Transport Impact Assessment

Smiths Beach Project

CW1141900

Prepared for
Smiths 2014 Pty Ltd

8 December 2021

Cardno

Contact Information

Cardno (WA) Pty Ltd
ABN 77 009 119 000

11 Harvest Terrace
West Perth WA 6005
Australia

www.cardno.com
Phone +61 8 9273 3888
Fax +61 8 9486 8664

Document Information

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Author(s):

Dana Romic
Transport Planner

Edmond Hoang
Traffic Engineer

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Approved By:

Ray Cook
Business Leader – Traffic & Transport Planning

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1 Introduction

1.1 Background

Cardno was commissioned by Smiths 2014 Pty Ltd to prepare a Transport Impact Assessment for the proposed development ('the Project') located at Lot 4131 Smiths Beach Road, Yallingup in the City of Busselton ('the Site').

This report has been prepared in accordance with the *Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016).*

Specifically, this report aims to assess the operations of the Project internally, its connections to the surrounding road network, with a focus on the traffic operations and access arrangements.

2 Development Proposal

2.1 Proposed Land Uses

The Project consists of the following components:

> Tourist development comprising hotel accommodation, restaurant and wellness centre

> Campground

> Community Hub comprising cafe, reception hall, surf lifesaving club, Cape to Cape Welcome Centre and general store/bakery

> Holiday Homes

Parking facilities are proposed to sufficiently accommodate the above new uses, in addition to contributing towards the parking demand generated by the existing Smiths Beach.

The layout of the Project is shown below in **Figure 2-1**.

Figure 2-1 Project Masterplan

Source: McGregor Coxall 2021

Table 2-1 below provides a summary of the anticipated ***new*** land uses/users relating to the Project.

Table 2-1 Summary of Land Uses

Land Uses	Approximate Yield
Tourism	
Tourist Accommodation	65 rooms
Restaurant (200 pax)	432sq.m
Recreation Lounge and Bar (Third Space Meeting Area) (50 pax)	356sq.m
Wellness Centre – Spa and Gym	401sq.m
Campground	36 sites
Community Hub	
Surf Life Saving Club	377sq.m
Reception Hall (150 pax)	292sq.m
Cape to Cape Welcome Centre	110sq.m
Café (174 pax)	255sq.m
General Store/Bakery inc. Liquor Sales	127sq.m
Hire Shop	70sq.m
Residential	
Holiday Homes	61 dwellings

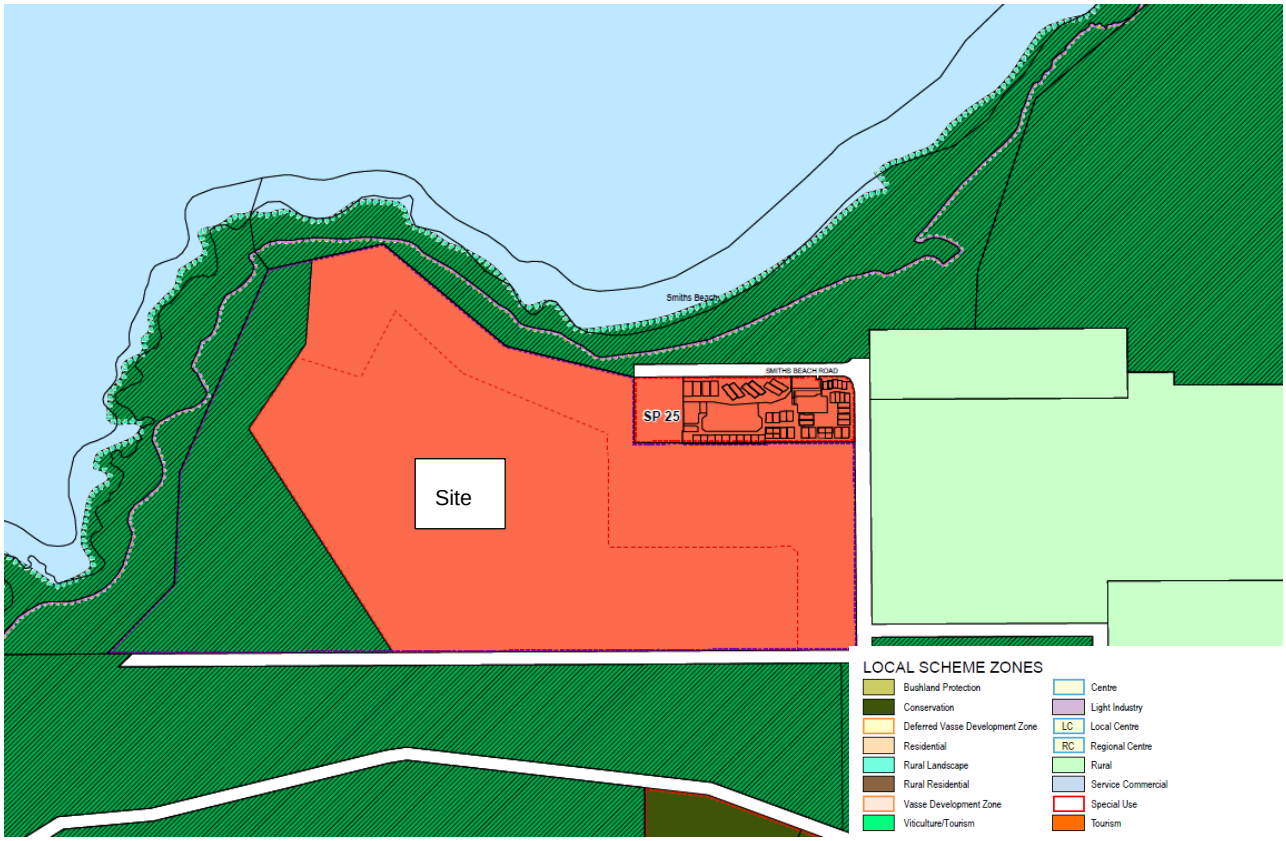
3 Existing Situation

3.1 Existing and Surrounding Land Uses

As shown in **Figure 3-1**, the Site is currently zoned *'Tourism and land uses consistent with the Residential Zone within A36'*. Areas north, south and west of the Site are zoned *'Recreation'*, whilst areas to the east are zoned *'Rural'*.

The Site is currently vacant, with existing tourism accommodation located to the north and east of the Site at Canal Rocks Apartments, Smiths Beach Resort and Chandlers Villas.

Figure 3-1 Existing Zoning Within and Adjacent to the Development



Source: City of Busselton – Local Planning Scheme No. 21

3.2 Existing Parking Supply and Demand

There are a total of 64 formal parking bays located in two car parks along the Smiths Beach foreshore area, in addition to a number of informal bays along Smiths Beach Road towards Smiths Point.

Parking demand is observed to be well in excess of current supply, estimated to be as much as 150 spaces on the busiest day of the year (refer Appendix B for further details). For modelling purposes an existing demand of 130 spaces has been assumed which is reflective of the maximum expected demand day for the third busiest day of the year. Due to the infrequency of the peak period associated with demand for 150 spaces (a 1-hour period across 1 to 2 days in a year) it is not considered appropriate to model parking at this level.

3.3 Existing Road Network

The existing road network surrounding the Site is shown in **Table 3-1**. Road classifications are defined in the Main Roads Functional Hierarchy as follows:

> **Primary Distributors (light blue):** Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.

> **Local Distributors (orange):** Carry traffic within a cell and link higher order roads such as Primary and District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.

> **Access Roads (grey):** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local government.

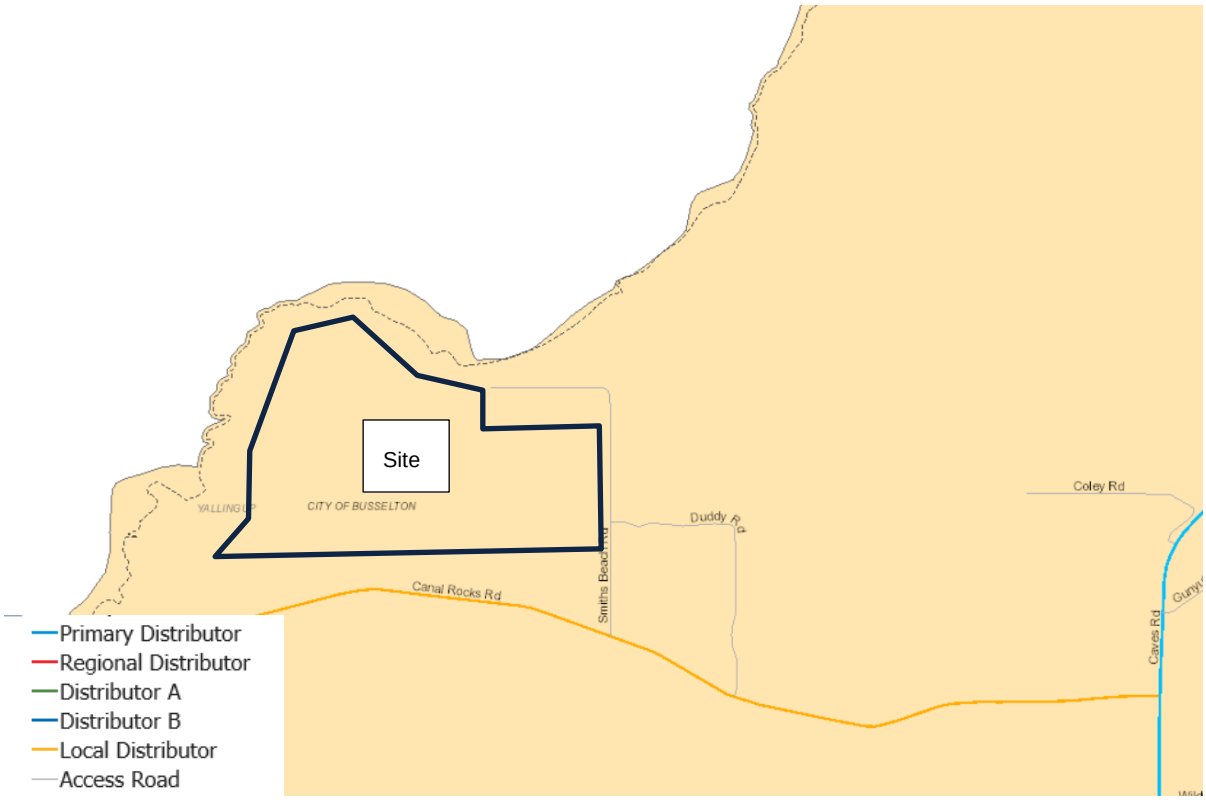
The Site is bounded by Smiths Beach Road to the north/east and the Leeuwin-Naturaliste National Park to the south. The surrounding road network is further described in **Table 3-1** and shows the hierarchy as per the Main Roads WA Road Information Mapping System, whilst **Figure 3-2** shows the road hierarchy surrounding the Site.

Table 3-1 Road Network Classification

Road Name	Road Hierarchy	Jurisdiction	No. Lanes	No. of Footpaths	Width (m)	Posted Speed Limit (km/h)
Smiths Beach Road	Access Road	Local Government	2	0	6	50
Canal Rocks Road	Local Distributor	Local Government	2	0	6	50 km/h in built up areas or 110km/h outside built up areas.
Caves Road	Primary Distributor	Main Road WA	2	0	7	80

As Canal Rocks Road is located outside of built up areas, the default speed limit is 110km/h.

Figure 3-2 Existing Road Network



Source: Main Roads Road Information Mapping System (2021)

3.4 Existing Traffic Volumes

The majority of existing trips to the Site area are related to Smiths Beach. Based on surveys conducted during the holiday period (between 16/12/2020 and 12/01/2021), traffic volumes to Smiths Beach (Smiths Beach Road near Canal Rocks Apartments) averaged 1,000 vehicles per day (each way).

Peak traffic volumes available from Main Roads WA showed weekend demands along Caves Road were substantially higher than weekday volumes. These traffic volumes are summarised in **Table 3-2.**

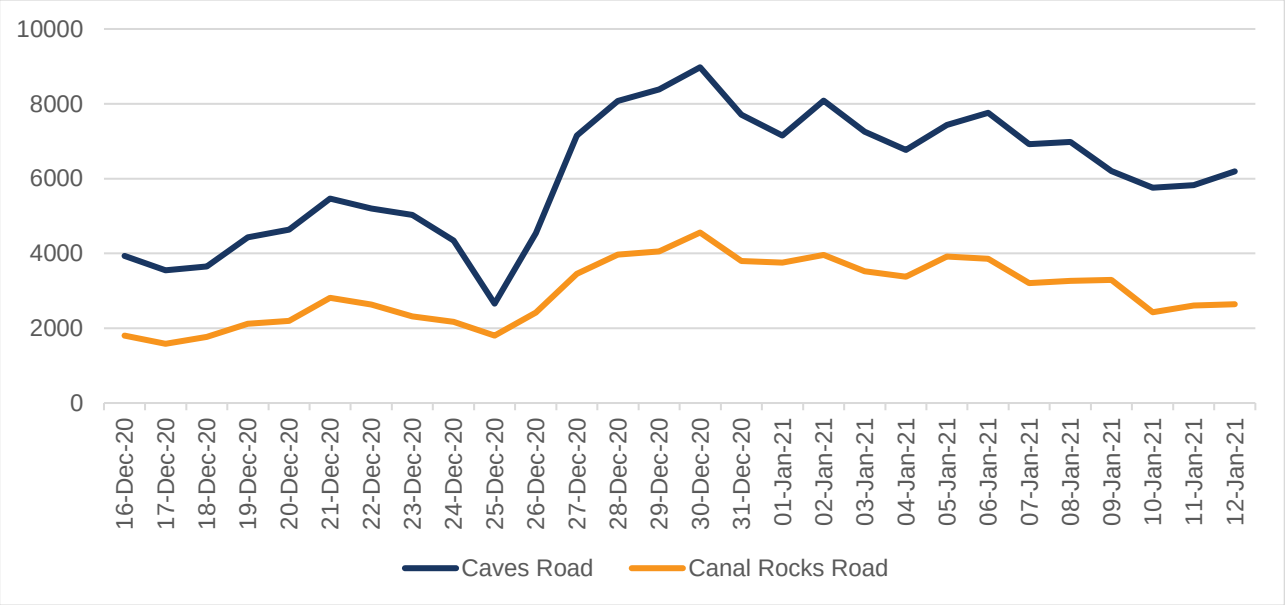
Table 3-2 Two-way traffic volumes – typical weekend operation

Location	Year	Peak Traffic	Average Daily Traffic (%HV)	Source
Caves Road (south of Canal Rocks Road)	2016	265	2,638	MRWA Traffic Map
Caves Road (south of Wildwood Road)	2018	278	2,443	MRWA Traffic Map

As Smiths Beach is predominantly a tourist destination, the typical “spike” in traffic during the morning and afternoon peak periods is not present. Instead, the traffic volumes show a consistent midday peak on both weekdays and weekends.

Survey data was also obtained through pneumatic tube counts at Canal Rocks Road and Caves Road, which indicated a significantly higher demand during the peak holiday season than observed in Main Roads data.

Figure 3-3 Daily two-way traffic volumes – 2020/21 Summer holiday period



3.5 Existing Pedestrian/Cycle Network

The Site is currently not served by any specific pedestrian/cycling infrastructure.

3.6 Existing Public Transport Service

The Site is not currently served by public transport services.

3.7 Crash Data

A review of the Main Road WA crash data for the five-year period between January 2016 and December 2020 has been undertaken for Smiths Beach Road and the intersection of Canal Rocks Road and Caves Road. Only single crash was recorded along Smiths Beach Road caused by a rear end crash adjacent to existing parking. For the Canal Rocks Road/Caves Road intersection, a single sideswipe crash was recorded. **Figure 3-4** identifies the location of this crash.

Figure 3-4 Crash Location

Source: Main Roads WA

4 Proposed Transport Networks

4.1 Internal Road Network

The Project proposes a new internal road network as shown below in **Figure 4-1**. These changes propose to link key land uses throughout the Site such as roads from the hotel to the holiday homes.

The holiday home loops are proposed to function in a one-way clockwise direction, to allow for a minimal road cross-section geometry and maintain a consistent environment suitable for low-speed shared use. This geometry will support safe pedestrian and cycling travel within the internal road network.

Figure 4-1 Proposed Internal Road Network

Source: McGregor Coxall 2021

4.2 Proposed Vehicle Access Arrangement

Four (4) new vehicular access locations are proposed, as shown in **Figure 4-2** and summarised below**.**

> Access 1 – Main access off Smiths Beach Road to the Project

> Access 2 – Access to the eastern holiday homes

> Access 3 – Access for western holiday homes and hotel guests

> Access 4 – Access to Smiths Lane Parking for restaurant, Community Hub, foreshore, and Smiths Beach visitors, as well as to campground parking

An access for emergency vehicles to the eastern holiday homes is also provided via Smiths Beach Road.

Figure 4-2 Vehicular Access Locations

Source: McGregor Coxall 2021

4.3 Pedestrian/Cycle Network

The Project includes an extensive path network through the Site to support safe, attractive connection by foot and bike from all areas to the Resort and Beach. The road cross-sections chosen are designed for slow-speed shared use and connect legibly to pedestrian paths.

This arrangement ensures that the most convenient mode of transport within the area is by foot.

A map of internal pedestrian/cycling paths is shown below, **Figure 4-3**.

Figure 4-3 Proposed Internal Path Network

4.4 Public Transport Network

There is currently no public transport servicing Smiths Beach and there is no proposed change to this arrangement.

5 Proposed Parking Demand and Supply

5.1 Parking Supply

5.1.1 External Parking Considerations

A total of 133 bays (B, F, G as referred to in **Figure 5-1**) are provided offsite to sufficiently meet the modelled parking demand adopted for the existing use of Smiths Beach. Note, as mentioned above there are also surplus bays provided onsite to accommodate overflow beach parking.

New Beach Parking (G) proposes to formalise parking within the current road reserve as a way for the City of Busselton to deal with the current undersupply of parking that exists for the use of Smiths Beach during peak periods. These locations are already used by the public as informal parking in peak periods (refer **Figure 2** in **Appendix B**). Formalising current parking in the existing road reserve does not require any development in the dunes and will ultimately be a decision made by the City of Busselton.

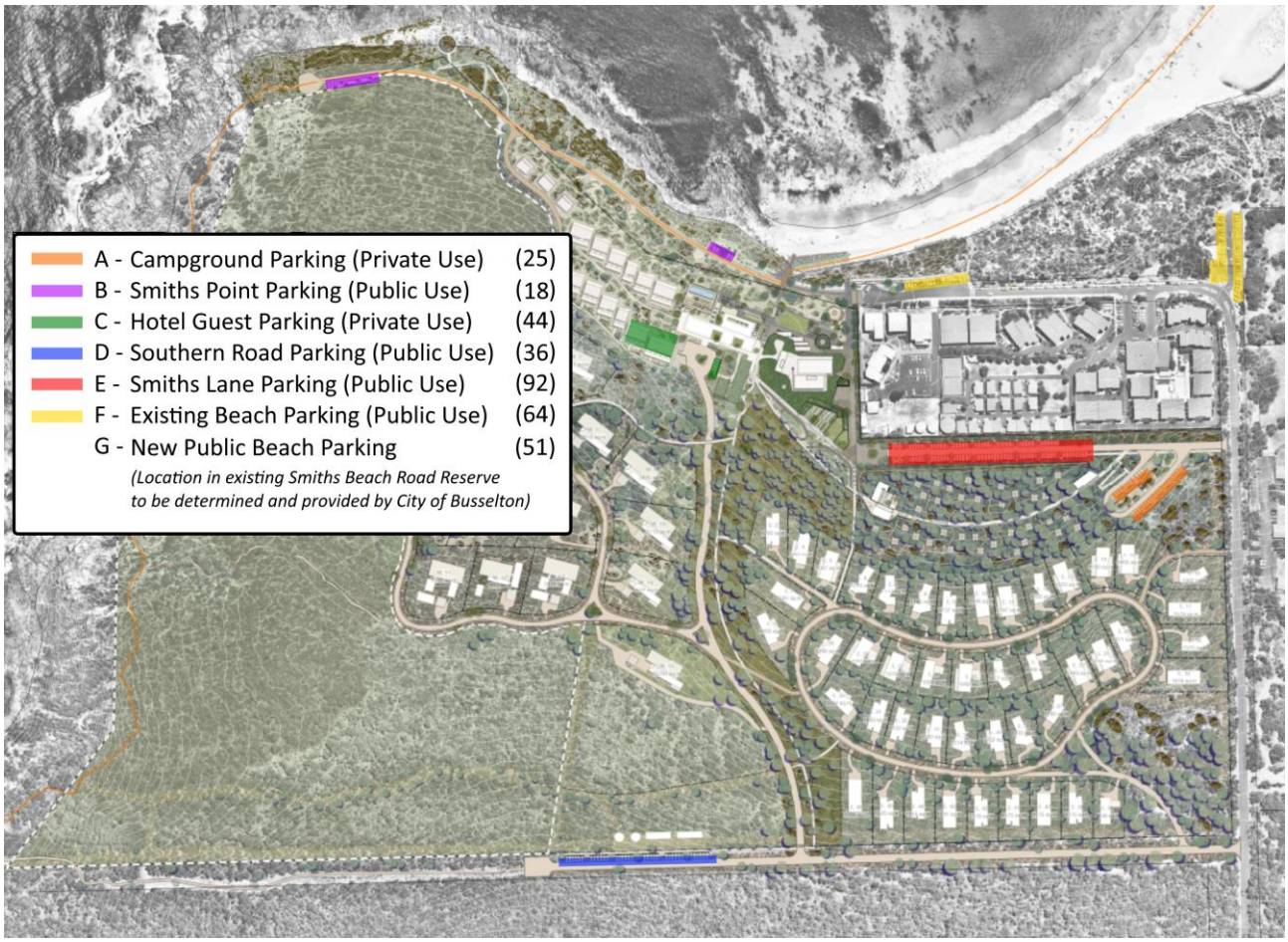
5.1.2 On-Site Parking

A total of 197 parking bays are proposed onsite (A, C, D, E as referred to in **Figure 5-1**). This provision adequately deals with expected parking demand generated by the Project relating to new land uses and also provides surplus parking for Smiths Beach use.

5.1.3 Parking Summary

A total of 330 (197 on-site + 133 off-site as described above) parking bays provide a combination of dedicated parking and efficient shared parking to appropriately suit the needs of the community and the Project.

Figure 5-1 Parking Supply



A synopsis of the proposed parking areas and functions is provided below:

1. Hotel Guest Parking – basement car park and ancillary bays dedicated for hotel guests.
2. Campground Parking – dedicated for campground use.
3. Smiths Lane Parking – for use by hotel and community hub visitors, staff overflow, hotel guest overflow and beach overflow.
4. Southern Road Parking – expected to accommodate a mix of staff parking and visitors, including to the 'Aquarium' (a natural rock pool).
5. Offsite parking for use of Smiths Beach incorporating Smiths Point Parking, Existing Beach Parking and New Beach Parking (formalising existing ad-hoc overflow supply where geometrically feasible).
6. Parking for holiday homes will be on-Site within each Holiday Home Lot envelope. On-site parking would consist of 2 formalised spaces and sufficient additional area to accommodate another 3 vehicles in accordance with the requirements under the City's Local Planning Policy (LPP) 4.1: Holiday Homes.

5.2 Parking Demand and Reciprocity

The key principle relating to the parking demand analysis is the **Reciprocity Factor**. This considers the reciprocal use of the beach and communal facilities (café, restaurant, etc) by those people already parked in the area. As Smiths Beach will be a multi-purpose destination, it is to be expected that at least 50% of the demand for the land uses and beach will be on-Site people from the accommodation (hotel, holiday homes, campground) or shared trips between other on-Site land uses.

For instance, a family who has come to the beach together in one car is also highly likely to visit the café/bakery after the beach. In this example, the use of the café/bakery by the family hasn't generated additional parking demand as they were already parked in the area.

As a result, the assumed demand for relevant land uses has been reduced by a factor of 50% which recognises that half the demand for the land uses are generated by people already on-Site. Note, the reciprocity factor is not applicable to staff demand as it is assumed they are only attending the Site for work and are unlikely to visit other on-Site land uses.

In addition to this reciprocity effect, it should be understood that not all uses are busy at the same time. For example, the peak period for the Community Hub is expected to be at midday, while hotel accommodation parking will peak in the late evening. This effect has been captured using a detailed demand analysis methodology described fully in **Appendix B**, which identifies a maximum parking demand of 168 bays during the midday peak period.

Table 5-1 summarises the effects of reciprocal parking on demand.

Table 5-1 Anticipated Parking Demand

Land Uses	Assumed Demand (cars)	Assumed Demand with Reciprocity factor (50%) (staff 1 for 1)	Location (refer Figure 5-1)
Tourism (on-site)			
Hotel Accommodation (65 rooms)	47 (occupancy discount)*	47 (occupancy discount)	Hotel Guest Parking & Smiths Lane Parking
Staff (33 Overall)	33	33	Southern Road Parking
Restaurant (200 seats)	50	25	Smiths Lane Parking
Recreation Lounge and Bar (50 people)	15	8	Smiths Lane Parking
Wellness Centre**	-	-	-
Campground (36 sites)	36	24	Campground Parking & Smiths Lane Parking
Community Hub (on-site)			
Surf Life Saving Club (5 staff)	5	5	Smiths Lane Parking

Surf Life Saving Club (50 guests)	15	8	Smiths Lane Parking
Reception Hall (150 seats)	45	23	Smiths Lane Parking
Reception Hall (15 staff)	15	15	Southern Road Parking & Smiths Lane Parking
Cape to Cape Welcome Centre (5 staff)	5	5	Smiths Lane Parking
Café (174 seats)	44	22	Smiths Lane Parking
Café (9 staff)	9	9	Southern Road Parking & Smiths Lane Parking where at capacity
General Store/Bakery & Hire Shop	7	4	Smiths Lane Parking
Total (Tourism & Community Hub)	**326 vehicles**	**228 vehicles** ***(168 maximum on-site at any one time)***	
Smiths Beach (off-site)			
Public Parking	130***	130	Smiths Point Parking, Existing Beach Parking & New Beach Parking

** Based on 72% peak hotel occupancy rate as detailed in Appendix B.*

*** The wellness centre is considered to be an ancillary facility to the hotel and therefore won't generate additional traffic.*

**** Peak parking demand assumed for modelling purposes as detailed in Appendix B.*

Note: parking rates and provision for the holiday homes have been excluded as parking will be contained within the individual lots.

Note: average of 3.5 persons per car has been assumed to determine parking demand (cars). This doesn't apply to staff, hotel guests or campground users.

Table 5-2 provides a breakdown of the parking requirements based off the City of Busselton's Local Planning Policy 2.1 Car Parking (LPP 2.1) requirements, note the LPP doesn't consider parking provision for staff associated with the uses.

Table 5-2 Parking Requirements and Provision

Land Uses	LPP 2.1 Parking Rate	Parking Requirements
Tourism		
Hotel Accommodation (65 rooms)	1 space per unit (room)	65 bays
Staff (33 Overall)		
Restaurant (200 seats)	1 space per 4 seats	50 bays
Recreation Lounge and Bar (50 people)	1 space to every 4 person the building is designed to accommodate	13 bays
Wellness Centre*	-	-
Camping grounds (36 sites)	1 per site plus 1 visitor space for every 4 sites	45 bays
Community Hub		
Surf Life Saving Club (5 staff)	1 space per 30m^2 NLA	13 bays
Surf Life Saving Club (50 guests)		
Reception Hall (150 seats)	1 space to every 4 person the building is designed to accommodate	38 bays
Reception Hall (15 staff)		
Cape to Cape Welcome Centre (5 staff)	1 space per 30m^2 NLA	4 bays
Café (174 seats)	1 space per 4 seats	44 bays

Café (9 staff)		
General Store/Bakery & Hire Shop	1 space per 30m^2 NLA	7 bays
Total		**279 bays**

** The wellness centre is considered to be an ancillary facility to the hotel*
Note: parking rates and provision for the holiday homes have been excluded as parking will be contained within the individual lots.

The LPP requirements do not consider either reciprocal use or time of day effects. Each land use is assumed to operate in isolation, with all peak demands occurring simultaneously. This is not how the precinct will practically function. The parking demand analysis described in **Appendix B** (Figure 7) therefore represents a better estimate for parking requirements across this Site.

Table 5-3 summarises the proposed parking supply and demand in relation to the Project.

Table 5-3 Parking Supply and Demand

Land Uses	Parking Supply	Peak Demand	Comment
Tourism & Community Hub (on-site)	197	168	Peak demand includes the Reciprocity Factor of 50% where relevant as well as time-of-day effects.
Smiths Beach (off-site)	133	130	Assumed demand derived from parking survey as detailed in **Appendix B**.
Total	**330**	**298**	

Whilst beach use will increase due to the presence of the development, it is not anticipated that this will generate additional parking demand from that observed through the parking survey. This is due to the reciprocity principle whereby additional beach use will come from those people who are already in the area at the hotel, holiday homes or other land uses as opposed to being generated purely from increased external visitors.

The parking demand modelling described in **Appendix B** (Section 5) shows that the proposed supply will be more than sufficient to accommodate peak demands, as a result of time-of-day and reciprocal use effects.

6 Integration with Surrounding Area

6.1 Nearby Attractors

The Site is located adjacent to Smiths Beach and is intended to serve as the base for the Cape to Cape Welcome Centre, which provides a logical and curated welcome centre for users of the Cape to Cape Track.

Access to nearby attractors is supported by a comprehensive path network, shown in **Figure 4-3** above.

6.2 External Road Network

Cardno is not aware of any planned changes to the external road network; however, the Project proposes improvements to Smiths Beach Road to support safe parking and movement through the network during peak demand periods.

In addition, the Project includes formalisation of the southern boundary road to allow access to the tourist development and western holiday homes, as well as to public parking areas which will accommodate a mix of staff parking and visitors to the 'Aquarium', a natural rock pool.

6.3 Pedestrian/Cycle Network

Cardno is not aware of any short to medium term pedestrian or cycle network changes outside of the Project.

6.4 Public Transport Network

Cardno is not aware of any proposed short to medium term public transport network changes.

6.5 Proposed Changes to Surrounding Land Uses

Cardno is not aware of any proposed land use changes surrounding the Site.

7 Analysis of Transport Network

7.1 Assessment Parameters

Traffic surveys were conducted over the holiday period for 4 weeks between 16/12/2020 and 12/01/2021.

The traffic data shows that the road network peak within the surrounding area of the Site was between 11:00am-12:00pm during the weekends which makes sense given that the surrounding area comprises mostly of tourist attractions which are typically busier during these periods.

For the purposes of this assessment, the data from the following periods were used in the analysis:

> 85th percentile of the holiday period which is represented by the 5th busiest day for Smiths Beach during this period which occurred during 30/12/2020 (referred to as 85th% Holiday Peak in the assessment).

> A standard weekend period for the holiday season which occurred on 20/12/2020 (referred to as Weekend Peak in the assessment).

The following model scenarios have therefore been analysed as part of this assessment:

> Scenario 1 – 2021 traffic without the Project ('background traffic')

> Scenario 2 – 2025 background traffic including the Project (estimated opening year of the development)

> Scenario 3 – 2035 background traffic including the Project (10-year horizon assessment as per WAPC guidelines)

For the purpose of a robust assessment, a 1% growth rate has been adopted to determine the background traffic for 2025 and 2035.

7.2 Traffic Generation Estimation

Trip generation has been calculated for the Project utilising trip generation rates from the *Institute of Transportation Engineers (ITE) "Trip Generation" 10th Ed* and the *RTA Guide to Traffic Generating Developments 2002*.

Table 7-1 provides the trip generation rate during the peak hour period, **Table 7-2** outlines the directional distribution acquired from ITE for the Project and **Table 7-3** states the total trip generation for the Project. Note that the Weekend Peak generation rate was selected for most land uses and if no weekend rate is available the highest generation rate of either the AM or PM peak was selected. The following land uses are unlikely to generate any additional traffic during the peak traffic periods;

> Cape to Cape Welcome Centre – this will comprise mostly of staff who typically arrive and depart outside of the peak periods.

> General Store/Bakery & Hire Shop – the majority of visitors to these shops will likely be hotel and beach visitors.

> Wellness Centre – this component is considered to be an ancillary facility to the hotel.

Table 7-1 Trip Generation Rate – Peak Hour Generator

Land Use	ITE Code/Source	Peak Period
Holiday Homes	ITE 260	0.85 trips per dwellings
Hotel Accommodation	ITE 330	0.5 trips per room
Restaurant	ITE 931	0.33 trips per seat
Recreation Lounge and Bar	ITE 295	1.15 trips per 100m^2
Campground	ITE 416	0.41 trips per occupied site
Surf Life Saving Club	ITE 295	1.15 trips per 100m^2
Reception Hall	Online Research	0.3 trips per person
Café	ITE 931	0.33 trips per seat

Table 7-2 Directional Distribution During the Peak Hour Period

Land Use	Peak Period	
	In	**Out**
Holiday Homes	58%	42%
Tourist Accommodation	50%	50%
Restaurant	59%	41%
Recreation Lounge and Bar	54%	46%
Campground	62%	38%
Surf Life Saving Club	54%	46%
Reception Hall*	100%	0%
Café	59%	41%

**Note that the in and out splits are dependent on the function start and finishing times. Typically, all traffic will arrive on Site prior to the start of the function and leave at the end of the function. For the purpose of this assessment it is assumed the peak demand for the function is associated with the arrival traffic, i.e. 100% inbound traffic.*

Table 7-3 Total Trip Generation During the Peak Hour Period

Land Use	Peak Period	
	In	**Out**
Holiday Homes	14	12
Tourist Accommodation	17	17
Restaurant	20	14
Recreation Lounge and Bar	1	1
Campground	10	6
Surf Life Saving Club	2	3
Reception Hall	23	0
Café	17	12
Total	**104**	**65**

The Project represents a trip generation of approximately 169 vehicles during the peak hour period.

7.3 Traffic Distribution

Most traffic traveling to and from the development will be from the east along Canal Rocks Road and Caves Road.

7.4 Background and Total Traffic Flows

Figure 7-1, **Figure 7-2** and **Figure 7-3** provide a summary of the anticipated traffic volumes for each assessment scenario. The figures below represent the anticipated number of vehicle movements at Caves Road/Canal Rocks Road and Smiths Beach Road/Canal Rocks Road intersections for each of the assessment scenarios described in **Section 7.1**.

Figure 7-1 Scenario 1 Traffic Volumes During the Peak Hour Period

Figure 7-2 Scenario 2 Traffic Volumes During the Peak Hour Period

Figure 7-3 Scenario 3 Traffic Volumes

7.5 Intersection Performance Analysis

An assessment was conducted for the following intersections:

> Caves Road/Canal Rocks Road intersection; and

> Smiths Beach Road/Canal Rocks Road intersection.

This assessment has determined that the intersections operate at an acceptable level of service for all scenarios (as identified in section 7.1) and therefore no upgrades are required.

The identified intersections have been analysed using the SIDRA analysis program. This program calculates the performance of intersections based on input parameters, including geometry and traffic volumes. SIDRA outputs for each approach are presented in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

> **Degree of Saturation (DOS)** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity. The theoretical intersection capacity is exceeded for an un-signalised intersection where DOS > 0.80;

> **95% Queue** is the statistical estimate of the queue length below which 95% of all observed queues would be expected;

> **Average Delay** is the average of all travel time delays for vehicles through the intersection. An un-signalised intersection can be considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and

> **Level of Service (LOS)** is a qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 7-4**.

Table 7-4 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	5-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

A LOS exceeding these values indicates that the road section is exceeding its practical capacity. Above these values, users of the intersection are likely to experience unsatisfactory queueing and delays during the peak hour periods.

7.5.2 Analysis Assumptions

The following assumptions were used for the assessment:

> For the purpose of this assessment, the development traffic generation is the same for both the 85th% Holiday Peak and the Weekend Peak.

> Heavy vehicle percentages were obtained from the traffic surveys that were conducted during the holiday period.

> As there were no class 10 or above vehicles (B-double trucks or larger), the parameters for these heavy vehicles were not inputted into the SIDRA model.

> The gap acceptance for the right turn movement on the western approach of the Caves Road/Canal Rocks Road was changed to the Austroads recommended values.

7.5.3 Caves Road/Canal Rocks Road Intersection

Figure 7-4 shows the SIDRA layout for the intersection. **Table 7-5** through to **Table 7-7** show the SIDRA results for all scenarios.

Figure 7-4 SIDRA layout – Caves Road/Canal Rocks Road Intersection

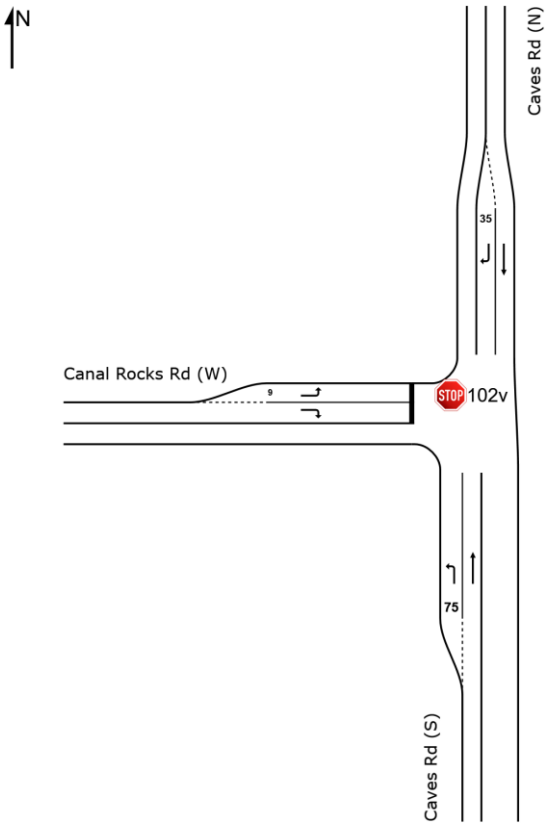


Table 7-5 Caves Road/Canal Rocks Road Intersection – Scenario 1

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay (secs)	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Caves Rd (S)	L	0.071	7.2	A	0	0.037	7.2	A	0
	T	0.204	0	A	0	0.095	0	A	0
Caves Rd (N)	T	0.233	0	A	0	0.087	0	A	0
	R	0.211	10.9	B	6.3	0.077	8.3	A	2.3
Canal Rocks Rd (W)	L	0.176	13.1	B	5.2	0.064	11.4	B	1.8
	R	0.444	24.4	C	15	0.096	13.2	B	2.7
All Vehicles		0.444	5.8	A	15	0.096	4.5	A	2.7

Table 7-6 Caves Road/Canal Rocks Road Intersection – Scenario 2

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay (secs)	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Caves Rd (S)	L	0.102	7.2	A	0	0.066	7.2	A	0
	T	0.214	0	A	0	0.099	0	A	0
Caves Rd (N)	T	0.246	0.1	A	0	0.091	0	A	0
	R	0.337	12.8	B	12.2	0.149	8.9	A	4.5
Canal Rocks Rd (W)	L	0.231	13.4	B	7	0.098	11.5	B	2.8
	R	0.69	34.7	D	28.5	0.162	14.2	B	4.7
All Vehicles		0.69	8.1	A	28.5	0.162	5.8	A	4.7

The SIDRA results for Scenario 2 shows that there will be an increase in delays for right turn movements at this intersection though still within acceptable limits.

Table 7-7 Caves Road/Canal Rocks Road Intersection – Scenario 3

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay (secs)	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Caves Rd (S)	L	0.109	7.2	A	0	0.07	7.2	A	0
	T	0.235	0	A	0	0.109	0	A	0
Caves Rd (N)	T	0.269	0.1	A	0	0.1	0	A	0
	R	0.389	14	B	14.9	0.163	9.1	A	5
Canal Rocks Rd (W)	L	0.262	14	B	8.2	0.107	11.6	B	3.1
	R	0.883	58.5	F	51.2	0.184	14.7	B	5.3
All Vehicles		0.883	11.1	A	51.2	0.184	5.8	A	5.3

The SIDRA results for Scenario 3 shows further increase in delays for right turn movements at this intersection. However, delays of this extent will be rare and mostly limited to a handful of days during the busiest holiday periods.

7.5.4 Smiths Beach Road/Canal Rocks Road Intersection

Figure 7-5 shows the SIDRA layout for the intersection. **Table 7-8** through to **Table 7-10** show the SIDRA results for all scenarios.

Figure 7-5 Smiths Beach Road/Canal Rocks Road Intersection

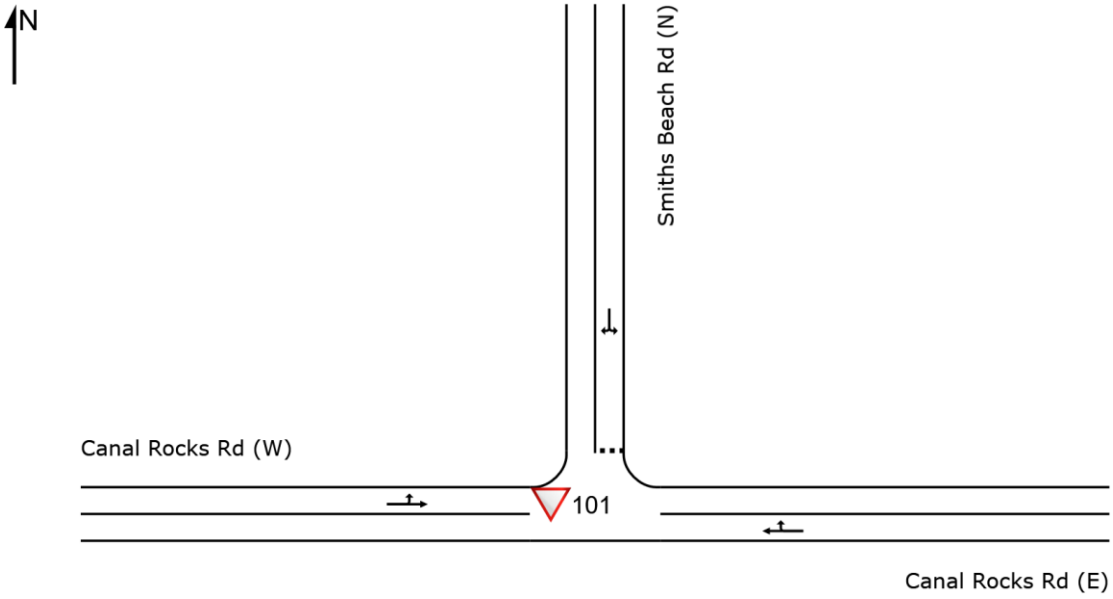


Table 7-8 Smiths Beach Road/Canal Rocks Road Intersection – Scenario 1

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay (secs)	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Canal Rocks Rd (E)	T	0.154	0.4	A	5.8	0.077	0.2	A	2.8
	R	0.154	5.2	A	5.8	0.077	4.9	A	2.8
Smiths Beach Rd (N)	L	0.13	5.1	A	4.2	0.056	4.8	A	1.7
	R	0.13	6.5	A	4.2	0.056	5.4	A	1.7
Canal Rocks Rd (W)	L	0.072	4.7	A	0	0.035	4.7	A	0
	T	0.072	0	A	0	0.035	0	A	0
All Vehicles		0.154	3.1	A	5.8	0.077	3	A	2.8

Table 7-9 Smiths Beach Road/Canal Rocks Road Intersection – Scenario 2

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay (secs)	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Canal Rocks Rd (E)	T	0.229	0.6	A	9.7	0.143	0.3	A	5.6
	R	0.229	5.3	A	9.7	0.143	4.9	A	5.6
Smiths Beach Rd (N)	L	0.193	5.1	A	6.5	0.108	4.8	A	3.4
	R	0.193	7.6	A	6.5	0.108	6	A	3.4
Canal Rocks Rd (W)	L	0.081	4.7	A	0	0.043	4.7	A	0
	T	0.081	0	A	0	0.043	0	A	0
All Vehicles		0.229	3.7	A	9.7	0.143	3.8	A	5.6

Table 7-10 Smiths Beach Road/Canal Rocks Road Intersection – Scenario 3

Intersection Approach		85th% Holiday Peak				Weekend Peak			
		DOS	Delay	LOS	95% Queue (m)	DOS	Delay (secs)	LOS	95% Queue (m)
Canal Rocks Rd (E)	T	0.246	0.6	A	10.6	0.151	0.3	A	6
	R	0.246	5.4	A	10.6	0.151	5	A	6
Smiths Beach Rd (N)	L	0.21	5.2	A	7.1	0.114	4.9	A	3.6
	R	0.21	8	A	7.1	0.114	6.2	A	3.6
Canal Rocks Rd (W)	L	0.088	4.7	A	0	0.047	4.7	A	0
	T	0.088	0	A	0	0.047	0	A	0
All Vehicles		0.246	3.7	A	10.6	0.151	3.7	A	6

7.5.5 SIDRA Results Summary

A summary of the SIDRA results are as follows:

> The Caves Road/Canal Rocks Road intersection operates at an acceptable level of service for all scenarios.

> The Smiths Beach Road/Canal Rocks Road intersection operates at an acceptable level of service for all scenarios.

8 Site Specific Issues

8.1 Main Roads WA Intersection Warrants

As Caves Road is a Primary Distributor managed by Main Roads WA, an intersection warrant assessment was conducted at the Caves Road/Canal Rocks Road intersection to determine if intersections upgrades are warranted at this intersection due to the increase in traffic generated by the Project. The volumes from the following periods were used for assessment:

> 85th percentile (**Figure 8-1**) which represents the "peak" traffic throughout the holiday period (5th busiest day during the 4 week survey period).

> 85th percentile with the inclusion of development traffic (**Figure 8-2**).

> 50th percentile (**Figure 8-3**) which represents the average traffic throughout the holiday period (14th busiest day during the 4 week survey period).

> 50th percentile with the inclusion of development traffic (**Figure 8-4**).

The parameters are defined as follows:

> Q_{T1} and Q_{T2} = Through traffic volumes

> Q_R = Right turn volumes

> Q_L = Left turn volumes

> HV% = heavy vehicle percentage

> Q_M = Major road traffic volume (based on table in the figure below)

> x = Parameter which determines turning warrants, for 70 km/h ≤ Design Speeds < 100 km/h

- If x < 1.5, only a BAR / BAL treatment is warranted
- If 1.5 ≤ x < 3.3, an AUR / AUL(S) treatment is warranted
- If x ≥ 3.3, a CHR / (AUL or CHL) treatment is warranted

Figure 8-1 Main Roads Intersection Warrants for 85th Percentile Traffic (Caves Road/ Canal Rocks Road Intersection)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	390	8
Q_R =	126	6
Q_{T2} =	343	8
Q_L =	116	6

RIGHT TURN ASSESSMENT

Q_m =	849
% HV =	7.727
x =	7.52
TREATMENT =	CHR

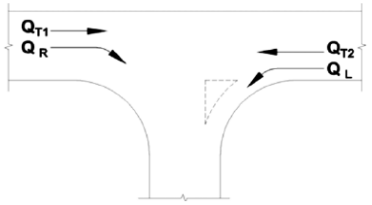
LEFT TURN ASSESSMENT

Q_m =	343
% HV =	8.000
x =	3.19
TREATMENT =	AUL(S)

Source: Austroads GTM Part 6 - 2017

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 33% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Figure 8-2 Main Roads Intersection Warrants for 85th Percentile + Development Traffic (Caves Road/ Canal Rocks Road Intersection)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	390	8
Q_R =	178	6
Q_{T2} =	343	8
Q_L =	165	6

RIGHT TURN ASSESSMENT

Q_m =	898
% HV =	7.633
x =	9.10
TREATMENT =	CHR

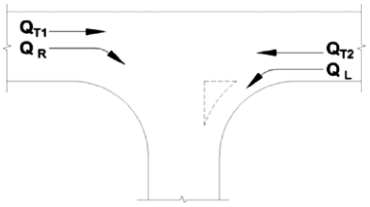
LEFT TURN ASSESSMENT

Q_m =	343
% HV =	8.000
x =	3.68
TREATMENT =	AUL or CHL

Source: Austroads GTM Part 6 - 2017

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 33% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Figure 8-3 Main Roads Intersection Warrants for 50th Percentile Traffic (Caves Road/ Canal Rocks Road Intersection)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	245	8
Q_R =	89	6
Q_{T2} =	248	8
Q_L =	82	6

RIGHT TURN ASSESSMENT

Q_m =	575
% HV =	7.715
x =	4.57
TREATMENT =	CHR

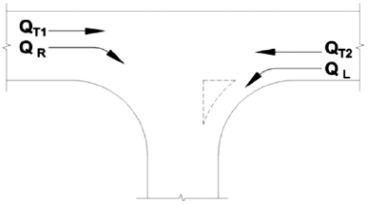
LEFT TURN ASSESSMENT

Q_m =	248
% HV =	8.000
x =	2.06
TREATMENT =	AUL(S)

Source: Austroads GTM Part 6 - 2017

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 33% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Figure 8-4 Main Roads Intersection Warrants for 50th Percentile + Development Traffic (Caves Road/ Canal Rocks Road Intersection)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	245	8
Q_R =	118	6
Q_{T2} =	248	8
Q_L =	127	6

RIGHT TURN ASSESSMENT

Q_m =	620
% HV =	7.590
x =	5.49
TREATMENT =	CHR

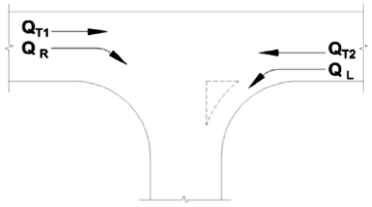
LEFT TURN ASSESSMENT

Q_m =	248
% HV =	8.000
x =	2.46
TREATMENT =	AUL(S)

Source: Austroads GTM Part 6 - 2017

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= Q_{T1} + Q_{T2} + Q_L
		Yes	= Q_{T1} + Q_{T2}
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x Q_{T1} + Q_{T2} + Q_L
		Yes	= 50% x Q_{T1} + Q_{T2}
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x Q_{T1} + Q_{T2} + Q_L
		Yes	= 33% x Q_{T1} + Q_{T2}
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Based on the existing traffic volumes, a CHR treatment (channelised right turn) is required for the right turn and an AUL (auxiliary left turn) is required for the left turn at the Caves Road & Canal Rocks Road Intersection. The current intersection arrangement already includes an AUL, therefore the only warranted upgrade would be the CHR. The results also show that even without development traffic (Figure 8-1), a CHR is warranted with the current traffic conditions and therefore this requirement isn't triggered by the Project.

9 Summary

This Traffic Impact Assessment outlines the transport aspects of the Project for Lot 4131, Smiths Beach Road in Yallingup. It focuses on the operations of the Project internally, its connections to the surrounding road network, traffic, parking and access arrangements.

The following conclusions have been made in regard to the Project:

> The SIDRA assessment shows that all intersections operate at an acceptable level of service for all scenarios.

> There was only two traffic incidents within the last 5 years along Smiths Beach Road, indicating that existing road safety is not of significant concern and very unlikely to be impacted by the Project.

> An Intersection Warrant Assessment identified a need for a channelised right turn treatment from Caves Road into Canal Rocks Road. This treatment is already required based on existing traffic volumes and isn't triggered due to the Project.

> Based on anticipated parking demand taking into account reciprocity, there is appropriate parking supply being provided as part of the Project to meet the parking demand profiles of the land uses.

APPENDIX A

SITE PLANS

Legend

- Public Street
- Emergency Vehicle Access Only
- Campground Access
- Shared Access (Pedestrian & Vehicle)
- Service Vehicle Access

Client
Smiths 2014 Pty Ltd

Project Name
Smiths Beach Project

Project No.
0848SYD

Address
Smiths Beach Rd, Yallingup, WA 6282

Key Plan

Issue Log

Rev	Revision Description	By / Checked	Date
A	Draft DA	AM/CD	9/07/2021
B	Draft DA	AM/CD	26/08/2021
C	DA ISSUE	AM/CD	10/09/2021

Scale
1:1500 @A1

0 100 m

All dimensions are in millimetres unless otherwise noted.
Do not scale from this drawing.

N

Phase
FOR DEVELOPMENT APPLICATION ONLY

Sheet Title
Vehicle Movement Plan

Sheet No.
MCG-L-MP-1002

Rev
C

Legend

- Boardwalk (Pedestrian only)
- Shared Pedestrian / Vehicle
- Shared Pedestrian / Emergency Vehic
- Shared Pedestrian / Buggy
- Natural Path (Pedestrian only)

MCGREGOR COXALL

Client
Smiths 2014 Pty Ltd

Project Name
Smiths Beach Project

Project No.
0848SYD

Address
Smiths Beach Rd, Yallingup, WA 6282

Key Plan

Issue Log

Rev	Revision Description	By / Checked	Date
A	Draft DA	AM/CD	9/07/2021
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C	DA ISSUE	AM/CD	10/09/2021

Scale
1:1500 @A1

0 100 m

All dimensions are in millimetres unless otherwise noted.
Do not scale from this drawing.

N

Phase
FOR DEVELOPMENT APPLICATION ONLY

Sheet Title
Pedestrian Movement Plan

Sheet No. MCG-L-MP-1003

Rev C

APPENDIX

B

PARKING ASSESSMENT

Technical Memorandum

Title	**CW1141900** **Parking Demand Analysis**		
Author	Edmond Hoang	**Discipline**	Traffic and Transport
Reviewer	Jacob Martin	**Office**	Perth

1 Introduction

Cardno was commissioned to prepare a Parking Demand Analysis for the proposed development (the Project') located at Lot 4131 Smiths Beach Road, Yallingup in the City of Busselton ('the Site').

This Technical Memorandum aims to calculate the anticipated parking demand generated by the Project to determine a suitable provision which accommodates the various users of this development. Additionally, advice on the parking access and geometry has also been provided.

2 Proposed Development

The proposed development comprises the following land uses:

> Tourist development comprising hotel, accommodation, restaurant and wellness centre

> Campground

> Community Hub comprising cafe, reception hall, surf lifesaving club, Cape to Cape Welcome Centre and general store/bakery.

> Holiday Homes

Parking facilities are proposed to sufficiently accommodate the above new uses, in addition to contributing towards the parking demand generated by the existing Smiths Beach.

Figure 1 shows the layout of the Project.

Figure 1 Development Master Plan

Source: McGregor Coxall

3 Parking Demand

3.1 Methodology

Various information sources were used to determine the anticipated parking demand for the various users of the Project. Where information is not available, a first principles approach was taken to determine the parking demand for that component.

Table 1 below provides a summary of the anticipated ***new*** land uses/users for the surrounding area.

Table 1 Summary of Land Uses/users

Land Uses	Approximate Yield
Tourism	
Tourist Accommodation	65 rooms
Restaurant (200 pax)	432sq.m
Recreation Lounge and Bar (Third Space Meeting Area) (50 pax)	356sq.m
Wellness Centre – Spa and Gym	401sq.m
Campground	36 sites
Community Hub	
Surf Life Saving Club	377sq.m
Reception Hall (150 pax)	292sq.m
Cape to Cape Welcome Centre	110sq.m
Café (174 pax)	255sq.m
General Store/Bakery inc. Liquor Sales	127sq.m
Hire Shop	70sq.m
Residential	
Holiday Homes	61 dwellings

For the purpose of determining the minimum parking requirements, community facilities such as the restaurant, general store, cafe/bakery, surf life saving club and Cape to Cape Welcome Centre may be considered at least partly ancillary to existing natural amenities (beach, trail etc.), as well as the existing and new accommodation options. This may mean that the community uses do not generate a significant increase in parking demand.

The key principle relating to the parking demand analysis is the **Reciprocity Factor**. This considers the reciprocal use of the beach and communal facilities (café, restaurant, etc) by those people already parked on site. As Smiths Beach will be a multi-purpose destination, it is to be expected that at least 50% of the demand for the land uses and beach will be on-site people from the accommodation (hotel, holiday homes, campground) or shared trips between other on-site land uses.

A parking sufficiency exercise has been undertaken which includes the standalone parking demand of the community uses; to estimate the maximum parking demand (refer to **Section 3.4**).

3.2 Holiday Homes

Parking for the **holiday homes** is expected to be contained within the individual lots and will not require additional public parking. This would consist of 2 formalised spaces and sufficient additional area to accommodate another 3 vehicles, in accordance with the requirements under the City's *Local Planning Policy (LPP) 4.1: Holiday Homes*.

3.3 Tourist Development

It is expected that **campground** parking may be required for up to 1 space per camping site. There is sufficient space at the campsites to allow for informal drop-off/pick-up and transfer of luggage, with 24 dedicated parking bays located to the east of the campsites. This is expected to support demand through the majority of the year. During peak periods, the balance of parking bays required would be available within the Smiths Lane parking.

The parking demand for the **hotel** is based on the *ITE Parking Generation 4th Edition* which provides a rate of 1.0 bays per occupied room. To determine the peak occupancy, the average hotel occupancy data from ITE was used to create a benchmark for demand during the peak holiday periods with consideration for the seasonal differences across the northern and southern hemisphere.

As shown in the table below, typical peak hotel occupancy is at 72%. This has been discussed with the hospitality consultant, and in order to ensure adequate parking supply, a conservative (i.e. high) occupancy rate has been assumed for this application.

Table 2 Average Hotel Occupancy

Month	Occupancy from ITE	Adjusted Occupancy
January	51%	72%
February	61%	71%
March	66%	67%
April	65%	67%
May	67%	59%
June	72%	48%
July	72%	51%
August	71%	61%
September	67%	66%
October	67%	65%
November	59%	67%
December	48%	72%

LEGEND	
	Winter
	Autumn
	Summer
	Spring

Based on the above occupancy rate, a total of 47 bays would be required for hotel guests. However, parking demand varies considerably through the day, as tourists head out to visit surrounding activities. This translates to a demand of approximately 0.55 spaces per occupied room through the middle of the day (or 26-29 bays between 10am and 2pm).

Restaurant parking has been considered in the context of the City's *Local Planning Policy 2.1: Car Parking*, which requires one space per 4 seats (including staff). In this location, the majority of restaurant guests are likely to be associated with one or more of the other on-Site uses (hotel, campground, beach, walking trails etc.) this significantly reduces the need for additional parking. For the purpose of this assessment, 50% of restaurant patronage is assumed to be related to these multi-purpose trips, and would not therefore require additional parking.

The majority of users of the **wellness centre** are expected to be guests of the hotel or campground. This is therefore considered to be an ancillary use from the perspective of parking and would not generate additional demand.

It has been estimated that in addition to the visitor requirements, the above uses will generate a peak demand for 24 staff parking bays.

3.4 Community Hub
(Café, Reception Hall, General Store/Bakery, Hire Shop, Surf Life Saving Club and Cape to Cape Welcome Centre)

The Community Hub uses (Café/Bakery, Reception Hall, General Store, Hire Shop, Surf Life Saving Club and Cape to Cape Welcome Centre) represent the 'foreshore offering' and are intended to enhance the attraction of Smiths Beach, while providing substantial community benefit.

Typically, in this environment, a large fraction of the activity will be generated by beach visitors and hotel guests. These people are already parking in the area and are therefore counted in those respective demand calculations.

The following analysis assumes that 50% of visitors (not staff) to the community hub are associated with tourist accommodation, holiday homes or existing beach users, with the remainder representing the *induced* demand for Smiths Beach as a result of the improvements to facilities at this location.

Table 3 shows the expected parking requirements, based on standard supply rates (from LPP 2.1 Car Parking) and first-principles assessment. Note, the LPP does not consider parking provision for staff associated with the uses or reciprocal usage between the uses.

Table 3 Community Hub Parking

Land Uses	Approximate Yield	Parking Rate (from LPP 2.1 Car Parking)	Parking Demand as per LPP	Peak Parking Demand Assumed	
				Staff	New Visitors (50% Reciprocity)
Cafe	255m^2 (174 pax)	1 space per 4 seats	44 bays	9 bays	22 bays
General Store/Bakery Hire Shop	127m^2 70m^2	1 space per 30m^2 NLA	7 bays	1 bay	3 bays
Surf Life Saving Club	377m^2	1 space per 30m^2 NLA	13 bays	5 bays	8 bays
Reception Hall	292m^2	1 space to every 4 person the building is designed to accommodate	38 bays	15 bays	23 bays
Cape to Cape Welcome Centre	110m^2	1 space per 30m^2 NLA	4 bays	5 bays	0* bays
Total			**106 Bays**	**35 bays**	**56 Bays**

**No additional parking demand is considered to be generated by the Cape to Cape Welcome Centre as it is considered an ancillary use.*

Given the wide range of potential parking requirements, it is proposed that parking be supplied in communal parking areas, located so as to provide safe path of travel to the hotel and campgrounds, foreshore uses and beach.

3.5 Smiths Beach Parking

The largest generator of parking demand in the area is Smiths Beach itself. However, it can be difficult to accurately discern a representative parking requirement as there are numerous factors which can affect visitor numbers, some of which include the following:

> Popularity of the beach itself – there is no definitive method of determining how popular a beach is as this is highly subjective.
> Quality of parking facilities – the availability and quality of parking provided at beaches is also a factor as visitors prefer to have a formalised parking area located close to the beach access.
> Surrounding area facilities – beaches that are located near complementary land uses such as cafés and restaurants are likely to be more popular compared to one without any facilities.

3.5.1 Benchmarking Exercise

As an exercise, a comparison of the parking provided in various beaches located within the region was completed to determine a benchmark for beachfront parking, as shown below (**Table 4**).

Table 4 Comparison of Formal Beachfront Parking Supply

Beaches	Current Parking Provision
Smiths Beach	64 bays (existing)
Meelup Beach	100 bays
Bunker Bay Beach	55 bays
Three Bears Beach	25 bays
Yallingup Beach	Approximately 150 bays
Injidup Beach	Approximately 45 bays
Castle Rock Beach	25 bays

This exercise shows that parking provision varies significantly between sites, with no clear relationship between popularity and parking supply.

3.5.2 Parking Demand Estimation for Smiths Beach

To determine the extent of parking demands at Smiths Beach, a combination of data sources was used, including interrogation of available aerial photographs and a detailed parking accumulation assessment.

Of all of the available aerial images, the maximum parking demand was observed on 10 January 2020, showing all car parks near the beach fully occupied plus an additional 76 cars parking informally throughout the surrounding area including at Smiths Point and along Smiths Beach Rd (for a peak demand of 140 vehicles). The majority of this observed parking demand is shown below in **Figure 2** (8 additional vehicles were parked at Smiths Point to the east which were included in the observed total).

Figure 2 Aerial Image of Smiths Beach (10/01/2020)

This snapshot of peak parking demand demonstrates a significant shortfall in formal car parking in the vicinity of Smiths Beach, with visitors using informal parking bays along Smiths Beach Road and the foreshore area. In particular, there may be an opportunity to narrow the approach road and formalise on-street parking along the edge of Smiths Beach Road (within the existing road reserve), which is currently used as parking during peak periods. This will also improve safety and operation along this congested section.

There is potential for additional parking bays to be constructed to bring the total formal public supply in line with other popular beaches, such as Meelup Beach. However, the viability of this on-street parking is highly dependent on the topographical and environmental constraints along the corridor. The design of these parking spaces therefore requires further consultation with the City of Busselton to ensure that the parking and roadway continue to function at an appropriate level of safety and operation.

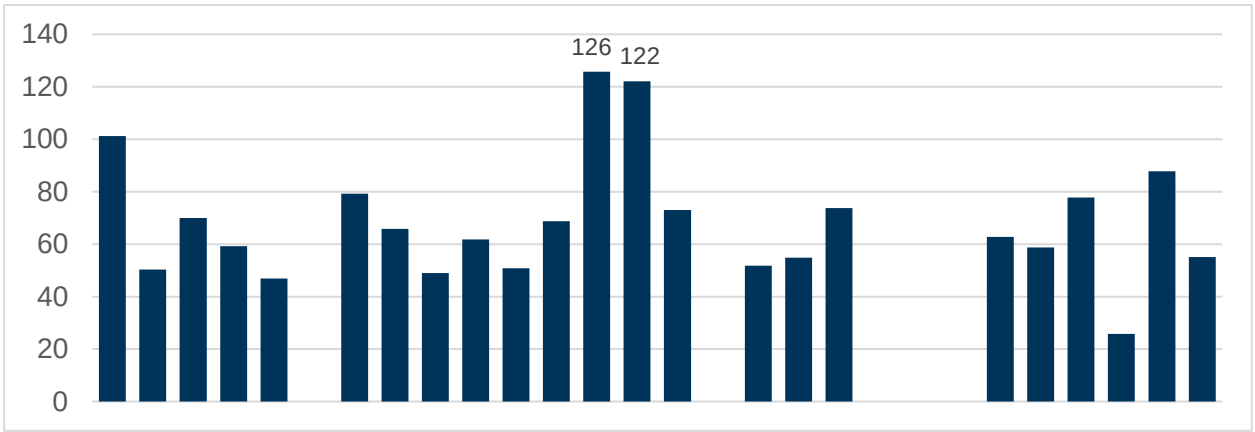
To determine the maximum parking requirement at Smiths Beach, a survey was undertaken over a 4-week period; from 16 December 2020 to 10 January 2021. This survey comprised a series of pneumatic tube counters which counted each vehicle travelling along Smiths Beach Road at several points in the Smiths Beach Study Area (**Figure 3**).

Figure 3 Tube Count Locations

The link count data obtained from these surveys was analysed to determine the total accumulation of parking associated with existing public attractions (Smiths Beach, walking trails, Smiths Point etc.). The analysis specifically excludes on-site parking at the Smiths Beach Resort and Canal Rocks Apartments.

The maximum parking occupancy calculated for each day is shown in **Figure 4** below.

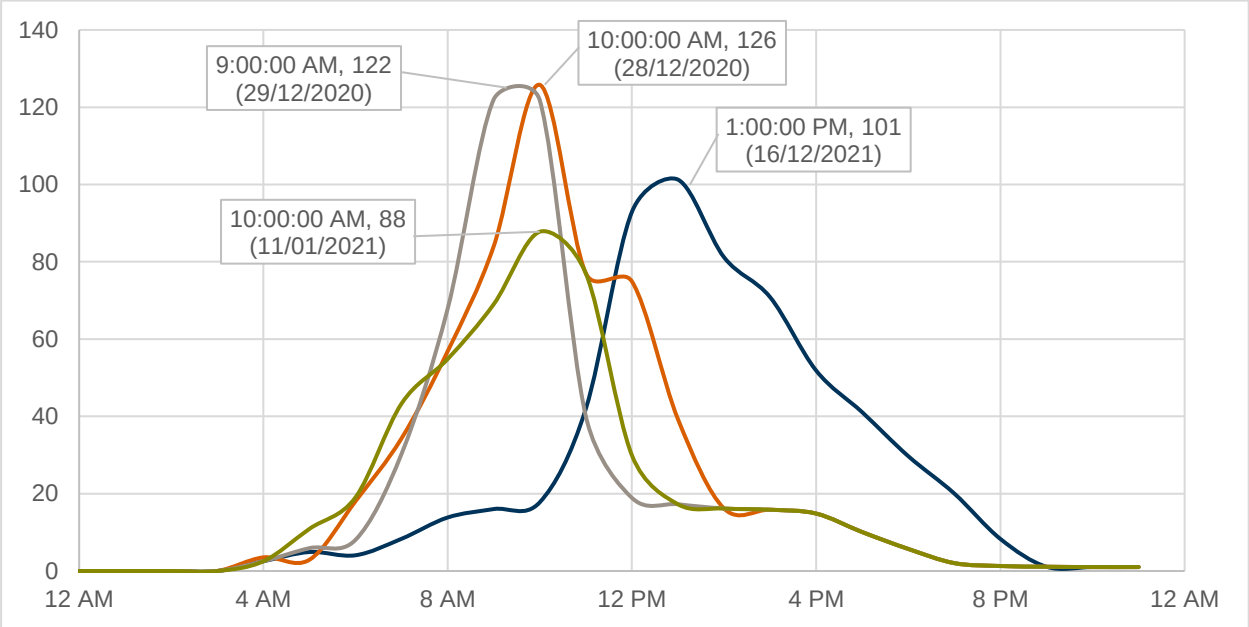
Figure 4 Maximum Beach Parking Occupancy per day



*Note: errors in count results were identified on several days. These dates have been removed from analysis.

The parking occupancy profiles (daily variation in parking demand) from the four busiest observed days are shown in **Figure 5**. For each of these days, approximately 30 cars were observed to be parked beyond the formal car parking along the Cape Track towards Smiths Point (all these cars were accounted for in the survey results).

Figure 5 Parking occupancy profiles – 4 busiest days observed



The parking occupancy observed through this survey tends to undercount cars parked along Smiths Beach Road south of the last tube counter. This is likely to occur only during the busiest periods, but could account for as many as 25 additional cars on the busiest days. As a result, the estimated peak parking demand was assumed at 150 cars which comprised of 125 cars as identified through the survey and an estimated additional 25 cars parked along Smiths Beach Rd outside the survey area.

A parking demand peak of 130 cars has been assumed for the purpose of this analysis, reflecting the maximum expected demand for the third busiest day of the year. There is some potential for parking demand to exceed this 'design day', but only sporadically – with parking overspill into informal locations along Smiths Beach Road. Due to the infrequency of the peak period associated with demand for 150 spaces (a 1-hour period across 1 to 2 days in a year) it is not considered appropriate to model parking at this level.

Whilst beach use will increase due to the presence of the development, it is not anticipated that this will generate additional parking demand from that observed through the parking survey. This is due to the reciprocity principle whereby additional beach use will come from those people who are already onsite at the hotel, holiday homes or other land uses relating to the Project as opposed to being generated purely from increased external visitors.

3.6 Cape to Cape Track Parking

Information available regarding Cape to Cape Track users/visitors are as follows:

> It is estimated that 300-400 people per year walk the trail end to end in one visit.
> People who walk end to end generally park at either the start or the end of the trail.
> Most users/visitors generally tend to walk the trail in small sections.

Based on the Project, the Track will predominantly be accessed either from the foreshore or the Smiths Point Car Park. It is expected that trail users would park for long periods (usually for the entire day or more).

The number of user/visitors walking the entire trail starting from Smiths Beach is likely to be relatively low, but visitors are likely to combine hiking trips with other purposes associated with the hotel, beach or Community Hub. A dedicated supply of parking (12 bays) at Smiths Point, 6 bays located in the foreshore near the hotel, as well as use of the Smiths Lane Parking at the Project is considered to be sufficient to accommodate these users.

4 Parking Supply

The following **Figure 6** shows the location of the existing and proposed formal parking (excluding informal parking areas) associated with the existing Smiths Beach and proposed development.

Figure 6 Proposed formalised parking supply

This parking is expected to operate as follows:

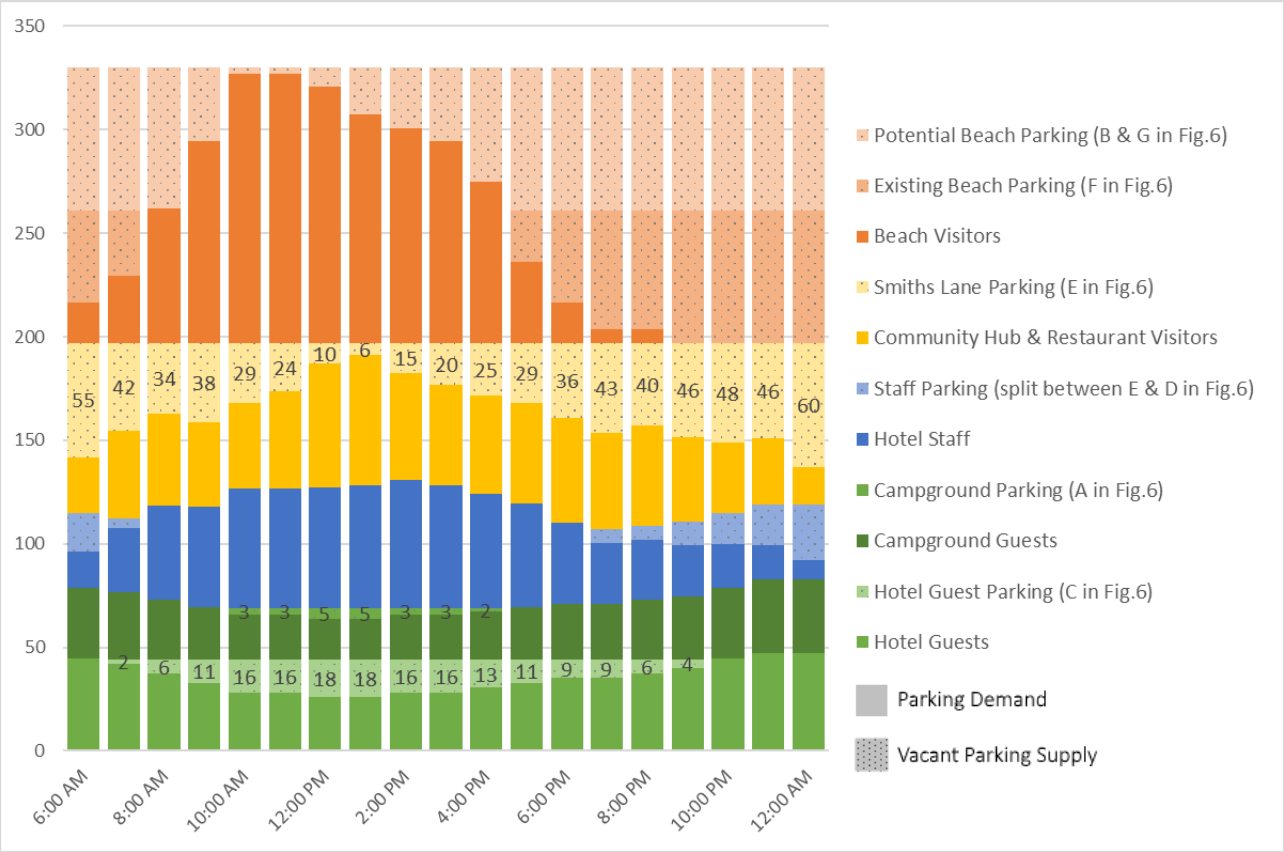
1. Hotel Guest Parking – basement car park and ancillary bays dedicated for hotel guests.
2. Campground Parking – dedicated for campground use.
3. Smiths Lane Parking – for use by hotel and community hub visitors, staff overflow, hotel guest overflow and beach overflow.
4. Southern Road Parking – expected to accommodate a mix of staff parking and visitors, including to the 'Aquarium' (a natural rock pool).
5. Offsite parking for use of Smiths Beach incorporating Smiths Point Parking, Existing Beach Parking and New Beach Parking (formalising existing ad-hoc overflow supply where geometrically feasible).

5 Parking Operation

To illustrate the expected operation of parking, each of the land uses has been allocated a parking demand profile based on standard best-practice observation data. The chart below describes how key parking areas function in the proposed development, for each hour between 6am and midnight.

The number in each column of **Figure 7** shows how many of the parking bays remain available for each hour of the day. This shows that even on some of the busiest days of the year, there would still be parking spaces available within the Smiths Lane parking (6 bays available during the 1pm peak), in the Hotel Guest parking (18 bays) and the Campground parking (5 bays) areas.

Figure 7 Modelled operation of parking at Smiths Beach



A discussion of **Figure 7** follows:

> **Hotel Guest Parking** is busiest in the evening, with demand filling up the dedicated car park and spilling into the Smiths Lane Parking (E). As some hotel guests leave through the day, this will create some empty parking spots in the dedicated hotel car park (C).

> **Campground Guests** are primarily contained within the dedicated campground car park (A) provided, but there may be some overflow into the nearby Smiths Lane Parking (E) in the evening.

> **Staff Parking** demand is busiest in the daytime, which means there will be additional capacity in the Smiths Lane Parking (E) and Southern Road (D) Parking at night.

> **Beach Visitor** demand is very high for only a few hours per day. These cars fill up the spots along the beach front (F). However, there are far fewer spaces currently constructed than existing demand during peak periods. It is expected that these cars will fill the new formalised

car parking proposed along Smiths Beach Road (New Beach Parking, B and G), and then the Smiths Lane Parking (E), with some degree of overspill into informal parking areas only on the busiest days of the year.

> **Community Hub and Restaurant Visitors** will tend to park in the Smiths Lane Parking (E), along with any staff, hotel guest overflow, campground overflow and beach overflow.

> **Holiday Home** parking will be primarily contained on the individual Lot, and has not been included in the above analysis for that reason.

6 Summary

The above analysis has been completed to determine the likely parking function of the proposed Smiths Beach development, and to assess the sufficiency of the proposed supply. Based on the information obtained from parking surveys, and detailed modelling of the on-site uses, it has been concluded that the provision identified for the Project would be sufficient to accommodate all on-site uses, including the Hotel and Community Hub, plus the existing beach demand on the overwhelming majority of days.

The parking supply assumes the formalisation of on-street parking (up to 51 bays) along Smiths Beach Road reserve in particular locations where beach users are already informally parking. This additional parking provision would ordinarily be required for the undersupply of parking that currently exists during peak periods of beach use.

Formalising the current parking in the existing road reserve does not require any development in the dunes, and will ultimately be a decision made by the City of Busselton.