

URBIS

PROPOSED ELSTERNWICK COMMUTER CAR PARK

Final Report
Prepared for City of Glen Eira

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ABOUT THIS PROJECT

01

Commuter Car Parks_Elsternwick



THIS PROJECT

FEDERAL COMMUTER CAR PARK FUND

This report provides support for the feasibility concept for a commuter car park at Elsternwick Station, to be funded under the Federal Commuter Car Park Fund.

Previous work undertaken by VLC Consulting has identified that approximately one-third of the new car parks would result in trips being diverted from driving closer to Melbourne, the remainder could have significant impacts on localised congestion (through people parking closer to the station), diversion from walking and cycling access to the stations or other stations.

THIS REPORT

There is a parallel report which looks at a commuter car park at Bentleigh.

This report examined the option for a commuter car park in Elsternwick. The Glen Eira City Council needs to address local concerns around:

- What purpose does the car park serve? (refer to Chapter 2).
- What is the demand for the car park? (refer to Chapter 2).
- What are the effects on the community? (refer to Chapter 3).
- What are the design considerations? (refer to Chapter 4).
- What is recommended? (refer to Chapter 5).

These concerns are not traditionally considered as part of the standard economic and business case assessments (and forms) generally used by the Federal Government but are critically important in gaining local acceptance and buy-in for the projects.



SUBJECT SITE AND CONTEXT

“ TO DEVELOP A RESPONSIVE DESIGN APPROACH THAT INTEGRATES PASSIVE CARPARKING SPACE WITH DYNAMIC PUBLIC PROGRAMS TO CREATE A PLACE OF LOCAL CULTURAL VALUE ”

Vision for Glen Eira Commuter Carparks

ELSTERNWICK CARPARK CONTEXT



COMMUNITY EFFECTS

02



CROSS USAGE AND TRAFFIC IMPACTS

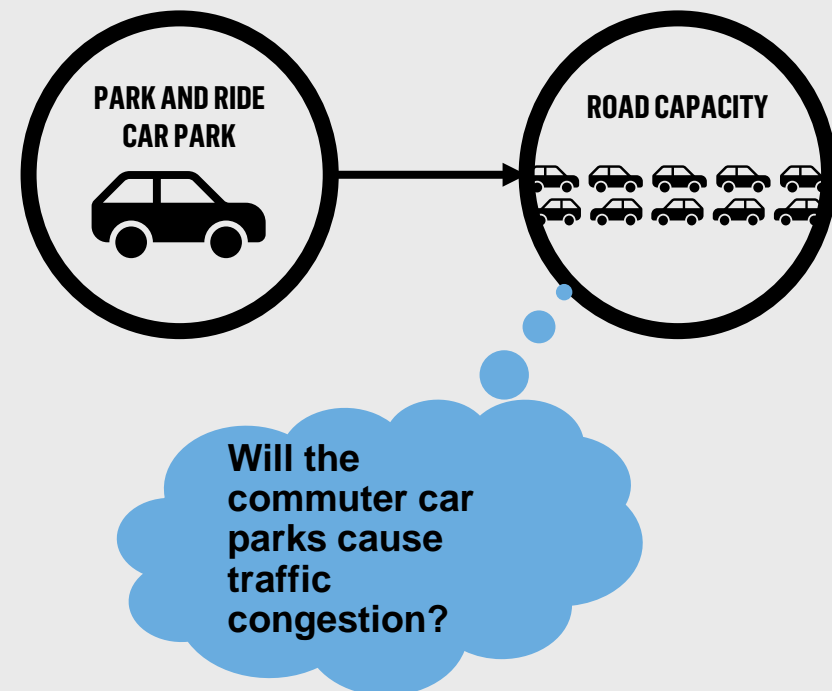
This chapter discusses two notable considerations for commuter car parks within the broader community.

- A. Potential benefits of cross-usage between the car park and the existing activity centre.
- B. Potential issues with congestion and traffic resulting from an increase in vehicles accessing the site.

CROSS USAGE



CONGESTION



Five case studies have been examined showing a range of commuter car parks in Melbourne and Sydney that are adjacent to activity centres. Some of these commuter car parks have been redeveloped into multi-story facilities and some are at-grade. Findings indicate a range of cross-usage.

Available SCATS data has been used to measure the current demand and the future demand both with the commuter car park redevelopment, and without. See Pages 19 and 20.

See Pages 13 to 18 and **Appendix B**.

CROSS USAGE BETWEEN IDENTIFIED CAR PARKS AND THE LOCAL ACTIVITY CENTRE

Key Findings

45 per cent of commuters from Elsternwick also use the Elsternwick activity centre on any given day. This is significantly higher than other rates of cross usage observed in other activity centres with adjacent train stations.

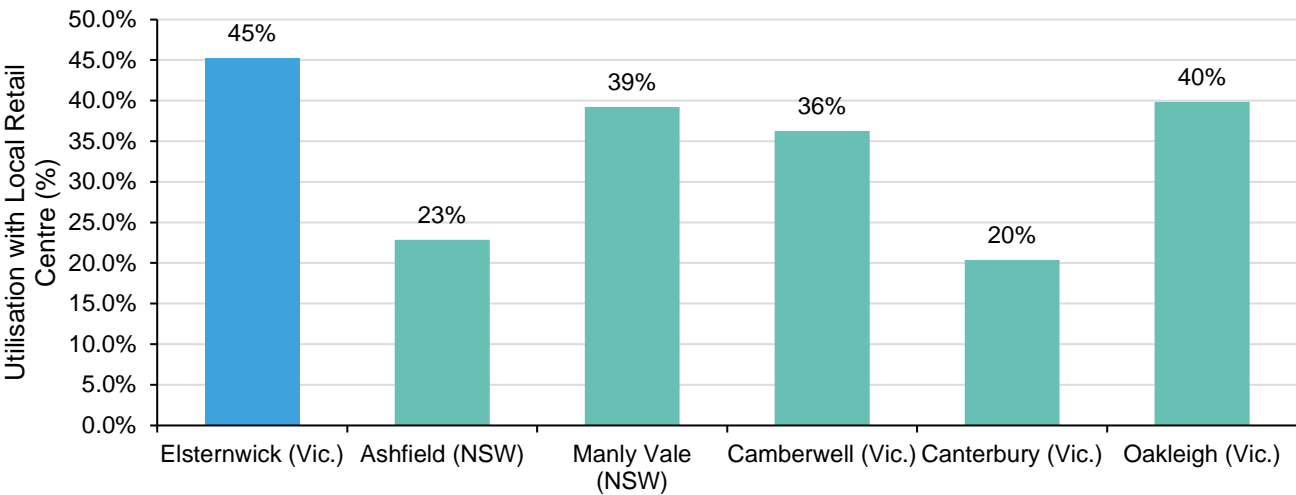
Of those that use the commuter car parks in the observed activity centre case studies, 8 to 13 per cent of these train commuters work in the CBD or other major precincts (see **Appendix B**). Workers who commute to the CBD and other major centres visit the local retail centre less than other workers possibly due to the abundant amenities in their work locations making it a more attractive offering. Elsternwick has a relatively high rate of people working in the CBD and major activity centres but it hasn't affected the high rate of cross usage between the train station and the centre. This may be because the train station exit results in most people being funnelled down Glen Huntly Road, where incidental shopping takes place.

See **Appendix C** for greater detail on the commuter car parks selected and cross-usage heat mapping.

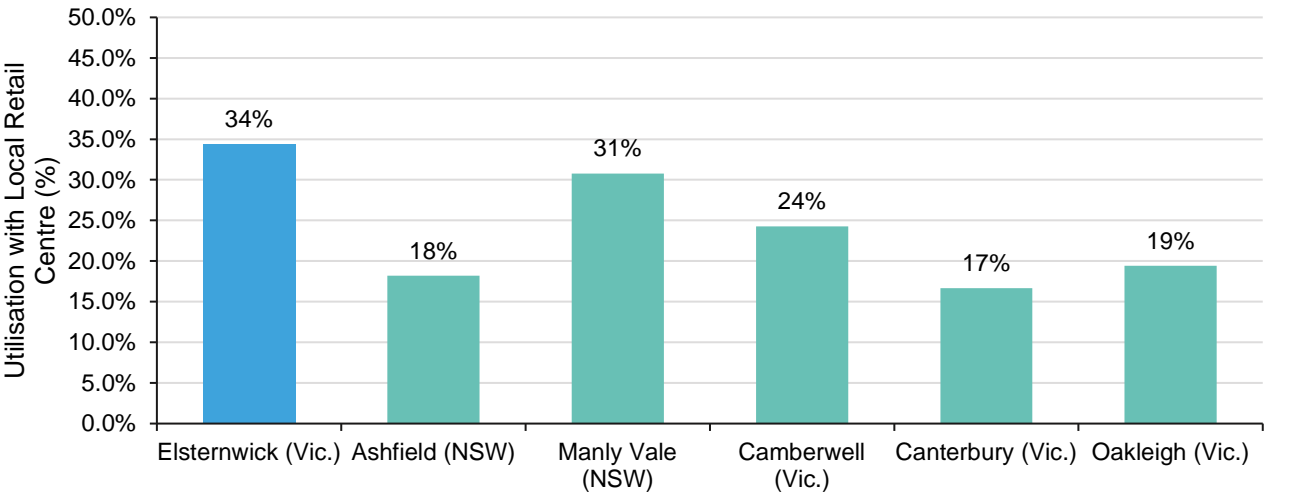


Elsternwick has a high proportion of Park and Ride users who also visit the activity centre.

Cross-usage between train commuters and activity centres (All)



Cross-usage between train commuters and activity centres (Major CBD Workers)



ACTIVITY LEVELS

The map on the right illustrates how commuters who parked at Elsternwick Park and Ride Car Park used the surrounding area.

Almost half of the Park and Ride car park users visited the retail precinct on the same day. Major activity areas are located close to the car park and the station.

See **Appendix C** for greater detail on cross-usage heat mapping in other studied activity centres.



The high rate of cross usage between users of the commuter car park and the activity centre presents the following challenges:

- Likely high use of the commuter car parks by people working in the area.
- Ensure good access between the activity centre, the train station and parking.




ACCESS AND CONGESTION POINTS- ELSTERNWICK

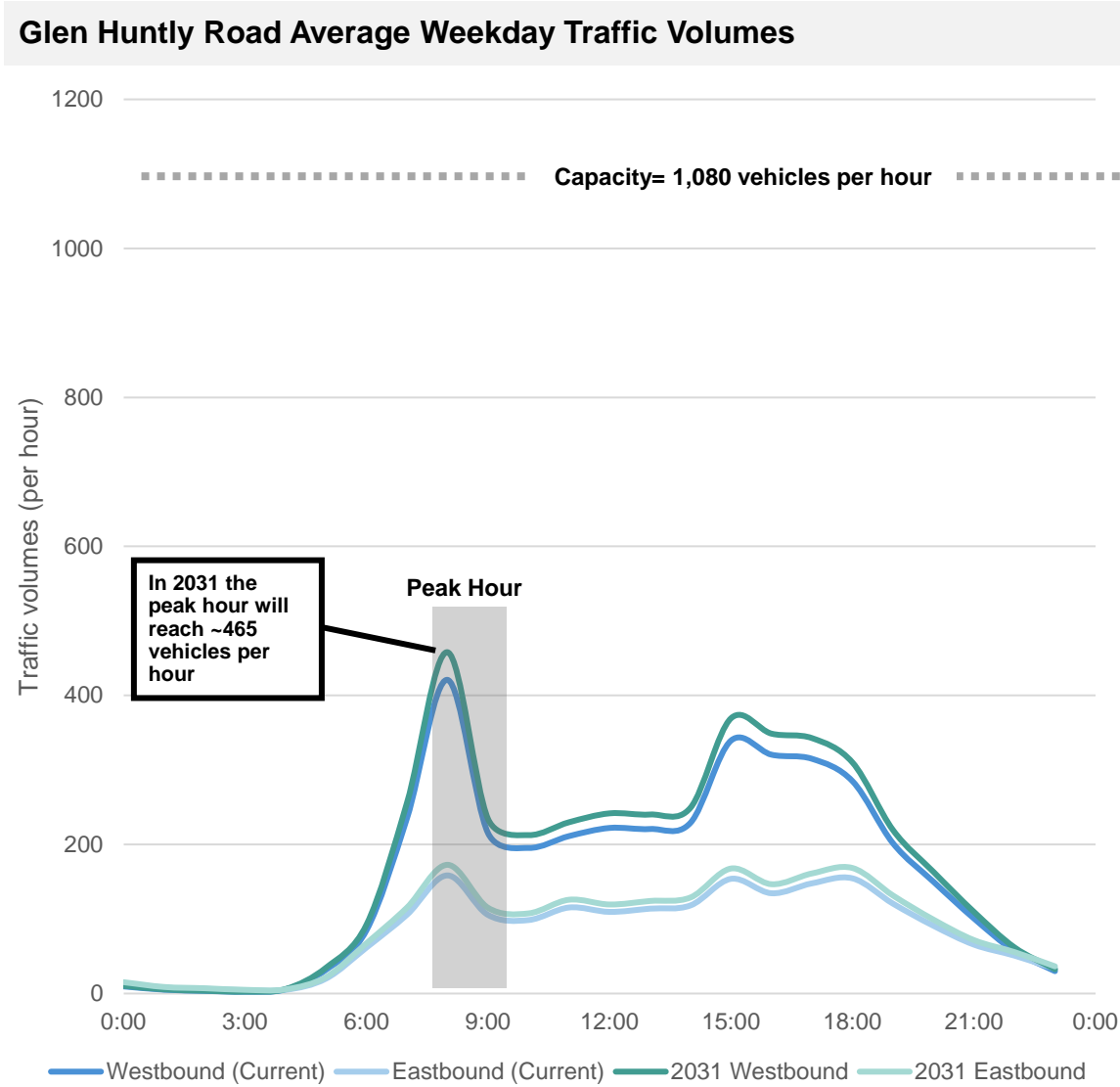
The station car park where the proposed Park and Ride car park would be constructed is currently accessed from Stanley Street. Most commuters that will access the site will be travelling along Glen Huntly Road before turning down either Riddell Street or Carre Street.

The capacity of Glen Huntly Road is 1,080 vehicles per hour. During the AM peak period, the number of eastbound and westbound vehicles comes to 158 and 420 vehicles per hour respectively. Should the development of the car parks take place, this would increase by 2031 slightly to 178 and 465 vehicles per hour respectively- a result of population increase and the additional demand derived from the car park.

See **Appendix C** for more.



New car parking capacity will not add significant demand for road space. There is capacity in the network.



Note- Traffic volumes from the SCATS detector located at the pedestrian crossing on Glen Huntly Road near Gordon Street were assessed. The figure above highlights the existing and future peak periods. To determine traffic growth in 2031 a growth factor of 0.771 percent was applied. This number was derived from population growth.

DESIGN CONSIDERATIONS

04

CASE STUDY ELEMENTS

Precedents selection criteria have been based on the preliminary discussions with the Council. They consider:

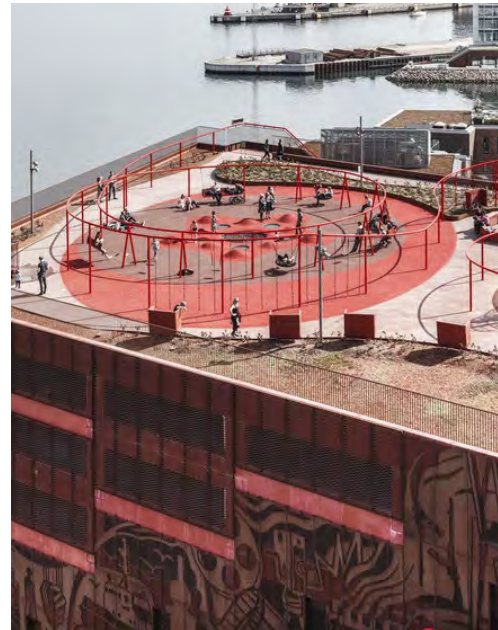
- To showcase multi-storeyed car park that integrates community uses.
- Adoption of environmental sensitive design strategies.
- Addresses local contextual interfaces sensitively.
- Future proofing.
- Explore built/ developed examples of such either local or global.

We have grouped the case studies to deal with various interfaces and urban elements that could form the **urban concept framework** for the multi-storeyed car park.



FAÇADE INTERFACE

Façade / elevation is the most visible feature of the car park and requires sensitive interface that addresses visual impact as well as light spillage to the surrounding areas. Addressing this through façade design, landscape and public art are some of the strategies that can be adopted.



PROGRAMS ON ROOF

The roof surface provides ample opportunities to achieve creative programmatic interventions or sustainability goals. The access to the roof via the stairs or elevators provides other public interface opportunities.



PUBLIC REALM INTERFACE

Positive social impact can be ensured through activation of the ground plane and frontage. This can be done through various strategies such as public open space, passive surveillance strategies and even interim/ temporary activation strategies.



FUTURE PROOFING?

To make a car park more than a car park seems to be the prevalent thinking given the evolving nature of transportation. What more can a car park become if it partially stops performing its current role? Can it easily transform its role or integrate opportunities?

FAÇADE INTERFACE

SUMMARY

The case studies have explored strategies adopted to address the impact of the car park elevation such as noise, light spillage and visual impacts.

The strategies adopted in the selected case studies incorporate:

- Landscape greenery that improves the air quality and social impact.
- Artistic facades using meshes or public art to celebrate the local character.

In addition, there is also the opportunity to utilise the walls for sports e.g. wall climbing areas and public art.

KEY TAKEAWAYS FOR ELSTERNWICK SITE

- Potential for built form setback and façade interface that retains the street planting and integrates landscape or artistic façade.
- Ensure reduced light spillage into the residential areas.



Manly Vale Car Park

Location: Sydney, NSW
Architect: Design Inc
Year: 2020
Size: approx. 150 parks

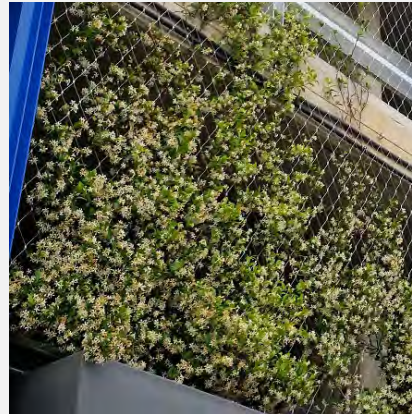
Key Insights

- Car park as a breathable landscaped structure.
- Attractive green façade that softens building mass, integrates form into landscape, and contributes to streetscape character.
- “Breathing wall” provides clean air and reduces noise pollution to surrounding residents and streets.
- Provides habitats for local biodiversity.
- Positive social impacts.
- Higher maintenance and costs.

FAÇADE INTERFACE



Landscape features at Manly Vale Car park:
Uses Junglefy Breathing wall, area of garden 260m2
Number of plants 9000, 27 species.



Sydney Superyacht Marina Car Park

Location: Rozelle, SYD

Year: 2016

Landscape type: 93 façade planters

Maintenance – as required.

Key Insights

- Transforms a traditionally uninteresting car park with a green curtain of plants.
- Uses pre-grown nursery plants.
- Easier maintenance and lower costs.
- Positive social impacts.

FAÇADE INTERFACE



Atkinson Street Community Car Park

Location: Oakleigh, VIC
 Year: 2017
 Size: approx. 274 parks (\$7.4 Million)
 Sustainability: Designed to meet Green Star Energy rating standards

Key Insights

- Car park as a cultural/community icon.
- Artistic façade with additional internal murals done by local artists.
- Circulation cores are celebrated at the street edge and made transparent to maximise safety and visibility.
- Rooftop solar panels sufficient to provide the buildings power consumption.
- Building management system for monitoring energy usage.



Cheltenham Station Car Park

Location: Cheltenham, VIC
 Year: 2020
 Size: approx. 220 parks

Key Insights

- Car park façade needed to be aesthetically pleasing and reduce light pollution flooding nearby homes from the car park, while also allowing for a 50% open area. to meet ventilation requirements.
- Artistic façade using perforated mesh pattern.
- Parkiteer bicycle storage and bicycle hoops.

FAÇADE INTERFACE



Car park with climbing wall

Location: Utrecht,
Netherlands
Year: 2013
Size: approx. 2000
parks over 9 levels

Key Insights

- To encourage the use of the public space on the campus. The climbing walls have been integrated into the design on request of Utrecht's sports council and in commission of the University of Utrecht.



Car park wall as a work of art

Location: Miami Design
District
Year: 2013
Size: approx. 800 parks
over 7 levels

Key Insights

- The project in this one-of-a-kind neighbourhood: Museum Garage, a seven-story building with vastly differing facades designed by five different architects that can house up to 800 cars. "We wanted to turn a parking garage into the most interesting structure in Miami,".

PROGRAMS ON ROOF

SUMMARY

The case studies have explored creative strategies adopted to address the roof space. The key challenge is accessing the roof. Case studies illustrate this being used as an opportunity to showcase the stairs or lift as vertical external features which can animate the public realm.

The strategies adopted for roof programs in the selected case studies incorporate:

- Urban farms or community gardens.
- Community amenities and sports areas e.g. play spaces, sports courts.

KEY TAKEAWAYS FOR ELSTERNWICK SITE

- The site being whilst still within the proximity to the train station is located within the residential context and close to the Elsternwick plaza and playground and hence could cater to more residential oriented programs and cater to alternative social amenity spaces.



Park n Play, Copenhagen, Denmark

Location: Copenhagen, Denmark

Year: 2016

Size: approx. 274 parks

Key Insights

- Approaching the car park as a provider of multiple uses such as functional public space and social community amenity.
- Rooftop playground/landscape.
- Artistic/permeable façade which reflect local heritage.
- Green planters break up massing.
- External stair provides direct access to the rooftop and other levels.

PROGRAMS ON ROOF



Dawson Street car park with solar on roof & artistic staircase

Location: Sunshine, VIC
Year: 2016
Size: approx. 350 parks/6 Storeys

Key Insights

- Provides important E/W pedestrian link to a newly developed aquatic centre.
- The external feature stair combined with a public plaza and events space animates the public realm while providing a safe walking environment.
- Wayfinding is enhanced with a bold colour palette supported by strong graphics.
- Roof contains solar panels which will power lighting throughout as well as E/V charging ports.



Car park roof top innovative urban vertical farming

Location: Singapore
Year: -
By Agri-tech firm Citiponics

Key Insights

- Vertical farming using an aqua organic system.
- Water is kept in a close loop system to prevent water wastage and pollution.
- Rainwater is also harvested to reduce water usage.
- Less load on the roof than traditional roof greening systems.

PUBLIC REALM INTERFACE

SUMMARY

The case studies have explored strategies adopted to address the public realm interface of car parks. This is by far the most critical interface and where the community daily interacts with the built form.

The strategies adopted in the selected case studies incorporate:

- Strategies to work with the existing landscape.
- Incorporate community programs in the ground level.
- Provide retail interface.
- Setback to allow for open space or plaza.
- Strategies to allow for plug in programs for architecture.

KEY TAKEAWAYS FOR ELSTERNWICK SITE

- Allow for adequate setback from Stanley Street residential interface to allow for retention of tree planting or plaza.
- Ensure activation of Stanley Street interface with a vertical element that connects to the roof.
- Urban form could allow for retention of trees by working around the significant trees (if any).



Harrow City Multi-Deck Car Park and Community Centre

Location: Box Hill, VIC
Year: 2019
Size: approx. 550 parks/5
Storeys

Key Insights

- Landscape approach - pocket setbacks formalize spaces surrounding the existing eucalyptus trees.
- Permeable façade allows for views out of car park while allowing the structure to act as a beacon of light during night time and play of shadow during the day.
- Permanent community centre is housed within the ground floor of the car park.

PUBLIC REALM INTERFACE



Security Kiosk at Monash Caulfield Campus Car Park

Location: Caulfield, VIC
Year: 2015
Size: N/A

Key Insights

- Plug-in approach to existing conventional car park.
- Semi permanent demountable structure housing security office
- Public Art style intervention.
- Acts as a wayfinding point at one of the entrances to the campus.



Little Saigon Car Park

Location: Footscray, VIC
Year: 2018
Size: approx. 142

Key Insights

- Plaza is part of the car park development.
- Multi-level carpark integrated with retail and a public plaza which ties together a precinct vision.
- Graphic art and pattern motifs were designed by a local artist were integrated into the façade.

FUTURE PROOFING

SUMMARY

“It’s not just about rethinking our buildings. It’s also about rethinking the structures that underpin our society and putting people and places together to bring about change from the bottom up” Turner Works (Peckham Levels).

Future proofing strategies involve (and are not limited to):

- Adequate floor to floor height for conversion.
- Allowance for future services.
- Location of ramps and stairs/ lifts carefully to ensure convenient location for future uses.
- Ensure floor plates are not sloped where possible.

KEY TAKEAWAYS FOR ELSTERNWICK SITE

- The site is located within the residential area and has the potential to be either converted into residential in the future (e.g., QV8 development in City of Melbourne) or some other complimentary community uses.



1111 Lincoln Road multi-storey car park

- Location: Miami Beach, USA

Key Insights

- Bold façade, architectural statement.
- Flexible parking that can be used as function space.
- Multi-use (host to parties, yoga classes and weddings) building that becomes a social gathering space and public space.

FUTURE PROOFING



Peckham Levels

Location: Peckham, London

Key Insights

- Occupying seven of the previously 'empty levels' of the existing multi-storey car park the project delivers specialist facilities including creative studios, shared workshops, co-working, kiln rooms, 3D printing, among other uses and will be home to a diverse community of tenants, ranging from individual start-ups to arts & culture organisations.



South Melbourne Market

Location: South Melbourne, VIC

Key Insights

- Parking on a market.
- A car park roof design that was used to create an urban role and will provide branding for the market and the City of Port Phillip in addition to being used for solar panels and rainwater harvesting.

PURPOSE OF THE CAR PARKS

04

CAR PARK DEMAND – ELSTERNWICK AND NEARBY STATIONS

KEY FINDINGS

- 10-minute drive time catchments were developed for Elsternwick and the stations immediately surrounding to determine demand.

The method which this was undertaken is shown in **Appendix A**.

- Demand for Park and Ride car parking within the Elsternwick catchment is significantly below supply with 236 all-day parking spaces provided and Park and Ride demand of 53.
- However, based on Journey to Work data for employment within 200 meters of the station and areal imaging observations, these car parks currently appear full. This could indicate a large number of local workers using the Park and Ride car parking for jobs in the Elsternwick activity center.
- This modest demand projection for Park and Ride parking suggests that other alternative site uses should be considered for the Park and Ride car park (see page 19 for further discussion on alternative site uses).
- Myki controlled boom gates should be considered at Park and Ride car parks.

Existing all-day parking considered is shown in **Appendix E**.



Park and Ride demand at the stations will not be significant in 2031, alternative uses for the site should be considered.

Current (2016) Station Park and Ride / All-Day Parking Supply and Demand- All Users

	Station	Middle Brighton	North Brighton	Elsternwick
Supply	Existing all-day parking	108	130	236
	Existing Park and Ride demand within catchment	15	131	53
Demand	Existing local worker parking demand within 200 metres of the train station	192	166	206
	Surplus / shortfall for Park and Ride parking	93	-1	183
Supply / Shortfall	Surplus / shortfall for all-day parking	- 99	- 167	- 23

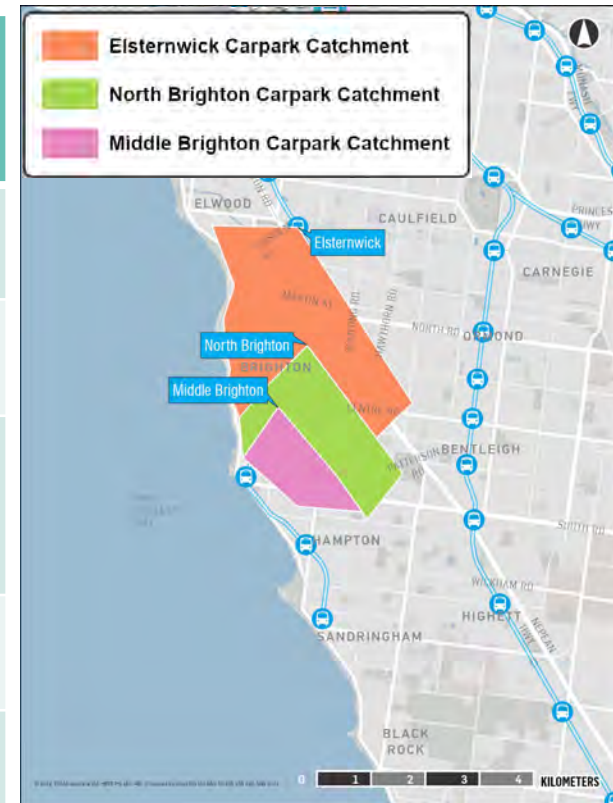
Future (2031) Elsternwick demand for Parking

2031 base Park and Ride demand ¹	2031 Park and Ride mode shift from cars ²	2031 total Park and Ride demand	2031 local worker al-day demand	2031 total parking demand	Additional spaces need to meet total demand
53	236	63	254	317	81

Note

- Park and Ride demand is based on train commuters who are already parking at a train station and then catching a train into Melbourne.
- The 10 per cent mode shift considers the existing trips plus 10 per cent of future car trips changing to car plus train.

Catchment Analysis - Elsternwick



RECOMMENDATION

05

Commuter Car Parks_Elsternwick



Elsternwick Station

KEY FINDINGS

1

There is sufficient supply of Park and Ride parking in Elsternwick to support demand in 2031

- By 2031, with the redeveloped Park and Ride car park it is expected that there is total demand for an 64 Park and Ride car parking spaces.
- Alternative uses for the site should be explored to realise opportunities for community benefit of the site. See page 30 for a discussion of alternative uses.
- Over-catering for parking on the site will result in car parking spaces being used by commuters working in the Elsternwick activity centre.

2

About half of car park users also visit the activity centre

- The high rate of cross usage between users of the Park and Ride car park and the activity centre presents the following challenges:
 - Local all-day workers parking in Park and Ride car parking spaces.
 - Ensuring good access between the activity centre, the train station and car parking.

3

The existing road network has capacity for the additional car parking

- New car parking capacity will not add significant demand for road space. There is capacity in the network.

4

Best practice case studies indicate a range of trends to be examined in Elsternwick

- The following should be considered in Elsternwick:
 - Façade interface.
 - Programs on the roof.
 - Public Realm Interface.
 - Future proofing.
 - Electric Vehicle Charing Stations.
 - Bicycle Parking.
 - Community Battery.
 - Solar Panels.

PUBLIC REALM IMPROVEMENT OPPORTUNITIES

There is an opportunity to create improved active transport infrastructure to the parking site which would benefit:

- Pedestrians walking between the site and the train station or activity centre.
- Cyclists accessing the site and continuing on to either the train station or activity centre.

To realise this improvement for pedestrian and cycling connectivity the following is recommended:

- Applying traffic calming measures to part of Stanley Street between Riddell Road the car park. This will make the street more attractive to walk along.
- Adding pedestrian crossing points at the corner of Riddell Street and Stanley Street to improve the pedestrian connection between the car park and the station.
- Addition of a cycling infrastructure connection on Stanley Street, to take advantage of existing routes on Orrong Road and Riddell Street and through Elsternwick Station Reserve and Glen Huntly Road to connect to the existing infrastructure further north on Rippon Grove.

KEY

EXISTING

- Cycling Route (informal)
- Cycling Route (on-road)
- Bus Route (625)

PROPOSED

- ▤▤▤▤ Pedestrian Crossing
- Cycling connection
- Traffic calming measures



ALTERNATIVE SITE USES

The table on the right indicates a number of alternative uses for the site and treatment types.

Section 2 of this report indicates a low demand for Park and Ride car parks in Elsternwick.

The opportunity should be used to:

- Address the demand.
- Identify opportunities for community uses and benefits on the site.

Location	Details
Façade interface	<ul style="list-style-type: none"> ▪ Façade interface that retains the street planting and integrates landscape or artistic façade.
Ground floor	<ul style="list-style-type: none"> ▪ Commuter bike parking (secure). ▪ Small scale retail such as bike repair, bike retail consistent with cycling commuter uses. ▪ Public bathroom/End-of-trip (EOT) facility for cyclists (noting that there is no public bathroom at nearby Elsternwick Station Reserve). ▪ Active frontage- southern (see above regarding bike repair/retail space). ▪ Community facilities- noting the expansion of library with community uses is pending but there may be opportunities for community uses compatible with commuter function. ▪ Electric vehicle charging (see below regarding rooftop solar/neighbourhood batteries).
Programs on roof	<ul style="list-style-type: none"> ▪ Residential oriented programs. ▪ Community garden. ▪ Visibility of the site could make it ideal to showcase urban farming e.g. attract agro-tech investment/ 'sky farm'. ▪ Playground / recreational space (tennis, basketball, netball courts). ▪ Rooftop solar/neighbourhood batteries (noting option for compatible use of electric vehicle charging- see above).
Public realm interface	<ul style="list-style-type: none"> ▪ Allow for adequate setback from Stanley Street residential interface for retention of tree planting. ▪ Ensure activation of Stanley Street interface. ▪ Urban form could allow for retention of trees.
Future proofing	<ul style="list-style-type: none"> ▪ The site is located within the residential area and has the potential to be either converted into residential in the future (e.g., QV8 development in City of Melbourne) or some other complementary community uses. ▪ Potential for additional height to be added in future (social housing, housing, etc).



APPENDIX A – CATCHMENT METHODOLOGY

METHOD – COMMUTER CAR PARK CATCHMENTS

The overall catchment for a potential commuter car park is considered a 10 minute drive time catchment for Elsternwick Station, two stations north of Elsternwick Station (Balaclava and Ripponlea) and three stations south of Elsternwick Station (Gardenvale, North Brighton and Middle Brighton).

Any station that did not include commuter car parking, had its catchment absorbed by the next station that did have a car park. This is due to the behavioural tendency of commuters to travel towards their destination rather than away from it. As a result, no station that was north of Elsternwick was considered in this analysis. Analysis also considered the 'flow on effect' of Park and Ride demand as existing car park supply is met, Park and Ride commuters drive to the next station to find a car park.

These catchments were cut in a funnel shape to reflect the behaviour of drivers where it is more likely to travel north than east or west when there is a choice between more than one station.

The catchments were also cut to avoid any overlaps with catchments from the Frankston line (refer to Bentleigh report).

Demand was calculated based on the current Australian Bureau of Statistics (ABS) Journey to Work (JTW) to the Melbourne CBD (Defined as the Melbourne City SA3) within each catchment and the future population of each catchment.

Local workers who may use all day local car parking were considered. These were defined as workers who drive to work and work within 200 metres of the train station. The 'flow on effect' concept was not applied to these workers.

APPENDIX B – SHARE OF WORKERS COMMUTING TO MAJOR PRECINCT

The share of workers who commute to a major precinct is relevant to the analysis as these workers tend to visit their origin activity centreless. In Elsternwick, 10 per cent of commuters are going to the CBD of Melbourne or another major precinct.

Share of Major Precincts Workers

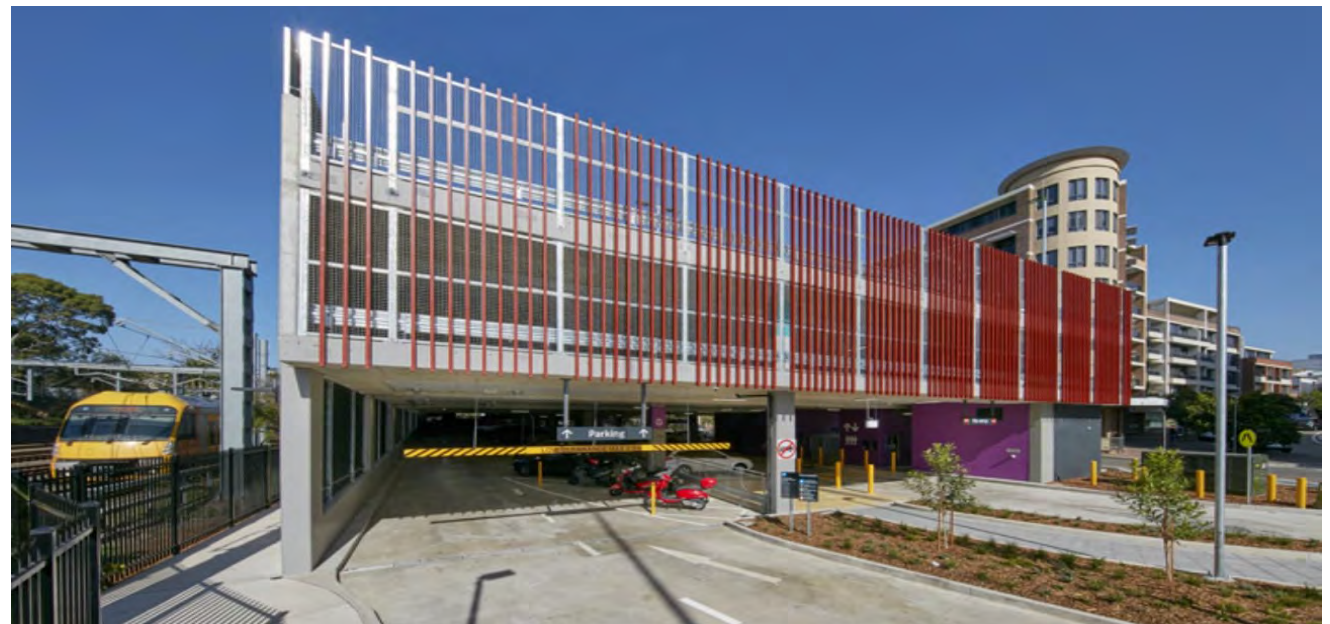
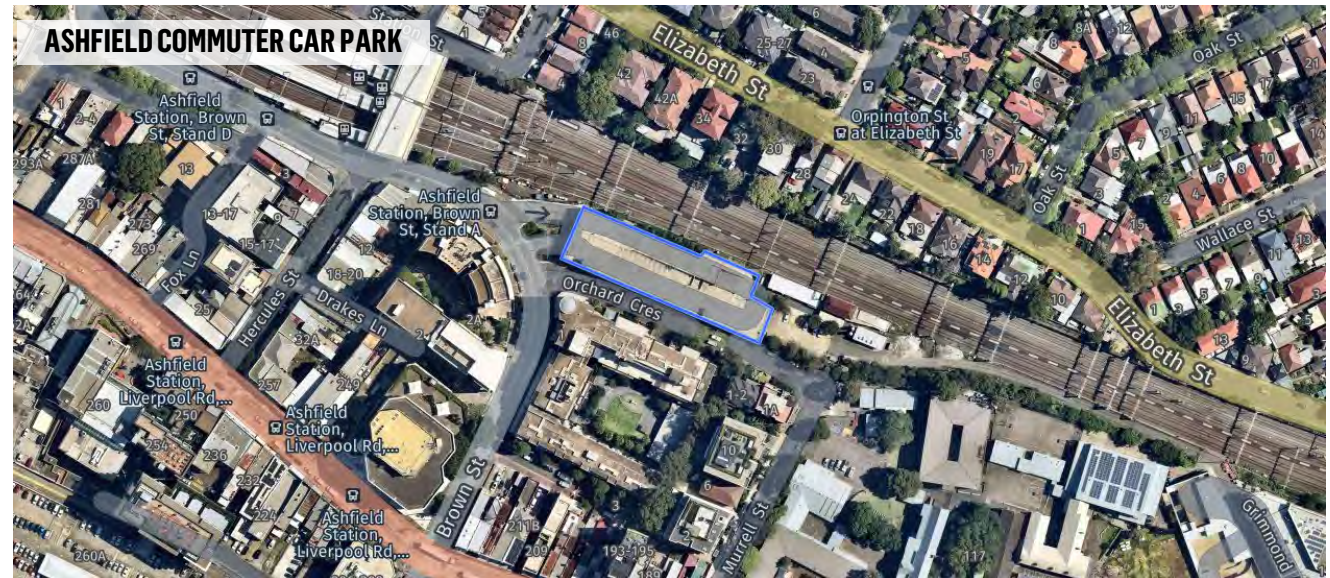
COMMUTER CP USERS	CBD	OTHER MAJOR PRECINCTS	TOTAL
Elsternwick (Vic.)	9%	1%	10%
Ashfield (NSW)	11%	2%	13%
Camberwell (Vic.)	7%	2%	9%
Canterbury (Vic.)	7%	2%	9%
Manly Vale (Vic.)	8%	2%	10%
Oakleigh (Vic.)	7%	1%	8%

APPENDIX C – CASE STUDY DESCRIPTION, ASHFIELD

Ashfield is a suburb in Sydney Inner West and is located about 8 km west of the Sydney CBD. The suburb is serviced by both train line and bus line. Ashfield train station is served by T2 Inner West and Leppington Line which provide direct access to Sydney CBD.

Ashfield Commuter Car Park was a ground-level outdoor car park before it was redeveloped into a multi-storey car park in 2018. The new car park provides 120 car spaces to commuters.

Ashfield has a diverse retail offering along Liverpool Road, right outside of Ashfield station. It is also home to Ashfield Mall, a sub-regional shopping centre that has three full-line supermarkets Woolworths, Coles and Aldi.



APPENDIX C – CASE STUDY DESCRIPTION, MANLY VALE

Manly Vale is a suburb located within the Northern Beaches LGA and is about 17 km north of Sydney CBD.

The primary public transport for the suburbs within the Northern Beaches LGA is the bus. In addition to the existing bus lines, Transport for NSW introduced B-line buses which connects between the CBD and Northern Beaches.

As part of the B-line program, six commuter car parks have been introduced to the area. Manly Vale commuter car park was completed in 2019 and provides 150 car spaces to commuters using the bus stop that is outside of the car park.

Most of the retail in the area is located along Condamine Street and are mainly bulky goods stores. The suburb also has three full-line supermarkets- Woolworths, Coles, and Aldi within the vicinity.



APPENDIX C – CASE STUDY DESCRIPTION, CAMBERWELL

Camberwell is a suburb in Boroondara LGA and is located 9 km east of Melbourne CBD. The suburb is highly accessible by train, tram and bus.

Camberwell commuter car park is located south of Camberwell train station and has a capacity of 75 car spaces for commuters.

Camberwell has strong retail provision with significant food and beverage offerings and strip retail along Burke Road. Camberwell Central is situated south of the train station and has two full-line supermarkets- Woolworths and Aldi. The suburb also has Coles Local west of Burke Road.



APPENDIX C– CASE STUDY DESCRIPTION, CANTERBURY

Canterbury is a suburb in Boroondara LGA and is located 10 km east of Melbourne CBD. The main public transport for this suburb is the train service at Canterbury station.

The commuter car park is located right outside of the train station and is an outdoor ground level car park. The car park provides over 150 car spaces to commuters travelling via Canterbury Station.

Canterbury has most of its retail provisions south of the station and a little strip retail along Canterbury Road north of the station. IGA Xpress is the only supermarket in the area.



APPENDIX C– CASE STUDY DESCRIPTION, OAKLEIGH

Oakleigh is a suburb in Monash LGA and is located 14 km south-east of Melbourne CBD. The suburb is serviced by both train and bus in terms of public transport.

There are multiple commuter car parks around Oakleigh train station, all of them are ground level outdoor car parks. They provide approximately 300 car spaces in total to commuters.

90 car spaces were closed off between September 2019 to August 2020 as the station was upgraded as part of the Level Crossing Removal Project. However, the capacity at the commuter car parks remains unchanged.

Oakleigh has strong retail provision north of the train station. It has diverse strip retail between Atherton Road and Portman Street and is home to Oakleigh Central, which supports two full-line supermarkets- Woolworths and Coles.



APPENDIX C- ASHFIELD CROSS USAGE

The map on the right illustrates how commuters who parked at Ashfield Commuter Car Park used the surrounding area in the last three years.

High level of activities can be observed at the retail located next to the car park. There are notable activities at Ashfield Mall as well. Around 23% of Ashfield Commuter Car Park users also visited the surrounding retail precinct on the same day.

The utilisation rate is lower compared to the other case studies. This can be explained by the abundant retail offerings in the surrounding suburbs of Ashfield like Burwood and Marrickville.



APPENDIX C – MANLY VALE CROSS USAGE

The map on the right illustrates how commuters who parked at Manly Vale Park & Ride used the surrounding area in the last three years.

Around 40% of Manly Vale Park & Ride users also visited the surrounding retail precinct on the same day. This may be the result of having three full-line supermarkets within the activity centre.

High level of activities can be observed at the surrounding supermarkets, particularly in Woolworths and Aldi on Roseberry Street. A notable level of activities can also be seen at the KFC drive-through located across the street from the car park.

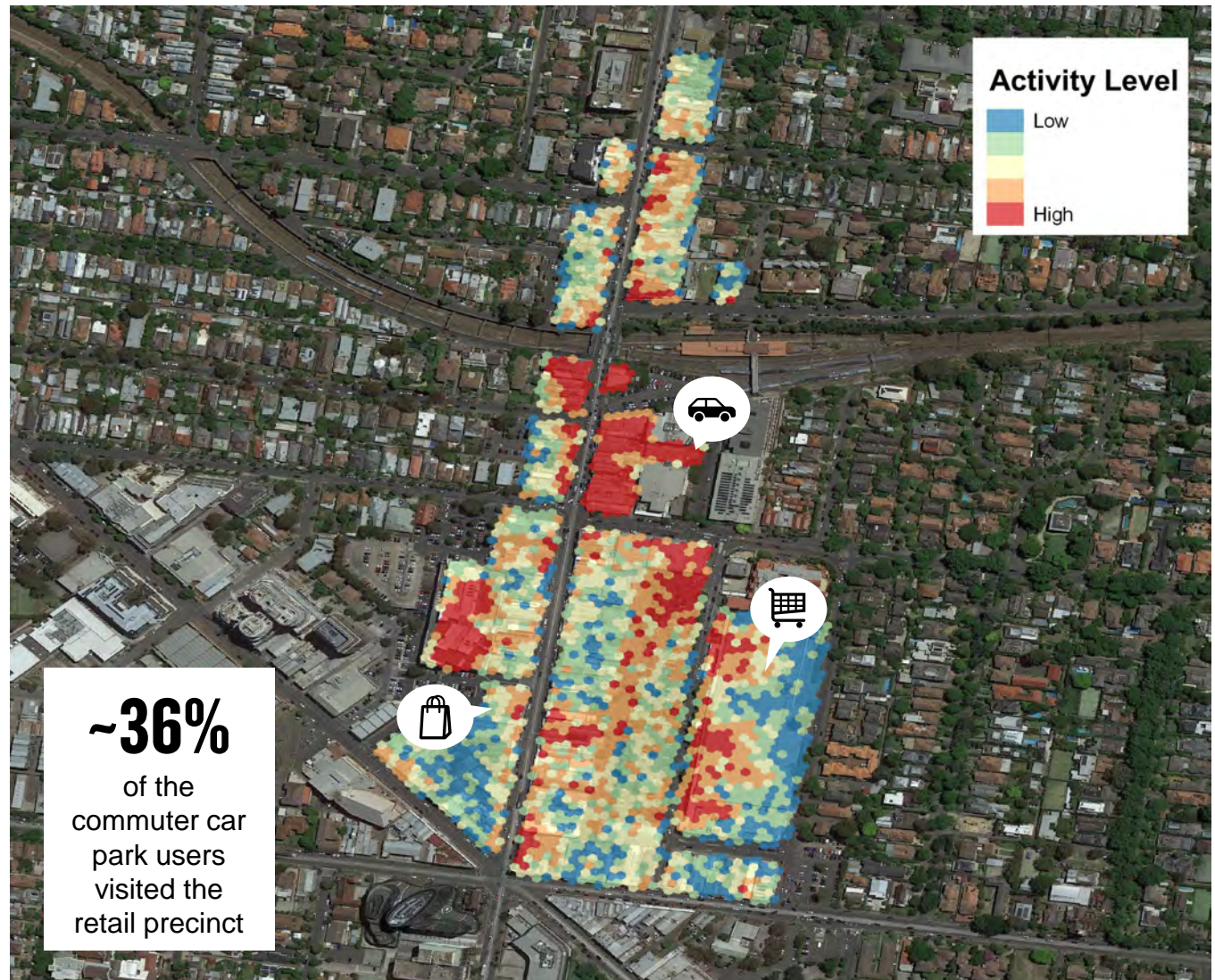


APPENDIX C –CAMBERWELL CROSS USAGE

The map on the right illustrates how commuters who parked at Camberwell Commuter Car Park used the surrounding area in the last three years.

Those that used the commuter car park were also observed at the retail car park on Market PI and Camberwell Grove, indicating that they would move their car from the commuter car park to the retail car park for convenience when doing their shopping. About 36% of the commuter car park users also visited the surrounding retail on the same day.

Camberwell has a significant level of retail offerings within its local activity centre and a high level of activities are observed in retail close to the car park and Camberwell Place.



APPENDIX C – CANTERBURY CROSS USAGE

The map on the right illustrates how commuters who parked at Canterbury Commuter Car Parks used the surrounding area in the last three years.

Majority of the activities are observed in retail precincts closest to the station. Approximately 20% of Canterbury Commuter Car Park users also visited the surrounding retail precinct on the same day.

Compared to the other case studies, Canterbury has a low utilisation rate. This may be explained by the limited retail offerings within the activity centre.

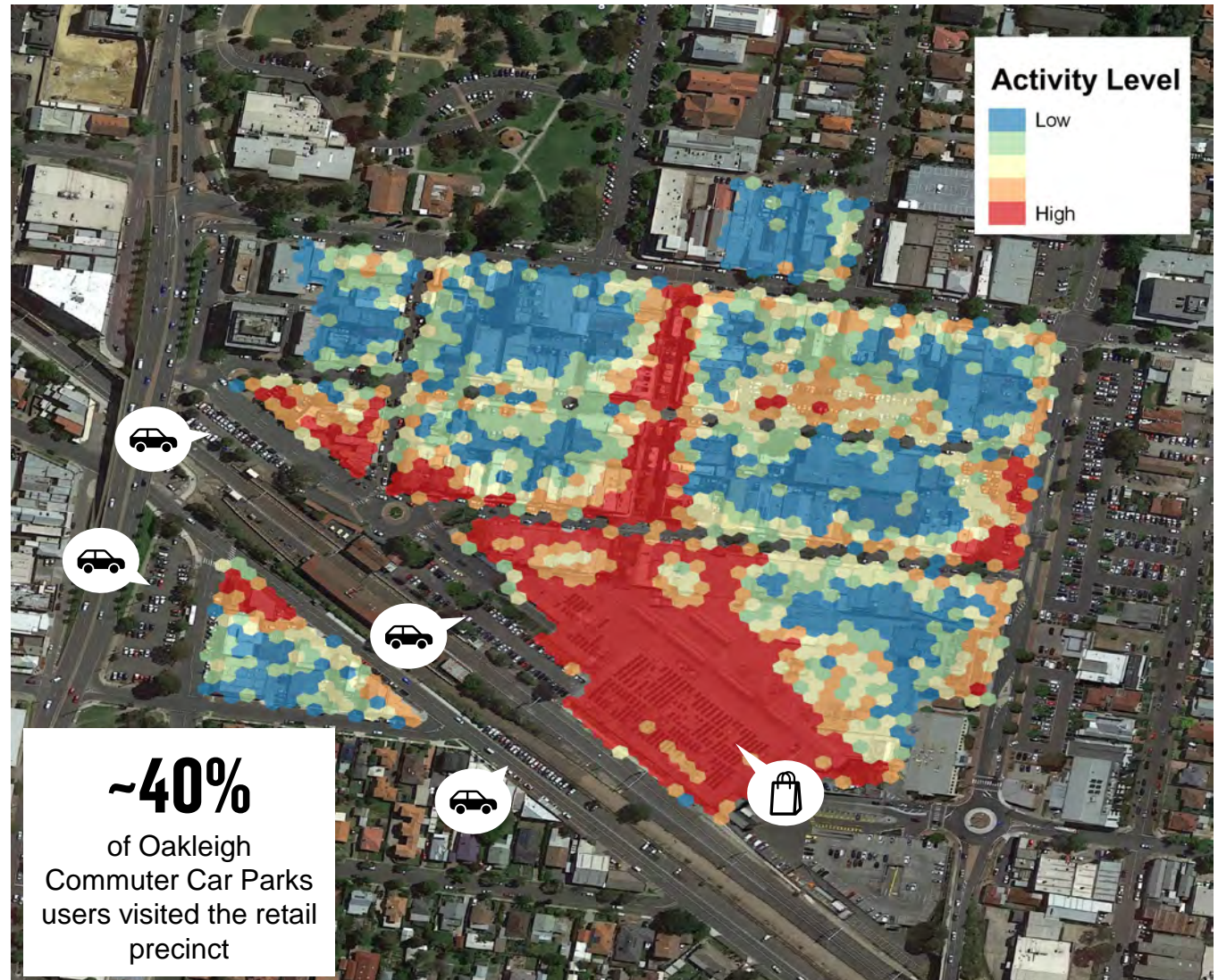


APPENDIX C – OAKLEIGH CROSS USAGE

The map on the right illustrates how commuters who parked at Oakleigh Commuter Car Parks used the surrounding area in the last three years.

Approximately 40% of Oakleigh Commuter Car Parks users also visited the surrounding retail precinct on the same day.

Oakleigh has a significant level of retail offerings close to the commuter car parks with both indoor and outdoor food and beverage options. Most of the activities are noted within Oakleigh Central Shopping Mall and the pedestrian footpath along Eaton Mall.



APPENDIX D - AVERAGE WEEKDAY TRAFFIC VOLUMES

The increase in Peak Volumes both with and without development are only very minor in both directions.

The environmental capacity limit for Glen Huntly Road is 1,080 vehicles per hour and is derived from *Austroads Guide to Traffic Management Part 3*.

Future traffic volumes along Glen Huntly Road were tested during the peak period and it was determined that the proposed development will not exceed the capacity, resulting in minimal traffic impact from the development.

Glen Huntly Road Average Weekday Traffic Volumes

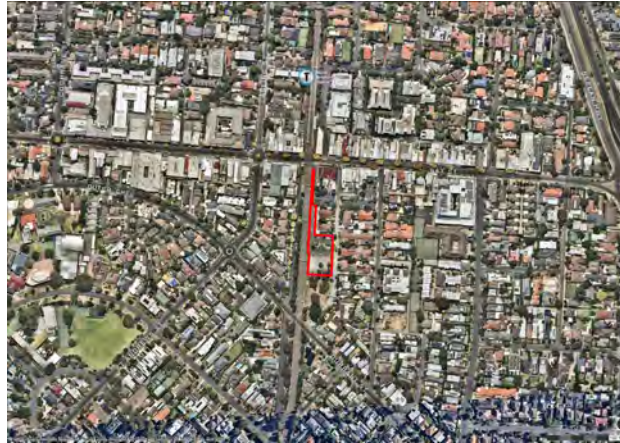
Direction	Existing Peak Volume	Future Peak Volume No Development	Future Peak Volume with Development	Environmental Capacity Limit
Eastbound	158 per hr	172 per hr	178 per hr	1,080 per hr
Westbound	420 per hr	458 per hr	465 per hr	1,080 per hr

APPENDIX E – COMMUTER CAR PARK LOCATIONS

Elsternwick Station



North Brighton Station



Middle Brighton Station

