

# Traffix Group

## Traffic and Parking Impact Assessment

Serpells Lane Car Park

399 Burwood Road, Hawthorn

Prepared for  
Boroondara City Council

December 2022

G32358R-01B

## Document Control

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## 1. Introduction

Traffix Group has been engaged by Boroondara City Council to undertake a Traffic and Parking Impact Assessment for the Serpells Lane Car Park at 399 Burwood Road, Hawthorn, with vehicle access provided via Serpells Lane.

We have been advised that our assessment is to contemplate a potential future alternate use of the site and the associated transport impact of such a change.

This report details the existing car parking conditions of the Serpells Lane Car Park (subject site) as well as publicly accessible car parking within the broader Glenferrie Activity Centre and provides recommendations pertaining to any potential future alternate use of the Serpells Lane Car Park.

## 2. Existing Conditions

### 2.1. Subject Site

The subject site is located at the northern end of Serpells Lane in Hawthorn and is bound by Glenferrie Railway Station and the Alamein/Belgrave/Lilydale rail line to the north, as shown in the locality plan at Figure 1.

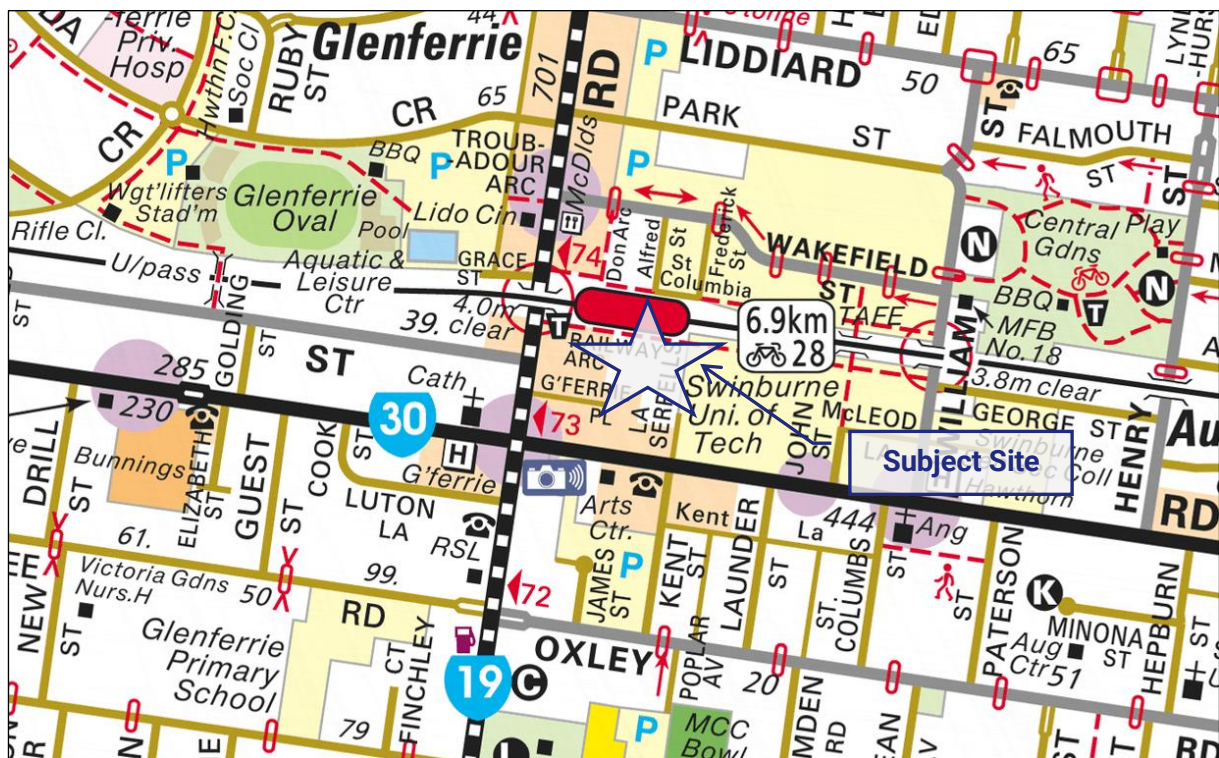


Figure 1: Locality Plan

The subject site is currently occupied by an at-grade Council owned public car park.

Vehicular access to the car park is provided via Serpells Lane towards the southeast corner of the car park. The northern area of the car park operates in a one-way clockwise arrangement, whilst there is a smaller dead-end section located at its southern end.

No abutting properties are provided with direct vehicle access via the car park, however Serpells Lane can be used by motorists to access three Swinburne University vehicle access points as well as a single vehicle access point for properties at 377 Burwood Road and 393 Burwood Road.

The car park is provided with a direct pedestrian link to Railway Arcade and Glenferrie Railway Station at its northwest corner. Furthermore, a pedestrian access point is provided at the western end of the car park for abutting properties at 660 Glenferrie Road and 367-369 Burwood Road.

The site comprises 90 car parking spaces as summarised at Table 1 with an aerial photograph of the subject site and its surrounds presented at Figure 2.

*Table 1: Serpells Lane Car Park Summary*

Parking Restriction	Parking Supply
3P 9am-5:30pm Monday-Friday, 9am-12:30pm Saturday	62 spaces
2P 9am-5:30pm Monday-Friday, 9am-12:30pm Saturday	22 spaces [1]
Loading Zone	3 spaces
4P Disabled Only	2 spaces
Permit Zone Flexicar Carshare Vehicles Only	1 space
[1] At the time of our recent site inspection in September 2022, three of these spaces were unavailable due to construction works.	





Figure 2: Aerial Photograph

The site is currently zoned 'Public Use– Local Government (PUZ6)' under the Boroondara Planning Scheme, as indicated in the land use zoning map at Figure 3.

The site is located within the Glenferrie Activity Centre, as such, surrounding uses generally comprise of a mixture of residential, commercial, retail and educational land uses.

Key surrounding land uses include:

- Swinburne University of Technology, located north and east of the site, and
- Glenferrie Railway Station, located immediately north of the site.

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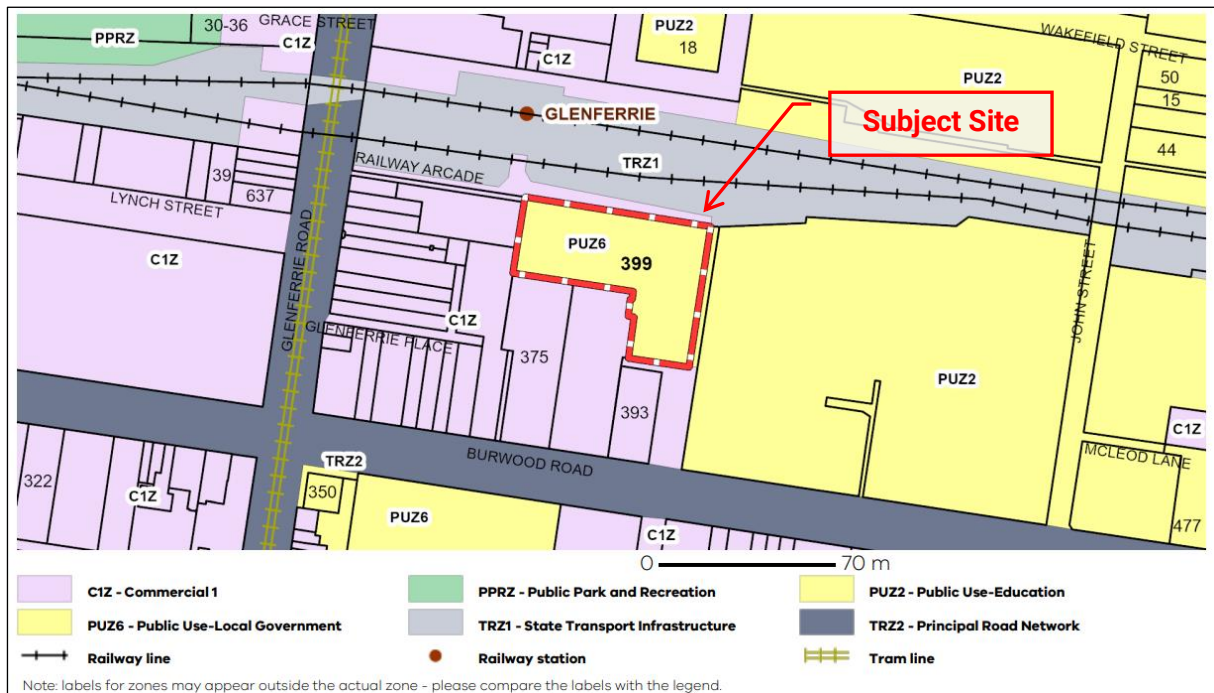


Figure 3: Land Use Zoning Map

## 2.2. Road Network

**Serpells Lane** is a Council local access road that is aligned in a north-south direction to the north of Burwood Road.

In the vicinity of the site, Serpells Lane accommodates an approximately 8.8m wide carriageway which allows for simultaneous two-way traffic movements.

The default urban speed limit of 50km/h applies to Serpells Lane.

Serpells Lane, in the vicinity of the subject site, is presented at Figure 4 and Figure 5.





Figure 4: Serpells Lane - view north



Figure 5: Serpells Lane - view south

**Burwood Road** is a Department of Transport (DoT) declared arterial road, located within a Transport Zone 2 (TRZ2), that is aligned in a general east-west direction to the south of the site.

In the vicinity of the site, Burwood Road accommodates two traffic lanes in each direction. Kerbside parallel parking is available on both sides of the road, with AM and PM peak hour Clearway restrictions applying to the south side and north side of the carriageway, respectively.

On-street car parking on Burwood Road is generally subject to short-term restrictions, including a combination of '1P 9am-4pm Monday-Friday, 9am-12:30pm Saturday' and '1/4P 9am-5:30pm Monday-Friday, 9am-12:30pm Saturday' on the north and south sides of the road.

A posted speed limit of 60km/h applies to Burwood Road in the vicinity of the site, noting that a 40km/h school zone speed limit applies a short distance to the east of the site.

Burwood Road, in the vicinity of the site, is presented at Figure 6 and Figure 7.



Figure 6: Burwood Road - view east



Figure 7: Burwood Road - view west

**Glenferrie Road** is a DoT declared arterial road, located within the Transport Zone 2 (TRZ2), that is aligned in north-south direction between Cotham Road (north) and Dandenong Road (south).

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In the vicinity of the site, Glenferrie Road provides kerbside parallel parking on both sides of the carriageway along with a single traffic lane and a bicycle lane in each direction. The single traffic lane also accommodates a tramway.

On-street car parking along Glenferrie Road is generally subject to short-term restrictions, including '1P 8am-6pm Monday-Saturday'.

A posted speed limit of 40km/h applies to Glenferrie Road in the vicinity of the site.

Glenferrie Road, in the vicinity of the subject site, is shown at Figure 8 and Figure 9.

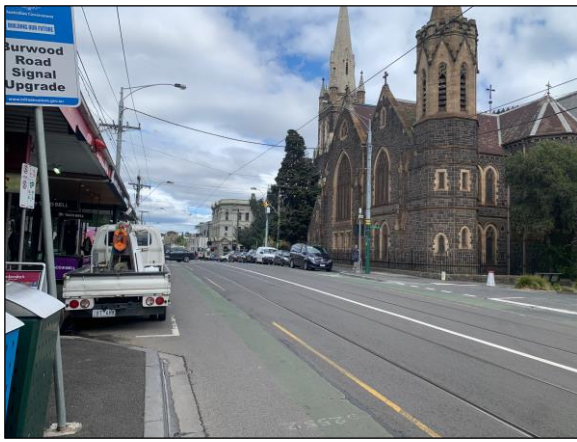


Figure 8: Glenferrie Road - view south

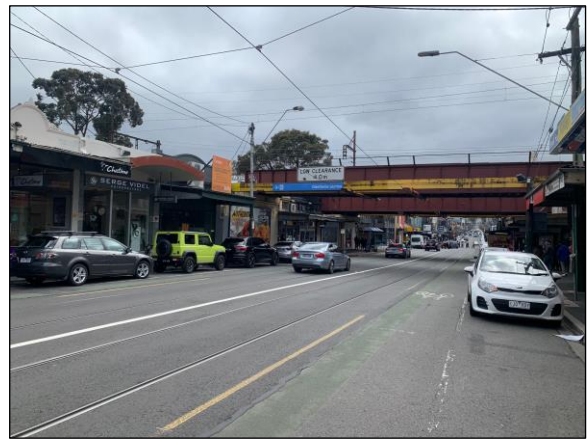


Figure 9: Glenferrie Road - view north

## 3. Existing Transport Data Summary

### 3.1. Glenferrie Activity Centre

#### 3.1.1. Car Parking Occupancy Surveys

Council commissioned car parking surveys of eight off-street car parks as well as on-street car parking on Glenferrie Road, Burwood Road, Linda Crescent, Park Street and Lynch Street at varying times and dates as follows:

- Thursday 24 October 2019, 7am-10pm, on-street parking.
- Tuesday 14 June 2022, 7am-9pm, off-street car park no. 6.
- Thursday 4 August 2022, 7am-10pm, off-street car park no. 7.
- Thursday 6 October 2022, 7am-10pm, off-street car park no.1, 2, 4, 5 and 8.
- Thursday 20 October 2022, 7am-10pm, off-street car park no. 3 and 9.

The survey area is illustrated at Figure 10 and includes a total of 1,917<sup>1</sup> (1,551 off-street and 366 on-street) car parking spaces as summarised within Table 2.

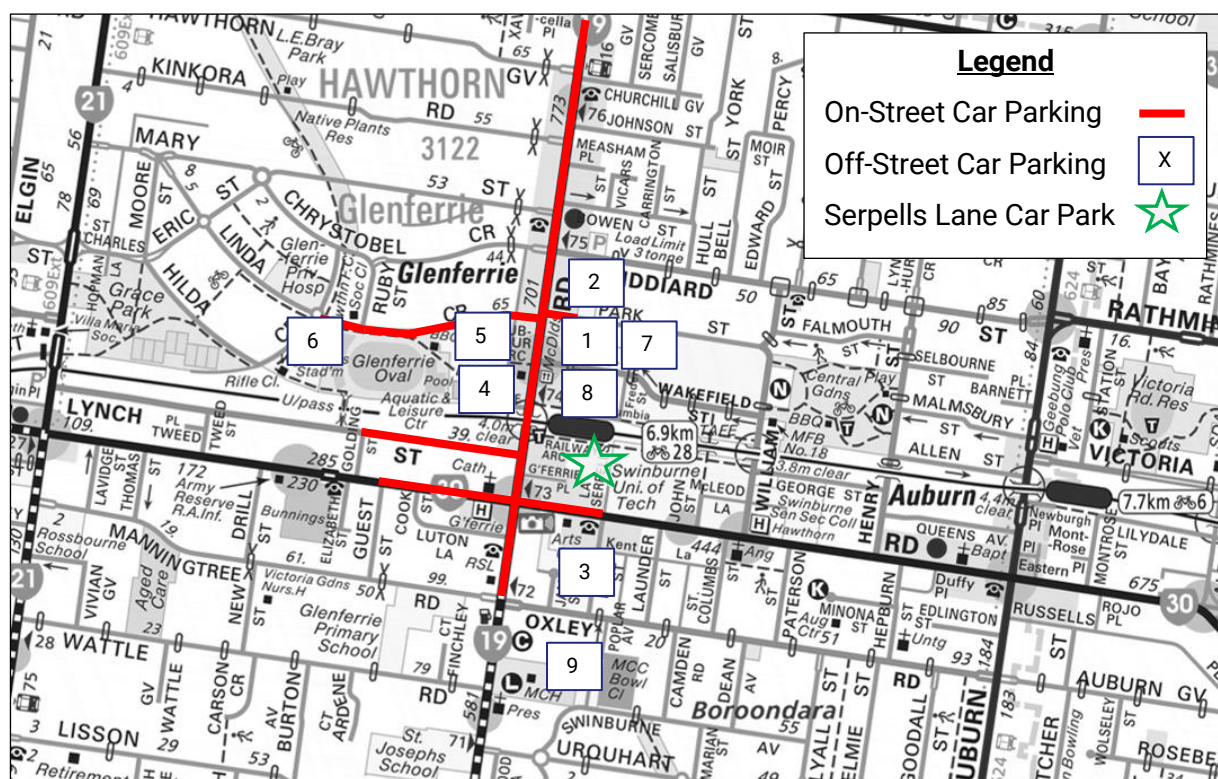


Figure 10: Glenferrie Activity Centre Parking Survey Area Extents

<sup>1</sup> Excludes reserved (or similar) car parking spaces that are not publicly accessible.



Table 2: Car Parking Summary

Number	Off-Street Car Park	Parking Supply	Peak Occupancy
1	Park Street Car Park	67 spaces	100% (67 parked cars) at 6:00pm
2	Liddiard Street Car Park	139 spaces	98% (136 parked cars) at 7:00pm & 7:30pm
3	Kent Street Car Park	178 spaces [1]	100% (178 parked cars) at 12:30pm [1]
4	Grace Street Car Park	63 spaces	97% (61 parked cars) at 5:00pm
5	Linda Crescent Car Park	170 spaces	100% (170 parked cars) at 6:30pm
6	Hilda Crescent Car Park	162 spaces	85% (137 parked cars) at 11:30am
7	Wakefield Street Car Park	564 spaces [2]	98% (550 parked cars) [2]
8	Glenferrie Centre Rooftop Car Park	56 spaces [3]	96% (54 parked cars) at 11:00am and 1:00pm [3]
9	Swinburne Avenue Car Park	152 spaces [4]	55% (84 parked cars) at 3:30pm [4]
General	On-Street Parking Area	366 spaces	88% (323 parked cars) at 7:30pm

[1] Parking supply and occupancy only relates to publicly accessible parking spaces. A total of 23 permit zone spaces (Council staff and trader only) and 5 loading zone spaces have been removed from the reported results for the purposes of this assessment.

[2] Parking supply and occupancy only relates to publicly accessible parking spaces. A total of 134 reserved, Swinburne pool vehicle and chancellor visitor parking spaces, are located within the car park and have been removed from the reported results for the purposes of this assessment.

[3] Parking supply and occupancy only relates to publicly accessible parking spaces. A total of 11 reserved car parking spaces are located within the car park and have been removed from the reported results for the purposes of this assessment.

[4] Parking supply and occupancy only relates to publicly accessible parking spaces. A total of 3 permit zone car parking spaces are located within the car park and have been removed from the reported results for the purposes of this assessment.

The survey results from each off-street car park car parking area are presented within Figure 11 to Figure 19. Peak periods were typically observed around midday as well as during the evening period (around 7pm) within the survey area.

All off-street car parks were recorded to be close to capacity throughout the daytime period, except for the Liddiard Street and Linda Crescent car parks which reached their peak occupancy during the evening. A summary of all off-street car parking is presented at Figure 20 which indicates a peak demand of 1,237 parked cars (80% occupancy, 314 vacant spaces, 12:30pm)<sup>2</sup>.

On-street car parking is also generally in high demand, with peaks coinciding with the lunchtime and evening periods. A summary of all off-street car parking is presented at Figure 21 which indicates a peak demand of 323 parked cars (88% occupancy, 43 vacant spaces, 7:30pm).

<sup>2</sup> Note that this is a compilation of all data recorded from a variety of survey days.

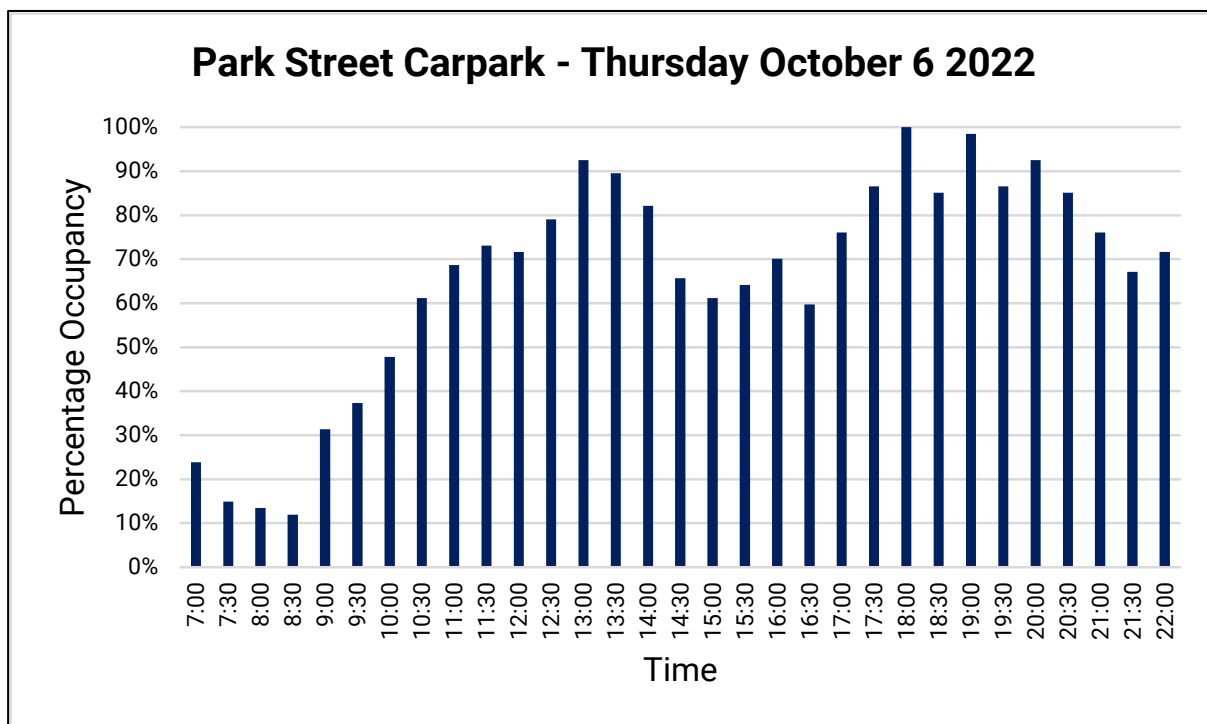


Figure 11: Park Street Car Park Survey Results (Car Park No.1)

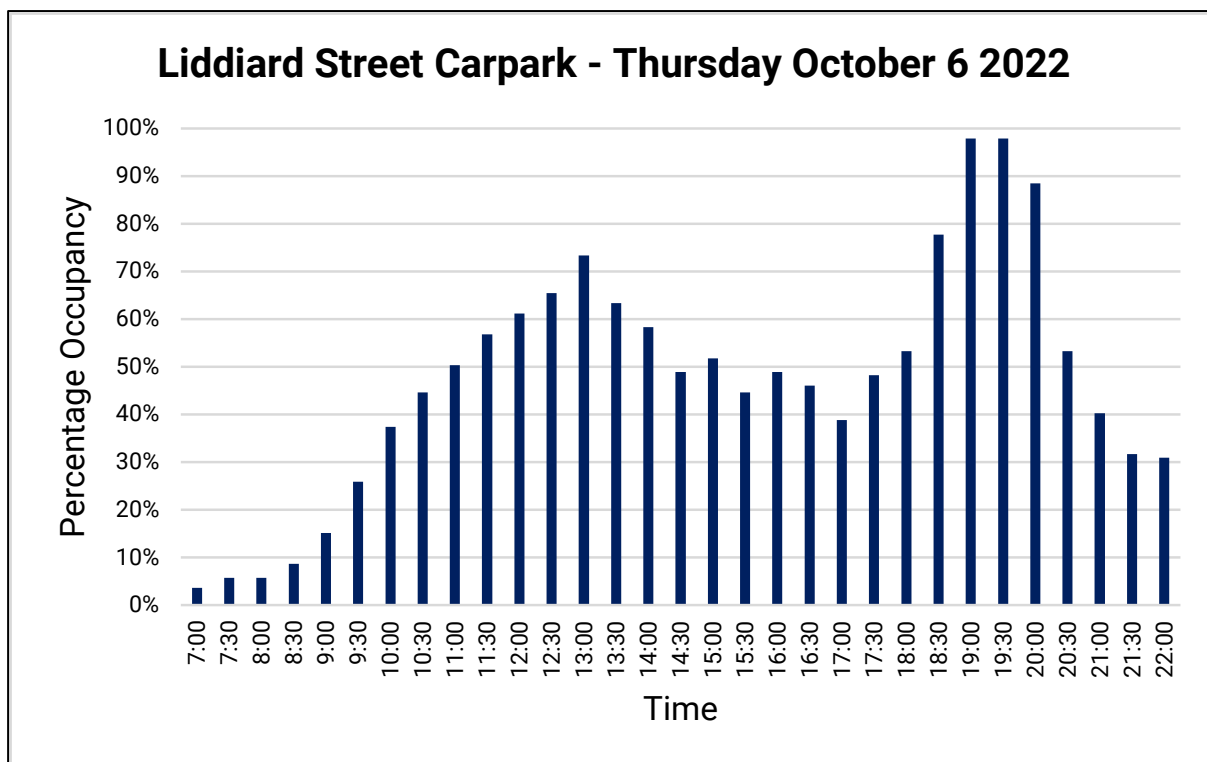


Figure 12: Liddiard Street Car Park Survey Results (Car Park No.2)



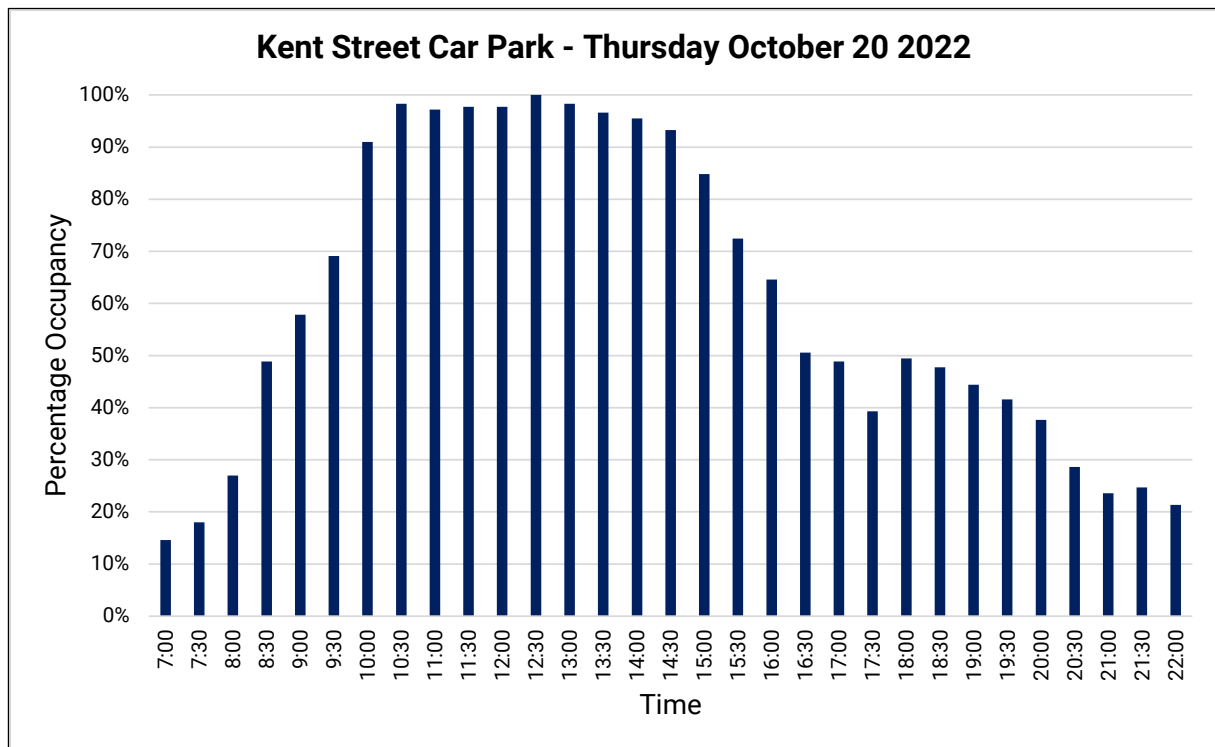


Figure 13: Kent Street Car Park Survey Results (Car Park No.3)

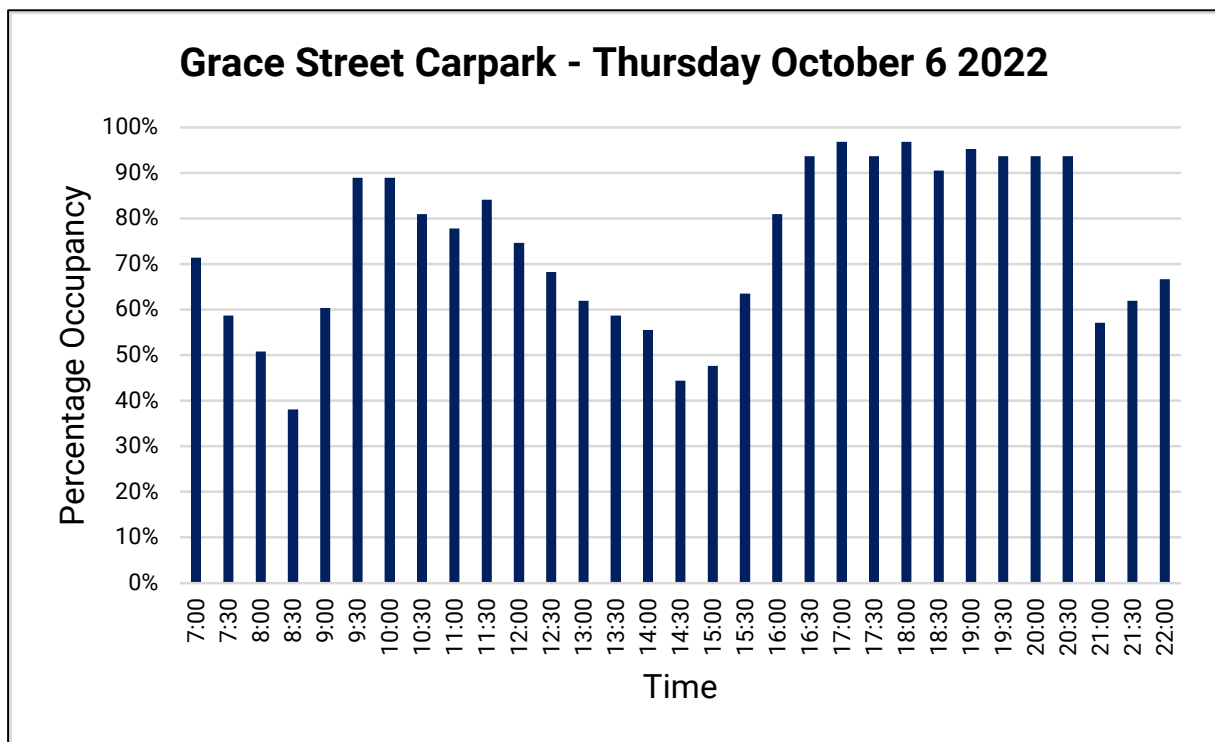


Figure 14: Grace Street Car Park Survey Results (Car Park No.4)

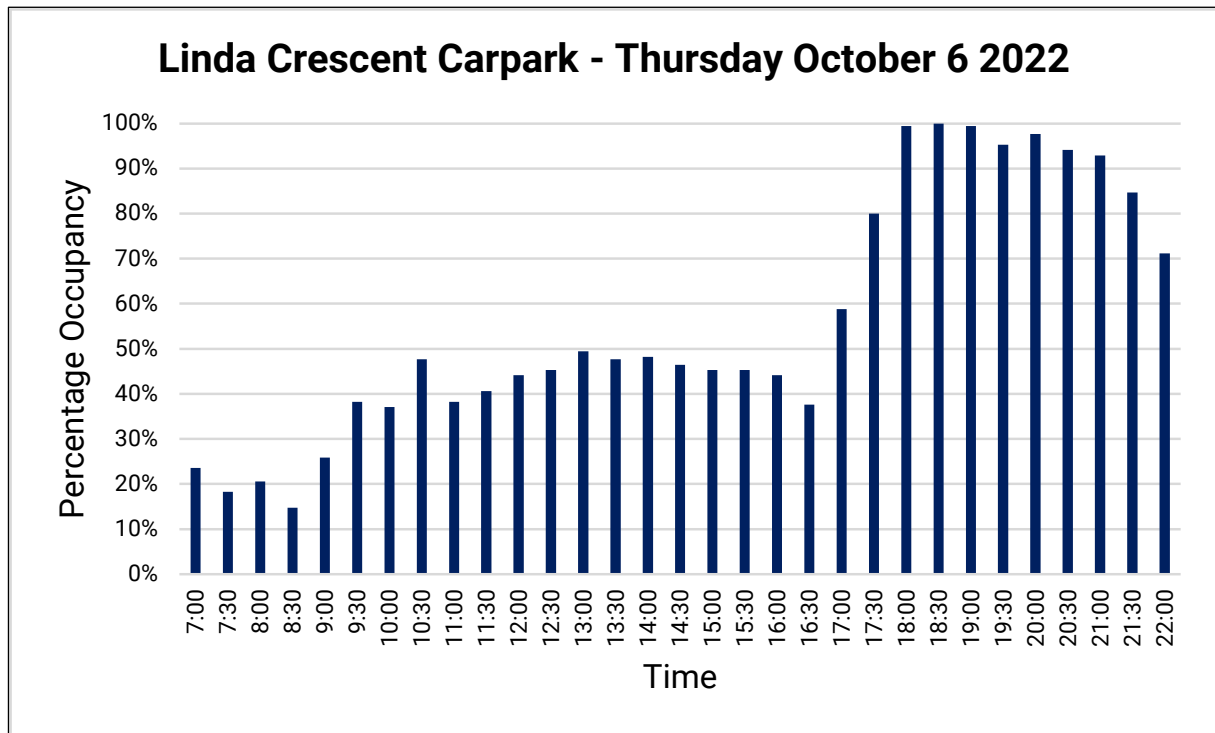


Figure 15: Linda Crescent Car Park Survey Results (Car Park No.5)

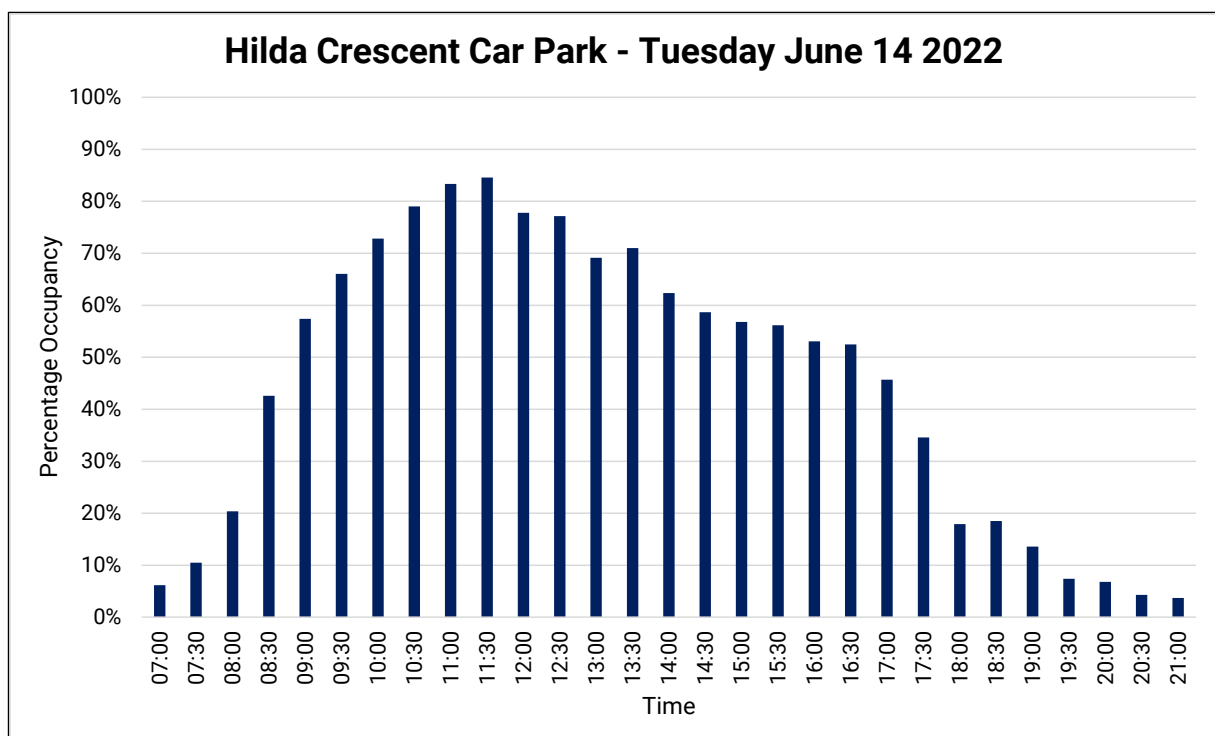


Figure 16: Hilda Crescent Car Park Survey Results (Car Park No.6)

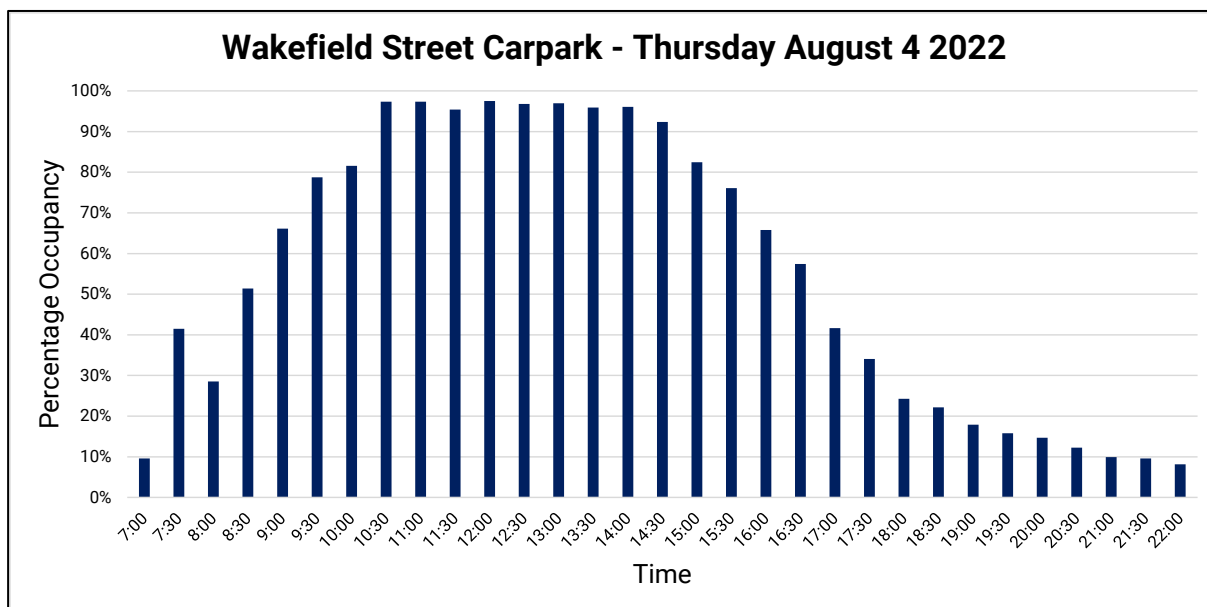


Figure 17: Wakefield Street Car Park Survey Results (Car Park No.7)

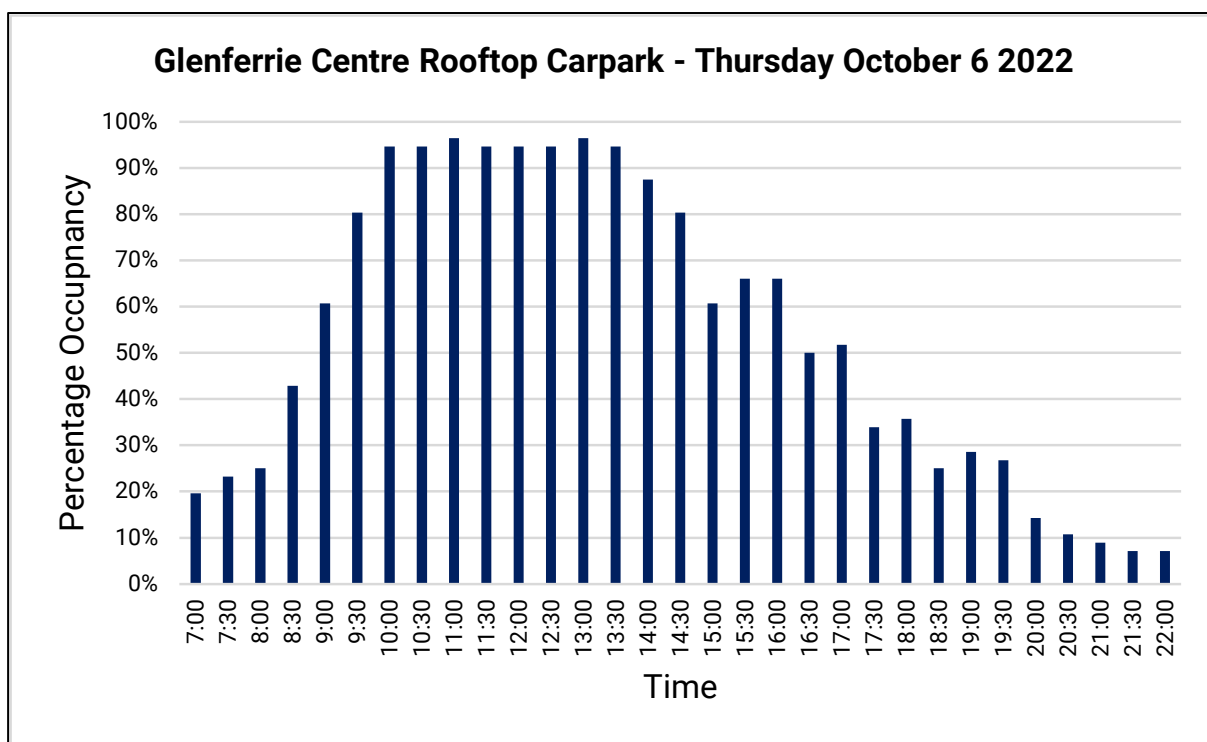


Figure 18: Glenferrie Centre Rooftop Car Park Survey Results (Car Park No.8)

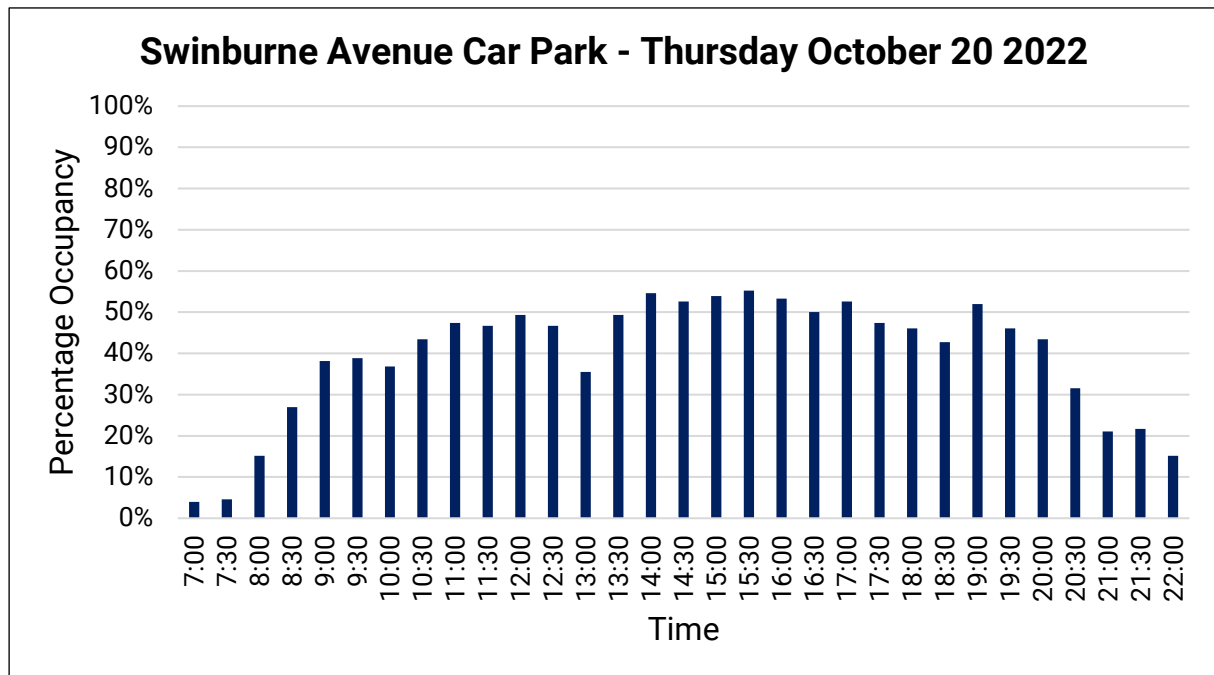


Figure 19: Swinburne Avenue Car Park Survey Results (Car Park No.9)

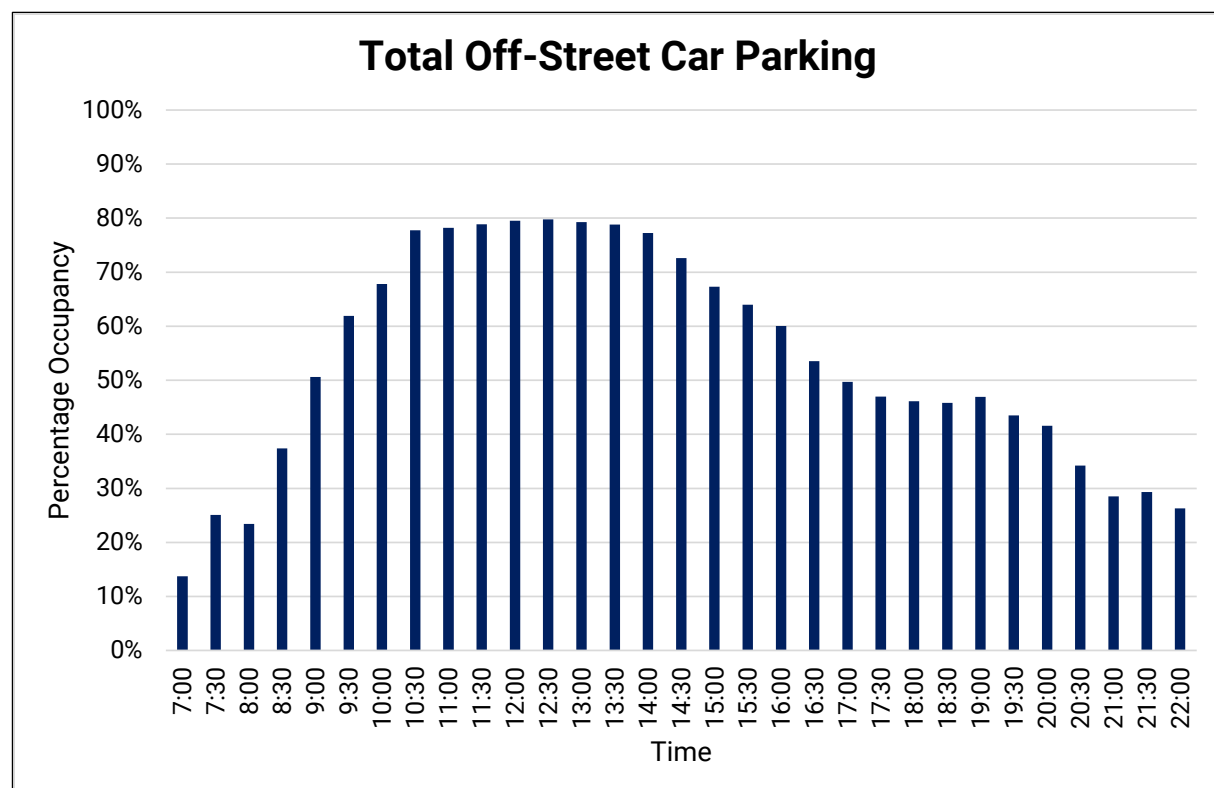


Figure 20: Total Off-Street Car Parking Survey Results

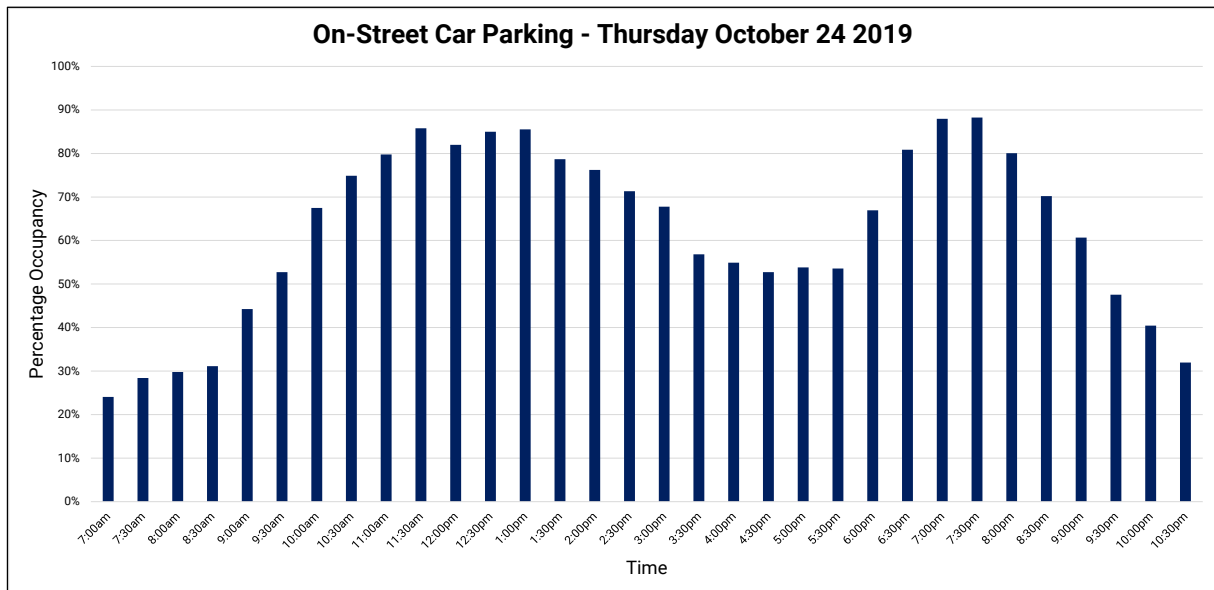


Figure 21: On-Street Car Parking Survey Results

## 3.2. Serpells Lane Car Park (Subject Site)

### 3.2.1. Car Parking Occupancy Surveys

Council commissioned car parking surveys at half hourly intervals of the Serpells Lane car park (subject site) at the following days/times:

- Thursday 24 October 2019 between 7:00am and 11:00pm, and
- Thursday 10 March 2022 between 7:00am and 11:00pm

The 2019 surveys identified that the car park was fully occupied between 12:30pm and 2:30pm, and above 90% occupancy between 8:00am and 7:30pm, as presented at Figure 22.

The 2022 surveys identified a peak occupancy of 96% (86 parked cars, 4 vacant spaces) at 10:00am, with the occupancy of the car park generally being in excess of 90% between 9:00am and 7:00pm, as presented at Figure 23.

It is important to note that in the order of 90-95% occupancy is typically considered to be the 'practical capacity' of car parking. That is, whilst there may be a small number of vacancies available, many motorists will likely look outside of the area for vacancies as it appears to be at saturation.

Additionally, whilst demands decrease later into the evening, we have been advised, anecdotally, that there may be vehicles parked overnight associated with residents/visitors of nearby apartments.



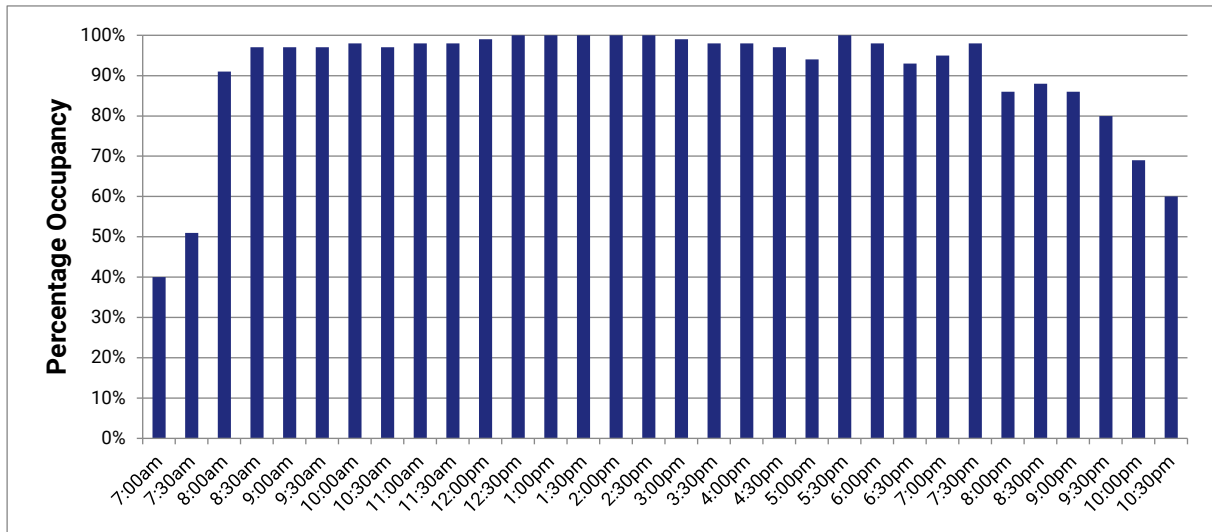


Figure 22: Serpells Lane Car Park – October 2019 Parking Survey Results

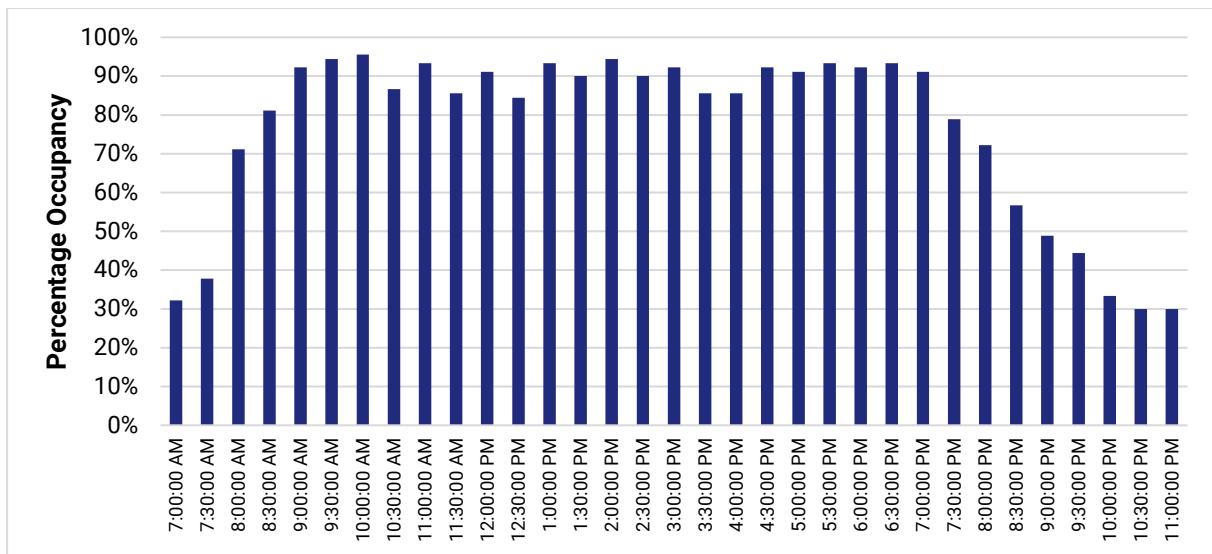


Figure 23: Serpells Lane Car Park – March 2022 Parking Survey Results

## 3.2.2. Duration of Stay Surveys

Council commissioned duration of stay surveys of the Serpells Lane car park between 7:00am-11:00pm on Thursday 10 March 2022, with results presented at Figure 24.

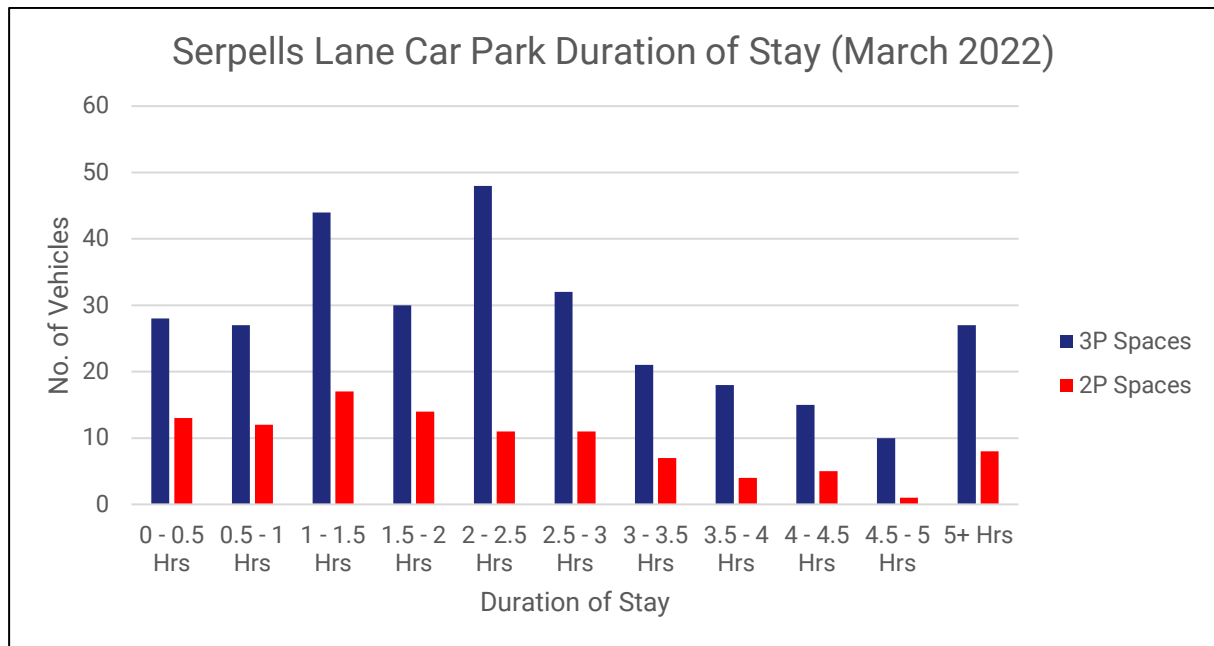


Figure 24: Serpells Lane Duration of Stay Results (March 2022)

Key findings of the March 2022 surveys are as follows:

- 3P spaces – 30% of motorists overstayed the three-hour time limit (including one vehicle parked within the area for the entire survey period).
- 2P spaces – 46% of motorists overstayed the two-hour time limit.

In order to supplement and support the above data, Traffix Group commissioned additional duration of stay surveys on Thursday 15 September 2022, between 7:00am-11:00pm, with results presented at Figure 25.

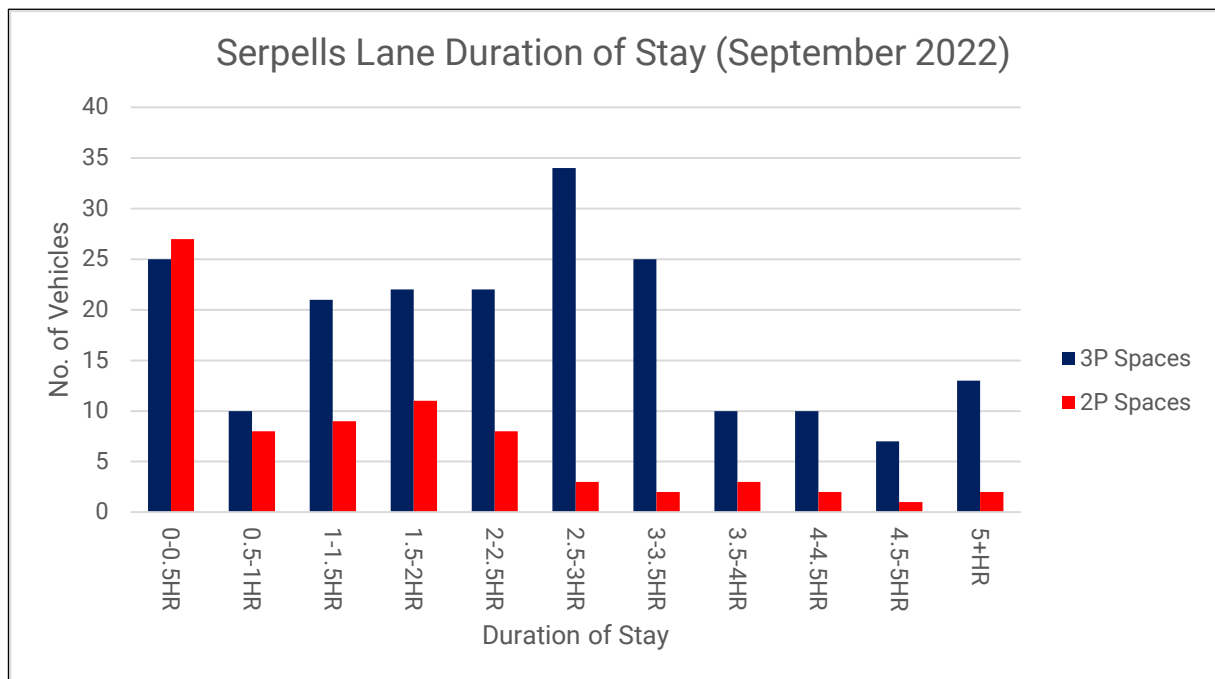


Figure 25: Serpells Lane Duration of Stay Results (September 2022)

Key findings of the September 2022 surveys are as follows:

- 3P spaces – 33% of motorists overstayed the three-hour time limit (including one vehicle parked within the area for the entire survey period).
- 2P spaces – 28% of motorists overstayed the two-hour time limit.
- Pick-up/drop-off – A total of 39 pick-up/drop-off movements recorded across the entire surveys period. That is, limited pick-up/drop-off movements.
- Shuffle<sup>3</sup> parking – Five instances of shuffle parking across the survey period.
- Motorcycle/scooter/bicycle activity – Seven parked or propped across the survey period, were primarily associated with food delivery services.

We note that duration of stay survey findings across the two different survey periods (March and September) are generally consistent, other than parking duration within 2P spaces, and identify that in the order of around 30% of motorists overstay the nominated 2P and 3P car parking restrictions within the survey area. It is also clear from the surveys that there is limited pick-up/drop-off, motorcycle/scooter/bicycle activity within the car park as well as limited 'shuffle' parking by motorists.

<sup>3</sup> 'Shuffle' parking relates to motorists who park their car and then move their car at a point(s) to another a space within the car park, so they are never parked in a single car parking space for longer than the 2P/3P parking restriction.

### 3.2.3. Pedestrian Movement Surveys

Traffic Group commissioned pedestrian movement surveys at the Serpells Lane car park on Thursday 15<sup>th</sup> September 2022 between 7am and 11pm.

The methodology of the surveys is summarised following:

- All car spaces within the car park were assigned a number.
- When a vehicle parked within a car space, the destination of where the pedestrians walked and time that this occurred was recorded.
- When a vehicle departed from the car space, the origin of where the pedestrians walked from and time that this occurred was recorded.
- Pedestrians that did not park but walked-through the car park were also recorded.

Each of the pedestrian routes forming part of the survey are illustrated at Figure 26.

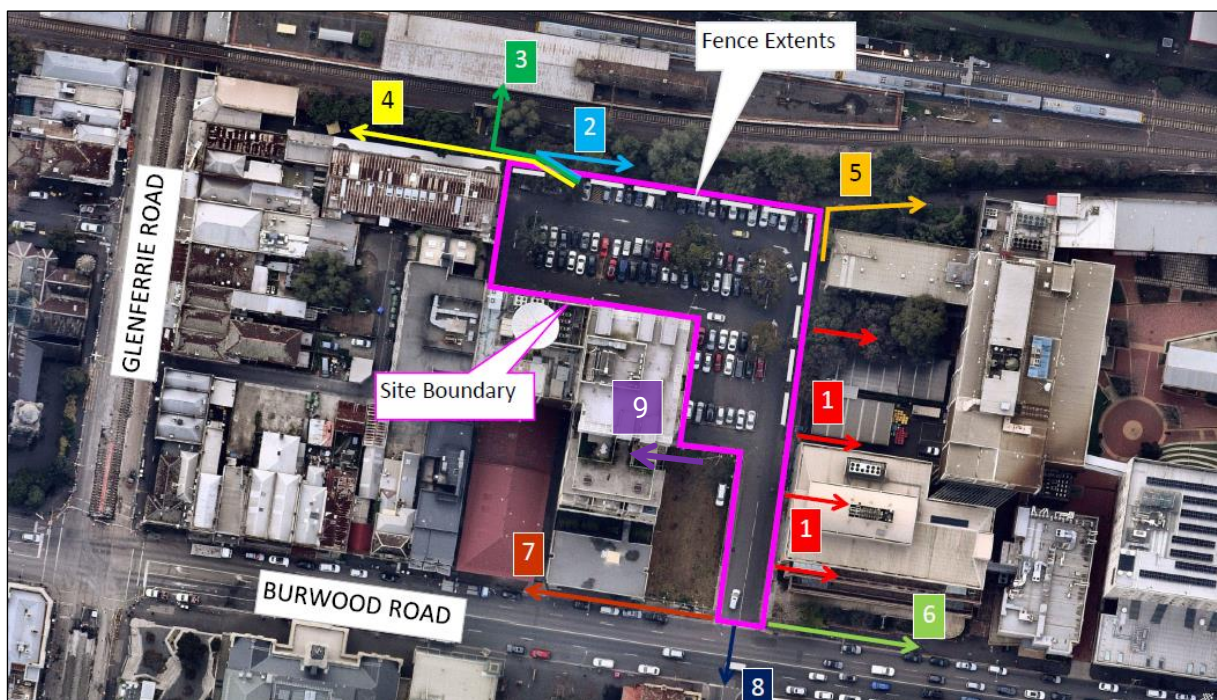


Figure 26: Surveyed Pedestrian Routes

Based on the directionality of pedestrians we can form conclusions as to the likely percentage of car park users who may be attending the Swinburne University Campus as opposed to other uses within the Glenferrie Activity Centre. Additionally, pedestrians who walked through the car park, without accessing a parked motor vehicle, were also recorded separately.

Whilst the specific destination of each pedestrian movement cannot unequivocally be confirmed, we have provided an estimate for the proportion of pedestrians that are likely to travel to/from Swinburne University via each route, as outlined within Table 3.

Table 3: Surveyed Pedestrian Routes

Route Number	Origin/Destination	Swinburne University Proportion
1	Swinburne University (towards Engineering and Science Buildings)	100%
2	Railway Arcade (towards Swinburne University)	95%
3	Railway Arcade (towards Glenferrie Railway Station)	90%
4	Railway Arcade (towards Glenferrie Road)	0%
5	Swinburne University (towards Railway Arcade)	90%
6	Burwood Road (east)	80%
7	Burwood Road (west)	0%
8	Burwood Road (towards Kent Street)	0%
9	Pedestrian Access for 377 Burwood Road	0%

Key results from the pedestrian movement surveys are as follows:

- The majority of pedestrian movements that were surveyed consisted of pedestrians 'cutting through' the car park rather than motorists parking within the car park and travelling to/from other destinations. Specifically, 66% of all recorded pedestrian movements were generated by pedestrians cutting through the car park, with the remaining 34% generated by pedestrians that parked within the car park.
- There was a negligible use of the car park area by motorcycles, cyclists and scooters.
- As shown at Figure 27 and Figure 28, pedestrian route 3 (Railway Arcade towards Glenferrie Railway Station) was the most common walking route for pedestrians. Pedestrian route 1 (Swinburne University) was the second most common origin/destination for pedestrians.
- As shown at Figure 29 and Figure 30, pedestrian routes 1 (Swinburne University) and 3 (Railway Arcade towards Glenferrie Railway Station) were the most popular routes for motorists that parked within the car park, with 28% and 29% of movements originating to/from these locations, respectively.



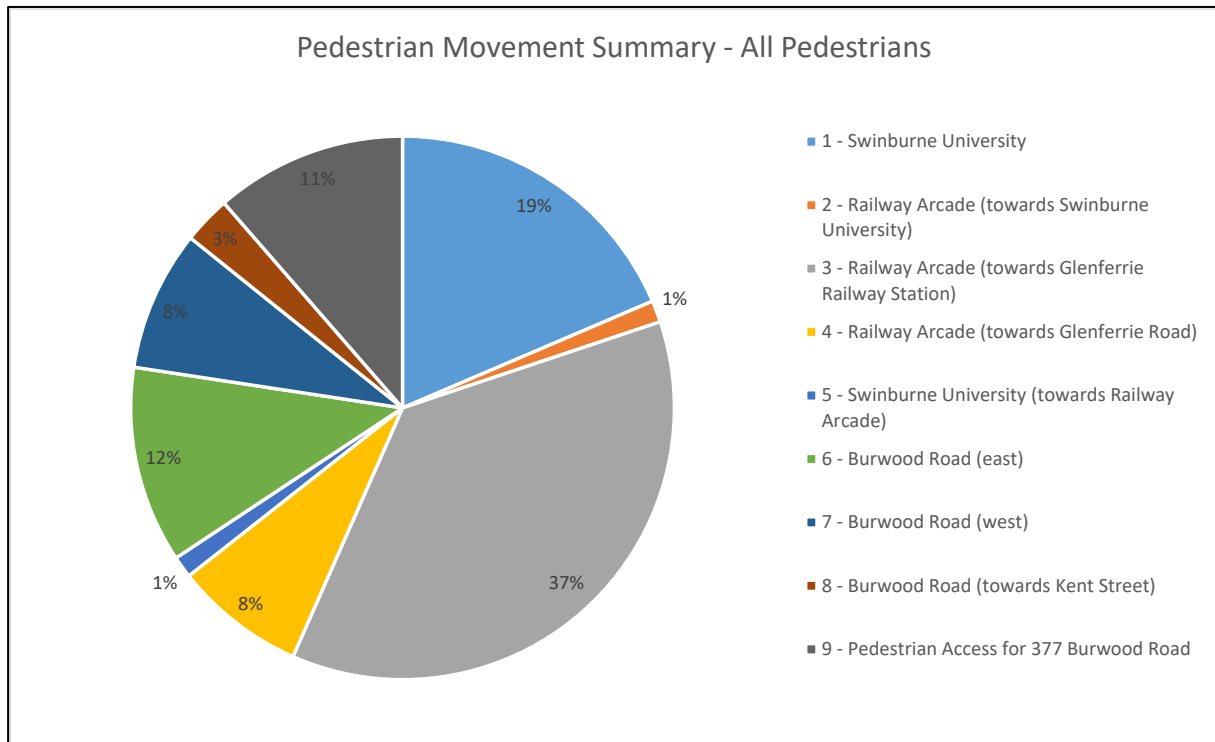


Figure 27: Pedestrian Movement Summary (All Pedestrians)

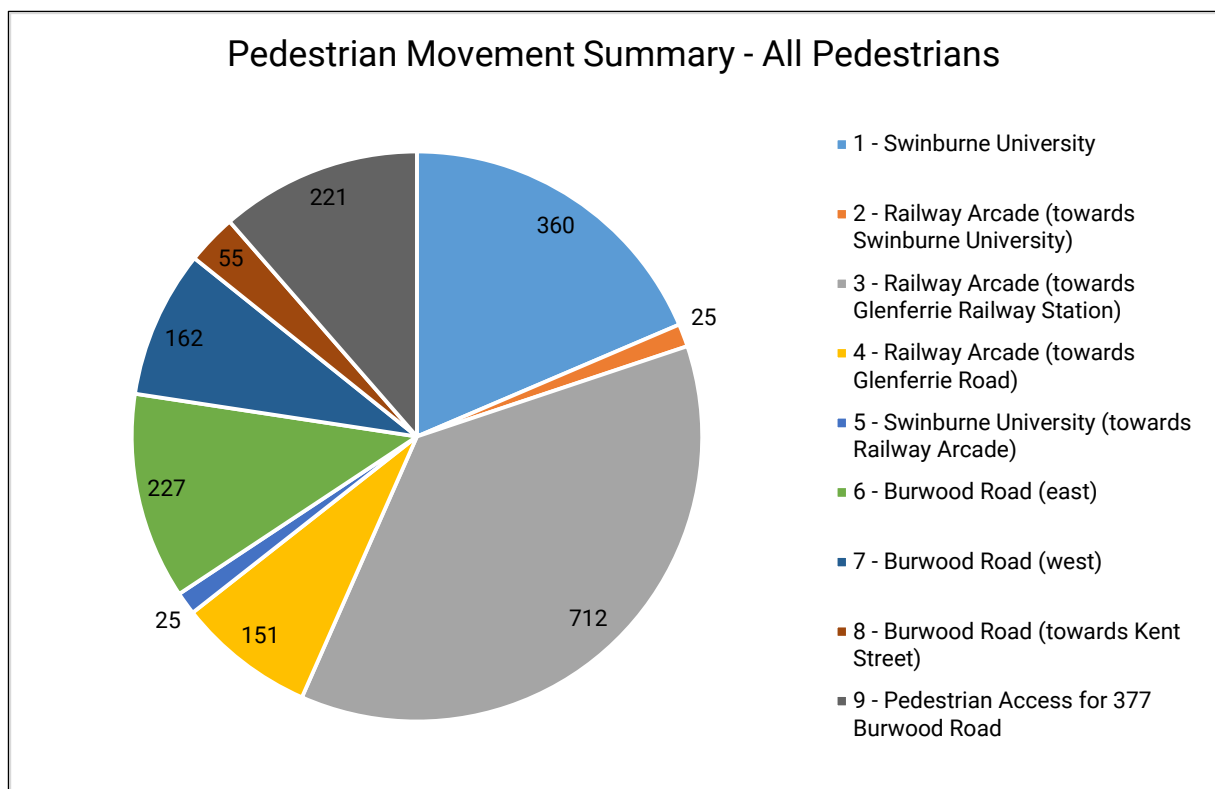


Figure 28: Pedestrian Movement Summary (All Pedestrians) - Number of Movements

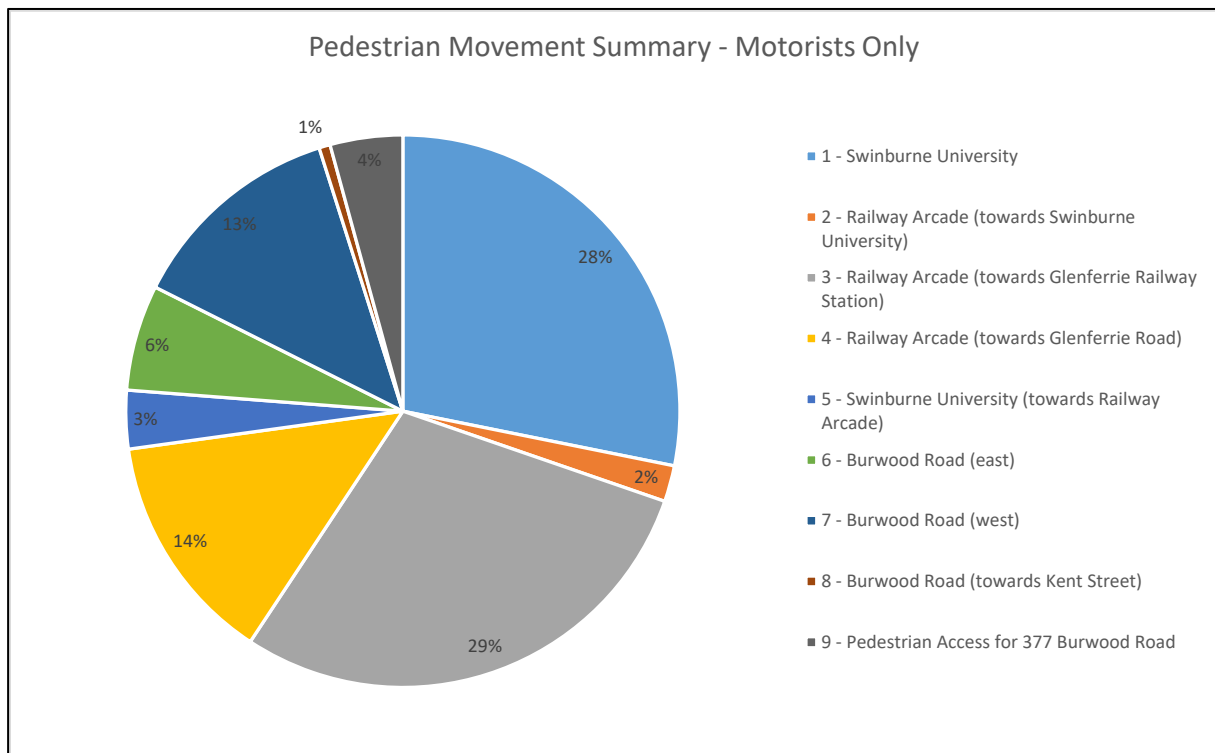


Figure 29: Pedestrian Movement Summary – Parked Motorists Only

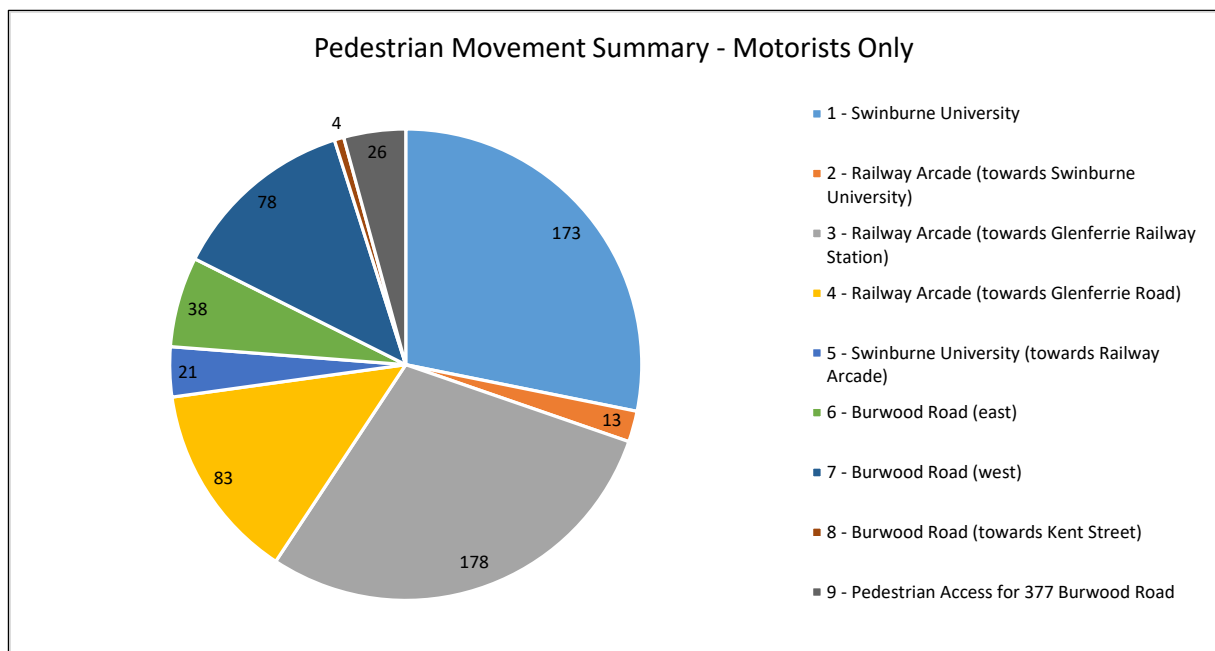
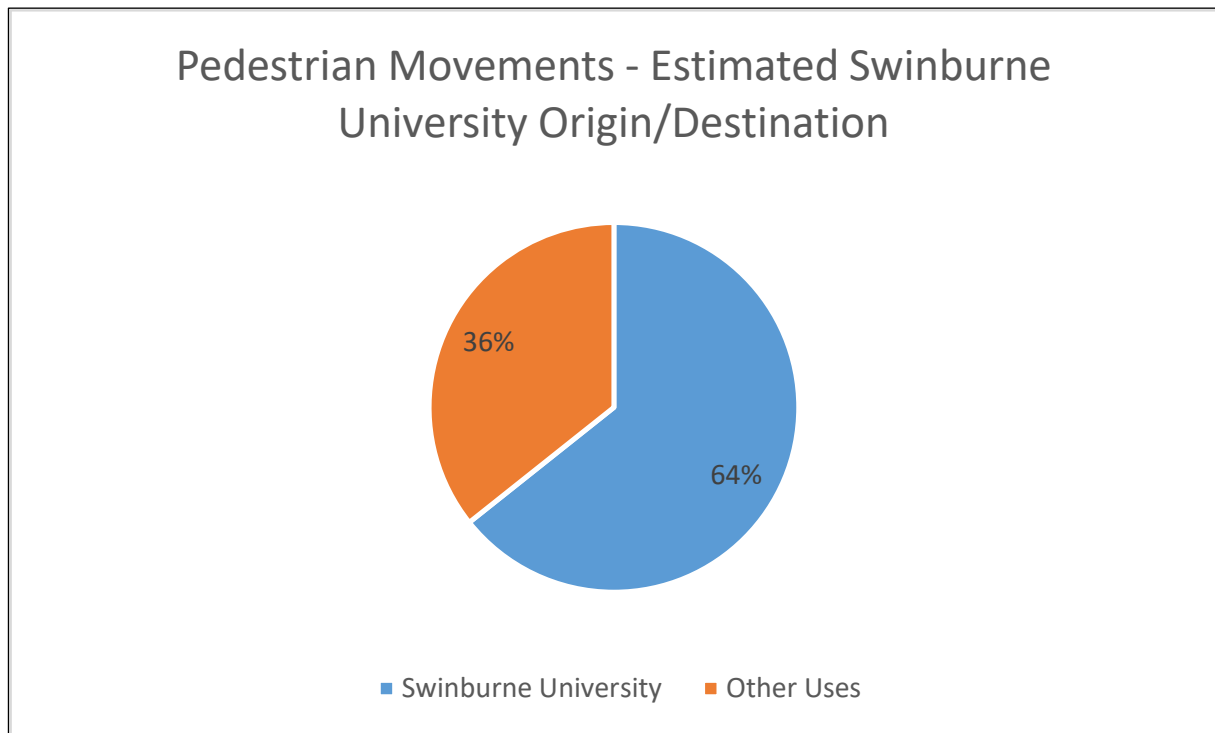


Figure 30: Pedestrian Movement Summary Parked Motorists Only (Number of Movements)

By utilising the above data and the pedestrian distribution assumptions outlined within Table 3, we can derive the estimated split of motorists parked within the car park between Swinburne University users and other general users associated with the Glenferrie Activity Centre.

As shown at Figure 31, it is estimated that there is a 64/36 percent split between Swinburne University users and other general users associated with the Glenferrie Activity Centre. That is, more than half of motorists who park within the Serpells Lane car park (subject site) are accessing Swinburne University.



*Figure 31: Pedestrian Movement Summary (Estimated Swinburne University Origin/Destination)*

Additionally, we have also sought to assess the duration of stay characteristics of motorists accessing Swinburne University vs motorists who are not accessing Swinburne University. Our following duration of stay findings are based upon the following split of motorists:

- Other Users (Non Swinburne) – Pedestrian Routes 4,7,8 & 9
- Swinburne University Users<sup>4</sup> – Pedestrian Routes 1,2,3,5 & 6

The findings of our assessment are outlined within Figure 32 and Figure 33.

<sup>4</sup> Reflects pedestrian routes with an anticipated 80% or greater percentage of users who access the Swinburne University Campus.

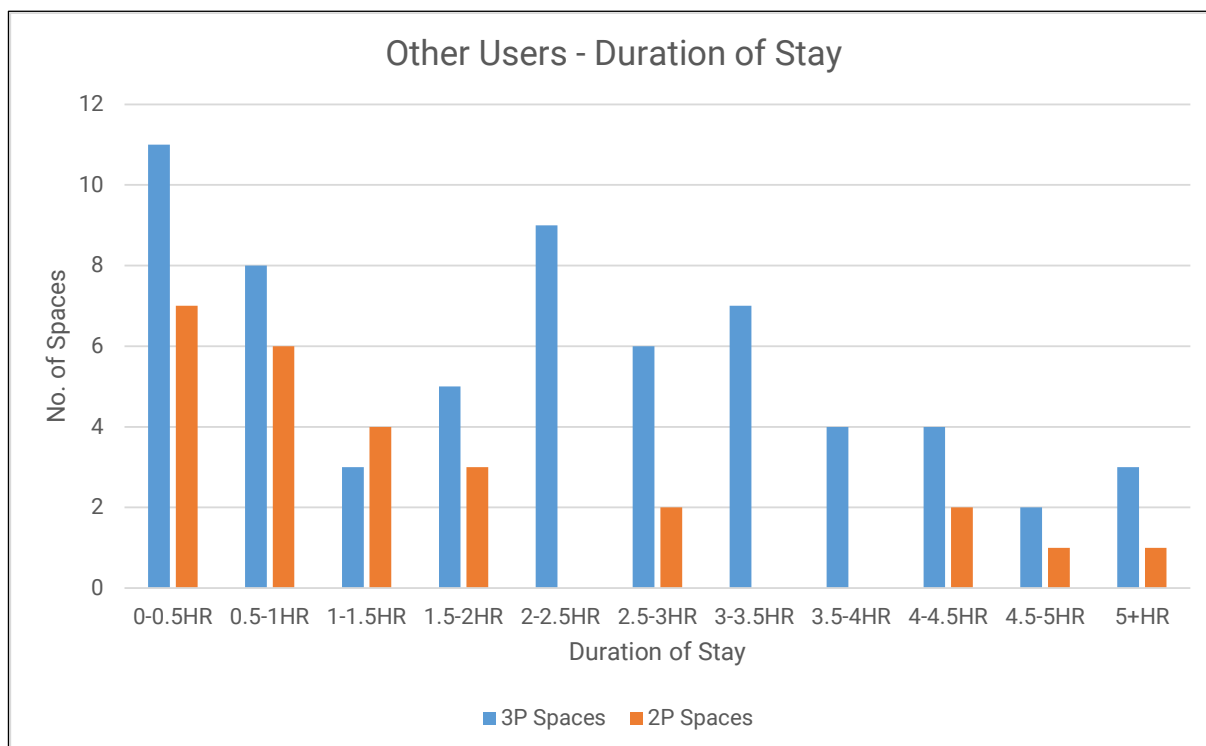


Figure 32: Duration of Stay Summary - Other Users (Non Swinburne)

As shown within Figure 32 the following conclusions are derived.

- 3P spaces – 32% of motorists overstayed the three-hour time limit.
- 2P spaces – 23% of motorists overstayed the two-hour time limit.

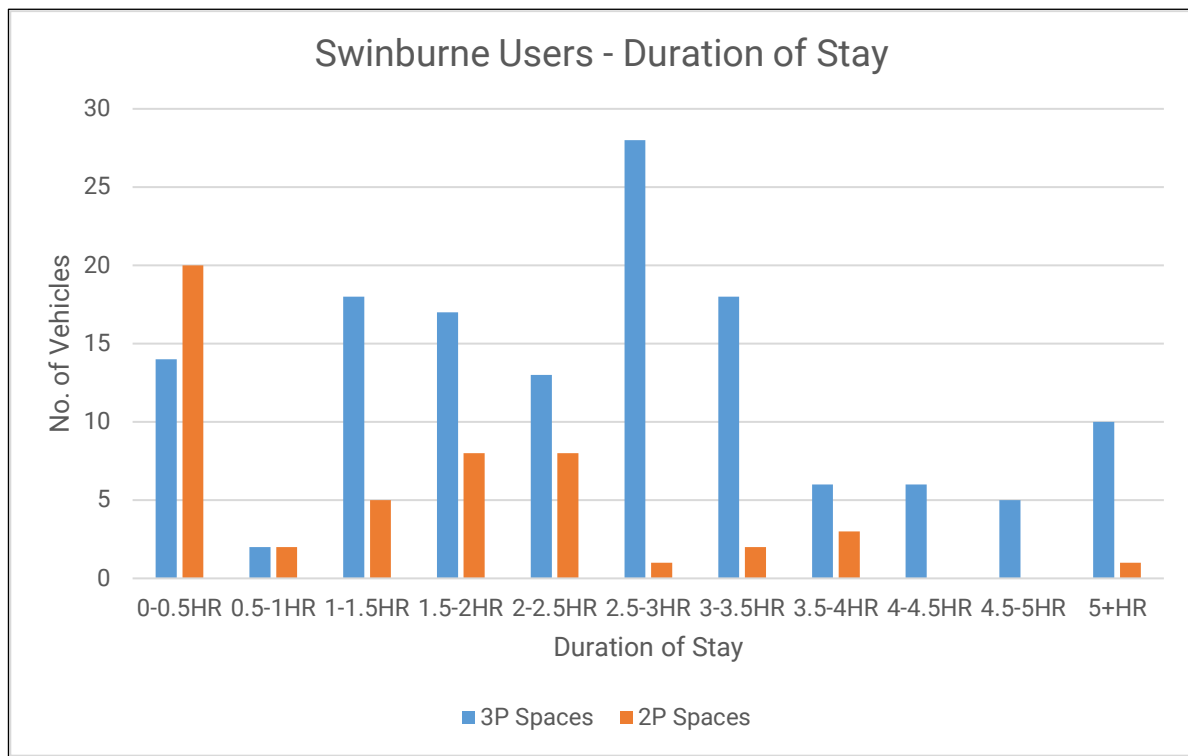


Figure 33: Duration of Stay Summary – Swinburne University

As shown within Figure 33 the following conclusions are derived.

- 3P spaces – 33% of motorists overstayed the three-hour time limit; this compares to 32% of the balance of car park users.
- 2P spaces – 30% of motorists overstayed the two-hour time limit; this compares to 23% of the balance of car park users.

Relative to other users of the car park, it can be concluded that motorists who park and travel to/from Swinburne University overstay car parking restrictions within the subject site at slightly higher levels, but generally consistent with, other users.



## 4. Traffic Engineering Review

### 4.1. Preamble

We have been advised that our assessment is to contemplate a potential future alternate use of the site and the associated transport impact of such a change.

Given this and based upon the above transport survey findings and analysis of the subject site and surrounding area, we have provided a series of recommendations for consideration should such a potential future change occur.

### 4.2. Car Parking Impact

#### 4.2.1. Car Parking Occupancy Assessment

As detailed previously, the Serpells Lane car park currently provides 90 publicly available car parking spaces, of which, some or all may be removed should the use of the site change in future. The removal of these spaces would reduce the publicly available recorded off-street car parking supply, in the Glenferrie Activity Centre, from 1,641 to 1,551 spaces (approximate 6% reduction in the off-street car parking supply).

Figure 34 and Figure 35 illustrate the existing and potential future parking supply and demand, respectively, both figures are inclusive of demands within the Serpells Lane car park.



Figure 34: Total Off-Street Car Parking - Supply vs Demand Summary (Existing Conditions)

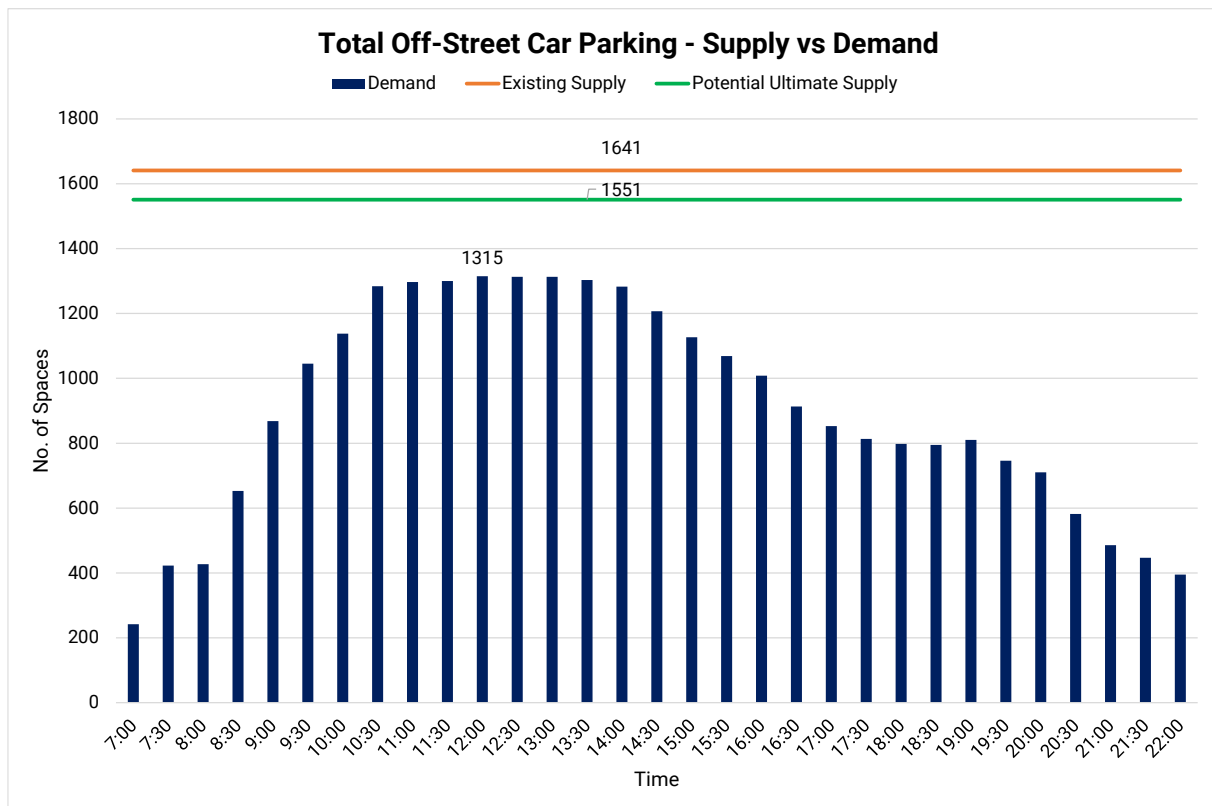


Figure 35: Total Off-Street Car Parking - Supply vs Demand Summary

It is evident that at peak times, the off-street car parks are at or approaching their capacity, particularly car parks that are more centrally located within the activity centre. Notwithstanding, it is recognised that there is temporal variation in these demands across different car parks. As an example, the Wakefield Street, Hilda Crescent and Glenferrie Centre car parks peak during the daytime with moderate demands during the evening whereas the Liddiard Street and Linda Crescent car parks have moderate demands during the daytime and are at capacity during the evening period.

The car parking surveys undertaken in 2019 and 2022 of the Serpells Lane car park (subject site) indicated that the car park is at or very close to capacity during the weekday midday peak period, which coincides with the overall peak occupancy of the entire parking supply of the Glenferrie Activity Centre (which occurred at 12:00pm<sup>5</sup>).

Accordingly, as shown within Figure 35, if we assume all motorists parked within the Serpells Lane car park are displaced to other off-street car parks within the survey area the peak occupancy increases from 80% (demand of 1,315 spaces, supply of 1,641 spaces) to 85% (demand of 1,315 spaces, supply of 1,551 spaces) with any potential future removal of car parking within the Serpells Lane car park.

In other terms, from a purely numerical perspective, the displaced demands from the potential loss of 90 publicly accessible car parking spaces within the subject site could be absorbed within the surrounding car parking supply, at peak times. That is, following any potential removal of car parking within the Serpells Lane car park there would be just over 200 vacancies within off-street parking areas.

### 4.2.2. Car Parking Demand Displacement

The Serpells Lane car parking spaces are the most proximate 2P and 3P off-street spaces for the Glenferrie Activity Centre that are free. Generally, other off-street car parks in the activity centre allow for one hour of free parking, then require a ticket for additional time.

There is clearly a demand for long-term car parking within the activity centre, as many motorists that parked within the Serpells Lane car park overstayed the restrictions. Long-term parking is currently available within the Hilda Crescent and Wakefield Street Car Park, where ticketed all-day parking is available.

The current management of on-street car parking in the Activity Centre with short-term and permit zone restrictions means that some motorists that previously overstayed within the Serpells Lane car park may choose to risk receiving a fine, or continually shuffle their car throughout the day, rather than park in nearby off-street ticketed car parks.

The pedestrian movement surveys indicated that 64% of motorists that parked within the Serpells Lane Car Park likely travelled to/from Swinburne University. These motorists currently park within the Serpells Lane car park due to its proximity to the campus and free medium-term parking restrictions. Whilst the Swinburne multi-deck car park provides long-term parking, given that it is ticketed, students/staff may be less likely to choose to park within this car park. Many of the other off-street car parks in the Activity Centre also offer paid parking (i.e. including the Liddiard Street and Wakefield Street car parks which are located in close proximity to the Swinburne University campus), therefore any displaced university students and staff may park on-street<sup>5</sup> or within unpaid off-street parking as an alternative.

There is not a 'clear cut' answer as to the impact and best way to treat the displacement of users of the subject site. The subject site is located within an urban Activity Centre, as such, car parking theory would dictate that parking within the area is very much a proposition of 'build it and they will come'. That is, an abundance of medium to long-term car parking, particularly free parking, would likely induce additional car parking demands. Whereas the restriction of medium/long-term free car parking in the area, generally consistent with current restrictions, forces users of the area to either consider alternate transport modes or places a price on medium/long-term car parking.

Additionally, in our view, and in the context of an urban Activity Centre, it would generally not be considered that the occupation of the majority (approx. 64%) of a Council car park by users of a nearby educational facility would be considered as an 'optimal' utilisation of scarce car parking resources within the area. Notwithstanding, the allocation and priority of scarce car parking resources within the Centre is a matter for Council, having regard to the user group needs and their hierarchy.

The removal of the car park will also result in the loss of three 'loading zone' spaces. These spaces will likely need to be relocated to nearby on-street car parking spaces (i.e. on Glenferrie Road or Burwood Road) to continue to service the nearby area. A Flexicar car share

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<sup>5</sup> It is noted that on-street car parking in the vicinity of the site is subject to short-term parking restrictions during the daytime, up to 2P in duration, also noting that permit zones are provided on a number of streets.

vehicle is also located within the car park, which will likely require relocation to an on-street car parking space.

### 4.3. Pedestrian Impact

The results of the pedestrian movement surveys identified that there are two main sources of pedestrian movements, being Swinburne University and towards the Glenferrie Railway Station (likely including the station itself, the northern portion of the Swinburne University campus and the general Activity Centre area surrounding it).

In the event that future pedestrian access is prevented through the Serpells Lane car park, or along its eastern boundary, the most notable change to pedestrian routes will be for pedestrians travelling between Glenferrie Railway Station and Burwood Road (with the intention of travelling further to the east along Burwood Road). This movement was undertaken by 12% of all pedestrians during the surveys, with these pedestrians instead required to travel via Glenferrie Road, as shown within Figure 36, increasing their travel distance by in the order of 150m (noting that this assumes pedestrians will not travel through Swinburne University itself).

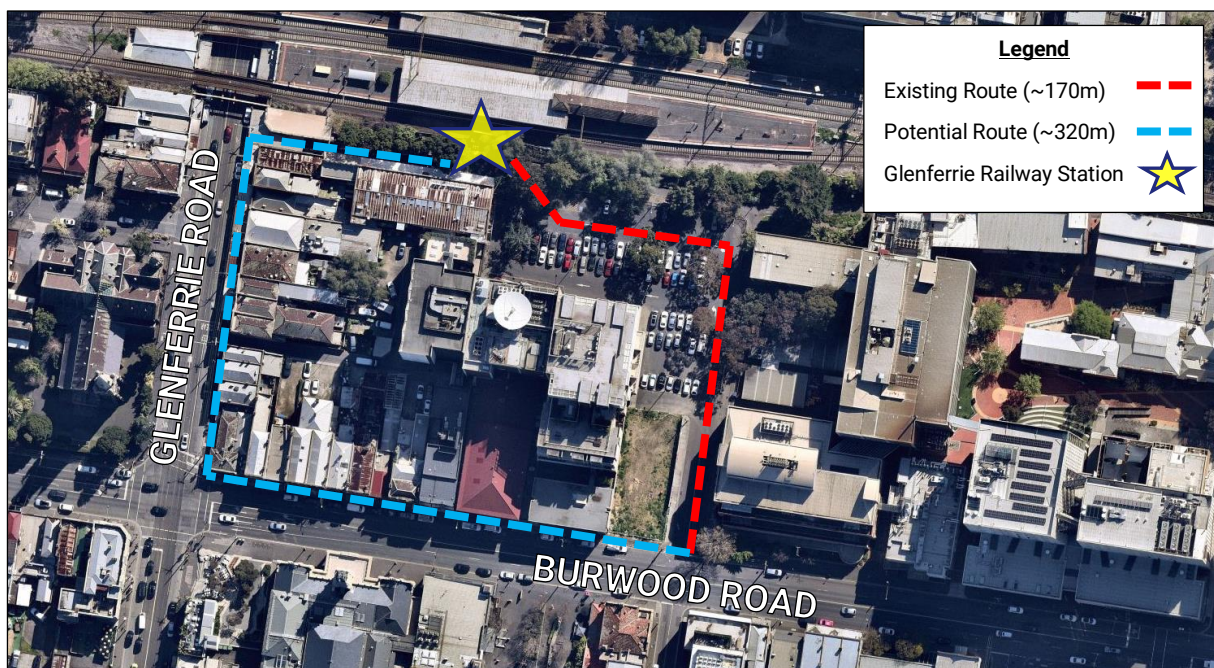


Figure 36: Glenferrie Railway Station – Burwood Road Pedestrian Routes Summary

Whilst we are not suggesting that the arrangements within Figure 36 would or should occur, we use this to highlight the impact of restricting pedestrian access through the subject site. Given the number of pedestrians who were recorded to 'cut through' the car park, being roughly double the number of motorists using the car park (1,324 cut through pedestrians compared to 614 pedestrians travelling to/from parked cars within the site), we would strongly recommend that a pedestrian link between Burwood Road and Railway Arcade be maintained either partially or fully through or adjacent to (east of) the subject site.

It is noted that pedestrian access between Swinburne University, Glenferrie Railway Station and Glenferrie Road will be maintained along Railway Arcade to the north of the Serpells Lane car park.

Pedestrian access to 660 Glenferrie Road and 367-369 Burwood Road will also need to be maintained in the event of any future development within the car park.

### 4.4. Recommendations

Having regard to the above analysis and discussions regarding the impacts to motorists and pedestrians, Table 4 outlines a series of recommendations should there be any future alternate use of the site. The below recommendations are non-binding but rather form a series of relevant considerations for Council should there be such a change of use.

*Table 4: Future Transport Recommendations*

Recommendation	Rationale
Maintain pedestrian link between Railway Arcade to Burwood Road either partially or fully through the site or adjacent to (east of).	Strong utilisation of subject site as a 'cut-through' for pedestrians. Any removal/use of the subject site as a 'cut through' would require pedestrians to go 'around the block' and add some 150m to pedestrian routes between Glenferrie Railway Station and Burwood Road.
Provide on-street 'loading zone' spaces in lieu of on-street car parking spaces on Burwood Road and/or Glenferrie Road to replace displaced bays within subject site.	The loss of three loading zone spaces within the Serpells Lane car park should be re-introduced as on-street spaces to assist with loading / deliveries of nearby uses.
Consider opportunities to provide additional on or off-street disabled car parking in the area.	The removal of disabled car parking spaces within the subject site.
Relocate Flexicar car space to nearby off-street car park or on-street car space.	The removal of the car share space within the subject site, noting that this would be via an agreement (as per current arrangements) between the operator and Council.
Maintain existing pedestrian and vehicle access arrangements to abutting properties, as required.	The retention of such links will be subject to not only practical considerations but existing land title or similar easement/legal agreements which exist upon the subject site and surrounding land parcels.

As outlined within a Table 4, a series of recommendations for Council's consideration are made. Whilst not listed above, a number of additional matters were also considered but not considered warranted on the basis of the survey data, analysis and discussions presented in this report. For completeness, we note these matters as follows:

- Additional pick-up/drop-off parking.
- Additional motorcycle/scooter/bicycle parking.



- Changes to surrounding car parking restrictions/supply.

With respect to car parking supply/restrictions within the surrounding area, 'numerically', the subject site's car parking demands can be displaced within the surrounding car parking supply, albeit this would result in a congested car parking network becoming more congested.

Specifically, as shown within Figure 35, if we assume all motorists parked within the Serpells Lane car park are displaced to other off-street car parks within the survey area the peak occupancy increases from 80% (demand of 1,315 spaces, supply of 1,641 spaces) to 85% (demand of 1,315 spaces, supply of 1,551 spaces) with any potential future removal of car parking within the Serpells Lane car park.

In other terms, from a purely numerical perspective, the displaced demands from the potential loss of 90 publicly accessible car parking spaces within the subject site could be absorbed within the surrounding car parking supply, at peak times. That is, following any potential removal of car parking within the Serpells Lane car park there would be just over 200 vacancies within off-street parking areas.

The suitability, or otherwise, of the car parking provision and restrictions within the broader Activity Centre, and the extent to which medium/long-term car parking is provided is a strategic matter for Council.

## 5. Conclusions

Having undertaken a detailed traffic and parking impact assessment of the Serpells Lane car park, we note the following:

- a) On and off-street car parking within the Glenferrie Activity Centre is generally approaching or at capacity at peak periods.
- b) The Wakefield Street, Kent Street, Hilda Crescent and Glenferrie Centre car parks peak during the daytime with moderate demands during the evening whereas the Liddiard Street and Linda Crescent car parks have moderate demands during the daytime and are at capacity during the evening period.
- c) On-street car parking is also generally in high demand, with peaks coinciding with the lunchtime and evening periods.
- d) The existing Serpells Lane car park accommodates 90 unpaid spaces, which are generally subject to 2P and 3P restrictions.
- e) The Serpells Lane car park is well utilised with high occupancy (90% plus) during peak periods, which generally occurs across the entire weekday daytime period.
- f) Approximately 64% of all motorists parking within the Serpells Lane car park are associated with Swinburne University.
- g) In the order of 30% of motorists within the Serpells Lane car park overstay the time-based parking restrictions. Motorists who park and travel to/from Swinburne University overstay car parking restrictions within the subject site at slightly higher levels, but generally consistent with, other users.
- h) If we assume all motorists parked within the Serpells Lane car park are displaced to other off-street car parks within the survey area the peak occupancy increases from 80% (demand of 1,315 spaces, supply of 1,641 spaces) to 85% (demand of 1,315 spaces, supply of 1,551 spaces) with any potential future removal of car parking within the Serpells Lane car park.
- i) From a purely numerical perspective, the displaced demands from the potential loss of 90 publicly accessible car parking spaces within the subject site could be absorbed within the surrounding car parking supply, at peak times. That is, following any potential removal of car parking within the Serpells Lane car park there would still be just over 200 vacancies within off-street parking areas.
- j) Numerically, the Serpells Lane car park demands can be displaced within the surrounding car parking supply, albeit this would result in an already congested car parking network becoming more congested. The suitability, or otherwise, of the car parking provision and restrictions within the broader Activity Centre, and the extent to which medium/long-term car parking is provided is a strategic matter for Council.
- k) Surveys of pedestrian movements through the Serpells Lane car park identified that the majority of pedestrians travel to/from Railway Arcade (towards the northern portion of Swinburne University, Glenferrie Railway Station and the Activity Centre) and the southern portion of Swinburne University.



- l) Approximately double the number of pedestrians 'cut through' the Serpells Lane car park compared with those pedestrians associated with travelling to/from vehicles parked within the car park itself.
- m) A series of recommendations are provided should there be any future alternate use of the site. These recommendations are non-binding but rather form a series of relevant considerations for Council should there be such a change of use.