Traffic Impact Assessment

Logans Beach Strategic Framework Plan

Prepared for
Warrnambool City Council

June, 2017
G21466R-01B
Traffic Impact Assessment
Logans Beach Strategic Framework Plan

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<th>Approved By</th>
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Our Reference: G21466R-01B

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Appendix A  Preliminary Strategic Development Concept Plan
1 Introduction

Traffic Group has been engaged by Warrnambool City Council to undertake a Traffic Impact Assessment as part of the preparation of the Logans Beach Strategic Framework Plan located in Warrnambool.

In particular, this report has considered both the internal movement within the study area and the traffic impacts on the surrounding road network and intersections.

2 Proposal

The proposal is for a Strategic Framework Plan for the Logans Beach coastal area in Warrnambool.

A copy of the Preliminary Strategic Development Concept Plan, prepared by Niche Planning Studio, is attached at Appendix A. We understand that approximately up to 450 additional allotments within the study area. This plan also identifies an indicative internal road network for the study area and connections with the external road network.

3 Existing Conditions

3.1 Subject Site

The study area is located approximately 3km to the southeast of the Warrnambool City Centre. The study area is bounded by Hopkins River to west, Logans Beach coastline to the south, and the Astbury Estate to the east. The northern boundary of the study area is predominately Hopkins Point Road, although a small part of the study area is located to the north of Hopkins Point Road near the Hopkins River.

A locality plan of the subject site is presented at Figure 1.

The study area is generally zoned Rural Living Zone (RLZ) under the Planning Scheme as presented in the land zoning map at Figure 2.
Figure 1: Locality Map

Source: Google Maps
Figure 2: Planning Scheme Zoning Map

3.2 Road Network

**Hopkins Point Road** is a higher order road managed by Council and is zoned ‘Road Zone Category 2’ under the Planning Scheme. Hopkins Point Road is defined as a ‘Link Road’ under the Warrnambool City Council Roads Register. A Link Road is defined in Council’s Road Management Plan as: *Carry the heaviest volumes of traffic including commercial vehicles and provide the principal routes for traffic flows in and around the municipality.*

Hopkins Point Road is aligned in an east-west orientation in the vicinity of the study area and provides a route between the Warrnambool City Centre (to the west) and Allansford (to the east). Hopkins Point Road accommodates a single traffic lane in each direction.

Hopkins Point Road has an existing speed limit of 60km/h to the west of Casuarina Court. To the east of this location, the speed limit increases to 80km/h. We have been advised by Council that Hopkins Point Road has been approved to have its speed limit reduced to 60km/h for the existing 80km/h section between Casuarina Court and the new subdivisions to the east.

Hopkins Point Road, in the vicinity of Bluehole Road, is shown at Figure 3 and Figure 4.

Hopkins Point Road, in the vicinity of Casuarina Court, is shown at Figure 5 and Figure 6.

**Blue Hole Road** is a local road managed by Council and is aligned in a north-south direction between Hopkins Point Road (to the north) and the Hopkins River lookout carpark (to the south) where it terminates.

The default urban speed limit of 50km/h applies to Blue Hole Road.

Bluehole Road is shown at Figure 7 and Figure 8.

**Logans Beach Road** is a local road managed by Council and is aligned in a general northwest-southeast direction to the east of Bluehole Road. Logans Beach Road provides access to the Whale Watching Platform carpark and terminates to the east at a dead-end.

A speed limit of 60km/h applies to Logans Beach Road.

Logans Beach Road is shown at Figure 9 and Figure 10.

**Henderson Way** is a local road managed by Council and is aligned in a general southwest-northeast direction. Henderson Way connects with Logans Beach Road and provides access to a small number of allotments.

The default urban speed limit of 50km/h applies to Henderson Way.

Henderson Way is shown at Figure 11 and Figure 12.

**Riverview Terrace** is a local road managed by Council and is aligned in a general north-south direction between Hopkins Point Road (to the south) and Banksia Drive (to the north) where it continues as private road further to the north.

The default urban speed limit of 50km/h applies to Riverview Terrace.

Riverview Terrace is shown at Figure 13 and Figure 14.
Figure 3: Hopkins Point Road (view east)

Figure 4: Hopkins Point Road (view west)

Figure 5: Hopkins Point Road (view east)

Figure 6: Hopkins Point Road (view west)

Figure 7: Bluehole Road (view north)

Figure 8: Bluehole Road (view south)
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Figure 9: Logans Beach Road (view east)

Figure 10: Logans Beach Road (view west)

Figure 11: Henderson Way (view southwest)

Figure 12: Henderson Way (view northeast)

Figure 13: Riverview Terrace (view north)

Figure 14: Riverview Terrace (view south)
3.3 Existing Traffic Volumes

We have reviewed existing traffic volume data provided to us by Council at numerous locations throughout the study area. This data was provided in GIS format and includes daily traffic volumes recorded from traffic counts (tube counts) and also Council estimates.

A summary of the existing daily traffic volumes is shown at Figure 15.

**Figure 15: Existing Daily Traffic Volumes**
4 Traffic Impact Assessment

4.1 Traffic Generation

Traffic Group has previously undertaken an assessment of actual existing traffic generation rates within the nearby area as part of our involvement with the approved residential estate to the east along Hopkins Point Road. This involved an assessment of the existing established residential estate on the north side of Hopkins Point Road which is accessed via Riverview Terrace (which includes part of the study area).

Using peak period turning movement data recorded on 16th and 17th July, 2014 at the Hopkins Point Road/Riverview Terrace intersection, it was calculated that each dwelling within the established estate generates an average rate of 0.5 movements per peak hour or approximately 6.5 vehicles per day. This information is considered by us to be more relevant for the study area given its locality. We note that there is a high likelihood of holiday houses and houses occupied by retirees within the study area and therefore the traffic generation rates are expected to be lower than typical residential estates.

Notwithstanding this for sensitivity purposes, an upper limit daily traffic generation rate of 8 vehicle movements per day per allotment has also been considered.

Adopting these rates to the indicative 450 additional residential allotments in the study area, it is estimated that a daily traffic generation of approximately 2,925-3,600 daily vehicle movements would be generated by the site. Of these, in the order of 234-288 movements are predicted to be generated during each of the AM and PM peak hours.

4.2 Traffic Distribution

It is expected that the majority of traffic generated by potential future allotments within the Logans Beach Strategic Framework Plan area would be destined towards the west across the Hopkins Point Road Bridge. This traffic would be destined towards the Warrnambool City Centre or Gateway Plaza and surrounding areas. A smaller proportion of traffic is likely to be destined for Allansford and the surrounding areas to the east.

Table 1 provides an estimation of the traffic distribution by destination both in terms of percentage and vehicle movements per day.

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1 This includes a 63 dwelling catchment and conservatively assumes that 8% of the daily traffic is generated during each peak hour.
Table 1: Traffic Distribution by Destination

<table>
<thead>
<tr>
<th>Measure</th>
<th>To/From the West (Warrnambool)</th>
<th>To/From the East (Allansford)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
</tr>
<tr>
<td>Vehicle Movements Per Day</td>
<td>2,340-2,880</td>
<td>585-720</td>
<td>2,925-3,600</td>
</tr>
</tbody>
</table>

The most direct route to the Warrnambool City Centre is via Hopkins Road, Otway Road and Flaxman Street to then travel along either Princes Highway or Nicholson Street (using local roads) towards the city centre. It is noted that some traffic would also use these roads to travel north and northeast to destinations such as the Warrnambool Race Course, Gateway Plaza and surrounding shops. However, this traffic would likely use Simpson Street and Otway Road to/from the east of Hopkins Road. In contrast, for vehicles travelling to/from the east, Tooram Road provides the only access route to Allansford and the surrounding districts to the east.

The likely traffic impact of the potential development on the surrounding road network and intersections is discussed in the following section.

4.3 External Traffic Impacts

4.3.1 Hopkins Point Road

We have reviewed the Traffic Impact Assessment (Our Ref: G17247R-01D) prepared by Traffix Group for the approved residential estates to the east/north of the study area which is known as the Hopkins Point Growth Area. That report assessed the traffic impact as a result of approximately 500 residential allotments located within this growth area, based on a conservative upper limit of 8 vte per dwelling per day.

Table 2 below provides a summary of the predicted ultimate traffic volumes on Hopkins Point Road including consideration of traffic generated by both the study area and also the approved Hopkins Point Growth Area.

Table 2: Predicted Ultimate Daily Traffic Volumes on Hopkins Point Road

<table>
<thead>
<tr>
<th>Location</th>
<th>Existing Daily Traffic Volume</th>
<th>Hopkins Point Growth Area Additional Traffic</th>
<th>Study Area Additional Traffic</th>
<th>Total Ultimate Daily Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>West of Blue Hole Road (at bridge)</td>
<td>2,900 vpd</td>
<td>2,600-3,200 vpd</td>
<td>2,340-2,880 vpd</td>
<td>7,840-8,980 vpd</td>
</tr>
<tr>
<td>East of Hopkins Point Growth Area</td>
<td>900 vpd</td>
<td>650-800 vpd</td>
<td>585-720 vpd</td>
<td>2,135-2,420 vpd</td>
</tr>
</tbody>
</table>
Table 2 shows that Hopkins Point Road to the west of Blue Hole Road (i.e. at the bridge) is predicted to carry in the order of 7,840 and 8,980 vpd.

This predicted ultimate volume exceeds the environmental capacity of Hopkins Point Road based on both the Planning Scheme and Infrastructure Design Manual (IDM). In particular, for a Connector Street Level 2 with a single traffic lane in each direction, the Planning Scheme specifies a capacity of 7,000 vpd. For the equivalent cross-section in the IDM (Connector Street Level 1), a traffic volume capacity of 6,000 vpd is specified.

Based on the IDM capacity, Hopkins Point Road would possibly be over the limit of 6000vpd prior to any development of the study area as a result of the fully developed Hopkins Point Growth Area, whilst based on the Planning Scheme there would be ‘spare’ environmental capacity for up to 1,500 vpd which is equivalent to the traffic generated by up to an additional 288 lots within the study area.

We note that for traffic volumes in the range of 6,000-12,000 vpd, the IDM suggests a Connector Street Level 2 cross-section (34m) with two traffic lanes in each direction and central a median. This is grossly excessive in our opinion given that it is equivalent to a primary arterial road that would typically carry up to 40,000 vehicles per day prior to a third lane in each direction potentially being added.

It is important to consider that these environmental capacities are for ‘greenfields’ sites and Hopkins Point Road (and other existing roads to the west of Hopkins River) are ‘brownfields’ sites. It is also important to note that the actual capacity is significantly more than the theoretical ‘environmental’ capacity. Accordingly, the IDM and Planning Scheme simply provide guidance to what should be considered. We also note that many existing roads in Victoria with one lane in each direction satisfactorily carry much more than 6,000 vpd.

Based on the above, we are satisfied that the existing Hopkins Point Road cross-section with a single traffic lane in each direction is sufficient from a capacity point of view to accommodate the predicted ‘upper limit’ ultimate daily volumes subject to appropriate retrofit considerations and provisions for cyclists and formal parking where relevant that are clear of the through traffic lanes. This is similarly the case for the roads to the west of Hopkins River which form part of route to the Warrnambool City Centre including Marfell Road, Hopkins Road, Otway Road and Flaxman Street.

To the east of the study area, Hopkins Point Road is predicted to carry an ‘upper limit’ daily traffic volume of approximately 2,420 vpd which is well within its capacity.

4.3.2 Connections with Hopkins Point Road

The study area has one existing connection with Hopkins Point Road at Blue Hole Road. This existing unsignalled T-intersection has no turning lane provisions.

The existing Blue Hole Road/Hopkins Point Road will not be sufficient as the primary access connection for the study area to accommodate ultimate traffic. A new primary access connection to the east is recommended as discussed below. Alternatively, the existing Blue Hole Road/Hopkins Point Road intersection could be upgraded with turning provisions, however the proximity of the nearby bridge is a constraint for accommodating a sufficient right-turn lane. It is therefore desirable to provide a new primary connection with Hopkins Point Road rather than upgrading the existing Blue Point Road intersection.
Traffic Impact Assessment
Logans Beach Strategic Framework Plan

The indicative road layout on the Preliminary Strategic Development Concept Plan identifies the following potential new connections with Hopkins Point Road:

- A potential primary connection with Hopkins Point Road opposite the approved connection on the north side to form a cross-intersection, noting that a roundabout will be necessary and would need to be fully funded by the study area. This connection could become the primary access route to Logans Beach Road with Blue Hole Road effectively downgraded.

- A secondary connection with Hopkins Point Road is identified at the eastern end of the study area and is important to distribute overall traffic and to also provide for better access to/from the east. This connection could be located directly opposite the approved connection of the north side to form a cross-intersection, noting that a roundabout will be necessary and would need to be fully funded by the study area.

- Alternatively, the secondary connection could be located to the west of the approved Madden Estate connection at a location that is sufficiently separated to the approved connection. This potential connection and any other T-intersection connection would require designated turning provisions as discussed following.

In relation to determining the necessary turning treatments of the potential unsignalised T-intersection at the eastern end of the site, guidance has been sought from Austroads – Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Figure 4.9. An extract of the relevant figure is provided at Figure 16.

The overall site is predicted to generate an upper limit peak hour traffic volume of approximately 288 vehicle movements. Of these, it is estimated that approximately 41 vehicles would turn right into the site at the potential eastern connection during the PM peak hour. Minimal left-turn entry movements are predicted at this connection.

Figure 16 shows the ‘warrants’ for determining what sort of turn lane treatments should desirably be provided on roads with a speed limit of up to 100km/h. This graph suggests that basic left and right turn treatments may be required at the potential eastern T-intersection connection.

The timing of the provision of these new connections with Hopkins Point Road will largely be dependent on the order of land development. In particular, both connections may be required at the early stages of overall development if two associated land parcels are to initially be developed and if no alternate access is available. Alternatively, in the order of two-thirds of the land could be developed prior to a second new connection being provided if appropriate internal road connections are possible. Nevertheless, it is likely that relevant assessments would be required at the time that each specific residential application is considered.

We note that direct property access with Hopkins Point Road should not be permitted as part of future potential development of the study area.
4.3.3 Key Intersections to the West of Hopkins River

Roads and intersections to the west of Hopkins River along the route to the Warrnambool City Centre are expected to see an increase in their daily traffic volumes. This route includes a number of key intersections which are identified for future upgrade works as discussed following.

Council has provided us with a copy of the Developer Contributions spreadsheet for the approved Hopkins Point Road Growth Area. This spreadsheet includes proposed works and indicative costs at a number of key intersections to the west of the Hopkins River which is to be funded by developer contributions.

**Marfell Road/Hopkins Road Intersection**

The Development Contributions spreadsheet sets out that this intersection is to be upgraded with channelisation that provides traffic calming and guided movements through the intersection by creating an exit only from Marfell Street (west of Hopkins Road) and installation of a traffic island in Hopkins Road (north of Marfell).

To accommodate the additional traffic predicted to be generated by the study area, we recommend a roundabout be provided at the Marfell Road/Hopkins Road intersection. Alternatively, reconfiguration of this intersection to provide a priority route between the north and east legs would also be a suitable arrangement to accommodate ultimate traffic volumes subject to the ability to appropriately treat the existing western and southern legs.
Hopkins Road/Otway Road Intersection

The Development Contributions spreadsheet sets out that this intersection is to be upgraded to a roundabout that is suitable for buses.

We are of the opinion that such a roundabout will sufficiently accommodate the combined predicted additional daily traffic volumes generated by the study area and also the Hopkins Point Road Growth Area.

Bostock Street/Flaxman Street/Nicholson Street Intersection

The Development Contributions spreadsheet sets out that this intersection is to be upgraded to a signalised intersection with nearby existing school crossings relocated to the signalised intersection.

We are of the opinion that the signalisation of this cross-intersection will sufficiently accommodate the combined predicted additional daily traffic volumes generated by the study area and also the Hopkins Point Road Growth Area.

Summary

We are satisfied that the intersection improvement works discussed above for each of the key intersections would be appropriate to accommodate the additional traffic generated by the proposed study area as well as the approved Hopkins Point Growth Area.

5 Conclusions

Having visited the site, perused relevant documents and plans, held discussions with Council officers and the project team, reviewed traffic volume information, undertaken assessments of traffic generation and distribution, and assessed traffic impacts to the surrounding road network, we are of the opinion that:

a) The existing Hopkins Point Road cross-section with a single traffic lane in each direction is sufficient from a capacity point of view to accommodate the predicted ‘upper limit’ ultimate daily volumes generated by up to 450 allotments subject to appropriate retrofit considerations and provisions for cyclists and parking where relevant that are clear of the through traffic lanes.

b) Traffic generated by the study area is not expected to cause any unacceptable detrimental impact to the surrounding road network including Hopkins Point Road and key intersections to the west of Hopkins River when considering the identified improvement works.

c) The number and location of the identified access points are considered to be satisfactory and are suitably located with consideration of approved connections on the north side of the road.

d) A roundabout should be provided at any site connection with Hopkins Point Road that forms a cross-intersection with the approved connections for the estate to the north.

e) There are no traffic engineering reasons why the Logans Beach Strategic Framework Plan should not be approved.
Appendix A
Preliminary Strategic Development Concept Plan
PRELIMINARY STRATEGIC DEVELOPMENT SCENARIO PLAN
LOGANS BEACH, WARRNAMBOOL

FUTURE DEVELOPMENT AREA

DEVELOPMENT LAYOUT AS SUPPLIED BY BRIAN CONSULTING

LIMITED ACCESS DUE TO TOPOGRAPHY

FUTURE SERVICE PIPE CROSSING UNDER NEGOTIATION

OPEN SPACE ALLOCATIONS ARE SUBJECT TO DETAILED SURVEY, ENGINEERING AND LANDSCAPE ARCHITECTURE ADVICE.

SUBDIVISION DESIGN IS SUBJECT TO DETAILED DESIGN ANALYSIS, PLANNING AND ENGINEERING INPUT. POTENTIAL LOT YIELDS DERIVED FROM THIS PLAN ARE INDICATIVE ONLY.

NOTES:
- Site Boundary
- Key Pedestrian Link
- Existing Road
- Proposed Road
- Existing Intersection
- Proposed Intersection
- Potential Land Acquisition
- Whale Watching Area
- No Additional Development
- Potential to Double Existing Density
- 500m
- 1000m
- 2000m
- 800m

SCALE: 1:10,000 @ A1

DATE: 20/03/2017
DRAWN: M.P (20.03.17)
PLAN: 16-026-013
REVISION: -
CADASTRAL BASE: VICMAP
CHECKED: N.S.S (20.03.17)

IMAGE SOURCE: L.G - ECW (11/05/2015) JOB REF: V_WARRNAMBOOL_LOGANS

PRELIMINARY STRATEGIC DEVELOPMENT SCENARIO PLAN
LOGANS BEACH, WARRNAMBOOL

DISCLAIMER:
This plan has been prepared for illustrative purposes only and should not be used as a means to judge any properties value or yield potential. Subdivision design is subject to detailed design analysis, planning and engineering input. Potential lot yields derived from this plan are indicative only. Open Space allocations are subject to detailed survey, engineering and landscape architecture advice. Use allocations are subject to council advice and Town Planner input.

LEGEND

- Site Boundary
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- No Additional Development
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- 500m
- 1000m
- 2000m
- 800m
Memorandum

Project: Logans Beach Strategic Framework Plan
Our Ref: G21466M-01B
Date: 21 June 2017

RE: Logans Beach Strategic Framework Plan
Addendum to Traffic Impact Assessment for Lesser Yield Scenario

1 Introduction

This memorandum provides an addendum to the Traffic Impact Assessment report prepared by Traffix Group for the Logans Beach Strategic Framework Plan (Our Ref: G21466R-01B).

The report previously prepared by Traffix Group assessed a development scenario of approximately 450 additional allotments within the study area.

Based on advice from the project team and consultation with Council, we understand that there is a series of constraints for the study area which limits the extent of development that is reasonably possible. This includes traffic constraints as discussed in our report as well as drainage limitations. Accordingly, the yield assessed in our report is higher than what can be realistically achieved.

We have been advised that a maximum potential yield in the order of 152-193 additional allotments is more achievable and realistic. An indicative layout of proposed development yield is attached. Our traffic assessment of the lesser development yield scenario is provided following.

This realistic development yield as shown on the attached layout would comprise approximately the following:

- 35-40 lots on a development site located on the south side of Hopkins Point Road with direct access via Hopkins Point Road.
- 8 lots on a development site at the southeast corner of Hopkins Point Road and Blue Hole Road.
- 50-60 lots on a development site on the south side of Logans Beach Road.
- 30-60 additional lots within the eastern part of the study area. Additional lots would have access via either Hopkins Point Road or Logans Beach Road via ‘battle axe’ or common property arrangements.
- Potential dual occupancy development on other existing allotments including:
  - 5 additional lots on Blue Hole Road.
  - 8 additional lots on Logans Beach Road or Henderson Way.
  - 16 additional lots to the north side of Hopkins Point Road.
2 Traffic Impact Assessment

The key matters for consideration for the lesser yield development scenario are discussed following.

**Hopkins Point Road Development Site**

The development site on the south side of Hopkins Point Road (5-9 Hopkins Point Road) is proposed to have direct access with Hopkins Point Road near its western boundary. This is to disperse overall traffic generated by the study area and importantly divert turning movements away from the Hopkins Point Road/Blue Hole Road Intersection.

We are satisfied that the proposed access location is satisfactory with sufficient separation to Casaurina Court (at least 20m centre to centre), assuming that the proposed road reservation is directly adjacent to the western boundary of this development site. Furthermore, we are of the opinion that site access would be satisfactory without the need for turning provisions.

**Hopkins Point Road / Blue Hole Road Intersection**

Based on the attached plan and intended access arrangements as discussed previously, in the order of up to 101-141 additional allotments within the study area are expected to take access via the existing Blue Hole Road/Hopkins Point Road intersection.

Based on the traffic generation rates set out in our report, a total in the order of 52-90 additional vehicle trip ends are predicted at the Hopkins Point Road/Blue Hole Road intersection during each of the peak hours (which equates to up to 1.5 additional turning movement per minute on average during the peak hours). This level of additional traffic is reasonably low and will not result in any unacceptable impacts to the Hopkins Point Road/Blue Hole Road intersection. We are satisfied that from a capacity/operation sense the existing intersection is adequate and it is not necessary for any modification or upgrade works.

**Existing Large Allotments in Eastern Part of the Site**

The existing larger lots in the eastern part of the precinct (approximately 30 allotments) are proposed to be developed as ‘battle axe’ subdivisions with access provided via common property driveways. The northern half would have access via Hopkins Point Road whilst the southern half would take access via Logans Beach Road. We are satisfied that both of these roads will be sufficient to accommodate the additional traffic generated by the proposed ‘battle axe’ developments.

We understand that additional vehicle access onto Hopkins Point Road and Logans Beach Road is to be via existing vehicle crossovers or new consolidated crossovers only.

We note that some minor upgrades to the Logans Beach Road pavement may be required to accommodate the additional traffic volumes.

**Emergency Vehicle Access**

Given that investigations suggest that a through road connection with Hopkins Point Road at the eastern end of the study area would be problematic due to the location of existing dwellings and some topography constraints, it is desirable to provide an alternative vehicle access route for emergency vehicles.
This could potentially be via an emergency access connection with the estate to the east that should also provide a pedestrian and cycle link. Alternatively, a north-south driveway could be provided near the eastern boundary of the study area for emergency vehicles only. This emergency access track would only need to have a single width unsealed carriageway.

**Hopkins Point Road and Key Intersections to the west of Hopkins River**

Our report provided an assessment of the ultimate predicted traffic along Hopkins Point Road including consideration of approximately 450 allotments within the study area in addition to the approved estates to the east.

We found that that the existing Hopkins Point Road cross-section with a single traffic lane in each direction is sufficient from a capacity point of view to accommodate the predicted traffic volumes. Accordingly, the traffic generated by the lesser development yield as now identified will be easily accommodated by Hopkins Point Road.

Similarly, we are satisfied that the proposed works at a number of key intersections to the west of Hopkins River as set out in our report will satisfactorily accommodate the level of traffic predicted to be generated by the lesser development yield.

We note that given the additional traffic generated by the potential development yield will have some impact on the existing road network and intersections to the west of Hopkins River, it is considered reasonable that a contribution towards upgrade works is made by future developments in the study area.

**Other Matters**

There may be a small increase of allotments on the north side of Hopkins Point Road as a result of dual occupancy development. This will result in a small increase of traffic at the Riverview Terrace and Casaurina Court intersections with Hopkins Point Road. We are satisfied that these existing intersections are sufficient in a capacity sense to accommodate the small expected increase in turning movements and that our previous comments about Hopkins Point Road and key intersections to the west of Hopkins River being satisfactory still apply.
3 Conclusion

Having undertaken an assessment of the revised development yield, we are of the opinion that:

a) A lesser development yield within the order of 152-193 additional allotments is more achievable and realistic for the study area compared to the 450 allotments discussed in our report based on advice from the project team.

b) The existing Hopkins Point Road/Blue Hole Road intersection is sufficient in a capacity/operation sense to accommodate the level of traffic predicted to be generated by the lesser yield without the need for a new road connection with Hopkins Point Road.

c) Emergency vehicle access including a pedestrian/cycle link should desirably be provided at the eastern end of the study area if possible.

d) Traffic generated by the study area is not expected to cause any unacceptable detrimental impact to the surrounding road network including Hopkins Point Road and key intersections to the west of Hopkins River when considering the identified improvement works as discussed in our report.

e) There are no traffic engineering reasons why the Logans Beach Strategic Framework Plan should not be approved.
MAXIMUM YIELD PLAN
LOGANS BEACH, WARRNAMBOOL

DISCLAIMER:
This plan has been prepared for illustrative purposes only and should not be used as a means to judge any properties value or yield potential. Subdivision design is subject to detailed design analysis, planning and engineering input. Potential lot yields derived from this plan are indicative only. Open Space allocations are subject to detailed survey, engineering and landscape architecture advice. Use allocations are subject to council advice and Town Planner input.

LEGEND
- Strategic Framework Plan Boundary
- Existing Cadastre

NORTH