollondilly Shire Council; Wingecarribee Council; Shellharbour City Council; Kiama Municipal Council; Eurobodalla Shire Council; and Port Macquarie Hastings Council.

These eight (8) Councils were compared in the parking infringement analysis which revealed that overall the levels of infringements in the Shoalhaven LGA were typical for a region of its size. Similarly, the levels of parking infringements for the Nowra CBD are considered to be typical for a major regional centre, although comparisons between the primary centres vary due to their size/extents and how significantly each area is influenced by car parking supply/demand, tourism/visitors, ranger resourcing, and/or employment density.

Development Control Plan No. 18 Analysis

The Shoalhaven City Council's Car Parking Code (Development Control Plan No. 18) was previously reviewed in 2007 by Monaro Consultants. This has been updated with 2015 inventory data as part of the Stage 2 Nowra CBD Parking Review. The key difference in the parking inventories were that Monaro Consultants report included informal parking in the supply for the area east of the Princes Highway, whilst the 2015 analysis has only included formal off-street parking areas. The floor spaces from the 2007 analysis were retained for the 2015 analysis with the outcomes compared in Table ES.3.

Table ES.3: Nowra CBD DCP Analysis Comparison (Update Monaro Consultants Analysis to 2015)

(Off Street Parking Only – Excluding the provision of on-street parking which currently exists)

Location	2007 DCP Analysis				2015 DCP Analysis			
	Supply	Demand	Balance	Comment	Supply	Demand	Balance	Comment
Central, NW, NE, SE, SW	3,534	4,116	-582	Deficit	3,788	4,116	-329	Deficit
East	1,264	762	502	Surplus	981	762	220	Surplus
Total CBD	4,798	4,878	-80	Deficit	4,769	4,878	-109	Deficit
Additional parking Council is to provide (sum of parking shortfalls including DA consents have required contributions to be paid for since 2007 under the Contributions Plan)							-77	Deficit
Current Total							-186	Deficit
Excluding the East Sector (-220) and On-street Parking Loss (-210 approximated from transport studies)							-430	Future demand
Total							-616	Future Demand

As indicated above the number of additional parking bays required based on parking shortfalls that development consents have required contributions to be paid for since 2007 is 77. As a result, the total current theoretical DCP demand deficit (based on the DCP analysis for off-street parking only and the DA requirements since 2007) is 186 parking bays.

The reduction in the DCP deficit for the area west of the Princes Highway is likely to be attributed to some increase in supply such as the Bridge Road car park (193 parking bays) opening in 2008. The 1,377 on-street parking bays has not been taken into account in the DCP analysis however it was taken into account in the supply/demand analysis and the impacts on that analysis (due to the additional available capacity) highlights its significance.

Parking rates for a number of Councils were compared with the Shoalhaven City Council parking rates (DCP18) and were deemed not to be dissimilar to the surrounding areas, albeit slightly higher.

Considering future sustainability of the Nowra CBD, it is recommended to consider parking concessions for the CBD core to promote new businesses that are required to provide contributions in lieu of parking. Outside the core area, the existing DCP parking rates are considered to be appropriate. By concessions, it is not intended to reduce rates (the rates are considered appropriate), more so by offer of financial incentives to reduce the amount of levy per space paid by commercial development. This is discussed later in the report, however the recommended approach is to consider residential development to fund 50% (nexus being the other end of the trip).

Parking Forecasts

The following parking forecasts have been determined based on previous studies and analysis:

- *Monaro Consultants* Nowra CBD Parking Analysis 2007 *report identified that Council would need to provide for 140 parking spaces as a result of new development within the CBD Core area by 2021 (assuming all development outside the CBD Core area would provide adequate parking on-site);*

  [Note: this level of growth hasn't occurred in the CBD and this is still considered to be a long term forecast. To put in context, based on the level of development activity that has occurred in the CBD (2007>2015), of the estimated future demand of 140 spaces based on floor area development and anticipated parking shortfalls in accordance with the current contributions plan, only an additional demand for 19 spaces has actually occurred. At this rate it would take a further 50 years for the full 140 to be realised, if there is no significant changes to development activity and the contributions plan.]

- *the* Nowra CBD (East) Road Network Strategy Review (2007) *prepared by Cardno Eppell Olsen estimated that 210 on-street parking bays would be lost to intersections, road network upgrades, and other competing demands for road reserve space in the CBD, and would need to be catered for off-street;*

  [Note: this level of car parking loss hasn't occurred as the forecast impacts haven't occurred, and broader population growth has been slower than originally anticipated when the original Nowra/Bomaderry Structure Plan forecasts were prepared some 15 years ago] and

- *the existing theoretical DCP demand deficit (taking Monaro consultants analysis, and updating this to 2015) based on the updated DCP analysis for the entire CBD is 186 parking bays. Note, this theoretical assessment only compares off-street parking provisions and does not consider the availability of on-street parking.*

It should be noted that the on-street parking loss is not related to DCP requirements and Council is not required to provide for this loss in public off-street parking facilities. These 210 parking bays are likely to spread over the CBD including into periphery on-street parking areas which are currently low in occupancy. However the Stage 1 report highlights the importance of the on-street car parking stock to keep supply/demand levels in reasonable level of service, within standards, and as such it is recommended that this loss of on street stock be factored into Council's future planning. As a result, and to allow Council to consider its targets, a range has been provided based on 'with' and 'without' the potential on-street parking losses for an estimated forecast future demand of between 406 and 616 parking bays (excluding the East Sector).

Parking Opportunities

Parking supply opportunities were determined by SCC. Table ES.3 summarises these parking supply opportunities. Some of these locations are suitable for short term parking supply, others are identified as medium-long term due to the influence of other factors where timing is more uncertain.

Table ES.4: Parking Supply Opportunities Summary

Term	Location	Description	Sector	On-street			Off-street			Total		
				No Limit	2P	1P	No Limit	2P	1P	No Limit	2P	1P
Short (3-5 years)	Graham Street	On-street and Off-street	NE	8			15			23		
	McGrath Avenue	Northern Side Extension	NE	31						31		
	McGrath Avenue	Conversion from 1P to All Day	NE	9		-9				9		-9
	Berry Street Car Park	Formalise and New Area	NW					12			12	
	Marriott Park	New Area within Park	SE				92			92		
	Burr Avenue	New on Western Side	SW				16			16		
	Douglas Street	New Parking	SE	18						18		

Term	Location	Description	Sector	On-street			Off-street			Total		
				No Limit	2P	1P	No Limit	2P	1P	No Limit	2P	1P
		between Kinghorne St and Princes Hwy										
Medium (5-15 years) – Long (> 15 years)	Lawrence Avenue	New Parking on Western Side	SE	13						13		
	McGrath Avenue	New Parking on Southern Side	NE	30						30		
	Douglas Street	New Parking between Berry St and Kinghorne St	SW/SE	42						42		
	Douglas Street	New Parking between Osborne St and Berry St	SW	34						34		
	Douglas Lane	New Parking	SW	30						30		
	Osborne Street Car Park	Conversion from All Day to 2P	SW				-60	60		-60	60	
In conjunction with pavement rehab works (timeframes unknown)	Collins Way Car Park	Amend to AS2890 parking dimensions	NW				5			5		
	Egan's Lane Car Park	Amend to AS2890 parking dimensions + relocations	Central				25			25		
	Haigh Avenue Car Park	Amend to AS2890 parking dimensions	SE				2			2		
	Lawrence Avenue Car Park	Amend to AS2890 parking dimensions	SE				6			6		
	Stewart Place Car Park	Amend to AS2890 parking dimensions	Central				10			10		
	Osborne Street Car Park	Amend to AS2890 parking dimensions	SW					3			3	
			Total	215	0	-9	111	75	0	326	75	-9
			Total	206			186			392		

Table ES.3 shows an overall total of 392 parking bays which includes a total of 186 off-street parking bays.

Long Term Parking Strategies

The consensus of the previous studies and Council's current position is that a multi-storey car parking facility will be required in the future as part of the Long Term Parking Strategy. Previous studies highlighted that a number of multi-storey parking facilities would be required by 2021, however given the forecast demand is considered to be much lower than previously forecast, priority should initially focus on one location only.

Existing parking surveys have highlighted that there are high demands for long-stay parking in the south west sector and short stay parking in the central core area. Based on the parking survey analysis, the updated DCP analysis, and the parking strategy objectives, as well as taking into consideration size, accessibility and location, providing a multi-storey parking facility at the Berry/Worrigee Street car park is considered to be the most suitable location to cater for future parking demands. The Berry/Worrigee Street car park, which shares boundaries with both the Central sector and the South-East sector, is estimated to be able to provide an additional 424 parking bays (within the current SLEP height requirements). Previous studies including the Nowra CBD Transport Strategy (2003) *and the* Draft Nowra CBD Master Plan (2011) *identified Berry/Worrigee Street car park as a suitable location for a multi-*

storey parking facility. The Berry/Worrigee Street car park was also the highest ranked option in Shoalhaven City Council's assessment of multi-storey parking facility locations.

Table ES.4 summarises the parking forecasts including the short, medium and long term infrastructure opportunities.

Table ES.5: Parking Forecasts - Long Term

Type	Location	Balance of Parking Bays	Comment
Current Off-street DCP Demand Deficit + Future Demand (if excluding east sector)	Nowra CBD (Excluding East Sector)	-406	Based on updated DCP analysis and DA Requirements since 2007 (Excludes the East Sector). Theoretical Deficit is based on off-street parking provisions only.
New Development	CBD Core	-140	Based on DCP requirements for forecast planning of the growth in the CBD Core
	Total	*-546*	*Current and forecast DCP Requirements*
On-street Parking Losses due to intersection upgrades and road widening	Nowra CBD	-210	Some of this demand is likely to spread into periphery on-street areas which are currently low in occupancy
	Total	*-756*	*DCP Requirements + Potential On-street Loss*
Parking Opportunities	Nowra CBD	+392	Includes potential on-street and off-street parking opportunities
	Total	*-364*	*DCP Requirements + Potential On-street Loss + Parking Opportunities*
Long Term Opportunities	Nowra CBD	+424	Includes multi-storey parking opportunities (based on the current design of a single multi-storey facility at Berry/Worrigee)
	Total	*+60*	*DCP Requirements + Potential On-street Loss + Short, Medium and Long Term Opportunities*

A 60 parking bay surplus is forecast assuming all short, medium and long term infrastructure opportunities are completed. It should be noted, however, that there is a level of uncertainty regarding these future forecasts, on-street parking losses, and proposed infrastructure opportunities, and it is recommended that this parking review be revisited in 5-10 years' time to update planning and parking data and review targets.

Funding

Funding will likely be the key factor in determining when a multi-storey facility can be constructed. The Nowra CBD Economic Analysis Commercial Development Contributions report prepared by AEC Group assesses the viability of development in the Nowra CBD and reviews the impact of the Shoalhaven Contributions Plan 2010. The Nowra CBD Economic Analysis Commercial Development Contributions report recommends the existing Contributions Plan approach incorporating potential discounts for parking requirements / contributions is considered as the preferred approach. The report specifies a discount mechanism (potentially 50%) for the parking requirements for new development in the CBD core would improve the viability of commercial development, however it may place pressure on Council to fund future parking infrastructure by alternative means.

Further discounting of DCP parking rates is not justified based on this analysis and is not recommended.

Other recommendations from the Nowra CBD Economic Analysis Commercial Development Contributions report include: applying for special rate variation funds, leveraging land holdings to facilitate development, exploring opportunities for Council and State Government funding, developing clear policy framework to provide clarity and guidance, and continual promotion for increased economic activity in the Nowra CBD.

An infrastructure levy could also be considered as an option for Nowra. This would ideally be applied to all new developments including residential dwellings within Nowra and surrounding catchment villages and could increase funding for future parking facilities. This could fund a 50% reduction in the current CBD parking levy and the nexus is this being the other end of the trip.

Parking Management Strategies

Parking Management Strategies which put less emphasis on increasing supply and focus on managing existing parking provisions and promoting the use of alternative transport modes that reduce parking demands, are considered to be essential for the future sustainability of the Nowra CBD.

Parking Management Strategies include:

- *Pedestrian Connections: Pedestrian links should be improved to promote utilisation of some of the lower occupied parking areas by widening footpaths and improving street scaping.*
- *Pay Parking: Although pay parking is an inevitable strategy that will likely be required in the medium to long term, considering RMS policy, pay parking should not be introduced in Nowra CBD in the short term primarily due to the availability of parking outside of peak times. This however is likely to change in the future if safety and/or traffic efficiency becomes an issue and demands become excessive.*
- *Enforcement: Improving parking enforcement using technologies should be considered, however many of these systems rely on pay parking. A gated ticketed system at the access to off-street parking areas could be introduced which essentially makes a parking area self-regulated. License Plate Recognition (LPR) technologies are also currently being used by a number of Councils in NSW including Wagga Wagga City Council which are considered to be highly beneficial and could be investigated for Nowra. This could allow better use of limited ranger resources and encourage greater compliance and parking turnover. These technologies can be used all year round whereas current chalk marking of tyres has limitations in wet conditions which significantly reduces enforcement hours and underutilises ranger resources.*
- *Parking Guidance: Occupancies of car parks can be determined using gated systems which can then be provided on dynamic signage to inform motorists of where parking is available. These dynamic signs can be located on primary access roads to the CBD to reduce unnecessary vehicle circulation in the CBD.*
- *Peak Spreading: Parking occupancies are much lower outside the short peak parking time of 11:00am to 1:00pm on a typical weekday. Although peak spreading is likely to occur over time, promoting trips to the CBD outside the peak period is important not only to manage parking but also to the sustainability of CBD businesses.*
- *Parking Hierarchy: A parking hierarchy is the prioritisation of the allocation of kerbside parking space by user type and by parking restriction type. It provides guidance to the way Council responds to public requests for on-street parking changes from competing users (including very short stay, short stay and long stay parking needs). The parking hierarchy should be reviewed in the future taking into consideration future potential parking strategies. Duration of Stay surveys which include occupancy should be undertaken at some of the major off-street parking areas such as those that include split time restrictions including Stewart Place, Berry Street, and West and East Nowra Mall. These surveys can be used to assess parking hierarchies to determine the most effective and efficient use of the parking areas as well as identify levels of compliance.*

1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting was engaged by Shoalhaven City Council to undertake a parking review of car parking in the Nowra CBD. An essential component of this parking review was to review and analyse parking survey data for the CBD. This included ground vetting to confirm the on-street and off-street parking inventory and availability including variations in demand. The study area was therefore generally based on the extent of the parking surveys as shown in Figure 1.1 below which importantly for the assessment aligns with the contributions planning area.

Source: Google Earth

Figure 1.1: Study Area

The purpose of this study was to investigate parking in the Nowra CBD by identifying existing trends, shortfalls and opportunities. Parking analysis has assisted in determining if parking in the Nowra CBD met existing demands and operated efficiently to serve the CBD. The analysis also examined the differences between on-site supply/demand and Council's obligations (compliance with DCP parking rates). Furthermore, this study has considered the appropriateness of Council's application of the DCP parking rates city wide and specific to Nowra CBD. Reviews of previous parking studies and their conclusions have

also been undertaken for the Nowra CBD including their reported analysis of existing and forecast parking conditions, and updating of that former analysis to 2015 conditions. The existing and forecast parking demands have also been considered in the identification of parking opportunities as well as review and development of parking strategies for the Nowra CBD.

1.2 SCOPE

The Nowra CBD Parking Review was split into two stages as follows:

- Stage 1 - Existing Situation; and
- Stage 2 - Parking Strategy Development (this report).

The scope for the Stage 1 Existing Situation component of the Nowra CBD Parking Review included the following tasks:

- collation and review of background material and data;
- update of Council's parking survey data spreadsheets (including comparison of old and new survey data, ground vetting, confirmation of data, reformatting and analysis);
- data analysis of both recent and historical surveys;
- data analysis of parking infringement data (limited initially to available Shoalhaven City Council and Wollongong City Council data at Stage 1) ;
- preliminary review of previous parking studies and reports;
- preliminary review of the Contributions Plan and DCP parking code (deferred and addressed at Stage 2); and
- a site visit including data verification and short-term opportunity identification.

The scope for Stage 2 (parking strategy review) included the following tasks:

- complete data analysis and reporting of parking infringement data for a total of eight Council LGAs (including expanding on the analysis of Shoalhaven City Council and Wollongong City Council data for full 5 year data set to end June 2014, and undertake analysis and comparisons for all eight LGAs identified, allowing Nowra and Shoalhaven data to be compared with neighbouring Council's and Councils of similar size and regional demographic);
- assess parking survey data and identify parking opportunities (expanding from Stage 1);
- Stage 1 has considered the CBD as a whole, at Stage 2: develop parking hierarchy and staged parking upgrade recommendations informed by sector analysis including data separation into sectors for supply/demand and DCP analysis comparisons. This will assist to identify which sectors in the CBD have adequate parking and which are deficient, for analysis and planning purposes;
- convert parking data spreadsheet into MapInfo to assist data analysis and establish a basis for future use;
- review parking hierarchy and identify future impacts and development considerations;
- detailed review of previous planning documents;
- detailed review of the Contributions Plan and DCP parking code (relevant to parking supply/demand policy);
- assess parking outcomes in relation to the Draft Master plan and previous strategy analysis undertaken;
- review, identity and comment on RMS and Council's parking rates considering relevance, sustainability and economic viability for Nowra;
- review the outcomes of the Monaro Consulting DCP analysis and update/review planning floor areas and parking changes implemented since that time (including update of parking inventory data to August 2015 informed by ground vetting undertaken in Stage 1, with further updates to August 2015 advised by Council);
- review outcomes of traffic modelling with the future structure plan including identification of potential impacts including timeframe adjustment and staging (addressing current deficiencies first), includes reviewing potential for additional parking to be provided by converting selected streets to one way traffic flows, etc.;

- consult and document Wollongong City Council parking strategy learnings (including benefits of pay parking);
- determine and analyse short, medium and long term strategies; and
- provide advice relating to the update of the Contributions Plan as well as Council's Parking Code.

2. PARKING ANALYSIS

Parking Analysis was the primary purpose of Stage 1 of the Nowra CBD Parking Review. The Existing Situation Report documents Stage 1 of this study. The following sections summarise the outcomes of the Existing Situation Report.

2.1 PARKING SURVEY ANALYSIS

2.1.1 Parking Surveys

The most recent parking demand surveys were undertaken by Joray Enterprises over a 3 to 4 month period from November 2012 to March 2013. The surveys were undertaken during peak parking conditions between 11:00am and 3:00pm for weekdays (Thursday and Friday) and weekends (Saturday).

The smaller off-street parking areas were surveyed once only across the following three days:

- Monday 03/12/2012;
- Thursday 06/12/2012; and
- Thursday 14/03/2013.

A large component of Stage 1 was to compare old and new survey data, undertake ground vetting to confirm / update the parking supply dataset, consolidate and re-format the parking data for ease-of-use and to assist in the analysis of the parking strategies in the Nowra CBD. Detailed analysis of the survey data is provided in the following sections.

2.1.2 Survey Analysis Outcomes

The key outcomes of the survey analysis in Stage 1 of the Nowra CBD Parking Review included:

- the parking surveys showed that whilst there are individual areas that are regularly close to fully occupied in peak parking periods, when the entire Nowra CBD study area is taken into consideration, the parking supply is adequate to cater for the demand;
- analysis of the key off-street parking areas identified that higher demand areas closer to the central area such as the Stewart Place Car Park were at capacity whilst some of the more outlying car parking areas such as the Bridge Road Car Park were underutilised;
- the results demonstrate that all of the unrestricted (no limit) off-street car parks (with the exception of the Bridge Road car park) are near capacity, when seasonally adjusted in accordance with AUSTROADS and RMS standards. This finding is mitigated only by the current availability of informal off street parking areas and the large stock of on street parking capacity in the study area;
- to account for parking demand seasonality, a methodology was adopted that uses daily traffic demands to determine 85th percentile peak parking demands for analysis in line with RMS and Austroads methodology;
- parking occupancy for an average of the Thursdays factored to 85th percentiles are summarised in Figure 2.1 to Figure 2.3:

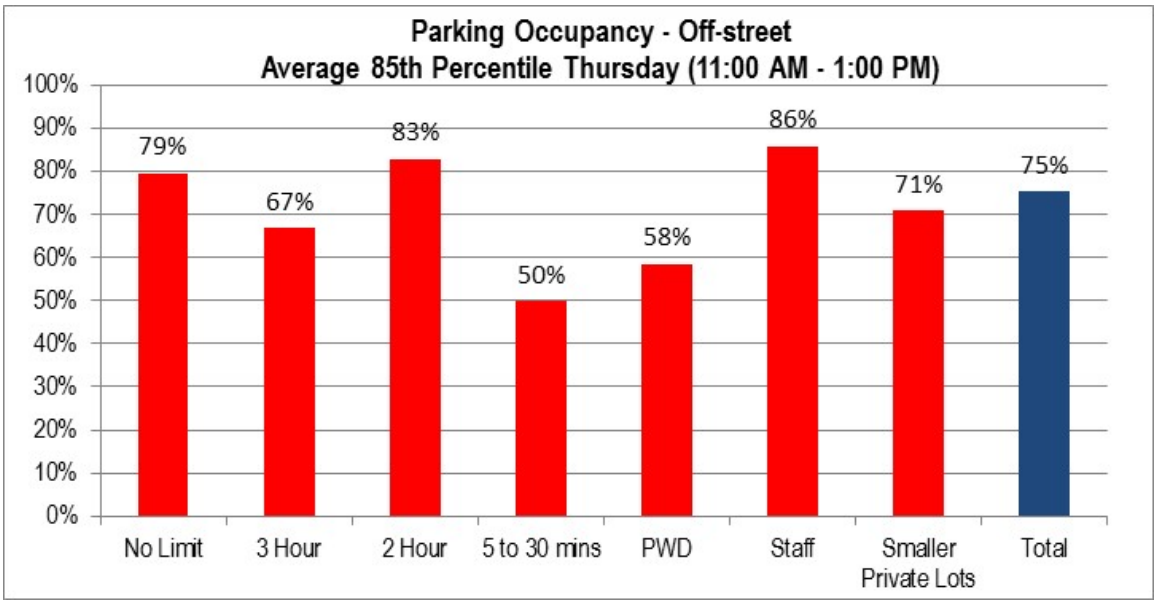


Figure 2.1: Average Thursday Percentile Off-street Parking Occupancy

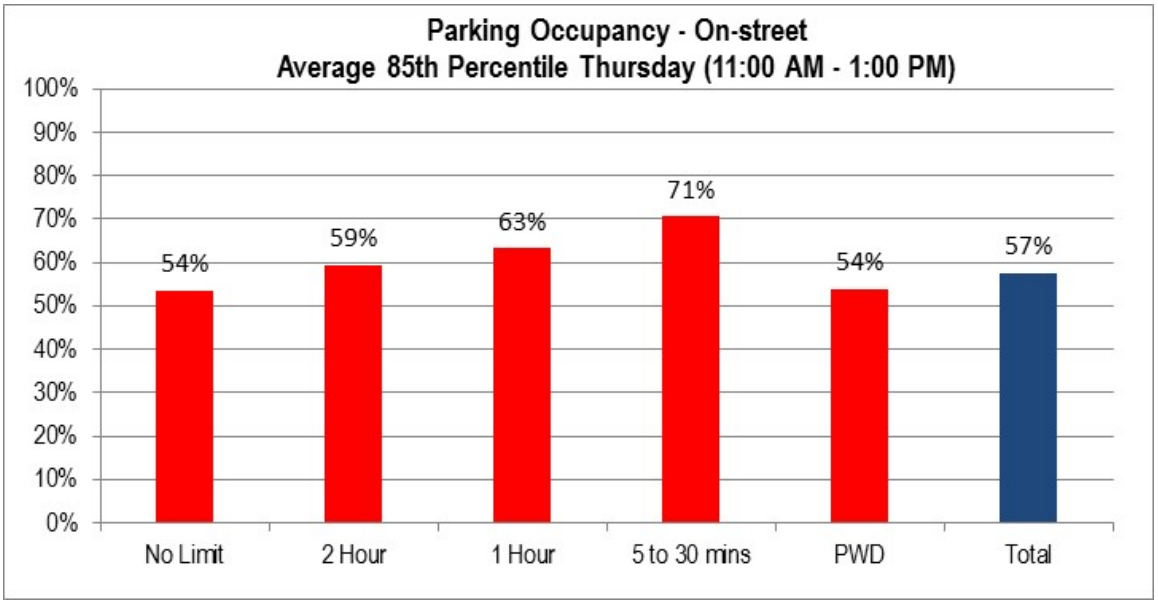


Figure 2.2: Average Thursday Percentile On-street Parking Occupancy

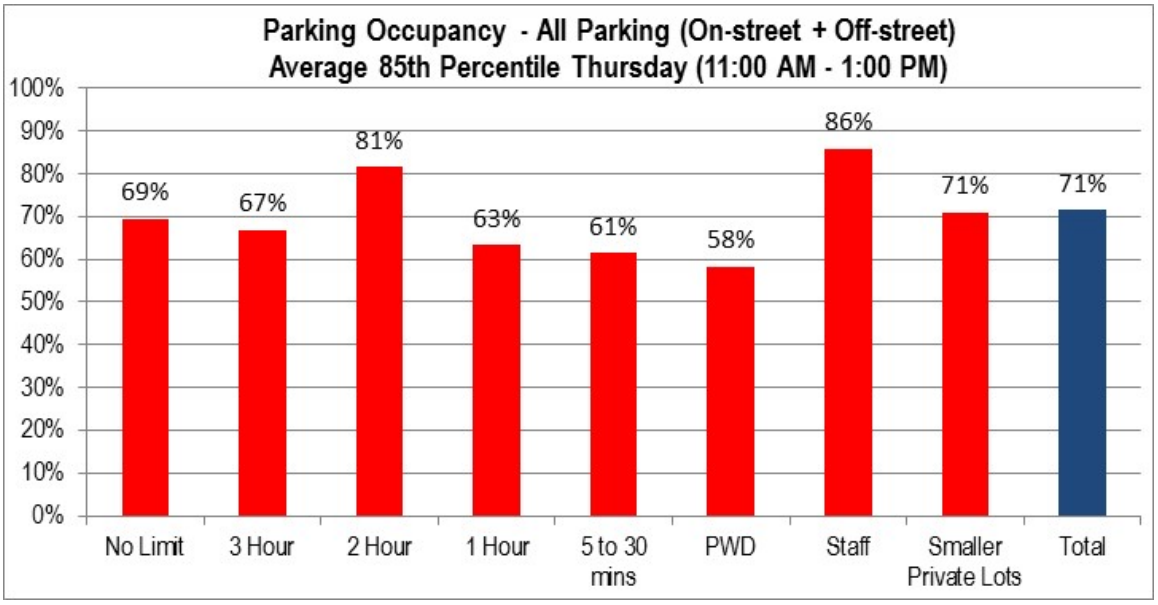


Figure 2.3: Average Thursday Percentile On-street and Off-street Parking Occupancy

- a significant number of smaller private off-street parking areas in the CBD are underutilised and this impacts overall CBD occupancy levels. To account for this, occupancy of these sites was set to capacity where public car parking was not freely available, and this has resulted in marginal increase in the reported occupancy CBD wide. If this was not done, overall occupancies in the CBD would have been falsely reported as lower. What is more important is the appreciation of how much informal parking demand and on street parking demand may be relocated to off street parking in future;
- many of smaller off-street parking areas have future development potential and current parking capacity could be reduced on many of these smaller lots in future which could increase latent demand;
- site observations generally confirmed that Council's off-street car parks were higher in occupancy the closer they were to the centre of the CBD;
- site observations also verified that a high number of commuters use vacant lots for all day parking, including many on the western side of the Princes Highway in/around the town centre and a very significant, well utilised vacant lot to the east of the Princes Highway (north of Junction Street on Stockland land);
- once vacant lots within the CBD are developed there is likely to be a more significant shortfall in all day parking which should to be factored into Council's strategic planning;
- these "additional parking demands" predominately associated with informal parking on vacant lots and illegal parking was added to the 85th percentile analysis resulting in an additional 5% on average total occupancy;
- if the additional demand was added directly to all No Limit parking areas (off-street public + off-street private + on-street) it would on average increase the No Limit occupancy by 13%;
- if the additional demand was added directly to Public Off-street No Limit parking areas, it would on average increase the occupancy by 26%, resulting in 100% occupancy of the Public Off-street No Limit parking areas including additional overflow of up to 84 vehicles;
- considering it unlikely that there is any practical capacity to absorb all displaced car parking into off-street private car parking, if the additional demand was consolidated into all no limit 'public' parking areas, (i.e. public off-street plus on-street), the overall no limit parking occupancy would be 84%, indicating at this stage there is still some capacity in peripheral on-street parking around the town centre (although this should not be relied on for planning purposes); and
- historical survey data shows that many parking areas have maintained a high level of occupancy, however historical comparisons are difficult to assess given the changes to parking areas, additional parking areas and differences in the scope of previous surveys, data collection periods and methods.

2.1.3 Stage 1 - Key Outcomes of the Survey Analysis

Although the survey and demand analysis indicates that there is 'some' spare capacity in some car parks to change parking restrictions to cater for under supply in others, the actual residual number of car parking spaces at each location would suggest this amount in each car park is generally insufficient to allow any major practical effective changes to be made.

Some planning attention needs to be drawn to the high occupancy levels, in particular the latent demand assessment (assessment of additional demand potential from displaced parking currently on vacant lands), particularly as it is expected that the redistribution of parking from these vacant lots (if/when these are developed) could be largely displaced to other off-street all day (unrestricted) parking areas.

Overall, parking in the Nowra CBD has become a high concern for locals. Although the data generally shows that some parking areas are at or approaching capacity, when considering the Nowra CBD as a whole, and based on the extent of survey and analysis (traffic and parking) undertaken for this review, overall seasonally adjusted parking occupancies for the Nowra CBD currently appear sufficient with respect of RMS and AUSTROADS guidelines (85th percentile demand target levels).

Whilst no seasonal adjustment has been undertaken with surveys predating 2012, it would also appear that parking occupancies have remained at generally consistent levels over the last 10-15 years, indicating that the supply has been keeping up with the demand. It is however, difficult to accurately compare all previous surveys with the latest data due to the randomness and variations in area scope of historical surveys.

Further detailed analysis and identification of opportunities have been undertaken in Stage 2 of the Nowra CBD Parking Review. The additional analysis breaks down the data to identify parking shortfalls, requirements and opportunities at a more concentrated level, and includes mapping (Section 4) and sector analysis (Section 5) to simplify the complexity of the survey/analysis.

3. PARKING INFRINGEMENT ANALYSIS

3.1 STAGE 1 - KEY OUTCOMES OF THE INFRINGEMENT ANALYSIS

Key outcomes of the Stage 1 Infringement Analysis included:

- the results for Nowra CBD show that the majority of parking offences are for parking longer than permitted but also a significant number of offences for disobeying no stopping/parking signs;
- the majority (66%) of the recorded parking offences in Nowra are located within Council's time restricted off-street car parks;
- the centralised and high demand areas of Junction Street, Berry Street and Kinghorne Street are the highest infringement areas for on-street parking;
- a comparison of parking infringements per capita for key areas within Shoalhaven LGA revealed that Nowra did not have significantly higher parking infringements rates than areas such as Huskisson or Milton;

Parking infringements for the Nowra CBD were compared to the Wollongong in Stage 1, however this was expanded as part of Stage 2 to include additional Council areas. This additional parking infringement analysis is provided in the following section.

3.2 STAGE 2 - ADDITIONAL PARKING INFRINGEMENT ANALYSIS

Parking infringements data was obtained from 1 July 2009 to 30 June 2014 for the following eight (8) Council areas which were identified based on their similar sizes or regional status:

- Shoalhaven City Council;
- Wollongong City Council;
- Wollondilly Shire Council;
- Wingecarribee Council;
- Shellharbour City Council;
- Kiama Municipal Council;
- Eurobodalla Shire Council; and
- Port Macquarie Hastings Council.

This expanded analysis compares the eight (8) Councils to determine if Nowra CBD and Shoalhaven LGA are consistent or different from the other Council areas.

3.2.1 Parking Infringements per Capita

To compare levels of infringement, a per capita methodology has been used for each area based on populations taken from the Australian Bureau of Statistics' (ABS) 2011 census data. Table 3.1 and corresponding Figure 3.1 make comparisons to each Council and the primary centre within each Council area.

Table 3.1: Parking Offences

Location	Type	Parking Offences (5 years)	Population	Parking Offences per Capita
Nowra	State Suburb	20,411	9,257	2.20
Shoalhaven	LGA	31,164	92,812	0.34
Wollongong	State Suburb	71,807	16,718	4.30
Wollongong	LGA	88,526	192,418	0.46
Picton	State Suburb	1,567	4,595	0.34
Wollondilly	LGA	2,188	43,259	0.05
Bowral	State Suburb	8,220	8,022	1.02
Wingecarribee	LGA	8,836	44,395	0.20
Shellharbour	State Suburb	460	3,327	0.14
Shellharbour	LGA	2,204	63,605	0.03
Kiama	State Suburb	1,117	6,272	0.18
Kiama	LGA	1,376	19,986	0.07
Batemans Bay	State Suburb	6,815	1,432	4.76
Eurobodalla	LGA	8,289	35,741	0.23
Port Macquarie	State Suburb	21,935	41,491	0.53
Port Macquarie Hastings	LGA	22,516	72,696	0.31

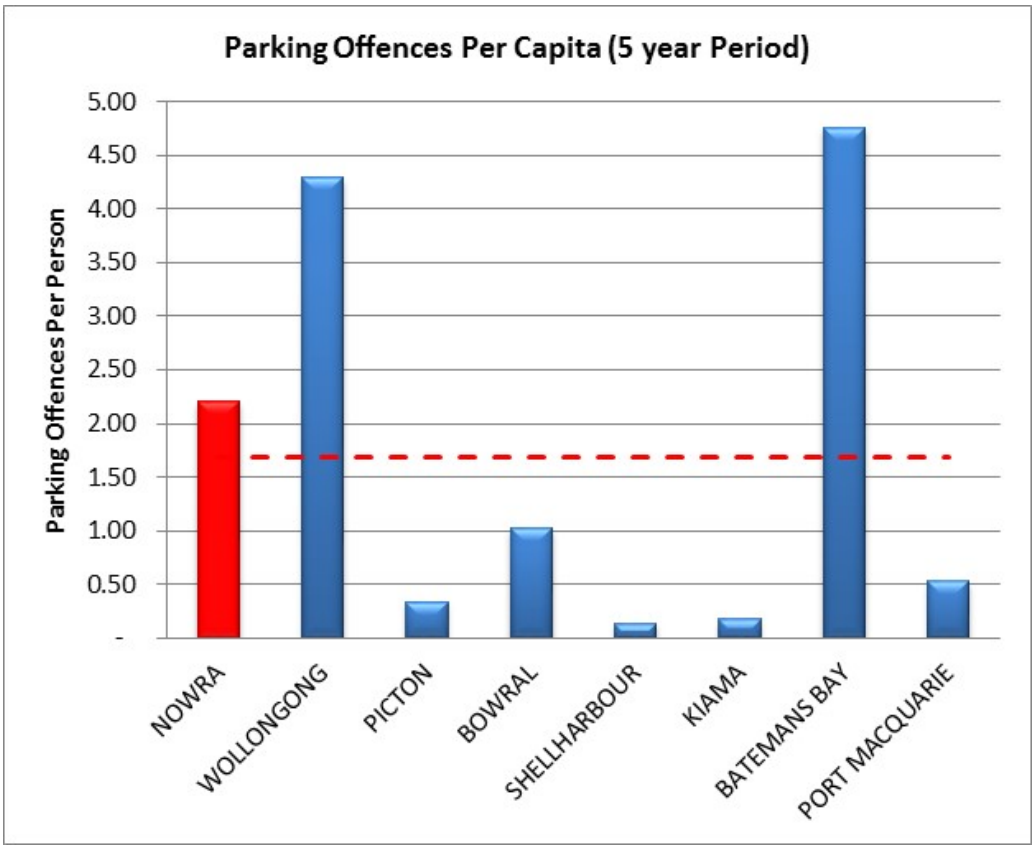


Figure 3.1: Parking Offences Per Capita (comparisons – by State Suburb)

Figure 3.2 compares the Parking Offences per Capita for Councils only.

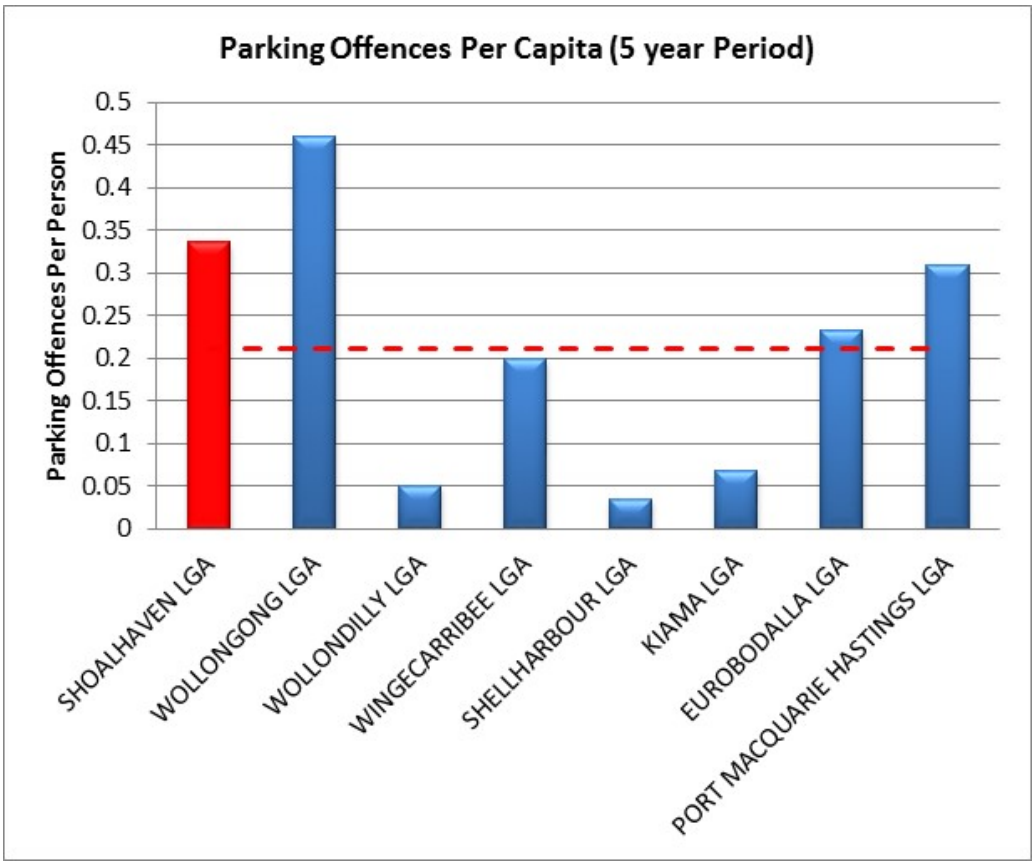


Figure 3.2: Council Parking Offences Per Capita (comparisons – by LGA)

The comparison between Shoalhaven and other Council areas show that the levels of infringements for the Shoalhaven LGA are typical for a region of that size. It should be noted that for the three highest parking offence Councils have the three highest populations in the same ranking order (i.e. Wollongong LGA, Shoalhaven LGA and Port Macquarie Hastings LGA). This pattern is not however consistent across all areas with Shellharbour having the 4th highest population but the lowest number of parking infringements per capita. This is likely to be because Shellharbour has a relatively low number of time restricted public parking spaces in its commercial centres with a high proportion of parking privately owned.

Comparisons between the primary centres vary significantly. This is a result of the varying size/extents of the State Suburbs and how significantly each area is influenced by tourism/visitors (Batemans Bay) and/or employment density (Wollongong CBD). Considering these factors, the levels of parking infringements for the Nowra CBD are typical for a major regional centre.

3.2.2 Parking Infringements per Parking Ranger

In addition to the above per capita comparisons, because ranger resources vary from Council to Council and this was expected to influence the number of infringements issued, the parking offences per full-time equivalent (FTE) parking ranger are also compared in Table 3.2, Figure 4.3 and Figure 4.4. The estimated number of parking rangers or hours spent undertaking parking enforcement was provided by each Council. An average for the number of full-time equivalent parking rangers was estimated across the five (5) year period.

Table 3.2: Parking Infringements per FTE Parking Ranger

Area	Parking Offences	FTE Parking Rangers	Offences Per Ranger	Offences Per Ranger Per Capita
Shoalhaven LGA	31,164	5	6,233	0.067
Wollongong LGA	88,526	8	11,066	0.058
Wollondilly LGA	2,188	1	2,188	0.051
Wingecarribee LGA	8,836	1	8,836	0.199
Shellharbour LGA	2,204	1	2,204	0.035
Kiama LGA	1,376	1	1,376	0.069
Eurobodalla LGA	8,289	1.5	5,526	0.155
Port Macquarie-Hastings LGA	22,516	2	11,258	0.155

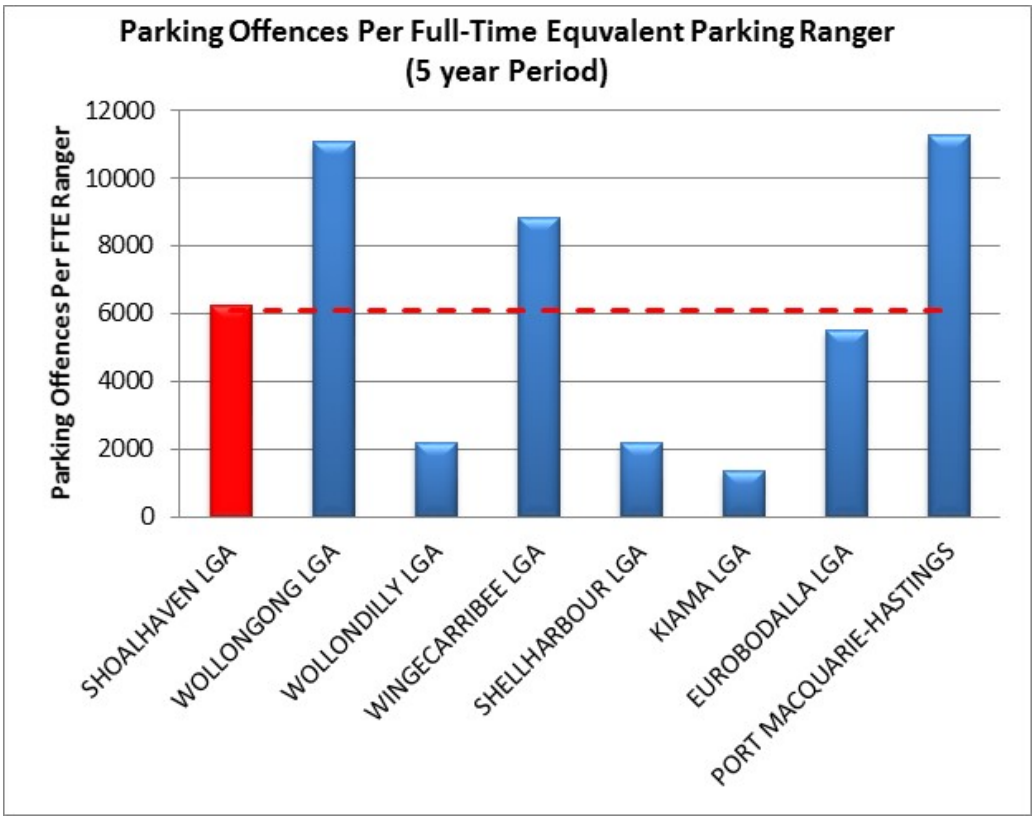


Figure 3.3: Parking Offences per FTE Parking Ranger

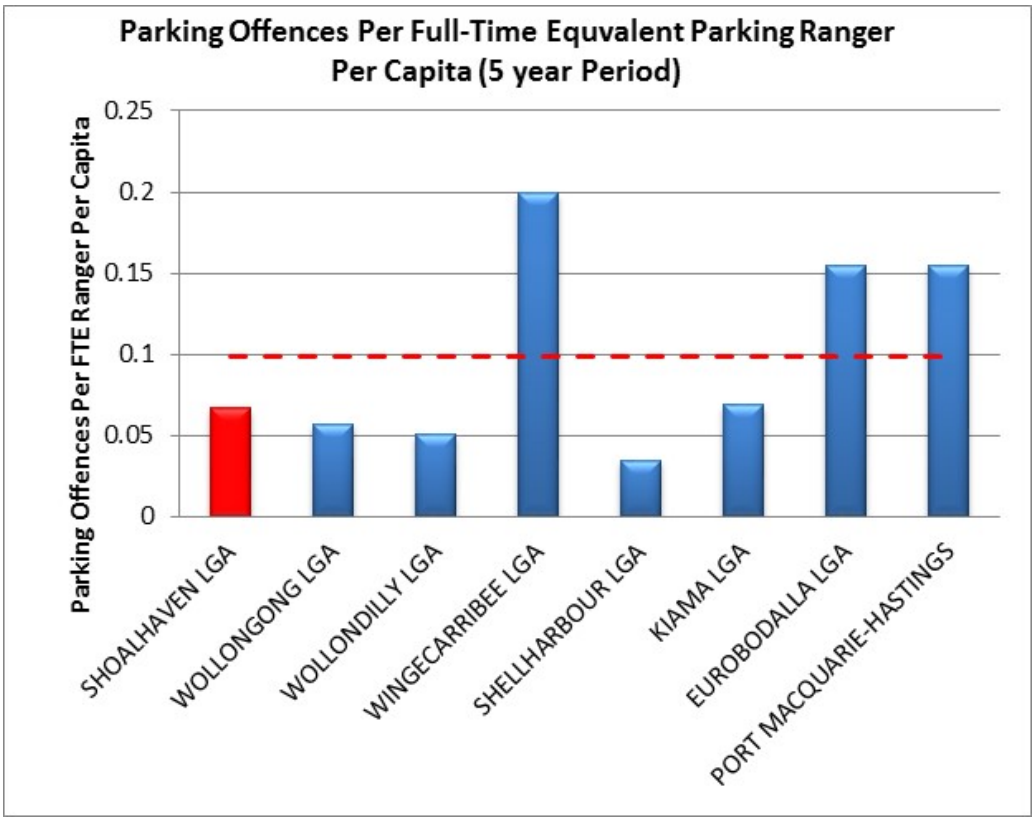


Figure 3.4: Parking Offences per FTE Parking Ranger per Capita

The offences per parking ranger show that the Shoalhaven LGA had lower parking infringement rates per parking ranger compared to Wollongong, Wingecarribee and Port Macquarie - Hastings. Overall the parking infringement rates per parking ranger were just above the average for all the Councils. The results of the "offences per ranger per capita" show that the Shoalhaven LGA is lower than average although in line with the median. The results of this comparison may however be influenced by the type of parking infrastructure within each LGA. For example, Wollongong CBD has approximately 150 pay parking ticket machines which are much easier to enforce than offences for overstaying limits in non-pay parking areas in the Nowra CBD. This may highlight the benefits of introducing metered parking and increasing the productivity and effectiveness of parking enforcement officers. Other factors that influence the results include the area of the LGA as well as the number of centres where parking is enforced.

4. PARKING SURVEY DATA MAPPING

4.1 OVERVIEW

Mapping of the parking data has been undertaken to indicate the locations of the surveyed parking areas and to identify highly occupied areas and trends associated with parking in the Nowra CBD. The mapping is based on off-street parking within land parcels throughout the Nowra CBD. On-street parking is shown by areas located for each mid-block section. The areas shown for the mapped parking are indicative only and are not detailed to represent individual parking bays/extents.

4.2 PARKING SUPPLY

Parking supplies or inventories are shown in Figure 4.1. For the mapping exercise, the parking supplies for the smaller private lots have been taken as the theoretical capacity for each lot. The theoretical capacity has been used for consistency with the occupancy figures, which use the theoretical capacity as opposed to the actual capacity which would result in all non-formal off-street parking areas shown as fully occupied.

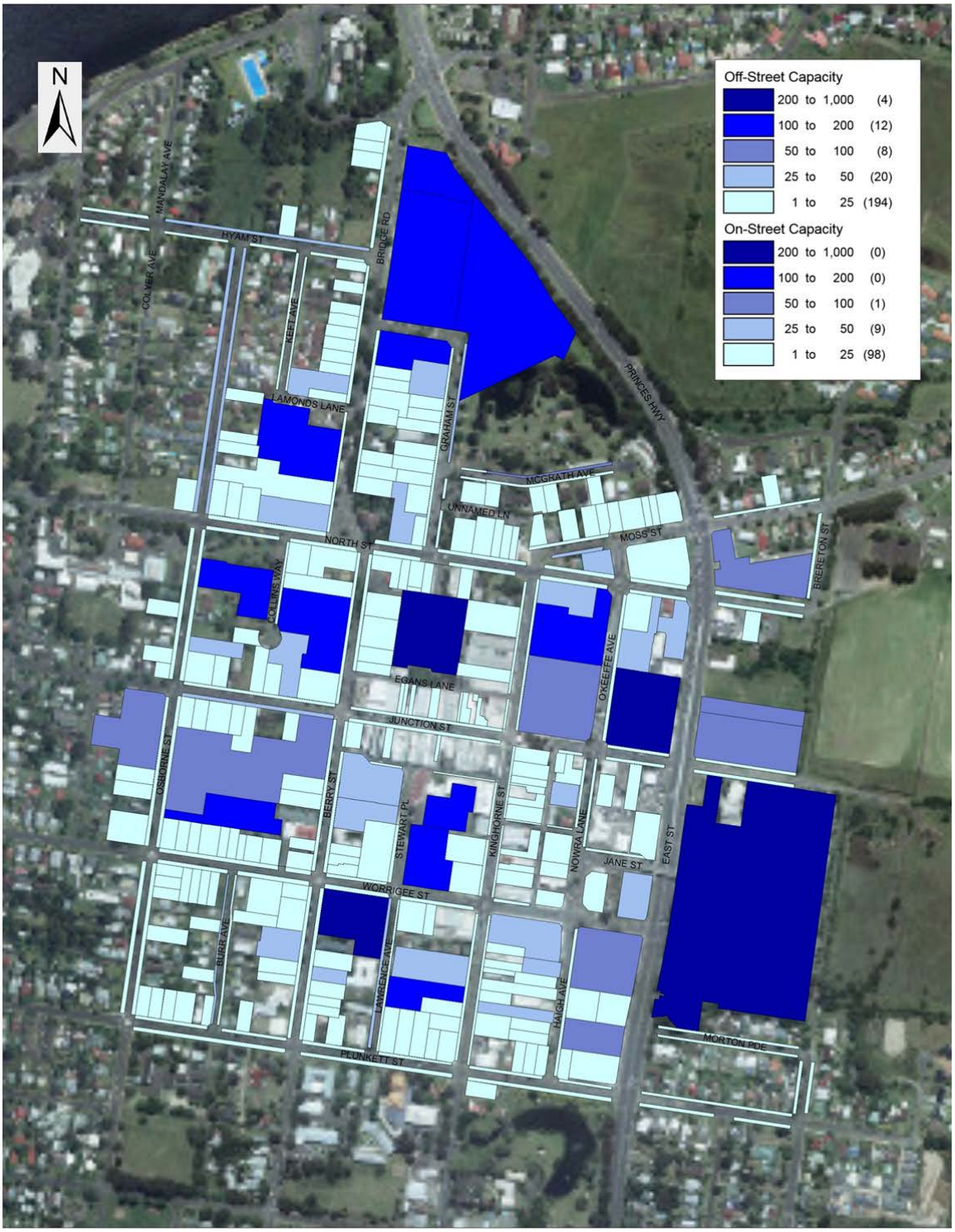


Figure 4.1: Nowra CBD Parking Supply Map

4.3 PARKING OCCUPANCY

Parking occupancies for average Thursday, Friday and Saturday parking demands are shown in Figure 4.2, Figure 4.3, and Figure 4.4. These figures illustrate the differences in daily utilisation patterns across the Nowra CBD. The Thursday and Fridays show similar patterns with all businesses open, while the Saturday shows much lower occupancies which are primarily concentrated to the retail core and Stockland. It should be noted for Austroads *Guide to Traffic Management – Part 11: Parking that* a parking system operates at optimum efficiency when the facility is being used in the range of 85% to 95% of capacity. This however depends of the restriction applied to the parking areas and 95% is considered optimum for long term whilst 85% is optimum for shorter term parking with a higher turnover.

Figure 4.2: Average Surveyed Thursday Parking Occupancies

Figure 4.3: Average Surveyed Friday Parking Occupancies

Figure 4.4: Average Surveyed Saturday Parking Occupancies

The parking occupancy based on an average 85th percentile Thursday is shown in Figure 4.5. As previously discussed, the 85th percentile peak parking demands account for parking demand seasonality using daily traffic demands for analysis in line with RMS and Austroads methodology.

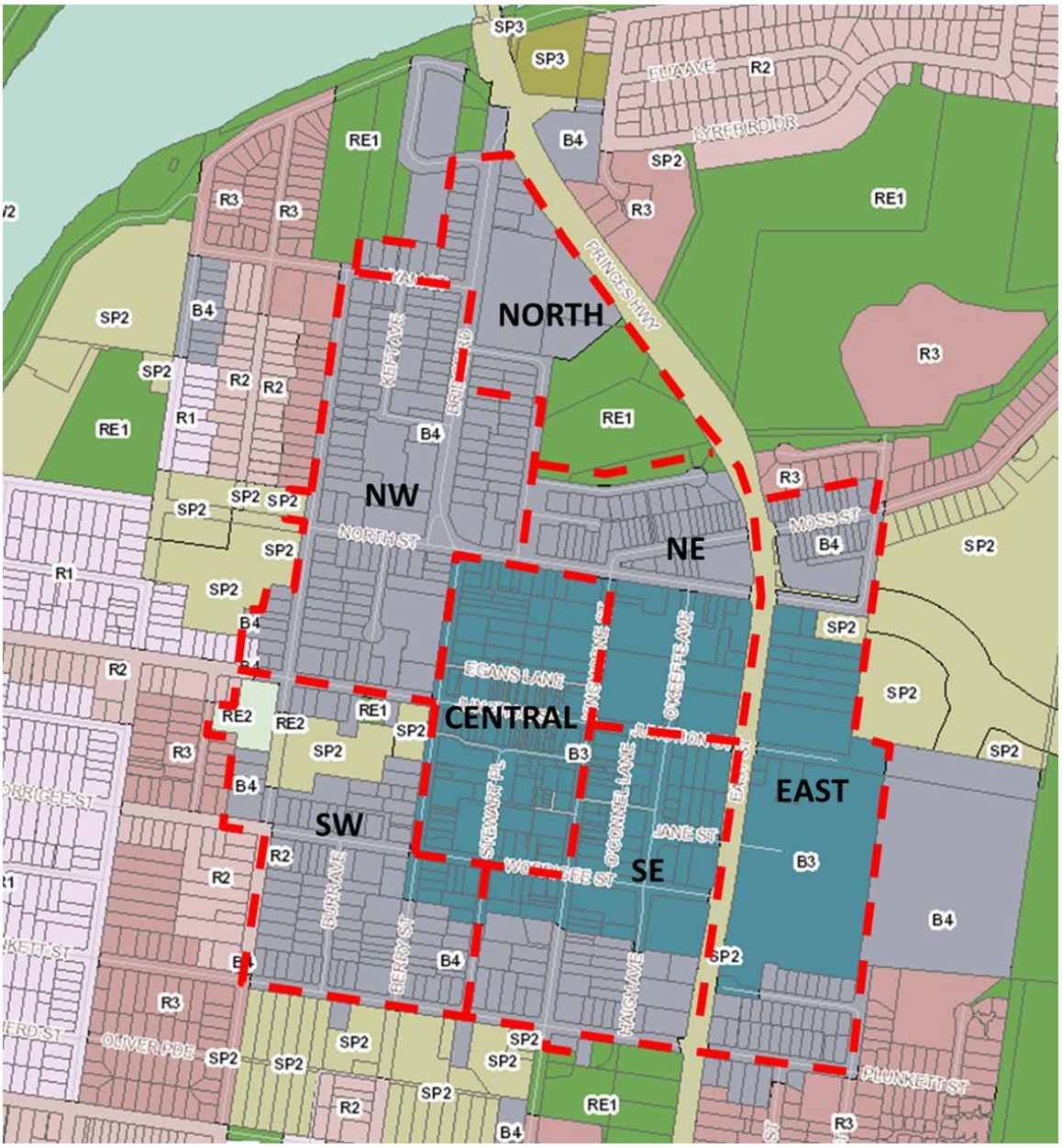
Figure 4.5: 85th Percentile Thursday Parking Occupancies

5. SECTOR ANALYSIS

5.1 OVERVIEW

The previous parking analysis (Stage 1) was based on individual parking areas as well as broader assessments for the entire surveyed area. To further determine requirements for the Nowra CBD, as part of Stage 2 the study area has been split into seven sectors as shown in Source (Base Layer): Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

Figure 5.1. Parking analysis of the sectors has been undertaken to determine deficiencies of each sector which can be used to determine the best location for future parking.



Source (Base Layer): Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

Figure 5.1: Sectors

5.2 SECTOR PARKING ANALYSIS

Analysis of the off-street parking for each sector is summarised in Figure 5.2 and Figure 5.3. Figure 5.2 does not include informal parking on vacant lots whilst Figure 5.3 includes informal parking demand added to the No Limit parking category.

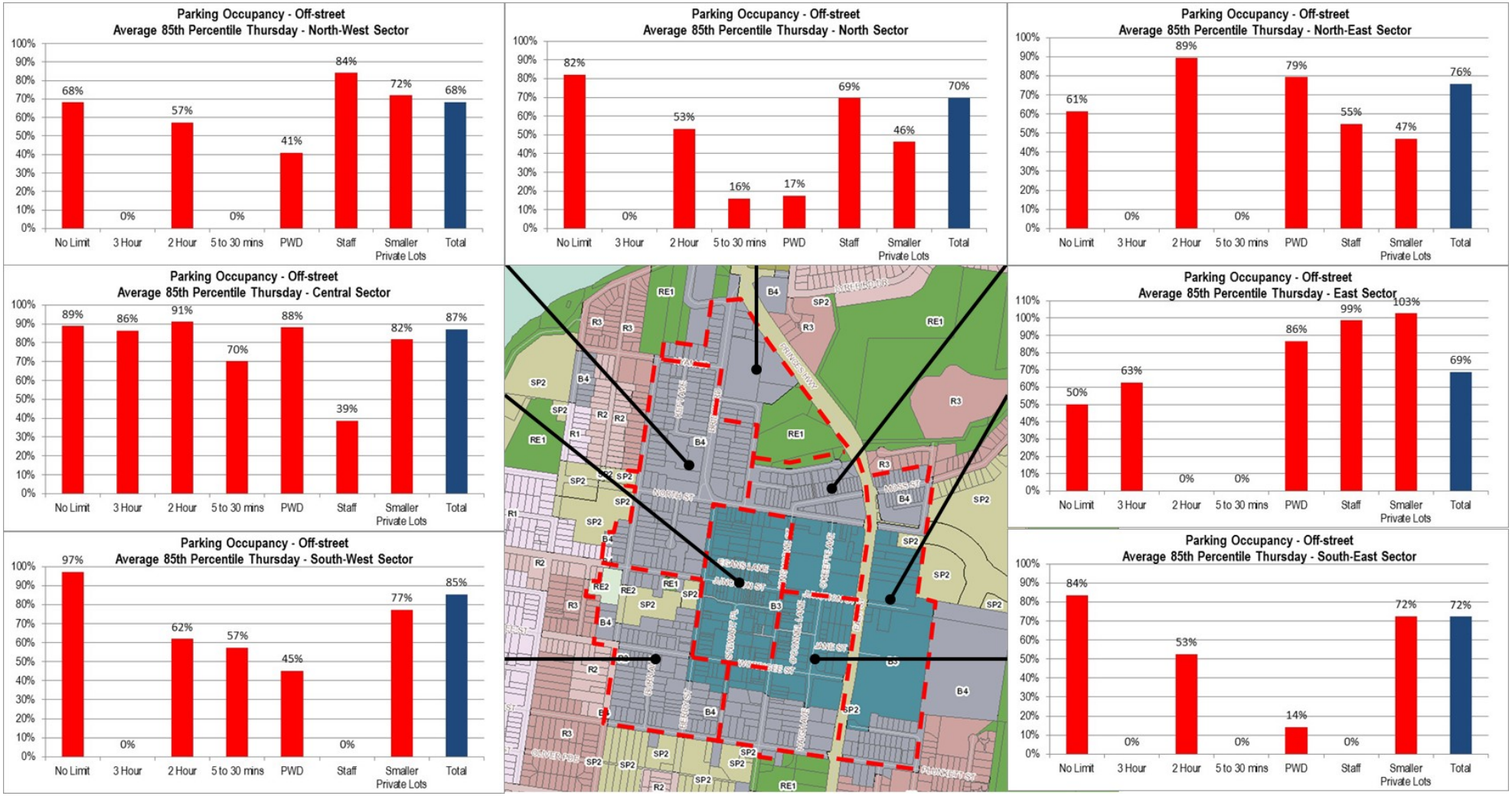


Figure 5.2: 85th Percentile Thursday Off-street Parking Sector Occupancy – Excluding Informal Parking Supply and Demand

**Informal Parking includes vacant lots and illegal parking*

Figure 5.3: 85th Percentile Thursday Off-street Parking Sector Occupancy – Including Informal Parking Demand

Figure 5.4: 85th Percentile Thursday On-street and Off-street Parking Sector Occupancy – Excluding Informal Parking Supply and Demand

**Informal Parking includes vacant lots and illegal parking*

Figure 5.5: 85th Percentile Thursday On-street and Off-street Parking Sector Occupancy – Including Informal Parking Demand

The parking occupancies shown in Figure 5.4 and Figure 5.5 are also summarised in the following sections for each sector.

5.2.1 Central Sector Analysis

Table 5.1 details the Average Thursday parking occupancies for the Central Sector.

Table 5.1: Central Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	13	15	89%	16	15	105%
3 Hour	132	153	86%	132	153	86%
2 Hour	358	393	91%	358	393	91%
1 Hour	70	85	82%	70	85	82%
5-30 minutes	61	76	80%	61	76	80%
PWD	14	15	92%	14	15	92%
Staff	3	8	39%	3	8	39%
Smaller Private Lots	96	118	82%	96	118	82%
Total	747	863	87%	750	863	87%

Note: Informal parking added to No Limit

The Central Sector has the highest total occupancy of all the sectors. 2-hour parking which has the largest supply in this sector is over 90% occupied. Parking for people with disabilities (PWD) is also highly occupied at 92%. All the other parking areas are occupied between 82% and 86% (with the exception of the small supply of staff parking). Although the sector is highly occupied, this is as expected for the central core and ideally the parking areas within the central core should be highly occupied and operating at the peak efficiency range of between 85% and 95% occupancy.

5.2.2 North-East Sector Analysis

Table 5.2 details the Average Thursday parking occupancies for the North-East Sector.

Table 5.2: North-East Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	125	198	63%	158	198	80%
3 Hour	0	0	-	0	0	-
2 Hour	419	477	88%	419	477	88%
1 Hour	27	48	56%	27	48	56%
5-30 minutes	0	0	-	0	0	-
PWD	9	14	65%	9	14	65%
Staff	9	16	55%	9	16	55%
Smaller Private Lots	84	179	47%	84	179	47%
Total	673	932	72%	706	932	76%

Note: Informal parking added to No Limit

Table 5.2 shows that with informal parking included the all-day parking demand increases by 14% but the supply is still considered to be sufficient. It does however show reasonably high utilisation of vacant lots in the north-east area, such as the vacant lot between North Street and Moss Street. The 2-hour limited

parking areas are 88% occupied which is the main supply in the north-east sector. The occupancies for the other parking types within the North-East sector are considered to be satisfactory.

5.2.3 North-West Sector Analysis

Table 5.3 details the Average Thursday parking occupancies for the North-West Sector.

Table 5.3: North-West Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	428	758	57%	473	758	62%
3 Hour	0	0	-	0	0	-
2 Hour	46	81	57%	46	81	57%
1 Hour	31	48	64%	31	48	64%
5-30 minutes	0	6	6%	0	6	6%
PWD	5	13	41%	5	13	41%
Staff	11	13	84%	11	13	84%
Smaller Private Lots	224	311	72%	224	311	72%
Total	746	1230	61%	790	1230	64%

Note: Informal parking added to No Limit

The low occupancies of the all-day parking areas shown in Table 5.3 are primarily as a result of the low occupancy of the Bridge Road car park and on-street parking. The occupancy of the Bridge Road car park is approximately 43% and on-street no limit parking is 39% whilst the Collins Way car park is 97% occupied. Although the Collins Way car park is almost fully occupied, the Bridge Road car park which is only 100m further from the central core is underutilised.

It should also be noted that the inclusion of informal parking has very little impact to the North-West sector given the low number of informally parked vehicles. The other parking areas in the North-West sector are generally considered to be satisfactory.

5.2.4 North Sector Analysis

Table 5.4 details the Average Thursday parking occupancies for the North Sector.

Table 5.4: North Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	180	228	79%	240	228	105%
3 Hour	0	0	-	0	0	-
2 Hour	23	47	50%	23	47	50%
1 Hour	0	7	0%	0	7	0%
5-30 minutes	3	17	16%	3	17	16%
PWD	2	12	17%	2	12	17%
Staff	50	72	69%	50	72	69%
Smaller Private Lots	9	20	46%	9	20	46%
Total	267	403	66%	328	403	81%

Note: Informal parking added to No Limit

In the North Sector with the informal parking added to the No Limit parking areas, the resulting demand exceeds supply. This is as a result of the 60 informally parked vehicles on the vacant lots to the north of the Entertainment Centre. This is a deficiency of the area and could be significantly exacerbated during an event at the Entertainment Centre. It should also be noted however that the underutilised Bridge Road car park is approximately 250m to 350m away from the Entertainment Centre and Council Administration Centre.

5.2.5 South-East Sector Analysis

Table 5.5 details the Average Thursday parking occupancies for the South-East Sector.

Table 5.5: South-East Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Survey	Capacity	Survey	Capacity
No Limit	171	226	76%	172	226	76%
3 Hour	0	0	-	0	0	-
2 Hour	45	90	50%	45	90	50%
1 Hour	77	123	63%	77	123	63%
5-30 minutes	0	0	-	0	0	-
PWD	2	8	28%	2	8	28%
Staff	0	0	-	0	0	-
Smaller Private Lots	387	535	72%	387	535	72%
Total	683	982	70%	683	982	70%

Note: Informal parking added to No Limit

The South-East sector is 50% to 75% occupancy for all limits (except PWD). The South-East sector is considered to have adequate parking supply for the demand.

5.2.6 East Sector Analysis

Table 5.6 details the Average Thursday parking occupancies for the East Sector.

Table 5.6: East Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	77	166	46%	203	166	122%
3 Hour	446	714	63%	446	714	63%
2 Hour	0	0	-	0	0	-
1 Hour	9	19	48%	9	19	48%
5-30 minutes	0	0	-	0	0	-
PWD	16	19	86%	16	19	86%
Staff	169	172	99%	169	172	99%
Smaller Private Lots	6	6	103%	6	6	103%
Total	724	1096	66%	850	1096	78%

Note: Informal parking added to No Limit

Table 5.6 shows that with informal parking included the all-day parking demands exceed supply. It should be noted that all informal parking has been assumed as all-day parking. This shows the high utilisation of vacant lots in East sector. These areas include the large vacant lots east of the Princes Highway off Junction Street. Parking overflow from the Stockland Shopping Centre during peak retail periods and overflow from the staff parking contribute to the amount of informal parking on these vacant lots. It is anticipated that a proportion of these informal parking demands are also attributed to demands for the South-East and North-East sectors. Regardless of this, the approximate additional demand of 126 vehicles using these informal parking areas will have a significant impact in the East sector should these lands be developed.

The occupancies for the other parking types within the East sector are satisfactory.

5.2.7 South-West Sector Analysis

Table 5.7 details the Average Thursday parking occupancies for the South-West Sector.

Table 5.7: South-West Sector Average 85th Percentile Thursday Parking Occupancy Analysis

Parking Type	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
No Limit	495	555	89%	497	555	90%
3 Hour	0	0	-	0	0	-
2 Hour	15	24	62%	15	24	62%
1 Hour	48	85	57%	48	85	57%
5-30 minutes	2	8	21%	2	8	21%
PWD	6	14	45%	6	14	45%
Staff	0	4	0%	0	4	0%
Smaller Private Lots	252	327	77%	252	327	77%
Total	818	1017	80%	821	1017	81%

Note: Informal parking added to No Limit

The South-West sector is highly occupied with All Day parking. In other parking areas the parking supply is generally adequate. However, as this sector has the second highest overall occupancy, additional parking could be provided to increase the supply.

5.3 SECTOR ANALYSIS SUMMARY

The sector analysis has highlighted that the proposed short-term parking provisions are likely to be provided in an around the CBD central area, whilst there is a growing demand for longer term parking in the South-West sector.

The future provisioning of the proposed Berry Street/ Worrigee Street multi-storey car park will assist with addressing the deficiencies in both of these areas.

6. PREVIOUS PLANNING AND PARKING STUDIES

Previous planning and parking studies for the Nowra CBD are summarised in the following sections. The previous Stage 1 report summarised the outcomes of the reports whilst this Stage 2 report provides comments on the strategies, opportunities and recommendations of these studies based on the outcomes of the (Stage 1) existing situation report and also includes further detailed analysis undertaken at Stage 2.

6.1 NOWRA CBD TRANSPORT STRATEGY (EPPELL OLSEN & PARTNERS, 2003)

The *Nowra CBD Transport Strategy* was undertaken in 2003 and was developed using a 2016 TRACKS model to identify future requirements for the Nowra CBD. The TRACKS Central Area Logistics Model (CALM) was also used to determine parking requirements based on actual supply/demand from a validated base model, and then incorporating high growth planning area forecasts to 2016. It is understood from a more recent assessment that the high growth forecasts incorporated into the 2003 study for 2016 were in fact much higher than originally anticipated. Shoalhaven City Council previously advised that based on current forecasts it is estimated that the original 2016 high growth forecasts from this 2003 study were more aligned to average off peak conditions in 2036 or 99th percentile conditions in 2026. Whilst it is now known these were high growth assumptions in the timeframes assumed, none the less the models revealed the conditions that will result when development growth eventually reaches those assumed levels.

The Nowra CBD Transport Strategy discusses the underutilisation of the Collins Way car park, however it still highlights the value of this parking area to cater for future demand with potential for multi-storey parking. The 2012/2013 surveys of the Collins Way car park revealed that it is now highly utilised with average occupancies on weekdays above 85%. The Bridge Road car park has also been constructed since the 2003 surveys and as a result the availability of all day parking in the north-west sector has increased significantly. The identification for the potential requirement for a multi-storey car park at Collins Way in 2003 has therefore since been superseded and the warrant for further additional all-day parking in the north-west sector has diminished, at this point in time.

The Nowra CBD Transport Strategy also identifies that multi-storey car parks could also be constructed at Worrigee Street, Lawrence Avenue, Egans Lane and Stewart Place car parks, when that high growth is eventually realised.

6.2 NOWRA CBD (EAST) ROAD NETWORK STRATEGY REVIEW (CARDNO EPPELL OLSEN, 2007)

The 2003 *Nowra CBD Transport Strategy* was reviewed in the *Nowra CBD (East) Road Network Strategy Review,* which focused on updating the strategy to accommodate the large-scale development proposals (at the time) east of the Princes Highway (LEDA and Stockland proposals).

The *Nowra CBD (East) Road Network Strategy Review* suggests that the previous *Nowra CBD Transport Strategy* may have underestimated or discounted the amount of peripheral on-street parking, parking in vacant lots, and the amount of commuters parking on the eastern side on the Princes Highway and crossing to the CBD (which will be directly impacted by the Stockland development north of Junction Street). As a result, the parking demand associated with these outlying areas and vacant lots was incorporated into the *Nowra CBD Parking Review*.

Overall the *Nowra CBD (East) Road Network Strategy Review* does not supersede the outcomes of the 2003 *Nowra CBD Transport Strategy* but generally provides additional recommendations relating to the road network to accommodate the expansion of development east of the Highway. Although it discusses potential shortcoming or overestimates in relation to parking numbers it does not specifically identify any additional parking recommendations.

6.3 NOWRA CBD PARKING ANALYSIS (MONARO CONSULTANTS, 2007)

The *Nowra CBD Parking Analysis* report prepared by Monaro Consulting reviewed the previous Eppell Olsen study (based on TRACKS modelling) and also undertook DCP18 calculations to analyse parking

adequacy in the Nowra CBD. This allowed the comparison of modelled supply/demand to be directly compared with Council's obligations under its parking code/DCP.

The *Nowra CBD Parking Analysis* recommended a target of 722 additional off-street parking by 2021 which included 582 spaces for what was described as the current DCP Demand deficit (in 2007) and 140 spaces for additional commercial development (noting also there is potentially an additional requirement of 468 spaces (1190 in total) to cater for increased demand, offset removal of on-street parking, and higher seasonal growth). Because Monaro consultants considered both the TRACKS modelling (from actual supply/demands) and DCP18 parking rates, it is still considered the most appropriate document upon which a parking strategy can be based, although it was considered appropriate to update the report to 2015 conditions.

This report is further discussed in Section 7 where the DCP parking analysis has been updated to coincide with the recent parking surveys and analysis, and review of parking changes (between 2007 and 2015).

6.4 DRAFT NOWRA CBD MASTER PLAN (ARUP, 2011)

The *Draft Nowra CBD Master Plan* is based more on planning principles rather than the technical aspects of previous transport and parking studies. As it is based on planning principles and not DCP requirements, modelling, or supply/demand based estimates, it provides a broader integrated planning approach for opportunities in the Nowra CBD. The Master Plan has however never been tested for technical merit, which was intended as Stage 2 of the Master Plan process (at the time of preparing this report, Stage 2 of the Master Plan has not been commenced and Council has since adopted the Master Plan).

In general the Draft Nowra Master Plan provides a good strategic planning approach to parking in the CBD. Some outcomes of the Car Parking Strategy from the *Draft Nowra CBD Master Plan* include:

- it is no longer feasible or desirable to continue to cater for ever growing traffic and parking demands;
- trips purposes and parking requirements need to be prioritised to cater for short term trips/parking closer to their destinations and longer term trips/parking slightly further away from their destination; and
- parking charges could be introduced at varying rates depending on location.

The study identifies the Collins Way car park and the Stewart Place car park as priority future multi-level parking locations, although this is not supported by any technical analysis or justification. It is not recommended that the Collins Way car park be considered as a priority multi-level car park at this point in time. Although the location could be considered for a future multi-storey car park, it is not considered to be a priority given the underutilised Bridge Road car park, which also provides all day parking, is a similar distance from the CBD. As all day parking demands increase or supplies closer to the core are reduced, it is anticipated that the overflow of all day parking demands for the Collins Way car park will be consolidated within the Bridge Road car park. Gradually converting all day parking to time restricted parking in areas close to the CBD core will assist in balancing parking occupancies. Once parking in the northern sectors approach full occupancy, a multi-level car park could be considered at the Collins Way location. However, this is not likely in the short-medium term based on the current planning forecasts assumed in this review (adopted, consistent with Monaro consultant's 2007 report).

It is agreed with the recommendation of the outcomes of the *Draft Nowra CBD Master Plan* that multi-storey parking should be constructed in the long term to reduce any more land dedicated to parking. Large multi-storey parking areas should be provided in the periphery to limit traffic impacts. If provided around the periphery of the CBD core (such as the proposed Berry/Worrigee car park) this presents ideal locations to manage/balance the short and long term parking demands within the one structure. The proposed Berry/Worrigee Street car park is ideally located for this type of dual application of short term parking (bottom levels) and longer term parking (top levels) and this split can be managed over time to suit current conditions.

The proposed CBD Loop Road in terms of parking does not have a significant impact. The majority of parking is located at least a block from the CBD Loop Road. If the proposed CBD Loop Road is adopted it should direct vehicles to/from major parking areas with appropriate signage depending on locations

throughout the network. Where possible connections between the CBD Loop Road and parking facilities should be improved taking into consideration the proposed road hierarchy.

The primary purpose of the link road is to remove through traffic from the CBD which is supported. From a parking view point this will allow Council to retain amenity and on street parking convenience in the CBD core which (from the Stage 1 report) is vitally important to supress future demand for more off street parking stock by promoting parking in the vicinity of the link road.

Whilst it is recognised that the link road function itself will lead to some on street losses along Osborne Street, this is more remote from the CBD core and accordingly parking demands are generally lower than the CBD core in this location. Under the current policy businesses along the Osborne Street corridor are also required to provide all parking on site which lessens the need for on street parking in those areas. As parking demands across the CBD continue to grow, it is inevitable that parking will be continually displaced to the outer fringe CBD areas around the link road. Whilst this is not desirable, it is inevitable and should be accepted as it mitigates any displacement impacts to the larger CBD parking areas. In essence, the on-street outer fringe parking areas provide a false sense of parking capacity for the CBD, when reality it is simply the continued growth of parking demand spilling over to the outer fringe areas as the CBD continues to grow and evolve.

Multi-storey parking facilities are further discussed in Section 9.

7. PARKING CODE REVIEW

7.1 DCP ANALYSIS UPDATE

The Shoalhaven City Council's Car Parking Code (Development Control Plan No. 18) was previously reviewed in 2007 by Monaro Consultants. Based on the updated inventory from the surveys and field vetting undertaken for this study, the Monaro Consultants analysis has been reviewed and updated to 2015 conditions. More specifically this review has assessed actual parking supply/demand versus the DCP parking requirements (based on Council's adopted parking rates). The purpose of reviewing this is to determine (CBD wide) whether there are parking surpluses or deficiencies and this will allow informed discussion on the appropriateness of the parking rates defined in Council's Parking Code (DCP18).

It is important to note that the purpose of the parking supply / demand analysis is to assist with continually benchmarking the performance of the parking in the CBD. The result of the parking performance does not mean that a 'knee jerk' reaction is required to provide immediate amendments to a Parking Code or introduction of a Parking Management Strategy or Infrastructure Solution. A pendulum effect would like result providing little confidence to the development industry and also introduces development application equity issues (i.e. comparative applications over a short period of time where differing rules applied).

The parking performance provides a risk profile of what risk Council has in terms of being able to meet the future parking demands with the forecast parking supply. This section provides a review of previous DCP Demand deficit assessments, updates the values to 2015 figures and then considers the future year risk profile in recommending whether any 'fine tuning' to the current Parking Code rates are required.

7.1.1 2007 Nowra CBD Parking Analysis

A summary of the data and outcomes of the DCP analysis from the Nowra CBD Parking Analysis (Monaro Consulting, 2007) are shown in Table 7.1.

Table 7.1: Nowra CBD Retail Core: Retail & Office Floorspace

Street Block	General Retail m2	S'markets m2	Retail Storage m2	Offices Ground m2	Offices Upper m2
Block A: North/Kinghorne/Junction/Berry	9,410	2,187	2,752	1,074	1,623
Block B: North/O'Keefe/Junction/Kinghorne	2,084	4,928	0	0	410
Block C: Junction/Nowra/Worrigee/Kinghorne	6,843	0	366	0	1,421
Block D: Junction/Kinghorne/Worrigee/Berry	12,189	0	1,545	2,802	3,392
Total	30,526	7,115	4,662	3,876	6,846

Source: Table 3.2: Nowra CBD Retail Core: Retail & Office Floorspace, Nowra CBD Parking Analysis p.19, Monaro Consultants, 2007.

Table 7.2: Nowra CBD West Retail Core Periphery: Retail & Office Floorspace

Street Block	General Retail m2	S'markets m2	Retail Storage m2	Offices Ground m2	Offices Upper m2
Block E: McGrath/Moss/North/Graham	2,001	0	0	1,039	1,225
Block F: Moss/Princes/North	374	0	0	146	0
Block G: North/Princes/Junction/O'Keefe	3,475	0	0	0	2,301
Block H: Junction/Princes/Worrigee/Nowra	2,235	0	0	268	0
Block I: Worrigee/Princes/Plunkett/Haigh	2,245	1,361	0	0	0
Block J: Worrigee/Haigh/Plunkett/Kinghorne	2,757	0	0	537	0
Block K: Worrigee/Kinghorne/Plunkett/Lawrence	3,608	0	0	1,701	0
Block L:Worrigee/Lawrence/Plunkett/Berry	213	0	0	1,164	0
Block M: Worrigee/Berry/Plunkett/Burr	1,997	0	0	0	2,329
Block N: Worrigee/Burr/Plunkett/Osborne	0	0	0	1,615	0
Block O: Junction/Berry/Worrigee/Osborne	1,791	0	0	375	2,191
Block P: Berry/Worrigee	0	0	0	218	0
Block Q: Berry/Junction	111	0	0	415	0
Block R: North/Berry/Junction/Osborne	2,182	0	0	2,237	762
Block S: Lamonds/Bridge/North/Osborne	3,105	0	0	238	0
Block T: Graham/North/Bridge	2,269	0	0	2,398	463
Block U: Hyam/Bridge/Lamonds/Keft	0	0	0	1,062	0
Total	28,362	1,361	0	13,412	9,272

Source: Nowra CBD West Retail Core Periphery: Retail & Office Floorspace, Nowra CBD Parking Analysis p.19, Monaro Consultants, 2007.

Table 7.3: Existing Retail & Office Parking Demand in Nowra CBD West

Indicator	Parking for Retail	Parking for S'markets	Parking for Retail Storage	Parking for Offices Ground	Parking for Offices Upper	Total Parking Demand
Standard:	1: 24m2	1: 19m2	1: 50m2	1: 24m2	1: 40m2	
CBD Core:	1,272	374	93	162	171	2,072
CBD Balance:	1,182	72	0	559	232	2,044
CBD Total:	2,454	446	93	720	403	4,116

ble 3.8: Existing Retail & Office Parking Demand in Nowra CBD West, Nowra CBD Parking Analysis p.19, Monaro Consultants, 2007.

Table 7.4: Existing Parking Supply: CBD West Total

Street Block	Off-Street Public	Off-Street Private	On-Street Not Included	Total
CBD West Retail Core:	774	304	165	1,243
CBD West Balance:	975	1,481	1009	3,465
Total CBD West:	1,749	1,785	1174	4,708

Source: Table 3.11: Existing Parking Supply: CBD West Total, Nowra CBD Parking Analysis p.19, Monaro Consultants, 2007.

Table 7.5: Current CBD West Parking Supply & Demand Situation

Location	Off Street Parking Supply (Survey)	Off Street Parking Demand (DCP18)	Balance	Comment
CBD Core Area	1,078	2,072	-994	Deficit
CBD West Balance	2,456	2,044	412	Surplus
Total CBD West	3,534	4,116	-582	Deficit

Source: Table 3.12: Current CBD West Parking Supply & Demand Situation, Nowra CBD Parking Analysis p.19, Monaro Consultants, 2007.

The Monaro Consultants report also excluded the Nowra CBD East which is summarised in Table 7.6 and Table 7.7. The CBD East was considered separately as it was assumed that it could be treated as a self-contained area. Further, given there is surplus overflow parking currently to the east of the Highway on Stockland land, and given there is current parking activity on the eastern side of the Highway (employees from CBD West), it was considered that by including the parking supply east of the Highway would not be appropriate as it would "mask" actual demand and the deficiency in parking conditions to the west of the Highway.

Table 7.6: Existing Commercial Floorspace & Parking Demand in Nowra CBD East

Location	General Retail Floorspace m2	Supermarket Floorspace m2	General Retail Parking Demand	Supermarket Parking Demand	Total Retail Parking Demand
Stockland Nowra	11,810	4,230	492	223	715
CBD East Balance	1,120	0	47	0	47
CBD East Total	12,930	4,230	539	223	762

Source: Shoalhaven City Council 2005

Table 7.7: Existing Parking Supply in Nowra CBD East

Location	Off-Street Public Parking	Off-Street Private Parking	Off-Street Vacant Lot Parking	On-Street Parking	Total Parking Supply
Stockland Nowra	828	0	0	0	828
CBD East Balance	420	16	0	38	472
CBD East Total	1,248	16	0	38	1,302

Source: Shoalhaven City Council 2005

The Monaro report considers the Nowra CBD East and Nowra CBD West separately, however it notes that the informal parking on vacant lots in the east are actually used as overflow from the west. It should also be noted that the informal parking in the east was included in the supply. Therefore a summary of the Monaro DCP Analysis including the CBD Core, East and West areas are provided in Table 7.8.

Table 7.8: Nowra CBD 2007 DCP Analysis Summary (Off-Street parking comparison only)

Location	Off Street Parking Supply (Survey)	Off Street Parking Demand (DCP18)	Balance	Comment
CBD Core Area	1,078	2,072	-994	Deficit
CBD West Balance	2,456	2,044	412	Surplus
CBD East Total	1,264	762	502	Surplus
Total CBD	4,798	4,878	-80	Deficit

The DCP Analysis when taking into account the entire CBD resulted in a DCP Demand deficit of 80 parking bays. If the DCP Analysis excludes the area east of the Princes Highway then the DCP Demand deficit would be 582 parking bays. It should again be noted that the parking supply for the CBD East includes informal parking and the surplus for the CBD East would actually be much lower and the overall deficiency higher. It is obvious that informal car parks are currently playing an important role, however they are not sustainable and can't be relied on for planning of the parking provisions in the CBD.

It is acknowledged that including CBD East in the 'whole of CBD' stats reduces the overall CBD DCP Demand deficit and masks actual conditions experienced on the western side of the Highway. For this reason it is considered that 582 was the appropriate DCP Demand deficit figure for the CBD west, and this analysis has been updated on the same basis for this study in 2015.

7.1.2 DCP18 Demand & Supply Situation (Updated to 2015)

The DCP Analysis has been updated with the parking supply changes from the 2007 surveys to the 2015 surveys. The parking demands determined from the floor spaces have however been retained from the 2007 analysis, and only adjusted where changes have been made (between 2007 and 2015). The parking supply for the 2015 DCP analysis includes all formal parking areas and excludes vacant lots (informal) parking areas or any other types of parking not associated with DCP requirements (i.e. on-street parking). The analysis has also been separated into sectors to further identify surpluses/deficiencies for each area.

It should be noted that the North sector was not included in the previous 2007 assessment and therefore has been excluded from this analysis, to allow direct comparison and updating to 2015. Similar to the treatment of CBD East in the 2007 analysis, the sector to the north was also removed due to the current excess parking supply due to primarily informal parking areas currently available. Similar to CBD East, by

removing the northern precinct has prevented the effect of reducing CBD wide occupancies and falsely portraying better conditions than are actually experienced for the broader Nowra CBD).

Table 7.9: Nowra CBD DCP Demand Summary (Updated 2015) – Off-Street Parking Only

Area	Parking for Retail	Parking for S'markets	Parking for Retail Storage	Parking for Office Ground	Parking for Office Upper	Total Parking Demand
	1: 24m²	1: 19m²	1: 50m²	1: 24m²	1: 40m²	
Central	900	115	86	162	125	1,388
North-West	319	0	0	265	31	615
North-East	331	259	0	49	98	738
South-East	737	72	7	104	36	956
South-West	167	0	0	141	113	420
East	539	223	0	0	0	761
CBD Total	2,992	669	93	720	403	4,878

Table 7.10: Nowra CBD 2015 DCP Analysis Summary – Off-Street Parking Only

Location	Parking Supply			DCP18 Demand	Balance	Comment
	Larger Off-street Areas	Smaller Off-street Areas	All Off-street Areas			
Central	610	118	728	1,388	-660	DCP Deficit
North-West	562	311	873	615	258	Surplus
North-East	494	179	673	738	-65	DCP Deficit
South-East	245	535	780	956	-176	DCP Deficit
South-West	407	327	734	420	314	Surplus
East	975	6	981	761	220	Surplus
CBD Total	3,293	1,476	4,769	4,878	-109	DCP Deficit

The 2015 DCP analysis results in a theoretical DCP Demand deficit for off-street parking of 109 parking bays for the CBD in total (excluding the North sector). This excludes consideration of the existing on-street parking provisions. The North sector was also excluded as explained above. As the North Sector is required to provide all parking on site under the Contributions Plan, its inclusion is unlikely to have influenced the calculations for the broader Nowra CBD.

The highest DCP Demand deficit is for the Central sector at 660 parking bays. This deficiency is typical for a core area where the higher densities of retail and commercial development cannot provide the required supply parking within the same immediate area. Parking for core areas are typically just outside or in the periphery. Historically these older town centre developments may have been developed at a time when parking was not considered to be an issue and may have had lower requirements. This can also skew the results of the DCP analysis as these developments are being assessed under the current DCP parking code. Refer also discussion on parking "credits" below.

A comparison between the 2007 analysis and the updated 2015 DCP analysis is provided in Table 7.11.

Table 7.11: Nowra CBD DCP Analysis Comparison (Off-Street Parking Only)

Location	2007 DCP Analysis				2015 DCP Analysis			
	Supply	Demand	Balance	Comment	Supply	Demand	Balance	Comment
Central, NW, NE, SE, SW	3,534	4,116	-582	DCP Deficit	3,788	4,116	-328	DCP Deficit
East	1,264	762	502	Surplus	981	762	220	Surplus
Total CBD	4,798	4,878	-80	DCP Deficit	4,769	4,878	-109	DCP Deficit

It should be noted from Table 7.11 that the East sector had a higher supply in 2007 than in 2015. This is due to the 2007 analysis including the informal demand within the parking supply. If this same informal supply was added to the 2015 analysis it would result in an overall surplus of 312.

The reduction in the theoretical DCP Demand deficit for the sector west of the Princes Highway is likely to be attributed to some increase in supply. The extent of the parking surveys which determined the supplies may have also contributed to this difference and therefore it is difficult to make a true comparison. Other than very minor changes to parking restrictions throughout the CBD (from 2007 to 2015), the following additional parking supply has been constructed by Council during that period:

- 193 new car parking spaces at the Bridge Road (former gas works site) completed in 2008. 58 of these spaces were considered as addressing the development consent for the Shoalhaven Entertainment Centre (the 58 space shortfall was required to be provided within 500m of the Entertainment Centre), however all 193 spaces are captured in the Contributions Plan as public car parking on the Bridge Road (former gas works) site, and as there is no formal reservation of the parking spaces, all 193 spaces have been captured in the 2015 supply;
- 14 new car parking spaces were constructed in Graham Street in 2013 (45 degree angled parking created on eastern side, converted from previous parallel parking);
- 21 new car parking spaces were constructed in McGrath Avenue in 2013 (90 degree angled parking created on the northern side, along the boundary of Harry Sawkins Park, to create continuous 90 degree angled parking, previously a combination of angled and parallel parking);
- 5 new car parking spaces were constructed in Moss Street in 2013 (45 degree angled parking created on the southern side, extending from the existing 45 degree angled car parking); and
- 5 new car parking spaces were constructed in the Berry Street (school of Arts) car park in 2014 (90 degree angled unrestricted parking created, extending from the existing all day angled car parking in the western side of the car park adjacent to the Collins Street access).

7.1.3 Parking Credits (and Development Shortfalls 2007>2015)

Council's current DCP allow for developers to apply parking credits for older buildings with development approval. This provides developers with the ability to argue that the building operates under an existing planning approval. In some cases development approval are listed from many years back when parking was not even required (i.e. many pubs where the centre-piece of the centre and relied on walk-up traffic).

This study has considered this matter in the quantification of the CBD parking DCP Demand deficit. This further re-iterates the need to retain existing parking rates within the Parking Code.

As previously mentioned the above analysis is based on land-use planning floor areas from 2007 to determine the parking demands. The increase in floor areas between 2007 and 2015 has been taken into consideration as part of the 2015 update. A number of developments have been approved in that period and have largely provided their own parking on site, with exception of a small number of developments that have paid contributions for some parking shortfalls (that was not able to be provided on site and accepted by Council in accordance with its adopted Contributions Plan), as follows:

- DA05/2381 (Lot 98 DP 1101464, 5 Nowra Lane, Nowra) – Approved in 2005 but construction started in April 2007 – 1 space shortfall;

- DA06/1234 (Lot 2 DP 552142, 57 Graham Street, Nowra) – Approved in 2006 but started construction in 2008 – 11.6 spaces shortfall;
- DA08/1353 (Lot 3 DP 591373, 11 Haigh Avenue, Nowra) – 1.5 spaces shortfall;
- DA08/2127 (Lot 120 DP 1129719, 5 Berry Street, Nowra) – 2 spaces shortfall;
- DA08/2540 (Lot 1 DP 884212, 72 Junction Street, Nowra) – 1 space shortfall;
- DA13/1549 (Lot 1 DP 1204604, 73 North Street, Nowra) – 2 spaces shortfall; and
- In addition to the above, the Entertainment Centre was required to provide 58 spaces within a 500m walking distance of the site, and this has been included as part of the 193 spaces provided at the Bridge Road (former gas works site) car park, none the less as the Entertainment Centre is included in Area 2 of the contributions plan, the 58 space shortfall associated with the Entertainment Centre approval has been appropriately added to the overall CBD development parking shortfalls (2007>2015)

In addition to the assessed current theoretical DCP Demand deficit, the number of additional parking bays required to be provided (based on assessed parking shortfalls and including where development consents have required contributions to be paid for since 2007) is 77. Accordingly, in addition to the above calculated theoretical DCP Demand deficit of 109, the total theoretical DCP Demand deficit (including the 77) is 186 parking bays. It should also be reiterated that the 1,377 on-street parking bays have not been taken into account in this DCP analysis, as the DCP and Contributions Plan objectives are clearly stated as being based on providing satisfactory off street car parking consistent with RMS and AUSTROADS guidelines.

To aid the review of parking credits, an assessment was undertaken by Council planning staff summarising floor area and parking demands (calculated from the DCP rates) just in the CBD core area (core Junction Street and Kinghorne Street buildings). In particular these buildings were chosen because they fall within Area 1 of the Shoalhaven Contributions Plan for Nowra CBD parking, they are centrally located, in the older part of town, provide very limited parking, and most of this retail and commercial floor area generates parking demand in public car parks around town. Historically, and because of the age of these buildings, and the credits system Council applies (where by developments only provide parking under the DCP for any new floor area provided), this can help to explain why Monaro consultants originally calculated a theoretical DCP Demand deficit in the order of 582 spaces. From Council's data it is estimated that just these select few central buildings alone generate demand for some 1084 spaces and any historic deficiencies won't be recouped through new developments. It is noted that Council has been working to minimise the DCP car parking theoretical DCP Demand deficit by providing more parking in/around the CBD core since 2007. With the revised theoretical DCP Demand deficit estimate now at 186 (updated calculation determined as part of this review), the current theoretical DCP Demand deficit is proposed to be addressed by providing additional parking in a number of locations as explained in Section 8. These are typically proposed in public reserves (including road reserves) as the most cost effective way of addressing the DCP Demand deficit. Whilst it is not generally advisable to cater for DCP parking requirements in public reserves including road reserves, it is considered this one off strategy to address the current parking DCP Demand deficit is reasonable given it is unlikely Council could address the theoretical DCP Demand deficit (primarily generated by historic development demand, not improved or addressed by the credits system) in any other manner, and considering the locations chosen are most likely to provide long term car parking provision.

7.2 PARKING RATES REVIEW

The parking rates for a number of Councils are compared in

Table 7.12. The parking rates are generally similar for each area. The main differences are associated with use of Gross Floor Areas (GFA) compared to Gross leasable Floor Areas (GLFA). It should be noted that some Councils use a GLFA rates plus an additional rate for storage areas.

Table 7.12: Parking Rate Comparisons

Area	Retail			Commercial	
	Shops	Supermarket	Storage	Offices Ground	Offices Upper
Shoalhaven	1 per 24m² of GLFA	1 per 19m² of GLFA	1 per 50m²	1 per 24m² of GFA	1 per 40m² of GFA
Kiama	1 per 35m² of GLFA	1 per 20m² of GLFA	1 per 50m²	1 per 40m² GLFA	
Shellharbour	1 per 35m² of GLFA			1 per 40m² of GLFA	
Eurobodalla	1 per 30m² of GFA	1 per 24m² of GFA	included in GFA	1 per 30m² of GFA	1 per 40m² of GFA
Wollongong	1 per 25m² of GFA*			1 per 40m² of GFA*	
Canberra	1 per 25m² of GFA*			1 per 40m² of GFA*	

** Location dependent- general or city wide rates shown*

Based on the parking rates shown in

Table 7.12, Shoalhaven City Council may be considered to have a slightly higher rate that the surrounding Councils. It should be noted for cities such as Wollongong and Canberra that the parking rates reduce significantly in central areas or have waivers/reduced rates for developments near public transport facilities.

Overall the SCC parking rates are not too dissimilar to the surrounding areas albeit slightly higher.

Considering future sustainability of the Nowra CBD, it is NOT recommended to consider reducing parking rates for the CBD or CBD core. A reduction of the parking rates is not justified based on the analysis and parking conditions review undertaken as part of this study.

Instead, to promote new businesses in the CBD (that are required to provide contributions in lieu of parking), Council could consider financing a 50% discount on the parking levy in a number of ways, including considering a broad infrastructure levy on all residential development to funds the 50% (nexus – other end of the trip). A levy of residential development to support the CBD parking access places acknowledgement that there are in fact two ends to a trip. It also acknowledges that whilst the trip is attracted by the land use associated in the CBD, it is generated by the surrounding sub-divisions. In addition, the introduction of a CBD levy to surrounding development would assist with consolidation business operations in the CBD rather than containing the continued sprawl of pocket retail/office uses.

Outside the core existing rates are considered to be appropriate. The amount of discount is to be determined from economic analysis considering Council's current position and future requirements for contributions to fund parking infrastructure. It should be noted from the *Nowra CBD Economic Analysis Commercial Development Contributions* study undertaken by AEC Group that a discount of up to 50% would be required for new developments to be deemed viable. The *Nowra CBD Economic Analysis Commercial Development Contributions* study and funding is further discussed in Section 9.2.6.

7.3 DEVELOPMENT INCENTIVES

Shoalhaven City Council's Car Parking Code (Development Control Plan No. 18) includes a Development Incentives section (5.16) which specifies that:

For a two (2) year period, commencing on 22 October 2014, a temporary 50% discount will be applied to future land uses (assessed via Development Application) in the Nowra CBD that clearly provides one or more of the following land use outcomes:

- *Primarily operates outside of core CBD Business hours;*
- *Involves public meeting places that facilitate events, non-gambling entertainment or improves the public domain/ safety for the general public (place making);*
- *Encourage use and attract public/ group (i.e. bus) transport.*

Considering the above there are very few potential developments that could satisfy one or more of the above criteria. The Development Incentives currently defined in the DCP are not considered attractive enough to promote re-development within the CBD. The above listed criteria are more about reducing the need for additional parking as opposed to financing parking that has to be provided. And there is currently no budget provision to fund any reduction in the parking levy for spaces that are required to be provided.

Accordingly, an infrastructure levy is supported by Bitzios Consulting in that it does not seek to reduce the parking rate (which is not warranted) however it seeks to more fairly distribute the funding burden based on both ends of the generated trip.

Development Incentive Recommendations

It is recommended to update the Development Incentives in the Development Control Plan. The objectives of the recommended updates are to:

- encourage redevelopment of existing sites;
- revitalise the CBD night life by increasing the inner CBD population;
- increase development within the CBD to reduce the extent of urban sprawl to satisfy residential demand; and

- encourage parking infrastructure contributions towards the provision of public parking stations in lieu of developers constructing individually owned private parking stations where cross-utilisation of parking is not available (e.g. coffee shops typically operate in the morning until 3pm, but bars and clubs typically don't increase their demands until after 4pm)
- maintain current parking rates (justified based on the analysis) however more fairly distribute the funding burden based to both ends of the generated trip.

Based on the above objectives the following development incentives have been suggested:

- Incentive#1: Promote CBD mixed use developments (residential + commercial/retail etc.) by marketing the ability for developers to apply discounts on the parking requirement for the non-residential component that is provided via parking contributions. This is consistent with the current policy which already allows a discount based on mixed use, consistent with RMS guidelines, however adequate justification is required to be established.
  - Objective: to encourage residential / mixed use development within the CBD. The reduction of parking is justified through the combination of trip internalisation, sharing of cars spaces during non-coinciding peaks, and multi-purpose trips under a publicly provided parking provision compared to private parking provision.
- Incentive#2: Promote residential growth in the CBD by applying a small parking levy / contribution requirement for all new residential dwellings within a reasonable travel distance to the Nowra CBD (outside of the CBD area). This approach could fund a 50% reduction of the levy currently charged to development for parking in the Nowra CBD.
  - Objective: recognises that there are two ends to a trip and that the demand for parking is not solely generated by the commercial/retail use but is in fact also generated by the surrounding residential growth. The surrounding residential growth is subsequently required to assist with the providing the necessary CBD parking. This levy/contribution will also account for the parking credit/shortfall issue that exists will all centres as parking demand increases over time and on street stocks deplete. It should be noted that this levy is cast over a broader area and hence is a lower levy, which when combined over the entire area, can make a significant difference to addressing the short-fall in CBD parking. The distance to apply this is at Council's discretion, but considering Nowra acts as Regional Centre, the application can be very broad to numerous towns villages, and Council could also consider a sliding scale of levy whereby the levy reduces the further from the Nowra CBD (or the levy could remain constant regardless of location, however the funds could be applied to any city car park at Council's discretion).

7.4 PARKING CODE RECOMMENDATIONS

The Stage 1 Parking Report has shown that without the provision of existing on-street parking, informal parking areas and removal of illegal parking, the current off-street supply is inadequate to cater for parking demands. This would imply that the DCP parking rates need to be increased to enable additional development funded parking to be introduced within the CBD area.

It is acknowledged that on-street parking is a depleting stock and is likely to continue reduce due to a number of competing demands (competing road reserve needs as outlined in the Stage 1 report) it is important that the car parking strategy addresses the need for the provisioning of sufficient off-street parking.

Conversely, there are pressures from the economic development sector to reduce the parking code rates to further incentivise development within the CBD area.

The parking supply and demand surveys have provided an indication of the level of parking utilisation across the CBD area. It is an important tool that is used to validate the parking performance and to gauge whether or not the DCP rates are required to be reduced.

Whilst there are a number of risks that exists within the CBD area that may remove some areas of on-street parking as well as some displacement of parking through the removal of informal parking areas, this study has shown that there are a number of additional areas within the CBD where parking stock may be gained in the short term. In addition, Council's commitment to the proposed Berry Street / Worrigee Street multi-storey car park will go a long way to addressing this risk and any current DCP Demand deficit and future demand.

The current DCP parking rates are consistent with that provided by other Council's / centres in the surrounding areas. It is also generally lower than the provisions required in the RMS guidelines. The current parking rates are considered to provide satisfactory levels of off street parking. The rates are appropriate given the size of the Nowra town centre and also the impending natural progression to increased levels of active transport usage in future, particularly as the CBD continues to mature.

The current parking code / contributions plan does not address however the traffic (and parking) demands associated with surrounding residential development. Whilst development in the CBD may not increase in line with the surrounding residential development, the demand for goods and services for the surrounding residential growth areas will still exist. Essentially, the demand for parking in the CBD will increase based on this residential growth regardless of any commercial / retail growth (by GFA) in the CBD. Subsequently, it is considered more than appropriate for Council to introduce a CBD parking levy for surrounding residential development. This CBD parking levy will further assist with reducing the longer term risk profile.

As future parking studies are undertaken for the Nowra CBD, and as the parking supply risk profile continues to reduce (as expected with the above levies in place, and continued use of the current parking rates), there may be opportunities to introduce parking code related development incentives in the future to attract the type of development that Council wishes to see enter into the CBD to address other land use, employment or social related strategies.

8. PARKING OPPORTUNITIES

Parking opportunities have been determined by Shoalhaven City Council. The opportunities include a mixture of new parking and changes to existing parking dimensions, limits and/or configurations. The following sections detail and discuss the potential opportunities identified by Shoalhaven City Council.

8.1 SHORT TERM PARKING OPPORTUNITIES

8.1.1 Graham Street

23 new parking bays could be provided from north of McGrath Avenue to North Street as shown in Figure 8.1 below. Some loss of trees is assumed, however there are opportunities to incorporate new landscaping which should be considered.

Source: Google Earth

Figure 8.1: Graham Street Parking Opportunities

8.1.2 McGrath Avenue – Additional Parking (North Side)

31 new parking bays could be provided on the northern side of McGrath Avenue, extending the recently provided 90 degree angled parking bays east, and around the existing cul-de-sac as shown in Figure 8.2 below.

Source: Google Earth

Figure 8.2: McGrath Avenue - Additional Parking (North Side) Parking Opportunities

8.1.3 McGrath Avenue – Parking Conversion

Parking on the northern side of McGrath Avenue could be converted from 1 hour parking to all day parking. It is understood that the existing 12 spaces provided for 1 hour parking are underutilised and therefore 9 of these bays (retaining 3 as 1 hour) could be converted to all day parking. It should also be noted that 2 hour parking is also provided on the southern side of McGrath Street. The location of this proposed conversion is shown in Figure 8.3 below. It is noted these spaces have already been line marked at 2.45m spacing in anticipation of being converted to all day parking.

Source: Google Earth

Figure 8.3: McGrath Avenue Parking Conversion

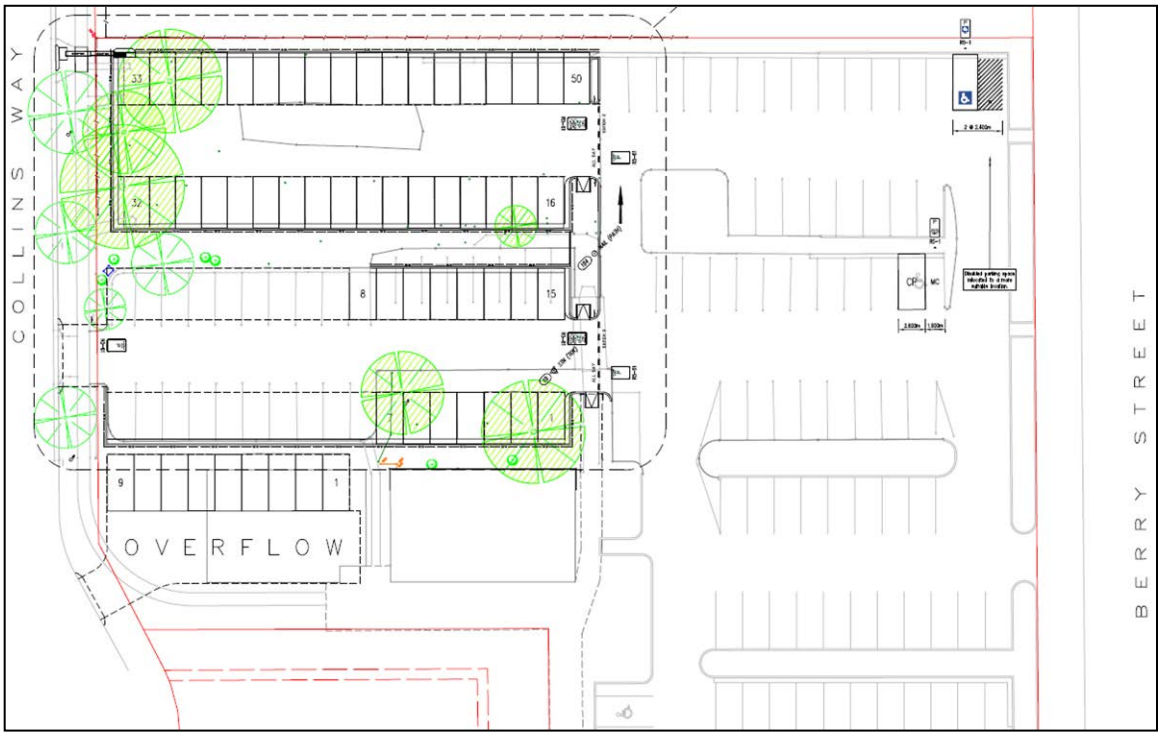
8.1.4 Berry Street Car Park

The informal areas of the Berry Street car park are proposed to be sealed and formalised which could create an additional 3 parking spaces. In addition to this, a previously inaccessible area will be formalised to create an additional 9 parking spaces for a total of 12 parking bays. The location of the Berry Street car park is shown in Figure 8.4.

Source: Google Earth

Figure 8.4: Berry Street Car Park - Parking Opportunities

The proposed configuration of the Berry Street Car Park is shown in Shoalhaven City Council's Concept Plan in Figure 8.5 below.



Source: Shoalhaven City Council

Figure 8.5: Berry Street Car Park Concept Plan

8.1.5 Marriott Park

A section of Marriott Park, shown in Figure 8.6, is proposed to be converted into a car park. Marriott Park is an ideal location according to the supply/demand analysis, and it is understood that the proposed section is generally underutilised and will not impact the main usage area of the park.

To the contrary the proposal could attract greater use of the park by the provision of convenient parking. By this we mean that parking would be utilised by CBD workers on weekdays, however outside of business hours and on weekends the car park will provide convenient parking for users of the park, which could increase utilisation and additional park facilities could also be considered to compliment this proposal.

Without this proposal, it is unlikely that the calculated DCP demand deficit could be addressed by short term cost effective parking, as this proposal accommodates almost half of the required spaces to address the shortfall.

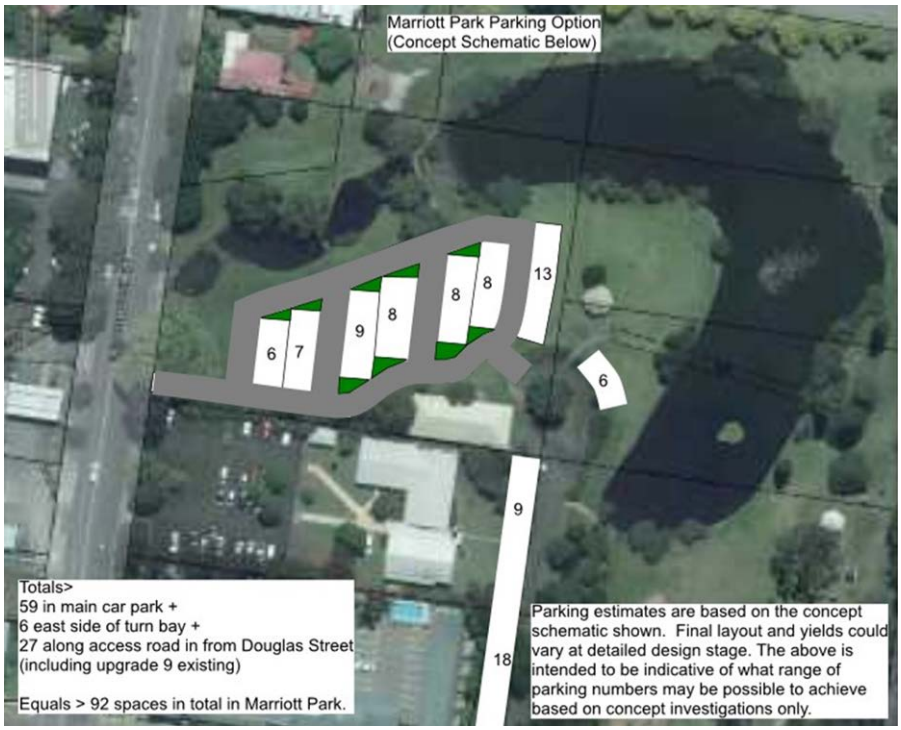
Importantly this proposal would also assist to mitigate the anticipated loss of parking on Plunkett Street in the short term (anticipated in conjunction with the combined service station/ McDonalds development), and would also provide a replacement stock of parking to assist during any construction of a multi-storey car park on the Berry/Worrigee car park site which will displace the current 201 spaces during construction. Whilst this site may be controversial, the benefits to CBD parking are significant and there could be some positives to consider regarding convenience for park users.

It is noted this review is from a parking analysis and strategy perspective only. There are other considerations for Council regarding use of the park land. However it is noted that the subject land (community land) is zoned RE1 (public recreation) and under the provisions of Council's LEP for that zoning car parks are permitted with consent.

Source: Google Earth

Figure 8.6: Marriott Park Parking Opportunities

A sketch of the potential layout of the car park was provided by Shoalhaven City Council and is shown in Figure 8.7. The sketch identifies that up to 92 parking bays could be constructed within Marriott Park.



Source: Shoalhaven City Council

Figure 8.7: Marriott Park Concept Sketch

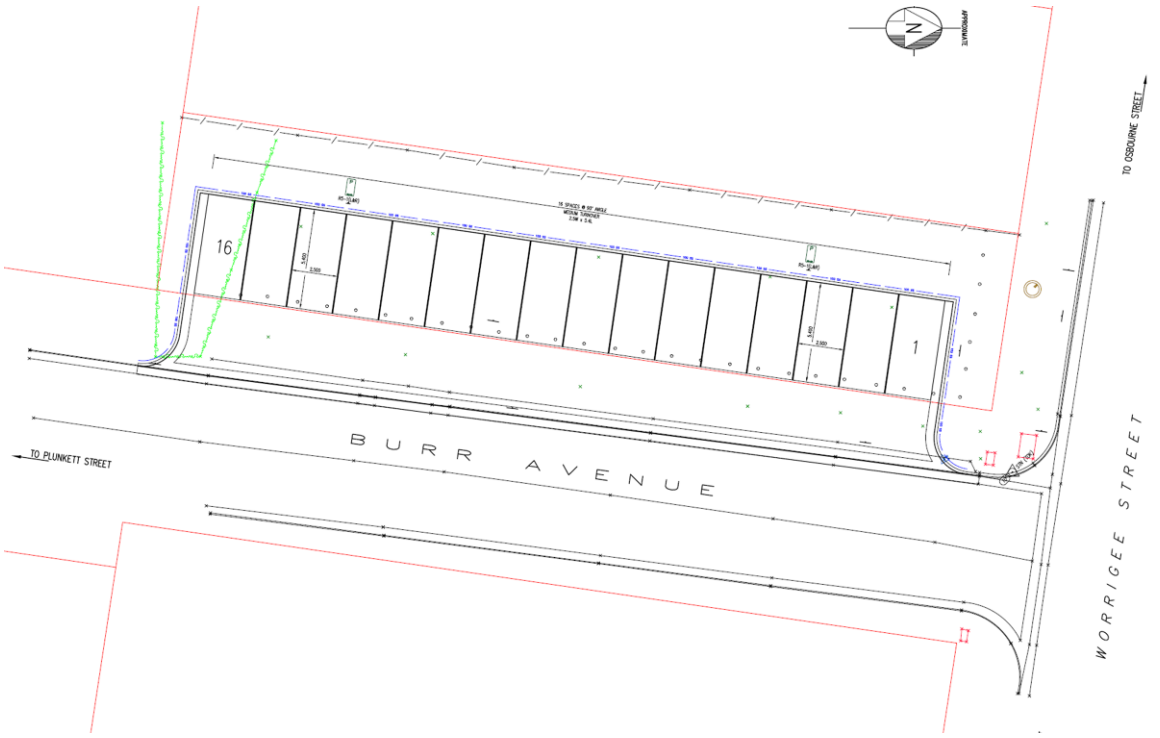
8.1.6 Burr Avenue

16 new parking bays can be provided on the western side of Burr Avenue between Worrigee Street and Plunkett Street as shown in Figure 8.8 below. This proposed area is currently a vacant lot which can easily be converted into 90 degree parking. Provision for footpaths / streetscaping should also be considered in the design.

Source: Google Earth

Figure 8.8: Burr Avenue Parking Opportunities

The estimated parking supply of 16 bays is based on a 90 degree parking configuration as shown in Shoalhaven City Council's Concept Plan in Figure 8.9.



Source: Shoalhaven City Council

Figure 8.9: Burr Avenue Parking Concept Plan

8.1.7 Douglas Street

New parking bays could be provided on Douglas Street between Kinghorne Street and the Princes Highway as shown in Figure 8.13. Land acquisitions/transfers would be required to provide 90 degree angled parking on the northern side of Douglas Street, or less an impact would be achieved if 45 degree angled parking was provided, albeit slightly less yield would be achieved. It is estimated 18 additional parking bays (29 bays minus the existing 11 parallel bays) could be provided between Kinghorne Street and the Princes Highway.

Source: Google Earth

Figure 8.10: Douglas Street Parking Opportunities

8.2 MEDIUM-LONG TERM PARKING OPPORTUNITIES

8.2.1 Lawrence Avenue

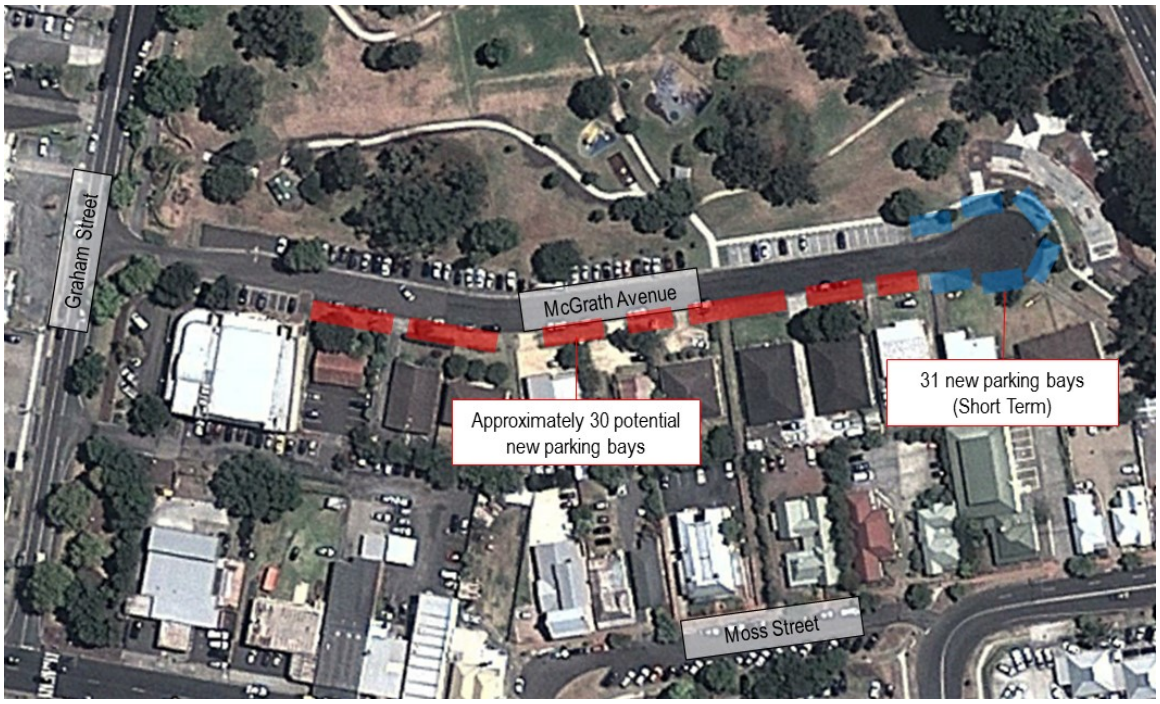
New parking bays could be provided on Lawrence Avenue between Worrigee Street and Plunkett Street as shown in Figure 8.11. Lawrence Street is proposed to widened to a 20m road reserve to ultimately allow for two-way traffic, however if one-way traffic was retained there may be opportunities to provide 45 degree on-street parking on the western side whilst retaining parallel parking on the eastern side. It is estimated that 13 additional bays could be provided based on this proposed configuration.

Source: Google Earth

Figure 8.11: Lawrence Avenue Parking Opportunities

8.2.2 McGrath Avenue – Additional Parking (South Side)

New parking bays could be provided on the southern side of McGrath Avenue between the existing parking and the Cul-de-sac as shown in Figure 8.12 below. This would require a legal setback requirement for the lots of the southern side of McGrath Avenue and would need to be addressed in the DCP. Pending these setbacks and driveway crossovers, it is estimated that up to 30 additional parking bays could be provided. This has already been commenced at the corner of Graham Street / McGrath Avenue (fronting the DoCS building) and it is intended to continue this scheme to provide an increased stock of parking for the remaining length of McGrath Avenue where practical.



Source: Google Earth

Figure 8.12: McGrath Avenue - Additional Parking (South Side) Parking Opportunities

8.2.3 Douglas Street

New parking bays could be provided on Douglas Street between Osborne Street and the Princes Highway as shown in Figure 8.13. Land acquisitions/transfers would be required to provide 90 degree angled parking on the northern side of Douglas Street, or less an impact would be achieved if 45 degree angled parking was provided, albeit slightly less yield would be achieved. It is estimated that the following additional bays could be provided (on the basis of 90 degree angled parking):

- 34 parking bays between Osborne Street and Berry Street;
- 42 parking bays between Berry Street and Kinghorne Street; and
- 18 additional parking bays (29 bays minus the existing 11 parallel bays) between Kinghorne Street and the Princes Highway (already recommended as a Short Term measure).

The above combine for a total of 94 parking bays (76 excluding the short term measure).

Source: Google Earth

Figure 8.13: Douglas Street Parking Opportunities

Douglas Street is proposed in the Draft Master Plan to be the southern section of the CBD Loop Road. The provision of 90 degree parking on Douglas Road may therefore not be considered ideal as the CBD Loop Road could be impacted by parking. With this in mind, 45 degree angled parking may be more appropriate if this parking is required at all in future. Providing parking on Douglas Street therefore depends on traffic and planning requirements for the proposed CBD loop road, and long term floor area forecasts / parking considerations for the CBD.

8.2.4 Douglas Lane

Douglas Lane could be upgraded to provide parking bays adjacent to the school. Land acquisitions / transfers would be required to provide this parking which could yield approximately 30 parking bays. Figure 8.14 shows the location of the proposed parking on Douglas Lane. It could be some time in future before there is sufficient demand for this location, and the broader location along Douglas Street west of Kinghorne Street, however it is useful to understand locations where parking could be provided in future if/when required.

Source: Google Earth

Figure 8.14: Douglas Lane Parking Opportunities

8.2.5 Osborne Street Car Park

The Osborne Street car park is proposed to be converted from a mixture of 2P / All-day parking to 2P only. This conversion obviously does not provide any additional parking but does provide more 2 hour parking with a corresponding loss to All Day parking. Council has envisaged that his parking conversion could only take place once additional All Day parking is provided elsewhere. There are currently 60 All Day parking bays within the Osborne Street car park. The Osborne Street car park is shown in Figure 8.15.

Source: Google Earth

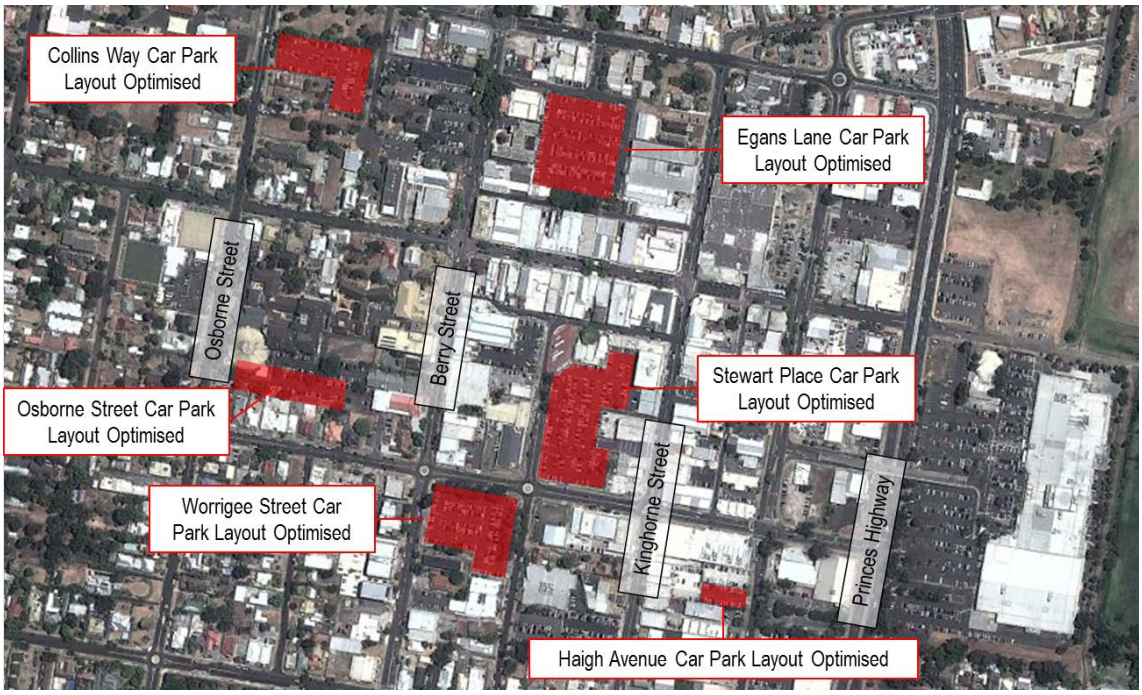
Figure 8.15: Osborne Street Parking Conversion Opportunities

8.2.6 Off-street Parking Upgrades

Shoalhaven City Council has recognised that a number of off-street car parks have generally oversized parking bays or are in line with the current DCP requirements. They have also identified that if these parking areas were to be altered to Australian Standards (AS2890.1) requirements that they could yield additional parking bays. It is understood that this would only be appropriate to be undertaken when resurfacing of a car park is require to reduce costs. The following car parks have been identified that could be reconfigured with the AS2890 requirements and yield additional parking bays:

- Collins Way Car Park – 5 additional parking bays;
- Egan's Lane Car Park – 25 additional parking bays;
- Haigh Avenue Car Park – 2 additional parking bays;
- Lawrence Avenue Car Park – 6 additional parking bays; and
- Stewart Place Car Park – 10 additional parking bays.
- Osborne Street Car Park – 3 additional parking bays, however noting that this is proposed to be converted to 2P in future when sufficient replacement stock of all day parking is available (for example when the Berry/Worrigee multi-storey car park is constructed).

The above car parks are shown in Figure 8.16 below.



Source: Google Earth

Figure 8.16: Car Park Reconfiguration Opportunities (reconfigured to minimum A.S.2890.1)

8.3 NBSP Traffic Modelling Impacts - Creation of One-Way Streets

The Nowra CBD Transport Strategy included traffic modelling that identified future traffic flows impacting the Nowra CBD as consequence of the Nowra Bomaderry Structure Plan. The increases in traffic to/from the town centre but also north-south through traffic through town (avoiding the Princes Highway) was observed to be significant and will be a challenge going forward. Part of the solution to address this is the proposed Osborne Street / Douglas Street ring road proposal, however capacity will become increasingly important in the broader CBD network.

One way street systems generally redistribute traffic and that traffic is required to be absorbed in other surrounding streets. It is understood Council are considering one way streets as a means of providing more parking. However this is not recommended given the traffic model forecasts, the problems one way street proposals may generate, and the very limited parking benefits.

The Nowra CBD (East) Road Network Strategy Review (2007) which also included an extensive traffic modelling review, also investigated a number of traffic options including the testing of Worrigee Street as one-way eastbound, Plunkett street as one –way westbound, and Junction Court as one way. In all cases the testing concluded that these arrangements should not be progressed due to the accessibility issues it would present, and adverse traffic impacts. It is likely that similar outcomes would be found if there was broader testing of other CBD streets for one way proposals.

The introduction of one-way arrangements does not necessarily result in increased levels of parking. The introduction of one-way arrangements results in a reduced level of directness in traffic and circulation of vehicles, increasing the number of traffic movements across the CBD network. This is turn is likely to require additional parking restrictions and upgrades on approaches to intersections outside of the immediate area to cater for these additional circulating movements.

In addition to this, the introduction of one-way movements reduces the legibility of the town centre street network often resulting in non-familiar road users becoming frustrated with not being able to get to their destination in an efficient manner. This could frustrate locals, but may also cause confusion to the many visitors to the Nowra CBD.

Council's transport strategy has opted for the creation of a ring road (link road) utilising the Osborne Street road corridor. This strategy aims to protect the CBD core (and in particular Berry Street) from unnecessary

through traffic in the more heavily pedestrianised areas, and this strategy also is aimed at protecting as much on-street parking as possible in the CBD core. This approach is supported.

It is understood that the Cardno Eppell Olsen estimate of 210 (loss of on street parking spaces over time) was also based on this strategy of protecting the integrity amenity and on street parking in the CBD core and encouraging capacity improvements around the periphery of the town centre and at key intersections, otherwise based on the traffic modelling forecasts the loss of on-street parking could have been estimated as a much greater loss over time.

The issue of parking supply is not currently in a state where such drastic measures are required whereby Council would be potentially addressing one risk by introducing another. The strategies outlines within this report are considered to provide sufficient direction at this point in until the next parking review is undertaken.

8.4 OPPORTUNITIES SUMMARY

A summary of the parking opportunities for the Nowra CBD are provided in Table 8.1. The table includes all the proposed new parking and converted parking areas discussed above. It is unlikely that all these parking areas can or will be approved for parking uses.

Table 8.1: Parking Supply Opportunities

Term	Location	Description	Sector	On-street			Off-street			Total		
				No Limit	2P	1P	No Limit	2P	1P	No Limit	2P	1P
Short	Graham Street	On-street and Off-street	NE	8			15			23		
	McGrath Avenue	Northern Side Extension	NE	31						31		
	McGrath Avenue	Conversion from 1P to All Day	NE	9		-9				9		-9
	Berry Street Car Park	Formalise and New Area	NW					12			12	
	Marriott Park	New Area within Park	SE				92			92		
	Burr Avenue	New on Western Side	SW				16			16		
	Douglas Street	New Parking between Kinghorne St and Princes Hwy	SE	18						18		
Medium-Long	Lawrence Avenue	New Parking on Western Side	SE	13						13		
	McGrath Avenue	New Parking on Southern Side	NE	30						30		
	Douglas Street	New Parking between Berry St and Kinghorne St	SW/SE	42						42		
	Douglas Street	New Parking between Osborne St and Berry St	SW	34						34		
	Douglas Lane	New Parking	SW	30						30		
	Osborne Street Car Park	Conversion from All Day to 2P	SW				-60	60		-60	60	
In conjunction with pavement rehab works (timeframes unknown)	Collins Way Car Park	Amend to AS2890 parking dimensions	NW				5			5		
	Egan's Lane Car Park	Amend to AS2890 parking dimensions + relocations	Central				25			25		
	Haigh Avenue Car Park	Amend to AS2890 parking dimensions	SE				2			2		
	Lawrence Avenue Car Park	Amend to AS2890 parking dimensions	SE				6			6		
	Stewart Place Car Park	Amend to AS2890 parking dimensions	Central				10			10		
	Osborne Street Car Park	Amend to AS2890 parking dimensions	SW					3			3	
			Total	215	0	-9	111	75	0	326	75	-9
			Total	206			186			392		

Table 8.1 shows an overall total for parking opportunities of 392 parking bays. This increase in parking also converts nine 1P parking bays to all day parking. It should be noted that the total off-street parking opportunities is 186 parking bays.

8.5 IMPACT ON PARKING THEORETICAL DCP DEMAND DEFICIT (NUMBERS)

The total off-street parking opportunities of 186 parking bays have been added and compared to the existing parking supply and the DCP18 demand requirements in Table 8.2.

Table 8.2: Parking Opportunities Impact on DCP Requirements

Location	DCP Demand	Existing			Sum of Parking Shortfalls including where DA consents have required contributions to be paid for since 2007 under the CP	Existing + Parking Opportunities		
		Off-street Supply	Balance	Comment		Off-street Supply	Balance	Comment
Central	1,388	728	-660	DCP Deficit	-77	763	-625	DCP Deficit
North-West	615	873	258	Surplus		890	275	Surplus
North-East	738	673	-65	DCP Deficit		688	-50	DCP Deficit
South-East	956	780	-176	DCP Deficit		880	-76	DCP Deficit
South-West	420	734	314	Surplus		753	333	Surplus
East	761	981	220	Surplus		981	220	Surplus
CBD Total	4,878	4,769	-109	DCP Deficit	-77	4,955	77	Surplus

If the on-street parking opportunities were also added to the supply, it would result in a surplus of 283.

Table 8.3 shows the potential impact of parking opportunities on both on-street and off-street parking supplies.

Table 8.3: Parking Opportunities Impact on Parking Supply

Location	DCP18 Demand	Existing			Existing + Parking Opportunities		
		Off-street Supply	On-street Supply	Total	Off-street Supply	On-street Supply	Total
Central	1,388	728	135	863	763	135	898
North-West	615	873	357	1,230	890	357	1,247
North-East	738	673	259	932	688	328	1,016
South-East	956	780	202	982	880	254	1,134
South-West	420	734	2,823	1,017	753	368	1,121
East	761	981	115	1,096	981	115	1,096
North	NA	376	27	403	376	27	403
CBD Total	4,878	5,145	1,377	6,522	5,331	1,583	6,914

9. LONG TERM PARKING STRATEGY REQUIREMENTS

9.1 FUTURE CONSIDERATIONS

9.1.1 Off-street

The consensus from previous studies is that additional parking is required to be constructed. The recommendations for this additional parking are to construct multi-storey parking facilities in the periphery of the Nowra CBD. These parking facilities in the periphery will provide long term parking primarily for employees of the CBD core area, but combined short stay parking can also be provided in these facilities to assist with increasing the availability of short stay parking in the CBD core. The decisions for time based restrictions for the future multi-storey car parks will need to be based on outcomes derived from future parking surveys.

The *Nowra CBD Transport Strategy (2003)* prepared by Eppell Olsen & Partners recommended the provision of 1000 additional off street car parking spaces by 2016 in the following locations:

- 350 new car parking spaces in the precinct bordered by the Princes Highway/Nowra Lane and by North Street/Plunkett Street;
- 250 new car parking spaces in the Berry/Worrigee Street car park;
- 150 new car parking spaces in the Lawrence Avenue car park; and
- 250 new car parking spaces in the Collins Way car park.

Monaro Consultants updated the above based on their outcomes in the Nowra CBD Parking Analysis 2007, as follows:

- 193 new car parking spaces at the Bridge Road (former gas works site) note: this was completed in 2008;
- 420 new car parking spaces in the precinct bordered by the Princes Highway/Nowra Lane and by North Street/Plunkett Street (increased from Cardno Eppell Olsen to cater for deficiencies in DCP 18 rates). This precinct was considered by both Monaro Consultants and Cardno Eppell Olsen as the highest priority location for provision of car parking in Nowra CBD. This was based on the need to address deficiencies which would occur as a result of development of Stockland land north of Junction Street.
- 260 new car parking spaces in the Berry/Worrigee Street car park (10 spaces more than the recommendation from Cardno Eppell Olsen);
- 150 new car parking spaces in the Lawrence Avenue car park; and
- 250 new car parking spaces in the Collins Way car park.

Monaro Consultants recommended the above provisions be implemented in that order.

The Draft *Nowra CBD Master Plan* prepared in 2011 by Arup based future parking requirements on a planning principles as well as the outcomes of the above previous studies. This primary opportunities and initiatives identified in the study in relation to off-street parking included the following:

- gradually convert a proportion of all-day unlimited parking spaces to time-restricted spaces, which will gradually limit, or at least not increase, the availability of all-day commuter parking, both on and off-street;
- wherever possible, locate the majority of off-street parking at the periphery of the CBD, possibly on the CBD loop road, where traffic impacts are lower than if parking was concentrated in the central core; and
- in the long term, develop strategically located and sensitively designed multi-deck car parks, preferably around the periphery, to reduce the land devoted to parking within the CBD.

Furthermore, the Arup report identifies the Stewart Place, Collins Way, Worrigee Street, Berry Street and Bridge /Road car parks as opportunity locations for multi-storey parking facilities. The Stewart Place and Collins Way car parks are considered to be priority locations in the masterplan.

The consensus of the previous studies and Council's current position is that a multi-storey car parking facility will be required in the future, and this is currently incorporated into the adopted Contributions Plan. Following this analysis and review, this position can still be supported by Council, although with recommended amendments. The timing, location, size and funding of future parking facilities are discussed in Section 9.2.

9.1.2 On-street

On-street parking in the CBD, particularly in the periphery, is generally considered appropriate. The parking analysis also identifies that on street parking stock is vitally important to maintain acceptable levels of service in the CBD. It has however been identified the many on-street parking location is the CBD will be removed in future years to cater for road upgrades required to mitigate future traffic impacts. The *Nowra CBD Transport Strategy (2003)* prepared by Cardno Eppell Olsen estimated 210 parking bays would be lost by 2021.

How that figure was determined has not been documented. However it appears to be a realistic figure when considering likely road capacity upgrades (particularly North Street and Plunkett Street), as well as intersection upgrades throughout the CBD, but also considering the role the link road (Osborne Street) could play in minimising parking losses through the town particularly on Berry Street. Whilst the number of on street parking loss may be considered realistic, the timeframes this could occur is harder to estimate. Based on review of growth assumptions it is likely to be a much longer period than assumed by Cardno Eppell Olsen. None the less it is agreed the potential loss of on-street parking needs to be considered in future targets and requirements.

9.2 REVISED LONG TERM PARKING STRATEGY

9.2.1 Objectives

Although a large component of this *Nowra CBD Parking Review* was to update, analyse and assess the previously undertaken parking surveys, the main reasoning this was required was to analyse, correlate and review this data in comparison to the previous planning studies, and update the findings of those studies to 2015. Some of these more recently completed studies were based on either out-dated data or based solely on planning principles without quantitative assessments. Review of the technical merit of these planning studies using the updated parking survey data was therefore one of the primary objectives of this study.

General parking strategy objectives have also been considered in the review and analysis of parking in the Nowra CBD. Some of these parking strategy objectives include:

- reducing the dependence of private vehicle trips;
- developing defined parking hierarchies for the CBD to better utilise existing parking areas;
- improving access to parking areas for both vehicles and pedestrians;
- providing a sustainable parking policy for future developments;
- promoting mixed-use developments within the CBD;
- creating a vibrant and active CBD to create local employment opportunities and encourage an increase in local pedestrian and cycle trips; and
- Maintain the Contributions Plan approach, with current rates maintained. Consistent with RMS guidelines, the very nature of sharing parking (acknowledging that different land uses generate demands at varying times) will inevitably reduce the overall footprint of parking in the CBD, whilst maintaining satisfactory parking levels for the broader Nowra CBD in accordance with guidelines.

9.2.2 Targets

Development Forecasts

Monaro Consultants *Nowra CBD Parking Analysis 2007* report identified that Council would need to provide for 140 parking spaces as a result of new development within the CBD Core area. This requirement assumes that all other new development outside the Core area would provide adequate parking on-site.

The forecast for the CBD core is considered to be low. It was originally based on additional developments to the east of the Princes Highway limiting the potential growth of the CBD Core.

There has been no updated floor area forecasts provided for this study, so the approach taken was simply to adopt the same forecasts prepared by Monaro Consultants in 2007, and simply update the current and forecast land use data taking into consideration actual known changes (between 2007 and2015).

On-street Parking Losses

The *Nowra CBD Transport Strategy (2003)* prepared by Eppell Olsen & Partners, identified that a number of on-street car parks will be lost with intersection upgrades and mid-block capacity improvements and these spaces will need to be accommodated off-street. The *Nowra CBD Transport Strategy (2003)* prepared by Cardno Eppell Olsen estimated 210 parking bays would be lost by 2021. Because it was not documented how Cardno Eppell Olsen arrived at the estimate of 210, it is unclear on whether any of these on-street parking losses have occurred since 2003. These on-street parking losses were based on very high growth road network upgrades for a 2016 scenario and the majority of these road widening requirements have not been implemented or required as of 2015. Whilst there has been some known on street parking changes from 2003 to 2015, in the context of the broader CBD these have been relatively minor, and not related to major road upgrades. Accordingly for the purposes of this exercise (to update the Monaro consultants findings to 2015), we have maintained the previously estimated 210 (expected future loss of on street parking spaces) and will include this in the forward estimates.

Monaro Consultants also maintained that these 210 parking bays would need to be catered for off-street. This is agreed and considered good forward planning, although it should be noted that this is superfluous to Council's minimum requirements (not a current policy requirement under the DCP).

Forecast Target

Based on Table 7.10 the existing DCP Demand deficit for the entire CBD is 109 parking bays plus 77 parking bays based on parking shortfalls (including DA consent requirements) since 2007 (Section 7.1.3) for a total existing off-street DCP Demand deficit of 186 parking bays. The existing DCP Demand deficit plus the above requirements for new CBD core development and on-street parking losses are summarised in Table 9.1.

Table 9.1: Parking Forecasts – Future Demand

Type	Location	Balance of Parking Bays	Comment
Existing Off-street DCP Demand Deficit + Future Demand (excludes east sector)	Nowra CBD	-406	Based on updated DCP analysis and DA Requirements since 2007 (excludes east sector). Off-street parking comparison only.
New Developments	CBD Core	-140	Based on future forecast Development consents with parking contributions applied
	Total	*-546*	*Current and forecast DCP Requirements*
On-street Parking Losses	Nowra CBD	-210	Some of this demand is likely to spread into periphery on-street areas which are currently low in occupancy
	Total	*-756*	*DCP Requirements + Potential On-street Loss*
Parking Opportunities	Nowra CBD	+392	Includes potential on-street and off-street parking opportunities
	Total	*-364*	*DCP Requirements + Potential On-street Loss + Parking Opportunities*

The parking targets determined in Table 9.1 are based on current and forecast DCP requirements, DA requirements since 2007, potential losses of on-street parking and potential gains based on parking opportunities. There are many uncertainties based on the above forecasts and opportunities. As a result,

the parking target could be considered as a range between a theoretical DCP Demand deficit of 546 parking bays and a theoretical DCP Demand deficit of 756 parking bays. Taking a conservative approach by excluding the parking opportunities, a theoretical DCP Demand deficit range can be assumed based on 'with' and 'without' the potential on-street parking losses. Based on this, the estimated forecast future demand range is between 546 and 756 parking bays.

Summary

The theoretical DCP Demand deficit is lower than previous studies and therefore the proposed long term strategy requires less infrastructure to cater for this deficit. The long term strategy to increase the parking supply to cater for existing DCP Demand deficit and forecast future demand is therefore based on providing one off-street multi-storey parking facility. Although it is likely that additional multi-storey parking facilities will be required in the future, priority should be focused on providing one at this stage. The provision of a multi-storey parking facility is discussed in the following sections. It is recommended however that the next revision of the Nowra CBD parking study include updated floor area forecasts undertaken prior to commissioning a revision of the parking study.

9.2.3 Multi-storey Parking Facilities - Overview

It has been identified that as part of the Long Term Parking Strategies, a multi-level parking facility should be provided. Although the dis-advantages of providing this level of infrastructure are the high costs, there are significant benefits that will potentially outweigh these costs. The main advantage of a multi-level car park is that it can be constructed on the land dedicated to an existing car park. It therefore does not require increasing the footprint of parking within the CBD whilst still increasing the parking supply. A multi-level car park could also be constructed as an alternative to providing additional parking in other areas, although due to affordability, it is recommended that if Council want to proceed to address the current DCP Demand deficit in the short term, the provision of identified short term parking spaces at grade around the CBD are a more cost effective means of addressing the DCP Demand deficit in the short term. An advantage of this is that this additional supply will also provide for some additional stock of parking to offset the impacts of the Berry/Worrigee car park during construction (that will displace the current 201 spaces during construction which are at most times fully occupied during peak periods).

In comparison to the identified shorter term parking opportunities (Table 8.1) totalling 392 parking bays, a multi-level parking facility located at Berry/Worrigee Street car park would gain 424 additional parking bays based on Shoalhaven City Council's current development application (refer Appendix B). Further analysis for the provision of a multi-storey car park is provided in the following sections.

9.2.4 Multi-Storey Parking Facilities - Location / Size

Shoalhaven City Council (SCC) has previously undertaken an assessment of potential off-street parking locations using a range of criteria including:

- best use of land;
- demand and yield;
- proximity to CBD;
- existing supply;
- traffic and site conflicts; and
- cost.

Based on the above criteria SCC ranked 12 different options across 9 locations in the following order:

1. Berry/Worrigee Street Car Park Option 2 (acquire Berry Court) – 367 additional bays in South-West Sector;
2. Egans Lane Car Park - Option 1 (full area, with setbacks) – 325 additional bays in Central Sector;
3. Berry/Worrigee Street Car Park Option 1 (over existing) – 267 additional bays in South-West Sector;
4. Lawrence Avenue Option 2 (acquire additional land) – 271 additional bays in South-East Sector;
5. Nowra Lane north of Jane Street – 446 additional bays in South-East Sector;

6. Stewart Place (over existing car park) – 247 additional bays in Central Sector;
7. Nowra Lane south of Jane Street – 454 additional bays in South-East Sector;
8. Egans Lane Option 2 (reduced area) – 22 additional bays in Central Sector;
9. Lawrence Avenue Option 1 (over existing) – 170 additional bays in South-East Sector;
10. Bridge Road (Gas Works Site) – 538 additional bays in North-West Sector;
11. O'Keefe Avenue (over existing) – 212 additional bays in North-East Sector; and
12. Collins Way (over existing) – 295 additional bays in North-West Sector.

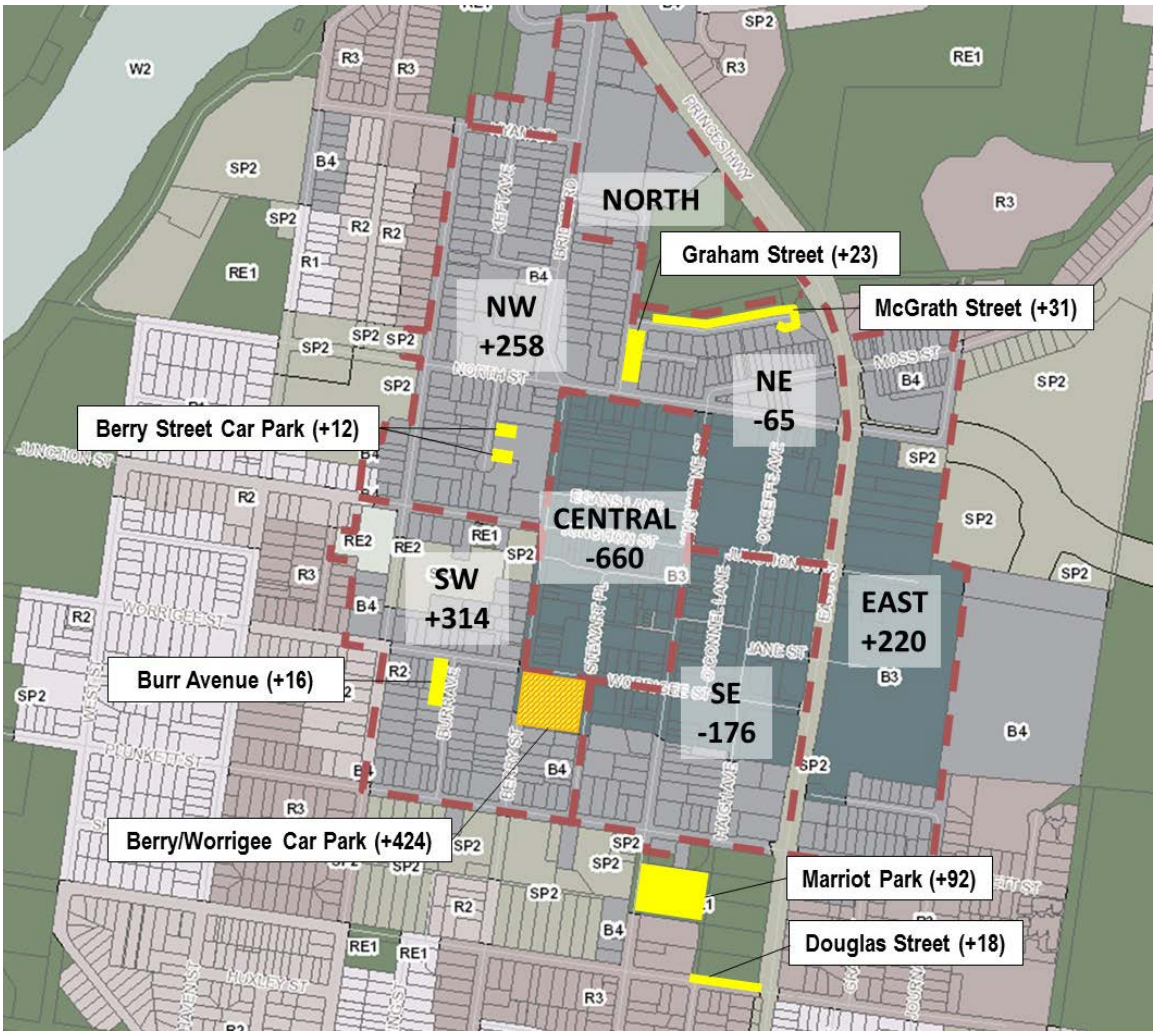
Table 9.2 summarises the existing occupancy for each sector and the existing DCP analysis for each sector.

Table 9.2: Sector Summary (2015)

Location	Existing Occupancy (On-street + Off-street + Informal)	Existing DCP Analysis		
		Off-street Supply	Balance	Comment
Central	87%	728	-660	DCP Demand Deficit
North-West	64%	873	258	Surplus
North-East	75%	673	-65	DCP Demand Deficit
South-East	69%	780	-176	DCP Demand Deficit
South-West	79%	734	314	Surplus
East	78%	981	220	Surplus
North	77%	-	-	-
CBD Total	75%	4,769	-109	DCP Demand Deficit
Additional parking Council is to provide (sum of shortfall of parking spaces including the DA consents that have required contributions to be paid for since 2007 under the Contributions Plan)			-77	Additional DCP Demand from Contributions Paid (2007>2015)
TOTAL			-186	Total Theoretical DCP Demand Deficit
TOTAL (excluding surplus from East Sector)			-406	Future Demand

Based on Table 9.2, the DCP analysis shows that the priority should be given to providing parking in the Central Sector with the South-East sector the next best option. This would favour a multi-storey car park at Egans Lane, Stewart Place or Lawrence Avenue, although the sector summary also clearly indicates the South-West sector (including Berry/Worrigee) has the highest occupancy recordings outside the CBD core. This analysis also supports the locations of the proposed short term parking opportunities to address the theoretical DCP Demand deficits in those respective areas.

Figure 9.1 confirms the suitability of the location of the short term parking opportunities as well as the Berry/Worrigee Car Park to address the current theoretical DCP demand deficit and future demand.



Source (Base Layer): Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

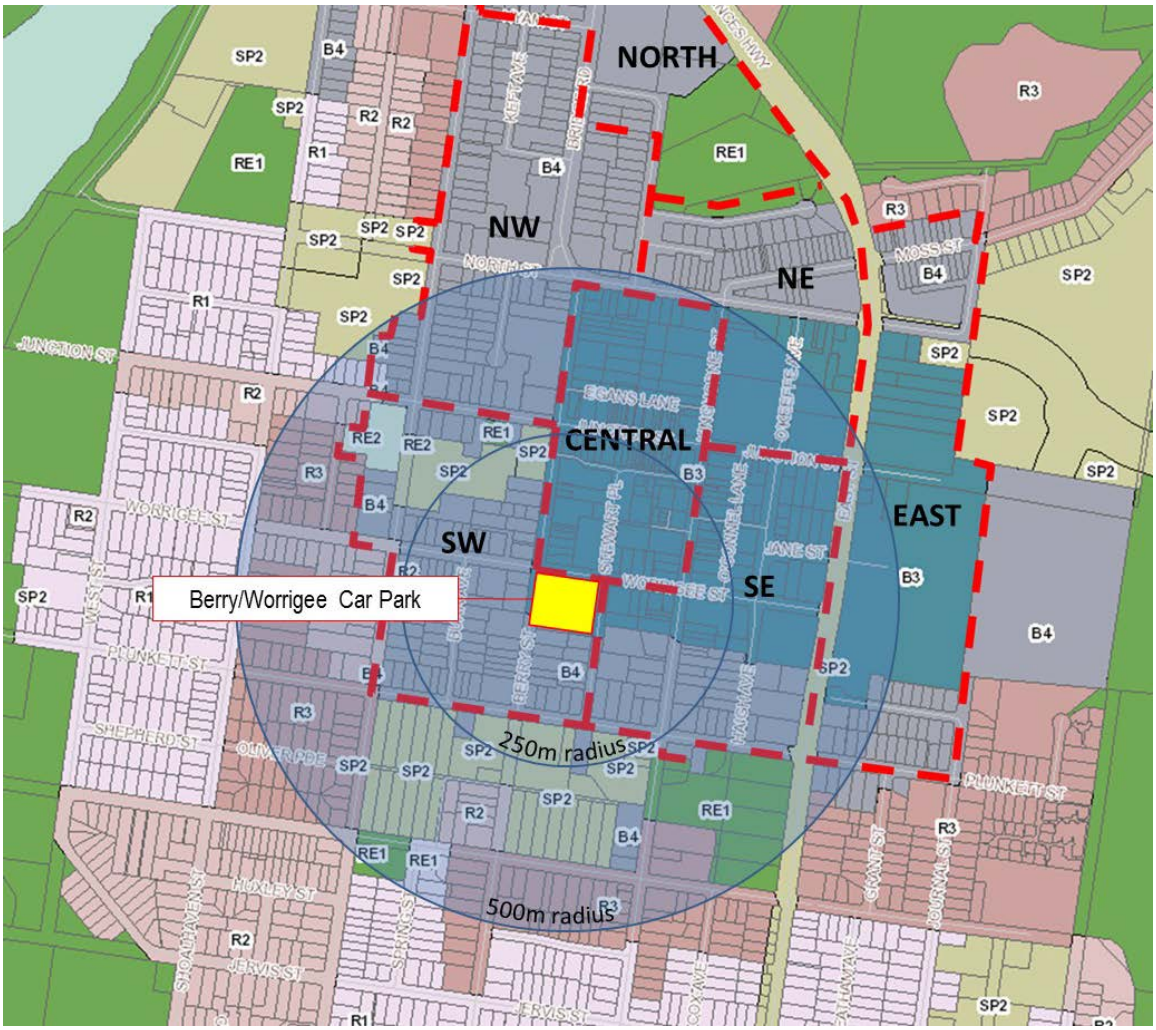
Figure 9.1: Multi-storey Car Park Location Suitability

Based on the potential shortfall of all-day parking however, the parking strategy objectives identify the ideal locations for long term off-street parking areas are in the periphery of the CBD. These areas are closer to the proposed loop road and reduce traffic impacts in the CBD core area. On the periphery of the CBD core is also ideal in that combined short term/long term parking supply can be provided as part of the one multi-level structure.

Although not directly accessible from the loop road, consideration should be given to the Lawrence Avenue or Berry/Worrigee Street car park. Of these two locations, the Berry/Worrigee Street car park in the South-west sector is considered to be the most suitable option given its accessibility and size. Although the South-West sector has the highest DCP surplus, it also has the highest occupancy outside the Central Core.

The Berry/Worrigee Street car park is also located only 50m from the Lawrence Avenue car park and shares a boundary with both the Central sector and the South-East sector which have the greatest DCP demand deficits. Source (Base Layer): Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

Figure 9.2 shows the Berry/Worrigee Street car park location and the walking distances from the car park. The figure shows that the entire Central and South-East sectors are within 500m of the car park and approximately 50% of each of these sectors is within 250m of the car park.



Source (Base Layer): Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

Figure 9.2: Walking Catchment

The Berry/Worrigee Street car park is estimated to provide an additional 424 parking bays, 153 more than the Lawrence Avenue carpark. Previous studies which took into account traffic impacts and the proposed master plan which was based on planning principles both identified Berry/Worrigee Street car park as a suitable location for a multi-storey car park. The Berry/Worrigee Street car park was also the highest ranked car park in Council's assessment. As a result, based on all the data obtained and the outcomes of previous studies, the Berry/Worrigee Street car park is considered to be the highest priority location for a multi-storey car park and is suitably located to provide a mix of both short term and long stay parking.

To mitigate any adverse traffic impacts associated with the Berry/Worrigee Street car park, multiple access points should be considered, as well as the potential to reverse the direction of the one way street (Lawrence Avenue) so that traffic exits the precinct via the roundabout rather than the uncontrolled junction at Plunkett Street. This also considers that (being a T-junction) there is insufficient room in the road reserve to provide a roundabout at the Lawrence Avenue/Plunkett Street intersection.

Table 9.3 summarises the parking forecasts including the short, medium and long term infrastructure opportunities.

Table 9.3: Parking Forecasts - Long Term

Type	Location	Balance of Parking Bays	Comment
Existing Off-street DCP Demand Deficit + Future Demand (excludes the east sector)	Nowra CBD (Excluding East Sector)	-406	Based on updated DCP analysis and DA Requirements since 2007 (Excludes the East Sector). Off-street parking comparison only.
New Development	CBD Core	-140	Based on future forecast development consents with parking contributions.
	Total	*-546*	*Current and forecast DCP Requirements*
On-street Parking Losses	Nowra CBD	-210	Some of this demand is likely to spread into periphery on-street areas which are currently low in occupancy
	Total	*-756*	*DCP Requirements + Potential On-street Loss*
Parking Opportunities	Nowra CBD	+392	Includes potential on-street and off-street parking opportunities
	Total	*-364*	*DCP Requirements + Potential On-street Loss + Parking Opportunities*
Long Term Opportunities	Nowra CBD	+424	Includes multi-storey parking opportunities (based on the current design of a single multi-storey facility at Berry/Worrigee)
	Total	*+60*	*DCP Requirements + Potential On-street Loss + Short, Medium and Long Term Opportunities*

The 60 parking bay surplus shown above is based on all short, medium and long term infrastructure opportunities completed. As previously discussed there is a significant amount of uncertainty regarding these future forecasts and proposed infrastructure opportunities. However given this target allows for gradual loss of 210 on street spaces over time, this is an appropriate long term strategy that can be reviewed and updated as required over time.

9.2.5 Multi-Storey Parking Facilities - Timing for Implementation

Funding will likely be the key factor in determining when a multi-storey facility can be constructed. Funding is further discussed in Section 9.2.6. The requirements of the car park to reduce deficiencies are estimated to be less than the forecasts identified in previous studies. Previous studies are considered to have overestimated existing deficiencies, development growth and traffic growth in the CBD. These studies estimated deficiencies of almost 1,000 parking bays in 2016 (based on a 2003 study) or in 2021 (based on a 2007 study). These previous estimates would have required 2-3 multi-storey parking facilities to be completed by 2021, although it is now known that very high growth rates were adopted in the planning forecasts used in those former analyses.

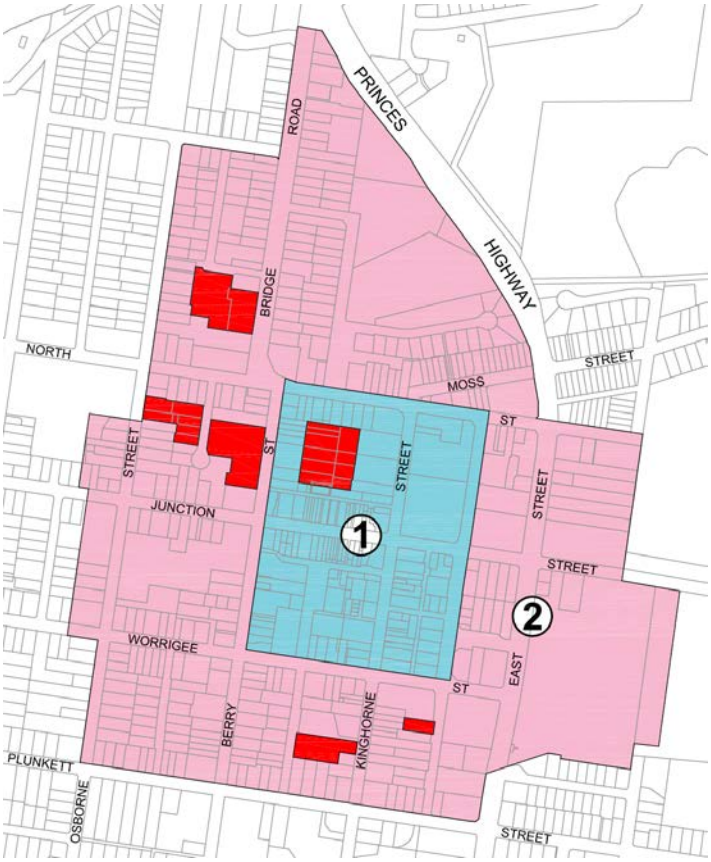
The timing of the multi-storey car park is not considered to be as crucial as previously estimated. Other than funding, which is the primary factor, the requirements for the multi-storey car park also depend on the shorter term infrastructure opportunities. The shorter term opportunities will allow Council to defer a multi-storey car park, however the costs associated with these shorter term opportunities are still considerable and need to be weighed up with the significant funding requirements for longer term strategies.

Importantly, the additional capacity provided by the short term opportunities, particularly to address the current DCP demand deficit, will also assist to mitigate the adverse impacts of construction of the Berry/Worrigee car park (when 201 well utilised spaces are displaced during construction). On that basis of addressing the current DCP demand deficit, and preparing the CBD for the impacts of constructing the Berry/Worrigee car park, it is recommended that Council address the additional at grade parking opportunities in the short term.

9.2.6 Multi-Storey Parking Facilities – Funding (Shoalhaven Contributions Plan 2010)

Shoalhaven Contributions Plan 2010 (Shoalhaven City Council)

Shoalhaven City Council currently has a contributions plan in lieu of provision of on-site parking where developments cannot fully provide parking on-site. A cash contribution at a rate of $ 25,333.03 (2015) per parking bay may be accepted by Council as specified in the *Shoalhaven Contributions Plan 2010*. The contribution strategy is based on locations as shown in Figure 9.3, where Area 1 requires payment of contributions for car parking while Area 2 normally requires parking to be provided on-site (however, Council may still accept contributions for Area 2).



Project cost breakdown

Car Park Location	Number of Spaces	Land Cost (Note 1)	Construction Cost (Note 2)	Estimated Total Cost
Egans Parking Station	220	N/A	$10,251,189	$10,251,189
8 Lawrence Avenue Parking Station	300	N/A	$6,601,499	$6,601,499
Collins Way	110	$946,550	$64,550	1,011,100
Old Gas Works Site (Bridge Rd)	196	N/A	$910,755	$910,755
9 Haigh Avenue	34	$241,573	$110,271	$351,844
67 Kinghorne Street	40	$417,228	$116,824	$534,052
Total	**900**	**$1,605,351**	**$18,055,088**	**$19,660,439**

Source: Shoalhaven City Council – Shoalhaven Contributions Plan 2010

Figure 9.3: Current Shoalhaven Contributions Plan 2010 Projects

The Contributions Plan currently stipulates parking contribution requirements for commercial / retail developments in the CBD where a DCP Demand deficit (of meeting DCP18 rates) currently exists. This will need to be re-worded to also capture the residential components (and any other relevant permitted use) that is permissible in the CBD.

Following this review and updating of parking estimates to 2015, the Shoalhaven Contributions Plan 2010 should be updated accordingly to reflect current forecast demands and projects recommended as part of

this review, subject to consultation. In particular the Projects table (as shown in Figure 9.3) also needs to be amended to correct some of the number of spaces indicated (Collins Way has 144 spaces, and Bridge Road 193 spaces, for example). Furthermore, the current Shoalhaven Contributions Plan 2010 includes two multi storey car park projects, whereas this assessment has determined that if the Berry/Worrigee multistorey parking station is approved, there is no need (based on current floor area projections and forward estimates) to provide any more than that one multistorey parking station at this point in time in the Contributions Plan. This 2015 update provides a sound basis for updating of the Shoalhaven Contributions Plan.

Nowra CBD Economic Analysis Commercial Development Contributions (AEC Group)

The *Nowra CBD Economic Analysis Commercial Development Contributions* report prepared by AEC Group assesses the viability of development in the Nowra CBD. The report also discusses the impact development contributions have on the feasibility of development. As developments in the CBD core are generally required to make cash contributions in lieu of on-site parking, parking has a substantial impact on development feasibility within the CBD core.

The key findings of the *Nowra CBD Economic Analysis Commercial Development Contributions* report include:

- the Nowra CBD car parking program has been relatively unsuccessful;
- contributions charged for developments in the Nowra CBD are generally in line with similar areas in NSW;
- current (2013) economic viability of property development in the Nowra CBD is not strong, with Return on Investment (ROI) negative for commercial and residential developments and only slightly positive for retail;
- one of the key issues impacting development viability is the high cost of providing parking and/or paying contributions in lieu of on-site parking; and
- the property market, parking and contributions have the most significant impact on development viability.

The recommendations of the *Nowra CBD Economic Analysis Commercial Development Contributions* report include:

- the existing Contributions Plan approach incorporating potential discounts for parking requirements / contributions is considered the preferred approach;
- the provision of a discount mechanism (potentially 50%) for the parking requirements for new development in the CBD would improve the viability of commercial development, however may place pressure on Council to fund the future parking infrastructure by alternative means;
- discount parking requirements would need to be supported by town planning, traffic and engineering analysis;
- consider applying for a special rate variation to fund construction of a multi-storey car park in the Nowra CBD;
- consider implementing a plan incorporating a contributions plan equating to 1% of construction costs which would significantly reduce the required contributions, however would require council to find other means of funding;
- consider leveraging Council's land holdings to facilitate development by potentially creating partnerships with government or university organisations to development on discounted land;
- explore opportunities for Council and State Government funding for the construction of multi-storey parking facilities;
- develop clear policy framework to provide clarity and guidance for Council and developers with the aim of reducing planning and approval timeframes; and
- Council continues to promote increased economic activity in the Nowra CBD through a number of actions proposed to increase demand for property in the Nowra CBD.

It should also be noted from the AEC Group report that providing pay parking solely within a multi-storey car park is not sufficient to pay off a loan funded multi-storey car park and is therefore not considered viable.

Funding Recommendations

Based on the *Shoalhaven Contributions Plan 2010* and outcomes of the *Nowra CBD Economic Analysis Commercial Development Contributions* report prepared by AEC Group, the following comments should be considered:

- Based on the analysis there is no technical justification for reducing parking rates, the rates are already considered at the lower end of the scale in comparison with RMS guidelines and already make suitable allowance for future public transport provision
- Parking incentives should be considered to encourage development and encourage the provision of public parking in lieu of private parking for retail/commercial;
- The adoption of Pay Parking for the Nowra CBD would need to occur in a consistent manner and should not apply to a single location (for equity and consistency purposes). Pay parking throughout the CBD would directly contribute to paying off additional parking facilities, however the Nowra CBD is not ready for such a strategy as the peak parking demand does not extend across the majority of the business day, but rather over the main 11am to 2pm lunch-time period. This would make the cost of provisioning pay parking systems difficult to justify and may introduce credibility issues for periods outside of the peaks. Pay Parking is further discussed in Section 10.2.
- Contribution requirements could be implemented for all new residential developments within a reasonable travel distance to the Nowra CBD (excluding the CBD itself). This acknowledges that there are two ends to a trip as the majority of residents in the broader Nowra area and surrounding towns/villages that use parking facilities within the CBD. As this is a larger catchment to levy upon, it provides a significant opportunity to obtain the necessary funds to assist with provisioning additional parking in the CBD. This could fund 50% of the costs of providing parking in the Nowra CBD, in effect providing commercial developers with a 50% discount on the current cost of levying for parking in the Nowra CBD.

10. PARKING MANAGEMENT STRATEGIES

The following strategies focus on managing parking with less emphasis on increasing supply. Although it is inevitable that additional parking will need to be provided in the future, managing existing parking provisions and promoting the use of alternative transport modes that reduce parking demands are essential for the future sustainability of the Nowra CBD.

10.1 PEDESTRIAN CONNECTIONS

Pedestrian links should be improved to promote utilisation of some of the lower occupied parking areas. It is recommended that footpaths be widened particularly in the vicinity of large off-street car parking facilities to improve pedestrian links. Street scaping can also improve/promote pedestrian connections. Street-scaping and footpath improvements are also discussed and recommended within the Draft Master Plan.

It should also be noted that apart from Egans Lane, Berry Street, Nowra Mall West and Stockland car parks, many of the off-street car parks do not provide pedestrian links within the parking areas, although safe and efficient external path links are more important given their exposure to higher traffic volumes and speeds, and the need to connect the peripheral parking locations to the CBD core.

10.2 PAY PARKING

Pay parking can be introduced to manage parking within the CBD. Although there is currently no pay parking areas within the CBD, pay parking is an inevitable strategy that will likely be required in the medium to long term.

Pay parking is a difficult strategy to implement and is generally negatively received by the local community and usually heavily objected to. The most significant issue the Nowra CBD faces is the competition between the Nowra CBD retail core and the Stockland Shopping Centre. If customers are required to pay for parking in the CBD core then they are more likely to take their business elsewhere. As a result, the need for pay parking should be reviewed in the medium to long term.

It should be noted that in some cases where parking is fully occupied, pay parking strategies can improve the attractiveness of some business areas where customers know that they are likely to be able to get a parking space if they are willing to pay for it, whereas without pay parking it would likely be fully occupied and deter customers. It is also understood that some employees within the CBD would rather park in time limited areas and pay the occasional small fine than park further away.

It is reinforced however that it would be premature to introduce Pay Parking at this stage until other alternative transport access modes are improved upon and additional residential uses are introduced into the town centre to reduce any risk of decentralising the CBD as a direct result of introducing Pay Parking.

RMS Policy

Pay Parking by the Roads and Maritime Services (RMS) provides guidelines for policy and operations framework to establish and operate pay parking. The primary objectives of pay parking specified in the policy are intended to:

- ensure both safety and traffic efficiency within the overall context of travel demand management and the management of traffic on the road system;
- provide equitable access to parking spaces for roads users on roads and road related areas where demand exceeds the available parking spaces through increased parking turnover;
- where demand exceeds supply, ration the use of both on-street as well as off-street car parking spaces on roads and road related areas, to allow short to medium term parkers to gain access to parking during business hours by removing competition from all day parkers.
- ensure that any parking demand strategy is consistent with any land transport strategy for the area, and to support and complement the transport objectives, especially public transport, rather than working against them.

Considering the above, pay parking should not be introduced in Nowra CBD in the short term. This is primarily due to the availability of parking outside of peak times. This however is likely to change in the future if safety and/or traffic efficiency becomes an issue and demands become excessive.

Wollongong City Council

Wollongong City Council implemented pay parking in the Wollongong CBD in 2010. This was initially widely criticised primarily from CBD retailers, however once the initial backlash ended and Council changed the parking fees from a flat rate to pro-rata system, the benefits were more widely observed. Some business owners changed their views on pay parking as they recognised the benefits to their customers.

Wollongong City Council has identified the following key benefits to Wollongong as a result of the implementation of pay parking:

- increased compliance with time limits particularly with respect to long stay parkers (significant numbers of city centre workers were previously utilising timed parking as all day parking);
- improved turnover of parking due to better compliance which increased the availability of short stay parking in the CBD;
- improved utilisation of surplus revenue on City Centre parking and active transport infrastructure where the public can see revenue is being used to address parking demand; and
- occupancy and utilisation data can be extracted from parking meter central data system (albeit somewhat limited) which facilitates better ongoing management of parking resource (e.g. adjustment of time limits and hours of operation etc.).

Although the benefits of the introduction of pay parking in Wollongong should be acknowledged, it is unlikely that pay parking would be beneficial to the Nowra CBD in the short term. As Nowra parking demands increase and spread in the longer term and pay parking is considered, it is recommended to revisit and liaise with Wollongong City Council to review their learnings and outcomes.

10.3 ENFORCEMENT

Parking enforcement is difficult due to the long duration time restrictions that typically exist and large parking supplies. Parking rangers currently chalk tyres to check for parking compliance. There are some technologies that can be used to enforce parking that remove the need for this manual method of enforcement, however many of these rely on pay parking systems.

A gated ticketed system at the access to parking areas could be introduced where parking is free for an initial defined period before fees apply. This requires tickets to be checked and validated using parking ticket machines before exiting the car park. The benefits of this type of system are that it removes the need for parking enforcement of that parking area. This system can also be introduced as an interim solution before a full pay parking strategy is introduced. This type of parking system could be introduced at the Egans Lane car park and Stewart Place car park (if converted to a single time restriction). Consideration would also need to be given to reduce the number of vehicle access points for these car parks.

License Plate Recognition (LPR) technologies are currently being used by a number of Councils in NSW including Wagga Wagga City Council. This enforcement technology uses a camera and computer fitted to a parking enforcement vehicle driven which is driven by a Council staff member. The system records number plates, photographs and records GPS data of each vehicle surveyed. The parking area is then resurveyed after the prescribed time restriction period has elapsed to determine overstay infringements. The benefits of using LPR technologies include:

- improved management of parking enforcement;
- enforcement in all weather conditions;
- increased efficiency in monitoring parking restrictions;
- improved utilisation of staff resources; and
- improved working conditions and OH&S for staff including security.

Most other technologies which can improve enforcement generally rely on pay parking systems, where pay-and-display tickets or pay-by-plate systems can be implemented.

10.4 PARKING GUIDANCE

Parking occupancies can be determined based on the number of vehicles entering / exiting a car park. This usually relies on a gated access for a parking area. The occupancies can then be provided on dynamic signage to inform motorists of where parking is available. These dynamic signs can be located on primary access roads to the CBD as well as at the direct access to the parking areas. This parking guidance system reduces the unnecessary vehicle circulation by guiding motorists to car parks with parking available. The survey analysis would indicate that conditions are not currently at a level that would warrant this type of system in Nowra CBD.

10.5 PEAK SPREADING

Peak parking for the Nowra CBD is generally very short between 11:00am and 1:00pm on a weekday. Outside of these periods parking is generally much lower in occupancy and parking can easily be found. Peak spreading is likely to occur over time as customers realise the benefits of shopping outside of peak periods. However promoting trips to the CBD outside the peak periods is important not only to manage parking but also to the sustainability of CBD businesses. The existing lack of peak spreading is the main reason why pay parking is not considered appropriate for Nowra, as short and medium term parkers can still access parking during business hours particularly outside of the peak period.

10.6 PARKING HIERARCHY

A parking hierarchy is the prioritisation of the allocation of kerbside parking space by user type and by parking restriction type. It provides guidance to the way Council responds to public requests for on-street parking changes from competing users (including very short stay, short stay and long stay parking needs). In most centres, the parking hierarchy is designed to ensure high turnover car spaces are located in close proximity to the CBD core, whilst longer stay spaces are located on the outer fringe of the CBD within a walking distance.

Multi-storey car parks located in inner CBD areas typically incur high pay parking rates to reflect the highly accessible car space that is being filled all day that would have otherwise been used with high turnover parker generating income for CBD retailers / service providers.

The parking hierarchy should be considered in the future for the Nowra CBD taking into consideration future potential parking strategies. Parking hierarchies should be simplified and not split within parking facilities if possible. Future installation of technologies such as gated systems and potential pay parking requirements should also be considered, when conditions warrant.

Parking surveys should continually be undertaken at different levels to assess parking hierarchies. Duration of Stay surveys which include occupancy should be undertaken for at least a full day at some of the major off-street parking areas. The key parking areas are those that include split time restrictions such as:

- Stewart Place;
- Berry Street; and
- West and East Nowra Mall.

“Duration of Stay” parking surveys can be used to assess parking hierarchies to determine the most effective and efficient use of the parking areas as well as identify the level of compliance. These surveys were initially undertaken to examine parking peaks in the Nowra CBD and to validate the original TRACKS models that were used to inform the original Nowra CBD Transport strategy. In addition to ongoing targeted surveys to update supply/demand data, the more detailed Joray surveys have been undertaken to update the supply/demand data and allow seasonal adjustment of the data in accordance with AUSTROADS and RMS guidelines. All forms of these surveys should be repeated into the future at suitable intervals to continue to monitor parking conditions and inform future updating of the strategy.

11. OUTCOME SUMMARY

The outcomes of Stage 2 of the Nowra CBD Parking Review are summarises in the following sections.

Parking Infringement Analysis

- parking infringements data was obtained from 1 July 2009 to 30 June 2014 for the following eight (8) Council areas which were identified based on their similar sizes or regional status:
  - Shoalhaven City Council;
  - Wollongong City Council;
  - Wollondilly Shire Council;
  - Wingecarribee Council;
  - Shellharbour City Council;
  - Kiama Municipal Council;
  - Eurobodalla Shire Council; and
  - Port Macquarie Hastings Council;
- the eight (8) Councils were compared in the parking infringement analysis which revealed that following outcomes:
  - levels of infringements for the Shoalhaven LGA are typical for a region of that size;
  - the three highest parking offence Councils have the three highest populations in the same ranking order (i.e. Wollongong LGA, Shoalhaven LGA and Port Macquarie Hastings LGA)
  - comparisons between the primary centres vary due to the size/extents of the State Suburbs and how significantly each area is influenced by tourism/visitors (Batemans Bay) and/or employment density (Wollongong CBD)
  - offences per parking ranger show that the Shoalhaven LGA had lower parking infringement rates per parking ranger compared to Wollongong, Wingecarribee and Port Macquarie – Hastings; and
  - the levels of parking infringements for the Nowra CBD are typical for a major regional centre.

Sector Parking Survey Analysis

- The 85th percentile peak parking demands which account for parking demand seasonality using daily traffic demands for analysis in line with RMS and Austroads methodology are provided in Table 11.1. This table summarises the average of each surveyed Thursday factored to 85th percentile demands for seven sectors within the Nowra CBD.

Table 11.1: Sector Average Thursday Parking Occupancy Analysis

Sector	Average 85th Percentile Thursday Analysis (On-street + Off-street)			Average 85th Percentile Thursday Analysis (On-street + Off-street + Informal)		
	Survey	Capacity	Occupancy	Survey	Capacity	Occupancy
Central	747	863	87%	750	863	87%
North-West	746	1230	61%	790	1230	64%
North-East	673	932	72%	706	932	76%
South-East	683	982	70%	683	982	70%
South-West	818	1017	80%	821	1017	81%
East	724	1096	66%	850	1096	78%
North	267	403	66%	328	403	81%
CBD Total	4658	6522	71%	4928	6522	76%

- The sector analysis shows that the central sector has the highest occupancy followed by the south-west sector and the informal parking demands have the most significant impact on the East and North sectors.

Development Control Plan No. 18 Analysis

- the Shoalhaven City Council's Car Parking Code (Development Control Plan No. 18) was previously reviewed in 2007 by Monaro Consultants and resulted in the following:

- a DCP Demand deficit of 80 parking bays when taking into account the entire CBD;
- a DCP Demand deficit of 582 parking bays if the area east of the Princes Highway is excluded;
- it should be noted that the Monaro Consultants report included informal parking in the supply for the area east of the Princes Highway which may skew the outcomes;

- the DCP Analysis was updated with the parking supply changes from the 2007 surveys to the 2015 surveys which included all formal parking areas and excludes vacant lots (informal) parking areas and other types of parking not associated with DCP requirements (i.e. on-street parking);
- the floor spaces from the 2007 analysis were retained for the 2015 analysis with the outcomes compared in Table 11.2;

Table 11.2: Nowra CBD DCP Analysis Comparison

Location	2007 DCP Analysis				2015 DCP Analysis			
	Supply	Demand	Balance	Comment	Supply	Demand	Balance	Comment
Central, NW, NE, SE, SW	3,534	4,116	-582	DCP Demand Deficit	3,788	4,116	-328	DCP Demand Deficit
East	1,264	762	502	Surplus	981	762	220	Surplus
Total CBD	4,798	4,878	-80	DCP Demand Deficit	4,769	4,878	-109	DCP Demand Deficit

- the number of additional parking bays required (parking shortfalls including where DA's have required contributions be paid for parking since 2007) is 77;
- the total DCP Demand deficit is 186 parking bays based on the DCP analysis and DA requirements;
- The key outcomes of the updated DCP analysis included:
  - the East sector had a higher supply in 2007 than in 2015 due to the 2007 analysis including the informal demand and if it was added to the 2015 analysis it would result in an overall surplus of 312;
  - the reduction in the DCP Demand deficit for the area west of the Princes Highway is likely to be attributed to some increase in supply (Bridge Road car park (193 parking bays) was opened in 2008);
  - the increase in floor areas between 2007 and 2015 has not been taken into account for the 2015 demand calculation; and
  - the 1,377 on-street parking bays have not been taken into account in the DCP analysis;
- the parking rates for a number of Councils were compared with the SCC parking rates (DCP18) and were deemed to be are not too dissimilar to the surrounding areas albeit slightly higher; and
- considering future sustainability of the Nowra CBD, it is recommended to consider reduced retail and commercial rates for the CBD core to promote new businesses that are required to provide contributions in lieu of parking while outside the core, the existing DCP parking rates are considered to be appropriate.

Parking Strategies

- parking supply opportunities were determined by SCC;
- Table 11.3 summarises the parking supply opportunities however it should be noted that it is unlikely all of these parking areas could or would be approved for parking uses;

Table 11.3: Parking Supply Opportunities Summary

Term	Location	Description	Sector	On-street			Off-street			Total		
				No Limit	2P	1P	No Limit	2P	1P	No Limit	2P	1P
Short (3-5 years)	Graham Street	On-street and Off-street	NE	8			15			23		
	McGrath Avenue	Northern Side Extension	NE	31						31		
	McGrath Avenue	Conversion from 1P to All Day	NE	9		-9				9		-9
	Berry Street Car Park	Formalise and New Area	NW					12			12	
	Marriott Park	New Area within Park	SE				92			92		
	Burr Avenue	New on Western Side	SW				16			16		
	Douglas Street	New Parking between Kinghorne St and Princes Hwy	SE	18						18		
Medium (5-15 years) – Long (>15 years)	Lawrence Avenue	New Parking on Western Side	SE	13						13		
	McGrath Avenue	New Parking on Southern Side	NE	30						30		
	Douglas Street	New Parking between Berry St and Kinghorne St	SW/SE	42						42		
	Douglas Street	New Parking between Osborne St and Berry St	SW	34						34		
	Douglas Lane	New Parking	SW	30						30		
	Osborne Street Car Park	Conversion from All Day to 2P	SW				-60	60		-60	60	
In conjunction with pavement rehab works (timeframes unknown)	Collins Way Car Park	Amend to AS2890 parking dimensions	NW				5			5		
	Egan's Lane Car Park	Amend to AS2890 parking dimensions + relocations	Central				25			25		
	Haigh Avenue Car Park	Amend to AS2890 parking dimensions	SE				2			2		
	Lawrence Avenue Car Park	Amend to AS2890 parking dimensions	SE				6			6		
	Stewart Place Car Park	Amend to AS2890 parking dimensions	Central				10			10		
	Osborne Street Car	Amend to AS2890 parking dimensions	SW					3			3	

Term	Location	Description	Sector	On-street			Off-street			Total		
				No Limit	2P	1P	No Limit	2P	1P	No Limit	2P	1P
	Park											
			Total	215	0	-9	111	75	0	326	75	-9
			Total	206			186			392		

- Table 11.3 shows an overall total for parking opportunities of 392 parking bays which includes a total of 186 off-street parking bays.

Parking Forecasts

- Monaro Consultants *Nowra CBD Parking Analysis 2007* report identified that Council would need to provide for 140 parking spaces as a result of new development within the CBD Core area (assuming all development outside the CBD Core area would provide adequate parking on-site;
- The *Nowra CBD (East) Road Network Strategy Review (2007)* prepared by Cardno Eppell Olsen estimated that 210 parking bays would be lost to intersections and road network upgrades in the CBD and would need to be catered for off-street; and
- the existing DCP Demand deficit for the entire CBD is 186 parking bays based on the updated DCP analysis and DA requirements since 2007.

Long Term Parking Strategies

- the consensus of the previous studies and Council's current position is that a multi-storey car parking facility will be required in the future as part of the Long Term Parking Strategies;
- previous studies highlighted that a number of multi-storey parking facilities would be required by 2021, however given the DCP Demand deficit is considered to be much lower than previously forecast, priority should initially focus on one location only;
- the updated DCP analysis shows that the priority should be given to providing parking in the Central Sector with the South-East sector the next best option, favouring a multi-storey car park at Egans Lane, Stewart Place or Lawrence Avenue;
- one of the primary purposes of the multi-storey car park is to cater for the shortfall in all-day parking and therefore based of the parking strategy objectives the ideal locations for long term off-street parking areas are in the periphery of the CBD closer to the proposed loop road;
- consideration should be given to providing a multi-storey parking facility at the Lawrence Avenue or Berry/Worrigee Street car park with the Berry/Worrigee Street car park considered to be the better option given its accessibility and size;
- although the Berry/Worrigee Street car park is in the South-West sector and has the highest DCP surplus, it also has the highest occupancy outside the Central Core and is shares a boundaries with both the Central sector and the South-East sector;
- The Berry/Worrigee Street car park is estimated to provide an additional 424 parking bays;
- previous studies which took into account traffic impacts and the proposed master plan which was based on planning principles, identified Worrigee Street car park as a suitable location for a multi-storey car park;
- the Berry/Worrigee Street car park was also the highest ranked car park in Council's assessment of multi-storey parking facility locations;
- Table 11.4 summarises the parking forecasts including the short, medium and long term infrastructure opportunities;

Table 11.4: Parking Forecasts - Long Term

Type	Location	Balance of Parking Bays	Comment
Existing Off-street DCP Demand Deficit + Future Demand (excludes east sector)	Nowra CBD (Excluding East Sector)	-406	Based on updated DCP analysis and DA Requirements since 2007 (Excludes the East Sector). Off-street parking comparison only.
New Development	CBD Core	-140	Based on future forecast development consents where parking contributions are provided.
	Total	*-546*	*Current and forecast DCP Requirements*
On-street Parking Losses	Nowra CBD	-210	Some of this demand is likely to spread into periphery on-street areas which are currently low in occupancy
	Total	*-756*	*DCP Requirements + Potential On-street Loss*
Parking Opportunities	Nowra CBD	+392	Includes potential on-street and off-street parking opportunities
	Total	*-364*	*DCP Requirements + Potential On-street Loss + Parking Opportunities*
Long Term Opportunities	Nowra CBD	+424	Includes multi-storey parking opportunities (based on the current design of a single multi-storey facility at Berry/Worrigee)
	Total	*+60*	*DCP Requirements + Potential On-street Loss + Short, Medium and Long Term Opportunities*

- a 60 parking bay surplus is forecast assuming all short, medium and long term infrastructure opportunities are completed noting that there is a significant amount of uncertainty regarding these future forecasts and proposed infrastructure opportunities;
- funding will likely be the key factor in determining when a multi-storey facility can be constructed;
- the *Nowra CBD Economic Analysis Commercial Development Contributions* report prepared by AEC Group assesses the viability of development in the Nowra CBD and reviews the impact of the *Shoalhaven Contributions Plan 2010*;
- The recommendations of the *Nowra CBD Economic Analysis Commercial Development Contributions* report include:
  - the existing Contributions Plan approach incorporating potential discounts for parking requirements / contributions is considered the preferred approach;
  - the provision of a discount mechanism (potentially 50%) for the parking requirements for new development in the CBD would improve the viability of commercial development, however may place pressure on Council to fund the future parking infrastructure by alternative means;
  - discount parking requirements would need to be supported by town planning, traffic and engineering analysis;
  - consider applying for a special rate variation to fund construction of a multi-storey car park in the Nowra CBD;
  - consider implementing a plan incorporating a contributions plan equating to 1% of construction costs which would significantly reduce the required contributions, however would require council to find other means of funding;
  - consider leveraging Council's land holdings to facilitate development by potentially creating partnerships with government or university organisations to development on discounted land;
  - explore opportunities for Council and State Government funding for the construction of multi-storey parking facilities;
  - develop clear policy framework to provide clarity and guidance for Council and developers with the aim of reducing planning and approval timeframes; and
  - continue to promote increased economic activity in the Nowra CBD through a number of actions proposed to increase demand for property in the Nowra CBD;

- it should also be noted from the AEC Group report that providing pay parking solely within a multi-storey car park is not sufficient to pay off a loan funded multi-storey car park and is therefore not considered a viable option;
- although the discount parking rates could be implemented for commercial and retail developments, there is very little discount available for residential development due to each residential dwelling typically requiring at least one parking space; and
- an infrastructure levy could be considered for Nowra to increase funding for future parking facilities which would ideally be introduced to all new developments (including residential dwellings) within Nowra.

Parking Management Strategies

- Parking Management Strategies which put less emphasis on increasing supply and focus on managing existing parking provisions and promoting the use of alternative transport modes that reduce parking demands are considered to be essential for the future sustainability of the Nowra CBD.
- Parking Management Strategies include:
  - *Pedestrian Connections*: Pedestrian links should be improved to promote utilisation of some of the lower occupied parking areas by widening footpaths and improving streetscaping.
  - *Pay Parking*: Although pay parking is an inevitable strategy that will likely be required in the medium to long term, considering RMS policy, pay parking should not be introduced in Nowra CBD in the short term primary due to the availability of parking outside of peak times. This however is likely to change in the future if safety and/or traffic efficiency becomes an issue and demands become excessive. Pay parking is a difficult strategy to implement and is generally negatively received by the local community and usually heavily objected to. Pay parking is also likely to impact the competition between the Nowra CBD retail core and the Stockland Shopping Centre. The benefits of the introduction of pay parking in Wollongong should be acknowledged and it is recommended to revisit and liaise with Wollongong City Council to review their learnings and outcomes, once pay parking is considered for the Nowra CBD in the longer term.
  - *Enforcement*: Improving parking enforcement using technologies should be considered, however many of these systems rely on pay parking. A gated ticketed system at the access to parking areas could be introduced which essentially makes a parking area self-regulated. This gated system could be introduced as an interim solution at the Egans Lane car park and Stewart Place car park before a full pay parking strategy is implemented in the long term. License Plate Recognition (LPR) technologies are also currently being used by a number of Councils in NSW including Wagga Wagga City Council. There are many benefits of this type of system and it could be considered a worthwhile strategy for Nowra and it is recommended liaising other Council's with this system to understand the full benefits and costs.
  - *Parking Guidance*: Occupancies of car parks can be determined using gated systems which can then be provided on dynamic signage to inform motorists of where parking is available. These dynamic signs can be located on primary access roads to the CBD to reduce unnecessary vehicle circulation in the CBD.
  - *Peak Spreading*: Parking occupancies are much lower outside the short peak time of 11:00am to 1:00pm on a typical weekday. Although peak spreading is likely to occur over time, promoting trips to the CBD outside the peak period is important not only to manage parking but also to the sustainability of CBD businesses.
  - *Parking Hierarchy*: The parking hierarchy should be reviewed in the future taking into consideration future potential parking strategies. Parking hierarchies should be simplified if possible and not split within parking facilities. Future installation of technologies such as gated systems and potential pay parking requirements should also be considered. Duration of Stay surveys which include occupancy should be undertaken at some of the major off-street parking areas such as those that include split time restrictions, including Stewart Place, Berry Street, and West and East Nowra Mall. Duration of Stay surveys can be used to assess parking hierarchies to determine the most effective and efficient use of the parking areas as well as identify levels of compliance.

12. IMPLEMENTATION PLAN

12.1 SHORT TERM

The short term parking opportunities recommended to be implemented are provided in Table 12.1 below.

Table 12.1: Short Term Parking Supply Opportunities

Term	Location	Description	Sector	No Limit	2P	1P
Short (3-5 years)	Graham Street	On-street and Off-street	NE	23	-	-
	McGrath Avenue	Northern Side Extension	NE	31	-	-
	McGrath Avenue	Conversion from 1P to All Day	NE	9	-	-9
	Berry Street Car Park	Formalise and New Area	NW		12	-
	Marriott Park	New Area within Park	SE	92	-	-
	Burr Avenue	New on Western Side	SW	16	-	-
	Douglas Street	New Parking between Kinghorne St and Princes Hwy	SW/SE	18	-	-
			Total	189	12	-9

The 192 short term parking opportunities identified above can be provided for an estimated cost of between $900,000 and $1,000,000. These parking opportunities will address the entire current calculated shortfall in the short term (186 parking bays), with 6 parking bays spare capacity.

12.2 MEDIUM-LONG TERM

The medium to long term parking opportunities recommended to be implemented are provided in Table 12.2 below.

Table 12.2: Medium to Long Term Parking Supply Opportunities

Term	Location	Description	Sector	No Limit	2P	1P
Medium (5-15 years) – Long (> 15 years)	Lawrence Avenue	New Parking on Western Side	SE	13	-	-
	McGrath Avenue	New Parking on Southern Side	NE	30	-	-
	Douglas Street	New Parking between Berry St and Kinghorne St	SW/SE	42		
	Douglas Street	New Parking between Osborne St and Berry St	SW	34	-	-
	Douglas Lane	New Parking	SW	30	-	-
	Osborne Street Car Park	Conversion from All Day to 2P	SW	-60	60	-
In conjunction with pavement rehab works (timeframes unknown)	Collins Way Car Park	Amend to AS2890 parking bay dimensions	NW	5	-	-
	Egan's Lane Car Park	Amend to AS2890 parking bay dimensions + relocations	Central	25	-	-
	Haigh Avenue Car Park	Amend to AS2890 parking bay dimensions	SE	2	-	-
	Lawrence Avenue Car Park	Amend to AS2890 parking bay dimensions	SE	6	-	-
	Stewart Place Car Park	Amend to AS2890 parking bay dimensions	Central	10	-	-
	Osborne Street Car Park	Amend to AS2890 parking bay dimensions	SW	-	3	-
			Total	137	63	-

In addition to the 200 parking bays identified in Table 12.2, the proposed Berry / Worrigee multistorey parking station will provide an additional 424 parking bays. Due to some of the uncertainties in some of the medium to long term opportunities, it is recommended to implement the Berry / Worrigee multistorey parking station prior to the opportunities identified Table 12.2 as it is an inevitable requirement for the Nowra CBD regardless.

12.3 CONTRIBUTIONS PLAN REVIEW

This review found no basis for recommending any changes to the DCP, however further to the discussion of the Shoalhaven Contributions Plan 2010 in Section 9.2.6, the Contributions Plan should be updated to reflect the above implementation plan. The above items are required to be costed and quantified by a qualified estimator and applied to the Contributions Plan.

APPENDIX A

STAGE 1 EXISTING SITUATION REPORT

NOWRA CBD PARKING REVIEW
STAGE 1 EXISTING SITUATION REPORT

FOR

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EXECUTIVE SUMMARY

Parking in Nowra is of a high concern for locals. The Nowra CBD Parking Review study has been undertaken to investigate parking in the Nowra CBD by identifying existing trends, shortfalls and opportunities. Stage 1 of the Nowra CBD Parking Review assesses the existing parking situation based on 15 random parking surveys undertaken from November 2012 to March 2013.

Analysis of the parking surveys revealed that whilst there are individual parking areas that are regularly close to fully occupied in peak parking periods, when the entire Nowra CBD study area is taken into consideration (off-street plus on-street), the existing parking supply is adequate to cater for the existing demand.

Analysis of the key off-street parking areas also identified that higher demand areas closer to the central area such as the Stewart Place Car Park were at capacity whilst some of the more outlying car parking areas such as the Bridge Road Car Park were underutilised.

To account for parking demand seasonality, 85th percentile parking demands were adopted which is aligned with the approach suggested in Austroads. Parking occupancies for average thursdays factored to 85th percentiles are summarised in the figure below.

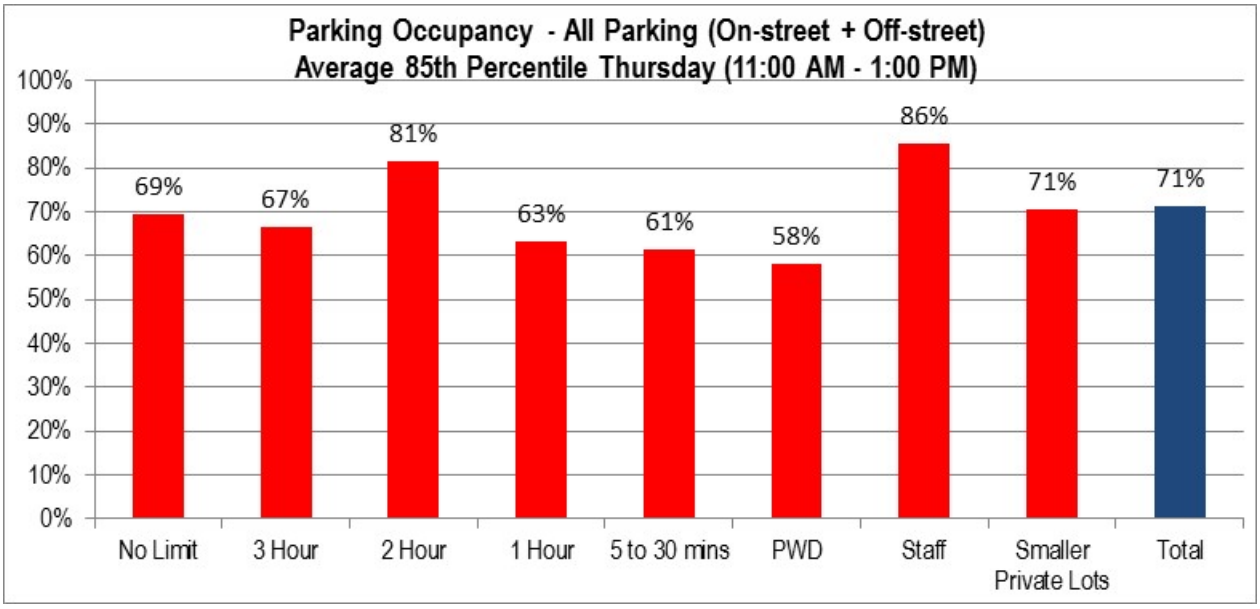


Figure ES.1: Average Thursday 85th Percentile Parking Occupancy

Survey analysis and site observations identified a high number of commuters use vacant lots for all day parking. These lots include many in/around the town centre and a very significant, well utilised vacant lot to the east of the Princes Highway (north of Junction Street on Stockland land). If the owners of these lands fenced these lots, or once the vacant lots within the CBD are developed, there could be a an increased shortfall in all day parking, which should to be factored into Council's strategic planning. Additional parking demands associated with the removal of the informal parking on vacant lots and illegal parking, results in an additional 5% on average total occupancy when added to the 85th percentile analysis.

If the additional demand was added directly to all No Limit parking areas (off-street public + off-street private + on-street) it would on average increase the No Limit occupancy by 13%. If however, the additional demand was added directly to Public Off-street No Limit parking areas only (a likely and logical displacement of parking), it would on average increase the occupancy by 26%. This would result in 100% occupancy of the Public Off-street No Limit parking areas including additional overflow of up to 84 vehicles.

Considering it unlikely that there is any practical capacity to absorb displaced car parking into off-street private car parking, if the additional demand was consolidated into all no limit 'public' parking areas, (i.e. public off-street plus on-street), the overall no limit parking occupancy would be 84%, indicating at this stage there is still some capacity in peripheral on-street parking around the town centre.

These are important study findings and some planning attention needs to be drawn to the high occupancy levels, in particular the latent demand assessment (assessment of additional demand potential from displaced parking currently on vacant lands), as it is expected that the redistribution of parking from these vacant lots (if/when these are developed) could be largely displaced to off-street all day (unrestricted) parking areas.

That said, whilst it is recommended that all of the parking demands for current parking on vacant lands be included in the assessment of total CBD demand, it is not recommended that these amounts be simply added as additional CBD parking supply requirements without caution or consideration of the development potential, and potential for developments to provide additional surplus parking.

There has been some significant developments in the Nowra CBD that have provided surplus car parking supply, and this assists to mitigate the impacts of loss of vacant land used for parking. This is possible on some of the more significant remaining vacant lands, and this also needs to be considered in Council's planning.

Although the data generally shows that some parking areas are at or approaching capacity, overall parking occupancies across the year for the Nowra CBD are currently sufficient (only if total off-street plus on-street supply is considered, in the broader CBD).

Parking occupancies have remained at consistent levels over the last 10-15 years, indicating that the supply has been keeping up with the demand. In review of the previous studies and analysis of the most recent survey data, the perceived existing parking supply issues in Nowra may be associated with parking restriction management / apportionment.

In summary, the parking inventory for the Nowra CBD is as follows:

- *On Street > 1478 spaces*
- *Off Street > 5590 spaces (including Off Street Public > 1994 spaces (36%) & Off Street Private > 3596 (64%)*
- *Total > 7068 spaces*

**Note this includes the off street vacant lots and is based on the Actual Parking Capacity for these areas which is based on the maximum surveyed parking quantum. If using the maximum space provision of parking on these areas was adopted (ie Potential Capacity) this would increase the parking supply by a further 588 spaces from the smaller private areas and 449 spaces from the larger off-street vacant lots. The Actual Parking Capacity of all of the off-street vacant lots was 386 spaces and the Potential Capacity was 835 spaces.*

This report further identified that the 85th%ile supply/demand analysis assessed parking supply as adequate (71% occupancy), if considering the whole of Nowra CBD, and if all parking supply is taken into consideration (on and off street). This means that annual parking levels only exceed the 71% occupancy level for 15% of the year.

Stage 2 of the Nowra CBD Parking Review will include:

- *further analysis and identification of opportunities to improve the management of parking within the CBD;*
- *more detailed review of latent demand;*
- *more detailed sector analysis to assist to identify which sectors in the CBD have adequate parking and which are deficient for analysis and planning purposes;*
- *mapping to simplify the complexity of the survey/analysis; and*
- *detailed review of any identified differences between DCP18 v supply/demand outcomes.*

1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting was engaged by Shoalhaven City Council to undertake a parking review of on-street and off-street car parking in the Nowra CBD. An essential component of this parking review was to review and analyse parking survey data for the CBD. This included ground vetting to confirm the on-street and off-street parking inventory and availability including variations in demand. The study area was therefore generally based on the extent of the parking surveys as shown in Figure 1.1 below.

Source: Google Earth

Figure 1.1: Study Area

The purpose of this study was to investigate parking in the Nowra CBD by identifying existing trends, shortfalls and opportunities. Parking analysis has assisted in determining if parking in the Nowra CBD met existing demands and operated efficiently to serve the CBD. The analysis also examined the differences between on-site supply/demand and Council's obligations (compliance with DCP18 parking rates). Furthermore, this study has considered the appropriateness of Council's application of the DCP parking rates city wide and specific to Nowra CBD. Reviews of previous parking studies and their conclusions have also been undertaken for the Nowra CBD including their reported analysis of existing and forecast parking conditions.

1.2 SCOPE

The Nowra CBD Parking Review has been split into two stages as follows:

- Stage 1 - Existing Situation (this report); and
- Stage 2 - Parking Strategy Development.

The scope for this Stage 1 Existing Situation component of the Nowra CBD Parking Review included the following tasks:

- collation and review of background material and data;
- update of Council's parking survey data spreadsheets (including comparison of old and new survey data, ground vetting, confirmation of data, reformatting and analysis);
- data analysis of both recent and historical surveys;
- data analysis of parking infringement data (limited initially to available Shoalhaven City Council and Wollongong City Council data at Stage 1) ;
- preliminary review of previous parking studies and reports;
- preliminary review of the S94 contribution plan and DCP parking code; and
- a site visit including data verification and short-term opportunity identification.

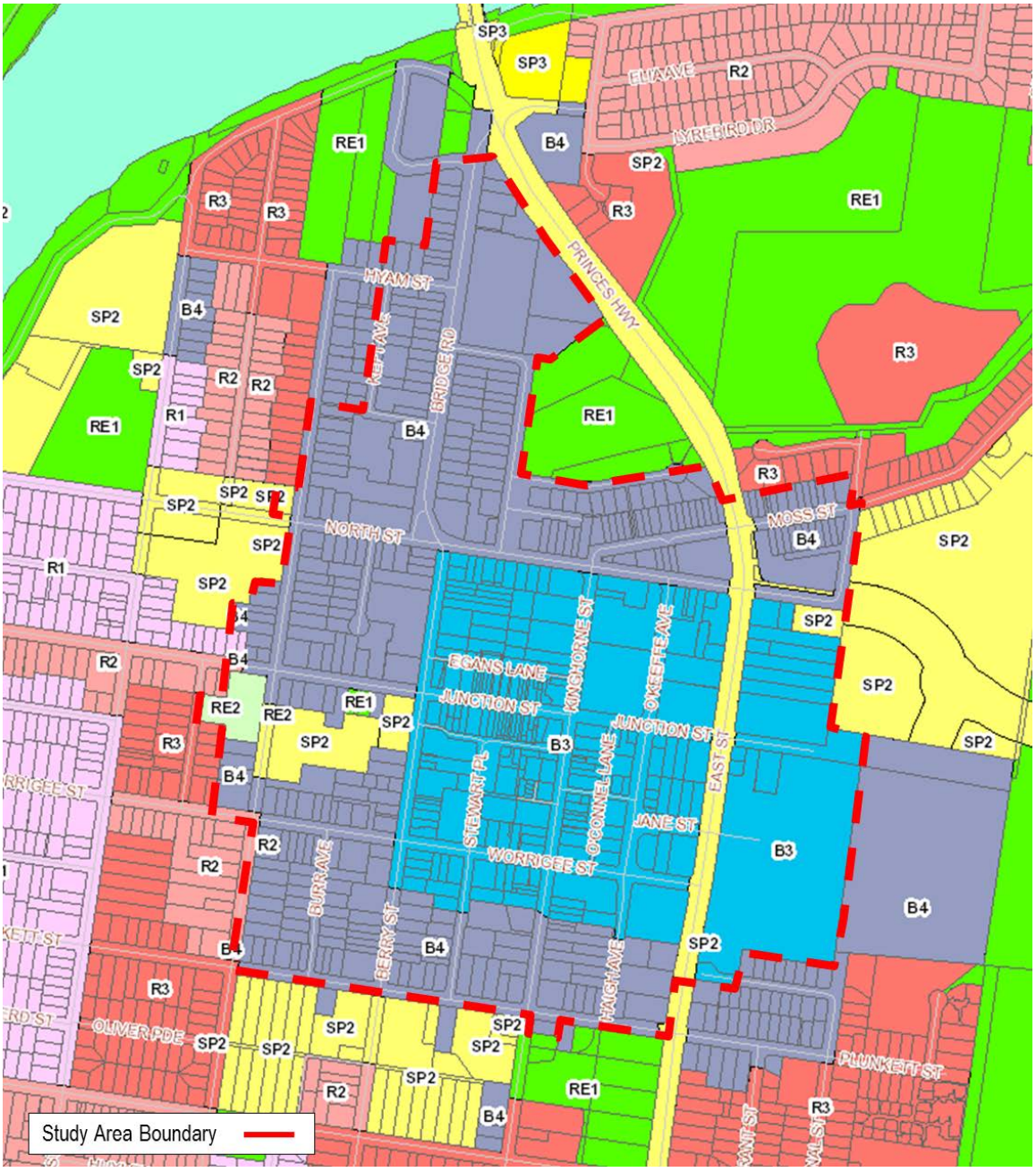
Following completion of Stage 1 the scope for Stage 2 (parking strategy review) is proposed to include the following tasks:

- complete data analysis and reporting of parking infringement data for a total of eight Council LGAs (including expanding on the analysis of Shoalhaven City Council and Wollongong City Council data for full 5 year data set to end June 2014, and undertake analysis and comparisons for all eight LGAs identified, allowing Nowra and Shoalhaven data to be compared with neighbouring Council's and Councils of similar size and regional demographic);
- assess parking survey data and identify parking opportunities (expanding from Stage 1);
- Stage 1 has considered the CBD as a whole, at Stage 2: develop parking hierarchy and staged parking upgrade recommendations informed by sector analysis including data separation into sectors for supply/demand and DCP analysis comparisons. This will assist to identify which sectors in the CBD have adequate parking and which are deficient, for analysis and planning purposes;
- convert parking data spreadsheet into MapInfo to assist data analysis and establish a basis for future use;
- review parking hierarchy and identify future impacts and development considerations;
- detailed review of previous planning documents;
- assess parking outcomes in relation to the Draft Masterplan and previous strategy analysis undertaken;
- review, identity and comment on RMS and Council's parking rates considering relevance, sustainability and economic viability for Nowra;
- review the outcomes of the Monaro Consulting DCP analysis and update/review planning floor areas and parking changes implemented since that time (including update of parking inventory data to October 2015 informed by ground vetting by Bitzios Consulting undertaken at Stage 1);
- review outcomes of traffic modelling with the future structure plan including identification of potential impacts including timeframe adjustment and staging (addressing current deficiencies first), includes reviewing potential for additional parking to be provided by converting selected streets to one way traffic flows, etc.;
- consult and document WCC parking strategy learnings (including benefits of paid parking);
- determine and analyse short, medium and long term strategies; and
- provide advice relating to the update of the S94 contributions plan as well as Council's Parking Code.

2. STUDY AREA OVERVIEW

2.1 LOCALITY AND USE

The Nowra CBD includes a Commercial Core surrounded by Mixed Use zoned areas. Figure 2.1 shows the Shoalhaven Local Environmental Plan (SLEP) 2014 with the Study Area boundary generally coinciding with the extent of Mixed Use zoning.



Source: Shoalhaven Local Environmental Plan (SLEP) 2014 – Shoalhaven City Council

Figure 2.1: Surrounding Land Uses

The parking areas in the Nowra CBD provide parking for staff and customers of the businesses within the CBD. The CBD includes on-street parking, off-street private parking and Council off-street parking facilities.

2.2 ON-STREET PARKING SUPPLY

The on-street parking inventory for the Nowra CBD is based on site inspections. Minor variations may exist along each section pending the size of vehicles parked on any given day. The on-street parking inventory was adjusted (where required) based on site observations which was undertaken to verify survey data.

This approach confirms the parking capacity for any length of road removing any assumptions regarding parked vehicle spacing (i.e. initial estimates of on-street supply were determined by dividing supply lengths into 7.2m parking intervals and then data was adjusted based on maximum number of surveyed vehicles across the 15 survey days and/or site observations).

A summary of the on-street parking inventory is provided in Table 2.1. The inventory includes all parking types and restrictions including loading, taxi, off-peak school zones etc. but excludes "No Parking" and "No Stopping" zones. Where time restrictions were in place, the estimate prepared is based on the legal parking availability during the surveyed parking periods (generally 11:00am to 2:00pm).

Table 2.1: On-street Parking Inventory

Location	Section	Parking Bays (incl. loading, taxi, etc.)
Berry Street	North Street - Plunkett Street	93
Brereton Street	North Street - Moss Street	23
Bridge Road	Scenic Drive - North Street	44
Burr Avenue	Plunkett Street - Worrigee Street	46
Collins Way	North Street - Cul de sac	11
Egans Lane	Berry Street - Kinghorne Street	12
Emporium Lane	Berry Street - Stuart Street	7
Graham Street	North Street - Bridge Street	66
Haigh Avenue	Worrigee Street - Plunkett Street	8
Hyam Street	Bridge Street - Colyer Avenue	88
Jane Street	Nowra Lane – end	5
Junction Street	Osborne Street - Cul de sac (east)	139
Keft Avenue	Hyam Street - Lamonds Lane	44
Kinghorne Street	North Street - Plunkett Street	111
Lawrence Avenue	Worrigee Street - Plunkett Street	40
McGrath Avenue	Graham Avenue - Cul de sac	100
Morton Parade	Plunkett Street - Cul de sac	49
Moss Street	North Street - Brereton Street	59
North Street	Osborne Street - Brereton Street	102
Nowra Lane	Junction Street - Worrigee Street	19
O'Keefe Avenue	Moss Street - Junction Street	4
Osbourne Street	Plunkett Street - Hyam Street	172
Plunkett Street	Osborne Street - Journal Street	117
Schofield Lane	Stewart Place - Kinghorne Street	12
Smith Lane	Kinghorne Street - Nowra Lane	9
Stewart Place	Emporium Lane - Worrigee Street	7
Worrigee Street	Osborne Street - Highway	56
Un-named Lane	Graham Street - Cul de Sac	35
	Total	1478

As the Council's DCP18 rates are specific for provisioning of off-street car parking (with the intent on satisfying all development related parking demands off-street), it is generally not a good strategic approach to rely on on-street parking to satisfy town centre parking demands. In future years, Council may require kerbside spaces to be utilised for other competing needs such as bicycle lanes, footpath widening,

landscaping, bus stops, taxi ranks, provision for midblock or intersection traffic capacity improvements, etc. and therefore on-street parking cannot be relied upon.

On-street parking is also limited and subject to depletion over time due to the above factors and as such it is appropriate for Council's DCP to ensure as an objective, a satisfactory provision of off-street parking for all new developments either on-site or by way of contributions in which Council provides.

Although it is broadly recognised that parking demands do fluctuate (seasonally), on-street parking provides a very useful supply of additional parking during times of higher seasonal demand beyond what can be reasonably provided off-street. Whilst on-street parking supply is not included in the assessment of parking sufficiency for DCP18 analysis, on-street parking is included in the assessment of demand as it provides a good indication of the parking deficiency.

2.3 OFF-STREET PARKING SUPPLY

Off-street parking inventory for public, private and informal (vacant lot) parking areas were also based on the parking survey data and site verifications. Table 2.2 and Table 2.3 summarise the parking inventory for the off-street parking areas. The parking inventory includes all parking bay types and restrictions including loading bays, drop-off bays etc. Table 2.2 summarises the larger off-street parking areas that were surveyed in detail, whilst Table 2.3 summarises the smaller off-street parking areas that were surveyed in less detail. A similar approach was adopted for off-street parking areas as was undertaken for on-street parking, whereby the maximum surveyed parking demand for any unmarked (i.e. not line marked) off-street parking area was adopted as the actual capacity. This is particularly relevant for the smaller private lots that often have large areas at the rear of their properties. The potential capacity of the smaller private lots is also included in Table 2.3 which represents the achievable capacity should the smaller private lots be formalised. This was done to ensure the parking supply for these large informal areas were not over-stated, masking the overall parking occupancies levels that exist within the CBD. The potential capacity is only documented for information purposes.

In some cases these areas could develop and contributions paid in lieu of parking provided, so these current estimates may be completely irrelevant in future. For these reasons only actual capacity was included in the analysis of supply/demand, so that these additional demands were considered, without upsetting the balance of overall calculated occupancies CBD wide.

Table 2.2: Parking Inventory - Larger Off-street Parking Areas

Development / Description	Location	Public / Private	Parking Bays (incl. loading, taxi, etc.)
Aldi	between Kinghorne and O'Keefe	Private	110
Worrigee Street Car Park	between Berry, Worrigee and Lawrence	Public	201
Bridge Road Car Park	between Bridge and Lamonds Lane	Public	193
Nowra Mall Car Park (West)	west of O'Keefe	Private	89
Nowra Mall Car Park (East)	east of O'Keefe	Private	264
Collins Way Car Park	between Collins Way and Osborne	Public	144
Collins Way Vacant Lot	11 Collins Way	Private	14
Haigh Avenue Car Park	9 Haigh Avenue	Public	34
IGA	Haigh Avenue	Private	85
Lawrence/Kinghorne Car Park	between Lawrence and Kinghorne	Public	101
North Street Vacant Lot	between North and Moss Street	Public	35 (reduced to 23 - area portioned off and leased to adjacent business)

Development / Description	Location	Public / Private	Parking Bays (incl. loading, taxi, etc.)
Osborne Street Car Park (South)	between Osborne Street and Worrigee All Day + Roxy	Public	60
Osborne Street Car Park (North)	between Osborne Street and Worrigee 2P + CWA	Public	42
Berry Street Car Park	between Berry and Collins Way	Public	150
Stewart Place Car Park (2 HOUR)	between Stewart and Kinghorne Street	Public	117
Stewart Place Car Park (3 HOUR)	between Stewart and Kinghorne Street	Public	153
Stockland Car Park	Stockland SC including Telstra Business	Private	918
Egan's Lane Car Park	between Egan's, Berry, North and Kinghorne	Public	254
Vacant Lots off Junction Street	North and east of the Ex-serviceman's car park	Private	68
Ex-serviceman's Car Park	North of Junction, East of highway	Private	87
Collins Way Medical (Private)	57 Junction Street, access from Collins Way	Private	37
Tait Miller McIntyre (Private)	53 Junction Street (Collins Access)	Private	11
Car Park (Council)	70 Graham Street 45 degree section	Public	9
Car Park and Vacant Lot	111 North Street	Private	73
Bridge Tavern Hotel Car Park	87 Bridge Road	Private	38
Australian Hotel (Empire Hotel)	Cnr Kinghorne and North Street	Private	30
Chemist Outlet	5 Nowra Lane	Private	32
Bowling Club	40 Junction Street	Private	56
Cemetery Car Park	Cnr North and Osborne Street	Public	19
Osborne House Nursing Home	Main Entrance off Osborne Street	Private	12
Osborne Nursing Home	Underground Secured Area	Private	23
Osborne House / church	Central fenced off area	Private	18
Osborne House - Staff / Visitors		Private	13
Spotlight Car Park	off Stewart Place	Private	46
Jolly Olly's	off Stewart Place	Private	27
McCallum's, Curves etc.	off Fitzgerald Lane	Private	15
Council	Visitors Building South Entrance (off Graham St)	Public	49
Council	Staff Reserved spaces - east/south of building	Public	53
Council	Staff Reserved Secured	Private	22
Council	Overflow parking area (off Bridge St) - grass	Public	144
Council	Car park to the South of Graham Street	Public	137
Entertainment Centre	N of Centre -(off Bridge Rd) southside of access road	Public	20
Entertainment Centre	N of Centre - (off Bridge Rd) northside of access road	Public	22
Entertainment Centre	Entertainment and Council - Drop Zone	Public	7
Entertainment Centre	S side of Centre - main car park - off Graham Ave	Public	62
Total			4094

Table 2.3: Parking Inventory - Smaller Off-street Private Parking Areas

Location	Development / Description	Actual Capacity	Potential Capacity
58 North Street	Caltex Service Station	5	5
8/10 Berry Street	Shoalhaven Library	1	1
12 Berry Street	Shoalhaven City Arts	6	6
16 Berry Street	Shoalhaven Wellness Centre	2	2
50 Berry Street	Rear	8	8
52 Berry Street	rear off Worrigee St - outside (4), underground secure (7)	11	11
54 Berry Street	rear off Worrigee St Laundrette - bitumen marked	3	3
66-68 Berry Street	N.S.W. Illawarra Health - concrete	8	8
70 Berry Street	Nowra Mental Health - Bitumen	26	26
72 Berry Street	Mission Employment - Computers - concrete	12	12
74 Berry Street	rear access from Kinghorne Norm Reed - concrete	6	6
76 Berry Street	rear Craig White - gravel	3	6
1 Berry Street	Dave Hill Marine	2	10
5 Berry Street	St Vincent	10	10
33 Berry Street	rear Standish Centre - under cover	21	21
35 Berry Street	rear Doctors (Off Berry St) - grassed	5	25
43 Berry Street	rear TJ Johnston (off lane way) - gravel	4	4
47 Berry Street	rear Alphatec - (off laneway) - gravel	3	4
49 Berry Street	Robert McDonald & Associates - concrete	7	7
51-53 Berry Street	Jane Adler Centre - bitumen	17	17
55 Berry Street	Bridgeton House	36	36
59 Berry Street	Caledonia House - concrete	10	20
61-67 Berry Street	Dunlop Tyres - gravel	5	28
27 Bridge Road	rear Restaurant	10	10
29 Bridge Road	rear NSW Nursing Group	3	3
31 Bridge Road	rear Wholesale Health Beauty	7	7
45 Bridge Road	Doctors (Hyam St entrance)	2	4
49 Bridge Road	rear 49	2	4
53 Bridge Road	rear South Tax	4	4
55 Bridge Road	rear CPA	2	4
57 Bridge Road	rear Doctor	2	4
59 Bridge Road	Barrister	1	2
61 Bridge Road	rear Pacific Westlake	2	3
63 Bridge Road	rear Chiropractic Clinic	3	3
65 Bridge Road	Motel	25	25
67 Bridge Road	rear Mitchell group	3	7
83 Bridge Road	Hardware	12	12
64 Bridge Road	rear CRS & ABC Radio	10	10
66 Bridge Road	rear Legacy House	10	10

Location	Development / Description	Actual Capacity	Potential Capacity
68 Bridge Road	rear Profussion	3	3
70 Bridge Road	rear South Coast Orthopaedic	4	4
78 Bridge Road	rear Bosco Accounting	2	6
80 Bridge Road	rear Hindmarsh McDonald	2	3
82 Bridge Road	rear AMP	4	5
2 Burr Avenue	Mechanical Repairs	6	6
3 Burr Avenue	South Coast Trophies	1	2
11 Burr Avenue	Waminda	3	6
Egans Lane	rear 21 Kinghorne St	0	2
Egans Lane	rear 129 Junction St	2	2
Egans Lane	rear 123 Junction St Optus	3	4
Egans Lane	rear 121 Junction St Aquatique	2	2
Egans Lane	rear 117 Junction St Zodiac Tatz	3	6
Egans Lane	rear 103 Junction St Darrel Lea	1	1
Egans Lane	rear 95 Junction St Comfort Shoes	2	4
Egans Lane	rear 91 Junction St Café	4	4
Egans Lane	rear 89 Junction St Athletes Foot	4	4
Egans Lane	rear 24 Berry St Govt Building - Secured parking	0	15
Egans Lane	Side18 Berry St Seed & Produce	7	7
Emporium Lane	rear 88 Junction St	1	1
Emporium Lane	rear 72 Junction Postmans Tavern (rear)	2	2
51-55 Graham Street	51 Watkinson & Apperley / 53 Restaurant / 55 NPS	25	25
57 Graham Street	Red Cross / Restaurant	8	11
59 Graham Street	Lawrence & Hanson	4	4
63 Graham Street	63-Bashas Furniture / Parkside Galleries (incl 2 rear)	4	8
65 Graham Street	The Everything Store includes 2 rear	2	10
65 Graham Street	Complete Car Care (includes 2 rear)	5	6
67 Graham Street	Pets (Front 6 - Rear 5)	3	11
69 Graham Street	Nowra Hydroponics (Front 3 - Rear 4)	1	7
71 Graham Street	Wholesale Fruit-Vegies	8	18
Haigh Avenue	rear 99 Plunkett St Moto	3	4
21 Haigh Avenue	Nowra Cycles	2	2
19 Haigh Avenue	Reece Plumbing	5	5
17 Haigh Avenue	rear 122 Kinghorne St South Coast Register Staff	26	26
15 Haigh Avenue	N.S.W. Fire Brigade	0	7
13 Haigh Avenue	rear 118 Kinghorne St (Brake Pro)	5	5
11 Haigh Avenue	Care South	10	10
Haigh Avenue - East Street	Supercheap Auto + Noodles	3	10
Haigh Avenue - East Street	rear 108 Kinghorne St (Office Works)	31	31
18 Haigh Avenue	AutoBarn/Uncle Petes Complex	51	51

Location	Development / Description	Actual Capacity	Potential Capacity
14 Haigh Avenue	Regan Mower Centre (incl. Selby's-Brake-clutch etc.)	17	17
59 East Street	Above Selby's	14	14
North Street - East Street	South Coast Auto Group	2	2
7 East Street	Hwy-No.5 East St) -Rivers Store North St)	49	49
9 East Street	Hwy-No.7 -Bob Jane Tyres (96 North St)		
11 East Street	Hwy-No.7 -Repco (14 Cust - 9 Staff) (East St)		
31 Hyam Street	rear Focas Shoalhaven	2	6
Jane St	Ford Dealers - Customer-Staff	12	12
152 Junction Street	Kinghorne Motors	12	12
66 Junction Street	Church, ministers parking (54 Osborne St) - Bitumen	4	4
64 Junction Street	Drs- Dentist / Party Hire - concrete marked	6	6
56 Junction Street	Commercial Printers - gravel	8	8
54 Junction Street	The Junction Helping Hands - gravel / grass	2	4
50 Junction Street	Laurelstom Professional Suites - gravel	3	6
48 Junction Street	Uniting Care - grass	1	4
46 Junction Street	Doctors - concrete	6	6
41 Junction Street	NSW Health access Osborne St	3	3
43-45 Junction Street	Doctors - gravel / brick	15	15
47 Junction Street	EPW Security - gravel	3	8
53 Junction Street	Tait Miller Partners & Restaurant - concrete not marked	6	9
55 Junction Street	Screaming Emu - gravel	1	4
57 Junction Street	SML (ambulance zone)	2	2
59 Junction Street	Post Office (Staff only) - concrete	13	13
2 Keft Avenue	Rear Solution Accounts Hyam St access	0	2
5 Kinghorne Street	Church (grass/rough area) Authorised church use only	5	20
15 Kinghorne Street	rear (Chicken Shop)	3	3
55 Kinghorne Street	Shell Garage (includes 6 paid spots)	10	10
65 Kinghorne Street	Wrights Chain Saws	28	28
63 Kinghorne Street	rear 63 Wrights Chain Saws	14	14
69 Kinghorne Street	Vacant Tennant Access council car park	12	20
71 Kinghorne Street	NRMA/Pizza	12	12
75 Kinghorne Street	City Mufflers	6	6
112/112A Kinghorne Street	Ray White Real Estate / Domino Pizza	14	14
114 Kinghorne Street	Ink Refills	9	9
116 Kinghorne Street	Kohhs	1	10
118 Kinghorne Street	rear Cash Converters - Georges Autos	3	5
118 Kinghorne Street	Cash Converters	3	5
120 Kinghorne Street	C B Consulting	5	5
124 Kinghorne Street	Jukejema front	6	6
124 Kinghorne Street	rear Dave Goatcher Motors	8	8

Location	Development / Description	Actual Capacity	Potential Capacity
130 Kinghorne Street	Under Construction	0	0
132 Kinghorne Street	rear Youth Centre	1	5
1 McGrath Avenue	rear Physiotherapy - access from lane	6	6
4 McGrath Avenue	The Park Medical Practice	7	7
5 McGrath Avenue	Shoalhaven Woman's Health Centre	6	6
8 McGrath Avenue	YWCA	2	2
2/4 Moss Street	AJ Campbell & G J Gardner	0	4
1 Moss Street	Medical	7	7
9 Moss Street	Amazing Dental	9	9
15 Moss Street	Northwood Professional Suites	5	7
17 Moss Street	AIS	2	6
21 Moss Street	Morton & Cord	4	4
23 Moss Street	Gordon McDonald Elect.	2	7
29 Moss Street	Arwon Chiropractic	1	6
31 Moss Street	Shoalhaven Bridge Program	2	6
33 Moss Street	Aqua Service Pool & Spa	2	5
59 Moss Street	Life without Barriers	4	4
45 North Street	Waminda	4	10
47 North Street	J.Mcguire	2	6
51 North Street	Headspace	5	8
61 North Street	rear underbuilding Doctors access from Graham	47	47
65 North Street	access from Graham (Complete Car Care)	5	8
71 North Street	Murphy's Tyres	5	5
73 North Street	Stone & So	2	20
77 North Street	Quality Clothing and Furniture	3	4
79 North Street	rear Restaurant access lane	6	6
81 North Street	rear Office Connection access lane	4	6
100 North Street	Don Sims	2	15
92/92a North Street	3 O'keefe	21	21
70 North Street	Nowra Pawn Shop & Hair Salon	4	4
64 North Street	GE Money - Naturopath (rear)	5	5
62 North Street	rear Nowra Taxi / Hair	4	4
62 North Street	rear Janome	3	3
60 North Street	Charlie's Auto Electrical	1	1
60 North Street	rear Dance School	1	1
54/52 North Street	Funeral Home	1	3
Nowra Lane	rear Condomorie - 148 Junction St	6	6
15 Nowra Lane	Saddle World, cust. & marked Private parking	21	21
17 Nowra Lane	Dave's Mowers	5	10
O'Connell Lane	NAB Bank (rear) 56 Kinghorne St - Customer	9	9

Location	Development / Description	Actual Capacity	Potential Capacity
O'Connell Lane	Book shop (rear) 138 Junction St	5	6
O'Connell Lane	Dept of Juvenile Justice/Aust.Elect (rear)142 Junction	8	10
O'Connell Lane	Lyrebird Cleaners (rear) 62 Kinghorne St	8	8
O'Connell Lane	Flats (rear) 66 Kinghorne St	5	5
O'Connell Lane	Laser Computers (rear) 74 Kinghorne St	4	4
O'Connell Lane	Raine & Horne (rear) 76 /80 Kinghorne St	14	14
O'Connell Lane	Direct Printing rear 84a Kinghorne St	6	6
O'Connell Lane	Gym. (rear) 94 Kinghorne St	9	9
O'Connell Lane	Bendigo Bank (rear) 98 Kinghorne St	4	4
O'Connell Lane	Green Acres (rear) 100 Kinghorne St	16	16
5 O'Keefe Avenue	NSW Govt Building	32	32
5 O'Keefe Avenue	NSW Govt Building (secured staff parking) not accessed	0	0
76 Osborne Street	Doctors	8	8
74 Osborne Street	Neami Private residence at rear	0	5
72 Osborne Street	Quinn Accountants	0	5
70 Osborne Street	Nowra Women's Housing Scheme	4	4
68 Osborne Street	Injury & Occupational Health Mgt.	2	3
66 Osborne Street	Livewire Orthodontics	6	6
52 Osborne Street	Arthur Booth Accountants rear 49 Junction St	25	25
28 Osborne Street	Brian Norwood CPA (+ double garage)	1	6
26 Osborne Street	NKI	2	5
20 Osborne Street	Bridge Invest	5	13
81 Osborne Street	Pre School	8	8
77 Osborne Street	Waminda	6	8
75 Osborne Street	South Coast Wealth Management	3	8
61 Osborne Street	Dunn & Williams	1	6
53 Osborne Street	Physiotherapy	4	6
49 Plunkett Street	Shoalhaven Skin Cancer Centre	2	5
51 Plunkett Street	Sargents Kids Quarters	6	6
53 Plunkett Street	Doctors	5	5
55 Plunkett Street	Family Health Centre	3	7
57 Plunkett Street	(A-B)	8	11
63 Plunkett Street	South Coast Financial Services - concrete not marked	2	6
69 Plunkett Street	Vacant - concrete not marked	0	14
71 Plunkett Street	Rear access off Berry St - concrete marked	4	4
75 Plunkett Street	Allen Price Associates	3	5
83 Plunkett Street	Mariott & Oliver Solicitors - not marked	2	5
85 Plunkett Street	Nowra Funerals -not marked	1	12
87 Plunkett Street	Shoalhaven Clinical Psychology - gravel	1	30
89 Plunkett Street	Mark Douglas - (Aboriginal Legal Aid-Service)	2	8

Location	Development / Description	Actual Capacity	Potential Capacity
93 Plunkett Street	rear Disabled Employment Service	4	5
95 Plunkett Street	Reed Prosthetics/ Orthotics	4	6
97 Plunkett Street	rear Ewings Electrical	6	8
103 Plunkett Street	Kennedy	1	3
103 Plunkett Street	TLE Electronics	4	6
Schofield Lane	rear 114 Junction St Spirals / Mill Thai - gravel	3	3
43 Worrigee Street	Dr.P McSwiney	3	4
45 Worrigee Street	Sacred Funerals - (rear parking)	1	2
47 Worrigee Street	Mission Australia - (rear parking)	1	5
49 Worrigee Street	Shoalhaven Youth Health Crossroads (rear)	11	12
53 Worrigee Street	Shoalhaven Podiatry Centre (rear)	1	5
55 Worrigee Street	Catholic Care (rear)	7	7
57 Worrigee Street	Industry Capability Network (rear)	1	4
59 Worrigee Street	Dr Williams (rear)	3	4
63 Worrigee Street	Solutions	4	4
71 Worrigee Street	Telstra	12	28
85 Worrigee Street	Focus car park incl. 19 Nowra Lane	22	22
52 Worrigee Street	Family Carer Mental Health, Community Care	6	6
54 Worrigee Street	Australian Credit Acceptance	5	5
56 Worrigee Street	Worrigee Health	1	5
58 Worrigee Street	Cheryl Young Associates	1	4
60 Worrigee Street	Vacant	0	0
66-70 Worrigee Street	Walsh / Mitre 10	8	24
82 Worrigee Street	Dulux Trade Centre - gravel	2	30
86-88 Worrigee Street	Integrity Real Estate/ + businesses (rear)	12	19
Worrigee Street	rear 2-Jane -Shoalhaven Auto - gravel	16	32
Worrigee Street	rear 6-Jane St – Vacant Land	0	0
Worrigee Street	rear.8 Jane St. Mission Australia - bitumen marked	25	25
Overflow vacant lot	Cnr Bridge / Hyam (N-S 37m. E-W 34m)	0	35
	Total	1496	2084

3. PARKING SURVEYS

3.1 OVERVIEW

The most recent parking demand surveys were undertaken by Joray Enterprises over a 3 to 4 month period from November 2012 to March 2013. The surveys were undertaken during peak parking conditions between 11:00am and 3:00pm for weekdays (Thursday and Friday) and weekends (Saturday). The following 15 days and associated times were surveyed (noting that Joray advice to Council, as required, was that all of the main off-street and on-street car parking areas were all surveyed during the more concentrated parking peak between 11:00am and 1:00pm):

- Thursday 29/11/2012 (1100 - 1600);
- Thursday 13/12/2012 (1100 - 1500);
- Friday 14/12/2012 (1110 - 1430);
- Saturday 15/12/2012 (1115 - 1330);
- Thursday 10/01/2013 (1100 - 1440);
- Friday 11/01/2013 (1100 - 1350);
- Thursday 07/02/2013 (1130 - 1440);
- Friday 08/02/2013 (1100 - 1350);
- Saturday 09/02/2013 (1100 - 1315);
- Thursday 28/02/2013 (1130 - 1440);
- Friday 01/03/2013 (1100 - 1340);
- Saturday 02/03/2013 (1100 - 1245);
- Thursday 14/03/2013 (1100 - 1400);
- Friday 15/03/2013 (1100 - 1400); and
- Saturday 16/03/2013 (1100 - 1310).

All parking areas were surveyed on the above dates with the exception of the smaller off-street parking areas. The smaller off-street parking areas were surveyed once only across the following three days:

- Monday 03/12/2012;
- Thursday 06/12/2012; and
- Thursday 14/03/2013.

All of the surveyed dates were “typical” and not affected by any kind of significant special event or market event. Variations in demand are therefore typical seasonal demands that are known to affect the Shoalhaven and South Coast broadly over the warmer months of the year, but can also impact Nowra CBD. The days of the surveys were carefully structured to capture a good spread of typical Thursdays, Fridays and Saturdays to examine seasonal trends and fluctuations in demand.

It is understood that the Joray surveys of the smaller off-street parking areas were assumed to be constant throughout the surveyed period. There was also the practicality of being able to survey all of these areas within the peak periods. As a result these smaller lots were only surveyed once and assumed to be constant. This constant parking demand was considered by Council to be a reasonable assumption which would not greatly affect the results.

Leading up to the commencement of parking demand surveys Joray first completed an update of parking supply inventory. Some differences were identified between the Joray supply data and previous surveys. In order to understand and verify these differences, Bitzios Consulting compared the previous survey and Joray parking supply records line by line, and field vetting was also undertaken in order to verify the parking supply dataset. This process ensured completeness of the data for purpose of updating inventory and preliminary analysis. In Stage 2 this refined data-set will allow a review of DCP18/ RMS rates (and review of Monaro Consulting’s analysis) to assess parking sufficiency.

A large component of this task was to compare old and new survey data, undertake ground vetting to confirm / update the parking supply dataset, consolidate and re-format the parking data for ease-of-use and to assist in the analysis of the parking strategies in the Nowra CBD. Detailed analysis of the survey data is provided in the following sections.

3.2 PARKING OCCUPANCY

The surveys have been analysed to determine the occupancy of the parking areas for each day surveyed. The following sections summarise the parking occupancy for off-street parking areas and on-street parking areas by type. A combined (on-street and off-street) parking occupancy has also been determined for the entire Nowra CBD study area. For some surveyed parking areas where a single parking occupancy was provided for two parking limits or it was unclear how the survey separated the parking data for each limit, the longer parking limit was assumed to be fully occupied first. For example, the Berry Street car park provides both 2-hour and all-day parking. It was assumed for this location that the all-day section was fully occupied first before the 2-hour parking section. This results in any spare capacity for the site allocated as 2-hour parking and not the more popular all-day parking.

3.2.1 Off-Street Parking Occupancy

Off-street parking occupancy has been split into public and private parking areas. Figure 3.1 summarises parking occupancy for the public off-street parking areas and Figure 3.2 summarises the private off-street parking area. Figure 3.3 combines the parking occupancy for public and private off-street parking areas. It should be noted that the smaller private off-street parking areas were only surveyed once (as previously mentioned) and assumed to be constant across all surveyed days. The occupancies of the informal or non-line marked parking areas within the smaller private lots were based on practical capacities. The practical capacities for these lots were taken to be the peak number of vehicles surveyed on the lot.

Some lots had considerably larger vacant areas, however as stated above, these were not included as practical capacity as this would unrealistically lower overall CBD occupancy levels. In these cases the potential capacity has been separately tabled in the report for information only.

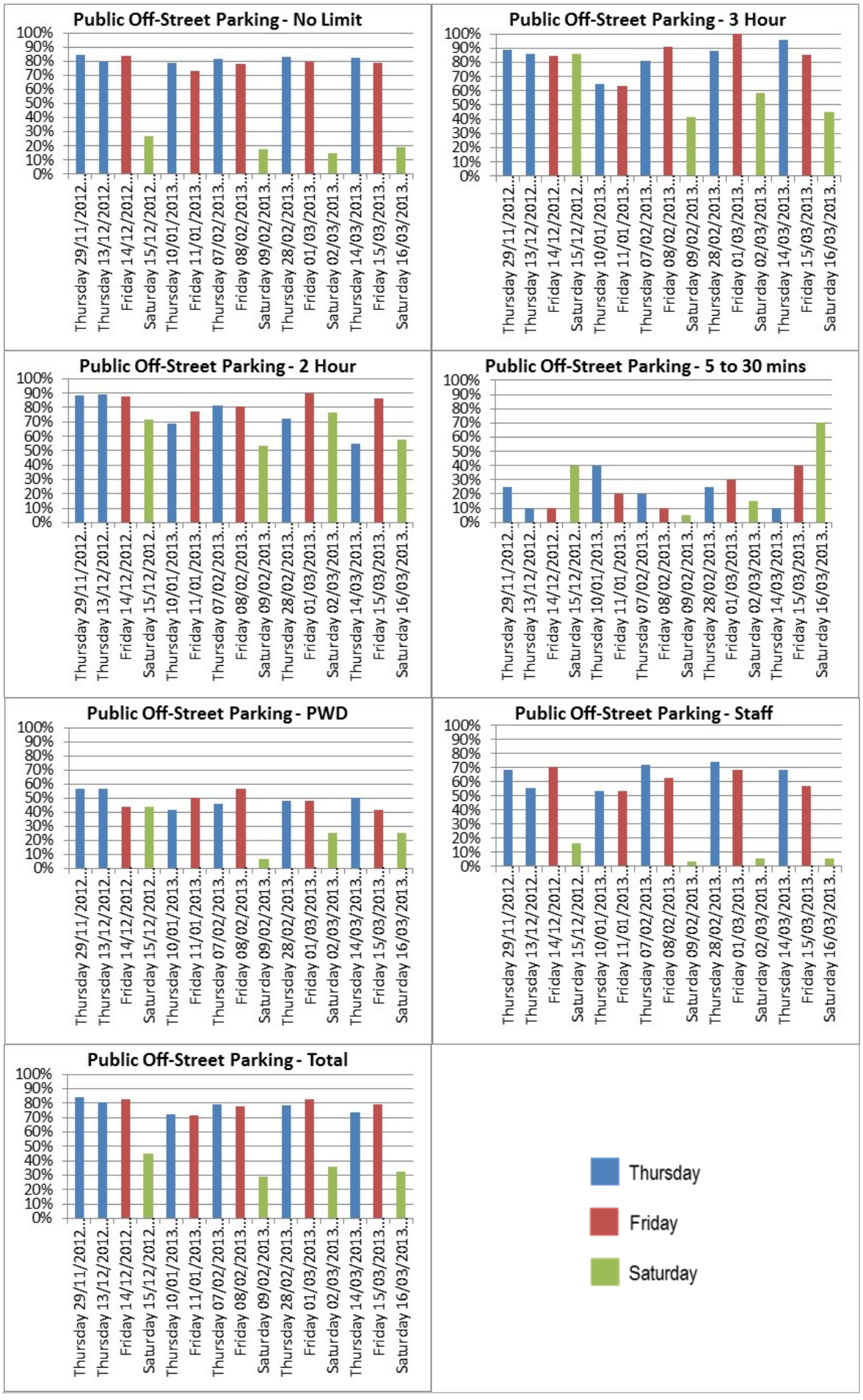


Figure 3.1: Public Off-street Parking Occupancy

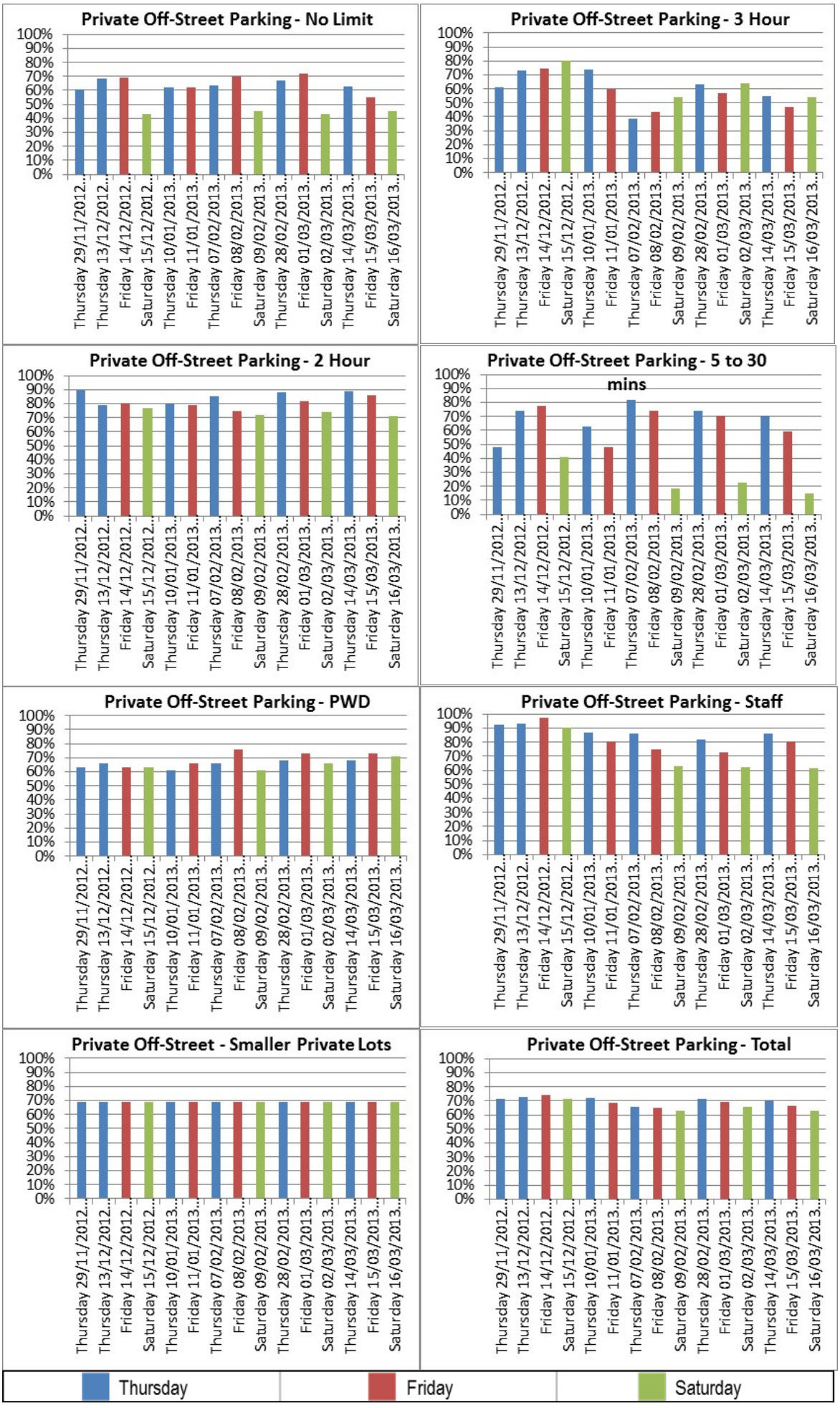


Figure 3.2: Private Off-street Parking Occupancy

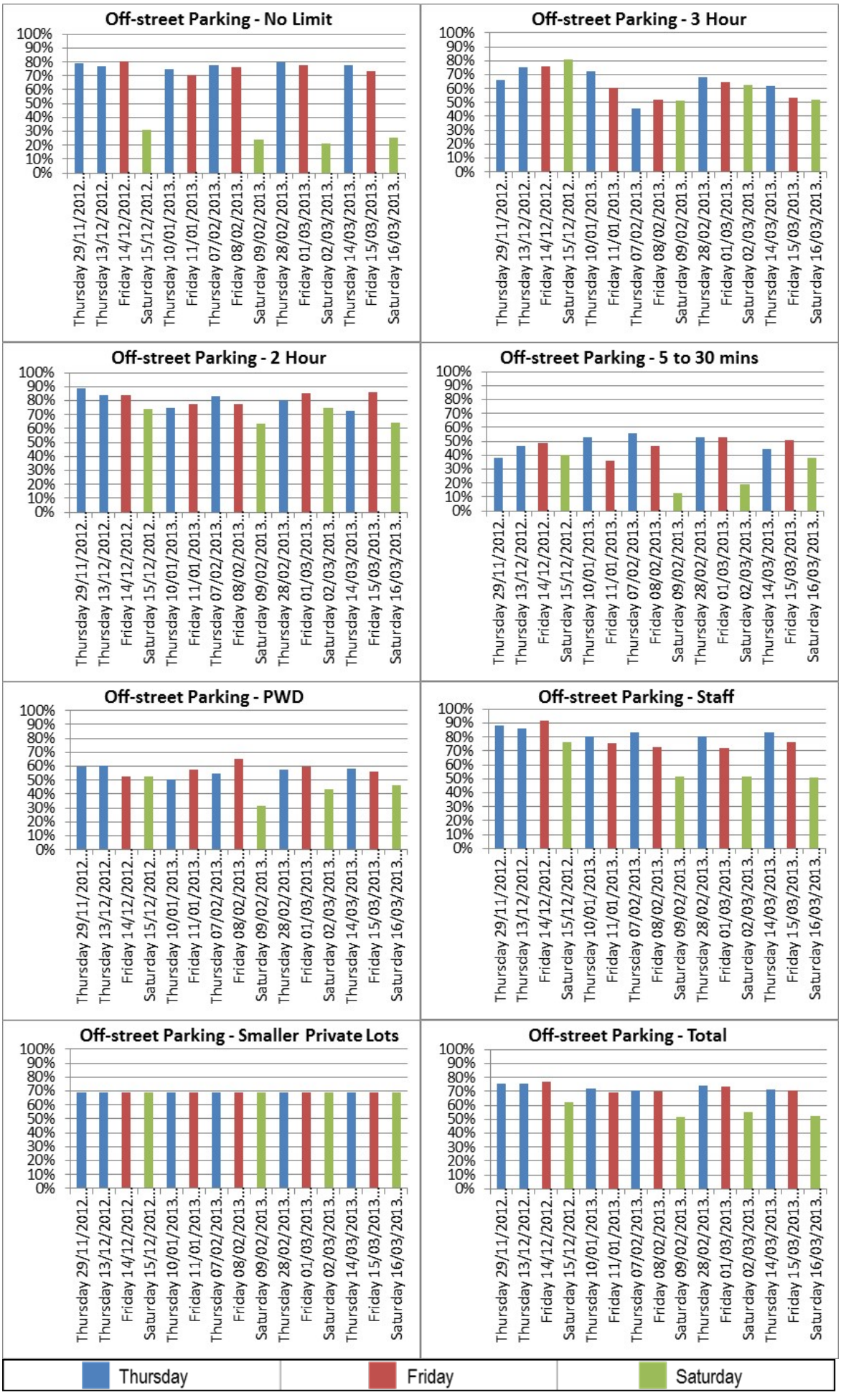


Figure 3.3: Public and Private Off-street Parking Occupancy

3.2.2 On-street Parking Occupancy

Figure 3.4 summarises the parking occupancy for on-street parking areas.

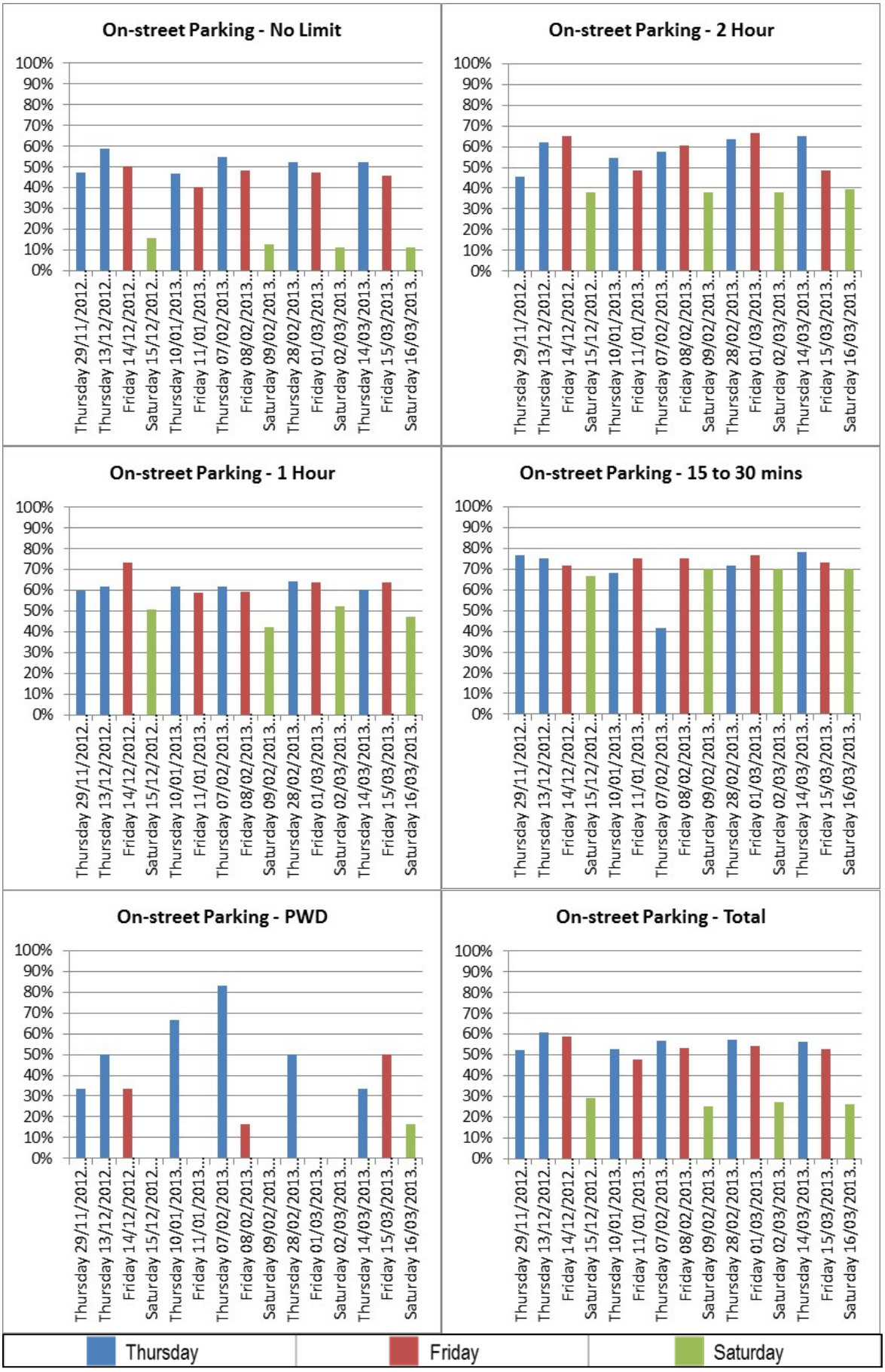


Figure 3.4: On-street Parking Occupancy

3.2.3 Combined On-street and Off-street Parking Occupancy

The combined on-street and off-street parking occupancies for the Nowra CBD are shown in Figure 3.5.

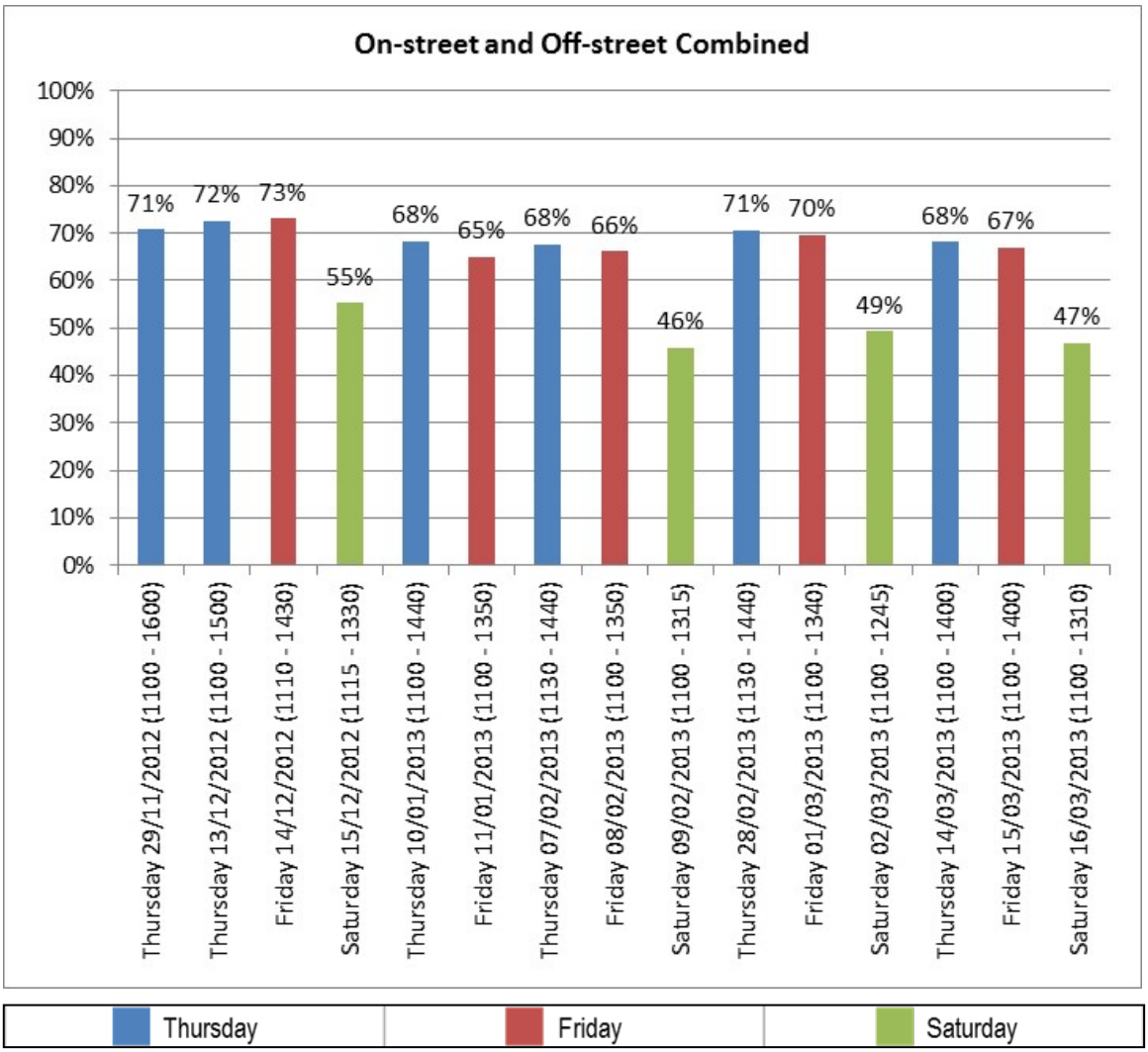


Figure 3.5: Nowra CBD Parking Occupancy

Whilst there are individual areas that are regularly close to fully occupied in peak parking periods, the occupancy figures show that when the entire Nowra CBD study area is taken into consideration, the parking supply is adequate to cater for the demand. The parking surveys have been further analysed in the following section.

4. PARKING SURVEY ANALYSIS

4.1 PARKING DEMAND SEASONALITY

Parking demand seasonality was determined based on traffic demands (due to the direct relationship between traffic and parking demands and the availability of annual hourly traffic data at key locations in/around Nowra CBD). Traffic volume data for 2012 / 2013 was obtained at the following four locations:

- Moss Street;
- Jane Street;
- Bridge Street; and
- Osborne Street.

The Moss Street traffic data was considered to be the most representative of parking demands given its location in the CBD. Jane Street volumes were directly associated with the Stockland Shopping Centre and therefore only represented one primary land use within the CBD. As longer trading hours were on a Thursday and given the high seasonal retail demands before Christmas, the results for Jane Street were slightly skewed. Bridge Street and Osborne Street, whilst providing reasonable representations of Nowra CBD traffic demands, are highly influenced by background traffic which have other influences and may not be affected as significantly by seasonal and visitor trends compared with movements directly into/out of the Nowra CBD. Moss Street was therefore considered the best location as it is affected by seasonal increases from the Princes Highway and carries traffic volumes for a range of land uses (directly into/out of the Nowra CBD) whilst also picking up some background demand.

The Moss Street traffic volumes were used to provide a link between the traffic volumes seasonality and the surveyed parking data. Based on these links, factors were determined that could be used to adjust the parking survey data to represent any given day of the year. The number of surveyed parking days was sufficient to allow for these relationships between traffic and parking numbers to be assessed and reliable patterns established. Adjustments to a specific day of the year was used to determine a parking "design" demand that can be used to assess parking supply and ultimately determine the parking supply requirements for the Nowra CBD. Stage 2 of this study will delve further into the parking supply requirements.

4.2 PERCENTILE PARKING DEMAND AND OCCUPANCY METHODOLOGY

To determine appropriate days of the year to adjust the survey data to and determine a representative parking demand, research was undertaken into how parking supply rates have previously been developed. The following extracts discuss parking demands and supply requirements:

RMS (RTA) Guide to Traffic Generating Developments: 5.7.1 Shopping Centres - Parking

The above (shopping centre) *car parking provisions reflect the mean results of the centres that were surveyed, for the peak parking demand on either Thursday, Friday or Saturday. There may be situations where parking provision at these levels would be inadequate. However, provision based on the 85 percent level of demand must be considered.*

Austroads' Guide to Traffic Management - Part 11: Parking, Section 3.2.2 Supply Based on a Forecast of Actual Demand

Conventional practice is not to provide parking supply to meet demand on the busiest day of the year as this approach would be uneconomical because parking supply would exceed demand for all but one day of the year. Likewise, it would be inappropriate to link the supply of parking to the demand on an average day, as this would mean that there would be insufficient parking available on half the days of every year. Instead, accepted practice is to adopt a level of supply to satisfy the parking demand that will only be exceeded for a number of hours or days each year. This demand is most often taken to be equivalent to the 85th percentile hourly utilisation level experienced throughout the year. Where this is difficult to accurately determine, often the peak hour demand on the tenth (or fifteenth) busiest day of the year is used. However,

in those cases where overflow will have a significant detrimental effect on adjacent areas a higher level of supply may be appropriate.

It should be noted that a parking system operates at optimum efficiency when the system is being used slightly less than at full capacity. The occupancy at which a parking facility achieves optimum efficiency is generally accepted as being in the range of 85 to 95% of capacity (ULI and NPA 2000). Supply should therefore be about 10%[1] higher than the estimated demand for parking when using this approach. This allowance provides for vehicle circulation and manoeuvring, operating fluctuations, and loss of parking attributable to misparked vehicles.

1. This is only applicable for high turnover parking areas, and does not typical apply to all day commuter car parks.

Given the above RMS and Austroads extracts, and common practice, a methodology has been adopted that uses daily traffic demands to determine an 85th percentile peak parking demands. In addition, the parking supply provided should be increased by a further 10% for short stay parking areas to account for parking turnover.

Daily traffic demands were used in the absence of hourly parking utilisation (generally the surveys were spread over 3 to 5 hours). Whilst strong relationships can be seen between daily traffic levels and peak parking levels, traffic peak hours and parking peak hours differ considerably, also different parking locations and parking categories also peak at different times. Accordingly it is more appropriate that daily traffic patterns be used in the seasonal analysis of parking.

4.3 TRAFFIC DEMAND AND PARKING OCCUPANCY ANALYSIS

Traffic volumes and parking occupancies were analysed to determine the relationship between the dataset and to confirm consistency.

Table 4.1 and Figure 4.1 below show the relationship between traffic demands and parking survey occupancy.

A full 365 days of traffic data was made available by Council (from Friday 14/12/2012 to Thursday 13/12/2013). Of the 15 parking survey days this allowed traffic data to be directly related to 13 of those days to compare relationship between traffic and parking data. For the first two surveys undertaken prior to Friday 14/12/2012 the same equivalent days were taken from 2013 as noted below. It is also noted that a number of the surveyed days were corrupted across the year (as typically occurs) and as such equivalent demand days were adopted in their place.

Table 4.1: Traffic Volumes and Parking Occupancy Relationship

Parking Survey Date	Equivalent Traffic Survey Date	Traffic Volumes			Parking Occupancy (vehicles)
		Peak Hour (veh/h)	Daily (veh/day)	Highest Day Rank, and Daily Volume Percentile	
Thursday 29/11/2012	Thursday 28/11/2013*	855	9695	148th (59.45%)	4561
Thursday 13/12/2012	Thursday 12/12/2013*	850	9765	144th (60.55%)	4703
Friday 14/12/2012	Friday 28/12/2012*	1094	10956	21st (94.50%)	4735
Saturday 15/12/2012	Saturday 15/12/2012	855	8989	221st (39.28%)	3575
Thursday 10/01/2013	Thursday 10/01/2013	871	10143	84th (77.19%)	4424
Friday 11/01/2013	Friday 11/01/2013	888	10189	80th (78.29%)	4214
Thursday 07/02/2013	Thursday 07/02/2013	929	10377	51st (84.89%)	4361
Friday 08/02/2013	Friday 08/02/2013	965	10874	24th (92.58%)	4288
Saturday 09/02/2013	Saturday 02/02/2013*	880	8590	244th (32.14%)	2958
Thursday 28/02/2013	Thursday 07/02/2013*	929	10377	51st (84.89%)	4575
Friday 01/03/2013	Friday 08/02/2013*	965	10874	24th (92.58%)	4517
Saturday 02/03/2013	Saturday 02/02/2013*	880	8590	244th (32.14%)	3188
Thursday 14/03/2013	Thursday 07/02/2013*	929	10377	51st (84.89%)	4421
Friday 15/03/2013	Friday 08/02/2013*	1027	10792	34th (90.93%)	4349
Saturday 16/03/2013	Saturday 16/03/2013	768	7680	293rd (19.78%)	3024

** Traffic volume equivalents fully or partially taken from different dates.*

Note, because 7th February 2013 was the correctly counted traffic day out of the data set provided (28th February / 14th March contained data errors and were documented as equivalent days), the 28th February 2013 was adopted as the representative 85th%ile demand day. It is noted that the parking demands were in fact higher on the other recorded days, and it is quite likely that the daily traffic volumes may have in fact been higher if it was not for the fact that the data was corrupted and equivalent day data was used.

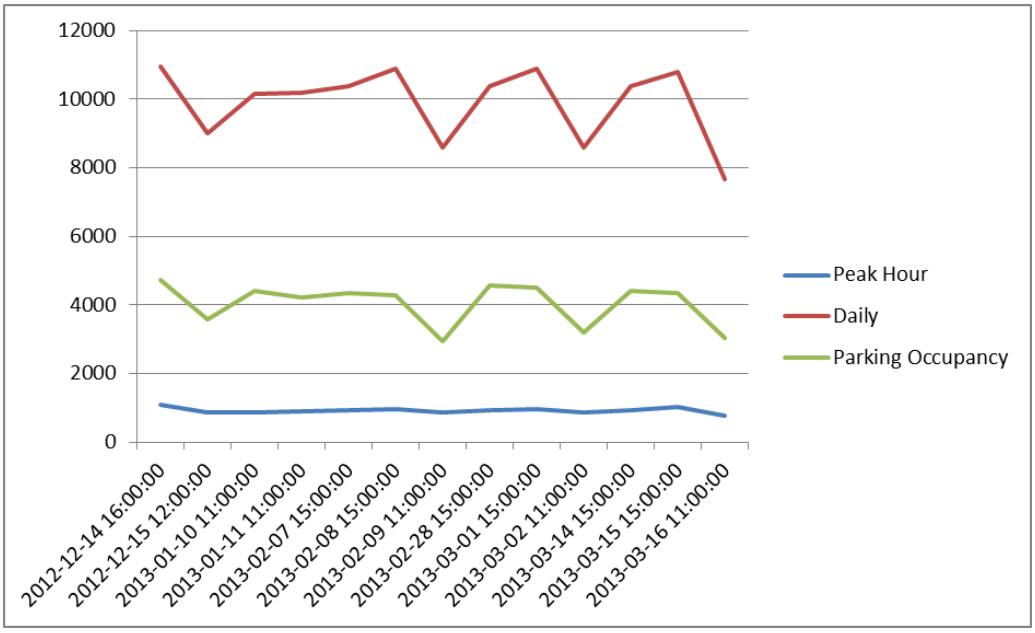


Figure 4.1: Traffic Volumes and Parking Occupancy Relationship

As shown in Figure 4.1, the relationship between traffic demands and parking survey occupancy is reasonably consistent and can therefore be relied upon with confidence to seasonally adjust parking data for annual design target levels (85th percentile design parking occupancy levels).

4.4 PERCENTILE ANALYSIS

It should be noted from the Traffic Demand and Parking Occupancy Analysis that Thursday 07/02/2013 most closely represents an 85th percentile daily traffic demand. Table 4.2 provides some more detail on how this day is represented within the dataset.

Table 4.2: Moss Street Traffic Volume Analysis

Day	Best Represented Day	Daily Volume	Percentile of Daily Volumes	Peak Hour Volume	Percentile of Hourly Volumes	Highest Hour Rank
Closest to an 85th %ile Day	Thursday, 7 February 2013	10377	84.9%	929	97.03%	252

Table 4.2 above shows that for the Thursday, 7 February 2013 parking surveyed day corresponds to an 84.9 percentile daily traffic volumes and a 97 percentile hourly traffic volume.

Although the parking surveyed day of Thursday 07/02/2013 closely represents the 85th percentile demand, parking occupancies across other surveyed days have also been factored based on traffic demands to represent estimated 85th percentile parking demand. These factored demands have been used to provide an understanding of the parking demands across each of the parking areas taking into account all the surveyed days and thereby removing any local nuances that may have existed on the 85th percentile equivalent day (Survey of Thursday 07/02/2013).

Table 4.3 details the parking demand factors (based on daily traffic volumes) used to generate 85th percentile parking demands.

Table 4.3: 85th Percentile Parking Demand Factors

Parking Survey Date	Equivalent Traffic Survey Date	Daily (veh/day)	Target Traffic Demand (percentile)	Factor
Thursday 29/11/2012	Thursday 28/11/2013*	9695	10377 (85%)	1.07
Thursday 13/12/2012	Thursday 12/12/2013*	9765	10377 (85%)	1.06
Friday 14/12/2012	Friday 28/12/2012*	10956	10377 (85%)	0.95
Saturday 15/12/2012	Saturday 15/12/2012	8989	10377 (85%)	1.15
Thursday 10/01/2013	Thursday 10/01/2013	10143	10377 (85%)	1.02
Friday 11/01/2013	Friday 11/01/2013	10189	10377 (85%)	1.02
Thursday 07/02/2013	Thursday 07/02/2013	10377	10377 (85%)	1
Friday 08/02/2013	Friday 08/02/2013	10874	10377 (85%)	0.95
Saturday 09/02/2013	Saturday 02/02/2013*	8590	10377 (85%)	1.21
Thursday 28/02/2013	Thursday 07/02/2013*	10377	10377 (85%)	1
Friday 01/03/2013	Friday 08/02/2013*	10874	10377 (85%)	0.95
Saturday 02/03/2013	Saturday 02/02/2013*	8590	10377 (85%)	1.21
Thursday 14/03/2013	Thursday 07/02/2013*	10377	10377 (85%)	1
Friday 15/03/2013	Friday 08/02/2013*	10792	10377 (85%)	0.96
Saturday 16/03/2013	Saturday 16/03/2013	7680	10377 (85%)	1.35

** Traffic volume equivalents fully or partially taken from different dates.*

It should be noted from the above tables that the factors for the Saturdays are significantly higher due to the much lower traffic and parking demands. As the Saturday factors have the potential to significantly

influence the average, the following sections summarise the factored percentile parking occupancies including and excluding the Saturday results.

As can be seen in the following section the higher Saturday factors have not skewed the relations that is proven between traffic demand and parking demand (refer Figure 4.1). The higher rates derived for a typical Saturday are further evidence that the traffic and parking demands on Saturdays are generally much less than that experienced on a weekday.

4.4.1 Off-street 85th Percentile Parking Occupancy

Figure 4.2 shows that on average approximately 71% of off-street parking areas in the Nowra CBD are occupied based on factored 85th percentile parking demands for all surveyed days including Saturdays. Figure 4.3 which excludes Saturdays increases the average occupancy to approximately 73%. Based on an optimum efficiency in the range of 85% to 95% of capacity, the spare capacity for off-street parking areas is approximately 15% to 25%.

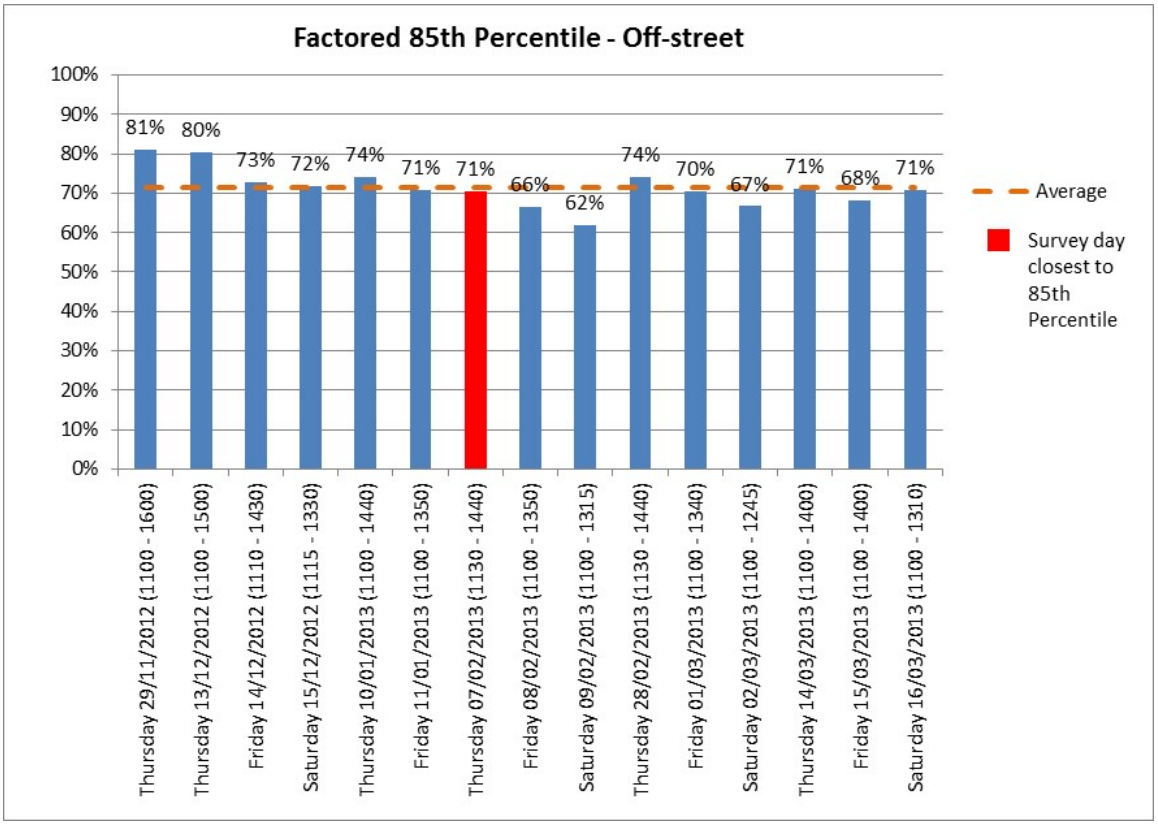


Figure 4.2: Factored 85th Percentile Off-street Parking Occupancy (including Saturdays)

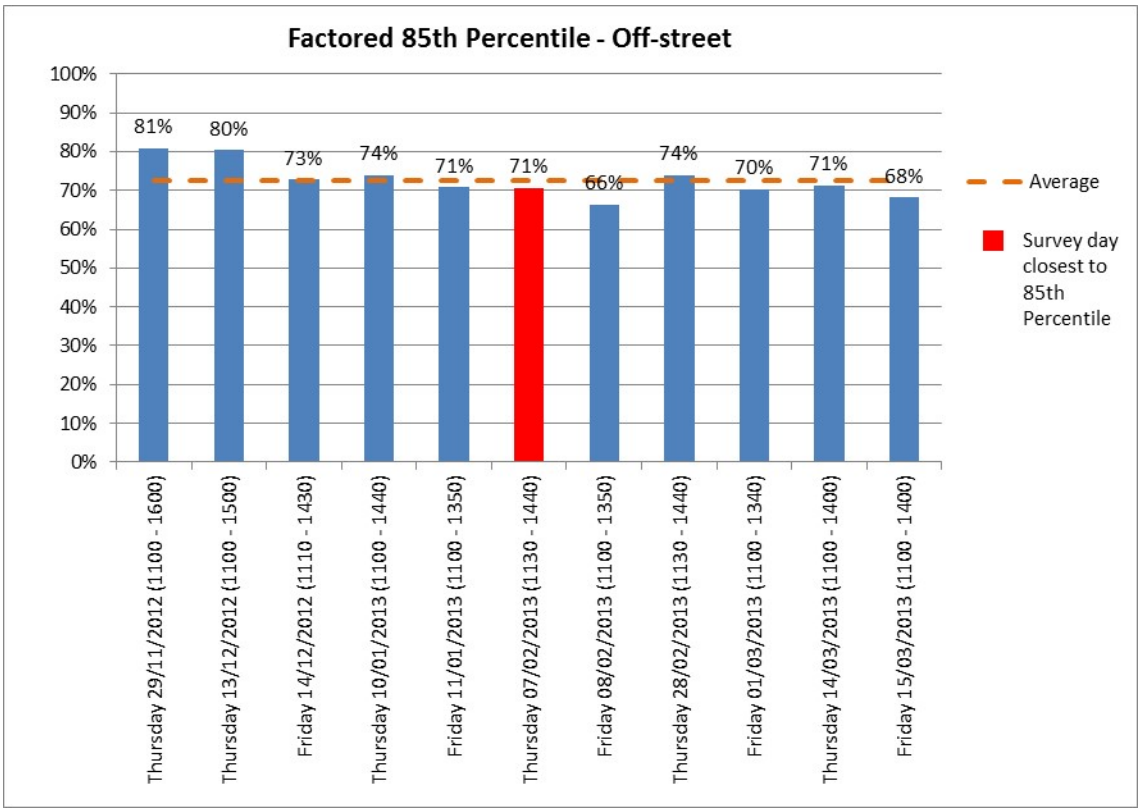


Figure 4.3: Factored 85th Percentile Off-street Parking Occupancy (excluding Saturdays)

4.4.2 On-street 85th Percentile Parking Occupancy

Figure 4.4 shows that on average approximately 50% of on-street parking areas in the Nowra CBD are occupied based on factored 85th percentile parking demands which include Saturdays. Figure 4.5 shows that the Saturday occupancies have a significant influence on the average with the average increasing to 55% with the Saturdays excluded. Based on an optimum efficiency range of 85% to 95%, there is approximately 30% to 40% spare parking capacity on-street.

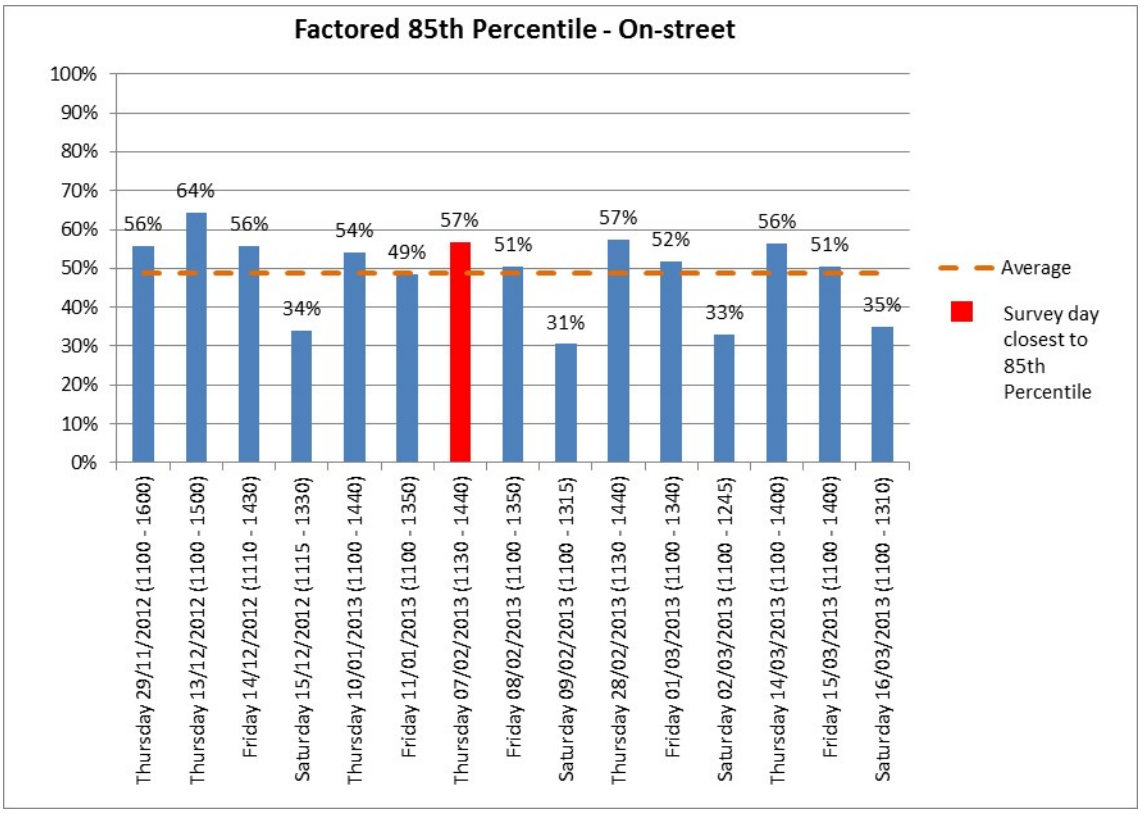


Figure 4.4: Factored 85th Percentile On-street Parking Occupancy (including Saturdays)

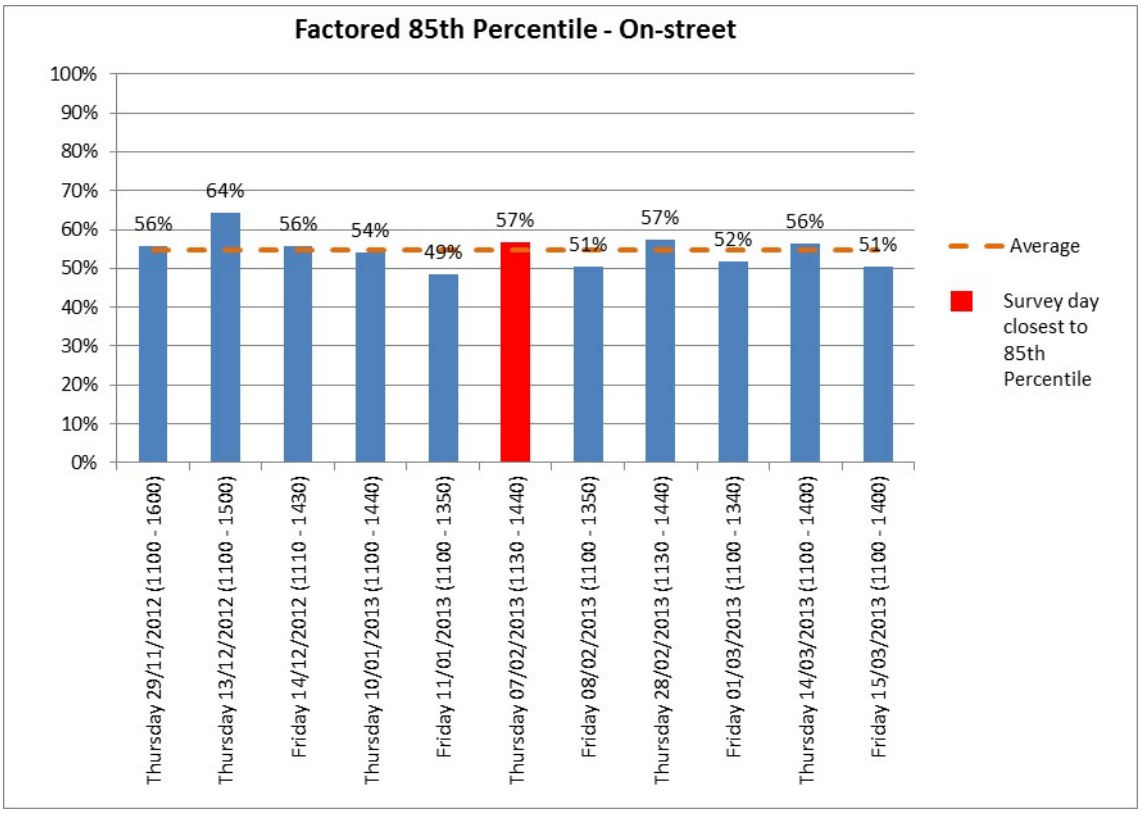


Figure 4.5: Factored 85th Percentile On-street Parking Occupancy (excluding Saturdays)

4.4.3 Combined 85th Percentile Parking Occupancy

Figure 4.6 shows that on average 67% of the combined on-street and off-street parking areas in the Nowra CBD are occupied based on a factored 85th percentile parking demand which includes Saturdays. Figure 4.7 shows that with Saturdays excluded the average occupancy increase to 69%. This equates to spare capacity in the order of 15% to 25% based on the optimum efficiency ranging from 85% to 95% of capacity.

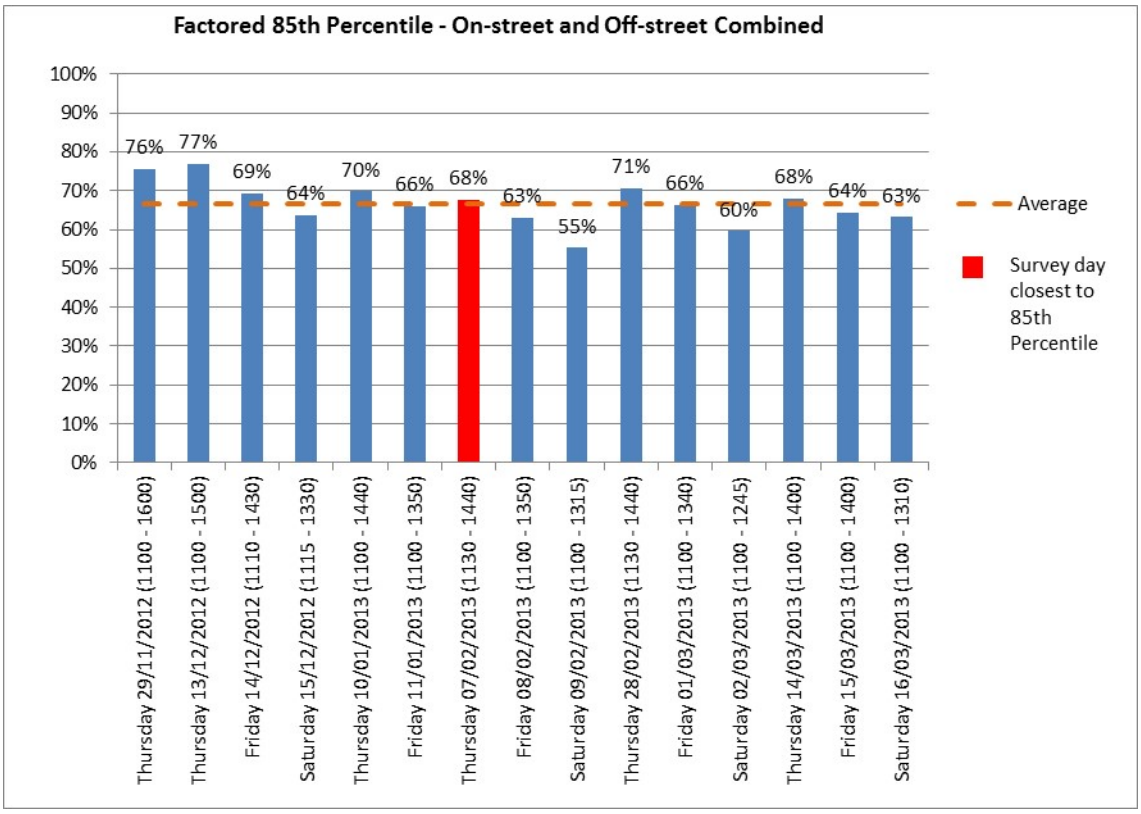


Figure 4.6: Factored 85th Percentile On-street and Off-Street Parking Occupancy (including Saturdays)

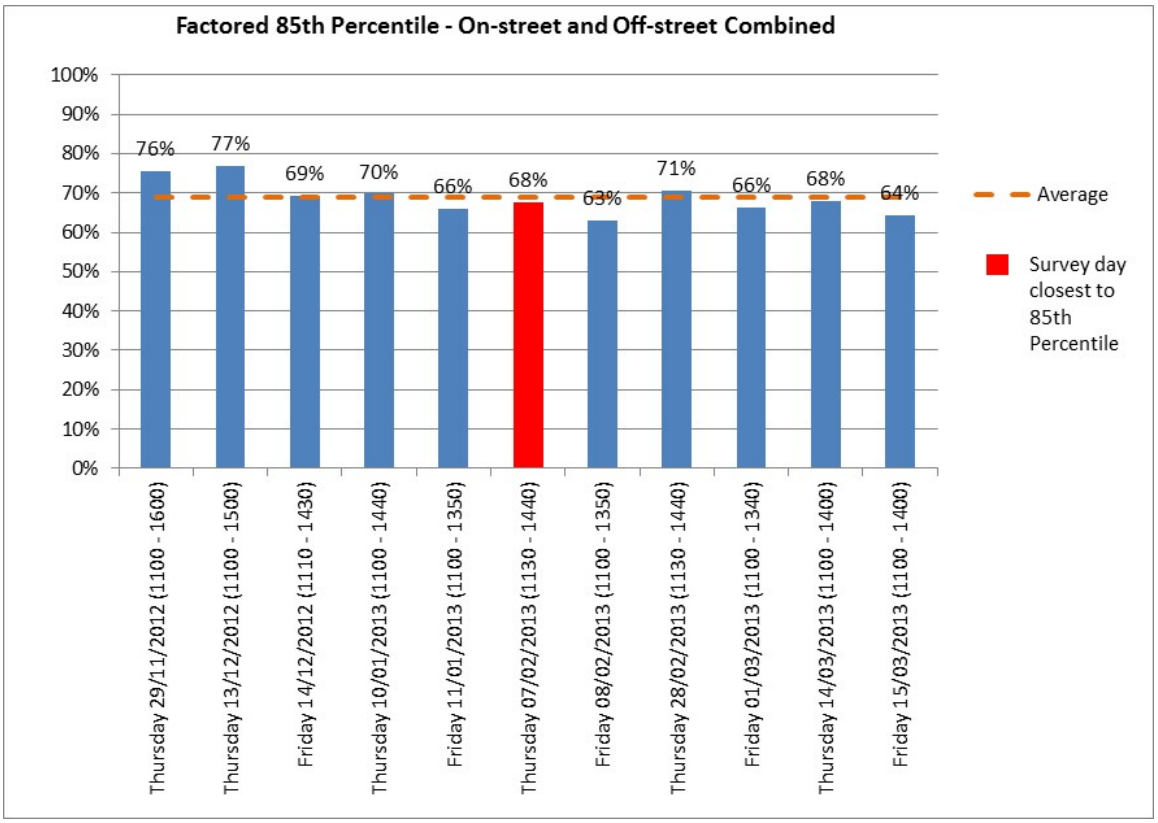


Figure 4.7: Factored 85th Percentile On-street and Off-Street Parking Occupancy (excluding Saturdays)

4.5 PERCENTILE PARKING DEMANDS SUMMARY

Based on the percentile parking demands, each factored day has been averaged to determine the average percentile parking demand for each parking term or category. As a result of the 85th percentile analysis undertaken in Section 4.4, and due to the different patterns of occupancy among the different parking types (Saturdays compared with weekdays), the Saturday's have not been included in the analysis as they significantly affect the resulting averages and are not considered appropriate to be used in the development of design demands. The above tables show that Saturdays have much lower traffic and parking demands and therefore there exclusion from further analysis does not adversely affect the planning targets for CBD wide parking provision (which is dominated by Thursday and Fridays). The following sections therefore summarise the average 85th percentile parking demands for the surveyed Thursdays and Fridays.

The benefit of analysing the parking surveys in this manner is that is allows for a suitable sample size of data to be analysed across each of the parking types, without impacting the results by including significantly lower demand days.

4.5.1 Average 85th Percentile Parking Occupancy Summary

Figure 4.8 to Figure 4.12 summarise the average 85th percentile parking occupancy.

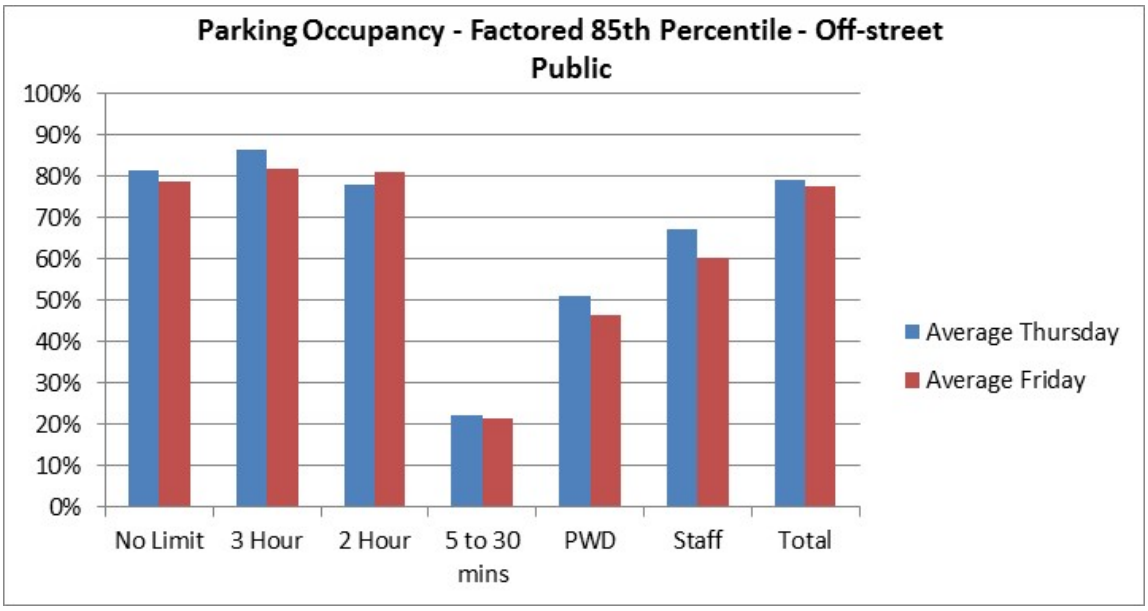


Figure 4.8: Average 85th Percentile Public Off-street Parking Occupancy

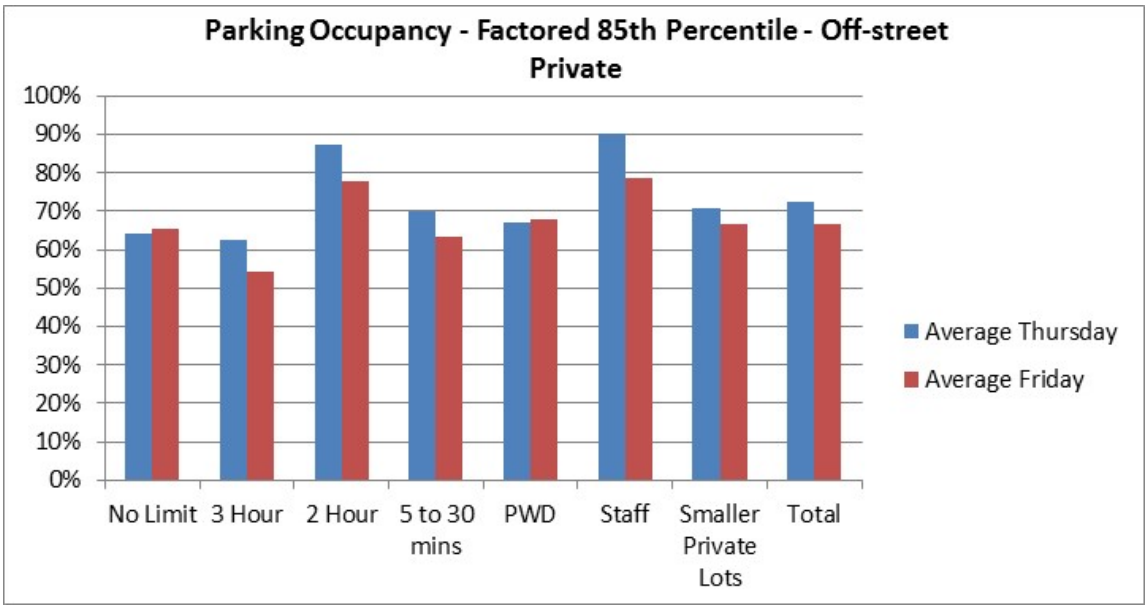


Figure 4.9: Average 85th Percentile Private Off-street Parking Occupancy

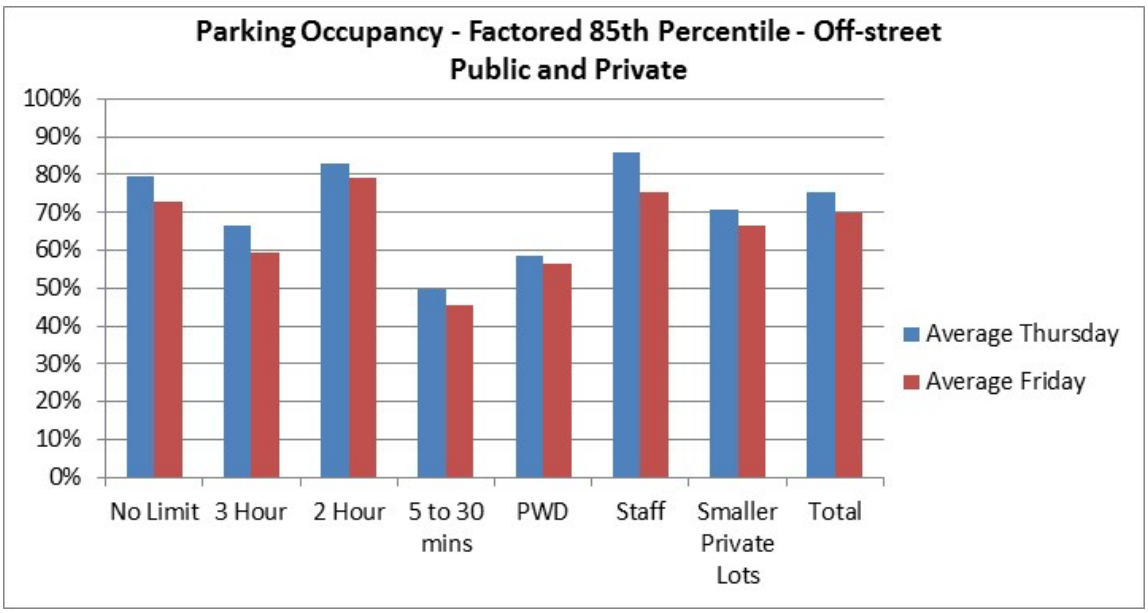


Figure 4.10: Average 85th Percentile Public and Private Off-street Parking Occupancy

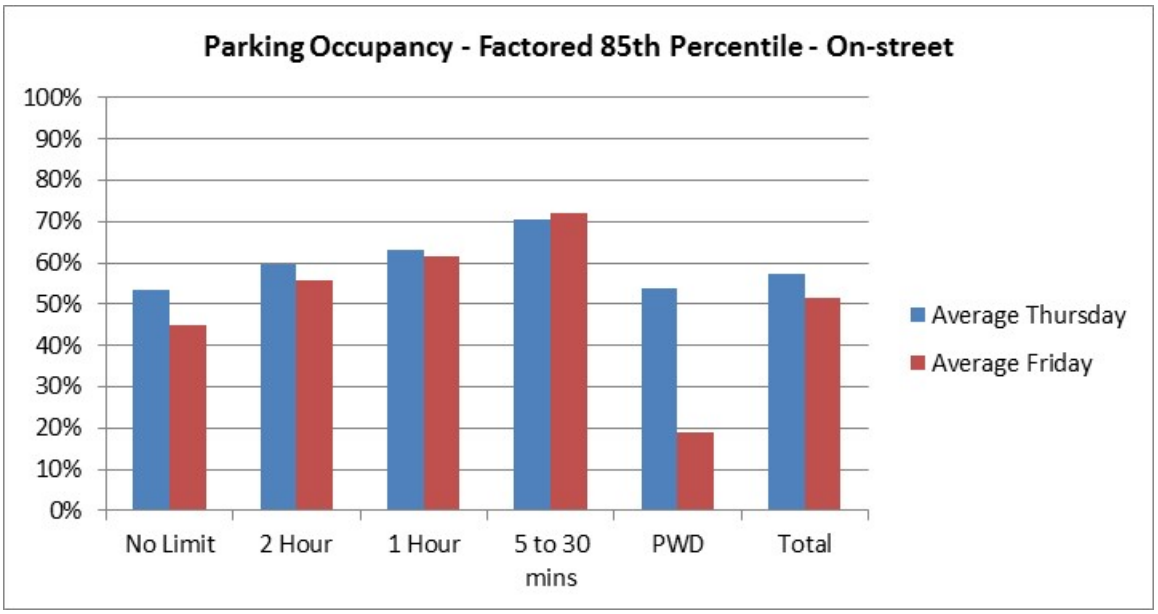


Figure 4.11: Average 85th Percentile On-street Parking Occupancy

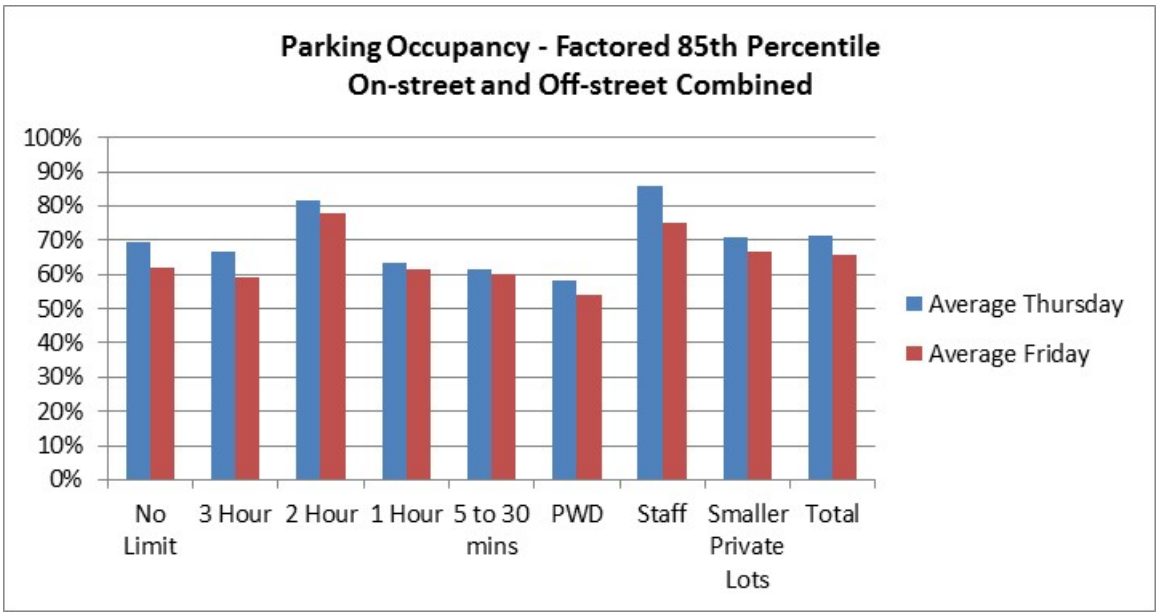


Figure 4.12: Average 85th Percentile On-street and Off-street Parking Occupancy

4.6 Additional Demand Analysis

Some surveyed parking areas were excluded from the above analysis as they could not be categorised or defined within a specific field. The most significant areas are the larger vacant lots that were considered/assessed separate to the Smaller Private Lots section. Details of these parking areas are provided in Table 4.4.

Table 4.4: Additional Demand Parking Areas

Parking Area	Capacity		Survey Range	
	Actual	Potential	Minimum	Maximum
Collins Way Vacant Lot (11 Collins Way – end of cul-de-sac, west side)	13	14	0	13
North Street Vacant Lot between North and Moss Street (Council land 6-10 Moss Street)	35	31	0	35
Berry Street Car Park (between Berry Street and Collins Way (gravel section))	34	35	17	34
Vacant Lots off Junction Street (north and east of the Ex-serviceman's car park (Stockland land))	68	450	4	68
Ex-serviceman's Car Park (Stockland land)	87	90	17	87
Osborne House / church (Central fenced off area - church/retirement village land behind Standish)	5	35	0	5
Council overflow parking area (off Bridge Street, north of the formal parking bays north of the SEC)	144	180	0	144

The capacities of these informal parking areas could not easily be defined and therefore were not included in the preliminary parking supply analysis as they could skew the occupancy results considerably. Although an approach similar to the smaller private lots was considered whereby the capacity of the informal parking areas was taken to be the maximum number of vehicle surveyed, these informal parking areas on the larger vacant lots are considered in this assessment as additional demand as they have the potential to be displaced as a result of future development. Illegal parking identified in the parking surveys has also been included as additional demand. Table 4.5 below details the additional demands excluded from the preliminary parking analysis documented above, that needs to be factored into the assessment of overall parking demand/supply.

Table 4.5: Additional Parking Demands (Locations in Table 4.4 Combined)

Survey Date	Off-Street		On-Street	Total
	Informal	Illegal	Illegal	
Thursday 29/11/2012	261	0	5	266
Thursday 13/12/2012	240	1	11	252
Friday 14/12/2012	283	3	5	291
Saturday 15/12/2012	286	5	5	296
Thursday 10/01/2013	221	2	6	229
Friday 11/01/2013	202	1	13	216
Thursday 07/02/2013	252	9	15	276
Friday 08/02/2013	207	7	9	223
Saturday 09/02/2013	68	1	7	76
Thursday 28/02/2013	254	7	9	270
Friday 01/03/2013	205	3	10	218
Saturday 02/03/2013	79	0	7	86
Thursday 14/03/2013	236	8	9	253
Friday 15/03/2013	210	9	12	231
Saturday 16/03/2013	163	7	6	176

To better understand the demand v supply scenario, the above additional parking demands have been added to the analysis without any additional capacity (a worst case for planning purposes). This is to

estimate the potential occupancy should these informal and illegally parked cars be displaced and need to be consolidated into the formal / legal parking areas.

As per the previous analysis the additional demands have been factored to 85th demands. Figure 4.13 shows the estimated occupancy based on applying the above additional demands without any additional capacity. The additional demand increases the overall occupancy by 4% on average. If the additional demand was added directly to all No Limit parking areas (off-street public + off-street private + on-street) it would on average increase the No Limit occupancy by 11%.

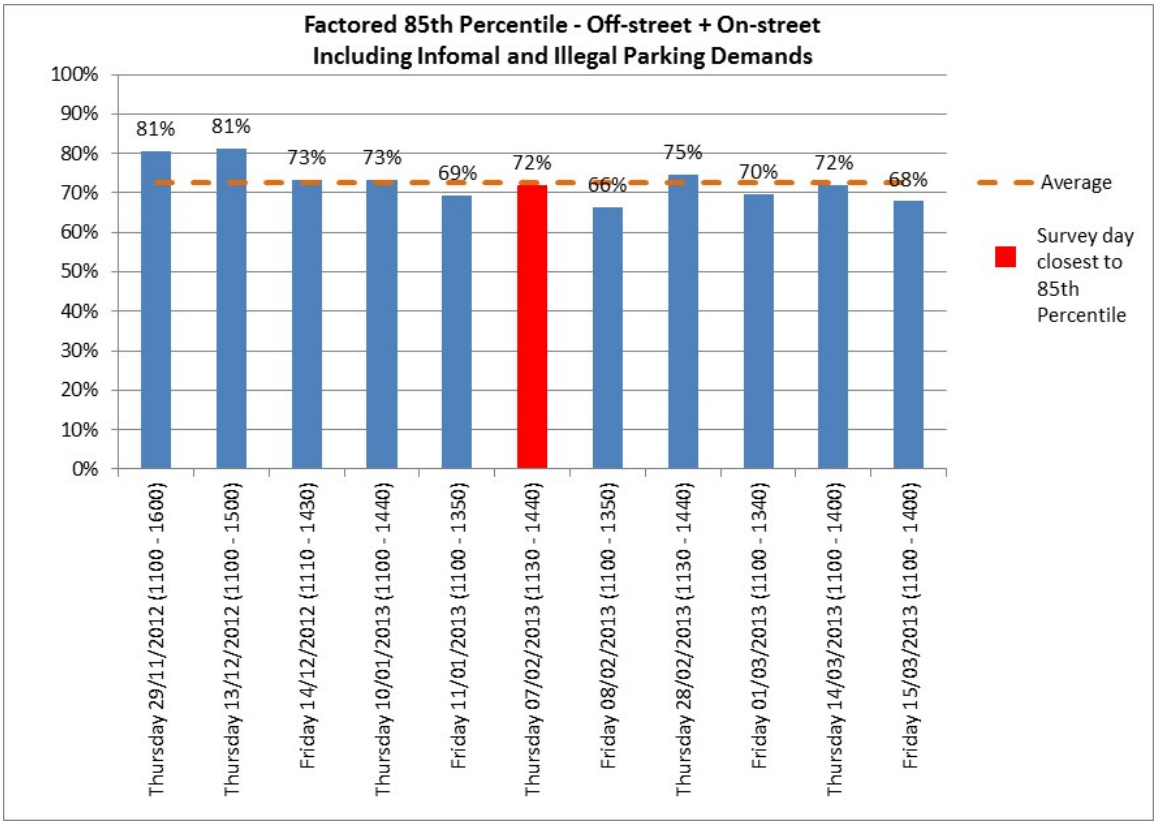


Figure 4.13: Factored 85th Percentile Parking Occupancy with Additional Demand

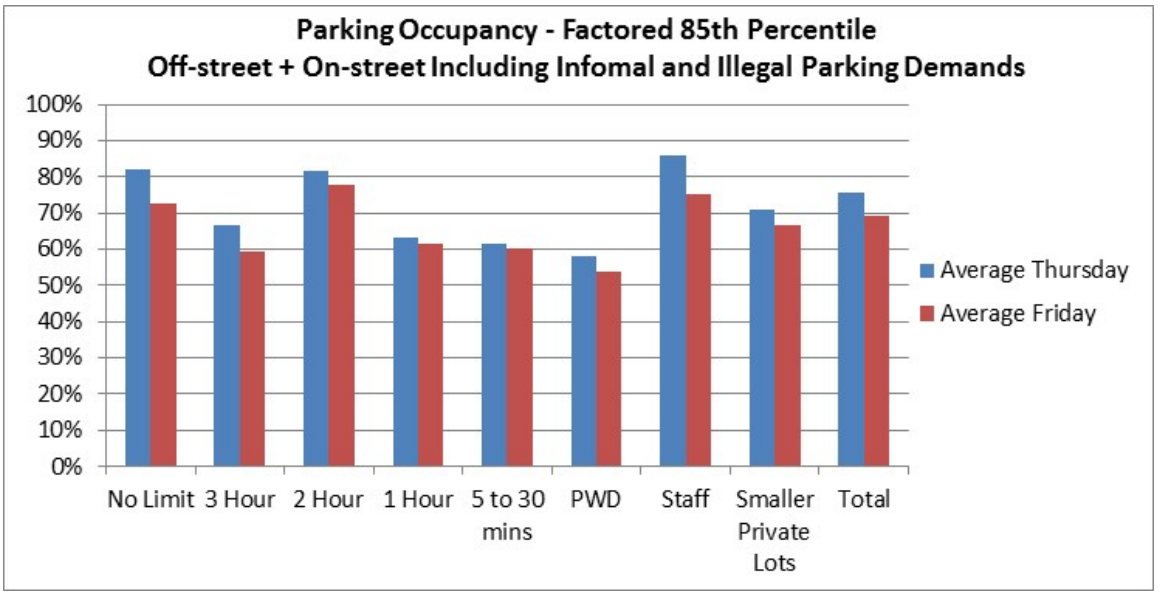


Figure 4.14: Factored 85th Percentile Parking Occupancy with Additional Demand Summary

If the additional demand was added directly to Public Off-street No Limit parking areas as shown in Figure 4.15 (a likely and logical displacement of parking), it would on average increase the occupancy by 26%. This would result in 100% occupancy of the Public Off-street No Limit parking areas including additional overflow of up to 84 vehicles.

This is an important study finding and some planning attention needs to be drawn to this fact, particularly as it is expected that the redistribution of parking from vacant lots (if/when these are developed) could be largely displaced to off-street all day (unrestricted) parking areas.

That said, whilst it is recommended that all of the parking demands for current parking on vacant lands be included in the assessment of total CBD demand, it is not recommended that these amounts be simply added as additional CBD parking supply requirements without caution or consideration of the development potential, and potential for developments to provide additional surplus parking.

There has been some significant developments in the Nowra CBD that have provided surplus car parking supply, and this assists to mitigate the impacts of loss of vacant land used for parking. This is possible on some of the more significant remaining vacant lands, and this also needs to be considered in Council's planning.

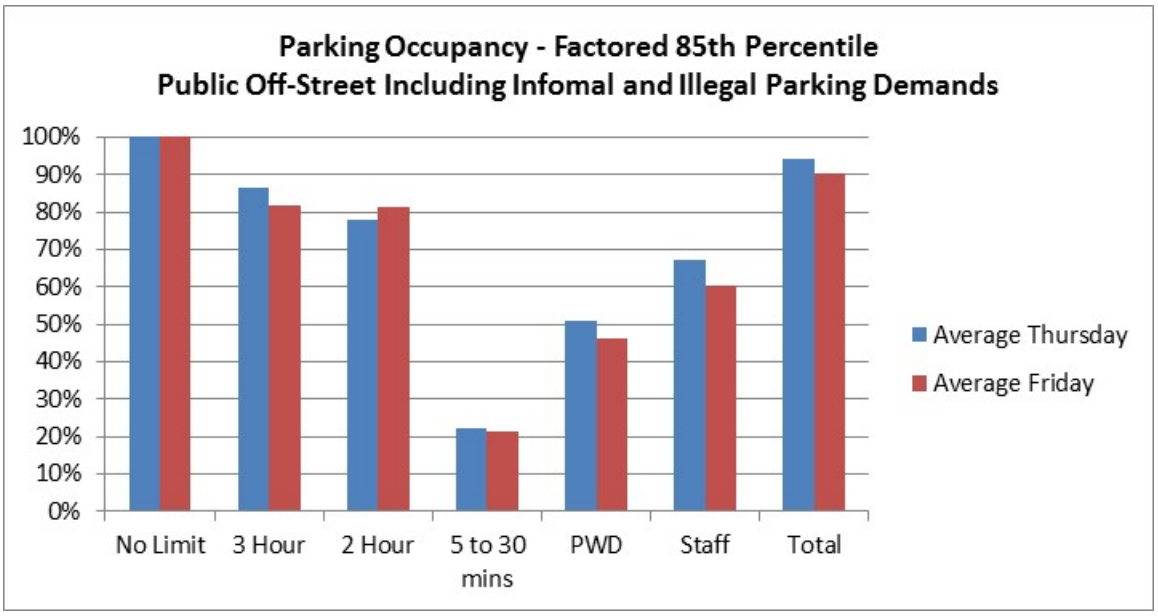


Figure 4.15: Public Off-street Parking - Factored 85th Percentile Parking Occupancy with Additional Demand

Overall, assuming that if all parking on vacant lots was removed without providing additional parking elsewhere and it was all considered as no limit parking, it is highly likely that the occupancy of the public no limit off-street parking areas would be 100% occupied (Figure 4.15).

If the additional demand was however consolidated into all no limit parking areas, i.e. public, private and on-street, the overall no limit parking occupancy would be closer to 80% (Figure 4.14).

However, considering it unlikely that there is any practical capacity to absorb displaced car parking into off-street private car parking, if the additional demand was consolidated into all no limit 'public' parking areas, (i.e. public off-street plus on-street), the overall no limit parking occupancy would be 84%, indicating at this stage there is still some capacity in peripheral on-street parking around the town centre (although for reasons stated in Section 2.2 this should not be relied on for planning purposes).

4.7 Off-street Parking Occupancy Comparison

The occupancies of some of the key off-street car parking areas are compared in Table 4.6. The table provides occupancies for the surveyed day best representative of 85th percentile demands, the Average of the Thursdays factored to represent 85th percentile demands, and the highest 85th percentile factored survey Thursday.

Table 4.6: Off-street Car Park Occupancy

Parking Area	Limit	Survey: Thursday 7/2/2013 84.9 %tile	Average Thursday Factored to 85th %tile	Highest 85th Percentile Thursday Occupancy
Aldi Car Park	2 Hour	95%	97%	108% Thursday 29/11/2012
Worrigee Street Car Park	No limit	99%	101%	107% Thursday 29/11/2012
Bridge Road Car Park	No limit	47%	43%	47% Thursday 29/11/2012
Nowra Mall Car Park (West)	2 Hour	91%	94%	101% Thursday 29/11/2012
Nowra Mall Car Park (East)	2 Hour	83%	82%	92% Thursday 29/11/2012
Collins Way Car Park	No limit	97%	97%	105% Thursday 29/11/2012
Haigh Avenue Car Park	No limit	91%	95%	104% Thursday 29/11/2012
IGA Car Park	2 Hour	47%	50%	54% Thursday 10/01/2013
Lawrence/Kinghorne Car Park	No limit	87%	94%	98% Thursday 13/12/2012
Osborne Street Car Park	No limit	105%	100%	111% Thursday 29/11/2012
Osborne Street Car Park	2 Hour	86%	68%	86% Thursday 07/02/2013
Berry Street Car Park*	No Limit / 2 Hour	89%	79%	97% Thursday 13/12/2012
Stewart Place Car Park	2 Hour	96%	84%	107% Thursday 13/12/2012
Stewart Place Car Park	3 Hour	81%	86%	96% Thursday 14/03/2013
Stockland Car Park	3 Hour	49%	69%	83% Thursday 13/12/2012
Egans Lane Car Park	2 Hour	81%	87%	108% Thursday 13/12/2012

** Berry Street Car Park includes informal parking area with capacity based on highest number of vehicles surveyed (34 vehicles)*

Although the Table 4.6 shows that some of the parking areas are at or near capacity, it also shows that some of the parking areas are underutilised. Higher demand areas closer to the central area such as Stewart Place (2 Hour) are at capacity whilst some of the more outlying car parking areas such as the Bridge Road Car Park are underutilised. The unrestricted southern car parks of Worrigee Street and Lawrence Street are also at capacity on an average weekday. This distribution of parking occupancy will be further expanded to provide more detailed sector analysis in Stage 2 of the Nowra CBD Parking Review.

It should be noted that all No Limit off-street car parks (with the exception of the Bridge Road car park) are at or near full capacity. Furthermore it should be noted that if the additional demand was added to these public off-street parking areas as previously shown in Figure 4.15, these areas including the Bridge Street car park would all be 100% occupied.

4.8 HISTORICAL PARKING ANALYSIS

Some of the historical off-street car parking data was compared to the latest survey data as shown in Table 4.7. Whilst there has been no attempt to seasonally adjust the historical data, the data shows that generally all the parking areas have maintained a reasonably high level of occupancy. Note: the occupancies from the 1997, 2001 and 2005 surveys are taken as the peak (highest occupancy) of the Thursdays surveyed.

Table 4.7: Historical Off-street Car Park Occupancy

Parking Area	Limit	Parking Survey Year			
		1997 Peak Thursday Surveyed 16/1/1997	2001 Peak Thursday Surveyed 29/11/2001	2005 Peak Thursday Surveyed 1/12/2005	2012/13 Average Thursday Factored to 85th %tile
Aldi Car Park	2 Hour	-	97%	100%	97%
Worrigee Street Car Park	No limit	85%	99%	100%	101%
Nowra Mall Car Park (West)	2 Hour	-	100%	94%	94%
Nowra Mall Car Park (East)	2 Hour	-	79%	88%	82%
Collins Way Car Park	No Limit	74%	74%	96%	97%
Osborne Street Car Park	No limit	-	-	100%	100%
Osborne Street Car Park	2 Hour	-	-	89%	68%
Berry Street Car Park	No Limit / 2 Hour	70%	79%	93%	79%
Stewart Place Car Park	2 Hour	99%	93%	98%	84%
Stewart Place Car Park	3 Hour	98%	92%	97%	86%
Egans Lane Car Park	2 Hour	98%	99%	99%	87%

It is difficult to make historical comparisons between parking areas as the surveyed areas have changed in size and the parking supplies and restrictions have changed.

Table 4.8 shows an overall comparison between the historical surveys.

Table 4.8: Historical Parking Survey Occupancy

Survey Year	On-street			Off-street		
	Capacity	Survey	Occupancy	Capacity	Survey	Occupancy
1995 Peak Thursday Surveyed (16/1/1997)	945	417	44%	3381	2667	79%
2001 Peak Thursday Surveyed (29/11/2001)	927	551	59%	3205	2446	76%
2005 Peak Thursday Surveyed (1/12/2005)	-	-	-	3158	2815	89%
2012/13 Average Thursdays Factored to 85th %tile	1377	804	58%	5145	3829	74%

Although the occupancy rates are difficult to compare, Table 4.8 does show that off-street parking demands have not increased significantly over the 8 year period between 2005 and 2013. The data however cannot be directly compared as the study areas have varied between surveys. This is evident by differences in capacities between the surveys.

The increase in capacity and corresponding decline in occupancy (going from 2005 to 12/13) is associated with addition of all off-street private car parking in greater detail than done before, also the expansion of study area including on-street parking around the broader CBD area which tends to be underutilised further out from the CBD core.

The inventories for the 2012/13 surveys were updated to October 2015 as part of this study, and remain the most comprehensive in terms of survey area covered and range of dates surveyed. It has also been the only survey where traffic data has been available to assist in the seasonal adjustment of the data.

4.9 SITE OBSERVATIONS

Site observations were undertaken by Bitzios Consulting in December 2014 to verify the parking inventory and survey data. Site observations generally confirmed that the Council's off-street car parks were higher in occupancy the closer they were to the centre of the CBD (Junction Street / Kinghorne Street). The peak period in the CBD was confirmed to be between 11:00am and 1:00pm with both parking and traffic operating at near saturated conditions (December 2014).

It was also noted that a substantial number of all-day commuters and shoppers were using the vacant lots east of the Princes Highway (north of Stockland). Whilst most of these (in December) were Stockland related a significant number were also observed to be crossing over to the CBD (western side of the Princes Highway). Council advised that the 2005 surveys by Council confirmed that even during quieter middle of the year periods up to 80 commuters (of the total 120 cars surveyed as parked in/around the former RSL car park) were surveyed to park and cross to the western side of the Highway. This location and a number of other vacant private lots were importantly all picked up in the parking surveys as discussed in Section 4.6.

4.10 LIMITATIONS

The survey data has some limitations in its use for technical analysis. Some of the limitations or potential issues include:

- the surveys were undertaken for peak parking periods only (typically between 11:00am to 3:00pm);
- the time each parking area was surveyed was not recorded and therefore could have been at any time between 11:00am to 3:00pm, however it is noted that Joray advised Council that all of the busiest parking demand areas were all surveyed between 11:00am and 1:00pm (the predominant parking peak);
- inconsistencies between days can highlight potential issues with the survey process and/or how the data was collected, or can simply indicate the degree of fluctuation in seasonal demand which is a known phenomenon affecting Nowra and the broader South Coast region particularly over the warmer months; and
- survey numbers greater than the supply can indicate potential inaccuracies, however it is noted that Joray advised Council that illegally parked vehicles and vehicles standing in parking areas waiting for a car space were included in the demand surveys as parking demand.

The surveys also only picked up peak demands with no off-peak periods surveyed which therefore represents a worst case scenario where parking could be perceived to be of a much greater issue. That said, with limited resources, assessment of peak demands is appropriate for planning purposes and the application 85th percentile methodology, in conjunction with the proposed review of RMS / DCP18 parking rates is appropriate to assess a reasonable benchmark for strategic planning.

4.11 FURTHER INVESTIGATIONS

This Stage 1 report will remain as a draft pending further detailed investigations at Stage 2.

The survey data assessed in the Existing Situation report will be further analysed in Stage 2 of the Nowra CBD Parking Review. This additional analysis will breakdown the data further into smaller sectors/areas which will then be used to identify parking utilisation, shortfalls and opportunities (where more parking could be provided) at a more concentrated level. Analysis of the Shoalhaven City Council's DCP18 parking rates (including review of previous investigations) will also be undertaken to assess parking deficiencies and will be compared to the supply/demand analysis and reported in Stage 2.

There may be valid reasons why the two approaches may yield different results and this will be reviewed as part of the Stage 2 works.

5. PARKING INFRINGEMENT DATA

5.1 NOWRA CBD PARKING OFFENCES

Parking infringement data can be an important indicator of parking performance (and deficiencies) and can help to identify parking hot spots where there are infringements which may be as a result of very high demands. Parking infringements may also be a function of Ranger resources.

Parking infringement data was initially provided by Shoalhaven City Council (LGA wide but able to be broken down by suburb) from 1 July 2009 to 30 June 2014 (5 years). Parking infringement data was also initially provided for Wollongong City Council area for the same period in the same format.

To derive any meaning from the analysis of infringement data for Nowra CBD, the analysis will be undertaken and compared against seven (7) other Councils to determine if Nowra CBD and Shoalhaven LGA are consistent or different from the other Council areas.

The eight (8) Council areas to be included in the analysis are; Shoalhaven, Wollongong, Port Macquarie-Hastings, Eurobodalla, Kiama, Shellharbour, Wingecarribee, and Wollondilly. These include neighbouring Councils and other Councils of similar size or Regional status.

Shoalhaven City Council and Bitzios Consulting thank and acknowledge the cooperation of these Councils to provide or permit the infringement and Ranger resource data to be accessed for this study.

The analysis will look at per capita infringement rates as well as infringements issued on a per Ranger basis, and will look at annual trends over the full 5 year data period.

Due to the limited data available at Stage 1 (only limited data from Shoalhaven and Wollongong LGAs available) a preliminary analysis was undertaken as detailed below. This template of analysis will be expanded and completed for all eight (8) Council areas and reported as part of the Stage 2 works.

The preliminary analysis of Shoalhaven and Wollongong infringement data is reported below, although little can be concluded until the expanded analysis is undertaken.

A summary of the parking offences during this period are shown in Figure 5.1 below.

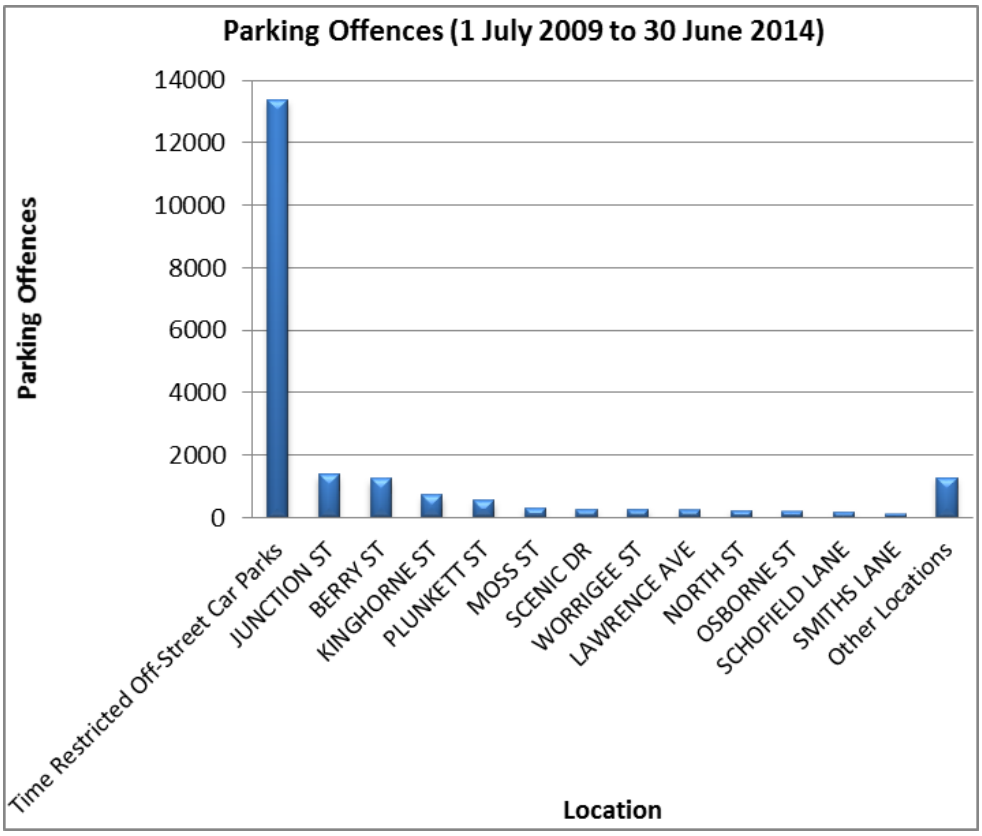


Figure 5.1: Parking Offences Summary

The majority of parking off-street parking offences are overstaying of time limits. Figure 5.1 shows that the majority (66%) of the recorded parking offences in Nowra are located within Council's time restricted off-street car parks where ranger resources are primarily concentrated.

The time restricted off street car parks are intended to provide higher turnover car parking in the CBD core to optimise the provision of parking for the town centre, and enforcement is aimed at achieving this outcome. The high number of offences in this category reflects the high demand for off-street parking in the CBD core.

In terms of on-street parking areas, the centralised and high parking demand areas of Junction Street, Berry Street and Kinghorne Street are, as expected, the highest infringement areas. These three streets account for just under half of the total on-street parking offences in Nowra. Although the majority of parking offences are for overstaying of limits, there are also a significant number of offences for disobeying no stopping/parking signs.

5.2 NOWRA CBD PARKING OFFENCE TRENDS

Parking offences per year and month are shown in Figure 5.2 and Figure 5.3. These figures indicate a slight reduction in offence rates over the last few years, however this cannot be confirmed as a trend given the relatively short period of data. Although parking offences trends are reducing, the high variance in parking offences per month makes it difficult to confirm or identify any annual or seasonal trends. Parking offence data has many other factors including human factors that heavily influence the data. More analysis of ranger resources will also be undertaken at Stage 2 as this may also have had influence on the infringement numbers.

Figure 5.2: Annual Parking Offences (Nowra Suburb)

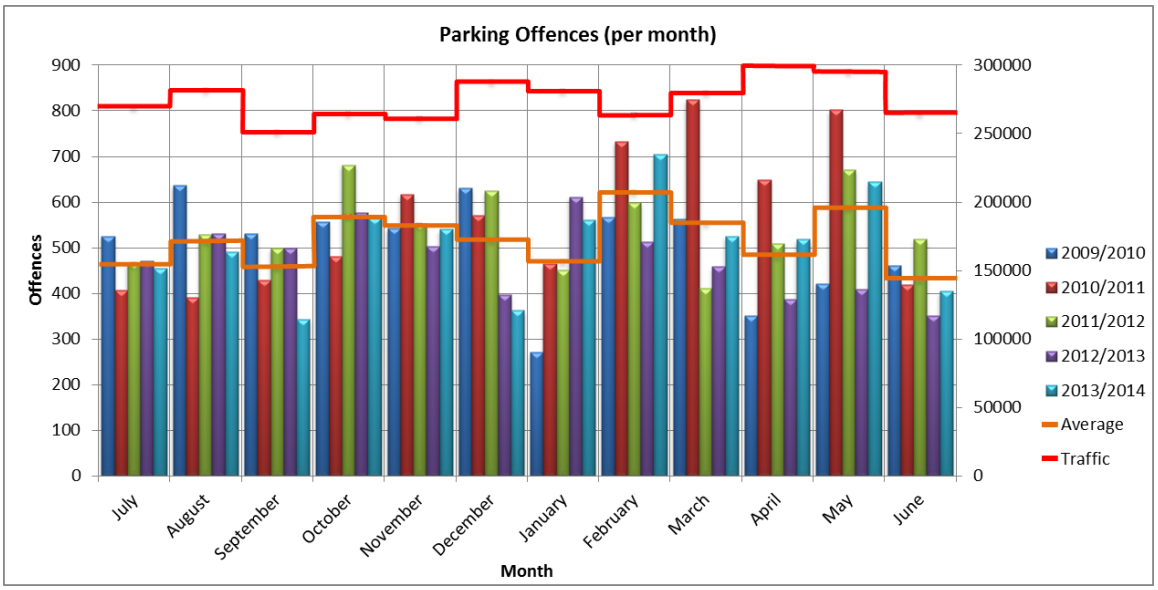


Figure 5.3: Monthly Parking Offences (Nowra Suburb)

Figure 5.3 above also shows that the monthly parking offences and the monthly traffic volumes for Moss Street have no direct relationship between them.

5.3 PARKING INFRINGEMENT COMPARISONS

Initially for the Stage 1 study, based on the limited data available, parking infringements have been compared across areas within Shoalhaven City Council and Wollongong City Council for the following 2 year periods:

- Wollongong City Council: 1/7/2009 to 30/6/2014; and
- Shoalhaven City Council: 1/7/2009 to 30/6/2014.

Nowra (state suburb) has been compared to other key areas within Shoalhaven City Council and Wollongong City Council. It should be noted that less than 1% of the parking infringements for Nowra (state suburb) were outside the Nowra CBD study area. This is expected as ranger resources are primarily concentrated in CBD areas.

As indicated above an expanded analysis will be undertaken for all eight (8) Council areas as part of the Stage 2.

5.3.1 Parking Infringements per Capita

To compare levels of infringement, a per capita methodology has been used for each area based on populations taken from the Australian Bureau of Statistics' (ABS) 2011 census data. Table 5.1 and corresponding Figure 5.4 make comparisons to key areas within Shoalhaven City Council.

Table 5.1: Shoalhaven City Council Parking Offences

Location	Type	Parking Offences (5 years)	Population	Parking Offences per Capita
Berry	State Suburb	2131	2421	0.88
Bomaderry	State Suburb	204	6566	0.03
Huskisson	State Suburb	1324	735	1.8
Milton	State Suburb	1937	1449	1.34
Nowra	State Suburb	20411	9257	2.2
Ulladulla	State Suburb	4421	6070	0.73
Vincentia	State Suburb	215	2802	0.08
Shoalhaven	LGA	31164	92812	0.34

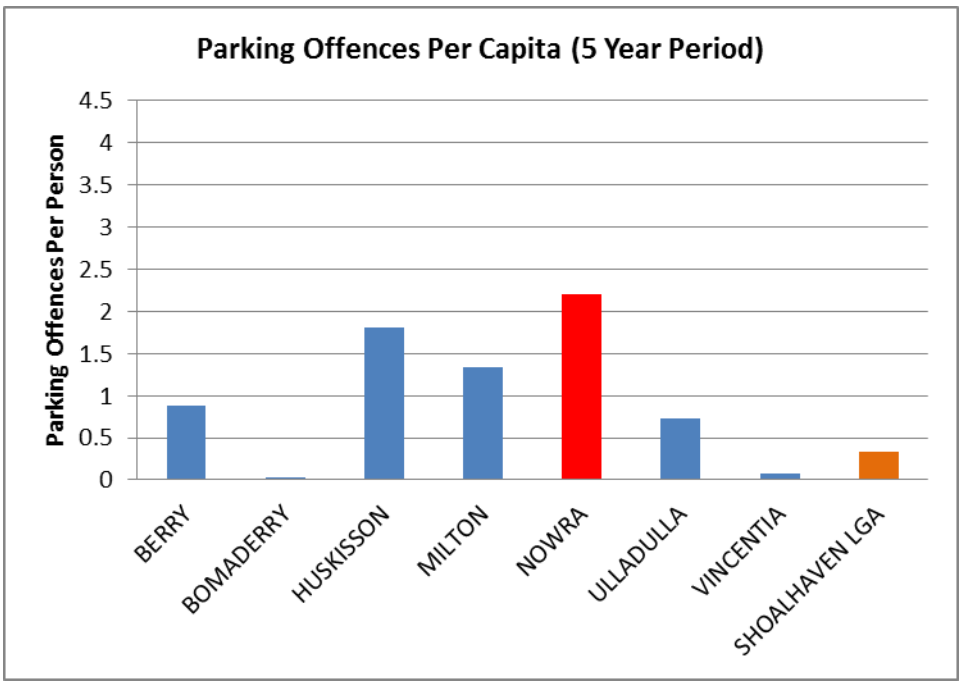


Figure 5.4: Shoalhaven City Council Parking Offences Per Capita

Table 5.1 and Figure 5.4 show that Nowra's parking offences, based on a per capita analyses, are not significantly higher than other areas. Given that Nowra is the primary centre within Shoalhaven LGA, it has also been compared to Wollongong City Council areas in Table 5.2 and Figure 5.5.

Table 5.2: Wollongong City Council Parking Offences

Location	Type	Parking Offences (5 years)	Population	Parking Offences per Capita
Coniston	State Suburb	733	2180	0.34
Corrimal	State Suburb	687	6325	0.11
Dapto	State Suburb	624	10735	0.06
Fairy Meadow	State Suburb	583	6585	0.09
Gwynneville	State Suburb	2728	2837	0.96
Keiraville	State Suburb	4165	3343	1.25
North Wollongong	State Suburb	1675	2272	0.74
Thirroul	State Suburb	812	5620	0.14
Warrawong	State Suburb	2107	4764	0.44
Wollongong	State Suburb	71807	16718	4.3
Wollongong	LGA	88526	192418	0.46
Nowra	State Suburb	20411	9257	2.2
Shoalhaven	LGA	31164	92812	0.34

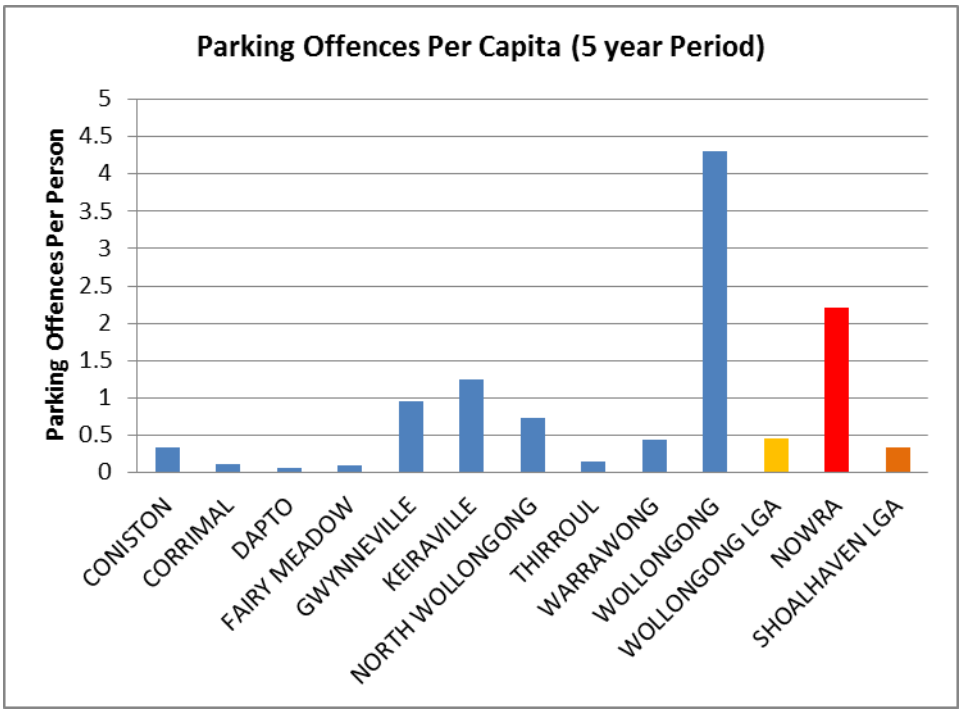


Figure 5.5: Wollongong City Council Parking Offences Per Capita

The comparison between Nowra and the Wollongong City Council areas show that the levels of infringements for the Nowra CBD could be typical for a major regional centre. Although Wollongong has almost twice the number of infringements per capita, it is likely that it attracts higher volumes of visitors from external areas when compared to Nowra. The overall comparisons for the Shoalhaven LGA compared to Wollongong LGA show that Shoalhaven LGA had slightly lower parking infringement rates per capita. Infringement data will also be analysed further in Stage 2 of the Nowra CBD Parking Review including additional comparisons to other Councils in the region.

5.3.2 Parking Infringements per Parking Ranger

In addition to the above per capita comparisons, the parking offences per full-time parking ranger are also compared in Table 5.3. The number of parking rangers was provided by Wollongong City Council and Shoalhaven City Council. An average for the number of full-time parking rangers was estimated across the five (5) year period.

Table 5.3: Nowra CBD Parking Infringements per Parking Ranger

Area	Parking Offences	Parking Rangers	Offences Per Ranger
Wollongong LGA	88,526	8	11,066
Shoalhaven LGA	31,164	5	6,233

The offences per parking ranger show that the Shoalhaven LGA had lower parking infringement rates per parking ranger compared to Wollongong LGA. The results of this comparison may however be influenced by the type of parking infrastructure within each LGA. For example, Wollongong CBD has approximately 150 paid parking ticket machines which are much easier to enforce than offences for overstaying limits in non-paid parking areas in the Nowra CBD. Whilst the analysis will be expanded in Stage 2, the above findings could highlight some of the potential efficiencies in enforcement officer resourcing through the introduction of metered parking.

Stage 2 will include a report on the Wollongong City Council experience in implementing metered parking.

6. PREVIOUS PARKING STUDIES

Previous studies relating to parking in the Nowra CBD over the last 12-13 years are summarised in the following sections. The strategies, opportunities and recommendations of these studies will be further analysed in Stage 2 of the Nowra CBD Parking Review.

6.1 NOWRA CBD TRANSPORT STRATEGY (EPPELL OLSEN & PARTNERS, 2003)

The *Nowra CBD Transport Strategy* was undertaken in 2003 and was developed using a 2016 TRACKS model to identify future requirements for the Nowra CBD. The TRACKS Central Area Logistics Model (CALM) was also used to determine parking requirements based on actual supply/demand from a validated base model, and then incorporating high growth planning area forecasts to 2016. The outcomes and recommendations of the strategy include:

- retain and protect the quantity of short term parking available at Stewart Place and Egan's Lane with long term consideration for possible expansion post 2016;
- some on-street car parking will be lost with intersection upgrades, midblock capacity improvements, or street scape improvements around town and will need to be accommodated for in off-street parking facilities as a result;
- over 1,500 new car parking spaces are required within the CBD by 2016 based on a net increase requirement of 1,290 spaces (210 estimated to be lost on on-street parking due to safety upgrades and traffic capacity requirements), of the 1,290 approximately 1,000 are required to be public car parking spaces (an estimate based on anticipated private provision v payment of contributions which in the current scheme is optional);
- Approximately 800 of the new public car parking spaces are to be allocated to unrestricted car parking stations located throughout the CBD by 2016. These spaces are required to address current deficiencies in all day parking, overcome the loss of the Haigh Avenue site, address future anticipated deficiencies in all day parking, and to prevent parking sprawl into adjacent residential areas. The analysis suggests that redevelopment and expansion of existing car parking stations together with the development of a new sites should be undertaken at the following locations (modelled highest demand locations):
  - a new car parking site to be located within the precinct of North Street, Nowra Lane, Jane Street overpass and the Princes Highway;
  - Lawrence Avenue car park;
  - Berry Street / Worrigee Street car park; and
  - Collins Way car park;
- Contributions should continue to be levied to the central zones bounded by North Street, Berry Street, Worrigee Street and Haigh Avenue/Nowra Lane/O'Keefe Avenue, and developers should not be allowed to provide their own parking. Exceptions may be considered where it is necessary to provide high turnover parking, disabled parking, select customer parking (depending on the application) however, these should be minimised where possible with contributions collected on the short fall; and
- Areas outside of the above CBD zones will be required to provide all parking on-site.

A recent assessment of planning area forecasts incorporated into the 2003 study identifies that the 2016 forecasts (known to be high growth) were in fact very high compared to current day forecasts. Shoalhaven City Council has advised that based on current forecasts it is estimated that the original 2016 high growth forecasts (based on traffic analysis) were more aligned to average off peak conditions in 2036 or 99%ile conditions (80-120th highest hour conditions) in 2026.

Accordingly these previous studies cannot be assumed to be out of date, but are likely to be still current and valid (with the demands reflecting actual forecast demands as they were at the time, relevant to forecasts of future land use scenarios based on the Nowra/Bomaderry structure plan).

6.2 NOWRA CBD PARKING ANALYSIS (MONARO CONSULTANTS, 2007)

The *Nowra CBD Parking Analysis* report reviewed the previous Eppell Olsen study (based on TRACKS modelling) and also undertook DCP18 calculations to analyse parking adequacy in the Nowra CBD. The

report identifies that the CBD East (east of the Princes Highway) can be treated as a self-contained precinct where proposed developments will meet parking needs. The main findings of the *Nowra CBD Parking Analysis* include:

- a target of 722 additional off-street parking is recommended by 2021 which includes 582 spaces for what was described as the current deficit (in 2007) and 140 spaces for additional commercial development;
- there is potentially an additional requirement of 468 spaces (1190 in total) to cater for increased demand, offset removal of on-street parking, and higher seasonal growth;
- localised parking shortfalls include:
  - all day parking to the immediate west of the Princes Highway including the need to cater for vehicles currently parked in the vacant lot to the east of the highway (north of Stockland) once that area is eventually developed (noting this was identified as a modelling hotspot by Cardno Eppell Olsen from the TRACKS analysis);
  - all day parking in the southern and western sectors of the CBD; and
  - 2P parking in central and western sectors of the CBD;
- recommendation to amend DCP parking rates to reflect actual parking demands, acknowledging DCP18 rates as being appropriate for off peak demands only, not addressing any proportion of seasonal demand which is known to affect Shoalhaven broadly, but including Nowra CBD;
- all off-street public car parks are near practical capacity with the exception of the 2P car park located at Nowra Mall (east) which is only at capacity during times of higher seasonal demand;
- use of all day parking on vacant lots masks a greater latent demand and needs to be considered in all parking strategies; and
- generally the parking analysis (based on DCP18 rates) concurs with the additional parking recommendation from the Eppell Olsen *Nowra CBD Transport Strategy (2003)* which was based on TRACKS modelling (supply/demand) but with some minor changes to recommendations of additional parking in each location, and a marginal increase in the total parking recommended to be provided.

It is understood that Shoalhaven City Council is seeking to update the previous studies by reviewing the previous Cardno and Monaro Consultants recommendations, and revising the parking shortfalls by incorporating the changes made to parking since those times.

Given that the Monaro report was based on parking rates by area, this will also need to be updated coinciding with the study area used for the 2012/2013 parking surveys. It is also understood that the parking deficiencies identified in the Monaro study did not include parking east of the Princes Highway and it is unclear what was included in the parking supply for the analysis (i.e. if small private off-street parking lots were included). This will be further investigated in Stage 2 of the Nowra CBD Parking Review to update and provide recommendations based on estimated parking deficiencies with the respect to current DCP18 rates, and compared with the supply/demand analysis at the 85%ile demand / strategy target levels.

6.3 NOWRA CBD (EAST) ROAD NETWORK STRATEGY REVIEW (CARDNO EPPELL OLSEN, 2007)

The *Nowra CBD (East) Road Network Strategy Review* as the name suggests, reviews the 2003 *Nowra CBD Transport Strategy,* with focus on updating the strategy to accommodate the very significant development proposals (at the time) east of the Princes Highway (LEDA and Stockland proposals). Accordingly the review primary focuses on the eastern CBD road network to the east of the Princes Highway surrounding the Stockland Shopping Centre and proposed expansions and/or additional developments. In terms of parking, the expansion or increased development to the east of the Princes Highway was considered to have little or no impact on parking for the CBD, other than latent demand displaced by the development. Accordingly parking was not the focus of the 2007 strategy review. The *Nowra CBD (East) Road Network Strategy Review* does however suggest that the previous *Nowra CBD Transport Strategy* may have underestimated or discounted the amount of peripheral on-street parking, parking in vacant lots, and the amount of commuters parking on the eastern side on the Princes Highway and crossing to the CBD (which will be directly impacted by the Stockland development north of Junction

Street). That area also importantly provides overflow parking for the Stockland development itself during times of higher seasonal demand. The 2016 TRACKS model used to assist the *Nowra CBD Transport Strategy* was still considered to be conservative (still based on average weekday conditions but incorporating the same very high population growth estimates) and therefore recommendations in terms of parking from the 2003 Eppell Olsen strategy and the 2007 Monaro consultant's report are not superseded.

Because Monaro consultants considered both the TRACKS modelling and DCP18 parking rates, it is still considered the most appropriate document upon which a parking strategy can be based, to date. This review by Bitzios Consulting will review the outcomes of those studies, update the parking data to 2015 and accordingly revise the estimated parking shortfall taking into consideration changes in parking since 2007, and offer comment regarding timing of parking priorities considering of current revised planning area forecasts. As above-mentioned this will be undertaken in Stage 2 of the Nowra CBD Parking Review.

6.4 DRAFT NOWRA CBD MASTER PLAN (ARUP, 2011)

The *Draft Nowra CBD Master Plan* is based more on planning principles rather than the technical aspects of previous transport and parking studies. As it is based on planning principles and not DCP18 requirements, modelling, or supply/demand based estimates, it provides a broader integrated planning approach for opportunities in the Nowra CBD. The recommendations however have never been tested for technical merit. That was intended as Stage 2 of the master plan process (at the time of preparing this report Stage 2 has not been commenced and Council has since adopted the masterplan).

The *Transport Conditions Review* for the Master Plan identifies parking as a concern for local residents with a perception of a significant shortfall in parking. The Master Plan also mentions that the 2007 parking study did not take into account on-street or fringe parking (which is understood to be false) and the demands estimated by Arup were calculated on random peak surveys only, not during times of higher seasonal demand, and not seasonally adjusted as required by RMS guidelines and AUSTROADS.

Some outcomes of the Car Parking Strategy from the *Draft Nowra CBD Master Plan* include:

- it is no longer feasible or desirable to continue to cater for ever growing traffic and parking demands;
- trips purposes and parking requirements need to be prioritised to cater for short term trips/parking closer to their destinations and longer term trips/parking slightly further away from their destination; and
- parking changes could be introduced at varying rates depending on location.

Car parking strategy items identified as opportunities or initiatives from the *Draft Nowra CBD Master Plan* are shown in Figure 6.1 and Figure 6.2.

Opportunities and Initiatives

Gradually convert a proportion of all-day unlimited parking spaces to time-restricted spaces, which will gradually limit, or at least not increase, the availability of all-day commuter parking, both on and off-street.
Wherever possible, locate the majority of off-street parking at the periphery of the CBD, possibly on the CBD loop road (see Road Network Strategy), where traffic impacts are lower than if parking was concentrated in the central core (e.g. the car park on the former gas works site could be accessed off Osborne Street).
Carefully manage parking supply to manage traffic generation and to increase walking, cycling and public transport usage.
In the long term, develop strategically located and sensitively designed multi-deck car parks, preferably around the periphery, to reduce the land devoted to parking within the CBD.
Identify high value development sites, currently used for car parking, and determine if alternative land uses are more appropriate.
Provide conveniently located car pool parking spaces.
Increase enforcement of parking restrictions to improve turnover to support businesses.
Review current planning controls that require most new developments to provide car parking.
Educate residents, businesses and employees about the benefits of the parking strategy.

Source: Draft Nowra CBD Master Plan Transport Study p.76, Arup 2007.

Figure 6.1: Draft Nowra CBD Master Plan - Opportunities and Initiatives

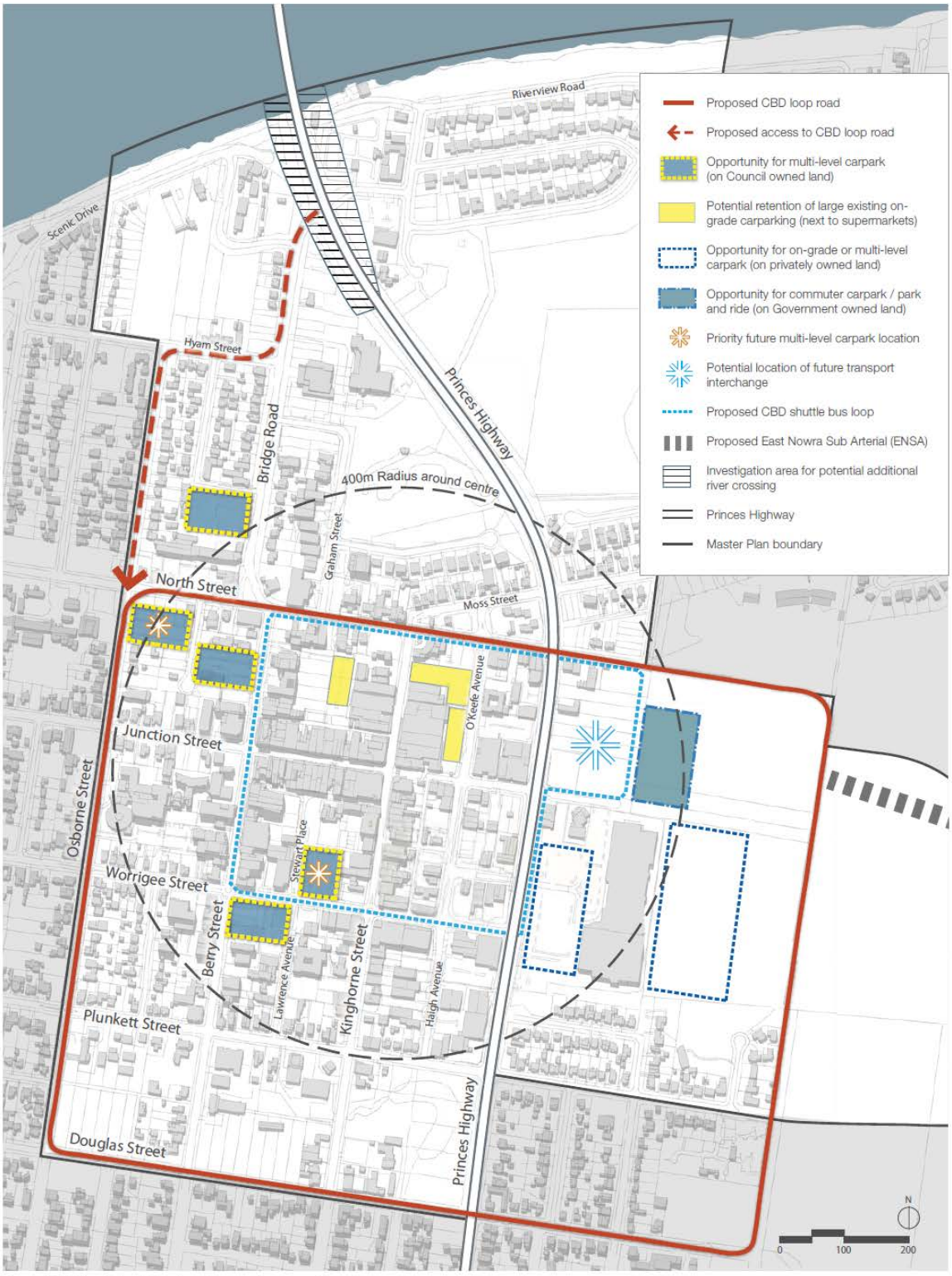


Figure 32: Potential multi-level and on-grade car park locations

Source: Draft Nowra CBD Master Plan Transport Study p.77, Arup 2007.

Figure 6.2: Draft Nowra CBD Master Plan – Parking Opportunities

The draft recommendations of the master plan were never tested for technical merit and as such needs to be taken into consideration when incorporating its findings into this study. The masterplan may provide some overarching strategic guidance towards longer term visions however cannot be directly used as fixed inputs towards a technical based parking assessment. Previous technical parking studies commissioned by Council, which are still current and valid based on their future year forecasts, are considered the superior documents in their assessment of parking requirements for the Nowra CBD, and the findings of those studies will be updated with respect of latest survey data, analysed and reviewed as part of Stage 2 of this study.

7. OUTCOME SUMMARY

Overall, parking in Nowra is of a high concern for locals. The outcomes of Stage 1 of the Nowra CBD Parking Review include:

- parking analysis was based on supply surveys (which were updated to October 2015) and 15 random parking demand surveys undertaken by Joray over a five month period from November 2012 to March 2013 for Thursday, Friday and Saturday peak parking periods;
- the surveys were analysed to determine the supply and demand (occupancy) for on-street as well as private and public off-street parking areas;
- the parking surveys showed that whilst there are individual areas that are regularly close to fully occupied in peak parking periods, when the entire Nowra CBD study area is taken into consideration, the parking supply is adequate to cater for the demand;
- to account for parking demand seasonality, a methodology was adopted that uses daily traffic demands to determine 85th percentile peak parking demands for analysis in line with RMS and Austroads methodology;
- analysis of traffic volumes and the surveyed parking demands revealed that the Thursday, 7 February 2013 surveyed day corresponded to an 84.9 percentile daily traffic volume which most closely related to the 85%ile target demand parking levels of the 15 random surveys undertaken;
- the parking surveys were further analysed by applying factors based on traffic demands to represent estimated 85th percentile parking demands across all of the various parking categories, which resulted in the following:
  - up to 86% occupancy of off-street parking areas;
  - up to 71% occupancy of on-street parking areas; and
  - up to 86% occupancy for the combined on-street and off-street parking areas;
- The traffic and parking demand tables showed that Saturdays have much lower traffic and parking demands and accordingly the Saturday surveys were ultimately excluded from further analysis. This was to ensure the Saturdays did not significantly affect the averages in the development of design demands. The report accordingly summarises the average 85th percentile parking demands for the surveyed Thursdays and Fridays which are the busiest demand days.
- The benefit of analysing the parking surveys in this manner is that is allows for a suitable sample size of data to be analysed across each of the parking types, without impacting the results by including significantly lower demand days (such as Saturdays).
- Furthermore, upon closer interrogation of the Friday surveys, some inconsistencies were identified. The Thursday surveys were therefore considered to be a better representation of the 85th percentile demands whilst still providing a sufficient sample size. The relationship between traffic demands and parking demands was also considered to be more appropriate for the Thursdays, as the Friday traffic demands are influenced by weekend traffic and do not represent a typical weekday.
- analysis of the key off-street parking areas identified that higher demand areas closer to the central area such as the Stewart Place Car Park were at capacity whilst some of the more outlying car parking areas such as the Bridge Road Car Park were underutilised;
- the results demonstrate that all of the unrestricted (no limit) off-street car parks (with the exception of the Bridge Road car park) are near capacity;
- parking occupancy for average of the Thursdays factored to 85th percentiles are summarised in Figure 7.1 to Figure 7.3:

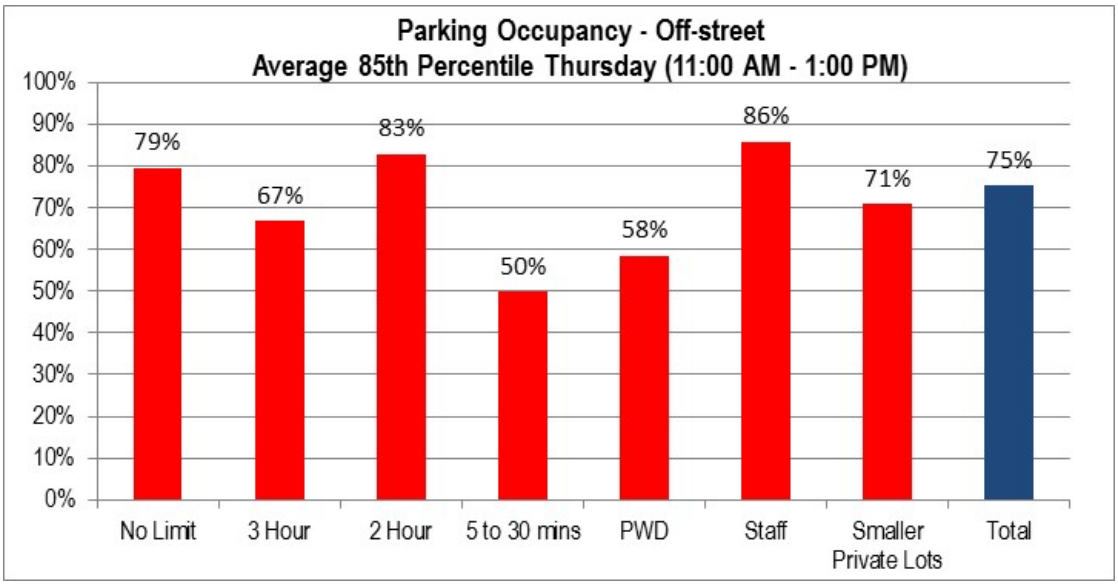


Figure 7.1: Average Thursday Percentile Off-street Parking Occupancy

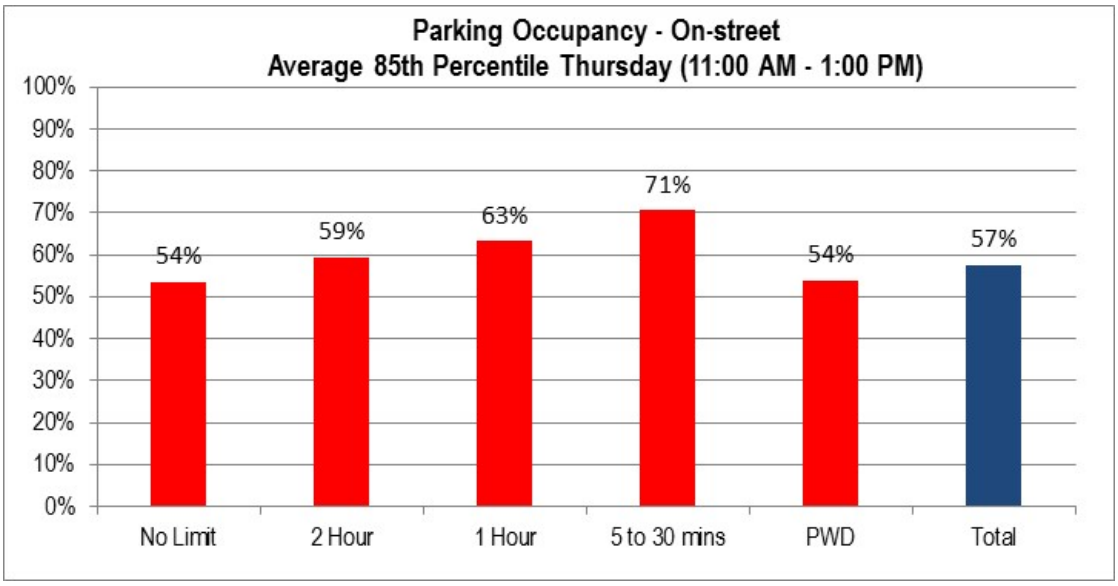


Figure 7.2: Average Thursday Percentile On-street Parking Occupancy

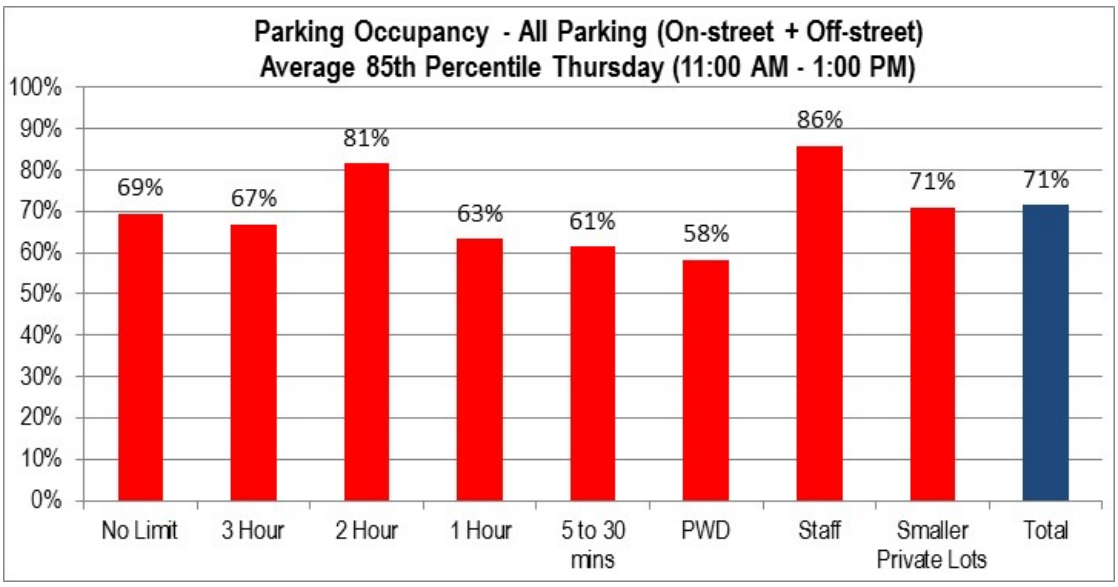


Figure 7.3: Average Thursday Percentile On-street and Off-street Parking Occupancy

- a significant number of smaller private off-street parking areas in the CBD are underutilised and this impacts overall CBD occupancy levels;

- many of smaller off-street parking areas have future development potential and current parking capacity could be reduced on many of these smaller lots in future which could increase latent demand;
- site observations generally confirmed that Council's off-street car parks were higher in occupancy the closer they were to the centre of the CBD;
- site observations also verified that a high number of commuters use vacant lots for all day parking, including many on the western side of the Princes Highway in/around the town centre and a very significant, well utilised vacant lot to the east of the Princes Highway (north of Junction Street on Stockland land);
- once vacant lots within the CBD are developed there is likely to be a more significant shortfall in all day parking which should to be factored into Council's strategic planning;
- these "additional parking demands" predominately associated with informal parking on vacant lots and illegal parking were added to the 85th percentile analysis resulting in an additional 5% on average total occupancy;
- if the additional demand was added directly to all No Limit parking areas (off-street public + off-street private + on-street) it would on average increase the No Limit occupancy by 13%;
- if the additional demand was added directly to Public Off-street No Limit parking areas (a likely and logical displacement of parking), it would on average increase the occupancy by 26%, resulting in 100% occupancy of the Public Off-street No Limit parking areas including additional overflow of up to 84 vehicles;
- considering it unlikely that there is any practical capacity to absorb displaced car parking into off-street private car parking, if the additional demand was consolidated into all no limit 'public' parking areas, (i.e. public off-street plus on-street), the overall no limit parking occupancy would be 84%, indicating at this stage there is still some capacity in peripheral on-street parking around the town centre (although for reasons stated in Section 2.2 this should not be relied on for planning purposes);
- Although Table 4.6 may be interpreted that there is 'some' spare capacity in some car parks to change parking restrictions to cater for under supply in others, the actual residual number of car parking spaces at each location would suggest this amount in each car park is generally insufficient to allow any major practical effective changes to be made. However, minor adjustments should be considered at a localised level, which is to be determined in Stage 2;
- These are important study findings and some planning attention needs to be drawn to the high occupancy levels, in particular the latent demand assessment (assessment of additional demand potential from displaced parking currently on vacant lands), particularly as it is expected that the redistribution of parking from these vacant Lots (if/when these are developed) could be largely displaced to off-street all day (unrestricted) parking areas.
- That said, whilst it is recommended that all of the parking demands for current parking on vacant lands be included in the assessment of total CBD demand, it is not recommended that these amounts be simply added as additional CBD parking supply requirements without caution or consideration of the development potential, and potential for developments to provide additional surplus parking.
- There has been some significant developments in the Nowra CBD that have provided surplus car parking supply, and this assists to mitigate the impacts of loss of vacant land used for parking. This is possible on some of the more significant remaining vacant lands, and this also needs to be considered in Council's planning.
- historical survey data shows that many parking areas have maintained a high level of occupancy, however historical comparisons are difficult to assess given the changes to parking areas, additional parking areas and differences in the scope of previous surveys, data collection periods and methods;
- parking infringement data was provided by Shoalhaven City Council from 1 July 2009 to 30 June 2014 for Shoalhaven and Wollongong LGAs;
- an expanded analysis will be undertaken at Stage 2 that will compare the eight (8) Councils to determine if Nowra CBD and Shoalhaven LGA are consistent or different from the other Council areas;
- the eight (8) Council areas to be included in the expanded infringement analysis at Stage 2 are; Shoalhaven, Wollongong, Port Macquarie-Hastings, Eurobodalla, Kiama, Shellharbour, Wingecarribee, and Wollondilly, which were identified as Councils of similar size or Regional status;
- the results for Nowra CBD show that the majority of parking offences are for parking longer than permitted but also a significant number of offences for disobeying no stopping/parking signs;

- the majority (66%) of the recorded parking offences in Nowra are located within Council's free off-street car parks;
- the centralised and high demand areas of Junction Street, Berry Street and Kinghorne Street are the highest infringement areas for on-street parking;
- a comparison of parking infringements per capita for key areas within Shoalhaven LGA revealed that Nowra did not have significantly higher parking infringements rates than areas such as Huskisson or Milton;
- parking infringements per capita were compared between Nowra and the Wollongong City Council areas showing that Wollongong (state suburb) has almost twice the number of parking infringements per capita when compared to Nowra (state suburb) ;
- the overall comparisons for the Shoalhaven LGA compared to Wollongong LGA showed that Shoalhaven LGA had slightly lower parking infringement rates per capita and per Parking Ranger;
- the overall outcomes of the analysis of parking infringements revealed that the infringement rates for the Nowra CBD could be typical for a major regional centre, however a firm conclusion cannot be drawn on the results until the expanded analysis is undertaken at Stage 2 which compares eight (8) Council areas;
- a review of previous studies was undertaken and summarised as follows:
  - The *Draft Nowra CBD Master Plan* is based more on planning principles rather than the technical aspects of previous transport and parking studies. As it is based on planning principles and not DCP18 requirements, modelling, or supply/demand based estimates, it provides a broader integrated planning approach for opportunities in the Nowra CBD, however the recommendations were never tested for technical merit which is a limitation that needs to be considered.
  - The *Nowra CBD Parking Analysis* prepared by Monaro Consulting in 2007 recommended a target of 722 additional off-street parking by 2021 which included 582 spaces for what was described as the current deficiency (in 2007) and 140 spaces for additional commercial development (noting also there is potentially an additional requirement of 468 spaces (1190 in total) to cater for increased demand, offset removal of on-street parking, and higher seasonal growth). Because Monaro consultants considered both the TRACKS modelling (from actual supply/demands) and DCP18 parking rates, and because of the growth forecasts included in the Cardno Eppell Olsen and Monaro studies, to date they are still considered the most appropriate documents upon which a parking strategy can be based.
- the outcomes of the Cardno Eppell Olsen and Monaro Consulting reports will be further investigated (including planning floor area data) in Stage 2 of the Nowra CBD Parking Review, which will also update and provide recommendations based on estimated parking deficiencies with the respect to current DCP18 rates and outcomes of this Stage 1 analysis. Adjustments will be made for parking capacity changes that have occurred since the Cardno Eppell Olsen and Monaro Consulting reports were undertaken, and comparison will be drawn with respect of updated survey data and comparison against latest supply/demand analysis.

Although the data generally shows that some parking areas are at or approaching capacity, when considering the Nowra CBD as a whole, and based on the extent of survey and analysis (traffic and parking) undertaken for this review, overall seasonally adjusted parking occupancies for the Nowra CBD currently appear sufficient with respect of RMS and AUSTROADS guidelines (85th percentile demand target levels).

Whilst no seasonal adjustment has been undertaken with surveys predating 2012, it would also appear that parking occupancies have remained at generally consistent levels over the last 10-15 years, indicating that the supply has been keeping up with the demand. It is however, difficult to accurately compare all previous surveys with the latest data due to the randomness and variations in area scope of historical surveys.

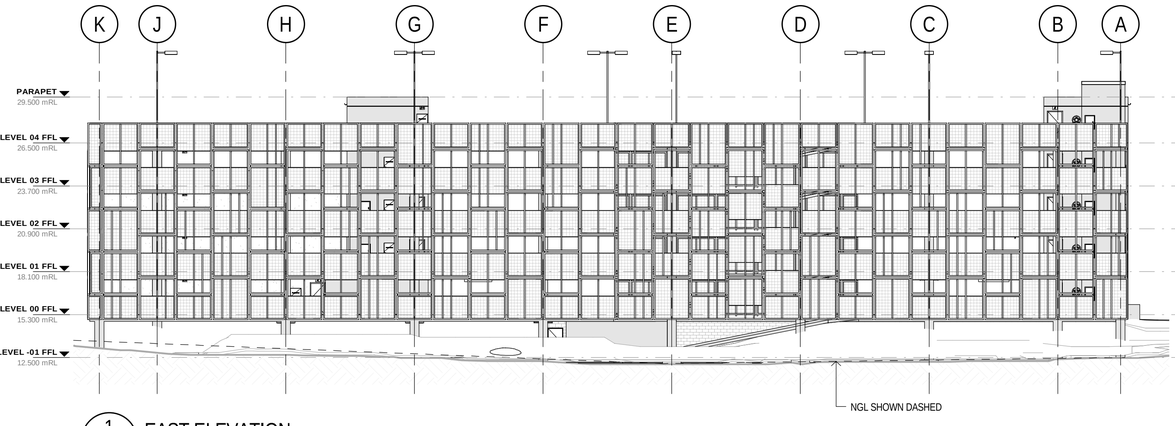
Further detailed analysis and identification of opportunities will be undertaken in Stage 2 of the Nowra CBD Parking Review. The additional analysis will breakdown the data to identify parking shortfalls, requirements and opportunities at a more concentrated level, and will include a sector analysis and mapping to simplify the complexity of the survey/analysis.

More detailed review will also be undertaken at Stage 2 into any identified differences between DCP18 v supply/demand outcomes.

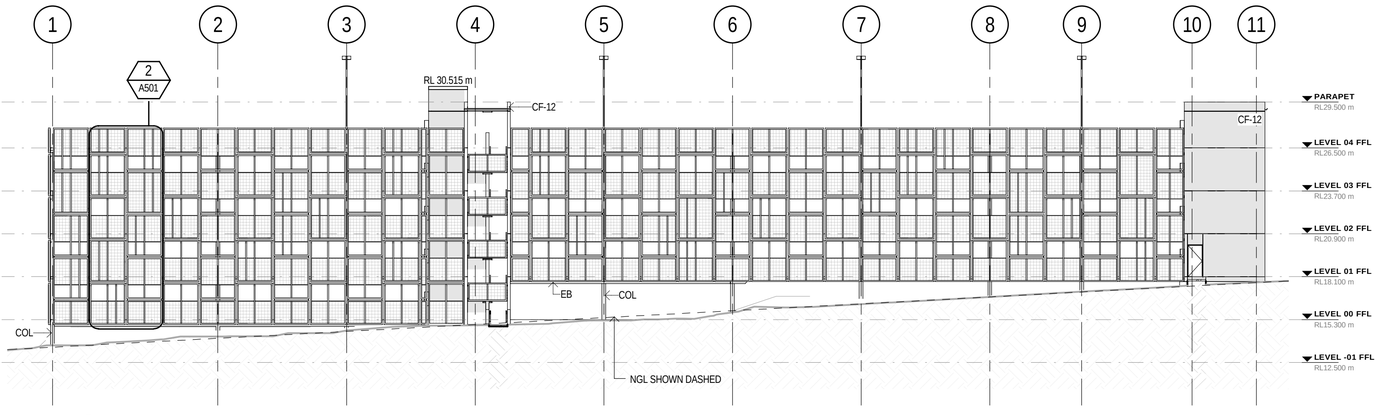
APPENDIX B

BERRY ST / WORRIGEE ST MULTI-STOREY CAR PARK

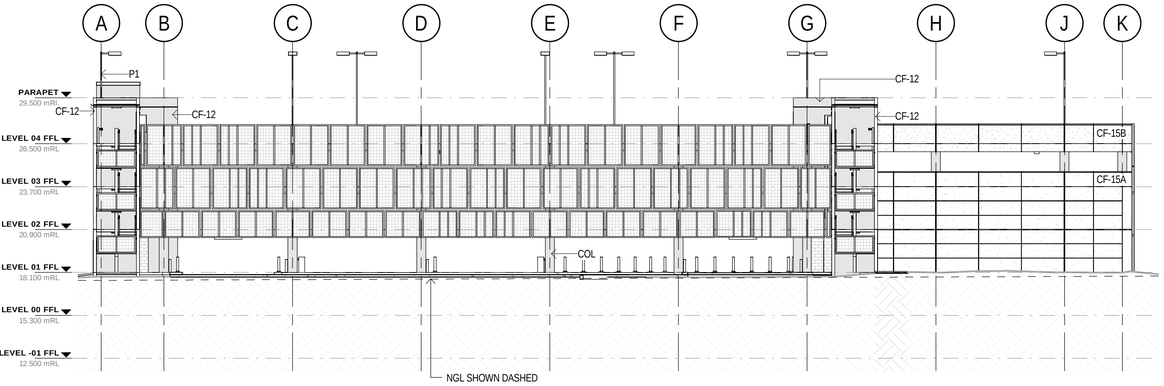
CONCEPT



1 A050 EAST ELEVATION
SCALE 1 : 200



2 A100 NORTH ELEVATION
SCALE 1 : 200



3 A050 WEST ELEVATION
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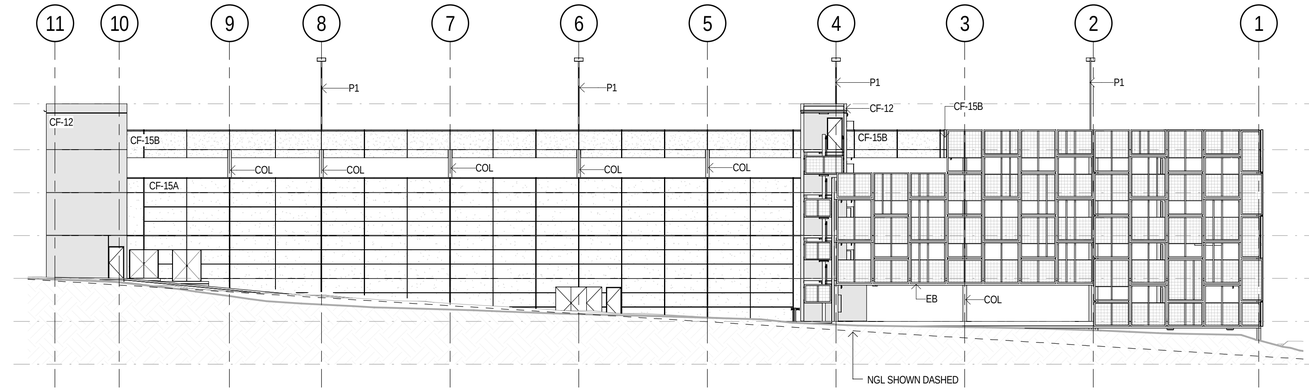

4 A050 SOUTH ELEVATION
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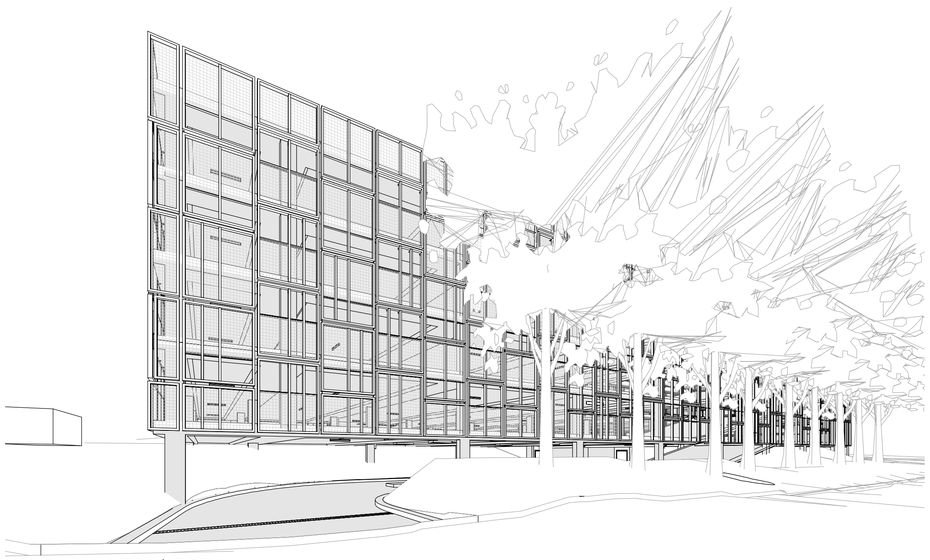
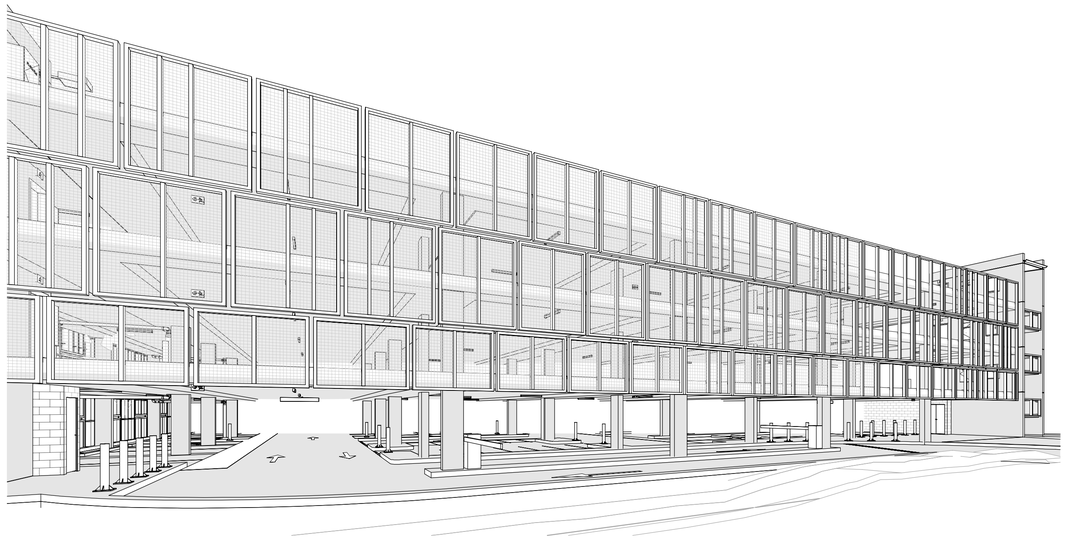


LEVEL -01 ENTRY / EXIT



LEVEL 01 ENTRY / EXIT

ABBREVIATIONS	
CF-12	CONCRETE - GREY OFF FORM FINISH - CLASS 2
CF-15A	CONCRETE - PRECAST, OFF WHITE - ACID ETCHED
CF-15B	CONCRETE - PRECAST, OFF WHITE - POLISHED
COL	STRUCTURAL CONCRETE COLUMN
EB	CONCRETE EDGE BEAM - 500mm x 300mm
P1	1 x 70w METAL HALIDE, POLE TOP LUMANAIRE AT 6.5m AFFL

PRELIMINARY

Rev	Description	Job Manager	Date
01	LIFT ADDED	DE*	03.11.14
00	ISSUE FOR DA	DE*	30.05.14

SHOALHAVEN CITY COUNCIL
WORRIGEE STREET CAR PARK

ELEVATIONS - SHEET 1

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scale 1 : 200 **for A1** **job no.** **23-15177**
date MAY 2014 **rev no.** **01**

approved (PD) D.BELL **A401**

Plot Date: 3/11/2014 10:20:33 AM File Path: C:\Users\dsevans\Documents\23-15177 WORRIGEE STREET CARPARK_devans.rvt