MIDSON traffic pty ltd

Clarence Lifestyle Village

625 East Derwent Highway Aged Care Development Traffic Impact Assessment

September 2023

ENGINEERS AUSTRALIA

PROFESSIONAL ENGINEER OF THE YEAR
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1. Introduction

1.1 Background

Midson Traffic were engaged by Clarence Lifestyle Village to prepare a traffic impact assessment for a proposed extension to the existing aged care facility at 625 East Derwent Highway, Risdon.

1.2 Traffic Impact Assessment (TIA)

A traffic impact assessment (TIA) is a process of compiling and analysing information on the impacts that a specific development proposal is likely to have on the operation of roads and transport networks. A TIA should not only include general impacts relating to traffic management, but should also consider specific impacts on all road users, including on-road public transport, pedestrians, cyclists and heavy vehicles.

This TIA has been prepared in accordance with the Department of State Growth (DSG) publication, *Traffic Impact Assessment Guidelines*, August 2020. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management,* Part 12: *Traffic Impacts of Developments*, 2019.

Land use developments generate traffic movements as people move to, from and within a development. Without a clear understanding of the type of traffic movements (including cars, pedestrians, trucks, etc), the scale of their movements, timing, duration and location, there is a risk that this traffic movement may contribute to safety issues, unforeseen congestion or other problems where the development connects to the road system or elsewhere on the road network. A TIA attempts to forecast these movements and their impact on the surrounding transport network.

A TIA is not a promotional exercise undertaken on behalf of a developer; a TIA must provide an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required. An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

This TIA also addresses the relevant clauses in C2.0, *Parking and Sustainable Transport Code*, and C3.0, *Road and Railway Assets Code*, of the Tasmanian Planning Scheme – Clarence, 2021.

1.3 Statement of Qualification and Experience

This TIA has been prepared by an experienced and qualified traffic engineer in accordance with the requirements of Council's Planning Scheme and The Department of State Growth's, *Traffic Impact Assessment Guidelines*, August 2020, as well as Council's requirements.

The TIA was prepared by Keith Midson. Keith's experience and qualifications are briefly outlined as follows:

- 27 years professional experience in traffic engineering and transport planning.
- Master of Transport, Monash University, 2006
- Master of Traffic, Monash University, 2004

- Bachelor of Civil Engineering, University of Tasmania, 1995
- Engineers Australia: Fellow (FIEAust); Chartered Professional Engineer (CPEng); Engineering Executive (EngExec); National Engineers Register (NER)

1.4 Project Scope

The project scope of this TIA is outlined as follows:

- Review of the existing road environment in the vicinity of the site and the traffic conditions on the road network.
- Provision of information on the proposed development with regards to traffic movements and activity.
- Identification of the traffic generation potential of the proposal with respect to the surrounding road network in terms of road network capacity.
- Review of the parking requirements of the proposed development. Assessment of this parking supply with Planning Scheme requirements.
- Traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety.

1.5 Subject Site

The subject site is located at 647 East Derwent Highway, Risdon. The site currently consists of a residential dwelling and is located immediately adjacent to the Clarence Lifestyle Village to the south. A right of way access connects to East Derwent Highway along the northern boundary of the site.

The subject site and surrounding road network is shown in Figure 1.

Figure 1 Subject Site & Surrounding Road Network



Image Source: LIST Map, DPIPWE

1.6 Reference Resources

The following references were used in the preparation of this TIA:

- Tasmanian Planning Scheme - Clarence, 2021 (Planning Scheme)
- Austroads, *Guide to Traffic Management,* Part 12: *Traffic Impacts of Developments*, 2019
- Austroads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, 2021
- Department of State Growth, *Traffic Impact Assessment Guidelines*, 2020
- Roads and Maritime Services NSW, *Guide to Traffic Generating Developments*, 2002 (RMS Guide)
- Roads and Maritime Services NSW, *Updated Traffic Surveys,* 2013 (Updated RMS Guide)
- Australian Standards, AS2890.1, *Off-Street Parking*, 2004 (AS2890.1)

2. Existing Conditions

2.1 Transport Network

For the purposes of this report, the transport network relevant to the development proposal consists of East Derwent Highway and Piper Road.

The East Derwent Highway is part of the State road network, owned and maintained by the Department of State Growth. It connects between the Tasman Bridge at its southern end, to Midland Highway at its northern end.

The East Derwent Highway is classified as 'Category 3 Roads: Regional Access Roads' under the Tasmanian Road Hierarchy. Regional Access Roads are of strategic importance to regional and local communities and economies; they link important towns to the Category 1 and Category 2 roads. Heavy freight vehicles use regional Access Roads, but this use is less than that of Regional Freight Roads.

East Derwent Highway adjacent to the site is a four-lane divided carriageway with an average pavement width of 7 m. The posted speed limit is 100-km/hr adjacent to the site, reducing to 70-km/h immediately north of the subject site. The traffic volume on East Derwent Highway is 15,150 vehicles per day, with approximately 4.5% heavy vehicles[1]. Peak hour flows are approximately 1,800 vehicles per hour during both the AM and PM peak periods.

East Derwent Highway at the Piper Road junction is shown in Figure 2.

Figure 2 East Derwent Highway





[1] Department of State Growth traffic data, 2021.

Piper Road is a local, narrow sealed road, which provides access to a relatively small residential catchment located on both Piper Road and Napier Street. Piper Road and the existing access to the Lifestyle Village is shown in Figure 3.

Figure 3 Piper Road



2.2 Road Safety Performance

Crash data can provide valuable information on the road safety performance of a road network. Existing road safety deficiencies can be highlighted through the examination of crash data, which can assist in determining whether traffic generation from the proposed development may exacerbate any identified issues.

Crash data was obtained from the Department of State Growth for a 5+ year period between 1st January 2018 and 30th July 2023 for East Derwent Highway between Grasstree Hill Road and Sugarloaf Road, and the full length of Piper Road.

The findings of the crash data is summarised as follows:

- No crashes were reported in Piper Road.
- A total of 51 crashes were reported in the East Derwent Highway.
- Severity. 1 crash involved serious injury; 9 crashes involved minor injury; 6 crashes involved first aid at the scene; and 35 crashes involved property damage only.
- Time of day. Afternoon crashes were dominant, with 20 crashes reported between 3:00pm and 6:00pm. The distribution of crashes by time of day is shown in Figure 4.

- Day of week. Crashes were relatively evenly disbursed by day of the week. The crash rate by day of week is shown in Figure 5.
- Crash types. Rear end crashes were dominant with 17 reported incidents. Vehicles striking animals, 'right-off-carriageway' and 'left-rear' collisions were the next most frequent crash types. Crash types are summarised in Figure 6.
- Crash locations. Crashes were generally concentrated near road junctions. The crash locations are shown in Figure 7.
- Vulnerable road users. 3 crashes involved motorcycles (1 x serious injury, 2 x minor injury). 2 crashes involved bicycles (1 x first aid, 1 x minor injury).

The crash history on East Derwent Highway is considered to be consistent with a busy highway road through an urban environment. The crash data does not provide an indication that there are any serious road safety deficiencies in the network that may be exacerbated by traffic generated by the development proposal.

Figure 4 Crashes by Time of Day

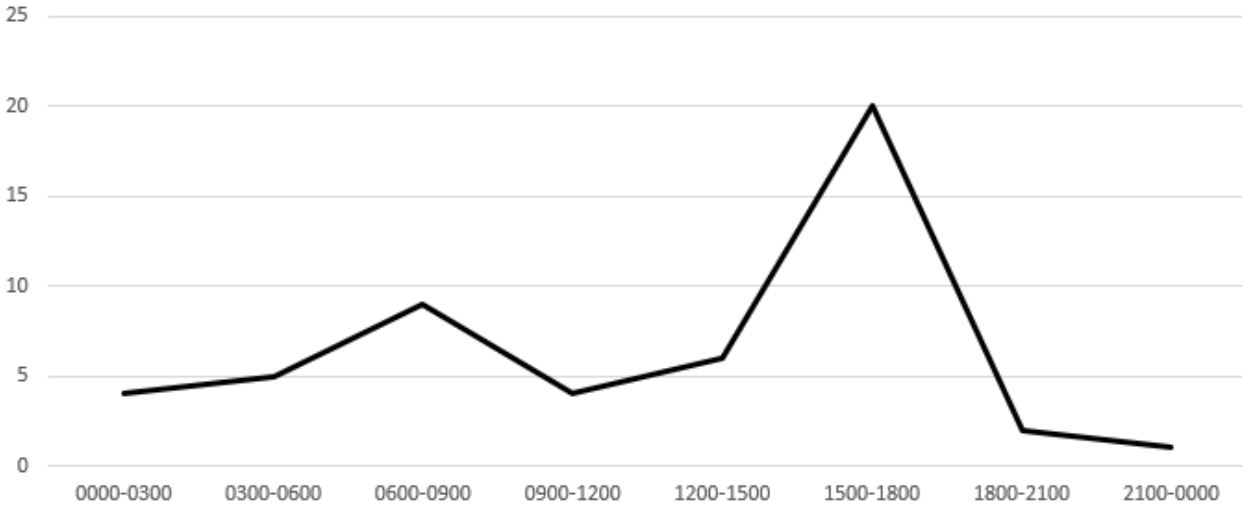


Figure 5 Crashes by Day of Week

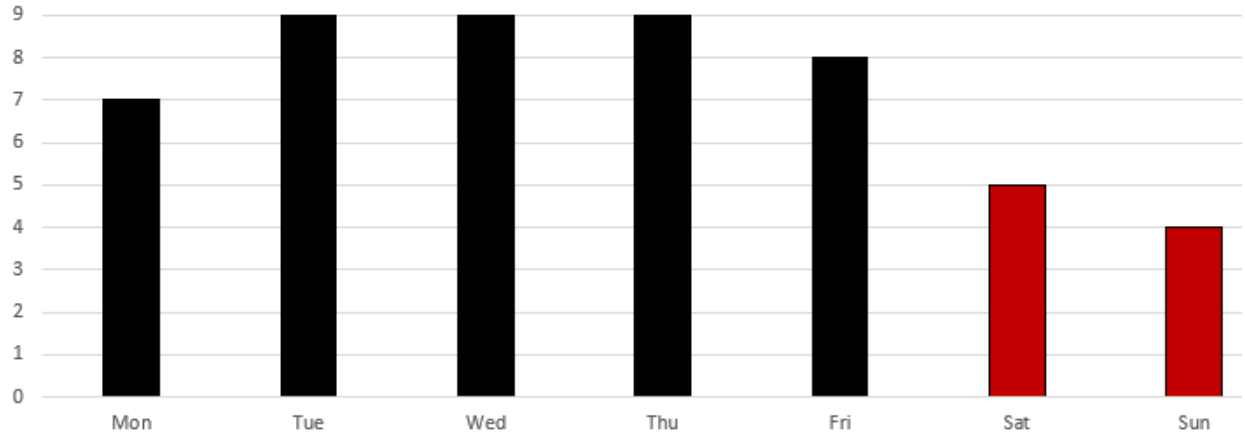


Figure 6 Crash Types

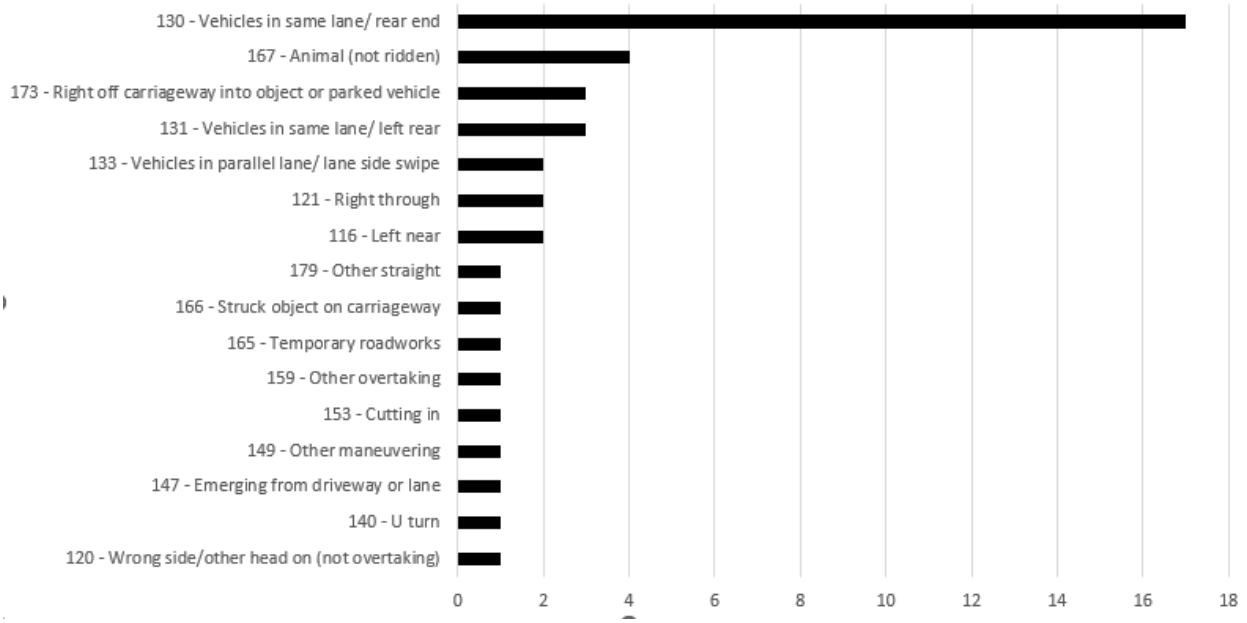
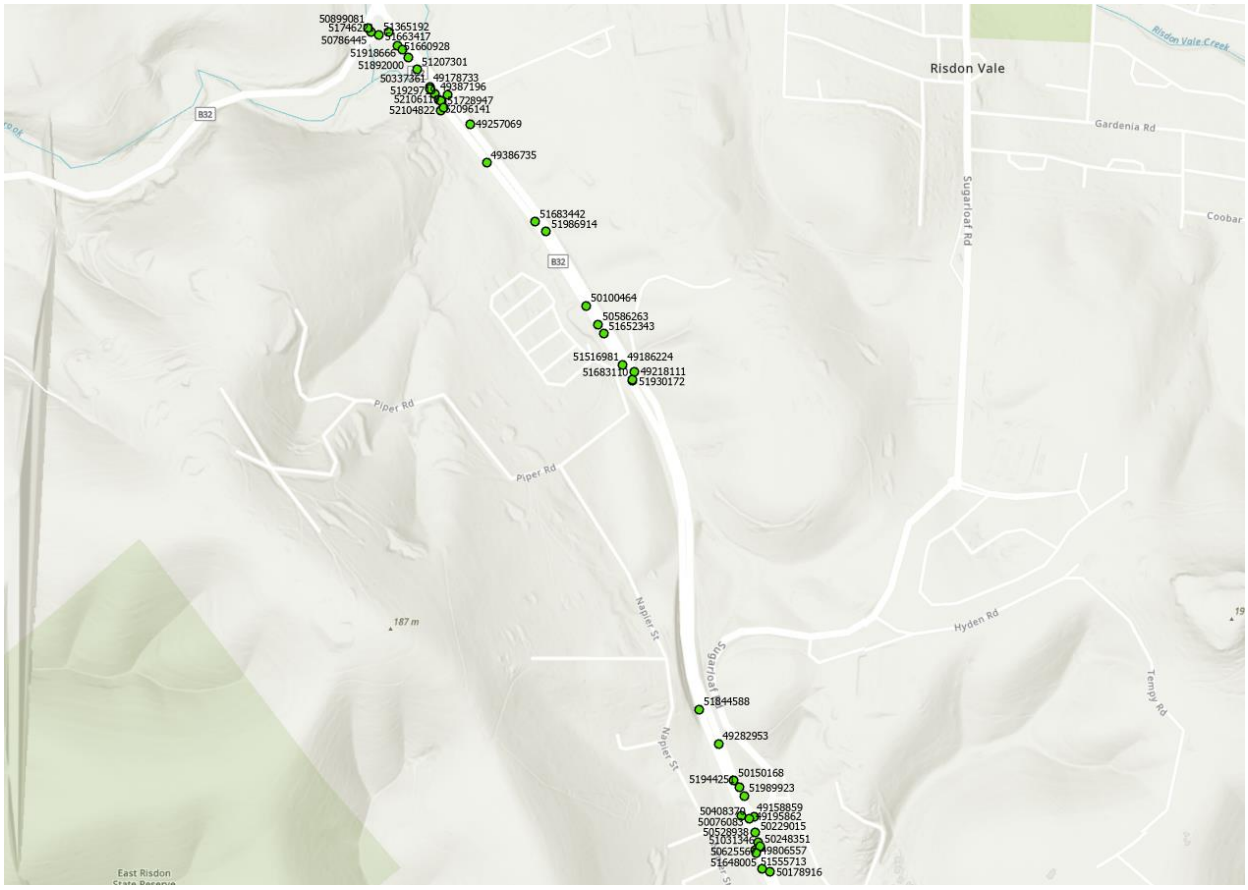


Figure 7 Crash Locations



Source: Department of State Growth

3. Proposed Development

3.1 Development Proposal

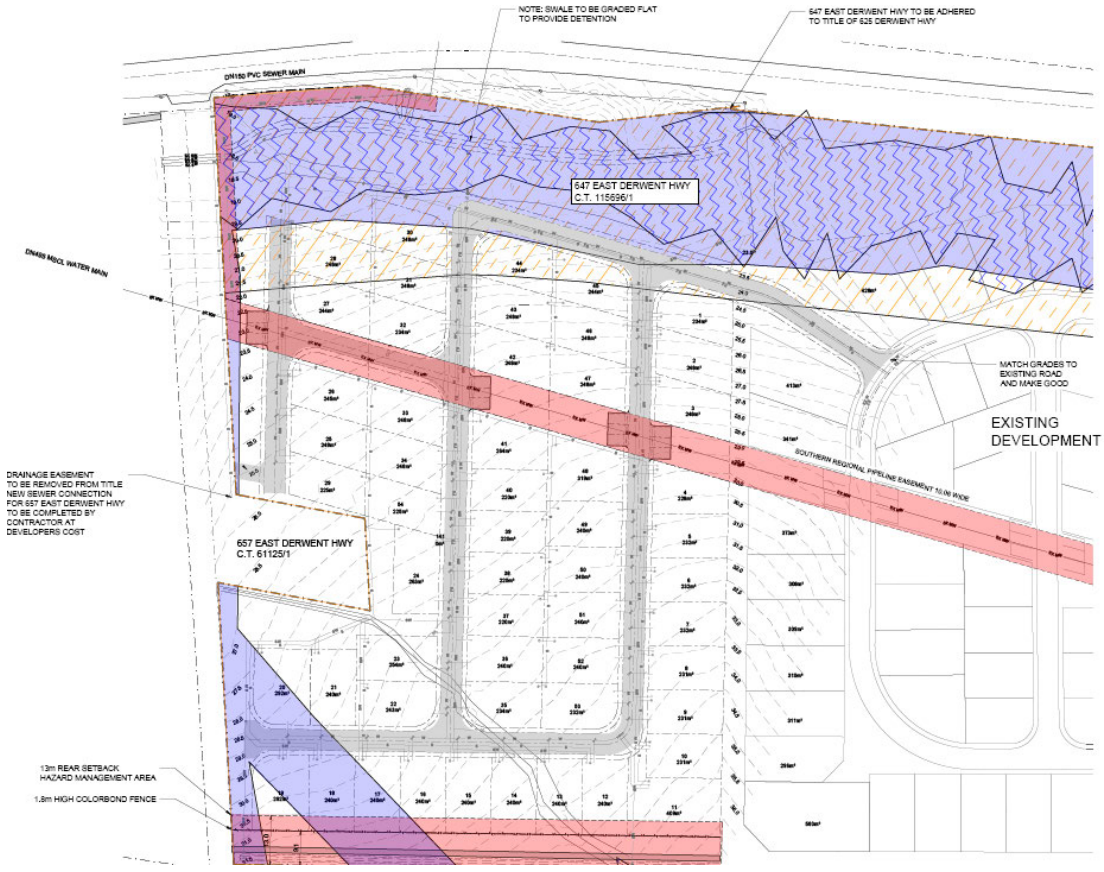
The proposed development involves the construction of 54 independent living units as an extension to the existing Clarence Lifestyle Village. The new independent living units will connect to the existing site via a new internal road located at the northern corner of the existing site. The units will be a mix of 1, 2 and 3 bedroom dwellings. Each dwelling will have a carport and a driveway which provides up to 8-metres of length for parking of an additional car in front of the carport.

A total of 12 on-street visitor car parking spaces are proposed. These are provided as 4 bays of 3 angle parking spaces within the internal road network.

Each unit will have parking for two cars (one garage and one jockey style space in front of the garage), a total of 108 spaces. The total on-site car parking provision is therefore 120 spaces.

The proposed development is shown in Figure 8.

Figure 8 Proposed Development Plans



4. Traffic Impacts

4.1 Trip Generation

4.1.1 RMS Guide Traffic Generation – Retirement Village

The RMS Guide provides traffic generation rates for 'Housing for the aged and disabled persons'. It is defined as follows:

> *"Housing for aged or disabled persons refers to residential accommodation (in any building form), which is used or is intended to be used permanently as accommodation for aged persons or disabled persons. Housing of this kind may consist of hostels, a grouping of self-contained dwellings, or a combination of both. This accommodation usually includes one or more of the following facilities:*
>
> - *accommodation for staff employed or to be employed in connection with the development.*
> - *chapel or other place of worship.*
> - *medical consulting room.*
> - *meeting room, recreation facility.*
> - *shops.*
> - *therapy room.*
> - *any other facilities for the use or benefit of aged or disabled persons".*

The traffic generation rates provided in the updated RMS Guide are summarised as follows:

- 2.1 trips per day per dwelling
- 0.4 trips per hour per dwelling during peak periods. It further states that "morning site peak hour does not generally coincide with the network peak hour).

Based on these traffic generation rates, the proposed development may generate the following trips:

- 113 trips per day
- 22 trips per hour during peak periods.

4.1.2 Traffic Surveys

Peak hour traffic surveys were undertaken by Midson Traffic at the existing Clarence Lifestyle Village on Monday 7th March 2016. The results are summarised in Table 1.

Table 1 Clarence Lifestyle Village Traffic Generation Surveys

Peak Period	Vehicles Entering	Vehicles Exiting	Total Vehicles
Morning Peak (8:00-9:00am)	12 vehicles	9 vehicles	21 vehicles
Evening Peak (5:00-6:00pm)	6 vehicles	6 vehicles	12 vehicles

At the time of the survey, the Clarence Lifestyle Village currently has 56 occupied units. This equates to the following peak hour generation:

- 0.375 trips per dwelling during the morning peak period. The directional split is 57% inward trips/ 43% outward trips.
- 0.214 trips per dwelling during the afternoon peak period. The directional split is 50%/ 50% inward/ outward trips.

Applying this traffic generation rate to the proposed expansion of the Lifestyle Village development (52 units), we have the following:

- Morning peak traffic generation: 20 trips per hour (11 inward/ 9 outward)
- Evening peak traffic generation: 12 trips per hour (6 inward/ 6 outward)

The peak hour trip rates surveyed are generally consistent with the RMS Guide recommendations. The RMS Guide recommends a peak rate of 0.4 trips per hour, but notes that the development peak does not coincide with the transport network peak. In this case, the network peak hour (8:00am to 9:00am) was surveyed and this rate was similar, but less than, the RMS Guide rate of 0.4 trips per hour.

4.2 Trip Distribution

All traffic movements are restricted to left-in/ left-out at the Piper Road junction.

4.3 Traffic Capacity Analysis

The development proposal will generate traffic that will intensify the existing access junction at Piper Road. The access is shown in Figure 9.

Figure 9 Existing Piper Road Site Access



The Acceptable Solution A1.4 of Clause C3.5.1 of the Planning Scheme states: "*Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than the amounts in Table C3.1*".

Table C3.1 states that the maximum permitted increase at the existing access is 20% or 40 vehicles per day, whichever is greater. In this case the development will exceed 20% of the existing traffic volume at the access and therefore does not comply with the requirements of Acceptable Solution A1.4 of Clause C3.5.1 of the Planning Scheme. The Performance Criteria P1 of Clause C3.5.1 states:

> *"Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:*
>
> *(a) any increase in traffic caused by the use;*
>
> *(b) the nature of the traffic generated by the use;*
>
> *(c) the nature of the road;*
>
> *(d) the speed limit and traffic flow of the road;*
>
> *(e) any alternative access to a road;*
>
> *(f) the need for the use;*
>
> *(g) any traffic impact assessment; and*
>
> *(h) any advice received from the rail or road authority".*

The following is relevant to the proposed development:

a. Increase in traffic. The increase in traffic is expected to be 113 vehicles per day. During peak times, traffic generation will be in the order of 22 vehicles per hour. This equates to an increase of an average of around 1 vehicle every 3 minutes during peak periods only.

b. Nature of traffic. The traffic generated by the development will be consistent with existing traffic that is currently utilising the access.

c. Nature of road. Piper Road is a low volume road. The intersection at the site's access is clear and obvious for all road users.

d. Speed limit and traffic flow of road. The general urban speed limit of 50-km/h is applicable to Piper Road. The traffic volume is approximately 1,000 vehicles per day.

e. Alternative access. Alternative access was considered at the right-of-way at the northern boundary of the subject site, but discounted as it is a low volume driveway rather than a road junction. The use of the existing access to Clarence Lifestyle Village was considered the most appropriate location.

f. Need for use. The expansion of the Lifestyle Village is based on demand.

g. Traffic impact assessment. This report documents the findings of a traffic impact assessment.

h. Road authority advice. No written advice was received by Council (as road authority) with respect to the use of the access.

Based on the above findings, the development meets the requirements of Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme.

4.4 Access Impacts

The existing junction of the subject site with Pipers Road is well defined. Clear visibility is available for approaching traffic, with clearly defined priorities at the Pipers Road junction, including its junction with East Derwent Highway.

The additional traffic generation associated with the proposed development can be adequately absorbed by the junction without any significant loss of operational efficiency (noting the peak generation will be in the order of 22 vehicles per hour, which represents an increase of slightly higher than 1 vehicle every 3 minutes).

4.5 Pedestrian Impacts

There is little pedestrian activity in the surrounding road network. A bus stop is located on the Highway south of the Piper Road intersection. The lack of pedestrian infrastructure along the Highway currently prevents pedestrian activity to other destinations form the subject site.

The proposed development will facilitate a pedestrian path to the north of the subject site. This will enable pedestrians to access destinations such as the Tavern to the north of the site.

4.6 Road Safety Impacts

No significant adverse road safety impacts are therefore foreseen as a result the proposed development.

The additional traffic generated by the proposed development can be adequately absorbed by the surrounding road network. The intersection of the site's junction with Piper Road and the intersection of Piper Road/ East Derwent Highway will continue to operate at a high level of service for all approaches.

It is noted that the intersection of Piper Road/ East Derwent Highway has been modified in recent years to ban right turn movements from Piper Road to the Highway. A right turn lane into Piper Road has also been constructed. The crash rate at the East Derwent Highway/ Pipers Road junction is relatively low.

5. Parking Assessment

5.1 Parking Provision

The proposed development will provide a total of 122 spaces as follows:

- 12 on-street visitor car parking spaces. These are 90-degree spaces at various locations within the internal road network.
- 108 parking spaces associated with the independent living units. This consists of one garage and one jockey style space in front of the garage.

5.2 Parking Demand

The RMS Guide states that the following parking requirements are applicable to resident funded retirement developments:

- 2 spaces per 3 units
- + 1 space per 5 units for visitor parking

This equates to a parking provision of 47 spaces. The provision of 120 spaces therefore exceeds this amount.

5.3 Planning Scheme Requirements

The Acceptable Solution A1 of Clause C2.5.1 of the Planning Scheme states:

> *"The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if:*
>
> *(a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan;*
>
> *(b) the site is contained within a parking precinct plan and subject to Clause C2.7;*
>
> *(c) the site is subject to Clause C2.5.5; or*
>
> *(d) it relates to an intensification of an existing use or development or a change of use where:*
>
> *(i) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or*
>
> *(ii) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table*

C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows:

N = A + (C- B)

N = Number of on-site car parking spaces required

A = Number of existing on site car parking spaces

B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1

C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1".

In this case, sub-points (a), (b), (c), and (d) are not applicable. The car parking requirements in Table C2.1 for the Particular Purpose Zone is:

- 1 space per bedroom; plus
- 1 dedicated space per 5 dwellings for visitor parking for residential uses not within the general residential zone.

An average of 2 bedrooms per unit has been assumed (the actual mix of 1, 2 and 3 bedroom units will depend upon demand). This equates to a parking requirement for 117 spaces. The provision of 120 spaces therefore meets the requirements of Acceptable Solution A1 of Clause C2.5.1 of the Planning Scheme.

6. Conclusions

This traffic impact assessment (TIA) investigated the traffic and parking impacts of a proposed development at 647 East Derwent Highway.

The key findings of the TIA are summarised as follows:

- The development is estimated to generate 113 vehicle trips per day, with a peak of 22 vehicles per hour.
- The traffic generation will not have any significant adverse impact on the traffic efficiency or road safety of the network. The traffic generation associated with the development meets the requirements of Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme.
- The provision of 120 on-site car parking spaces meets the requirements of Acceptable Solution A1of Clause C2.5.1 of the Planning Scheme.

Based on the findings of this report the proposed development is supported on traffic grounds.

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Document Status

Revision	Author	Review	Date
0	Keith Midson	Zara Kacic-Midson	7th September 2023
1	Keith Midson	Zara Kacic-Midson	11th September 2023

CELEBRATING
15 YEARS
2008 - 2023

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30 September 2024

Phil Gartrell
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Dear Phil,

2 PIPER RD, 647 EAST DERWENT HWY & 657 EAST DERWENT HWY – RESPONSE TO COUNCIL RFI

This letter provides a response to Council's request for further information regarding the proposed expansion to the Clarence Lifestyle Village at the abovementioned address.

The responses to the matters raised regarding traffic are addressed in the following sections.

1. Traffic Generation

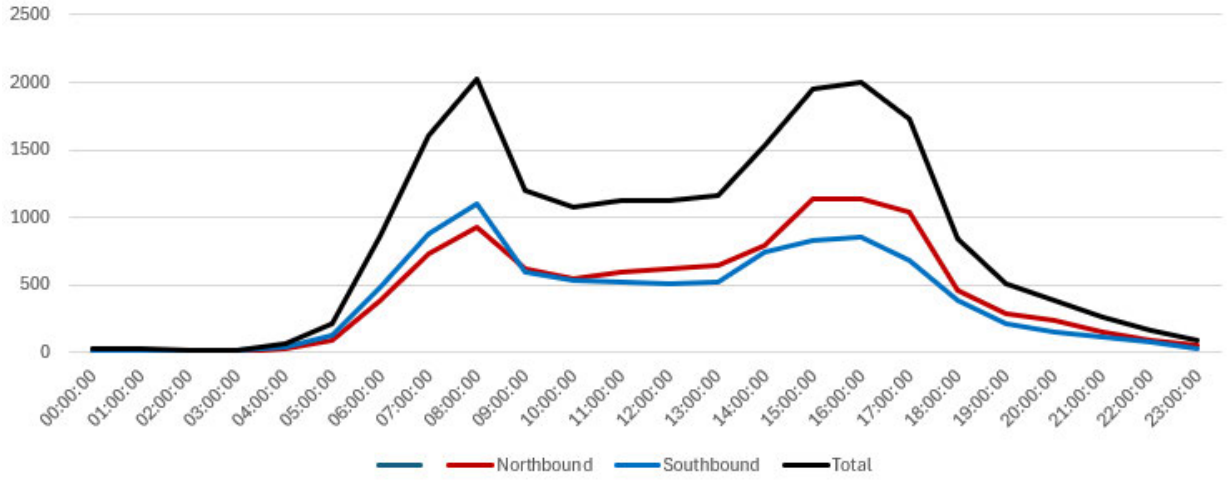
Council stated:

> *"The Traffic Impact Assessment sec 4.1.2-traffic survey refers the data from March 2016 and Council's engineers believe the data presented is outdated and not relevant. It is understood that more than 50% of the existing units were built and occupied after 2016 and all developments at Napier Street were post 2016, it is logical to collect recent data for the intersection capacity and safety assessment".*

The traffic surveys undertaken in 2016 identified that the 56 occupied dwellings at the time of the survey generated 0.375 trips per dwelling per hour during the morning peak period, and 0.214 trips per dwelling per hour during the afternoon peak period.

Updated surveys were conducted on 26th September 2024 at the Piper Road junction. The surveys were undertaken during the peak periods associated with East Derwent Highway. The weekday hourly flow of the East Derwent Highway near the subject site is shown in Figure 1. Peak hourly flows on the Highway are approximately 2,000 vehicles per hour during the morning (8:00am – 9:00am) and afternoon peak (4:00pm – 5:00pm) periods respectively.

Figure 1 East Derwent Highway Weekday Hourly Flows



The survey results are summarised in Table 1.

Table 1 Clarence Lifestyle Village Traffic Generation Surveys

Peak Period	Vehicles Entering	Vehicles Exiting	Total Vehicles
Morning Peak (8:00-9:00am)	22 vehicles	19 vehicles	41 vehicles
Evening Peak (4:00-5:00pm)	17 vehicles	12 vehicles	29 vehicles

At the time of the survey, the Clarence Lifestyle Village had 111 occupied units. This equates to the following peak hour generation:

- AM peak. 0.37 trips per dwelling per hour. The directional split was 54% inward trips/ 46% outward trips.
- PM peak. 0.26 trips per dwelling per hour. The directional split was 59% inward trips/ 41% outward trips.

The surveys compare well to the original surveys conducted in 2016. The 2024 AM peak generation was the same as the 2016 survey results. The PM peak generation was slightly higher (0.26 versus 0.21 trips per unit per hour) due to the difference in the selection of the peak hour time (4-5pm versus 5-6pm). The earlier time was selected for the 2024 surveys as this reflected the peak period of the highway.

2. East Derwent Highway/ Piper Road Junction

Council have stated:

> *"It is also noted that the TIA has only assessed the access to the lifestyle village and has not consider capacity/safety assessment of the Piper Road/ East Derwent Highway intersection. Due to the proximity and the likely intensification of the intersection, it is suggested to include full assessment for the junction of Piper Road/East Derwent Highway".*

Peak hour turning movement counts were undertaken at the Lifestyle Village access with Piper Road as well as the East Derwent Highway/ Piper Road junction on 26th September 2024. The turning movement summaries are provided in Table 2 and Table 3.

Table 2 AM Peak Turning Movement Surveys – East Derwent Hwy/ Piper Road

Approach – 8:00 – 9:00am	Left Turn	Through	Right Turn
East Derwent Hwy south	67	923	-
East Derwent Hwy north	-	1,098	12
Piper Road west @ East Derwent Hwy	46	0	-
Lifestyle Village Access	19	-	0

Table 3 PM Peak Turning Movement Surveys – East Derwent Hwy/ Piper Road

Approach – 4:00 – 5:00pm	Left Turn	Through	Right Turn
East Derwent Hwy south	51	1,142	-
East Derwent Hwy north	-	856	16
Piper Road west @ East Derwent Hwy	30	0	-
Lifestyle Village Access	11	-	1

The existing access arrangements at the Lifestyle Village were modelled using SIDRA Intersection modelling software. Two scenarios were tested for the East Derwent Highway/ Pipers Road junction:

- Existing conditions during AM and PM peaks.
- 10-year forecast conditions during AM and PM peaks, accounting for background growth on the highway and all traffic generation associated with the proposed expansion of the Lifestyle Village utilising the existing access (ie. traffic generation not utilising the proposed junction directly onto East Derwent Highway to the north).

The growth rate on East Derwent Highway is approximately 2.4% per annum compound growth (based on 2018 to 2023 volumes). The traffic generation associated with the proposed Lifestyle Village expansion is likely to be:

- 0.37 trips per dwelling per hour during the AM peak = 20 vehicles per hour
- 0.26 trips per dwelling per hour during the PM peak = 14 vehicles per hour

The trip generation is based on the updated traffic survey results conducted in 2024, as well as the directional splits of inward and outward traffic.

The 10-year forecast AM and PM turning movements based on the above assumptions are summarised in Tables 3 and 4 respectively.

Table 4 2034 AM Peak Turning Movement Surveys – East Derwent Hwy/ Piper Road

Approach – 8:00 – 9:00am	Left Turn	Through	Right Turn
East Derwent Hwy south	90	1,170	-
East Derwent Hwy north	-	1,392	15
Piper Road west @ East Derwent Hwy	62	0	-
Lifestyle Village Access	28	-	0

Table 5 2034 PM Peak Turning Movement Surveys – East Derwent Hwy/ Piper Road

Approach – 4:00 – 5:00pm	Left Turn	Through	Right Turn
East Derwent Hwy south	68	1,448	-
East Derwent Hwy north	-	1,085	20
Piper Road west @ East Derwent Hwy	40	0	-
Lifestyle Village Access	16	-	1

The SIDRA modelling outputs for the existing conditions during the AM and PM peaks are summarised in Tables 6 and 7 respectively.

Table 6 AM Peak Existing Conditions East Derwent Hwy/ Piper Rd SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: RoadName								
1	L	71	1.0	0.050	7.6	LOS A	0.2	1.4
2	T	972	8.4	0.263	0.0	LOS A	0.0	0.0
Approach		1042	7.9	0.263	0.5	NA	0.2	1.4
North: RoadName								
8	T	1156	8.4	0.313	0.0	LOS A	0.0	0.0
9	R	13	1.0	0.029	15.3	LOS C	0.1	0.7
Approach		1168	8.3	0.313	0.2	NA	0.1	0.7
West: RoadName								
10	L	48	1.0	0.075	11.8	LOS B	0.2	1.5
Approach		48	1.0	0.075	11.8	LOS B	0.2	1.5
All Vehicles		2259	8.0	0.313	0.6	NA	0.2	1.5

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

Table 7 PM Peak Existing Conditions East Derwent Hwy/ Piper Rd SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: RoadName								
1	L	54	1.0	0.038	7.7	LOS A	0.2	1.1
2	T	1202	8.4	0.325	0.0	LOS A	0.0	0.0
Approach		1256	8.1	0.325	0.3	NA	0.2	1.1
North: RoadName								
8	T	901	8.4	0.244	0.0	LOS A	0.0	0.0
9	R	17	1.0	0.056	19.6	LOS C	0.2	1.3
Approach		918	8.3	0.244	0.4	NA	0.2	1.3
West: RoadName								
10	L	32	1.0	0.061	13.2	LOS B	0.2	1.2
Approach		32	1.0	0.061	13.2	LOS B	0.2	1.2
All Vehicles		2205	8.1	0.325	0.5	NA	0.2	1.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

It can be seen that the existing intersection performs at a relatively high level of service, with all movements at LOS C or better.

The SIDRA modelling outputs for 2034 AM and PM peaks are summarised in Tables 8 and 9 respectively. Note that traffic movements associated with the eastern leg of Piper Road was not included in the modelling. This approach to the intersection operates independently from the western approach, with no through movements occurring between eastern and western approaches and vice versa.

Table 8 AM Peak 2034 Conditions East Derwent Hwy/ Piper Rd SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: RoadName								
1	L	95	1.0	0.067	7.7	LOS A	0.3	1.9
2	T	1232	8.4	0.333	0.0	LOS A	0.0	0.0
Approach		1326	7.9	0.333	0.5	NA	0.3	1.9
North: RoadName								
8	T	1465	8.4	0.396	0.0	LOS A	0.0	0.0
9	R	16	1.0	0.056	20.3	LOS C	0.2	1.3
Approach		1481	8.3	0.396	0.2	NA	0.2	1.3
West: RoadName								
10	L	65	1.0	0.132	13.8	LOS B	0.4	2.7
Approach		65	1.0	0.132	13.8	LOS B	0.4	2.7
All Vehicles		2873	7.9	0.396	0.7	NA	0.4	2.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

Table 9 PM Peak 2034 Conditions East Derwent Hwy/ Piper Rd SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: RoadName								
1	L	72	1.0	0.051	7.7	LOS A	0.2	1.4
2	T	1524	8.4	0.412	0.0	LOS A	0.0	0.0
Approach		1596	8.1	0.412	0.3	NA	0.2	1.4
North: RoadName								
8	T	1142	8.4	0.309	0.0	LOS A	0.0	0.0
9	R	21	1.0	0.134	31.1	LOS D	0.4	2.9
Approach		1163	8.3	0.309	0.6	NA	0.4	2.9
West: RoadName								
10	L	42	1.0	0.117	16.5	LOS C	0.3	2.3
Approach		42	1.0	0.117	16.5	LOS C	0.3	2.3
All Vehicles		2801	8.0	0.412	0.7	NA	0.4	2.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

It can be seen that the 10-year forecast conditions result in the intersection continuing to operate at an acceptable level of service, LOS D or better. The left turn movement from Piper Road to East Derwent Highway reduces from LOS C to LOS D within the 10-year period, however this is on the assumption that all traffic associated with the proposed Lifestyle Village expansion will utilise the Piper Road junction.

The East Derwent Highway/ Piper Road junction has undergone modifications in recent years. The junction only permits left-turn movements from Piper Road to East Derwent Highway. The junction also provides channelised left-turn and right-turn movements from the highway into Piper Road.

The junction of East Derwent Highway and Piper Road is adequate and acceptable from a capacity and safety perspective to cater for traffic generated by the proposed Lifestyle Village expansion.

3. External Pedestrian Movements

Council have stated:

> *"One of the major challenges for existing use and proposed development at this location is the access to the amenities including bus stops/shops etc. The application and Traffic Impact Assessment notes a pedestrian pathway along north of the proposed development however these details are missing from the plan or have not been included. It is understood that any works for such pedestrian access/pathway will require works within the land controlled by the Department of State Growth (DSG) and a Crown consent will be required".*

It is understood that a pedestrian footpath is not being pursued along the East Derwent Highway.

4. Internal Pedestrian Movements

Council have stated:

> *"The traffic impact Assessment is to clearly address the risk of pedestrian and access within the site/location and provide clear recommendation for improvements".*

The existing Lifestyle Village does not provide separate footpaths within the site. Traffic within the site is low-volume and low-speed and effectively operates as a 'shared zone'. The design of the internal road network will provide a low-speed environment. All traffic within the site relates to residents and visitors who are highly familiar with the environment.

A pedestrian path is provided through the site along the Southern Regional Pipleline easement. This path extends through the proposed expansion, as well as the existing Village site.

5. Public Transport

Council have stated:

> *"The site is poorly connected with the public transport infrastructure including the bus stop, especially city bound, and the Traffic Impact Assessment is expected to elaborate and provide recommendation for improvement/useability".*

A northbound bus stop is located immediately south of the Piper Road junction on the highway. This provides convenient access from public transport to the site for residents/ visitors/ staff travelling from Lindisfarne/ Hobart.

A southbound bus stop is located directly opposite the Piper Road junction. This bus stop is not considered safely accessible for elderly pedestrians. No formalised pedestrian crossing location is provided on the highway to access the bus stop. It is not recommended to encourage pedestrians to cross the highway at this location due to the high volume and high speed environment.

The Lifestyle Village currently operates a 12-seater minibus that takes residents on many trips throughout a typical week, including shopping trips. This service therefore provides a safe alternative to the Metro services that operate on the highway.

Please contact me on 0437 366 040 if you require any further information.

Yours sincerely,



Keith Midson BE MTraffic MTransport FIEAust CPEng EngExec NER

DIRECTOR
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