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17 October 2014

Waimakariri District Council
Private Bag 1005
RANGIORA 7440

Attention: Trevor Ellis

TRANSMITTAL: **EMAIL**
c/o heike.downie@wmk.govt.nz

Dear Trevor

KAIAPOI PARKING BUSINESS CASE
MODEL RESULTS AND DISCUSSION

Thank you for inviting Abley Transportation Consultants to undertake a car parking analysis for Kaiapoi Town Centre (the town centre). This letter outlines the analysis that was undertaken, discusses the results and provides a recommendation.

The objective for this commission was to determine where, if any, additional off-street car parking may be required for the town centre. The analysis and subsequent discussion has determined that an at-grade area of at least 4,500m^2 will be required to support car parking within the town centre to 2026. Without this additional car parking motorists will be required to circulate more often searching for a car park and probably park further away from their intended destination.

This additional car parking could be provided by private developments and Council. We recommend Council leads the provision of this car parking given the other environmental benefits this provides. Additionally we are aware that street improvement projects in the town centre are currently underway and will potentially reduce on-street car park supply. The magnitude of this loss will not greatly influence the outcomes of this analysis.

Introduction

Most people will arrive at the town centre by motor vehicle (car) to shop, visit, provide a service, deliver goods or attend work. Clearly providing a suitable and well located parking destination will affect the attractiveness of the town centre as a location to visit, dwell and do business.

It is our opinion that consolidating off-street parking in the town centre into fewer larger car parks, rather than having a greater number of smaller parking areas is a preferred philosophy. This is because this approach provides simpler coordinated access, reduces 'hunting' and consequently minimise pedestrian and on-street impacts as well as increasing parking utilisation.

Additionally, it also our opinion given the transport network is controlled by Council, it is appropriate Council takes a strong and proactive lead defining the ideal location of car parking. If confidence can be translated to action, then the private sector may provide less car parking in close proximity to these preferred parking locations or offer to lease car parks within these preferred areas. This has the further benefit of maximising land

development into productive activity uses and increase utilisation via parking aggregation. There are also additional urban design benefits.

Different motor vehicle types and users will require parking facilities to match their needs. In the majority these will fall into long stay commuter parks, short stay visitor car parks, on-street parking and goods and service vehicles.

Long Stay Commuter Parking

Whilst some travelling to work in the town centre will choose alternative modes, most will drive by car and these are 'long stay' parkers. Long stay parking is typically associated with employees and involves parking for longer than four hours[1] and typically eight hours[2].

Some long stay parkers may choose to park in locations outside the town centre where parking is unregulated and walk from their parked car to their destination. Others may have access to use off-street parking facilities owned by the business where they are employed. Some people will prefer to use commercially operated facilities (if they exist) that are within the town centre on a lease or pay as you go basis.

Short Stay Visitor Parking

People visiting the town centre to shop, dine and do business are referred to as 'short stay' parkers. Short stay parking involves parking for less than four hours. Given the length of stay of these users is less than that associated with long stay parking the location of the car parks associated with this parking type needs to be in closer proximity to the intended destination.

On-Street Parking

The allocation of kerb side on-street parking is managed through paint marking, parking orders and signage. This allows a great deal of flexibility for changing parking allocation as needs change.

Parking needs are expected to evolve as the town centre public and private developments proceed and consequently on-street parking will require regular review. Short stay on-street parking will be predominantly made up of special use parking spaces such as for pick up and drop off, loading, taxis, motorcycles and mobility spaces.

The type of on-street short stay parking such as for drop off and pick up activities only require 5 to 10 minutes, and these need to be located in convenient positions, such as within the town centre proper and distributed around the town centre in convenient and easy to access locations e.g. the start or end of a parking cluster.

Although allowance for servicing within the town centre will be made on some sites there will still probably be a need to provide loading zones. Taxis for travel to and from the town centre will need to be located in conspicuous and convenient positions. In addition to off-street facilities, motorcycles can be catered for on-street by providing dedicated spaces. Spaces for mobility permit holders are also required. Similar to pick up and drop off parking locations, mobility spaces are best distributed throughout the town centre in locations that are easy to access. The quantity and location should be decided in conjunction with the relevant stakeholder groups.

Within the greater town centre on-street car park spaces should be time restricted and prioritised for short term parking. As a guide, on-street parking within a 5 minute walk or about 300m should be prioritised for short stay parking. Parking for longer periods should

[1] Auckland Transport Draft Parking Discussion Document, 2014, Page 34 https://at.govt.nz/media/503106/ATParkingDiscussion.pdf

[2] "Long time periods (8+ hours) accommodate commute trips and residential parking" Litman, T. Parking Management Best Practices, American Planning Association, Washington DC, 2006, p81.

be catered for within off-street public parking locations or if necessary on streets further away from the town centre, say within a 10 minute walk or about 600m. .

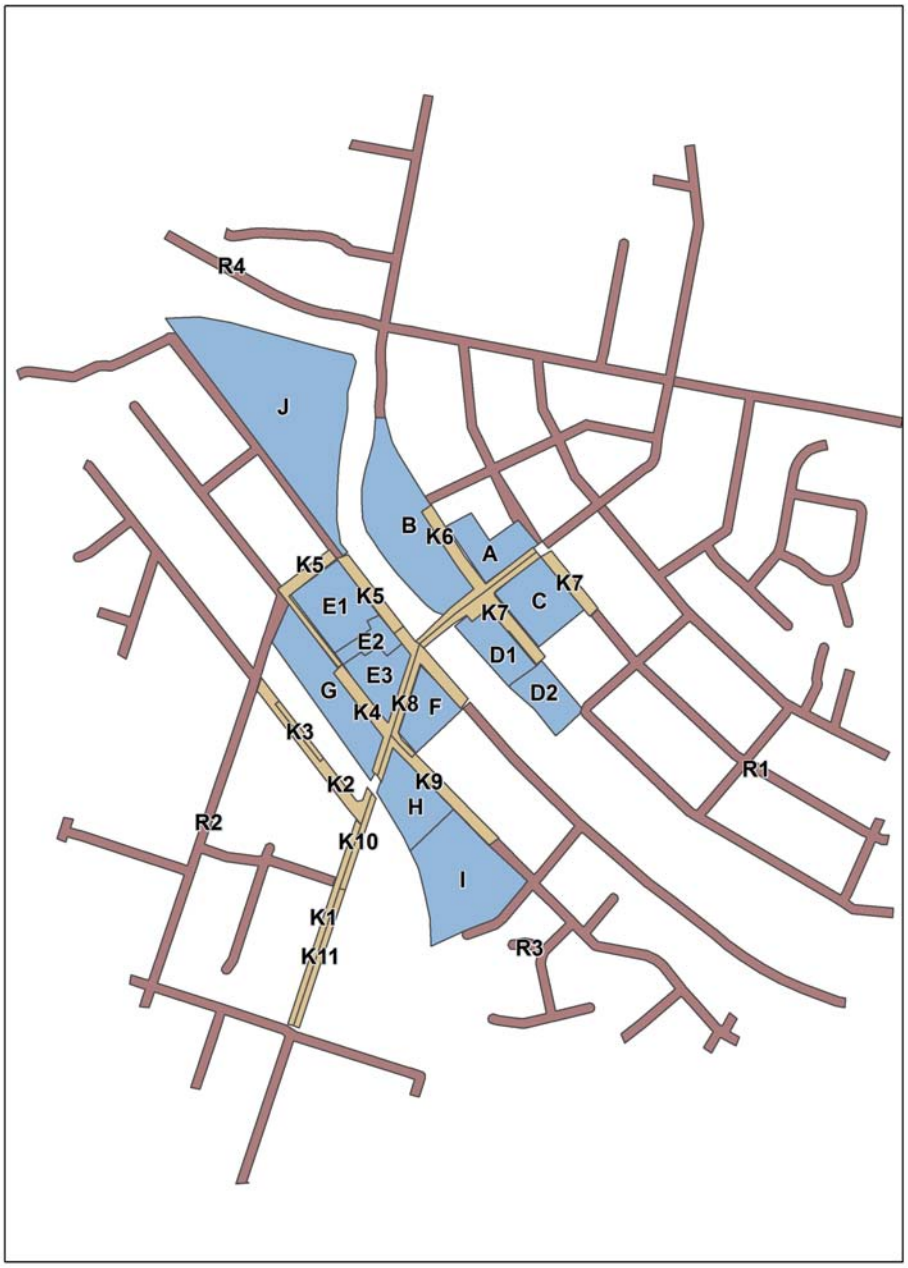
Goods and Service Vehicles

Ideally development sites will have dedicated and consolidated service lanes between sites to maximise possible development areas.

Model Methodology

A parking model was developed based on various land use, kerb and residential 'blocks'. The location of the various blocks is shown in **Figure 1**. The blocks were developed in such a way to enable the later parking model to align with previous economic and parking studies.

Figure 1: Kaiapoi Town Centre Parking Model 'Blocks'



Kaiapoi Study Blocks

Parking activity associated with each land use was determined through measuring the existing land use activity that existed in 2010 i.e. pre earthquake. This information was gathered by measuring building footprints using Google Earth and confirming building heights using Google Streetview. The land use activity classifications were determined from NZ Transport Agency Research Report 453 Trips and Parking Related to Land Use[3]. The land use classifications included those listed in Appendix C of Research Report 453 and the classifications with the associated measured Gross Floor Areas (GFA) are shown in **Table 1**.

Table 1: Block Gross Floor Areas

	Activity								
	Gross Floor Area								
Block	Assembly	Commercial	Education	Industry	Medical	Recreation	Residential	Retail	Total
A	444						1,050	1,298	2,792
B	1,196					1,256		390	2,842
C	940							4,052	4,992
D1					234			1,691	1,925
D2						556			556
E1	2,950					1,487	284	694	5,415
E2				87		263			350
E3								5,147	5,147
F	1,700			154	297			2,227	4,378
G	544	801			796		483	1,794	4,418
H								2,725	2,725
I				6,685				3,084	9,769
J						21,408			21,408
Total	7,774	801	-	6,926	1,327	24,970	1,817	23,102	66,717

The land use quantum for Retail was compared to the Market Economics (ME) report titled 'Assessment and Review of Key Activity Centres September 2014'. ME measured 2013 Retail and Hospitality as 15,400m^2 GFA. The ME definition for Retail and Hospitality is equivalent to parking analysis definition for Retail. Given the earthquake damage in Kaiapoi the figures are similar and this provides confidence that the GFA measurements are appropriate.

The parking demand rates for the land use activities were extracted from Research Report 453 and where the independent variable units were other than GFA the parking demand rate was transformed into a GFA rate as shown in **Table 2**.

Table 2: Average Parking Demand Rates

	Parking Demand				Units to 100m2 GFA		Equivilent Parking Demand per 100m2 GFA		
	15th	50th	85th				15th	50th	85th
Assembly	0.4	0.4	0.5	congregation (person)	10	m2 GFA	4.0	4.0	5.0
Commercial	2.4	2.7	3.2	100m2 GFA	100		2.4	2.7	3.2
Education					100		0.0	0.0	0.0
Industry	0.6	1.6	2.9	100m2 GFA	100		0.6	1.6	2.9
Medical	1.5	1.5	1.5	professional	25	m2 GFA	6.0	6.0	6.0
Recreation	0.2	0.2	0.2	spectators	100	m2 GFA	0.2	0.2	0.2
Residential	0.6	1.2	1.8	Unit	150	m2 GFA	0.4	0.8	1.2
Retail	2.0	3.3	4.9	100m2 GFA	100		2.0	3.3	4.9

Parking demands vary by time of day and day of week. For the purposes of this analysis, the parking model was based on a weekday midday period. This period was chosen because it reflects the greatest period of demand for the week. It is probable that other parking demand periods exist, such as for sporting events at Murphy Park, but these are isolated periods. The analysis determines the greatest demand for parking 'on average' throughout the week and hence the greatest benefit or overall need for car parking.

[3] Douglass, M and S Abley (2011) Trips and parking related to land use. NZ Transport Agency research report 453. 156pp http://www.nzta.govt.nz/resources/research/reports/453/docs/453.pdf

The generic parking demand rates included in Research Report 453 where converted to the weekday midday period as shown in **Table 3**.

Table 3: Weekday Midday Park Parking Demand Rates

	Parking peak occours at		Convert Parking peak to Design Period	Converted Parking Rate		
	Day	Hour		15th	50th	85th
Assembly	Weekend	AM	100%	4.0	4.0	5.0
Commercial	Weekday	AM	95%	2.3	2.6	3.0
Education	Weekday	AM	95%	0.0	0.0	0.0
Industry	Weekday	INT	40%	0.2	0.6	1.2
Medical	Weekday	INT	100%	6.0	6.0	6.0
Recreation	Weekend	PM	5%	0.0	0.0	0.0
Residential	Weekday	AM	25%	0.1	0.2	0.3
Retail	Weekday	INT	100%	2.0	3.3	4.9

An on and off street parking survey was undertaken by Abley Transportation Consultants in March 2010. That survey enabled the parking model to be calibrated so theoretical parking demand matched measured parking occupancy. The variables that adjusted the calculated parking demand, such as the unit conversion shown in Table 2 and the peak parking demand period conversion shown in Table 3, were varied to most closely replicate measured demand.

The result was a generic model that closely (but not exactly) replicated the 2010 survey. This is not unexpected given the survey reflects a snapshot of parking demand on one day and parking varies both in demand and spatial locations during the day, week and throughout the year. The March survey is considered an average or typical parking demand and at other times of the year, parking demands will be higher such as closer to holiday periods e.g. Christmas.

The March 2010 surveyed parking occupancy was 766 car parks and the modelled 50th percentile unadjusted on and off street parking demand for the town centre was 957 car parks. This calculation allows for parking demand from blocks that were not included in the original survey that probably over spilled into the survey area. The theoretical demand was therefore reduced by 20% that enabled the survey parking demand to match the calculated theoretical demand. This 20% reflects a calibration parameter that acknowledges the specific parking demands for the town centre and shared parking where one car park will satisfy two parking demand activities. It is the agglomeration of activities that enables this positive effect. Very simplistically, the parking rates shown in Table 3 were reduced by the calibration parameter.

The parking model is a coarse approximation that determines parking demands and where spill over parking may locate. The methodology provides an appropriate macro scale approach regarding where parking may locate, but will be heavily influenced by the attractiveness of specific activities when considering the micro scale. It is not considered that the spill over analysis is sufficiently robust to provide the level of testing of specific development sites and this is an area for model refinement.

Future Parking Demands

The ME report[4] predicts increasing growth for the town centre for Retail and Hospitality from 15,400m^2 GFA to in 2013 to 18,300m^2 GFA in 2026. This is an increase of 19%. Assuming an increase in parking demand of the same percentage, then for an average month in 2026 there is a need to supply another 185 car parks and in a holiday shopping

[4] Market Economics Assessment and Review of Key Activity Centres September 2014

period i.e. Christmas, an increase of 258 car parks could be expected. Depending on the exact configuration of the car parks, and assuming an average of 25m^2 per at grade car park, this equates to an approximate area of 4,500m^2 and 6,500m^2 respectively.

On street 2010 occupancy varied between specific locations and on average the March 2010 survey indicated an average occupancy of 51% with the core of the town centre recording an on-street car park occupancy of approximately 70% (blocks K4, K6, K7, K8, and K9). In periods of higher demand e.g. Christmas, parking occupancy will be much higher and using the relationship between the 50th percentile and 85th percentile parking demands in the town centre core are expected to be at, or over capacity. This results in unacceptable environmental effects such as increased vehicle circulation and a wider area required for spill over car parking that results in greater car park penetration into nearby residential areas.

Pre earthquake on-street car park occupancy was generally considered 'high' and finding an appropriate car park in the right location 'difficult'. If pre earthquake on street occupancies were to be maintained at the same level of service to 2026, then the additional car parking will need to be supplied off street either via private of public developments. Given the previous discussion regarding the benefits of public leadership of car parking and the existing generally high parking demands in the town centre, it is considered some predicted demand could be supplied by the public sector. Clearly some car parks will be supplied off street by the private sector and consequently less than the 85th percentile demand could be supplied. This reflects the supply that will be provided by the private sector and consequently it is probably more appropriate that the supply by the public sector is closer to the 185 car parks level.

Where could additional car parks be located?

There may be an opportunity to use red zone land for the supply of future anticipated car parking. As discussed previously, it is important that any additional supply is easy to find as a driver enters the town centre and located relatively close to the town centre destinations.

Three specific red zone areas located adjacent to the town centre were considered as possible car park locations. The attractiveness of each of the sites were considered in terms of walking access to the northern and southern parts of the town centre. The centre of gravity (centroid) of each part of the town centre was calculated and the walking distances to each centroid from each parking area considered. The location of each site i.e. Kaiapoi West, Kaiapoi East and Kaiapoi South along with the centroid locations are shown in **Figure 2**.

The advantages and disadvantages of each option are:

<u>Kaiapoi West (bounded by Raven Quay, Hilton Street, Black Street and Rich Street)</u>

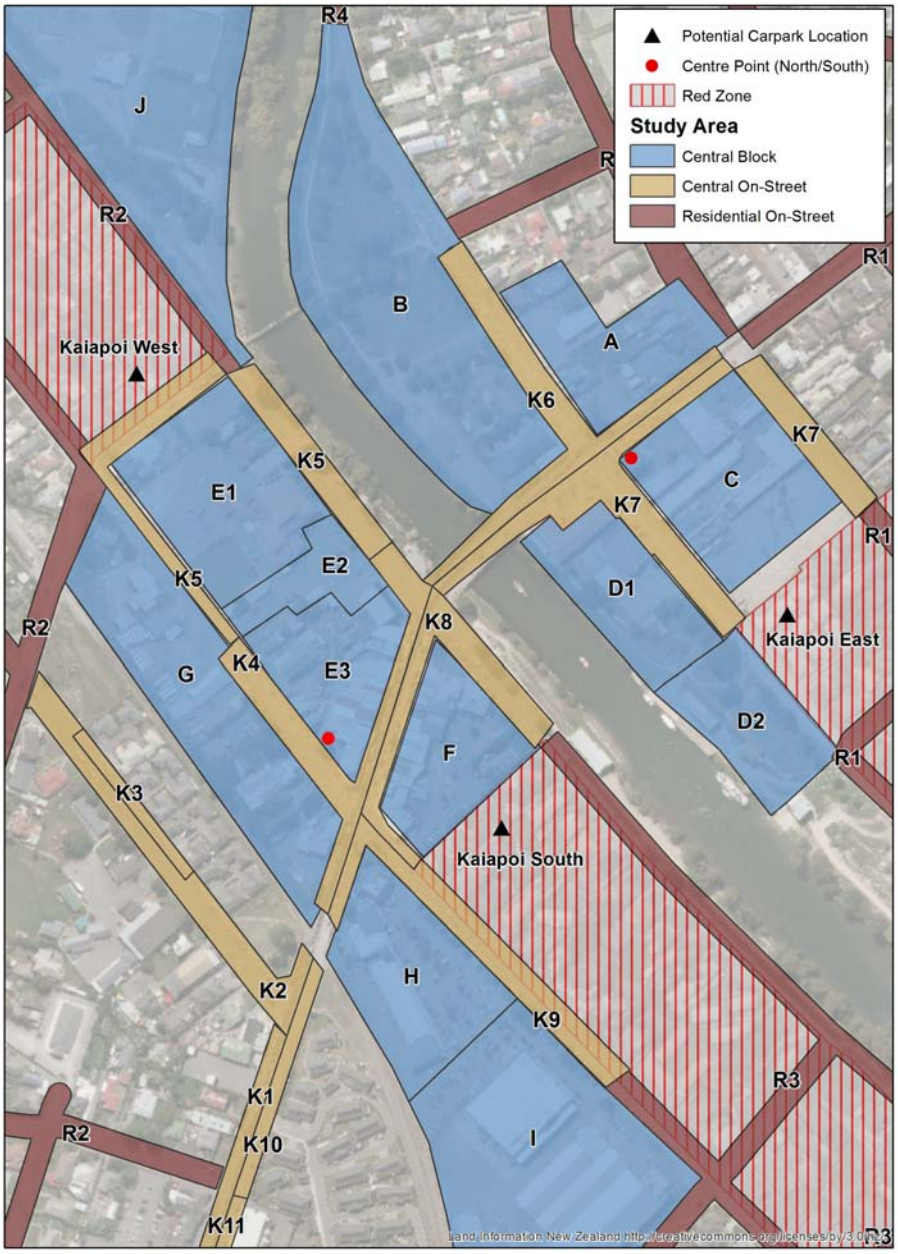
Advantages:

- Depending on what part of this area was used for parking there could be opportunity to cater for demand at Murphy Park when large sporting events are held and also any Kaiapoi Borough School demand.
- This area has good vehicle access via Hilton Street, Raven Quay and Black Street and foot access via the pedestrian/cycle bridge over the river.

Disadvantages:

- The distance to the South and North centroids, although less than a 5 minute walk is not as convenient as the other red zone areas.

Figure 2: Car Park Location Options



Kaiapoi Parking Analysis

Conclusion:

- This area is not considered to be the most optimum location for a large area of town centre parking supply. There is an area of on-street angle parking to be created on Raven Quay as part of the earthquake recovery project, this will help to meet southern town centre demand.

<u>Kaiapoi East (bounded by Charles Street, Jones Street, Sewell Street and New World site)</u>

Advantages:

- Depending on what part of this area was used for parking there could be an opportunity to cater for demand associated with the Kaiapoi River Recreational precinct.

- This area is close to the northern centroid.
- This area has good access via Sewell Street and Charles Street.

Disadvantages:

- The distance to the southern centroid, although less than a 5 minute walk is not very convenient.
- A further car park directly adjacent a large supermarket car park will not be a desirable urban design outcome, although a significant landscape buffer could help mitigate this.

Conclusion:

- This area is not considered to be the most optimum location for a large area of town centre parking supply. However there may be an opportunity to create an area of angle parking on Charles Street as part of the earthquake recovery project, this will provide a convenient location in the northern area. It may be prudent to consider the street design early as a strip of red zone land parallel with road reserve may be advantageous.

Kaiapoi South (bounded by Raven Quay, Hilton Street, Bowler Street and an existing town centre car park)

Advantages:

- This area is close to the southern centroid and also the new library/service centre which will be a popular town centre destination.
- Being adjacent to existing main town centre car park provides an opportunity to create a larger well-designed car park. The current car park is small, has a layout that is not ideal and the Hilton Street access is very close to the Williams Street roundabout.
- This area has good access from Williams Street via the Raven Quay one-way (east bound) shared space and Hilton Street.

Disadvantages:

- The distance to the northern centroid is not ideal although less than a 5 minute walk.

Conclusion:

- This area is considered to be the most optimum location for a large area of town centre parking supply.

Conclusion

Our assessment has determined that of the three red zone areas the optimum location for an at grade car parking is a section of land at the west end of the Kaiapoi South red zone, approximately two to three section across. This is an area of approximately 4,500m^2 and would cater for approximately 185 cars.

This parking area would be supplemented with additional on-street car parking to be created on Raven Quay (west). To provide additional convenient supply for the northern area a precinct of on-street angle car parking could be created on Charles Street. This may require some red zone land adjacent to the road reserve.

We recommend that as the recovery of Kaiapoi town centre proceeds demand for on-street car parking is monitored and on-street car parking managed to meet changing demands and the demand for specific car park types.

If you would like any further information or clarification of any issues, please don't hesitate to contact me.

Regards
Abley Transportation Consultants Limited

Steve Abley
Managing Director

Direct 03 367 9003
Mobile 021 556864
Tel 03 377 4703
Email steve@abley.com