Table of Contents

1 Introduction

2 Background and Existing Conditions
   2.1 Location
   2.2 Planning Zones
   2.3 Road Network
      2.3.1 Beach Road
      2.3.2 Mentone Parade
   2.4 Sustainable Transport
   2.5 Bicycle Network

3 Proposed Development
   3.1 General
   3.2 Car Parking and Access
   3.3 Bicycle Parking
   3.4 Waste Collection

4 Design Considerations
   4.1 Standard Car Spaces
   4.2 Parking and Access
   4.3 Ramp Grades & Height Clearances
   4.4 Access Arrangements
   4.5 Waste Collection

5 Car Parking Considerations

6 Bicycle Parking Considerations

7 Loading Considerations

8 Traffic Considerations
   8.1 Traffic Survey
   8.2 Traffic Generation
   8.3 Generated Traffic Volumes
   8.4 Intersection Analysis
      8.4.1 Background
      8.4.2 Anticipated Intersection Operating Conditions

9 Conclusions
Appendices

Appendix A  Swept Path Diagrams
Appendix B  Cardno Drainage Assessment

Tables

Table 2-1  Public Transport Services  7
Table 3-1  Development Schedule  8
Table 5-1  Planning Scheme Car Parking Requirements – Clause 52.06  12
Table 6-1  Planning Scheme Bicycle Parking Requirements – Clause 52.34  13
Table 7-1  Planning Scheme Loading Requirements – Clause 52.07  14
Table 8-1  Peak Hour Traffic Generation – Vehicle Trips Per Hour  16
Table 8-2  Degree of Saturation Rating  16
Table 8-3  SIDRA Analysis – Existing Conditions  17
Table 8-4  SIDRA Analysis – Comparison of Existing Conditions Against Expected Post-Development Conditions  17

Figures

Figure 2-1  Subject Site Location  2
Figure 2-2  Planning Scheme Zones  3
Figure 2-3  Beach Road Facing Northwest Adjacent to the Subject Site  4
Figure 2-4  Beach Road Facing Southeast Adjacent to the Subject Site  4
Figure 2-5  Mentone Parade Facing North Adjacent to the Subject Site  5
Figure 2-6  Mentone Parade Facing South Adjacent to the Subject Site  5
Figure 2-7  Public Transport Map  6
Figure 2-8  Travel Smart Map  7
Figure 8-1  Existing AM and PM peak hour traffic volumes – Thursday 18 June, 2015  15
1 Introduction

Cardno has been retained by Urbis to prepare a Traffic and Transport Assessment Report in relation to the proposed redevelopment of the Mentone Hotel at 95 Beach Road, Mentone. It is proposed that the subject site is to be established as a residential development comprised of apartments, townhouses and a cafe at ground level.

Cardno have additionally reviewed the apex levels provided by Council based on flood levels for Beach Road and Mentone Parade and have prepared a summary letter, attached as Appendix B to this report.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development have been examined and relevant background information has been reviewed.
2 Background and Existing Conditions

2.1 Location

The subject site is located on the northern side of Beach Road adjacent to its intersection with Mentone Parade, as shown in Figure 2-1.

The site is currently occupied by the Mentone Hotel which at present time is not operational. The site itself is irregular in shape, with an area in the order of 3,700 square metres and frontages of approximately 100 metres and 75 metres onto Beach Road and Mentone Parade respectively.

Directly to the site’s east is St Bede’s College, with which gains access from multiple points along Dixon Street (located southeast of the subject site). The location of St Bede’s College with respect to the subject site is shown in Figure 2-1 below.

To the north and accessed from the western side of Mentone Parade is Mentone Girls Grammar School, a pre-school is located opposite on the east side of Mentone Parade.

Land use in the wider area is generally residential in nature.
2.2 Planning Zones

Figure 2-2 shows the location of the site and the surrounding Kingston Planning Scheme Zones.

Figure 2-2 Planning Scheme Zones

The subject site is located within the General Residential Zone – Schedule 3 (GRZ3). The permitted uses for the GRZ3 are listed in Clause 32.08 of the Planning Scheme.
2.3 Road Network

2.3.1 Beach Road

Beach Road is a declared arterial road, running along the south-eastern side of Melbourne's Port Phillip Bay, starting at its southern point in Mordialloc and ending at the intersection of New St and the Esplanade in Brighton. A posted speed limit of 40 kilometres per hour applies to Beach Road between 8am – 9:30am and 2:30pm – 4pm on school days (within the vicinity of the subject site). A posted speed limit of 60 kilometres per hour applies to Beach Road at all other times.

Beach Road provides for two trafficable lanes in each direction as shown in Figure 2-3 and Figure 2-4 below. Along the sites frontage to Beach Road, parking is restricted as a Taxi Zone from 10pm – 6am, beyond this parking is unrestricted. A pedestrian footpath is provided along this side of Beach Road.

Figure 2-3 Beach Road Facing Northwest Adjacent to the Subject Site

Figure 2-4 Beach Road Facing Southeast Adjacent to the Subject Site
2.3.2 Mentone Parade

Mentone Parade is a local road approximately 1 kilometre in length and orientated north-south. It connects Como Parade West in the north with Beach Road in the south. A posted speed limit of 40 kilometres per hour applies to Mentone Parade for its entirety.

Mentone Parade provides for traffic flow in both directions as shown in Figure 2-5 and Figure 2-6 below. A bus zone with associated No Stopping zones is located on the northeast side of the road directly opposite the site. The southwest side of Mentone Parade contains unrestricted parking directly in front of the subject site.

Parking further north of the site is restricted to 5 minutes between 8am – 9am and 3pm – 4pm on school days on both sides of Mentone Parade. Pedestrian footpaths are provided along both sides of Mentone Parade for its entirety.

Figure 2-5 Mentone Parade Facing North Adjacent to the Subject Site

Figure 2-6 Mentone Parade Facing South Adjacent to the Subject Site
2.4 **Sustainable Transport**

The site has access to a number of public transport services, highlighted by the convenience of bus route 903 running along Mentone Parade. The nearest stop associated with this route is located directly opposite the road from the subject site.

Mentone Station is situated approximately 1 kilometre north of the subject site, and is directly serviced by bus route 903. Additional bus connections are provided at Mentone station providing connections to the wider area.

Figure 2-7 below depicts a map of surrounding public transport alternatives within the region of the subject site. Relevant public transport services have been described in Table 2-1.

**Figure 2-7 Public Transport Map**
Table 2-1 Public Transport Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Route No's</th>
<th>Route</th>
<th>Nearest Stop</th>
<th>Approximate Distance &amp; Walking Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train</td>
<td>Frankston Line</td>
<td>Mentone Railway Station</td>
<td>1 kilometre</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>708</td>
<td>Carrum – Hampton via Southland</td>
<td>Mentone Railway Station</td>
<td>1 Kilometre</td>
</tr>
<tr>
<td></td>
<td>811</td>
<td>Dandenong – Brighton via Heatherton Road, Springvale</td>
<td>Mentone Railway Station/Como Parade</td>
<td>1 Kilometre</td>
</tr>
<tr>
<td></td>
<td>812</td>
<td>Dandenong – Brighton via Parkmore Shopping Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>825</td>
<td>Moorabbin – Southland via Black Rock and Mentone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>903</td>
<td>Altona – Mordialloc (SMARTBUS Service)</td>
<td>Adjacent St Bede’s College Football Oval</td>
<td>10 metres</td>
</tr>
</tbody>
</table>

2.5 Bicycle Network

The subject site has access to a number of formal and informal bicycle routes, principally the informal bike route along Beach Road. This connects to formalised bike lanes further northwest commencing at Beach Road’s intersection with Charman Road. At this intersection, an off-road shared path commences and continues further west along Beach Road to augment the on-road bike lanes.

In the wider area roads are generally provided with a wide pavement allowing for wider traffic lanes and informal bike lanes.

Figure 2-8 illustrates the location of the subject site relative to the bicycle network in the area.
3 Proposed Development

3.1 General

Based on plans dated May 2016 prepared by Peddle Thorp Architects, it is proposed to develop the subject site for the purposes of incorporating a residential development. The development schedule is summarised in Table 3-1 below.

Table 3-1 Development Schedule

<table>
<thead>
<tr>
<th>Use</th>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwellings</td>
<td>1 Bedroom Units</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2 Bedroom Units</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>3 Bedroom Units</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2 Bedroom Townhouses</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3 Bedroom Townhouses</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>68</td>
</tr>
<tr>
<td>Food and Drink Premises</td>
<td>Cafe</td>
<td>259 sqm</td>
</tr>
</tbody>
</table>

3.2 Car Parking and Access

Car parking is proposed to be provided across two basement levels, with a total of 137 spaces provided to cater for resident and visitor parking needs. The total parking supply includes 99 standard spaces, 2 accessible spaces and 18 tandem pairs (36 spaces).

Parking within Basement Level 1 caters for both resident and visitor parking with a total of 77 spaces provided. A total of 32 standard parking spaces, 2 accessible spaces and 6 tandem pairs (12 spaces) are provided for visitors and the café.

A total of 31 resident spaces are located within a secured area in the west of Basement Level 1 comprising 23 standard spaces and 4 tandem pairs (8 spaces). Each of the tandem pairs will be allocated to a single dwelling.

Parking within Basement Level 2 caters for resident parking only and with a total secured parking supply of 60 spaces. The Basement Level 2 parking supply comprises 44 standard spaces and 8 tandem pairs (16 spaces), with each of the tandem pairs to be allocated to a single dwelling.

Access to the development is proposed via a single two-way crossover from Mentone Parade generally aligned with an existing crossover.

One redundant crossover along the subject site’s frontage to Mentone Parade and a further two crossovers along the subject site’s frontage to Beach Road will be removed and reinstated with kerb and channel. This will accommodate an additional four (4) on-street parking spaces, subject to the approval of the Responsible Authority.

3.3 Bicycle Parking

It is proposed to include 48 bicycle parking spaces in the form of Ned Kelly vertical parking rails as part of this development. These are to be located within a secure bike storage area positioned in the southeast corner of Basement Level 1.

3.4 Waste Collection

It is proposed to utilise a 6.35 metre waste collection vehicle operated by Wastewise for regular waste collection for the majority of the development. Collection is proposed to be undertaken from a common bin storage area on Basement Level 1 adjacent to the central lift shafts, where a dedicated linemarked loading bay is proposed.
In accordance with the development’s Waste Management Plan, waste services for all townhouses and apartment numbers 3, 15 and 17 will be provided by Council. It is understood that Council will collect waste on the site’s Beach Road frontage (kerbside).

Prior to collection, residents will transfer Council bins from their dwellings to kerbside, returning the bins once the collection has taken place.
4 Design Considerations

4.1 Standard Car Spaces
The car park and access design has been assessed against the requirements of the Kingston Planning Scheme and the Australian Standards for off-street car parking (AS/NZS 2890.1:2004).

Standard car parking spaces have generally been provided in accordance with Clause 52.06-8 of the Planning Scheme. All standard car spaces have been designed 2.6 metres wide and 4.9 metres long. Car spaces designed in tandem pairs have been designed 2.6 metres wide and 10.3 metres long, adhering to the need for an additional 500mm in length to be provided between each vehicle space.

Car parking spaces throughout both basement levels will be accessed via 6.4 metre wide aisles, designed to conform to statutory requirements as outlined in Table 2 of Clause 52.06-8 within the Kingston Planning Scheme.

Where parking bays are bound by a wall, an additional car space width of 300mm has been provided to assist with door opening, in accordance with the general requirements outlined in Diagram 1 of Clause 52.06-8 of the Planning Scheme.

Columns shown within Basement Levels 1 & 2 are generally provided in accordance with the requirements of Clause 52.06-8 of the Planning Scheme.

4.2 Parking and Access
The proposed bicycle parking provisions have been assessed against the requirements of Clause 52.34 of the Kingston Planning Scheme and the Australian Standards for Bicycle parking facilities (AS 2890.3).

As previously described in Section 3.3 of the report, a designated and secure bike storage area is proposed within the Basement Level 1 car park. A review of the area indicates that a total of 48 parking spaces are proposed in the form of ‘Ned Kelly’ vertical bicycle rails, made in accordance with the manufacturer’s specifications. Within these spaces, bicycle rail spacings and access aisles meet the minimum dimension requirements and are therefore considered appropriate. All spaces are designed to be sufficient to accommodate a bike measuring 700 mm in width at the handle bars, 1.2 m in height and 1.7 m in length.

4.3 Ramp Grades & Height Clearances
The site access ramp has been designed to appropriately accommodate the required apex level 9.7 AHD, the access ramp proposes to commence at the property boundary line with an initial section graded up 1:10 for 500mm. The ramp will then feature a vertical curve of 10m radius for 2.78m, reaching the required apex level 9.7m AHD at 1.49m from the property line. The entry ramp will then continue into its steepest section graded at 1:5.5 for 5.6m before adopting a bottom transition section of 1:8 for 2.55m to avoid vehicles scraping as they enter Basement Level 1.

It is noted that ramp grades of the internal ramp connecting Basement Levels 1 & 2 are no greater than 1:5, grade changes have been made no greater than 12.5% and transition sections are at least 2 metres in length.

Headroom clearances provided above the site access ramp and internal ramp to Basement Level 2 are in accordance with the minimum headroom clearance requirements outlined in AS2890.1:2004.

4.4 Access Arrangements
Access ramps allow for simultaneous two way vehicle movements, with proposed minimum widths of 6.6 metres wall to wall inclusive of abutting 300mm kerbs. This has been made in accordance with Figure 2.8.a and 2.8.b of Australian Standards for 2-way access ramps (AS/NZS 2890.1:2004).

In response to Council’s request, a central traffic splitter island has been provided at the proposed vehicle crossing to the development, separating ingress and egress manoeuvres.
A pedestrian sight triangle measuring 2 metres along Mentone Parade from the edge of the commencement of the access ramp and 2.5 metres along this ramp is to be provided (on both sides of the access ramp), in accordance with Design Standard 1 of Clause 52.06-8 of the Kingston Planning Scheme.

### 4.5 Waste Collection

It is proposed to utilise a 6.35 metre waste collection vehicle operated by Wastewise for regular waste collection for the majority of the development. The vehicle’s accessibility of the internal accessways has been tested and confirmed using swept path diagrams, which are attached in Appendix A.

As noted, Council collection is proposed for all townhouses and selected apartments within the development.
5 Car Parking Considerations

Clause 52.06 of the Kingston Planning Scheme specifies the following car parking provision requirements with regard to the different components of the proposed development.

Table 5-1 Planning Scheme Car Parking Requirements – Clause 52.06

<table>
<thead>
<tr>
<th>Use</th>
<th>Schedule</th>
<th>Rate (All Zones)</th>
<th>Car Parking Measure</th>
<th>Total Number of Spaces Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling</td>
<td>47</td>
<td>1</td>
<td>To each one or two bedroom dwelling, plus</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>2</td>
<td>To each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms) plus</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>68</td>
<td>1</td>
<td>For visitors to every 5 dwellings for developments of 5 or more dwellings</td>
<td>13</td>
</tr>
<tr>
<td>Food and Drink Premises (Café)</td>
<td>259sqm</td>
<td>4</td>
<td>To each 100 sq m of leasable floor area</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total Requirement</strong></td>
<td><strong>112</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Proposed Supply</strong></td>
<td><strong>137</strong></td>
</tr>
</tbody>
</table>

The provision of 91 spaces over basement levels 1 and 2 for residential uses exceeds the statutory requirement of 89 spaces as outlined in the Kingston Planning Scheme.

The provision of 46 spaces within Basement Level 1 exceeds the statutory requirement for 23 car parking spaces for the combined residential visitor and café components.

Review of the above indicates that the proposed provision of 137 resident, visitor, café patron and disabled parking spaces exceeds the requirements outlined in the Kingston Planning Scheme.
6 Bicycle Parking Considerations

Clause 52.34 of the Kingston Planning Scheme specifies the following bicycle parking provision requirements with regard to the different components of the proposed development.

Table 6-1 Planning Scheme Bicycle Parking Requirements – Clause 52.34

<table>
<thead>
<tr>
<th>Component</th>
<th>Area/No</th>
<th>Requirement Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling</td>
<td>68</td>
<td>1 space per 5 dwellings for residents 1 space per 10 dwellings for visitors</td>
<td>14 7</td>
</tr>
<tr>
<td>Food and Drink Premises (Café)</td>
<td></td>
<td>No Requirement Specified</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>Residents &amp; Visitors</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

The proposed provision of 48 combined resident and visitor bicycle parking spaces exceeds the Kingston Planning Scheme Requirements detailed above, and is therefore considered appropriate.
7 Loading Considerations

Clause 52.07 of the Kingston Planning Scheme outlines the requirements for the loading and unloading of vehicles, and specifies loading requirements for developments which include the manufacture, servicing, storage or sale of goods or materials. The café component of the proposed development therefore generates a loading requirement.

Clause 52.07 of the Kingston Planning Scheme outlines the requirements for the loading and unloading of vehicles. It specifies that:

- No building or works may be constructed for the manufacture, servicing, storage or sale of goods or materials unless:
  - Space is provided on the land for loading and unloading vehicles as specified in Table 7-1;
  - The driveway to the loading bay is at least 3.6 metres wide;

The driveway that provides access to the loading bay is at least 3.6 metres wide. As such, a permit may be granted to reduce or waive these requirements if either:

- The land area is insufficient; or
- Adequate provision is made for loading and unloading vehicles to the satisfaction of the responsible authority.

Table 7-1 Planning Scheme Loading Requirements – Clause 52.07

<table>
<thead>
<tr>
<th>Floor Area of Building</th>
<th>Minimum Loading Bay Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,600 m² or less in single operation</td>
<td>Area 27.4 m²</td>
</tr>
<tr>
<td></td>
<td>Length 7.6 m</td>
</tr>
<tr>
<td></td>
<td>Width 3.6 m</td>
</tr>
<tr>
<td></td>
<td>Height clearance 4.0 m</td>
</tr>
</tbody>
</table>

For every additional 1,800 m² or part | Additional 18 m² |

Considering the above, the café component of the proposed development generates a requirement for 27.4 m² of loading. It is, however, considered that a waiver of this on-site loading requirement is appropriate in this instance having consideration of the small size of the proposed café and the likely small number of loading vehicles attending the site.

Existing parking restrictions along the site’s frontage to Beach Road restrict parking to a taxi zone between 10pm and 6am daily and No Stopping between 6am and 10am on Saturdays and Sundays. It is proposed that these restrictions will be altered based on the site’s change in use. As such, these proposed changes to parking restrictions (coupled with the removal of two redundant crossovers along the same frontage to Beach Road) provide the opportunity for deliveries to the subject site to be conveniently undertaken on-street.

The size of the proposed café is anticipated to rely on deliveries by smaller loading vehicles (such as vans) and as such kerb side loading is considered appropriate.
8 Traffic Considerations

8.1 Traffic Survey

Turning movement counts were undertaken by Nationwide Traffic Surveys at the intersection of Beach Road and Mentone Parade, on Thursday 18 June, 2015, between 6:30am and 9:30am, and between 2:30pm and 6:30pm.

The AM and PM peak hour results of the surveys are shown in Figure 8-1.

Figure 8-1 Existing AM and PM peak hour traffic volumes – Thursday 18 June, 2015

8.2 Traffic Generation

Cardno has conducted surveys of a variety of residential developments similar to the proposal and observed typical traffic generation rates in the order of 2.5 to 4.6 vehicle movements per day per dwelling or 0.25 to 0.5 vehicle movements per dwelling in the peak hours.

8.3 Generated Traffic Volumes

In order to provide a conservative assessment of anticipated traffic generation, a daily rate of 5 vehicle movements per dwelling has been adopted with 0.5 vehicle movements per dwelling in the morning and evening peak hours.

Applying these rates to the proposed 68 units and townhouses equates to a peak hour traffic generation of 34 movements during the morning and evening peak hour periods.

During the morning peak hour it is anticipated that 80% of vehicle movements will be outbound, while it is assumed that 60% of vehicle movements will be inbound during the evening peak.

It is therefore anticipated that the 34 projected movements will comprise 6 arrivals and 28 departures during the morning peak hour and 21 arrivals and 13 departures during the evening peak hour.

Traffic generated by the café is not anticipated to directly correlate to that generated by the residential development or the road network (8:00am-9:00am and 3:30pm-4:30pm). As such the café is, for intents and purposes, not considered to generate traffic in the AM or PM peak hours. Furthermore, it is anticipated that a substantial amount of café patrons will be residents of the proposal or drawn from the surrounding area resulting in a reduced traffic generation.

Considering the traffic generation rates and distributions detailed above, the expected traffic volumes generated by the proposed development are summarised in Table 8-1.
Table 8-1  Peak Hour Traffic Generation – Vehicle Trips Per Hour

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>RESIDENTIAL</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outbound</td>
<td>Inbound</td>
<td>TOTAL</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td>28</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>21</td>
<td>13</td>
<td>34</td>
</tr>
</tbody>
</table>

8.4  Intersection Analysis

8.4.1  Background

The operations of the intersection was analysed using SIDRA Intersection. This computer package, originally developed by the Australian Road Research Board, provides information about the capacity of an intersection in terms of a range of parameters, as described below:

**Degree of Saturation (D.O.S.)** is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various values of degree of saturation and their rating are shown in Table 8-2.

<table>
<thead>
<tr>
<th>D.O.S.</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 0.6</td>
<td>Excellent</td>
</tr>
<tr>
<td>0.6 to 0.7</td>
<td>Very Good</td>
</tr>
<tr>
<td>0.7 to 0.8</td>
<td>Good</td>
</tr>
<tr>
<td>0.8 to 0.9</td>
<td>Fair</td>
</tr>
<tr>
<td>0.9 to 1.0</td>
<td>Poor</td>
</tr>
<tr>
<td>Above 1.0</td>
<td>Very Poor</td>
</tr>
</tbody>
</table>

It is considered acceptable for some critical movements in an intersection to operate in the range of 0.9 to 1.0 during the high peak periods, reflecting actual conditions in a significant proportion of suburban signalised intersections.

The **95th Percentile (95%ile) Queue** represents the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour; and

**Average Delay** is the delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour.
Table 8-3  SIDRA Analysis – Existing Conditions

<table>
<thead>
<tr>
<th>Approach</th>
<th>Movement</th>
<th>Degree of Saturation</th>
<th>Existing Conditions</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>95th%ile Queue (m)</td>
<td>Average Delay (sec)</td>
<td></td>
</tr>
<tr>
<td>AM Peak Period Beach Road and Mentone Parade</td>
<td>Through</td>
<td>0.46</td>
<td>30</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.46</td>
<td>30</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.19</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.33</td>
<td>7</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.25</td>
<td>9</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through</td>
<td>0.25</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PM Peak Period Beach Road and Mentone Parade</td>
<td>Through</td>
<td>0.19</td>
<td>8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.19</td>
<td>8</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.20</td>
<td>6</td>
<td>11</td>
<td></td>
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<tr>
<td></td>
<td>Right</td>
<td>0.13</td>
<td>3</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.32</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through</td>
<td>0.32</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

8.4.2  Anticipated Intersection Operating Conditions

It should be recognised that this assessment considers the peak AM and PM periods during a typical weekday. As such, this analysis considers the ‘worst case’ scenario, with delays and queues during other times expected to be lower than those identified in this analysis.

Table 8-4 provides a comparison of the SIDRA analysis for existing traffic conditions and the anticipated traffic conditions post-development. A review of the SIDRA analysis identifies that the increased peak hour vehicle movements at the intersection of Beach Road and Mentone Parade will result in minimal impact upon the operations of the subject intersection or the wider road network.

Table 8-4  SIDRA Analysis – Comparison of Existing Conditions Against Expected Post-Development Conditions

<table>
<thead>
<tr>
<th>Approach</th>
<th>Movement</th>
<th>Degree of Saturation</th>
<th>Existing Conditions</th>
<th></th>
<th></th>
<th>Post Development</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>95th%ile Queue (m)</td>
<td>Average Delay (sec)</td>
<td>95th%ile Queue (m)</td>
<td>Average Delay (sec)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM Peak Period Beach Road and Mentone Parade</td>
<td>Through</td>
<td>0.46</td>
<td>30</td>
<td>1</td>
<td>0.47</td>
<td>30</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.46</td>
<td>30</td>
<td>13</td>
<td>0.47</td>
<td>30</td>
<td>13</td>
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</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.19</td>
<td>5</td>
<td>8</td>
<td>0.20</td>
<td>6</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.33</td>
<td>7</td>
<td>75</td>
<td>0.35</td>
<td>7</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>0.25</td>
<td>9</td>
<td>6</td>
<td>0.25</td>
<td>9</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through</td>
<td>0.25</td>
<td>9</td>
<td>0</td>
<td>0.25</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PM Peak Period Beach Road and Mentone Parade</td>
<td>Through</td>
<td>0.19</td>
<td>8</td>
<td>1</td>
<td>0.20</td>
<td>8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>0.19</td>
<td>8</td>
<td>17</td>
<td>0.20</td>
<td>8</td>
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<tr>
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<td>Left</td>
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<td>6</td>
<td>11</td>
<td>0.21</td>
<td>6</td>
<td>11</td>
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<td>26</td>
<td>0.14</td>
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<tr>
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<td>5</td>
<td>6</td>
<td>0.32</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through</td>
<td>0.32</td>
<td>5</td>
<td>0</td>
<td>0.32</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

The undertaken SIDRA analysis of the abovementioned intersection indicates that the intersection will continue to function under “excellent” conditions post development.

It is noted that this is a conservative analysis as it assumes that all traffic generated by the development passes through the intersection of Mentone Parade and Beach Road.
9 Conclusions

Based on the foregoing analysis it is concluded that;

> The proposal includes the redevelopment of the site to provide 68 one, two and three bedroom units and townhouses, as well as a 259sqm café;

> A provision of 137 car parking spaces will be provided throughout two basement level car parks within the development;

> The proposed car parking supply of 137 spaces exceeds the requirements outlined in the Kingston Planning Scheme;

> The proposed development will provide opportunities for a review of and consequent increase in on-street parking along the subject site’s frontages to Beach Road and Mentone Parade. Redundant crossovers located along the subject site’s two frontages are to be removed and reinstated with kerb and channel, resulting in the creation of an additional 4 on-street parking spaces;

> The proposal includes the provision to store a total of 48 bicycles in a secure storage area in the southeast corner of Basement Level 1;

> The proposed bicycle provisions exceed the requirements of Clause 52.34-3 of the Kingston Planning Scheme (21 spaces);

> A review of the SIDRA analysis identifies that the generated vehicle movements at the intersection of Beach Road and Mentone Parade will pose minimal impact upon the operations of the subject intersection or the wider road network.
APPENDIX A

SWEPT PATH DIAGRAMS
Mentone Hotel Redevelopment

APPENDIX

B

CARDNO DRAINAGE ASSESSMENT
24 May 2016

Momentum Developments - Property Management
PO Box 5120
PINEWOOD VIC 3149

Attention: Pat Prout

Dear Pat,

MENTONE HOTEL
COUNCIL FLOOD LEVELS - DESIGN ADVICE

Cardno have reviewed the Apex levels provided by Council based on flood levels for Beach Road and Mentone Parade.

The Apex levels provided from the invert of the kerbs were:

- Beach Rd – 220mm
- Mentone Parade – 420mm

At Beach Road, the height between the top of kerb and invert is 100mm, therefore Cardno’s recommendation is to raise the footpath 120mm above the top of kerb. This raising can begin to grade up from existing levels parallel to the kitchen.

The only requirement along the Mentone Pde side is to have an Apex of 9.70m in the driveway to the basement. This apex needs to match in along the walls. The footpath may need some local grading to allow this to occur. Then existing level of the footpath at the driveway is 9.60m.

Design requirements for the raising of the footpath are as follows:

- A maximum longitudinal grade on footpath to be 1 in 20 for all adjoining footpaths proposed to be modified.
- Maximum cross-fall (including through vehicle crossing) to be 3% for all adjoining footpaths proposed to be modified.
- Maximum cross-fall to be 7% for all adjoining nature strips proposed to be modified.

At this stage of the development we are confident that Council’s requirements can be met in terms of required Apex levels.

Please refer to the site survey which confirms the existing footpath levels and the height between the top of kerb and invert.

If you have any queries please contact the undersigned.

Ed Henty
Yours sincerely,

[Signature]

Ed Henty
Senior Engineer
for Cardno
Direct Line: 8415 7529
Email: edward.henty@cardno.com.au