304-322 Main Street, Lilydale
Mixed Use Development
Traffic Impact Assessment

Prepared by Movendo Pty Ltd
For 304-322 Main Street Pty Ltd
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1 INTRODUCTION

This Traffic Impact Assessment (TIA) report has been prepared by *Movendo Pty Ltd* in support of a planning permit application for a proposed multi-level mixed-use development on a site at 304-322 Main Street, Lilydale. The planning permit application was originally submitted on 12 October 2022 and there have since been ongoing discussions with Council on how to best optimise development of this site.

An earlier Traffic Impact Assessment report was prepared for this site on 27 August 2022 (the "August 2022 TIA"). This latest TIA report represents an update of the August 2022 TIA and addresses a revised design which forms part of the same 2022 planning permit application.

The site is located within the Lilydale Major Activity Centre. The proposed application includes demolition of an existing building and the construction of a new multi-level structure with a range of proposed uses, as detailed in Table 1. There are 88 on-site car parking spaces and 16 bicycle parking spaces – in support of the proposed uses.

Table 1: Proposed Development Components

Development Component	Space Proposed
Childcare Centre	1,297 m² (internal) and 921 m² (external) of gross floor area (130 children)
Food & Drink	248 m² of gross floor area
Shop	300 m² of gross floor area (labelled 'Pharmacy' on development plans)
Medical Centre	1,020 m² of gross floor area (labelled 'GP Practice/Radiology/Precision Health' on development plans)
Office	1,395 m² of gross floor area

The following report provides an assessment of the traffic and parking implications of the proposed development. More specifically, this report includes an assessment of the following:

- The provisions of the Yarra Ranges Planning Scheme in so far as they relate to carparking and the appropriateness of the off-street carparking supply;
- Suitability of the proposed parking in terms of layout; and
- Likely traffic impacts.

This report concludes that there are no traffic engineering reasons why the proposed development should not be allowed. In particular:

- The development provides **adequate parking**, as there is sufficient justification to recognise that the proposed **88-space parking supply** generally **satisfies the development's parking needs** and justifies a part waiver of the statutory parking requirement under the Yarra Ranges Planning Scheme – once the legitimate Planning Scheme considerations for reducing the statutory car parking requirement are taken into consideration.
- The **parking layout** is **satisfactory** as it accords with the design guidelines set out in the Yarra Ranges Planning Scheme and Australian Standard AS2890.1.
- The overall **traffic volume generated** by the development can be **readily accommodated** at the subject site's Hardy Street access point and on the surrounding road network with the **traffic impact** expected to be **insignificant** and with **no adverse impacts expected on road network performance**.

It is particularly relevant to note that the 'Car Parking Demand Assessment' undertaken for this study has identified that the proposal is well placed to operate with the proposed levels of carparking by virtue of the:

- Likelihood of **'trip linking' or 'multi-purpose trips' occurring** in the Lilydale Major Activity Centre – where a person arrives at the centre for one purpose and uses the opportunity to visit one or more other establishments in the centre.
- Distinct **variation of car parking demand over time** (particularly between peak childcare pick-up / drop-off and the medical centre uses). As car parking demand for these each land uses peaks at different times, the car parking spaces that are provided can be used more efficiently (and less spaces are needed) as they can be shared and service visitors to different land uses at different times.
- Availability of **excellent public transport access** (multiple existing bus routes immediately adjacent to the site and a major train station within easy walking distance).
- Existence of **effective pedestrian and bicycle networks** servicing the Lilydale Major Activity Centre and the generous supply of on-site bicycle parking – in satisfaction of the minimum Planning Scheme requirements.
- The likely anticipated **low car ownership rates of future workers, customers and visitors to the subject site** as demonstrated by 2016 and 2021 Census data for the Lilydale area.

It has also been established that there is **abundant spare on-street parking capacity at all times on a weekday** to accommodate any unusual unforeseen spikes in demand that may occur. The proposed level of on-site parking is also **consistent with Council's suite of strategic guidance documents** – which collectively aim to **moderate car dominance and promote walking, cycling and public transport use as viable and preferable alternatives** – supporting the creation of a **vibrant, safe and sustainable Lilydale Major Activity Centre**. Within this comprehensive sustainable transport policy context, the proposed development's imperative is to contribute an outcome that supports low car dependency and optimises use of active transport and public transport. It has also been established that the parking supply that is proposed for the development is consistent with Yarra Ranges Council's transport objectives and desires, as expressed through its municipal-wide 'Connected' strategy (which is Yarra Ranges' Integrated Transport Strategy 2020-2040). 'Connected' recognises the imperative of reducing car dependency and has set ambitious targets to reduce the proportion of trips undertaken by car for all trip purposes. 'Connected' identifies that just **over half of all car trips in Yarra Ranges are less than 3km**. Whilst acknowledging that some of these trips will need to be done by car, 'Connected' also point out that there are **many that could be easily completed by walking (less than 1km) or cycling (less than 3km)** if the right infrastructure was provided. To this end, 'Connected' commits to "*expanding the current walking and cycling network to allow people the opportunity to walk and cycle*". In addition, Council has also formulated a formal vision for the Lilydale Major Activity Centre, as articulated in Council's Lilydale Place Plan 2020 which outlines actions to develop and embed sustainable transport choices – aimed at increasing walking and reducing car-dependence and congestion.

In summary, Council's suite of strategic guidance documents clearly set out to moderate car usage and promote walking, cycling and public transport use as viable and preferable alternatives – supporting the creation of a vibrant, safe and sustainable Lilydale Major Activity Centre. Within this comprehensive sustainable transport policy context, the proposed development's imperative is to contribute an outcome that supports low car dependency and optimises use of active and public transport.

Finally, a traffic impact analysis has revealed that the overall **traffic consequences** arising from the development are expected to be **insignificant**. The additional traffic movements forecast on surrounding roads and at all the key intersections near the subject site are exceptionally low and thus **no adverse traffic impacts on intersection performance are expected**. Monitoring of existing conditions confirms that all intersections exhibit reasonable spare capacity and are capable of adequately satisfying the traffic demand generated by the development.

Therefore, in view of the above considerations, there are no traffic engineering reasons why the proposed development at 304-322 Main Street, Lilydale should not be approved.

2 EXISTING CONDITIONS

2.1 LOCATION

The development site at 304-322 Main Street is located in the commercial/retail heart of the Lilydale Major Activity Centre – on the south side of Main Street, west of Anderson Street, as shown in Figure 1. The site enjoys excellent links to public transport services.

Figure 1: Subject Site – Locality Plan

2.2 PEDESTRIAN & CYCLING CONDITIONS

The subject site is easily accessible by a complete, continuous and well-maintained footpath network linking to surrounding residential and commercial areas, and to a comprehensive network of public transport services centred at Lilydale Station. In addition to the comprehensive walking infrastructure found on Main Street, all other streets in the general vicinity feature well maintained footpaths on both sides. Cycling conditions are not as convenient, given the mildly undulating topography in the subject site's catchment and scarcity of bike lanes. These conditions are not necessarily conducive to high levels of cycling in Lilydale – though numerous cyclists were observed travelling to/from and through the Lilydale Major Activity Centre during the extensive field work undertaken during the preparation of this report.

2.3 PUBLIC TRANSPORT ACCESSIBILITY

The subject site is easily accessed by public transport, principally via a number of bus and train services, as shown in Figure 2. The new Lilydale railway station and wider precinct improvements were completed in 2022 (as part of the Level Crossing Removal Project). The upgraded station offers an enhanced passenger experience with station access off both sides of Main Street / Maroondah Highway – only around 600 metres walking distance from the subject site. The upgrade of the station precinct is shown in

Figure 3: Lilydale Station Precinct Upgrade (completed in 2022)

.

In addition to trains departing from Lilydale Station towards the central city, the station also acts as a major bus interchange, providing a connection for eleven local and metropolitan bus routes. A number of those bus routes (663, 679, 680, 683, 685 and FlexiRide) travel along the Main Street frontage of the subject site, with stops located immediately along the subject site's frontage and with pedestrian access across Main Street facilitated by pedestrian signals.

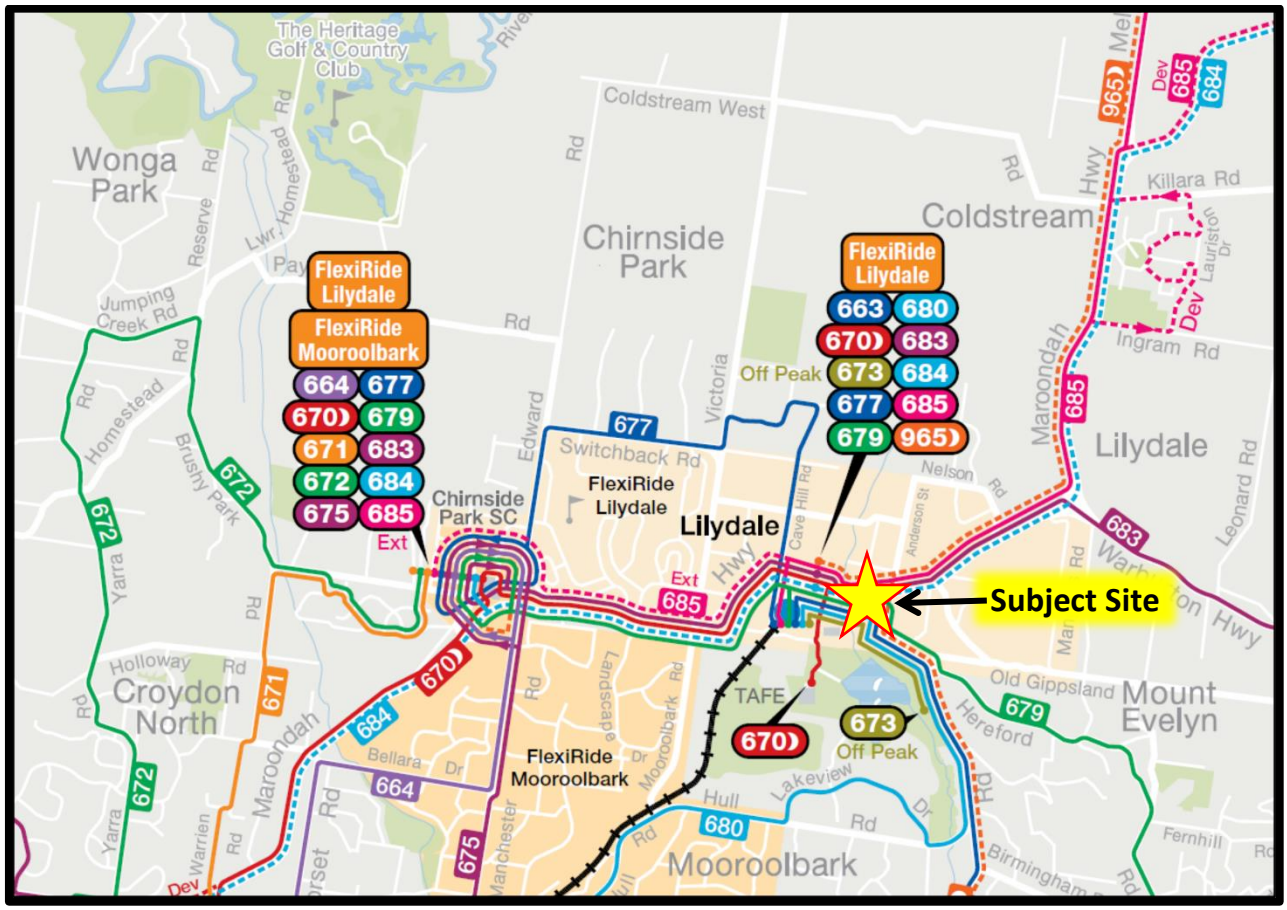


Figure 2: Public Transport Services in vicinity of the Subject Site

Figure 3: Lilydale Station Precinct Upgrade (completed in 2022)

Details of the bus routes that service Lilydale Activity Centre and travel past the subject site, are as follows:

- Route 663 (Belgrave – Lilydale via Kallista, The Patch, Monbulk, Mt Evelyn) – provides a service between Belgrave and Lilydale. It departs from the terminus at Lilydale Station and initially runs via Maroondah Hwy, travelling immediately in front of the subject site, then turning into Anderson St, to head to Belgrave Station.
  It is a seven-day operation. On weekdays the peak period service frequency reaches 13 minutes at the busiest demand times and is, typically, 30 minutes throughout the remainder of both the AM and PM periods.
- Route 679 (Ringwood – Chirnside Park) – This route links Ringwood to the Chirnside Park Shopping Centre to Ringwood, and also services Lilydale Station and runs past the development on Maroondah Hwy, travelling immediately in front of the subject site, then turning into Anderson St.
  It is a seven-day operation. On weekdays the peak period service frequency reaches 12 minutes at the busiest demand times and is, typically, 20-25 minutes throughout the remainder of both the AM and PM periods.
- Route 680 (Lilydale Station – Mooroolbark) – This route links Lilydale Station to Mooroolbark Railway Station travelling via Lilydale East Estate and Lakeview Estate. It also runs past the development on Maroondah Hwy, travelling immediately in front of the subject site, then turning into Anderson St.
  It is a five-day (weekdays-only) operation. The weekday peak period service frequency is, typically, around 30 minutes in both the AM and PM periods.

- Route 683 (Chirnside Park Shopping Centre – East Warburton) – This route travels via Lilydale Station, Seville and Yarra Junction. Some services operate via local schools and others feature route deviations and route extensions.
  It is a seven-day operation. The weekday peak period service frequency is, typically, around 30 minutes in both the AM and PM periods.
- Route 685 (Lilydale – Healesville) – This route travels via Lilydale Station & Coldstream & Yarra Glen.
  It is a seven-day operation. The weekday peak period service frequency is, typically, around 30 minutes in both the AM and PM periods.
- FlexiRide – This is a new on-demand service which commenced operation in October 2021. This service is designed to help local residents get to work, local shopping centres and transport hubs. FlexiRide has no fixed route and only operates when booked. Passengers can book a trip using the FlexiRide app. Passengers can start a trip from anywhere within the service area either to or from the designated "FlexiRide bus hubs" (Lilydale Station, Lilydale Shopping Precinct or Chirnside Park Shopping Centre). The service area is shown in Figure 4. Service operating hours are:
  - 6am – 8pm Monday to Friday
  - 8am – 6pm Saturday

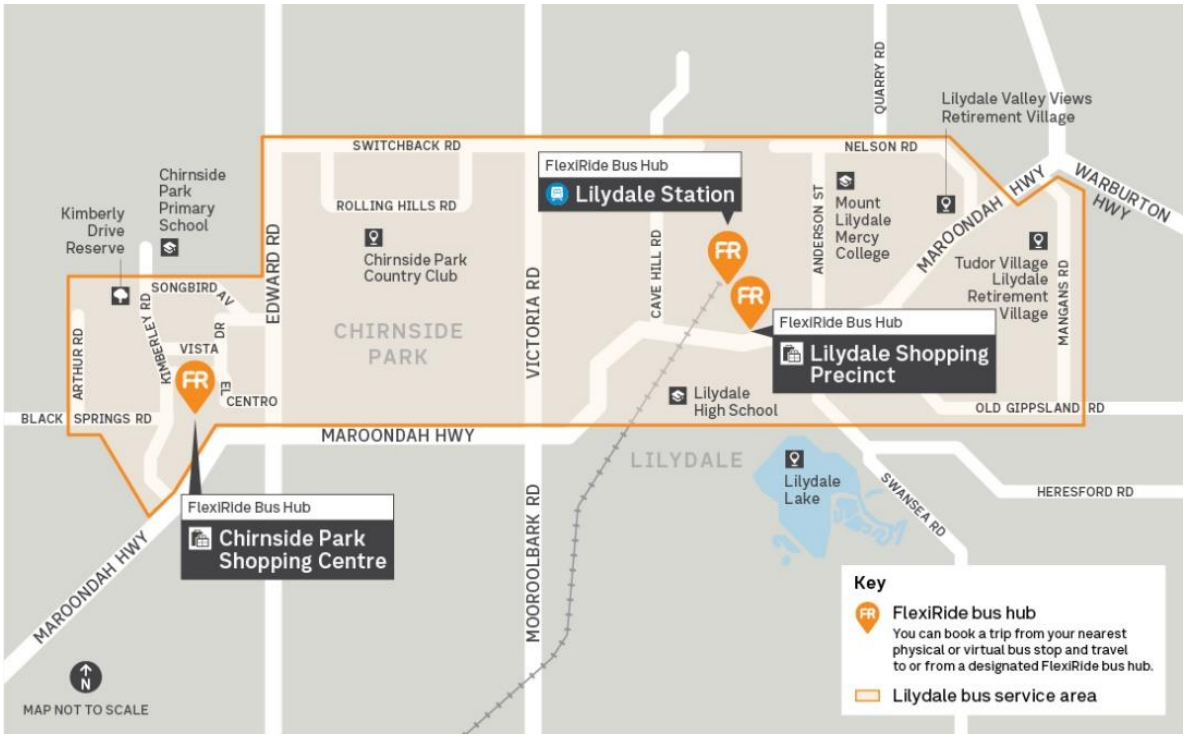


Figure 4: Service Area for FlexiRide Lilydale

2.4 PARKING SURVEYS

Parking surveys were conducted on Wednesday 7 February 2024 over a 4-hour period, between 10:00am to 2.00pm, in the area surrounding the subject site (shown in Figure 5). These surveys were designed to validate earlier surveys conducted on Wednesday 1 December 2021 over an 11-hour period, between 7:00am to 6.00pm. The 4-hour period surveyed in February 2024 was selected as it was the busiest period in December 2021. Thus, the principal aim of the surveys was to establish whether conditions had remained similar over the 2-year period that has elapsed since December 2021. In each instance, Wednesday was selected as it represents a 'typical day' when the future 'childcare', 'shop', 'pharmacy', 'medical centre' and 'office' uses are likely to be operating at representative levels of activity and also the time when other nearby activities would experience normal customer visitation.

A total of 237 spaces parking spaces was surveyed, within a short walking distance of the subject site – of which 228 spaces are publicly accessible. The remaining 9 parking spaces comprise 4 disabled parking spaces, 4 loading zones and a mail zone (in front of the Post Office). The 228 publicly accessible parking spaces are the focus of this assessment and are governed by the following time restrictions:

Main Street (south side) in vicinity of subject site – 116 spaces

- 15-minute limit parking = 6 spaces
- 1 hour limit parking = 41 spaces
- 2 hour limit parking = 41 spaces
- 4 hour limit parking = 28 spaces

Main Street (north side) – 92 spaces

- 15-minute limit parking = 6 spaces
- 1 hour limit parking = 53 spaces
- 2 hour limit parking = 33 spaces

Clarke Street – 20 spaces

- 1 hour limit parking = 20 spaces

The parking spaces are located in the area shown in Figure 5.

Figure 5: Area Covered by Parking Surveys

The parking occupancy findings from Wednesday 1 December 2021 surveys (between 7.00am and 6.00pm) are shown in Table 2, in Figure 6 (full survey area) and Figure 7 (the south side of Main Street – where the subject site is located).

The table and images highlight that the number of occupied on-street parking spaces in the vicinity of the subject site is modest throughout the day – rarely exceeding 60%. Most of the parking demand occurs between 10am and 4pm. The parking demand drops sharply in the late afternoon and by 6.00pm it is very low.

Table 2: On-street Parking Survey Results December 2021 – Occupancy on a Typical Weekday

Street	Parking Supply	Parking Spaces Occupied at Time Interval Shown							
		7am	8am	9am	10am	12pm	2pm	4pm	6pm
Main St (south side)	119	4	18	30	76	79	68	58	12
Main St (north side)	89	10	24	21	37	46	45	39	38
Clarke St (both sides)	20	0	2	6	11	14	4	10	9
TOTAL	228	14	44	57	124	139	117	107	59
Proportion of Parking Spaces Occupied		6.1%	19.3%	25.0%	54.4%	61.0%	51.3%	46.9%	25.9%

Each of the two images below (Figure 6 and Figure 7) shows the fluctuating parking occupancy (spaces occupied as a proportion of the total spaces available to the public) at the various survey intervals.

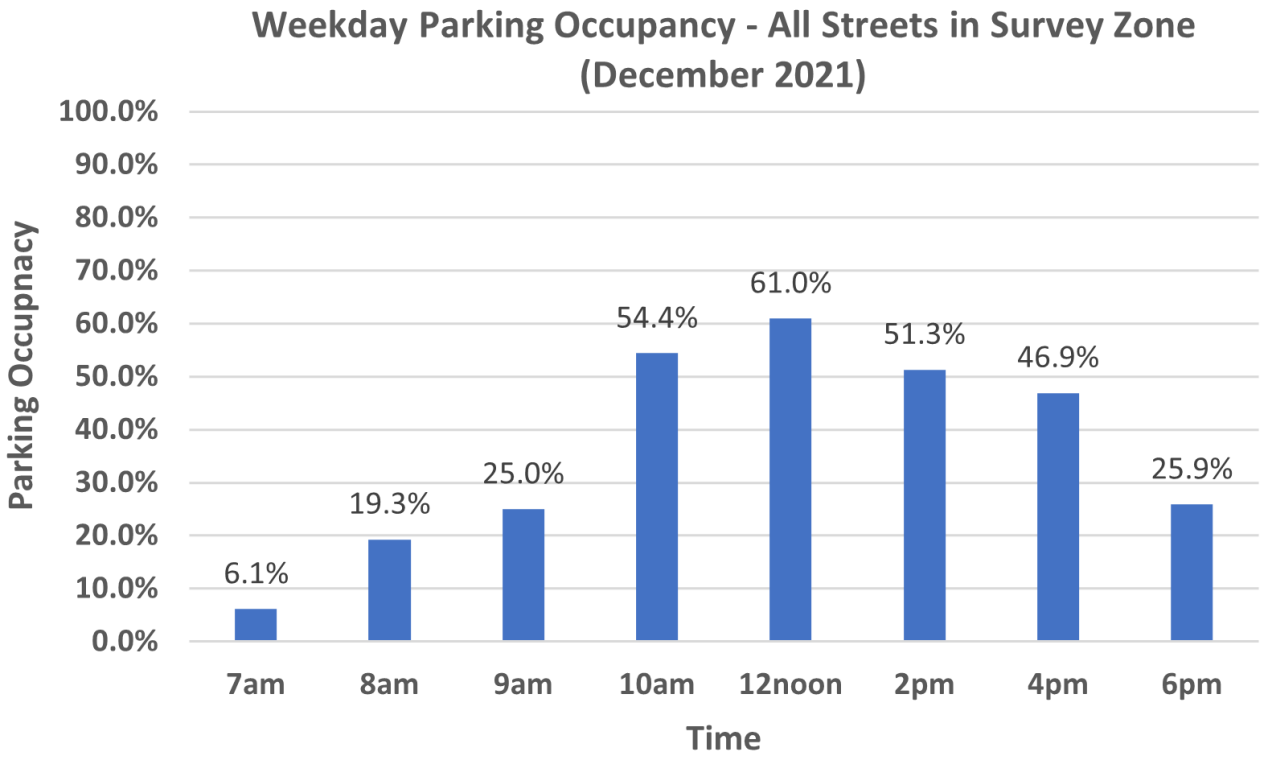


Figure 6: Parking Surveys December 2021 – Fluctuation in Weekday Parking Demand Full Study Area

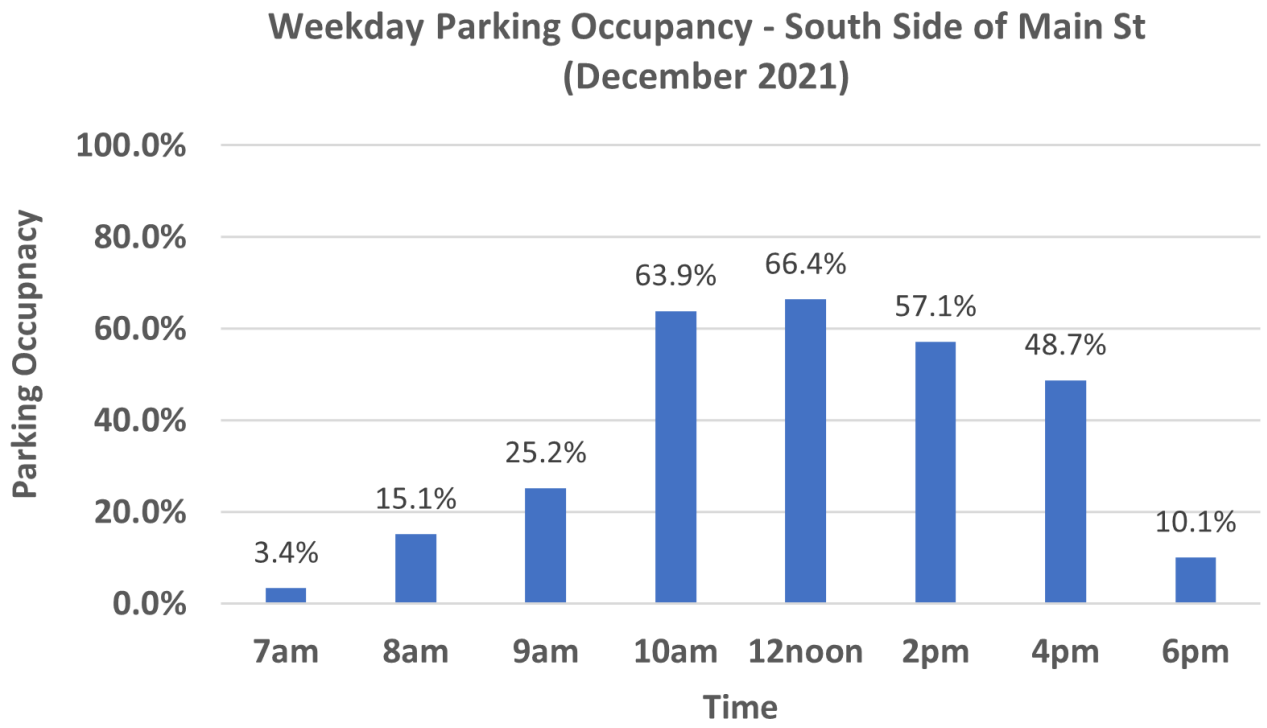


Figure 7: Parking Surveys – Fluctuation in Weekday Parking Demand South Side of Main Street

The comparison of parking occupancy between February 2024 and December 2021 is shown in in Figure 8 (full survey area) and Figure 9 (the south side of Main Street).

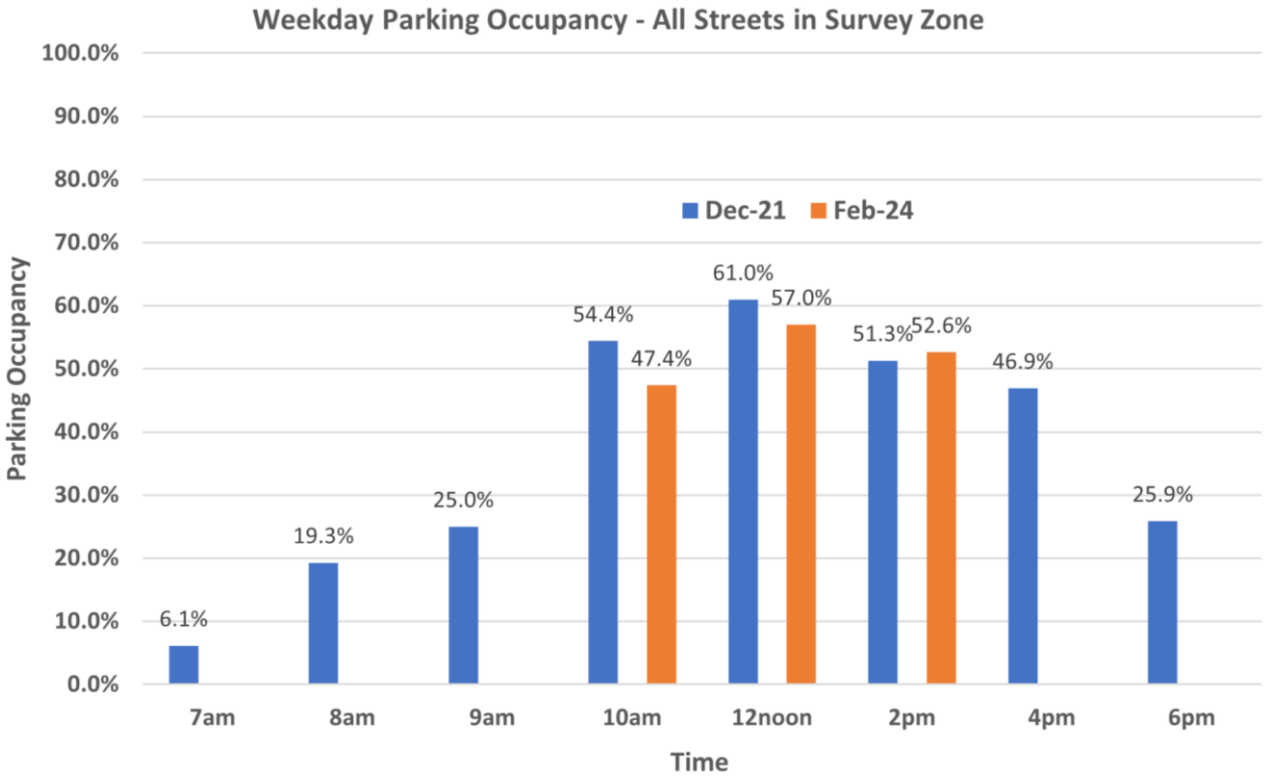


Figure 8: Parking Surveys Comparison February 2024 and December 2021
Fluctuation in Weekday Parking Demand between 10am and 2pm Full Study Area

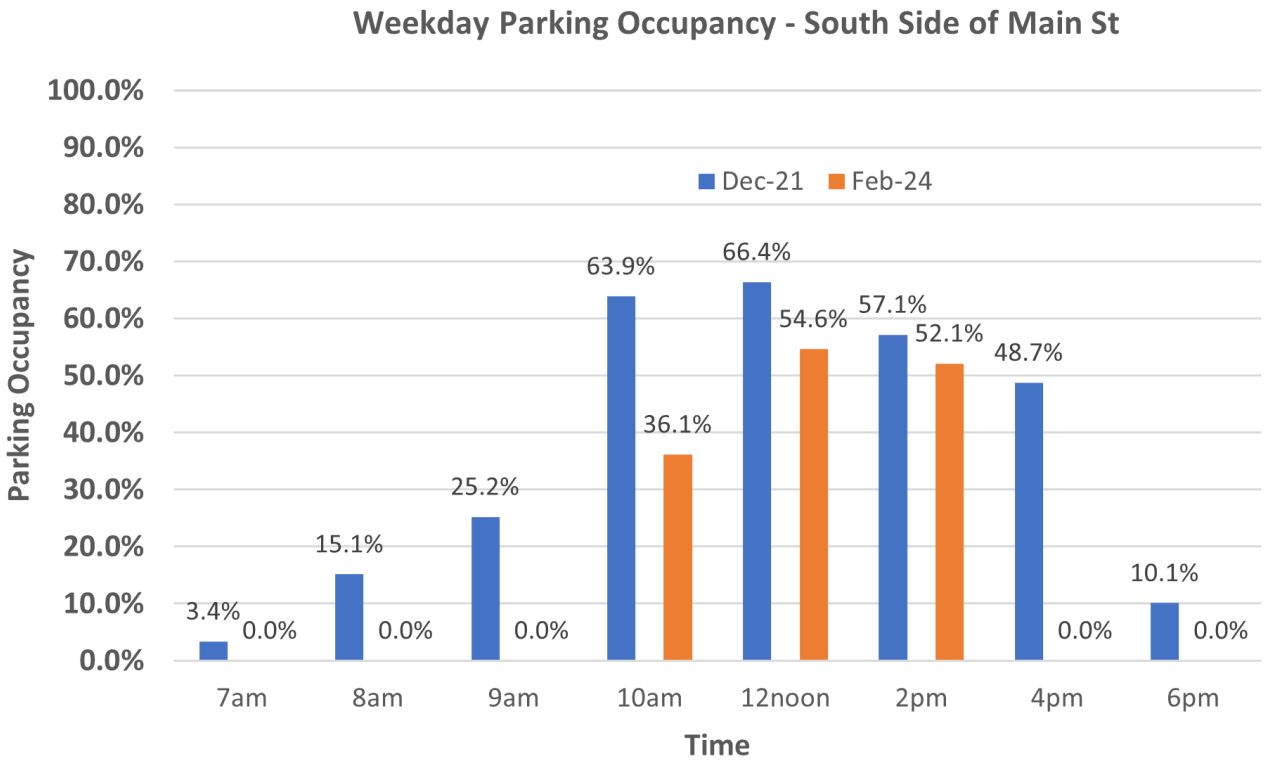


Figure 9: Parking Surveys Comparison February 2024 and December 2021
Fluctuation in Weekday Parking Demand between 10am and 2pm South Side of Main Street

Figure 8 and Figure 9 highlight that parking demand on Main Street has not increased between December 2021 and February 2024. In fact, during the busy middle part of the day the parking demand in the overall study area was slightly lower in 2024 compared with 2021 (Figure 8). Furthermore, when focusing on the utilisation of parking spaces on the south side of Main Street only (Figure 9) – where the subject site is located – the parking occupancy was markedly lower in 2024.

Within this context, it is considered that the broad conclusions drawn on the basis of the December 2021 surveys are still valid in 2024. Specifically, the December 2021 surveys revealed that across the full survey area, parking demand is very low at the start and end of the day when there is generous parking availability throughout. The busiest parking demand occurred at 12.00noon with 61% of publicly available parking spaces occupied (this timing reflects the characteristics of the land uses in the shopping precinct, whereby lunchtime is the peak period for activity). By 4.00pm the parking demand had dropped significantly with the occupancy being under 50%. The occupancy dropped further to only around one quarter by 6.00pm (25.9%).

In February 2024, the parking demand pattern at the busiest times had not altered significantly since December 2021.

In summary, based on the February 2024 surveys (which confirm the December 2021 patterns) it is concluded that:

- There is exceptionally generous parking availability in the study area at all times.
- The parking demand on the south side of Main Street during is exceptionally low – including, importantly, the peak period set-down and pick-up periods for the proposed childcare centre (7-9am and 5.30-6.30pm).

Images of typical parking occupancy in February 2024 in the immediate vicinity of the subject site – during the survey period are provided in Figure 10 and Figure 11.

Figure 10: Main St South Side Parking Occupancy circa 10.00am:
Looking west from Subject Site (left image)
& looking west from near Anderson St toward Subject Site (right image)

Figure 11: Main St South Side Parking Occupancy circa 12 noon:
Looking west from Subject Site (left image)
& looking west from near Anderson St toward Subject Site (right image)

2.5 SURROUNDING ROADS

2.5.1 ROAD HIERARCHY & DESCRIPTION OF ROADS

The site is bounded by Main Street (on its north side) and Hardy Street (on its south side). Main Street is also known as the Maroondah Highway. The Main Street service road provide access to the subject site. Other nearby roads that will be used by vehicles travelling to/from the site include Clarke Street and Anderson Street (an arterial road – for the section south of Maroondah Highway).

Main Street service road

The part of Main Street most relevant to this assessment is the service road on the south side of the street. The service road runs in an east-west direction and features a mix of parallel and angle parking spaces, between Anderson Street and Clarke Street.

Most of the parking is subject to 1-hour and 2-hour limit restrictions designed to support the retail and commercial uses in the precinct. Demand for parking along the subject site's frontage is exceptionally low at present, as revealed by both the December 2021 and February 2024 parking surveys.

The Main Street service road, adjacent to the development site, features a single wide traffic lane that provides access to on-street parking in both angle and parallel format. There are various entry/exit access points from/to Maroondah Highway (in the form of slip lanes).

Main Street main carriageway (Maroondah Highway)

Maroondah Highway is a major thoroughfare through Melbourne's eastern suburbs and the main highway servicing the Lilydale Major Activity Centre. It is an arterial road under DoT's control. Maroondah Highway features 2 traffic lanes in each direction, west of Anderson Street, and 3 lanes in each direction east of Anderson Street. This general geometry is supplemented with multiple turning lanes at intersections.

Hardy Street

Hardy Street runs in an east-west direction and is an undivided local road. In the vicinity of the subject site (the section between Anderson Street and the Fire Brigade's rear driveway exit) Hardy Street has 2 traffic lanes in each direction. West of the Fire Brigade's property, Hardy Street is 1 lane in each direction.

Anderson Street

Anderson Street is the major north-south arterial road (south of Maroondah Highway) through the Lilydale MAC. It is under DoT's control and generally provides 2 traffic lanes in each direction, supplemented with multiple turning lanes at intersections.

Clarke Street

Clarke Street is a local street controlled by Yarra Ranges Council with a single mid-block traffic lane in each direction. It runs north-south between Maroondah Highway and Hardy Street.

2.5.2 TRAFFIC VOLUME

Peak hour traffic volumes near the subject site were measured at the intersection of Main Street (Maroondah Highway) and Anderson Street in the first week of December 2021 (shown in Figure 12). Traffic flows were also recorded travelling past the proposed access point for the subject site (on Hardy Street); these volumes are presented and discussed in chapter 5, as part of the traffic impact assessment. Traffic volumes were checked in February 2024 (half hour intervals in peak periods) and were found to be similar to those measured in December 2021.

Accordingly, the December 2021 traffic volumes have been utilised in this assessment.

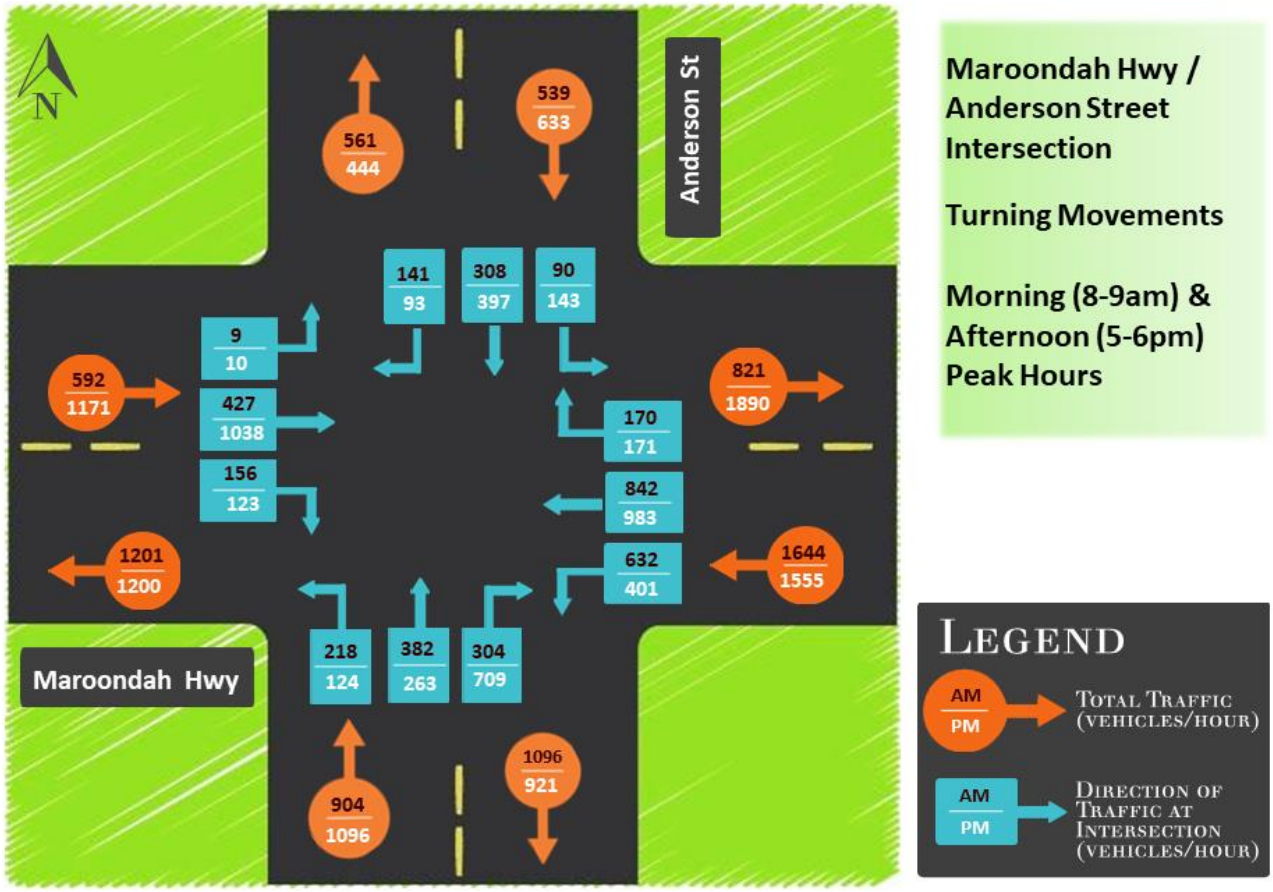


Figure 12: AM & PM Peak Hour Traffic Volumes at the Intersection of Maroondah Highway & Anderson Street

3 POLICY CONTEXT

3.1 LOCAL PLANNING POLICY CLAUSE 22.07

Clause 22.07 of the Yarra Ranges Planning Scheme is the local planning policy and applies to the precincts within the Lilydale Major Activity Centre as shown in Figure 13. The subject site lies within the Lilydale Major Activity Centre.

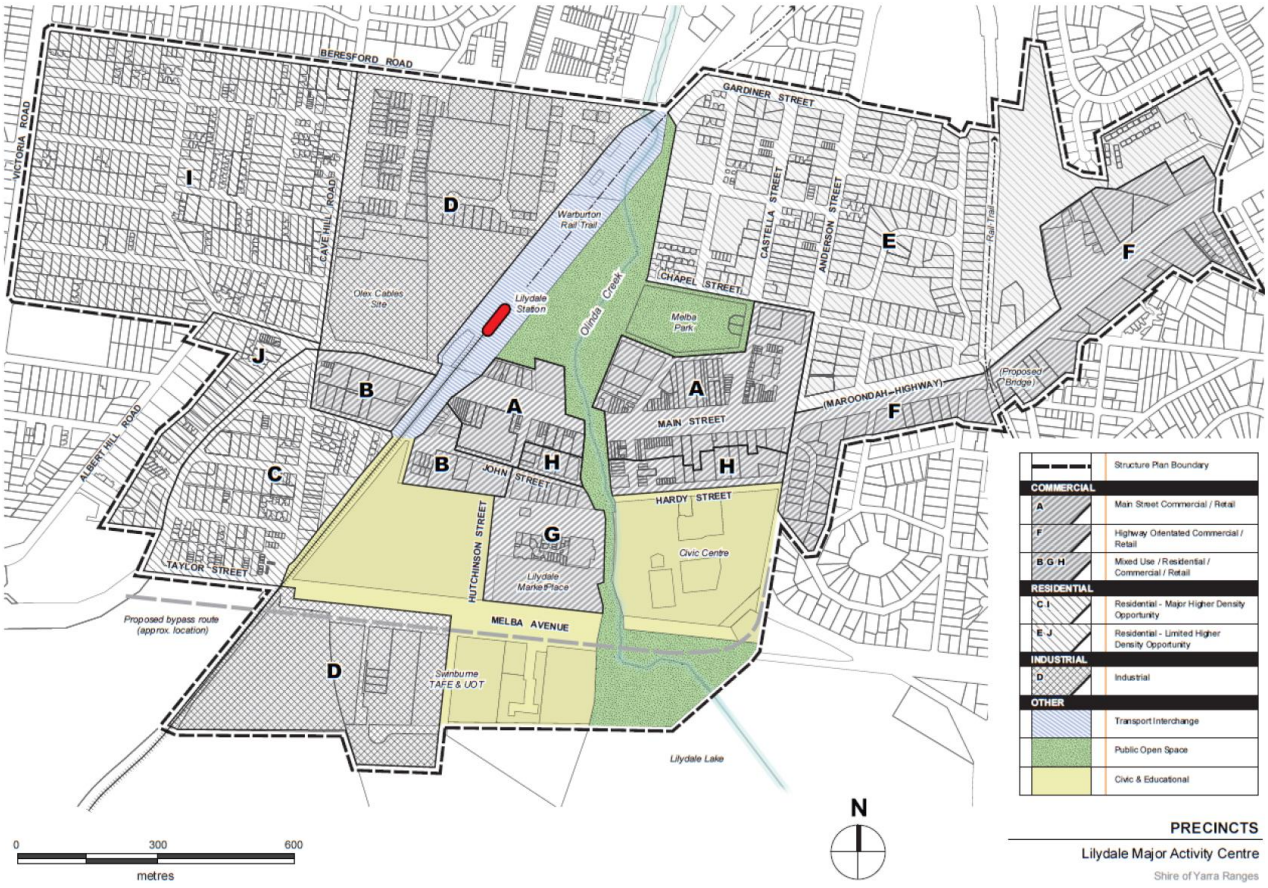


Figure 13: Lilydale Major Activity Centre

Sub-Clause 22.07-2 lists a number of specific objectives for Lilydale Major Activity Centre, including (of most relevance to this proposal):

- To create a vibrant town centre with a strong hub of commercial and pedestrian activity centred on the Main Street.
- To create an accessible and convenient centre which gives priority to people with disabilities, pedestrians, cyclists, and public transport users.

3.2 CONNECTED – YARRA RANGES INTEGRATED TRANSPORT STRATEGY 2020-2040

'Connected' is Yarra Ranges' Integrated Transport Strategy 2020-2040. It presents a 'Case for Change' as follows:

> *"The traditional approach to transport planning has not delivered the best outcomes for the community. Traffic and parking congestion remains a pressing issue, growing risks from climate change requires a decrease in emissions from transport."*

In the introductory 'Overview' chapter of 'Connected' council identifies it as: "*… our key strategic document that will guide transport projects, advocacy, and decision-making in Yarra Ranges. It will provide guidance, support, and evidence based justification to a range of important projects and plans across the municipality*".

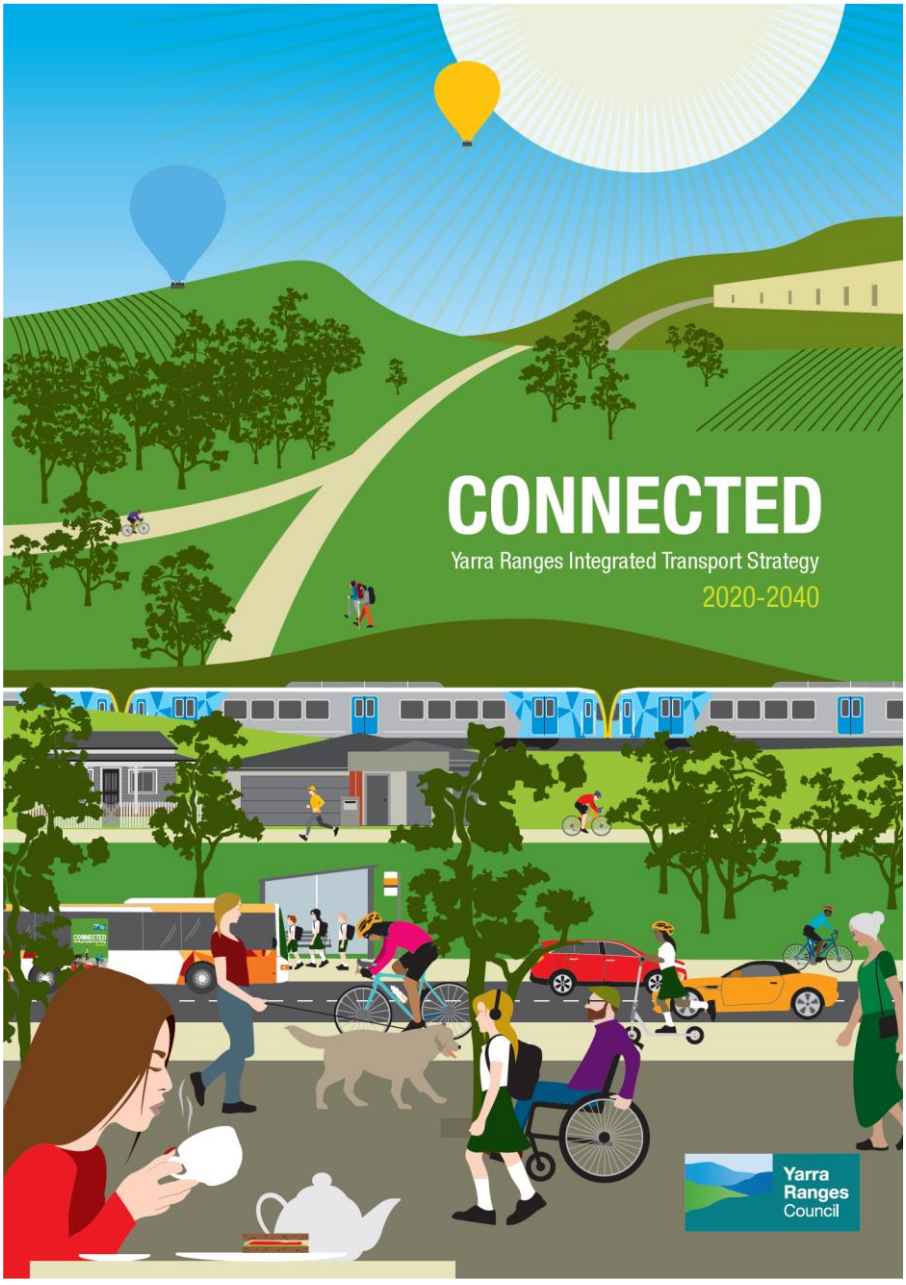


Figure 14: Connected Integrated Transport Strategy 2020-2040

'Connected' identifies that just **over half of all car trips in Yarra Ranges are less than 3km**. Whilst acknowledging that some of these trips will need to be done by car, 'Connected' also point out that there are **many that could be easily completed by walking (less than 1km) or cycling (less than 3km)** if the right infrastructure was provided. To this end, 'Connected' commits to "*expanding the current walking and cycling network to allow people the opportunity to walk and cycle*".

The policies and actions embedded in 'Connected' are the Council's response to what it heard from the community:

> "*Overall, the key theme the community expressed was a frustration associated with car use (congestion and parking difficulty), and a desire to have better options for walking, cycling and public transport use*."
>
> "*We need to take action, to at the very least hold car trip numbers at their current level. To fully support the vision of Council and the community, we must begin to reduce car travel, to boost the reliability of the road system for those that need to use their car. Transition out the short car trips for walking and cycling offers the easiest way to reduce local traffic and parking congestion, while increasing the vibrancy and liveability of Yarra Ranges*."

'Connected' recognises the imperative of reducing car dependency and has set ambitious targets to reduce the proportion of trips undertaken by car for all trip purposes. Figure 15 shows the Council's 2036 mode-share targets for the journey-to-work – which feature a 20% reduction in the proportion of car trips between the 2036 'Business as Usual' case and the preferred 'sustainable' target. The figure highlights that simply maintaining the same level of car use today into 2036 (Business as Usual), there are going to be more cars on the road leading to worsening traffic congestion and parking problems. Council notes that: "*by taking the sustainable scenario approach, 'Connected' helps to maintain and improve our quality of life*".

Figure 16 (over the page) shows the Council's 2036 mode-share targets for non-work trips.

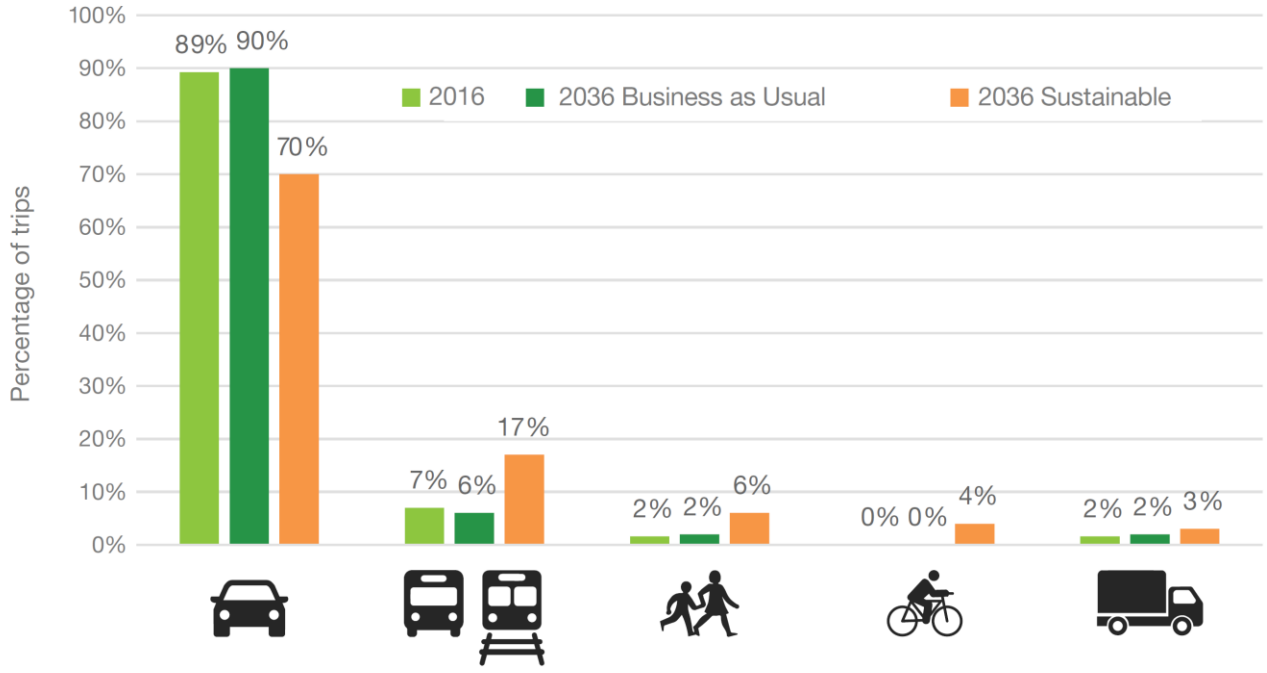


Figure 15: Journeys to Work, Now and in the Future (extract from 'Connected')

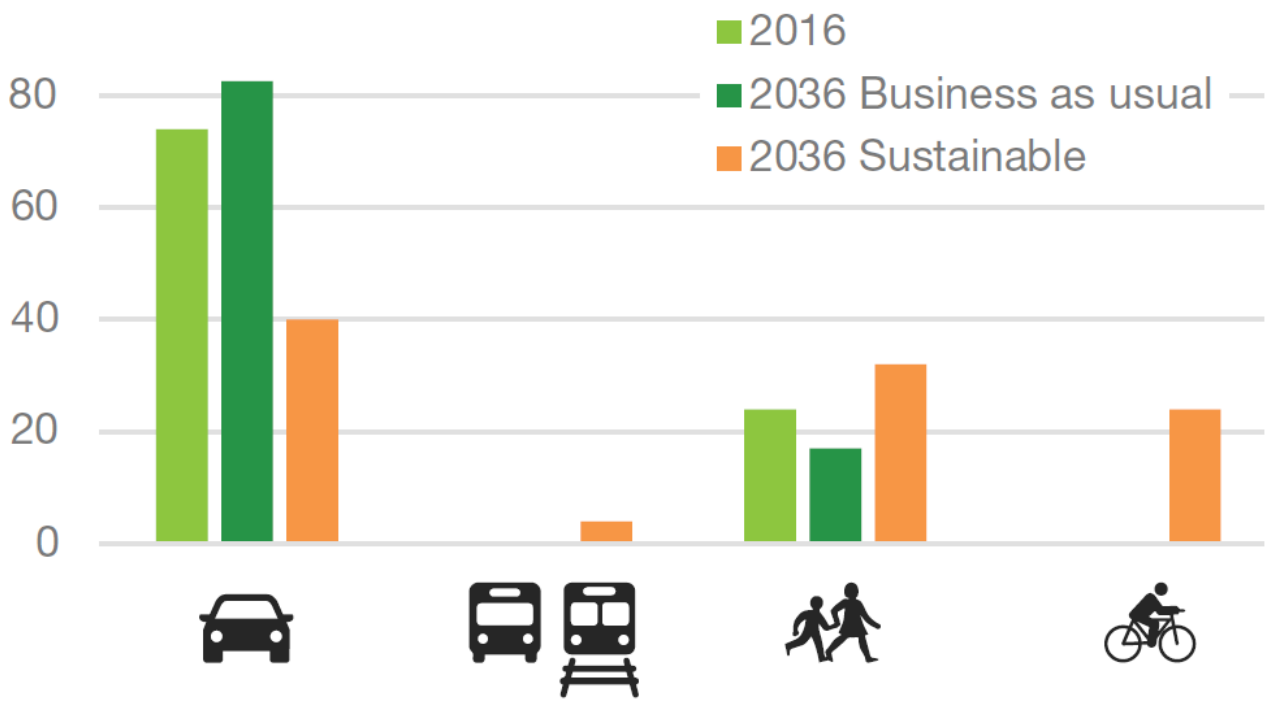


Figure 16: Shopping, Social and Personal Trips 3km or Less (extract from 'Connected')

'Connected' notes that the "*2036 sustainable scenario shown in Figure 16 offers a pathway for the future, in which the transport system is designed to diversify the options for people travelling in Yarra Ranges. This leads to car use for these very short trips dropping to 40%, and a growth in all other modes, but especially walking and cycling. The benefits to the community include greater transport choice, healthier lifestyles, cleaner air, safer streets and a better outcome for those that have to drive.*"

Finally, it is relevant to note that in relation to parking, 'Connected' recognises its multiple adverse impacts – and highlights the importance of limiting the supply (see Figure 17 for key issues identified around parking).

Figure 17: Key Issues Related to Car Parking Reform for Yarra Ranges (extract from 'Connected')

3.3 LILYDALE PLACE PLAN 2019

The Lilydale Place Plan 2019 outlines actions to develop and embed sustainable transport choices – aimed at increasing walking and reducing car-dependence and congestion.

The Plan lists various mechanisms to measure progress against its stated objectives. In respect of measuring changes in transport networks and environment, the Plan commits to:

- Compare use of public and active transport with baseline data
- Targets
  - 20% increase in the number of people walking past the same 'Place Score Assessment' locations after major capital works are completed
  - 10% increase in the number of people using public transport at Lilydale interchange

3.4 LILYDALE MAJOR ACTIVITY CENTRE STRUCTURE PLAN JUNE 2022

The June 2022 Lilydale Major Activity Structure Plan was officially adopted by Council at its meeting on Tuesday 9 August 2022.

The Structure Plan's 'Vision for Lilydale' includes the following elements that are relevant to the traffic, transport and parking considerations discussed in this report:

"*The Lilydale Major Activity Centre will be a vibrant centre with a focus on community uses, walkability and activity, building on its strengths as a mixed-use centre by recognising its rich history, cultural heritage, beautiful trees and sense of space. Lilydale will be a place to support local living in the heart of a buzzing centre with convenient access to daily services and needs. In the short term, the focus will be on redevelopment of key development sites and land use opportunities in and around the grade separation/relocated train station.*

The relocated train station will offer a focus for creation of a new street-based retail a precinct that will also benefit from proximity to the Lilydale High School that, along with other key community uses, will be encouraged to remain and thrive within the activity centre. In the medium term, delivery of the Bypass will enable Main Street to be comprehensively redeveloped as a genuine 'main street' where traffic speeds and volumes will be significantly reduced, and the street will transition away from being a connecting through-route to become a high-quality destination."

The Structure Plan's objectives, strategies and actions have been arranged into four 'key directions' (one of which is to 'Improve traffic and transport infrastructure') that are viewed as being well aligned to the hallmarks that are contained within the 20 Minute Neighbourhood concept. The Structure Plan explicitly recognises that 20 Minute neighbourhood areas are intended as compact, walkable places that emphasise the importance of living locally, giving people the ability to meet most of their daily needs within a 20-minute return walk from home, with access to safe cycling and local transport options.

The subject site at 304-322 Main Street is clearly identified in the Structure Plan as lying within the '20-minute & highly walkable / accessible area', as shown in Figure 18. In addition, the Structure Plan identifies the section of Main Street adjacent to the subject site as part of a revitalised "Local Access Street" characterised by a low-speed traffic environment, that balances pedestrian access and connectivity with opportunities for enhanced street tree planting and other forms of landscaping, when a bypass is delivered. Hardy Street will also be returned to its intended local road function (see Figure 19). While the Plan considers the delivery of the bypass as the ultimate traffic solution that can achieve a revitalised Main Street that is a place for people, it recognises that this requires State Government investment and management in the intervening period.

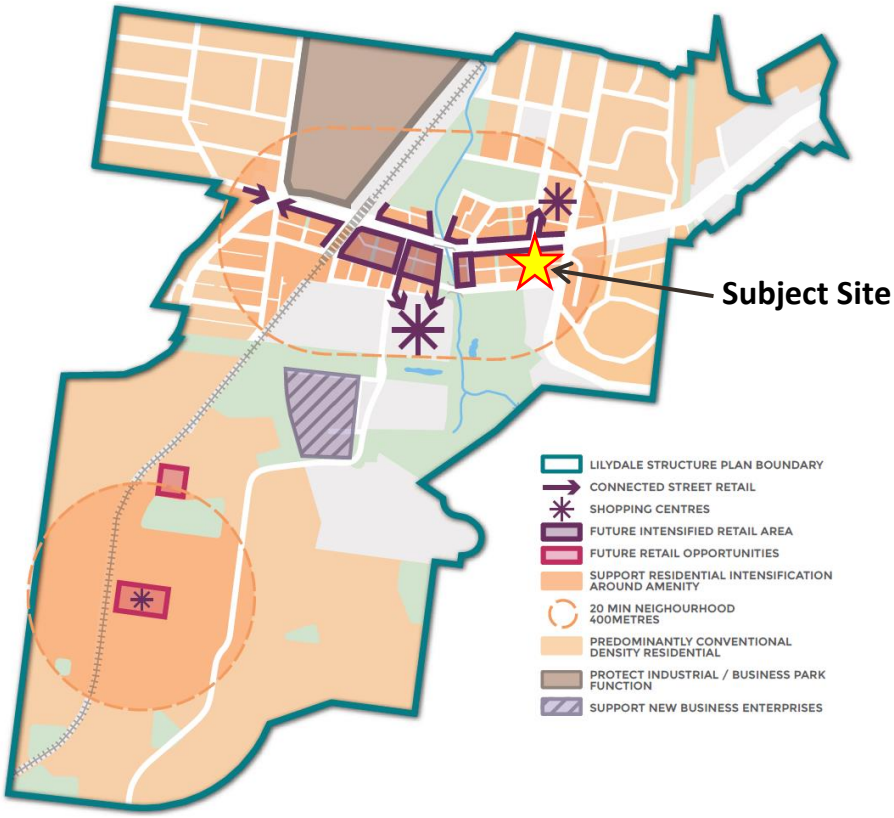


Figure 18: Lilydale Structure Plan: 20-minute neighbourhood catchments
(reproduced from Structure Plan "Figure 24")

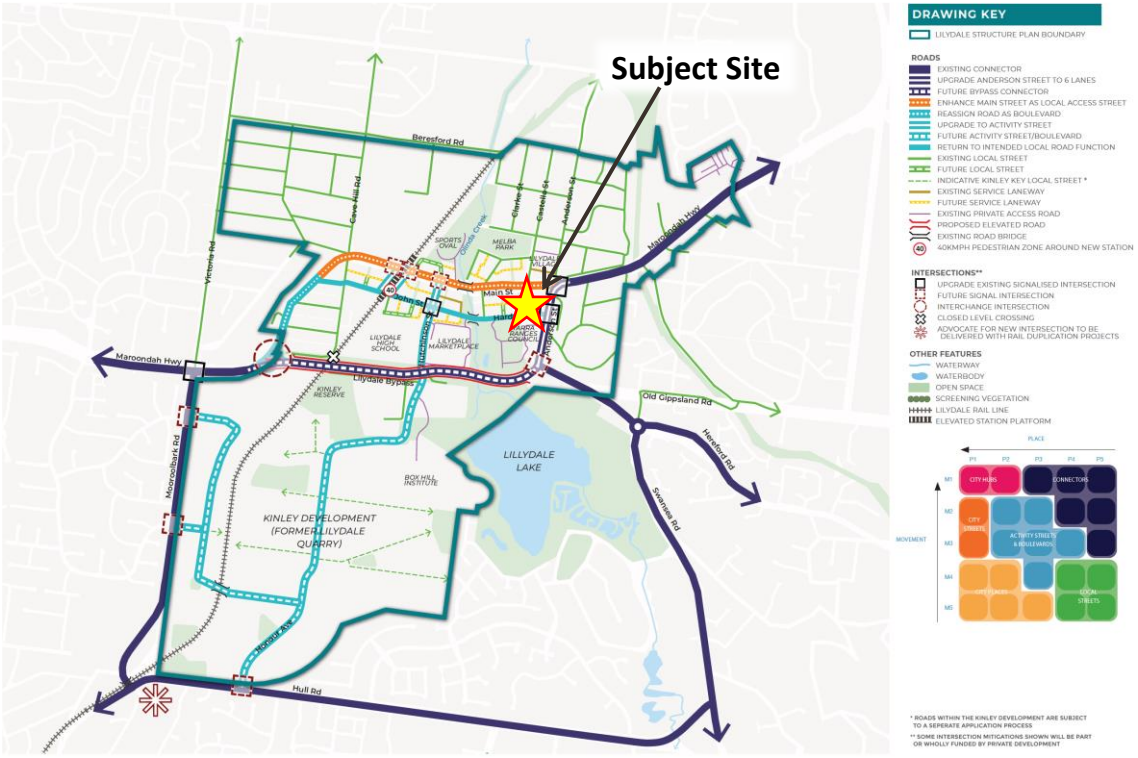


Figure 19: Lilydale Structure Plan: Main Street Revitalisation adjacent to subject site
(reproduced from Structure Plan "Figure 43")

The Structure Plan also outlines comprehensive initiatives in support of walking and cycling. It recognises that, currently, Lilydale's movement network prioritises vehicles which creates an environment where it is difficult to walk or cycle around the activity centre. The Structure Plan seeks to strengthen pedestrian and cycling connections throughout the Lilydale Activity Centre by delivering missing links within the existing network and transforming key local roads to be priority pedestrian and cycling friendly environments.

The Structure Plan calls for Main Street to be reconfigured to give priority to pedestrian and cyclists, over through traffic and freight, once a bypass is delivered. Interim works will seek to improve the pedestrian environment where possible in advance of a bypass. John Street and Hardy Street will become key active streets with dedicated cycle lanes and improved pedestrian connectivity. The Plan also identifies dedicated cycle lanes to be created along Anderson Street and Cave Hill Road to establish new links to the Warburton Trail and the broader shared path network. These cycle connections will enhance access to the town core from the north and south of the Lilydale Activity Centre. The Plan's aim for walking and cycling is that a transformed network of pedestrian and cycling connections will be well integrated with Lilydale's public transport offering enhanced access to train and bus services through walking and cycling, in-turn reducing car dependency and increasing use of public transport.

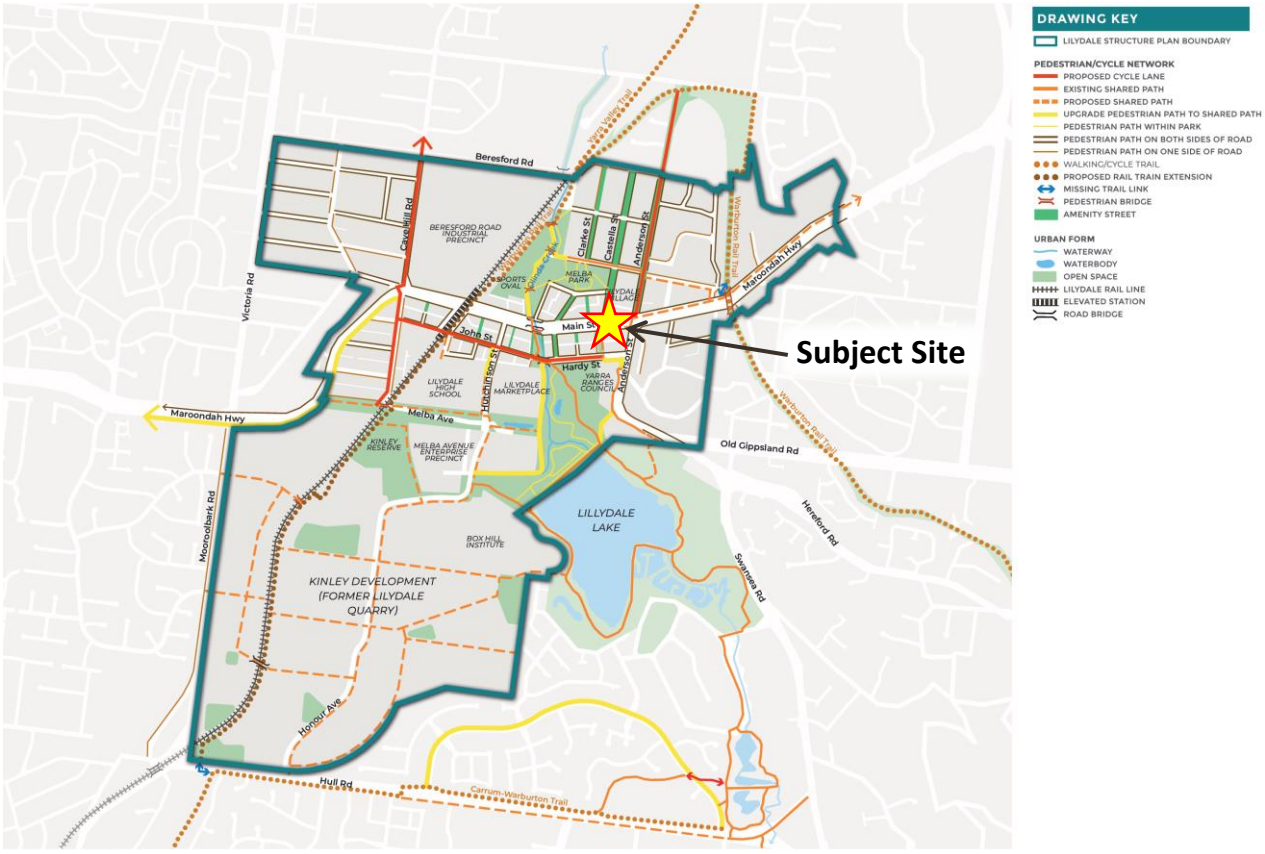


Figure 20: Lilydale Structure Plan: Existing & Proposed Pedestrian & Bicycle Networks
(reproduced from Structure Plan "Figure 47")

4 PARKING ANALYSIS

4.1 STATUTORY CAR PARKING REQUIREMENT

As previously indicated, the development comprises the following components:

- Childcare Centre = 130 children
- Food & Drink =248 m² of gross floor area
- Shop = 300 m² of gross floor area (labelled 'Pharmacy' on development plans)
- Medical Centre = 1,020 m² of gross floor area (labelled 'GP Practice/Radiology/Precision Health' on development plans)
- Office = 1,395 m² of gross floor area

The starting point in assessing the carparking requirements servicing the development is to consider the statutory parking rates stipulated under the Yarra Ranges Planning Scheme, which are obtained from Table 1 in Clause 52.06-5 of the Scheme. There are two sets of parking rates provided in Table 1 (Columns A and B). Column A is a 'standard' rate and is intended to apply for stand-alone developments which are not within major activity centres. Column B applies if:

- any part of the land is identified as being within the Principal Public Transport Network (PPTN) Area as shown on the Principal Public Transport Network Area Maps (State Government of Victoria, August 2018); or
- a schedule to the Parking Overlay or another provision of the planning scheme specifies that Column B applies.

Lilydale's Major Activity Centre lies partly within the Principal Public Transport Network Area with the western half of the retail/commercial town centre falling inside the PPTN whilst the eastern half falls outside of it, as shown in Figure 21.

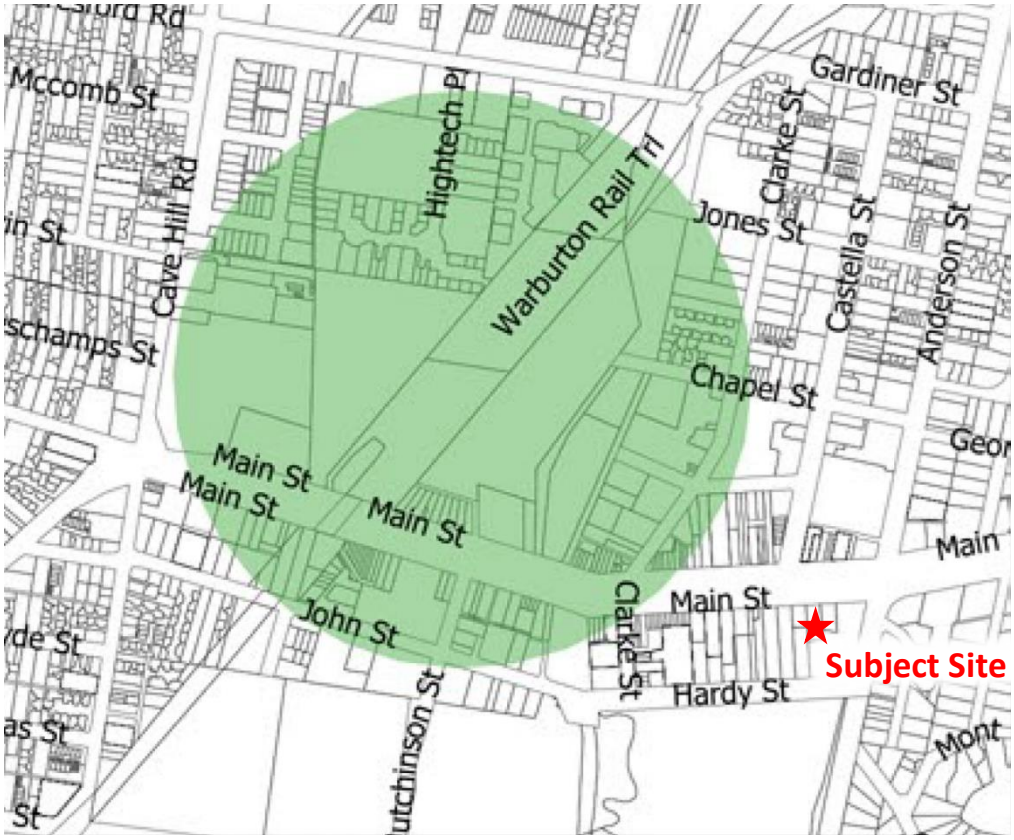


Figure 21: Principal Public Transport Network Area in Lilydale

The application of two different sets of parking rates in the Lilydale retail/commercial town centre is somewhat counter-intuitive and contradictory – as the two halves of the town centre form a single, homogeneous and connected zone.

Within this context it is also relevant to note that the Lilydale Major Activity Centre's town centre provides a substantial proportion of the overall car parking supply as 'shared' public parking. Accordingly, the Column B rates provide a more appropriate starting point for any development within the town centre. More specifically, car parking requirements for uses within the Lilydale MAC should reflect that, due to the sharing of carparking amongst a number of uses, demands generated by developments in the area are lower than those generated by similar land uses that are not located within an activity centre and are 'isolated' from other uses. Accordingly, it is reasonable to conclude that the standard 'Column A' rates specified in Clause 52.06 are higher than those would be required for the Lilydale MAC. It is thus considered appropriate to adopt the 'Column B' rates for the purposes of assessing this development application, as the 'Column B' rates provide a 'whole of centre' approach to parking. The whole of centre approach considers that patrons will visit an activity centre, and then make use of the trip to visit a number of uses within the centre. This approach is consistent with the original Planning Permit application in 2017.

The 'Column B' rates for the relevant land uses proposed for 304-322 Main Street are as follows:

- Child Care = 0.22 parking spaces to each child (130 children are proposed)
- Food & Drink premises = 3.5 parking spaces to each 100 m^2 of leasable floor area (248 m^2 of gross floor area is proposed)
- Shop = 3.5 parking spaces to each 100 m^2 of leasable floor area (300 m^2 of gross floor area is proposed)
- Office = 3 parking spaces to each 100 m^2 of leasable floor area (1,395 m^2 of gross floor area is proposed)
- Medical Centre = 3.5 parking spaces to each 100 m^2 of leasable floor area (1,020 m^2 of gross floor area is proposed)

In the interests of a conservative analysis, it will be assumed that the leasable floor areas for the shop, office and medical centre components equal the gross floor area (which leads to an overestimation of parking requirements). Application of the above rates yields a statutory parking requirement of 122 spaces, including:

- Child Care = 28 parking spaces
- Food & Drink = 8 parking spaces
- Shop = 10 parking spaces
- Office = 41 parking spaces
- Medical Centre = 35 parking spaces

The proposal involves the provision of 88 on-site car spaces – a shortfall of 34 parking spaces. Accordingly, a justification for the reduction to the statutory car parking is requirement is necessary – as outlined under Clause 52.06-6 of the Yarra Ranges Planning Scheme.

4.2 PREVIOUS PLANNING PERMIT & COMPARISON WITH CURRENT DEVELOPMENT PROPOSAL

A previous planning permit (issued in March 2017) allowed for development of the land to construct a mix of uses, including a Restricted Retail Premises, Shops, Office and Convenience Restaurant. The permit also allowed for a reduction in car parking – requiring only the provision of a minimum 43 car parking spaces onsite. This parking supply level represents a significant part waiver of the statutory Planning Scheme parking requirements – reflecting the implicit recognition that the subject site is an integral part of Lilydale's retail/commercial town centre and, as such, enjoys the benefits of a 'whole of centre' approach to parking.

It is relevant to note that the previous planning permit requirement for a minimum provision of 43 spaces represents an effective parking waiver of 18 car spaces (calculated using Column B). The comparison between the statutory parking requirement and the number of parking spaces allowed by the planning permit, issued by Yarra Ranges Council, is shown in Table 3.

Table 3: Comparison of Statutory Parking Requirement & Parking Supply (Approved vs Proposed Development)

	Parking Requirement using Column B in Table 1 of Clause 52.06-5	Parking Supply	Parking Waiver (under column B)	Proportion of car spaces supplied versus Column B requirement
Existing 2017 Planning Permit	61	43	18	70.5%
Current Planning Permit Application	122	88	34	72.1%

The new proposal involves a more predictable mix of uses (in terms of parking demand characteristics), retaining the 'Shop' and 'Office' uses, but deleting the potentially high customer generating uses ('Convenience Restaurant' and 'Restricted Retail Premises') and replacing those with uses which have a more predictable and contained parking-generation profile – namely the 'Childcare Centre' and a 'Medical Centre'.

The proposed provision of 88 on-site car spaces against a Column B requirement of 122 parking spaces represents a supply level of 72.1%. This exceeds the supply level under the previous 2017 planning permit where the approved 43 parking spaces represented 70.5% of the Column B parkin g requirement.

It is also highly relevant to note that the key change under the current planning permit application is the replacement of two uses likely to attract continuous and at times high patronage, including on weekends (the Convenience Restaurant and Restricted Retail Premises) with two uses that generate their parking demand on weekdays only – either the start and end of the day (the Childcare Centre) and in a predictable, finite and structured manner (the Medical Centre – reflective of the appointment-based business model used by the health sector, which effectively filters parking demand to a steady and constant flow).

In summary, the current development application provides a greater proportion of the Column B parking requirement compared to the previously approved development (whilst, intrinsically, featuring a far less intense parking demand). The parking waiver sought under this current proposal (34 spaces) is thus considered consistent with the previously approved development scheme.

4.3 REDUCING THE REQUIREMENT FOR CAR PARKING

Planning Practice Note 22 (August 2023) issued by the State Government's Department of Transport and Planning provides guidance about the use of the car parking provisions in Clause 52.06. Clause 52.06-7 draws a distinction between the assessment of likely demand for parking spaces, and whether it is appropriate to allow the supply of fewer spaces.

These are two separate considerations, one technical while the other is more strategic. Different factors are taken into account in each consideration. Accordingly, the determination of whether the provision of car parking for the proposed development is appropriate will be made on the basis of a two-step assessment process, which has regard to:

- The car parking demand likely to be generated by the proposed uses
- Whether it is appropriate to allow fewer spaces to be provided

This two-step assessment process is set out in the sections that follow.

4.4 CAR PARKING DEMAND ASSESSMENT

Clause 52.06-7 allows for the statutory car parking requirement to be reduced (including to zero) subject to an application being accompanied by a Car Parking Demand Assessment. Furthermore, Clause 52.06-7 sets out that a Car Parking Demand Assessment must address the following key factors:

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.
- The variation of car parking demand likely to be generated by the proposed use over time.
- The short-stay and long-stay car parking demand likely to be generated by the proposed use.
- The availability of public transport in the locality of the land.
- The convenience of pedestrian and cyclist access to the land.
- The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.
- The anticipated car ownership rates of likely or proposed visitors to or proposed occupants (residents or employees) of the land.
- Any empirical assessment or case study.

A summary of the 'response' to each of these factors has been provided, for ease of reference, in Table 4.

Table 4: Summary of Car Parking Demand Assessment Criteria

Criteria	Response
The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.	The presence of multi-purpose trips within the Lilydale Major Activity Centre is indisputable. Trip linking provides a sound basis and substantiation to apply a parking rate discount. Much of the parking demand associated with the development's shop use is already captured by separate parking events in the surrounding area as customers are engaged in 'multi-purpose trips'. No separate customer parking is needed for the shop component and a **full waiver of the 10 parking spaces for the 'Shop' tenancy** is considered appropriate. Shop employee parking is also considered unnecessary given the site's location within the Lilydale MAC and the ready availability of alternate transport to/from the land.
The variation of car parking demand likely to be generated by the proposed use over time.	Each of the development components exhibits different parking generation characteristics – with little overlapping demands. For instance, the parking demand associated with the childcare centre will be highest at times when other uses are not in operation (before 9am and after 5pm). The peak parking demand at childcare centres typically occurs in the early morning between 7.00 and 9.00am (as parents drop children off before work). Similarly, the evening peak will occur between 5.30 and 6.30pm (as parents pick up children after work) – this early evening period is a time when the shop, medical centre and office uses are either already closed or nearing closure. Thus, the parent drop-off / pick-up parking demand associated with the development's childcare use is able to utilise empty parking spaces that, in turn, will be used by visitors to the medical centre components, during normal daytime business hours. In common with the 'shop' use, employee parking for childcare centre staff is also considered unnecessary given the site's location within the Lilydale MAC and the ready availability of alternate transport to/from the land. Within this context, the 28-space statutory parking requirement for the childcare centre can be largely utilised by the medical centre uses during the daytime – reducing by 28 spaces the statutory requirement for that development component. This represents an effective **28-space part waiver of the parking requirements for the medical centre use**.

Criteria	Response
The short-stay and long-stay car parking demand likely to be generated by the proposed use.	The car parking demand generated by the proposed development is likely to consist of a mix that comprises both short-stay and long-stay parking. The longer-term car parking demand will primarily be associated with office and medical centre employees. Younger shop attendants and childcare staff are more likely to utilise public transport for the journey-to-work. The short-stay parking demand will be mostly associated with visitor / customer and pick-up / drop-off activity to the childcare and medical centres. Spaces are allocated for this purpose on site. The customer parking associated with the shop is expected to be addressed by the availability of abundant spare on-street parking, as discussed in previous sections of this report. Overall, sufficient spaces are available on site to cater for the identified parking requirements, particularly given the likelihood of sharing of visitor spaces by the childcare and medical centres – as noted in other sections of this car parking demand assessment.
The availability of public transport in the locality of the land.	Excellent public transport exists in the locality with multiple bus routes directly in front of the site and Lilydale train station located within easy walking distance at 600 metres from the site. The parking demand associated with the development's land uses is therefore likely to be lower due to the ready availability of public transport. A **part waiver of 11 parking spaces for the 'Office' use is considered appropriate** (which represents around half of the total statutory 'Office' parking requirement of 41 spaces). This will encourage around one-quarter of office workers to use public transport for the journey-to-work. This outcome supports Council's Lilydale Place Plan 2020 which aims to increase in the number of people using public transport at Lilydale interchange by 10%.
The convenience of pedestrian and cyclist access to the land.	The well-maintained existing local footpath network into Lilydale Town Centre provides convenient pedestrian access to the subject site.
The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.	Sixteen on-site bicycle parking spaces are proposed, which satisfies the statutory requirement.
The anticipated car ownership rates of likely or proposed visitors to or proposed occupants (residents or employees) of the land	The lower car ownership rates, revealed by the 2021 Census, associated with the residential population in the development's primary catchment justify the parking waivers proposed in this report.
Any empirical assessment or case study.	Not Applicable.

<u>Summary of Car Parking Demand Assessment Criteria:</u>

The analysis presented in Table 4 has concluded that it is reasonable to **allow a 49-space parking waiver** under this planning permit application (with respect to Column B requirements of 122 spaces). However, **only a 34 space parking waiver is sought under the application**. The key justifications to support this partial parking waiver include:

- It is acceptable to waive the 10-space statutory parking requirement for the 'Shop' use, due to its location within the Lilydale town centre and the associated likelihood of multi-purpose trips occurring within the locality
- The demand for the 28 parking spaces required for the childcare centre will be manifested in the early morning and late afternoon / early evening – times when the medical centre is closed or near closing. Thus, the 28-space statutory parking requirement for the childcare centre can be largely utilised by the medical centre uses during the daytime – satisfying the need of 28 spaces (out of the 35-space statutory requirement for that development component). The shared use of the 28 childcare centre spaces represents an effective 28-space waiver of the parking requirements for the medical centre use.
- A waiver of 11 parking spaces for the 'Office' use is considered appropriate (out of the total statutory 'Office' parking requirement of 41 spaces) – which will encourage around half of office workers to use public transport for the journey-to-work.

The relevance of each of the 'car parking demand' aspects (summarised above in Table 4) is discussed in more detail in the sections that follow.

4.4.1 Multi-purpose trips within the area

In Lilydale MAC, many trips serve more than one function due to the proximity of many varied retail and commercial uses. This will tend to reduce the need for car parking. For example, the shop tenancy will draw some of its trade from local workers, as well as workers of the proposed development's future office component, who will have already travelled to the area for work and hence do not need additional parking. Similarly, there are dozens of existing shops on both sides of this section of Main Street and patrons typically park once-only and then walk between different shops until their visit is complete.

This phenomenon is known as 'trip linking' or 'multi-purpose trips' – where a person arrives at a centre for one purpose and uses the opportunity to visit one or more other establishments in that centre. It is a common occurrence in activity centres such as Lilydale and is discussed further in the context of traffic generation in chapter 5 of this report.

From a parking perspective, trip linking has the potential to significantly reduce the overall parking demand generated by the proposed development. However, the extent to which any reduction will apply depends on the nature of future land uses and the ease of 'physically moving' between the new uses on the subject site and the existing land uses in the section of Main Street between Clarke Street and Anderson Street. There is no generic guidance available to help determine the extent by which a 'trip linking discount' may apply to parking demand (in contrast to the published guidance that is available for trip generation discounts). Accordingly, in order to obtain an indication of the average number of shops typically attended by shoppers, a visitation survey of the existing premises in this block of Main Street was undertaken at the time when the original traffic and parking impact assessment report was prepared for the existing planning permit. A total of 100 shoppers was monitored in November 2015 and it was found that, on average, each visited 1.8 premises on a single parking trip. The survey was based only on the users of the 1-hour and 2-hour limit parking spaces.

It has therefore been concluded that in this section of the Lilydale MAC there is strong evidence that trip linking is occurring and this is manifested in a single parking event servicing more than a single land use. On this basis it is reasonable to apply a significant parking rate discount. Such a discount, in the context of the proposed mixed-use development at 304-322 Main Street, is most applicable for the 'shop' use as it will draw business from the presence of customers visiting other land uses nearby.

Accordingly, no separate customer parking is needed for the shop component, particularly in view of the abundant spare on-street parking supply identified through parking surveys in both December 2021 and February 2024. The parking occupancy surveys on the south side of Main Street, adjacent to the subject site, showed the busiest parking demand occurring at 12.00noon with 66.4% and 54.6% (2021 and 2024 respectively) of publicly available parking spaces occupied. At that time there were 40 and 54 (2021 and 2024 respectively) unoccupied parking spaces out of a total supply of 119 spaces. The 2021 surveys also revealed that in common with the broader study area, by 4.00pm the parking demand on the south side of Main Street had dropped significantly with the occupancy being under 50%. Finally, by 6.00pm, the occupancy was insignificant with only around one-tenth of parking spaces occupied (10.1%).

Conclusion: Much of the visitor parking demand associated with the development's shop use is already captured by separate parking events in the surrounding area as customers are engaged in 'multi-purpose trips'. In addition, no separate employee parking supply is considered necessary for the shop staff, given the site's location within the Lilydale MAC and the availability of generous public transport options to travel to/from the subject site. In this context, a full waiver of 10 parking spaces for the shop use is considered appropriate.

4.4.2 Variation of car parking demand over time

There is a mix of uses proposed for the subject site that have different visitation-generation characteristics. Specifically, the time of peak parking demand associated with each component of the development will not coincide. In particular, the parking demand associated with the childcare centre will be highest at times when other uses are not in operation (before 9am and after 5pm). The peak parking demand at childcare centres typically occurs in the early morning between 7.00 and 9.00am (as parents drop children off before work). Similarly, the evening peak will occur between 5.30 and 6.30pm (as parents pick up children after work) – this early evening period is a time when the shop, medical centre and office uses are either already closed or nearing closure. In common with the 'shop' use, employee parking for childcare centre staff is also considered unnecessary given the site's location within the Lilydale MAC and the ready availability of alternate transport to/from the land.

In summary, the parent drop-off / pick-up parking demand associated with the development's childcare use is able to utilise empty parking spaces that, in turn, will be used principally by visitors to the medical centre components, during normal daytime business hours. As such, simply adding the overall parking requirements for the different uses, would result in an oversupply of parking. In fact, the variation in parking demand over time justifies provision of a lower level of parking. More specifically, when the car parking demand for each land use peaks at different times, the car parking spaces that are provided can be used more efficiently (and less spaces are needed) as they can service different land uses at different times.

Within this context, the 28-space statutory parking requirement for the childcare centre can be largely utilised by the medical centre uses during the daytime – reducing by 28 spaces the statutory requirement for that development component.

Conclusion: The demand for the 28 parking spaces required for the childcare centre will be manifested in the early morning and late afternoon / early evening – times when the medical centre is closed or near closing. Thus, the 28-space statutory parking requirement for the childcare centre can be largely utilised by the medical centre uses during the daytime – satisfying the need of 28 spaces (out of the 35-space statutory requirement for that development component). This represents an effective 28-space waiver of the parking requirements for the medical centre use.

4.4.3 SHORT-STAY AND LONG-STAY PARKING DEMAND

The car parking demand generated by the proposed development is likely to consist of a mix that comprises both short-stay and long-stay parking. The longer-term car parking demand will primarily be associated with office and medical centre employees. Younger shop attendants and childcare staff are more likely to utilise public transport for the journey-to-work. The short-stay parking demand will be mostly associated with visitor / customer and pick-up / drop-off activity to the childcare and medical centres. Spaces are allocated for this purpose on site. The customer parking associated with the shop is expected to be addressed by the availability of abundant spare on-street parking, as discussed in previous sections of this report. Overall, sufficient spaces are available on site to cater for the identified parking requirements, particularly given the likelihood of sharing of visitor spaces by the childcare and medical centres – as noted in other sections of this car parking demand assessment.

4.4.4 AVAILABILITY OF PUBLIC TRANSPORT IN THE LOCALITY

Existing bus and train services will provide excellent access for all the proposed land uses on the subject site. The services offer connectivity into the surrounding residential catchment as well as convenient access to multiple regional attractions and destinations across the entire metropolitan area. Between Monday and Friday, most of the bus routes operate between around 5.00-6.00am and 10.00-11.00pm and are scheduled every 20 to 30 minutes for most of the day. On Saturdays and Sundays, bus services run between around 7.30-8.00am and 10.00-11.00pm and are typically scheduled every hour for most of the day.

In summary, the availability of such convenient public transport reduces the need to provide car parking. Whilst proximity to public transport is not, in itself, a sufficient reason for reducing a car parking requirement, the fact that the availability of the bus and train services overwhelmingly coincides with the operating hours of the proposed childcare, medical centre, office and shop uses (standard business hours) justifies a parking reduction. Public transport will provide both employees and visitors of this development a viable and attractive travel-to-work and visitation option.

Conclusion: Excellent public transport exists in the locality with multiple bus routes directly in front of the site and Lilydale train station located within easy walking distance at around 600 metres from the site. The employee/visitor parking demand associated with the development's land uses is therefore likely to be lower due to the ready availability of public transport. A waiver of 11 parking spaces for the 'Office' use is considered appropriate (out of the total statutory 'Office' parking requirement of 41 spaces) – which will encourage around one-quarter of office workers to use public transport for the journey-to-work. This outcome supports Council's Lilydale Place Plan 2020 which aims to increase in the number of people using public transport at Lilydale interchange by 10%.

4.4.5 CONVENIENCE OF PEDESTRIAN AND CYCLIST ACCESS TO THE LAND

Convenient pedestrian access is available from all directions to/from the subject site making walking a practical alternative to car use. There are high-quality pedestrian areas available in the activity centre in support of people choosing to walk – with appropriate footpath widths and safe crossing locations. Moreover, the street network extending into residential catchments around the subject site, features well maintained footpaths which are provided throughout. This will reduce the need for car parking as there is a realistic likelihood of some people walking instead of driving. Cycling, whilst also feasible, may not be as attractive to many users, given the hilly terrain that exists in certain directions. Nonetheless, observations of visitor travel patterns in the local area have confirmed that that both walking and cycling are used as modes of access to the existing shopping precinct (see Figure 22). Importantly, as discussed in section 3.4, the recently approved Lilydale Major activity Centre Structure Plan outlines a comprehensive program to enhance pedestrian and bicycle networks to complement and increase usage of public transport and educe car dependency.

Figure 22: Bike Riding on Main Street

The existing pedestrian and cycling facilities described above will reduce the need for car parking as there is a realistic likelihood of many people walking / cycling instead of driving.

Conclusion: The employee/visitor parking demands associated with the development's land uses are likely to be lower – due to the attractiveness of walking and cycling alternatives instead of car use. The parking waivers already identified in previous sections are further supported by the convenience of pedestrian and cyclist access to the land.

4.4.6 BICYCLE PARKING AND END OF TRIP FACILITIES FOR CYCLISTS IN THE LOCALITY OF THE LAND

The proposed development provides generous on-site bicycle parking facilities, which are conveniently located for the use of visitors, shoppers and employees alike. Sixteen on-site bicycle parking spaces are proposed, which satisfies and exceeds the statutory requirement.

4.4.7 ANTICIPATED CAR OWNERSHIP RATES OF LIKELY VISITORS TO OR PROPOSED OCCUPANTS OF THE LAND.

Car ownership is an important parameter that broadly reflects the propensity for people to drive. The mix of uses proposed on the subject site (particularly the childcare and medical centres) are likely to attract customers and staff from the immediate surrounding residential catchment. Accordingly, 2021 car ownership data from the Census data was examined for the part of Lilydale closest to the subject site (shown in Figure 23).

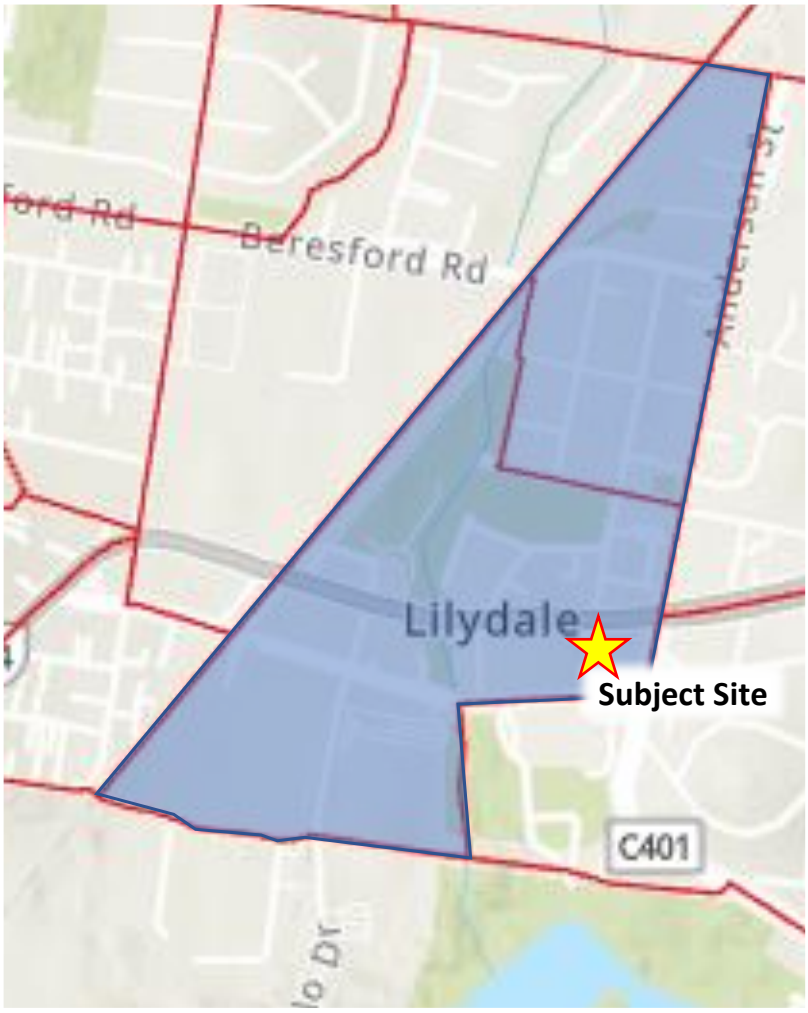


Figure 23: Census District around subject site

The breakdown of the car ownership structure for the precinct shown in Figure 23 is shown in Table 5, which also provides a comparison with the broader Yarra Ranges municipality and Metropolitan Melbourne. The most notable aspect is the proportion of households with "No Vehicles": 15.6% in the precinct surrounding the subject site compared with only 2.8% across the Yarra Ranges and 8.2% in Metropolitan Melbourne. The proportion of households with 1 vehicle is also much higher near the subject site with nearly half, 48.8%, of all households having access to a single vehicle compared with 26.6% across Yarra Ranges. These vehicle ownership characteristics reflect the high likelihood of much lower car usage/dependency by residents who live in the precinct surrounding the subject site – compared to the rest of the Yarra Ranges municipality.

Table 5: Number of Vehicles per Dwelling (Census 2021)
Comparison between parts of Lilydale close to subject site, Yarra Ranges and Metropolitan Melbourne

Location	Proportion of Dwellings & Corresponding Vehicles per dwelling				
	No Vehicles	One Vehicle	Two Vehicles	Three or more Vehicles	Not Stated
Residents who live near the subject site	15.6%	48.8%	24.9%	10.7%	0%
Yarra Ranges	2.8%	26.6%	40.2%	26.7%	3.8%
Metropolitan Melbourne	8.2%	35.6%	35.1%	16.3%	4.7%

The Census also provides insights into car utilisation by capturing statistics on journey-to-work. In this instance, 2016 Census data was examined, as 2021 travel patterns were affected by the Covid pandemic. The Census data reveals that residents who live in the part of Lilydale closest to the subject site exhibit lower car dependency for the journey-to-work than the municipal average for the broader Yarra Ranges municipality. This is shown in Table 6, which also provides a comparison with journey-to-work statistics for Greater Metropolitan Melbourne.

Table 6: Comparison of Journey-to-Work Travel Mode Choices (2016 Census)

Travel Mode for Journey-to-Work	Residents who live near the subject site	Yarra Ranges Municipality	Greater Metropolitan Melbourne
Public Transport	8%	6%	18%
Walking	6%	1%	3%
Car (driver/passenger)	65%	73%	76%
Other *(includes bikes, 'worked from home', 'did not go to work', etc)*	21%	20%	3%

Table 6 specifically shows that, when travelling to work, residents who live near the subject site:

- **Walk** at **6 times** the rate of people in the **entire Yarra Ranges municipality** (6% against 1%)
- **Catch public transport** at a rate that is **33% higher** than the rate of people in the **entire Yarra Ranges municipality** (8% against 6%)
- **Drive** at a rate that is **11% lower** than that of people in the **entire Yarra Ranges municipality** (65% against 73%) and **14.5% lower** than people **across Metropolitan Melbourne** (65% against 76%)

Conclusion: The 2016 and 2021 Census data sets have revealed much lower car ownership and utilisation rates by the residential population that lives in the subject site's primary catchment. These lower rates foreshadow a greater propensity, for those visitors, customers and employees who may live in the local surrounding neighbourhoods, to be less reliant on the use of cars compared with residents of the broader Yarra Ranges Council area. These findings help to justify the parking waivers already identified in previous sections.

4.4.8 ANY EMPIRICAL ASSESSMENT OR CASE STUDY

Not Applicable.

4.4.9 OVERALL CONCLUSIONS FROM CAR PARKING DEMAND ASSESSMENT

The assessment presented in the previous sections has identified justifications to potentially part-waive the requirement for a total of 122 parking spaces, taking the realistic parking requirement down to the 88 spaces that are proposed. This 34-space waiver being sought is reasonably justified given that there is potential to justify an even greater waiver of 49 spaces. In particular, the following factors are relevant:

- Likelihood of **'trip linking' or 'multi-purpose trips' occurring** in the Lilydale Major Activity Centre – where a person arrives at the centre for one purpose and uses the opportunity to visit one or more other establishments in the centre.
- Distinct **variation of car parking demand over time** (particularly between peak childcare pick-up / drop-off and the medical centre uses). As car parking demand for these each land uses peaks at different times, the car parking spaces that are provided can be used more efficiently (and less spaces are needed) as they can be shared and service visitors to different land uses at different times.
- Availability of **excellent public transport access** (multiple existing bus routes immediately adjacent to the site and a major train station within easy walking distance).
- Existence of **effective pedestrian and bicycle networks** servicing the Lilydale Major Activity Centre and the generous supply of on-site bicycle parking – in satisfaction of the minimum Planning Scheme requirements.
- The exhibited **low car ownership and utilisation rates of residents living in neighbourhoods surrounding the subject site** (as demonstrated by 2016 and 2021 Census data for the Lilydale area). Many of the **future workers, customers and visitors to the subject site** will live in these areas and likely exhibit low car dependency.

4.5 APPROPRIATENESS OF PROVIDING FEWER SPACES THAN THE NUMBER LIKELY TO BE GENERATED

The second step (when reflecting on the merit of waiving carparking requirements) is to consider whether it is 'strategically' appropriate to allow fewer parking spaces to be provided on site – as determined by the Car Parking Demand Assessment previously presented. In this respect, Clause 52.06-7 of the Yarra Ranges Planning Scheme sets out a series of car parking provision factors that should be considered when assessing the appropriateness of providing fewer car spaces on the site. The car parking provision factors are as follows (with the most relevant four factors highlighted by underlining):

- The **Car Parking Demand Assessment**.
- Any relevant **local planning policy** or incorporated plan.
- The availability of alternative car parking in the locality of the land, including:
  - Efficiencies gained from the consolidation of shared car parking spaces.
  - Public car parks intended to serve the land.
  - **On street parking in non-residential zones**.
  - Streets in residential zones specifically managed for non-residential parking.
- On street parking in residential zones in the locality of the land that is intended to be for residential use.

- The practicality of providing car parking on the site, particularly for lots of less than 300 square metres.
- Any adverse economic impact a shortfall of parking may have on the economic viability of any nearby activity centre.
- The future growth and development of any nearby activity centre.
- Any car parking deficiency associated with the existing use of the land.
- Any credit that should be allowed for car parking spaces provided on common land or by a Special Charge Scheme or cash-in-lieu payment.
- Local traffic management in the locality of the land.
- The impact of fewer car parking spaces on local amenity, including pedestrian amenity and the amenity of nearby residential areas.
- The need to create safe, functional and attractive parking areas.
- Access to or provision of **alternative transport modes** to and from the land.
- The equity of reducing the car parking requirement having regard to any historic contributions by existing businesses.
- The character of the surrounding area and whether reducing the car parking provision would result in a quality/positive urban design outcome.
- Any other matter specified in a schedule to the Parking Overlay.
- Any other relevant consideration.

The factors highlighted above are discussed in the sections that follow.

4.5.1 CAR PARKING DEMAND ASSESSMENT

The previous 'Car Parking Demand Assessment' section, identified that the proposed mixed-use development is well placed to operate with modest levels of carparking – particularly by virtue of the:

- Likelihood of **'trip linking' or 'multi-purpose trips' occurring** in the Lilydale Major Activity Centre – where a person arrives at the centre for one purpose and uses the opportunity to visit one or more other establishments in the centre.
- Distinct **variation of car parking demand over time** (particularly between peak childcare pick-up / drop-off and the medical centre uses). As car parking demand for these each land uses peaks at different times, the car parking spaces that are provided can be used more efficiently (and less spaces are needed) as they can be shared and service visitors to different land uses at different times.
- Availability of **excellent public transport access** (multiple existing bus routes immediately adjacent to the site and a major train station within easy walking distance).
- Existence of **effective pedestrian and bicycle networks** servicing the Lilydale Major Activity Centre and the generous supply of on-site bicycle parking – in satisfaction of the minimum Planning Scheme requirements.
- The likely anticipated **low car ownership rates of future workers, customers and visitors to the subject site** as demonstrated by 2016 and 2021 Census data for the Lilydale area.

Within this context, it is reasonable to conclude that the proposed 88-space parking supply is adequate to cater for realistic demand under the 'Car Parking Demand Assessment'.

4.5.2 LOCAL PLANNING POLICY

It is appropriate to consider the local planning policy context and future growth objectives when examining the adequacy of carparking supply for the proposed development. At a strategic level, Clause 22.07 of the Yarra Ranges Planning Scheme is the local planning policy and applies to the precincts within the Lilydale Major Activity Centre.

Sub-Clause 22.07-2 lists a number of specific objectives for Lilydale Major Activity Centre, including (of most relevance to this proposal):

- To create a vibrant town centre with a strong hub of commercial and pedestrian activity centred on the Main Street.
- To create an accessible and convenient centre which gives priority to people with disabilities, pedestrians, cyclists, and public transport users.

Furthermore, the parking supply that is proposed for the development is consistent with Yarra Ranges Council's transport objectives and desires, as expressed through its municipal-wide 'Connected' strategy (which is Yarra Ranges' Integrated Transport Strategy 2020-2040). 'Connected' recognises the imperative of reducing car dependency and has set ambitious targets to reduce the proportion of trips undertaken by car for all trip purposes. 'Connected' identifies that just **over half of all car trips in Yarra Ranges are less than 3km**. Whilst acknowledging that some of these trips will need to be done by car, 'Connected' also point out that there are **many that could be easily completed by walking (less than 1km) or cycling (less than 3km)** if the right infrastructure was provided. To this end, 'Connected' commits to "*expanding the current walking and cycling network to allow people the opportunity to walk and cycle*". In addition, Council has also formulated a formal vision for the Lilydale Major Activity Centre, as articulated in Council's Lilydale Place Plan 2020 which outlines actions to develop and embed sustainable transport choices – aimed at increasing walking and reducing car-dependence and congestion.

In summary, Council's suite of strategic guidance documents aim to moderate car dominance and promote walking, cycling and public transport use as viable and preferable alternatives – supporting the creation of a vibrant, safe and sustainable Lilydale Major Activity Centre. Within this comprehensive sustainable transport policy context, the proposed development's imperative is to contribute an outcome that supports low car dependency and optimises use of active transport and public transport.

4.5.3 ON STREET PARKING IN NON-RESIDENTIAL ZONES

Comprehensive parking survey shave been undertaken in the vicinity of the subject site. The surveys were conducted between 7:00am to 6.00pm on Wednesday 1 December 2021 and between 10:00am to 2:00pm on Wednesday 7 February 2024. The weekday was selected as it represents a 'typical day' when the future 'childcare', 'shop', 'medical centre' and 'office' uses are likely to be operating at representative levels of activity. It is also the time when other nearby activities would experience normal customer visitation. A total of 237 spaces parking spaces was surveyed, within a short walking distance of the subject site – of these, 228 spaces are publicly accessible. The findings of the parking surveys highlight a couple of relevant factors:

- There is exceptionally generous parking availability in the study area at all times.
- The parking demand on the south side of Main Street during peak set-down and pick-up periods for the proposed childcare centre (7-9am and 4-6pm) is exceptionally low.

On the basis of the findings, it is concluded that there is exceptionally generous on-street parking capacity to cater for any excess demand that may occasionally not be catered for by the proposed 88-space on-site parking supply.

4.5.4 ALTERNATIVE TRANSPORT MODES TO AND FROM THE LAND

The subject site is readily accessible by alternative transport modes including public transport, cycling and walking, as described in previous sections of this report. In addition to excellent public transport services, there is an established comprehensive footpath network, linking surrounding residential catchments to the subject site, offering high levels of convenience for pedestrians to access to the land.

It is therefore concluded that the locality is well served by public transport and pedestrian networks that, collectively, will give rise to a reduced demand for car parking on site. It is thus appropriate to take these factors into account when assessing the appropriateness of the car parking supply for the subject site.

4.6 STATUTORY BICYCLE PARKING REQUIREMENT

Bicycle parking requirements are found in Clause 52.34-3 of the Yarra Ranges Planning Scheme. The relevant rates are reproduced below. There is no bicycle parking rate stipulated for childcare centres – and thus no requirement.

- **Office (proposed area 1,395 m²)**:
  In developments where the net floor area exceeds 1000 m²:
  1 to each 300 sq m of net floor area for employees; and
  1 to each 1000 sq m of net floor area for visitors
- **Shop (Pharmacy – proposed area 300 m²)**:
  In developments where the leasable area exceeds 1000 m²:
  1 to each 600 m² of leasable floor area for employees; and
  1 to each 500 m² of leasable floor area for shoppers/visitors
- **Food & Drink (adopt rate for Take-away Food premises – proposed area 248 m²):**
  1 to each 100 sq m of net floor area for employees; and
  1 to each 50 m² of net floor area for shoppers/visitors
- **Medical Centre (nine proposed practitioners)**:
  1 to each 8 practitioners for employees; and
  1 to each 4 practitioners for visitors

The shop area is less than 1,000 m² – and therefore no bicycle parking is required.

The total statutory parking requirement, after application of the above standard parking rates, is shown in Table 7. Clause 52.34-3 advises that if in calculating the number of bicycle facilities the result is not a whole number, the required number of bicycle facilities is the nearest whole number.

Table 7: Statutory Bicycle Parking Requirement

Use	Statutory Bicycle Parking requirement
Office (1,395 m²)	5 (4 for employees / 1 for visitors)
Medical centre (9 practitioners)	3 (1 for employees / 2 for visitors)
Food & Drink Premises (248m²)	7 (2 for employees / 5 for visitors)
Total	**15 bicycle parking spaces (7 for employees / 8 for visitors)**

The proposed bicycle parking supply is 16 spaces – which satisfies and exceeds the statutory requirement.

Table 2 to Clause 52.34-5 defines the "shower" requirements for the development. These only arise if 5 or more employee bicycle spaces are required (1 for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter). As the development triggers the requirement for 7 employee bicycle spaces – there is a requirement for one shower to be provided. Furthermore, Table 3 to Clause 52.34-5 – 'Change rooms' stipulates that 1 change room (or direct access to a communal change room) is required for each shower. The change room may be a combined shower and change room.

Provision for a shower and changeroom has been allowed for in the development's design.

4.7 ACCESS ARRANGEMENTS & PARKING LAYOUT

The proposed 88 carparking spaces are located undercover in a part-basement part-ground floor design. The carpark is accessed off both Hardy Street.

The carpark design has been assessed under the relevant sections of the Planning Scheme (Clause 52.06-9) and the Australian Standards for off-street parking facilities. The carpark satisfies all key design aspects outlined in those documents and is thus satisfactory. The carpark layout is shown in Figure 24.

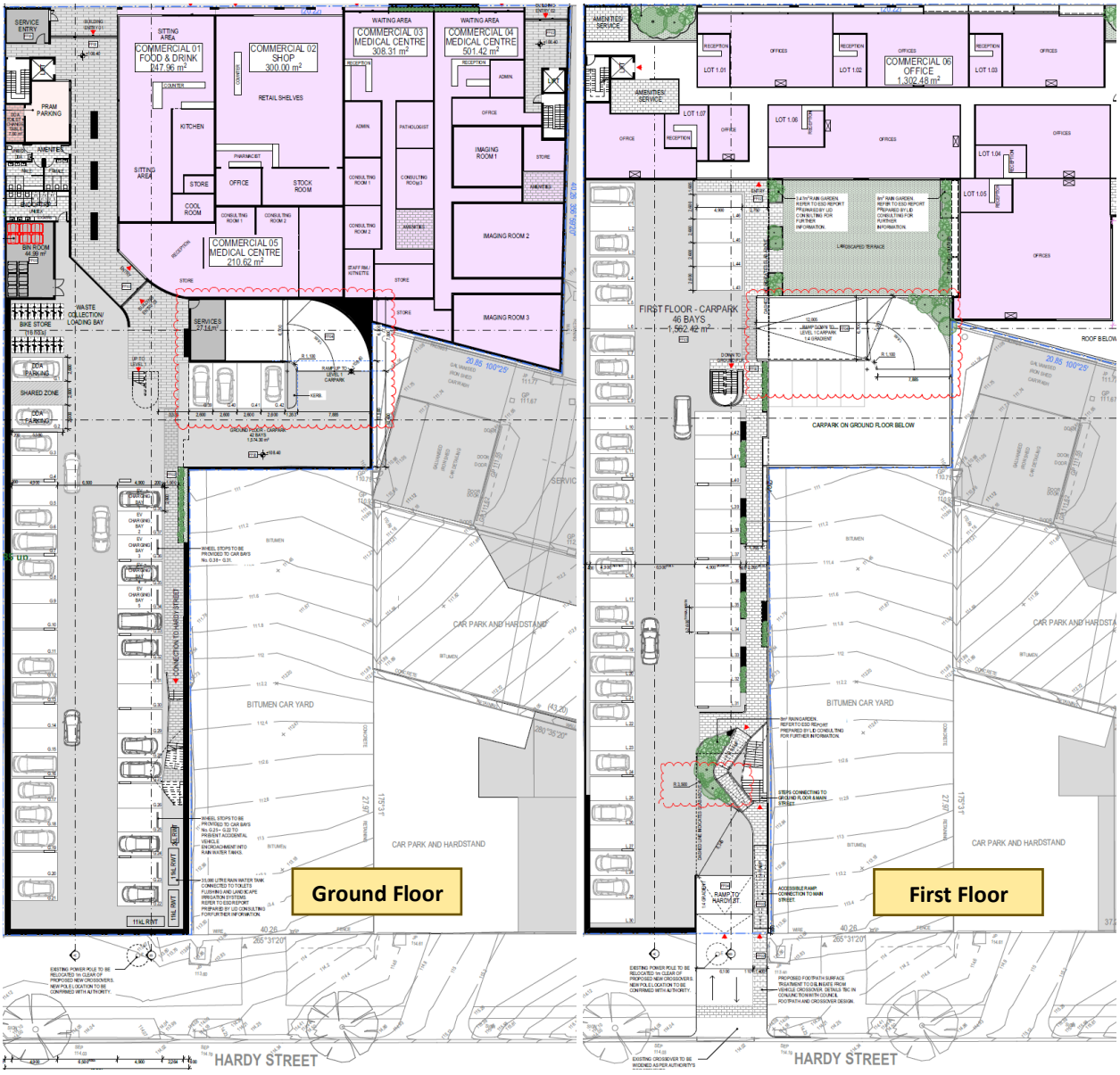


Figure 24: Ground & First Floor Plan – Carpark Layout

5 TRAFFIC IMPLICATIONS

5.1 TRAFFIC ANALYSIS PROCESS

The traffic impact analysis for this development has been structured as follows:

a) Prediction of the likely peak hour traffic volume generation for each of the development land use components
b) Distribution of this traffic volume on the road network
c) Assessment of the ability of roads to accommodate the predicted traffic flows

The original version of this "Traffic Impact Assessment" was prepared on 22 February 2024. The distribution of traffic and assessment of impacts was subsequently reviewed and new recommendations were presented in an Addendum report dated 17 July 2024 – which should be read in conjunction with this report dated 25 July 2024. The conclusions of that Addendum report (that the site access at Hardy St operate as left-in / left-out) supersede the conclusions presented in this chapter. The traffic generation methodology presented in this report remains

5.2 SELECTION OF ANALYSIS PERIOD

The analysis presented in this traffic assessment focuses on the traditional commuter peak hours that characterise this part of metropolitan Melbourne – namely 8am to 9am (AM peak) and 5pm to 6pm (PM peak). These peak hours are also consistent with much of the busiest 'activity' expected in association with the various land uses proposed on the subject site (shop, office, childcare and medical centres). For example:

- Most employee trips to/from the development's various components will likely occur during the traditional AM and PM peak hours
- The highest level of activity for the childcare centre is likely the AM peak period (as demonstrated by comprehensive empirical evidence – discussed later in this report)

Those activities whose peak periods do not coincide with the 'traditional' weekday AM and PM peak hours will attract the greatest number of trips at times when there is abundant spare capacity on the road network, such as the 'shop' which is likely to attract the highest patronage in the middle of a typical weekday. This is consistent with the observed operating hours of existing shops in Main Street, which are overwhelmingly 9am-5pm, and the peak on-street parking occupancy which occurs at lunchtime.

Within this context, adoption of the traditional AM and PM peak hours (for the purposes of traffic impact analysis) will provide the 'worst case' combination of site-generated trips plus background trips on the adjacent road network.

5.3 TRIP GENERATION

In order to reliably estimate the traffic generation potential of a given development, the well-established industry practice across Australia is to utilise the NSW RTA's "Guide to Traffic Generating Developments" (the RTA Guide) together with local surveys/data, if available and as appropriate – in instances where land uses similar to the proposed development exist so that meaningful comparisons may be made. Accordingly, for the purposes of this assessment, trip generation rates for the development have been based on the rates outlined in the RTA Guide as well as some local empirical research, as discussed in the sections that follow.

5.3.1 OFFICE

For the purposes of this analysis, all of the trips generated by the 'office' component will be assumed to be new trips (namely workers that are not working in the Lilydale MAC at present and office visitors who likewise are not currently visiting the Lilydale MAC).

The RTA Guide advises that office trip rates are as follows:

- Morning peak hour vehicle trips = 1.6 per 100 m^2 gross floor area.
- Evening peak hour vehicle trips = 1.2 per 100 m^2 gross floor area.

Based on these rates, the 1395 m^2 office component of the development is expected to generate:

- Morning peak hour vehicle trips = 22
- Evening peak = 17

It will be conservatively assumed that all of the AM and PM peak hour trips associated with the offices are employee-related and thus will be treated as entirely new trips on the surrounding road network. It will also be assumed that 90% of trips in the AM peak hour are incoming and 90% in the PM peak outgoing (consistent with office employee travel-to-work patterns).

5.3.2 SHOP / FOOD & DRINK PREMISES

In the "Parking Analysis" chapter it was determined that no parking would be assigned on site for the shop use. That conclusion made allowance for a phenomenon known as 'trip linking' – where a person arrives at a centre for one purpose and uses the opportunity to visit one or more other establishments in that centre. This occurrence is typical in activity centres such as Lilydale.

The practical implication of the existence of 'Linked Trips' is simply the reduction of movements (in/out) at the subject site access point (as a proportion of visitors to the subject site's land uses will have parked elsewhere). However, there is no corresponding reduction in movements on the existing road network (as the trips are still present on the network). Within this context – it will be assumed that no peak hour vehicle trips associated with the shop component of the development are manifested as traffic movements at the development's Hardy Street driveway.

Similarly, the 'Food & Drink' premises is assumed to attract visitation from trips already occurring in the activity centre. The parking spaces assigned to the 'Food & Drink' premises are assumed to be for staff use and occupied prior to 8.00am and after 6.00pm. Thus, traffic movements will not contribute to peak period flows on the surrounding network.

5.3.3 CHILDCARE CENTRE

In considering the various development components it is evident that the use that will potentially generate the largest traffic generation is the childcare centre (with multiple trips occurring g in association with single parking spaces). Movendo Pty Ltd has undertaken extensive surveys of existing childcare facilities in order to determine the peak hour traffic generation characteristics at sites where the parking supply matched the Planning Scheme requirements of 0.22 spaces per child. Insights have been derived from surveys at childcare facilities at the following locations:

- 364 McKinnon Road, East Bentleigh
- 53 Church Street, Geelong West
- 767 Mt Alexander Road, Moonee Ponds
- 243-251 Flemington Road, North Melbourne

Arrivals and departures at these childcare centres were surveyed over extended morning and afternoon / evening periods. The aggregated findings were:

- AM peak traffic generation = 1.6 car trips per parking space per hour (in & out movements combined)
- PM peak traffic generation = 1.4 car trips per parking space per hour (in & out movements combined)

Accordingly, based on the 28 parking spaces that have been identified as being required for the childcare centre, the traffic generation will be:

- Morning peak hour vehicle trips = 45
- Evening peak vehicle trips = 39

It will be assumed that all of the AM and PM peak hour trips are new trips on the road network, associated with parents dropping-off and picking-up children. It will also be assumed that these trips are evenly divided between incoming and outgoing trips (in each peak period).

5.3.4 MEDICAL CENTRE

Movendo has previously surveyed hourly traffic generation rates associated with existing medical centre uses at outer suburban locations in Melbourne. From these surveys, it has been found that the maximum traffic generation rate is around 3.5 trips per hour per medical practitioner (occurring in the evening peak hour). In the AM peak hour (8.00 to 9.00am) the traffic generation for medical centre is much lower (as typically most are closed and only open at 9.00am – there is therefore very little if any patient activity). Maximum traffic generation in the AM peak hour has been measured at around 2 trips per hour per medical practitioner.

Accordingly, application of the above traffic rates based on the 9 medical practitioners that are proposed to operate at the medical centre, will generate the following traffic:

- Morning peak hour vehicle trips = 18
- Evening peak vehicle trips = 32

It will be assumed that all new trips will be new trips on the road network. In the AM peak hour, it will be assumed that trips are 50% staff related and 50% patients (the first set of arrivals in readiness for the 9am opening of the medical centre). All AM peak hour trips will be incoming. In the PM peak hour, all trips will also be assumed to be related to patients; and these trips will be evenly divided between incoming and outgoing trips.

5.3.5 TOTAL TRIP GENERATION

The total number of trips that is forecast to be generated by the proposed development is summarised in Table 8.

Table 8: Trip Generation for Proposed Development

Land Use	Trip Generation (vehicles/hour)	
	AM Peak (8-9am)	PM Peak (5-6pm)
Office	22 (20 in / 2 out)	17 (2 in / 15 out)
Childcare Centre	45 (23 in / 22 out)	39 (20 in / 19 out)
Medical Centre	18 (18 in)	32 (16 in / 16 out)
Total	**85** **(61 in / 24 out)**	**88** **(38 in / 50 out)**

The next step in this traffic impact analysis is to consider the distribution of traffic – this is presented in the following section.

5.4 TRAFFIC DISTRIBUTION

The previous trip generation analysis revealed that the total forecast trips generated by the development is as follows:

- **85 vehicle trips** in the **AM peak hour** (61 incoming trips and 24 outgoing trips); and
- **88 vehicle trips** in the **PM peak hour** (38 incoming trips and 50 outgoing trips).

These vehicle movements will be manifested at the Hardy Street access point.

Traffic attracted to the proposed development are likely to be distributed based on the location of residential catchments in the surrounding region. Given that residential neighbourhoods are well established in all directions, it will be assumed that the arrival routes for traffic are evenly split 4 ways – north, south, east and west. The assignment of incoming and outgoing traffic movements at the Hardy Street access point, in accordance with the 4-way distribution is provided in Table 9. The table shows the direction from which traffic has come from (the 'arrivals') and where traffic is going to (the 'departures').

Table 9: Peak Hour Forecast Traffic Movements (Combined Total at Two Site Access Points – vehicles per hour)

Peak Period		Hardy Street Access Point – Trip Distribution (vehicles/hour)			
		North	South	East	West
AM Peak (8-9am)	Coming From	15	15	15	16
	Going To	6	6	6	6
PM Peak (5-6pm)	Coming From	9	9	10	10
	Going To	12	12	13	13

On the basis of the above 'distribution', the forecast vehicle trips have been distributed in the AM and PM peak hours at the Hardy Street access point as shown in Figure 25 to Figure 26. It is relevant to note that the traffic distributions shown in these figures reflect the existing road geometry and local access options that are available in the immediate road network. The forecast distributions adopt logical route choice solutions that provide safe integration with existing traffic streams. Importantly the traffic distributions reflect what movements are realistically 'possible' for motorists to perform when '*arriving from / departing to*' the various surrounding catchments.

For example, motorists bound for the site and who originate from the west have been assigned as left turners from Hardy Street into the subject site, as this option is the most rational alternative. These same motorists – when leaving the site and wishing to return to the west – have been assigned as right turners out of the subject site onto Hardy Street.

The distributions of traffic movements shown in Figure 25 to Figure 26 highlight that the forecast additional traffic on the surrounding road network is exceptionally modest.

Figure 25: AM Peak Hour – Forecast Traffic Movements at Hardy Street Access Point (vehicles per hour)

Key aspects to note in Figure 25 are as follows:

1. All of the traffic arriving from the north and east and half of the traffic arriving from the south will enter the site via right turns from Hardy Street
2. Half the traffic arriving from the south and all the traffic from the west will enter the site via left turns from Hardy Street
3. Traffic departures will follow a reverse pattern

Figure 26: PM Peak Hour – Forecast Traffic Movements at Hardy Street Access Point (vehicles per hour)

Key aspects to note in Figure 26 are as follows:

1. All of the traffic arriving from the north and east and half of the traffic arriving from the south will enter the site via right turns from Hardy Street
2. Half the traffic arriving from the south and all the traffic from the west will enter the site via left turns from Hardy Street
3. Traffic departures will follow a reverse pattern

5.5 TRAFFIC CAPACITY ANALYSIS

5.5.1 OVERVIEW

The likely traffic impact associated with the development has been assessed by considering the impacts of entry/exit movements at the Hardy Street access point. The analysis includes consideration of total movements '*arriving from'* all directions and '*departing to'* all directions (north, south, east and west). The traffic volumes used are those forecast in Figure 25 and Figure 26.

5.5.2 HARDY STREET IMPACTS

When assessing the likely performance of the Hardy Street access point, it is necessary to consider current traffic volumes on that street. The existing traffic on Hardy Street near the proposed development access point is shown in Figure 27 and Figure 28. The existing peak hour traffic volumes shown in these figures is notable. Monitoring of traffic conditions at the proposed Hardy Street access point has revealed the following general operational conditions:

- At peak times queuing occasionally forms in the eastbound lanes on the approach to Anderson Street. In contrast the westbound carriageway is always free-flowing (due to its location on the 'departure' side of the Anderson street / Hardy Street signalised intersection).
- There are already two existing driveways off the north side of Hardy Street to the east of the proposed development access point (namely – closer to the intersection with Anderson Street and thus more susceptible to queuing impacts on the eastbound carriageway). The operation of the existing driveways has been monitored and this has revealed satisfactory performance throughout – with motorists being able to readily undertake left turns (in and out) and right turns experiencing only small delays, thanks to the presence of 'keep-clear' roadmarkings that facilitate right turn access at each of the existing driveways.
- Within the context of what has been observed, it is considered that access movements into and out of the proposed development will operate satisfactorily. Nonetheless, despite the strong operational performance indications derived the site reconnaissance, a rigorous assessment based on published Austroads guidance has been undertaken and is presented in this section of the report.

Figure 27: AM Peak Hour – Comparison of Development Traffic & Existing Traffic at Hardy Street Access Point

Key aspects to note in Figure 27 are as follows:

1. Traffic arriving from the north and east will use the slip lane from Maroondah Highway into Main Street
2. Traffic arriving from the south and west will use Hardy Street (right and left turns respectively)
3. Traffic departing to the north, south and east will turn left from the subject site into Hardy Street
4. Traffic departing to the west will turn left from the subject site into Main Street

The same pattern for traffic arrivals and departures applies to Figure 28 over the page.

Figure 28: PM Peak Hour – Comparison of Development Traffic & Existing Traffic at Hardy Street Access Point

Taking into consideration the traffic volumes presented in Figure 27 and Figure 28, and the site reconnaissance, the following more specific conclusions can be drawn for Hardy Street:

The location where the future development access point intersects Hardy Street can be effectively treated as an unsignalised intersection. Such intersections work well when the minor road traffic volume (in this instance the access point) is low compared to the major road volume (provided delays on the minor legs are not excessive). "Austroads 2015: Guide to Traffic Management Part 2: Traffic Theory" (the "AustRoads Guide") is typically used to determine the capacity for uncontrolled intersections. The AustRoads Guide is the definitive guidance document available in Australia and used by all road agencies. It provides the most 'rigorous' level of capacity modelling available for uncontrolled intersections such as driveways – based on 'gap acceptance theory. The AustRoads Guide provides Practical Absorption Capacities for turning movements at such intersections – relevant for analysing conditions at the site entrance / Hardy Street interface. The Practical Absorption Capacity is the theoretical number of movements that can be accommodated before unacceptable delays occur.

At the access point, surveys have revealed that there are currently 332 eastbound vehicle movements and 801 westbound vehicle movements/hour between 8-9am. In the evening peak hour, 5-6pm, there are 774 eastbound vehicle movements and 231 westbound vehicle movements/hour. The forecast peak hour movements, as shown in Figure 27 and Figure 28, at the access point to the subject site are as follows:

AM Peak Hour

- 24 left turn movements into site
- 15 left turn movements out of the site
- 37 right turn movements into site
- 9 right turn movements out of the site

PM Peak Hour

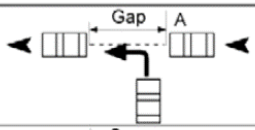
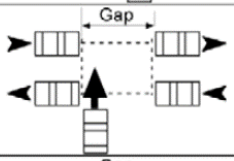
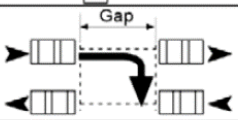
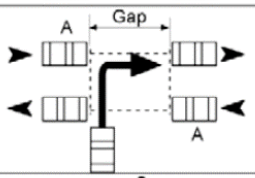
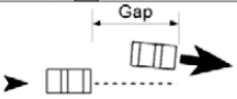
- 15 left turn movements into site
- 31 left turn movements out of the site
- 23 right turn movements into site
- 19 right turn movements out of the site

Thus, the key movements that require analysis are the left turn from the site onto Hardy Street and the right turn movements into and out of the site. Motorists undertaking these manoeuvres both need to give way and find a gap in the eastbound traffic flow on Hardy Street or – in the worst case scenario (the right turn out of the subject site) both traffic streams on Hardy Street. The other left turn (from Hardy Street into the subject site) has no opposing traffic and thus it is inconsequential from a traffic capacity perspective (bearing in mind that there is negligible pedestrian activity on that side of Hardy Street).

In deriving a Practical Absorption Capacity for the site entrance off Hardy Street, the Austroads Guide first provides 'critical acceptance gap' and 'follow-up headway' values (reproduced as Table 10).

Using Table 10 the 'critical acceptance gap' and 'follow-up headway' values that are relevant for the three movements under consideration are identified. These are shown in Table 11.

Table 10: Gap Acceptance Time – General Guidance

Movement	Diagram	Description	t_a	t_f
Left hand turn		Not interfering with A Requiring A to slow	14-40 sec 5 sec	2-3 sec 2-3 sec
Crossing		Two lane/one way Three lane/one way Four lane/one way Two lane/two way Four lane/two way Six lane/two way	4 sec 6 sec 8 sec 5 sec 8 sec 8 sec	2 sec 3 sec 4 sec 3 sec 5 sec 5 sec
Right hand turn from major road		Across 1 lane Across 2 lanes Across 3 lanes	4 sec 5 sec 6 sec	2 sec 3 sec 4 sec
Right hand turn from minor road		Not interfering with A One way Two lane/two way Four lane/two way Six lane/two way	14-40 sec 3 sec 5 sec 8 sec 8 sec	3 sec 3 sec 3 sec 5 sec 5 sec
Merge		Acceleration lane	3 sec	2 sec

Note: t_a = critical acceptance gap
t_f = follow up headway

Table 11: Gap Acceptance Times at Hardy Street Access Point

Movement	Critical Acceptance Gap (seconds)	Follow-up headway (seconds)
Left Turn from Subject Site onto Hardy Street	5	2-3
Right Turn from Hardy Street into Subject Site	5	3
Right Turn from Subject Site into Hardy Street	8	5

These 'Critical Acceptance Gap' and 'Follow-up headway' values shown in Table 11 are then used to derive 'Practical Absorption Capacity' values (provided in Figure 29) which is the volume of left-turning and right-turning (incoming and outgoing) traffic that can be accommodated at the site entrance interface point with Hardy Street.

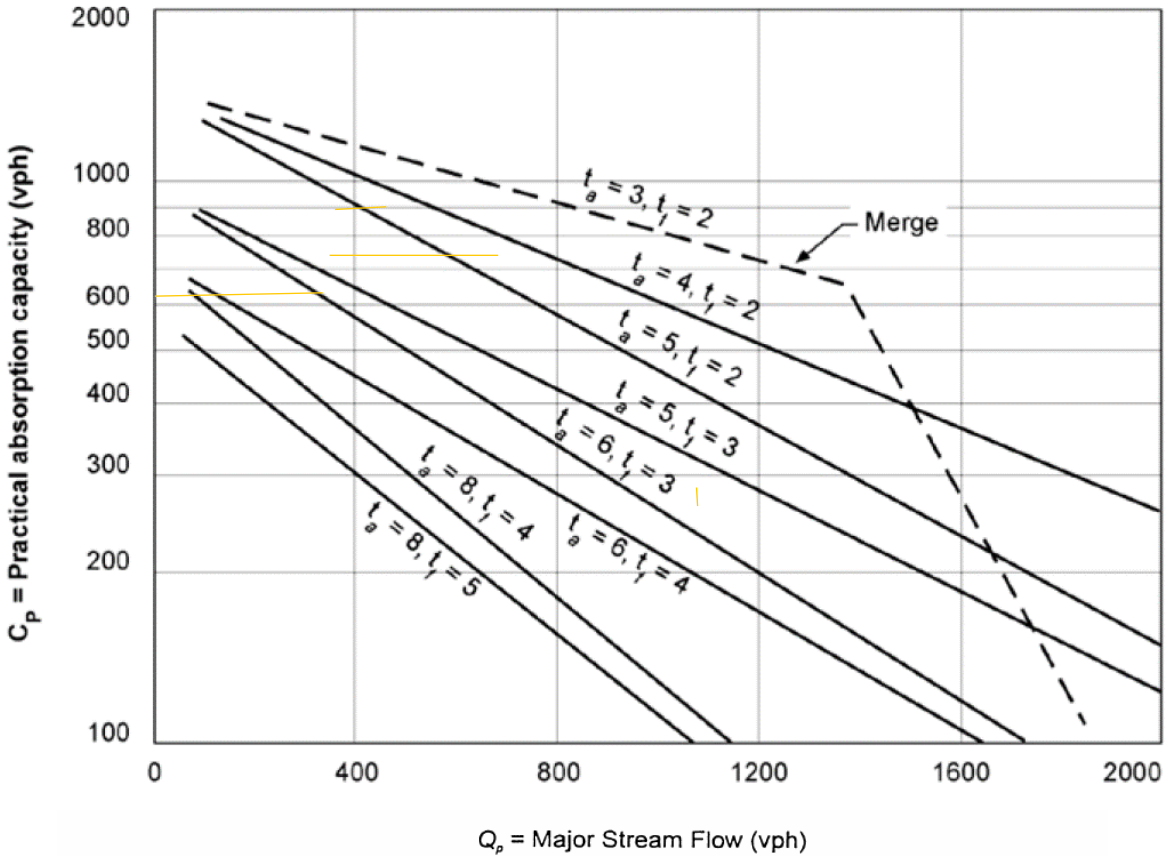


Figure 29: Practical Absorption Capacity at Unsignalised Intersections

Application of the adopted gap acceptance parameters to Figure 29 (in combination with the measured existing traffic volumes on Hardy Street and the forecast movements at the development's access point) provides the assessment shown in Table 12.

Table 12: Capacity Analysis at Hardy Street / Site Access

Parameter (vehicles per hour)	Movement Description					
	Left Turn from Subject Site onto Hardy Street		Right Turn from Hardy Street into Subject Site		Right Turn from Subject Site into Hardy Street	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Opposing Flow	332	774	332	774	1,133	1,005
Practical Absorption Capacity	810	510	620	440	100	120
Movements Generated by Subject Site	15	31	37	23	9	19
CONCLUSION	Forecast Traffic is 2% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY	Forecast Traffic is 6% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY	Forecast Traffic is 6% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY	Forecast Traffic is 5% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY	Forecast Traffic is 9% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY	Forecast Traffic is 16% of what could be accommodated. SUBSTANTIAL SPARE CAPACITY

The analysis summarised in Table 12 clearly demonstrates that there is ample spare capacity to accommodate the peak period movements expected to be generated by the development – with the *Practical Absorption Capacity* (the theoretical number of movements that can be accommodated before unacceptable delays occur) being well in excess of the forecast volume of traffic movements at the development's access point.

It should be noted – as previously indicated (at the start of this report section) – that monitoring of the operation of the existing driveways on Hardy Street has revealed satisfactory performance throughout – with motorists being able to readily undertake left turns (in and out) and right turns experiencing only small delays. The existing operations were enhanced by the presence of 'keep-clear' roadmarkings – to particularly facilitate right turn access at each of the existing driveways (whenever stationary queues form and have the potential to extend across driveways, as a result of the operation at the nearby signalised intersection of Hardy Street with Anderson Street). The location of the existing 'keep-clear' roadmarkings is shown in Figure 30.

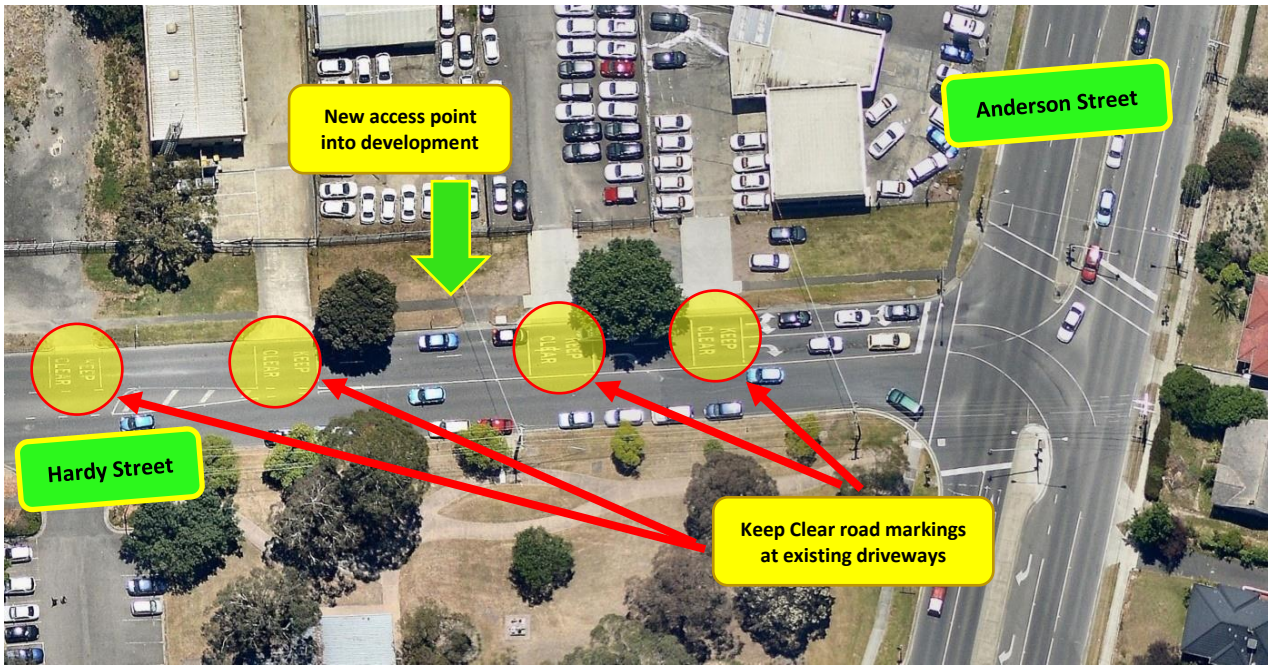


Figure 30: Hardy Street – Driveway Conditions at Existing Access Points near the Subject Site

6 CONCLUSIONS

This report concludes that there are no traffic engineering reasons why the proposed mixed-use development at 304-322 Main Street, Lilydale should not be allowed. There is sufficient justification to recognise that the proposed 88-space parking supply generally satisfies the development's needs and justifies a part waiver of the statutory parking requirement under the Yarra Ranges Planning Scheme – once the legitimate Planning Scheme considerations for reducing the statutory car parking requirement are taken into consideration.

It is particularly relevant to note that the 'Car Parking Demand Assessment' undertaken for this study has identified that the proposal is well placed to operate with the proposed levels of carparking by virtue of the:

- Likelihood of **'trip linking' or 'multi-purpose trips' occurring** in the Lilydale Major Activity Centre – where a person arrives at the centre for one purpose and uses the opportunity to visit one or more other establishments in the centre.
- Distinct **variation of car parking demand over time** (particularly between peak childcare pick-up / drop-off and the medical centre uses). As car parking demand for these each land uses peaks at different times, the car parking spaces that are provided can be used more efficiently (and less spaces are needed) as they can be shared and service visitors to different land uses at different times.
- Availability of **excellent public transport access** (multiple existing bus routes immediately adjacent to the site and a major train station within easy walking distance).
- Existence of **effective pedestrian and bicycle networks** servicing the Lilydale Major Activity Centre and the generous supply of on-site bicycle parking –in satisfaction of the minimum Planning Scheme requirements.
- The likely anticipated **low car ownership rates of future workers, customers and visitors to the subject site** as demonstrated by 2016 and 2021 Census data for the Lilydale area.

It has also been established that there is **abundant spare on-street parking capacity at all times on a weekday** to accommodate any unusual unforeseen spikes in demand that may occur. The proposed level of on-site parking is also **consistent with Council's suite of strategic guidance documents** – which collectively aim to **moderate car dominance and promote walking, cycling and public transport use as viable and preferable alternatives** – supporting the creation of a **vibrant, safe and sustainable Lilydale Major Activity Centre**. Within this comprehensive sustainable transport policy context, the proposed development's imperative is to contribute an outcome that supports low car dependency and optimises use of active transport and public transport. It has also been established that the parking supply that is proposed for the development is consistent with Yarra Ranges Council's transport objectives and desires, as expressed through its municipal-wide 'Connected' strategy (which is Yarra Ranges' Integrated Transport Strategy 2020-2040). 'Connected' recognises the imperative of reducing car dependency and has set ambitious targets to reduce the proportion of trips undertaken by car for all trip purposes. 'Connected' identifies that just **over half of all car trips in Yarra Ranges are less than 3km**. Whilst acknowledging that some of these trips will need to be done by car, 'Connected' also point out that there are **many that could be easily completed by walking (less than 1km) or cycling (less than 3km)** if the right infrastructure was provided. To this end, 'Connected' commits to "*expanding the current walking and cycling network to allow people the opportunity to walk and cycle*". In addition, Council has also formulated a formal vision for the Lilydale Major Activity Centre, as articulated in Council's Lilydale Place Plan 2020 which outlines actions to develop and embed sustainable transport choices – aimed at increasing walking and reducing car-dependence and congestion.

In summary, Council's suite of strategic guidance documents clearly set out to moderate car usage and promote walking, cycling and public transport use as viable and preferable alternatives – supporting the creation of a vibrant, safe and sustainable Lilydale Major Activity Centre. Within this comprehensive sustainable transport policy context, the proposed development's imperative is to contribute an outcome that supports low car dependency and optimises use of active and public transport.

Finally, a traffic impact analysis has revealed that the overall **traffic consequences** arising from the development are expected to be **insignificant**. The additional traffic movements forecast on surrounding roads and at all the key intersections near the subject site are exceptionally low and thus **no adverse traffic impacts on intersection performance are expected**. Monitoring of existing conditions confirms that all intersections exhibit reasonable spare capacity and are capable of adequately satisfying the traffic demand generated by the development.

Therefore, in view of the above considerations, there are no traffic engineering reasons why the proposed development at 304-322 Main Street, Lilydale should not be approved.