GRACETOWN RESIDENTIAL DEVELOPMENT
SHIRE OF AUGUSTA MARGARET RIVER

TRAFFIC MANAGEMENT PLAN

transcore
Gracetown Residential Development
Proposed Structure Plan

Traffic Management Report

Prepared for:
LandCorp
June 2010

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<table>
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<th>Version</th>
<th>Approved by</th>
<th>Date</th>
<th>Version type</th>
</tr>
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<td>B Bordbar</td>
<td>Feb 2010</td>
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</tr>
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File name: t09.209.vb.r02b.1.doc

Author: Vladimir Baltic

Project manager: Behnam Bordbar

Client: LandCorp

Project: Gracetown Residential Development

Document version: r02b

Project number: t09.209.1

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1.0 INTRODUCTION

LandCorp has retained Transcore’s services to assess the traffic impact of the proposed Gracetown Residential Development structure plan (GRD), and to prepare a suitable Traffic Management assessment in response to the plan.

This Traffic Management assessment is set out to address the traffic related issues of the proposed Gracetown Structure Plan for residential development located in Gracetown, Shire of Augusta-Margaret River (AMRSC).

Gracetown is a townsite of approximately 150 residential dwellings situated 16km northwest of Margaret River townsite, overlooking Cowaramup Bay.

The proposed structure plan is for the residential development, which is to be located immediately south of the Gracetown townsite. The subject site is approximately 14.42ha in size and will entail 146 dwellings in total (mix of detached and grouped dwellings).

Accordingly, this traffic report assesses the impact of the proposed GRD by estimating the development-generated traffic and the resultant additional traffic on the surrounding road network including estimation of future traffic growth. This report will also investigate the standard and adequacy of the proposed internal GRD roads, connectivity of the external development roads with the existing Gracetown road network and traffic management measures required to address the objectives of the project.
2.0 EXISTING SITUATION

Gracetown townsite is located approximately 250km southwest of Perth and 16km northwest of Margaret River, within the Shire of Augusta Margaret River. It consists of approximately 150 residential dwellings, where permanent residents occupy approximately 30% of dwellings and the remaining 70% of dwellings are utilised by holidaymakers who typically reside during weekends and holiday periods. Refer Figure 1.

![Figure 1. Aerial photo of Gracetown](image)

The existing single access to the townsite is provided via Cowaramup Bay Road, which connects further east to Caves Road and Bussell Highway. It is an 11.2km long, Regional Distributor\(^1\) road that terminates at the approach to the townsite. Cowaramup Bay Road (west of Caves Road) typically comprises undulating vertical geometry with 6.6m wide sealed carriageway and 1.5m wide unsealed shoulders. It entails an 80km/h speed limit, which is further reduced to 60km/h at its approach to the townsite and then 50km/h at the very entrance to the town.

Cowaramup Bay Road is under the care and control of the AMRSC. Cowaramup Bay Road approaches Cowaramup Bay from the northern tip and runs along the coastline linking into the Gracetown townsite from the north. From the entry

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\(^1\) Main Roads WA, Functional Road Hierarchy classification
point to Gracetown, Cowaramup Bay Road extends into Bayview Drive further west.

Cowaramup Bay Road carries all of the inbound and outbound Gracetown traffic along with the traffic accessing the local town beaches and tourist attractions located further south of the townsite. No formal pedestrian path exists along this road (Figure 2).

![Figure 2. Southbound view along Cowaramup Bay Road (Bayview Drive) on the approach to Gracetown](image)

Traffic counts sourced from Main Roads (Bunbury office) for Cowaramup Bay Road suggest that this road (west of Caves Road) typically carries approximately 1,300 vpd (see Table 1 for more details).

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Traffic Volume</th>
<th>Heavy Vehicles %</th>
</tr>
</thead>
<tbody>
<tr>
<td>West of Caves Rd</td>
<td>Apr 2006</td>
<td>1,310 vpd</td>
<td>3.1%</td>
</tr>
<tr>
<td>West of Caves Rd</td>
<td>Mar 2005</td>
<td>1,353 vpd</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

Table 1. Cowaramup Bay Road traffic volumes sourced from Main Roads WA

However, for the purpose of this assessment, two sets of new traffic surveys were undertaken on March/April 2008 and March/April 2010. These are discussed further in this Chapter.

Caves Road is a Primary Distributor road under care and control of Main Roads WA. It provides access to a number of settlements and tourist attractions along the coastline. Cave Road runs parallel to Bussell Highway with frequent east-west

2 ADT – Average Daily Traffic
3 Main Roads WA, Functional Road Hierarchy classification
links. Caves Road is a typical single carriageway rural road with 7.3m wide carriageway and 1.4m wide unsealed shoulders. It operates under an 80km/h speed limit, which is reduced at certain sections down to 70km/h or increased to 90km/h depending on actual road conditions and sightline limitations.

Historical traffic count data sourced from Main Roads (Bunbury office) for Caves Road (south of Metricup Road) are shown in Table 2; traffic count survey at the Caves Rd/Cowaramup Bay Rd intersection was undertaken by Transcore as part of the intersection analysis data collection (October 2008), where traffic count units were installed on each leg of the intersection. The traffic count results of this survey for Caves Road are also reported in Table 2.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Traffic Volume</th>
<th>Heavy Vehicles %</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>South of Metricup Rd</td>
<td>Jun 2008</td>
<td>1,081 vpd</td>
<td>7.3%</td>
<td>MRWA</td>
</tr>
<tr>
<td>South of Metricup Rd</td>
<td>Mar 2006</td>
<td>1,564 vpd</td>
<td>5.6%</td>
<td>MRWA</td>
</tr>
<tr>
<td>South of Metricup Rd</td>
<td>May 2004</td>
<td>999 vpd</td>
<td>5.4%</td>
<td>MRWA</td>
</tr>
<tr>
<td>South of CBR</td>
<td>Oct 2008</td>
<td>1,638 vpd</td>
<td>6.6%</td>
<td>Transcore</td>
</tr>
<tr>
<td>North of CBR</td>
<td>Oct 2008</td>
<td>1,450 vpd</td>
<td>6.6%</td>
<td>Transcore</td>
</tr>
</tbody>
</table>

Table 2. Caves Road traffic volumes

Even though historical records show a drop in traffic volumes between 2006 and more recent 2008 count, it is still considered that the 2006 traffic levels reflect a more realistic situation for this road. Based on the advice from Main Roads WA it is estimated that, during the peak season periods where the tourism traffic component is more pronounced, the Caves Road traffic at this location is likely to reach 2,500 vpd.

Cowaramup Bay Road and Caves Road form a 4-way, priority-controlled intersection approximately 3km northeast of the Gracetown townsite. Cowaramup Bay Road flares at its approaches to the intersection enabling separation of the through and turning traffic. A site visit has indicated a potential sightline issue associated with the Cowaramup Bay Road western approach to this intersection, due to the upgrade approach and the right hand bend.

The crash history data for the Caves Road/Cowaramup Bay Road intersection for the five-year period ending with December 2008 sourced from the Main Roads WA web site is summarised in Table 3.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>State Frequency Rank</th>
<th>State Cost Rank</th>
<th>Total Crashes</th>
<th>Casualty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caves Road/Cowaramup Bay Road Intersection</td>
<td>3548</td>
<td>4251</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Rear End</td>
<td>Right Angle</td>
<td>Pedestrian</td>
<td>Cycle</td>
<td>Wet</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3. Caves Road/Cowaramup Bay Road intersection crash data

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*ADT – Average Daily Traffic*
AMRSC has applied for National Black Spot funding for upgrading of the Caves Road/Cowaramup Bay Road intersection. It is understood that this funding is approved with a total budget of $200,000. The upgrade of this intersection would entail the creation of a staggered T-intersection by moving the eastern Cowaramup Bay Road approach to the intersection further to the south including vegetation clearance (if deemed necessary). Intersection upgrade works would involve survey, design and approvals for clearing in 2010/11, with constructions commencing the same year.

Salter Street is a typical 6m wide semi-rural road, which forms the western boundary of the Gracetown townsite. It forms a T-intersection with Bayview Drive (extension of Cowaramup Bay Road through the townsite) and extends further south providing access to the local tourist attractions south of Gracetown. Refer Figure 3.

Bayview Drive and Salter Street form a partially channellised 3-way intersection at the northwest end of the townsite. Please refer Figures 4 and 5.
A number of unsealed roads and tracks link the townsite with nearby tourist and coastline attractions.

The town’s internal road network is semi-rural in nature and predominantly consisting of 6m wide, sealed, single carriageways (with occasional formal pedestrian paths along one side of the road) with GIVE-WAY intersection priority controls, providing overall satisfactory access to all the dwellings within the
settlement. The Gracetown road network forms a low-speed, pedestrian-friendly environment even though clear pedestrian-vehicle separation is not formalised.

Public parking facilities are provided via a mixture of formal and informal facilities. Around the northern tip of the town and in the vicinity of the shops and the beach, congestion and vehicular/pedestrian conflicts occur during the peak holiday periods.

In order to establish the existing level of traffic along the Cowaramup Bay Road/Bayview Drive/Salter Street for the three key periods: typical weekday, typical weekend and peak period (holiday and festive season), traffic surveys were organised in cooperation with the AMRSC. The traffic surveys were undertaken between 26th March and 12th April 2010 (for the typical weekday/weekend and Easter weekend as peak period). This period was selected as Easter break is considered to be one of the most traffic-intensive periods during a year with the above-average tourism traffic activity. The traffic survey results (vehicles per day - vpd) are displayed in Figure 6 below.

A similar survey of the key Cowaramup Bay Road/Bayview Drive/Salter Street was previously undertaken during the same Easter holiday period in 2008 (18th March to 2nd April 2008) to establish the traffic levels for the typical weekday, typical weekend and peak period. Traffic counts were undertaken at the similar locations as in the 2010 survey.

The analysis of the comparable 2008 and 2010 traffic count records revealed some degree of correlation between the two sets of data, particularly for Cowaramup Bay Road/Bayview Drive section of the road network. Accordingly, the following trends were established:

- An increase in weekday traffic of approximately 2.5%;
- An increase in weekend traffic of approximately 18%;
- A decrease in peak period traffic of approximately 11.5%;

Salter Street traffic count data was more volatile and no clear trends have been identified for this road. This may be explained by the fact that Salter Street and roads extending further south lead to local tourism spots south of Gracetown which a day to day weather attraction and ocean conditions rather than seasons or holiday breaks (i.e. good surfing days).
Figure 6. Traffic survey results (March/April 2010)
3.0 PROPOSED SITUATION

The proposed Gracetown Residential Development (GRD) is to be located just south of the townsite, at the northeast corner of the Langley Crescent and Salter Street intersection (please refer to Appendix A for concept plan). The total site area spreads over 14.4ha (of which 5.98ha is actual residential development area) and will entail approximately 146 individual and grouped dwellings in total.

The proposed development aims to establish strong connectivity with the existing Gracetown townsite while at the same time preventing major impact on the existing townsite traffic operations.

The proposed GRD entails an internal grid of pedestrian footpaths providing internal and external connectivity. For the proposed outer vehicular circulatory road (consisting of Langley Crescent, Salter Street and complementing future road) and two internal parallel east-west road links provide overall permeability and legible vehicular access to each of the individual/group dwellings while at the same time maintains pedestrian-friendly environment. Pedestrian and vehicular movements are separated in a complementary manner promoting legibility and a safe, conflict-free environment. Refer Figure 7 for GRD location.
Figure 7. Proposed location of Gracetown Residential Development
4.0 TRAFFIC ANALYSIS

The analysis of the transport network in this section of the report provides an assessment of the proposed GRD in terms of anticipated traffic generation, internal road reservation requirements, intersection treatments and provision of pedestrian facilities.

4.1 Trip Generation and Distribution

In order to assess the traffic volumes generated by the proposed GRD and the traffic volumes within the internal road network of the development, a traffic generation and distribution exercise was undertaken.

To estimate the future traffic that would be generated by the proposed development, the document "Guide to Traffic Generating Developments, Roads and Traffic Authority NSW (October 2002)" was sourced. This document is commonly used by traffic engineers and a widely accepted point of reference for establishing typical daily and peak period traffic-generation rates for various land uses.

Based on the proposed type of development, its location and function, including relative proximity to the local attractions, the estimated trip generation rate for the proposed development is 5 daily vehicle trips (vpd) per dwelling. However, in order to allow for a more robust assessment, a sensitivity analysis was undertaken with daily trip generation rate of 7 daily vehicle trips (vpd) per dwelling.

Although pedestrian traffic is anticipated, it was not factored in the total daily trip assessment.

In order to calculate the total daily vehicle trips for the proposed GRD the following occupancy assumptions were made:

- Typical weekday occupancy of the proposed GRD is estimated at 30%;
- Typical weekend occupancy of the proposed GRD is estimated at 75%;
- Typical peak holiday occupancy of the proposed GRD is estimated at 100%.

Accordingly, the total GRD trip generation (both ins and outs) for two scenarios (5 and 7 daily trips per dwelling) is summarised in Table 4.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Number of Units</th>
<th>Assumed Rate</th>
<th>Total daily vehicle trips by units occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td>Scenario A</td>
<td>146</td>
<td>5</td>
<td>219</td>
</tr>
<tr>
<td>Scenario B</td>
<td>146</td>
<td>7</td>
<td>307</td>
</tr>
</tbody>
</table>

Table 4. Daily vehicle trip generation calculation
Based on the surrounding land uses, tourist attractions and proposed location of GRD, it is assumed that 90% of the generated vehicular trips would be via Cowaramup Bay Road and the remainder to the major local attractions located south and northwest of the townsite accessible via Salter Street.

The vehicular trips generated by the GRD were assigned to the road network based on the assumed trip distribution. The resulting traffic volumes for the 30%, 75% and 100% occupancy for both scenarios are shown in Figure 8 for the regular weekday, weekend and holiday periods, respectively.

Landorp’s GRD Project’s ultimate goal is to promote a sustainable and eco-friendly development by implementing a number of progressive solutions such as: green power, renewable energy and recycled water treatment facility. Landorp’s intention with GRD developments is to set an example for future sustainable development design.

Consequently, Gracetown with this development is expected to attract additional tourist trips (not included in existing traffic surveys). Quantification of this type of induced traffic is a challenging task because no similar example in this region is available to provide indicative. However, for the purpose of robustness of this analysis it is assumed that up to 5% of traffic along Caves Road may eventually divert to Gracetown. This would equate to approximately 75/90/100 additional weekday/weekend/peak season vehicular trips via Cowaramup Bay Road. This level of traffic increase will have minimal impact on Gracetown, therefore the induced traffic volumes are not reflected in Figure 9, which shows the total existing surveyed traffic volumes plus the traffic volumes generated by the GRD developments.

As expected, the traffic volumes in Figures 6, 8, 9 & 10 illustrate that the traffic volumes within Gracetown will increase as a result of the GRD. The traffic increases are more pronounced along the entry roads to the townsite, namely Cowaramup Bay Road and Bayview Drive. Even though the current standards of the road network within the townsite can accommodate this level of traffic increase, a number of traffic management measures are recommended to enhance and improve traffic flow, pedestrian amenity and road safety. These measures are not all as a result of the GRD but are outlined and discussed in the subsequent sections of this report.
Figure 8. Distribution of GRD-generated traffic for scenarios A & B over Gracetown road network
4.2 Analysis of External Road Network

The impact of the proposed GRD onto existing townsite road network was identified as one of the concerns by the local community. Therefore a detailed analysis of Caves Road, Cowaramup Bay Road and Salter Street as key elements of the road network was undertaken to establish the practical effect of the anticipated traffic increase for the post-development stage.

In order to determine actual traffic conditions for relevant roads, the Level of Service (LoS) evaluation is considered. The LoS concept may be used as the basis of capacity and operational analysis of all road facilities. LoS is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists/passengers. A level of service definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience and safety. In general there are six levels of service, designated from A to F, with level of service A representing the best operating conditions (i.e. free flow) and level of service F the worst (i.e. forced or break-down flow).

Each of the levels of service can generally be described as follows:

- **Level of Service A** is a condition of free flow in which individual driver is virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.

- **Level of service B** is in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is a little less than with LoS A.

- **Level of service C** is also in the zone of stable flow, but most drivers are restricted to some extent to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.

- **Level of service D** is close to the limit of stable flow and is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.

- **Level of service E** occurs when traffic volumes are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within traffic stream will cause break-down.

- **Level of service F** is in the zone of forced flow. With it, the amount of traffic approaching the point under consideration exceeds that which pass it. Flow break-down occurs, and queuing and delays result.

The following table illustrates approximated LoS for the typical single carriageway rural, two-lane, two-way, road with the rolling terrain configuration. This table can be used as a guide to provide likely LoS with respect to maximum annual average daily traffic (AADT) under conditions specific to the Gracetown locality (refer Table 5).

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT 1,100 vpd</td>
<td>2,800 vpd</td>
<td>5,200 vpd</td>
<td>8,000 vpd</td>
<td>14,800 vpd</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Estimated maximum AADT for various Levels of Services

In order to estimate future traffic flows along Caves Road (in the vicinity of Cowaramup Bay Road), Cowaramup Bay Road (section west of Caves Road) and Bayview Drive as key inbound/outbound corridor for Gracetown, relevant annual

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6 All values rounded to nearest 100 vpd. Assumed conditions include 60/40 directional split, 14% heavy vehicles, 4% buses. Percentage of length with no overtaking estimated at 40%.
population growth and tourism growth rates were sourced from the relevant authorities.

For this purpose, annual population growth rate for AMRSC was established based on the census data published in the *Population Report 6 (November 2006) Western Australia Tomorrow* document prepared by WAPC and Western Australia Government. Accordingly, average annual increase in population rate of 2.24% was established. Although it is noted that the population increase would likely be incremental rather than steady it is still considered to be relevant over the extended 5-10 year period.

The projects currently in planning or early development stages which will be developed in the immediate area are listed in the following table (refer Table 6).

<table>
<thead>
<tr>
<th>Development</th>
<th>Location</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olio Bello</td>
<td>SE corner of Caves Rd/CBR</td>
<td>25 short-stay units + facilities</td>
</tr>
<tr>
<td>Cowaramup Resort</td>
<td>650m NW of Bussell Hwy/CBR</td>
<td>161 villa-style units + facilities</td>
</tr>
<tr>
<td>Resort</td>
<td>NE corner of Caves Rd/CBR</td>
<td>8 chalets (possible)</td>
</tr>
<tr>
<td>Resort</td>
<td>NW corner Caves Rd/Van Tripp Rd</td>
<td>4 chalets</td>
</tr>
<tr>
<td>Restaurant</td>
<td>SW corner of Caves Rd/CBR</td>
<td>Restaurant</td>
</tr>
</tbody>
</table>

Table 6. Presently known projects to be developed in the vicinity of Gracetown

Based on the advice provided by the Augusta-Margaret River Tourist Bureau, annual tourism growth rate is estimated at 6.23%. This rate was extrapolated from the 2007/08 and 2008/09 annual tourism growth rates (2009/2010 figures are not yet available).

For the purpose of this study, and in order to assess the most robust scenario, it was concluded that the expected annual traffic growth for the region would be in order of 4.23% per annum.

As a starting point the level of traffic on Caves Road and Cowaramup Bay Road is assumed to be that of the highest recorded in the past several years, as reported in Section 2.0 of this report. Existing traffic volumes on Bayview Drive are derived from the March/April 2010 traffic survey.

With respect to the existing traffic levels, impact from the GRD generated traffic and projected average annual traffic growth for the region, future expected LoS for the key Gracetown roads were established (refer Tables 7, 8, 9 & 10). Bayview Drive and Salter Street would experience somewhat different and more constrained traffic growth since population and tourism activity in Gracetown will be directly related to the limited residential and tourism expansion opportunities in the foreseeable future.
<table>
<thead>
<tr>
<th>Road</th>
<th>Weekday</th>
<th>Peak Period</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caves Road</td>
<td>LoS B</td>
<td>LoS B</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>LoS B</td>
<td>LoS C</td>
<td>+ 5 years</td>
</tr>
<tr>
<td></td>
<td>LoB B</td>
<td>LoS C</td>
<td>+10 years</td>
</tr>
</tbody>
</table>

Table 7. Estimation of Level of Service for Caves Road in for the 10-year period

<table>
<thead>
<tr>
<th>Road</th>
<th>Weekday</th>
<th>Peak Period</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cowaramup Bay Road</td>
<td>LoS B</td>
<td>LoS B</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>LoS B</td>
<td>LoS B</td>
<td>+ 5 years</td>
</tr>
<tr>
<td></td>
<td>LoS B</td>
<td>LoS C</td>
<td>+10 years</td>
</tr>
</tbody>
</table>

Table 8. Estimation of Level of Service for Cowaramup Bay Road in for the 10-year period

<table>
<thead>
<tr>
<th>Road</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Peak Period</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayview Drive</td>
<td>LoS B</td>
<td>LoS B</td>
<td>LoS B</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>LoS B</td>
<td>LoS B</td>
<td>LoS B</td>
<td>Post GRD (A)</td>
</tr>
<tr>
<td></td>
<td>LoS B</td>
<td>LoS B</td>
<td>LoS C</td>
<td>Post GRD (B)</td>
</tr>
</tbody>
</table>

Table 9. Estimation of Level of Service for Bayview Drive for the post GRD period (Scenario A & B)

<table>
<thead>
<tr>
<th>Road</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Peak Period</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salter Street</td>
<td>LoS A</td>
<td>LoS A</td>
<td>LoS B</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>LoS A</td>
<td>LoS B</td>
<td>LoS B</td>
<td>Post GRD (A)</td>
</tr>
<tr>
<td></td>
<td>LoS A</td>
<td>LoS B</td>
<td>LoS C</td>
<td>Post GRD (B)</td>
</tr>
</tbody>
</table>

Table 10. Estimation of Level of Service for Salter Street for the post GRD period (Scenario A & B)

The reported results reflect the worst-case scenario since the percentage of heavy vehicles in the overall traffic along the subject roads is significantly less than those used to establish LoS in Table 5.

With respect to results from the road network analysis (presented in Tables 7-10), it is concluded that the capacity of existing townsite and external road network will not be undermined by the proposed residential expansion (GRD development). It is also confirmed that no major road upgrades would be required to cater for the anticipated levels of traffic over the next 10-year period inclusive of the development traffic and the anticipated typical yearly traffic growth. The anticipated LoS for the balance of the townsite roads would be that of LoS A.

---

*Post GRD (A) – scenario A (assumed GRD traffic generation rate of 5 trips per day per unit*

*Post GRD (B) – scenario B (assumed GRD traffic generation rate of 7 trips per day per unit*
4.3 Caves Road / Cowaramup Bay Road intersection Analysis

As previously reported in Section 2.0 of this report, intersection of Caves Road and Cowaramup Bay Road was flagged as critical due to the existing crash records, and as such, subject to future upgrades. For this reason, the intersection of Caves Road and Cowaramup Bay Road was analysed for its operational performance and potential sightline issues. As previously reported, funding from the Federal Black Spot Program has been approved and funds have been allocated for upgrade of this intersection.

Accordingly, in order to establish operational conditions of the intersection for the existing situation and future scenario, which includes post GRD and peak road network conditions, a capacity analysis using SIDRA software was undertaken.

SIDRA is an intersection-modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and Mean Queue. These characteristics are defined as follows:

- **Degree of Saturation** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for infrequent traffic flow up to one for saturated flow or capacity.
- **Level of Service** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- **Average Delay** is the average of all travel time delays for vehicles through the intersection.
- **Mean Queue** is the queue length below which 50% of all observed queue lengths fall.

The results of the SIDRA analysis are summarised in Table 11.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Movement Type</th>
<th>Degree of Saturation</th>
<th>Level of Service</th>
<th>Average Delay (sec)</th>
<th>Mean Queue (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caves Rd South</td>
<td>ALL</td>
<td>0.023</td>
<td>A</td>
<td>5.1</td>
<td>0</td>
</tr>
<tr>
<td>CB Rd East</td>
<td>ALL</td>
<td>0.022</td>
<td>B</td>
<td>11.9</td>
<td>0</td>
</tr>
<tr>
<td>Caves Rd North</td>
<td>ALL</td>
<td>0.036</td>
<td>A</td>
<td>3.8</td>
<td>1</td>
</tr>
<tr>
<td>CB Rd West</td>
<td>ALL</td>
<td>0.053</td>
<td>B</td>
<td>12.1</td>
<td>1</td>
</tr>
<tr>
<td>All Vehicles</td>
<td></td>
<td>0.053</td>
<td>N/A</td>
<td>7.8</td>
<td>1</td>
</tr>
</tbody>
</table>
The results of the SIDRA analysis demonstrate that presently this intersections’ performance is at the high level, with minimal delays and queues with ample spare capacity for additional traffic. It is also concluded that in the future and under peak traffic loading, the intersection will experience marginal increases in the degree of saturation, delays and queues. Even under these conditions (peak road network traffic loading and impact from the proposed development) Caves Road and Cowaramup Bay Road intersection will still have significant additional capacity to accommodate future traffic growth.

It is therefore concluded that, from the capacity and performance point of view, the proposed GRD will have no adverse impact on the operations of the Caves Road and Cowaramup Bay Road intersection.

The sightline assessment of the Caves Road and Cowaramup Bay Road intersection suggests that eastern and western legs of this intersection do not satisfy minimum sightline requirements. The following issues have been identified:

- Cowaramup Bay Road (western approach) does not meet the minimal sightline requirements due to horizontal geometry;
- Cowaramup Bay Road (eastern approach) does not meet the minimal sightline requirements due to vertical geometry;

These findings are confirmed by engineering assessment (refer Appendix E for relevant plans) but were also noted during the site visit (refer Figures 10 & 11).
4.4 Construction Traffic

At this stage, limited information on GRD construction traffic schedule is available since the project is still far from the detailed design stage. However, some indicative information is presented on basis of a “typical 150-lot subdivision” project:

- Civil construction works will likely be carried out in one stage over an 8-month period;
- The heavy machinery required for the installation of services will be delivered to the site by heavy vehicles at the start of the construction stage. This machinery will be confined to the subdivision site and will not be used on roads accessible to the public;
• Some work on upgrade of existing services and installation of new ones may require engagement of the machinery at various locations throughout the townsit. However, these works will be pre-approved and limited in scope and duration;
• The delivery of machinery is typically carried out in the morning by flatbed heavy vehicles, therefore no “high’n’wide” loads are expected for this operation;
• Appropriate traffic management plan (TMP) for the machinery and material delivery, including contractors’ traffic would be prepared and authorised by local authorities prior to construction commencement. This TMP will provide details on traffic schedule, signage and warnings including temporary road closures (if required) during the construction process;
• There is no plan to modify existing road network for the purpose of construction vehicles;
• The contractors will be encouraged to only use the main access road to the site;
• The contractors’ staff would use light vehicles to travel to and from work every day. This would probably involve half a dozen utility vehicles;
• Occasional and limited civil construction traffic activity is also expected during latter individual unit construction stage (10-year period).

In light of the information provided to Transcore the following is concluded:

• The heavy vehicle traffic component would be limited and typically occur outside peak traffic activity periods of the existing road network.
• Any possible disruption to the normal traffic activity within the townsit will be occasional, announced in advance, controlled and in line with the pre-approved TMP.
• No road upgrades or modifications of existing road network are required for the operation of this traffic. However, it is anticipated that due to the nature of this type of activity some detrimental effect may be experienced in form of noise and dust pollution and occasional traffic operation disruptions. It is however understood that the developer will be requiring strict adherence to dust and noise management practice of all civil contractors;
• The light traffic component related to construction works would be occurring on daily basis (over the entire construction period) and would be directed to use main access roads to the site. The type and frequency of this traffic suggests that it will have no practical effect on existing traffic operations within the townsit;

4.5 Parking

Due to its location, local attractions and existing facilities, Gracetown is one a popular tourist destination within the Margaret River region of WA. It experiences large influx of tourism, recreational and leisure visitors during
weekend, holidays and special event days. This situation leads to traffic spikes during these critical periods and other issues such as increased parking along main access roads at the approach to the townsite and in the vicinity of informal parking areas. These incidents were identified by local community members, as one of the major ongoing problems causing safety and amenity issues.

The site observations have confirmed that these events are not related to the insufficient road network capacity to accommodate this extraordinary traffic occurrences, but rather inadequate parking supply near the main coastal attractions (i.e. main swimming beach, boat ramp, surf spots, etc) causing parking overflow.

It is important to note that this situation is an inherited problem and is in no way related to the proposed GRD development.

In order to address this situation and improve pedestrian safety and traffic operations the following mitigation measures should be considered by the appropriate approving authorities and delivering agencies as part of the carpark upgrade strategy:

- Formalisation of existing informal parking areas (including upgrade of existing facilities);
- Extension of existing formal parking facilities (subject to environmental impact assessment);
- Prohibition of parking along road verges of Cowaramup Bay Road and Bayview Drive;
- Signs directing visitors to alternative carpark facilities.

The formalisation of informal parking areas would improve the utilisation efficiency and would provide additional parking space. In some cases up to 100% of additional parking bays could be achieved with improved safety and operation. Prohibition of parking along road verges can be enforced through signage, vegetation planting and bollard installation. These measures should be negotiated between the Shire and community members/groups and implemented to the satisfaction of both parties. Indicative plan for parking upgrade and parking improvement strategy are illustrated in Figures 12 & 13.

These improvements along with other traffic management measures are discussed in detail in the Section 4.6 of this report.
Figure 12. Indicative plan for the potential improvement strategy of the existing main swimming beach area
4.6 Proposed Traffic Management Measures related to GRD

A significant portion of the GRD generated traffic will result in traffic increases on the existing external road network to the GRD area. These roads include Caves Road, Cowaramup Bay Road, Salter Street, Langley Crescent and respective intersections. Post GRD development analysis has confirmed the following:

- It is estimated that the GRD-generated traffic would add approximately a maximum of 795 daily vehicle trips to the existing Caves Road traffic. This maximum traffic increase is only expected during the peak holiday season and during all other times the level of traffic increase will be less. Therefore the total peak holiday season traffic along Caves Road is estimated at approximately 3,300 vehicular trips (in both directions) following the GRD development. This traffic volume is well within the capacity of Caves Road and would not adversely impact on its future
operation. This level of traffic increase does not necessitate any upgrades to Caves Road;

- Cowaramup Bay Road, Salter Street and Langley Crescent enjoy spare capacities and are all expected to satisfactorily accommodate the estimated maximum increase in traffic during the peak holiday season.

In order to ensure a satisfactory movement network and maximum safety, a number of traffic management measures are recommended which are discussed in this section and Section 4.7 of this report;

- Improvements to the intersection of Salter Street and Langley Crescent, through improved corner radii and formalisation. These improvements include kerbing of the eastern side of Salter Street at the intersection, improvement to the hold line, relocation of the GIVE WAY sign and introduction of a centre line on Langley Crescent;
- Intersection of Bayview Drive and Salter Street is also recommended to be improved. A roundabout is the preferred treatment.
- The standard of Salter Street from Bayview Drive to the South Beach access and Lefthanders carpark will need to be improved to provide consistency and to provide a pavement width of 5.5 to 6 metres;
- The Galliers Street/Langley Crescent intersection is to be modified to prevent development generated traffic filtering through existing townsite road network. This modification is to be supplemented with the addition of “No entry” and “Right only” painted arrow on Galliers Street. Refer Appendix C for more details;
- The 60km speed zone immediately outside the town site is recommended to be extended from the bend in Cowaramup Bay Road to the entrance of the townsite immediately north of the commercial land uses. Cowaramup Bay Road from the bend to Caves Road would need to have a speed limit of 80km per hour (existing). The speed limit in the vicinity of the commercial land uses is recommend to be reduced to 40km per hour (presently only a recommended 40km/h speed limit sign is posted). All other roads within the townsite are recommended to entail a speed limit of 50km per hour, as per default speed limit in built up and residential areas. The new speed limits will need to be supported by signage where appropriate. The speed limit modifications are typically initiated by the relevant Local Government agency and would have to be endorsed by Main Roads WA in order to be implemented. Refer Figure 14 for the proposed speed limit map.
In order to assess the adequacy and safety of the informal pedestrian crossing on Bayview Drive, located at the entry to the townsite approximately 30m north of the commercial zone, a detailed review is undertaken in Section 4.8. This issue has been raised by local community, which expressed concern about the safety and adequacy of the crossing point location.

4.7 Other Proposed Traffic Management Measures

In addition to the traffic management and improvement measures identified for the GRD, the following additional measures are suggested to further improve Gracetown road network and traffic operations:

- An entry statement feature (such as tourist information bay) to the town site in the vicinity of the commercial land uses. This entry statement could be in the form of change in pavement texture/colour and landscaping/street furniture. At this location consideration should be given to provision of a suitable turnaround facility for the vehicles towing boats, coaches and buses as well as additional parking;
- A painted pavement, raised platform or new pavement texture on Bayview Drive to improve the legibility of pedestrian crossing at this location;
• Parallel parking bays along Bayview Drive opposite the commercial land uses;
• Improvements to the intersection of Cowaramup Bay Road and the boat ramp including improvement to the left turn geometry out of the boat ramp area and provision of pavement line markings. There is an opportunity to increase parking in the boat ramp area⁹;
• Formalisation of the northern tip carpark to increase parking capacity and improve traffic operations. Access improvement to the existing carpark facility should also be considered;
• Formalisation of parking and upgrade of existing facilities at the main swimming beach parking area, including improvements to access;
• Formalisation of the southern beach carpark area to increase parking capacity and improve traffic operations. Improvement of access to the existing carpark should also be considered, including upgrade of the pedestrian crossing point;
• Consider expansion of existing formal carpark facility located at the northern end of Salter Street;
• Consider imposing parking prohibition along Bayview Drive verges (from northern tip to the commercial zone) to prevent obstruction of regular traffic operations and avoid potential pedestrian/vehicular conflicts. This can be achieved through signage, vegetation planting and bollards installation along both sides of the road and appropriate penalty policy;
• The intersection of Salter Street and the South Beach access will also need to be formalized through kerbing of corner radii and line markings.

### 4.8 Bayview Drive Pedestrian Crossing Assessment

A sightline assessment of the Bayview Drive pedestrian crossing point (refer Appendix F for engineering plans) revealed the following issues:

• Removal of the vegetation on eastern side of Bayview Drive, immediately north of the crossing point would provide satisfactory sightlines in northbound direction (refer Figure 15);
• Due to the vertical geometry of Bayview Drive south of the crossing point sightlines in the southbound direction do not meet the criteria of minimum required sightline (refer Figure 16).

⁹ The Shire is currently seeking “Royalties for Regions” funding to upgrade the boat ramp parking area
Accordingly, it is concluded that the existing pedestrian crossing location is not adequate and presents hazard to pedestrians attempting to cross Bayview Drive to access the pedestrian footpath and town beach on the opposite side of the road.

In order to avoid this undesirable situation it is recommended that the pedestrian crossing is relocated approximately 90m south of its existing location and equipped with suitable pedestrian crossing facilities and signage. This relocation would have to be followed by vegetation clearance and pedestrian footpath extension along the western side of Bayview Drive so that the footpath meets the new crossing point. Refer Bayview Drive pedestrian crossing assessment plan attached in Appendix F for more details.
4.9 Internal GRD Road Network

In order to determine the road hierarchy and the required road reservations for the internal road network of the GRD, the generated traffic was distributed on the internal development roads based on the configuration shown in the Concept Plan in Appendix A. The outcome of this exercise is shown in the Appendix B with the daily traffic volumes shown on key internal roads.

The Western Australian Planning Commission (WAPC) document “Liveable Neighbourhoods – Street Layout, Design and Traffic Management Guidelines” has been sourced to assess road hierarchy and reservation requirements for the internal roads. The analysis shows that all three north-south internal development roads can be classified as Narrower Access Streets with typical road reservations of 14m. The typical road reserve entails a 6m wide road pavement with the 4m wide verges on both sides. The typical cross-section of the Narrower Access Street (Liveable Neighbourhoods, October 2007) is illustrated in Figure 17.

![Figure 17. Access Street D – Narrow yield (give way) street with target speed of 30 km/hr (<1,000 vpd)](image)

During the course of development of the concept plan, Transcore has proposed several recommendations to improve the overall legibility, safety and pedestrian connectivity (refer Appendix C). The following measures have being recommended and proposed in the GRD concept plan:

- Addition of another pedestrian link onto Salter Street to improve pedestrian connectivity with the existing Gracetown townsite;
- Traffic calming measures at key points on roads abutting the development to improve safety aspect.
4.10 Pedestrian Network

The proposed comprehensive network of internal pedestrian footpaths within the proposed GRD will provide an adequate level of accessibility for each individual lot promoting walking in favour of driving. Internal pedestrian connectivity is achieved through a proposed network of pedestrian footpaths comprising of two major north-south and two east-west links and a number of minor links, which provide direct access to individual lots.

External connectivity is to be provided through four proposed external pedestrian connection points, which would be located along Langley Court and Salter Street (two points on each road). Refer Appendix A for GRD details. Pedestrian desire lines have been illustrated in Figure 18. Accordingly, the proposed pedestrian improvement measures, which aim to improve the overall pedestrian connectivity within the Gracetown townsite and between Gracetown and the GRD, are illustrated in Figure 19 and listed as follows:

- The existing footpaths along Bayview Drive and Salter Street will need to be extended further east to Langley Court to establish formal connectivity between the proposed GRD and the neighbouring Gracetown townsite, community nodes and local attractions;
- Also, a pedestrian connection would need to be created between the Bayview Drive and the South Point;
- There is a footpath along the alignment of Galliers Street. This footpath needs to be upgraded, lit through bollards, and extended to connect Langley Court to Bayview Drive.

Particular consideration should be given to the proposed roundabout intersection of Salter Street/Bayview Drive, which would require inclusion of pedestrian facilities in its design such as islands, pram ramps, grab rails, etc.
Figure 18. Pedestrian desire lines plan
Figure 19. Proposed pedestrian network improvement measures plan

- Improved Pedestrian Environment via Traffic Management/Calming Measures
- Proposed Roundabout with Pedestrian crossing Facilities
- Improved Pedestrian Paths at New Beach Carpark
- Pedestrian footpath created and lit using bollards
- Pedestrian footpath requires upgrade, lit using bollards
- Pedestrian footpath created and lit using bollards
- New Pedestrian Footpath

GRACETOWN RESIDENTIAL DEVELOPMENT
4.11 Assessment of community proposed “loop road” options

The local community has expressed concern about the detrimental effect of the “transit” traffic associated with tourists/surfers traversing the townsite to access popular destinations west and south of Gracetown. This is also related to the anticipated negative impact from the future GRD construction traffic. The tourism traffic is particularly manifested during the weekend and holiday periods and may have impacts on the overall pedestrian safety, amenity and intended character of Gracetown.

The implementation of the “loop road” proposals are intended to address inherited traffic issues and are only partially related to the proposed GRD. The connection to GRD is relevant to the subdivision construction traffic component which will be limited to an 8-month period. The construction of the houses within GRD will be undertaken by the lot owners over a 10 year period. The significance of the housing construction is much less than the subdivision construction traffic.

Two main “surf & construction” road upgrade plans have been suggested by the community for comments and assessment (refer Figure 20 & 21).

![Figure 20. Proposed “surf & construction” plan - Option A](image)

Option A of the proposed “loop road” road upgrade plan represents an elaborate plan consisting of a number of road network modifications and intersection upgrades in order to establish an alternative route for the “transit”
traffic which would effectively skirt around the northern and western perimeter of the townsite. Although the proposed plan has evident merits the following is concluded:

**Benefits of the proposal:**

- Displacement of construction and transit traffic away from the townsite core;
- Internal Gracetown road network servicing residential traffic only;
- Improved amenity and pedestrian safety along Bayview Drive (section from commercial zone to Salter Street) and Salter street (section from Bayview Drive to Langley Crescent);
- Reduced vehicle conflict between residential and “transit” traffic.

**Disbenefits of the proposal:**

- Negative amenity impact transferred from Bayview Drive to Percy Street;
- Questionable real need of doubling the existing road infrastructure and capacity;
- Not warranted from the road capacity point of view;
- Disproportionate benefit in relation to mitigation of the detrimental effect of the construction traffic since it is limited in timeframe (8-months only) and frequency. Construction traffic typically outside road network peak activity periods (11AM – 2PM).
- Loop road may not be in place by the time civil construction works commence and will therefore have limited benefit;
- Disproportionate benefit in relation to the mitigation of the detrimental effect from “transit” traffic, which is limited to weekend, holiday periods and special event days only;
- Adequate land for additional road reserve may not be available;
- Costs associated with the construction of new and upgrade of existing road infrastructure;
- Costs associated with maintenance of new road infrastructure;
- South Beach and commercial zone carpark extension already recommended in this report;
- Proposal is not entirely warranted due to implementation of GRD;
- Potential environmental impacts;
Option B of the proposed “loop road” upgrade plan is a simplified version of the previous plan, which attempts to address the same issues. Again, the proposed plan offers solution to the identified community concerns however the following benefits and shortcomings are identified:

**Benefits of the proposal:**

- Displacement of construction and transit of traffic away from the townsite core;
- Internal Gracetown road network servicing residential traffic only;
- Improved amenity and pedestrian safety along Salter street (section from Bayview Drive to Langley Crescent);
- Reduced vehicle conflict between residential and “transit” traffic;

**Disbenefits of the proposal:**

- Negative amenity impact transferred from Bayview Drive to Percy Street;
- Doubling of existing road infrastructure and capacity;
- Not warranted from the road capacity point of view;
- Partial redirection of future GRD traffic through core townsite road network rather than Salter Street;
- Detrimental effect from construction traffic (heavy vehicle component) limited in timeframe (8-months only) and frequency. Construction traffic (light vehicles component) limited in timeframe, frequency, and amenity impact;
• Loop road may not be in place by the time civil construction works commence and will therefore have limited benefit;
• Detrimental effect from “transit” traffic limited to weekend, holiday periods and special event days;
• Requirement for new road reserve;
• Costs associated with the construction of new and upgrade of existing road infrastructure;
• Costs associated with maintenance of new road infrastructure;
• Proposal is not entirely warranted due to implementation of GRD;
• Potential environmental impacts;

In conclusion, it is confirmed that both loop road options offer some benefits; however, transfer of impacts elsewhere in the town, construction costs and limited extent of practical benefits undermines the project justification.

4.12 Second Road Access Investigation

A second road access to Gracetown, which is proposed to provide an additional link between Caves Road, the existing Gracetown townsite and the proposed GRD, was assessed by Transcore and presented in a separate report. The conclusion of this assessment was as follows:

“The installation of a Secondary Access Road into Gracetown could be seen to deliver both benefits and disbenefits to the townsite. The main benefits relate to the northern part of the existing town at the entry near the existing shops. Traffic analysis indicated that Second Access Road could facilitate improvements in amenity and walkability at this part of the town. It is however important to note that this improved amenity could alternatively be achieved through implementation of other traffic management measures (outlined in the Transcore’s Gracetown Residential Development Traffic Management Report, June 2010) under the existing road network scenario.

Any traffic that will be diverted as a result of Second Access Road construction from the northern part of the townsite (near existing shops) would likely be transferred to the eastern part of the town, resulting in amenity impacts and safety concerns that may require implementation of another set of traffic management measures to mitigate newly created issues at this location.

In light of significant costs associated with building a Second Access Road to the standard required by FESA and DEC, the negative environmental impact of the road and the future maintenance costs, the construction of the Second Access Road is questionable.

This is further supported by the fact that the existing road network has the required capacity to cater for estimated traffic increase as a result of the proposed GRD.”
However, the final decision on the Second Access Road proposal will have to be reached through consultation with relevant government agencies and local community groups.

### 4.13 Fire Management Access

Fire Management Access information will be finalised upon completion of the relevant Fire Management and Emergency Response Report by FirePlan WA.

Please refer Appendix D for a copy of the proposed Fire Management plan for the existing Gracetown townsite and proposed GRD.
5.0 CONCLUSIONS

This Traffic Management Report provides information on the proposed Gracetown Residential Development (GRD) and describes and evaluates the existing and proposed transport characteristics of the Gracetown townsite.

The proposed GRD is anticipated to generate 219, 548 and 730 vehicular trips in total (sum of inbound and outbound trips) for the 30%, 75% and 100% occupancy rate, respectively. Alternatively, a more robust scenario was tested with the amplified trip generation rate in order to carry out a sensitivity analysis. Accordingly, the proposed development generated 307, 767 and 1,022 total daily vehicular trips for the 30%, 75% and 100% occupancy rate.

The increased traffic is expected primarily along the Cowaramup Bay Road/Bayview Drive/Salter Street corridor with the anticipated volumes for both scenarios shown in Figure 9.

The existing Gracetown townsite transport network requires certain upgrades to successfully integrate and accommodate the proposed GRD and the associated estimated increase in traffic volumes. Namely, Salter Street/ Langley Crescent intersection, which would require upgrade and the Bayview Drive/Salter Street intersection, which may require change in layout to a roundabout with pedestrian facilities.

Additional traffic management measures are recommended to improve overall legibility, safety, parking provision and vehicular and pedestrian traffic operations within the townsite and in the vicinity of the proposed development.

Assessment of the Gracetown Residential Development has confirmed satisfactory overall vehicular and pedestrian road and path networks. It is recommended that the proposed internal vehicular network be designed according to the Narrower Access Street cross-section from the WAPC Liveable Neighbourhoods (October 2007) document.

Therefore, it is concluded that, with the implementation of the proposed array of transport network upgrade measures, future Gracetown movement network would successfully integrate the proposed GRD development and accommodates the estimated future traffic associated with the development.

A table outlining issues and concerns raised by local community including relevant responses and recommendations is attached in Appendix G.
APPENDIX A

GRACETOWN RESIDENTIAL DEVELOPMENT PLAN
APPENDIX B

ESTIMATED INTERNAL TRIP GENERATION FOR THE GRACETOWN RESIDENTIAL DEVELOPMENT (SCENARIOS A & B)
APPENDIX C

PROPOSED TRAFFIC IMPROVEMENT MEASURES FOR GRACETOWN RESIDENTIAL DEVELOPMENT
APPENDIX D

FIRE MANAGEMENT PLAN
APPENDIX E

CAVES ROAD & COWARAMUP BAY ROAD INTERSECTION – SIGHTLINE ASSESSMENT PLANS
APPENDIX F

BAYVIEW DRIVE PEDESTRIAN CROSSING – SIGHTLINE ASSESSMENT PLAN
APPENDIX G

SUMMARY OF COMMUNITY CONCERNS AND RESPONSE/RECOMMENDATIONS
<table>
<thead>
<tr>
<th>ITEM</th>
<th>ISSUES &amp; COMMUNITY COMMENTS</th>
<th>COMMENTS/RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Address the age of the data (i.e. 2008 traffic figures) and extrapolate these over next 10 years;</td>
<td>Traffic count data from March/April 2010 is used in the report. Traffic volume estimates for next 10 years are reported in the TMP. See Section 4.2;</td>
</tr>
<tr>
<td>2.</td>
<td>Data needs to consider new development in surrounding areas (i.e. new estates in Cowaramup etc.);</td>
<td>TMP provides estimation of average annual population growth in the AMRSC region. See Section 4.2;</td>
</tr>
<tr>
<td>3.</td>
<td>Need to check tourism rates in Margaret River and the likely growth rates;</td>
<td>TMP provides estimation of average annual tourism growth in the AMRSC region. See Section 4.2;</td>
</tr>
<tr>
<td>4.</td>
<td>Identify why dates were selected;</td>
<td>Based on local advice Easter break typically represents one of the major peak traffic activity periods of the year and provides good indication of operational performance of the road network;</td>
</tr>
<tr>
<td>5.</td>
<td>Is future growth being considered?</td>
<td>See Section 4.2 of TMP;</td>
</tr>
<tr>
<td>6.</td>
<td>Is the NSW traffic theory document (that the assessment is based on) the most up to date and appropriate basis – if so, need to better outline why;</td>
<td>The RTA NSW traffic generation document is the officially recognised and widely used guideline in Australia for establishing traffic generation rates for various land uses and it is the most up to date available;</td>
</tr>
<tr>
<td>7.</td>
<td>What level of traffic would be required before a second access road should be implemented (extrapolate date of visitor traffic to give an indicative timeframe) Note that this needs to be considered with and without the effects of a GRD;</td>
<td>Based on detailed analysis of road network capacity over the next 10-year period as presented in the TMP (Section 4.2), a Second Access Road is not warranted.</td>
</tr>
<tr>
<td>8.</td>
<td>Need to consider the impact of a good surfing day (with traffic movements from Dawn til Dusk not over a 24hr period);</td>
<td>Absolute peak traffic volumes (combining residential and tourism traffic) were used to assess the capacity and operation of the internal and external road network;</td>
</tr>
<tr>
<td>9.</td>
<td>Traffic count figures are unreliable as they utilised an inadequate number of traffic counters (the internal flow of traffic can not be separated from tourists; destinations of traffic accessing Gracetown cannot be isolated; do not capture traffic solely utilising boat ramp or Beach);</td>
<td>A combination of traffic count information and site observation including local community feedback provides sufficient information to undertake a reasonably accurate traffic analysis. Updated traffic count survey (Mar/Apr 2010) at 8 locations throughout the townsite provides most up to date traffic volume information;</td>
</tr>
<tr>
<td>10.</td>
<td>Traffic analysis does not attempt to quantify the impact of construction traffic;</td>
<td>Construction traffic was addressed to the extent of presently available construction data. See Section 4.4;</td>
</tr>
<tr>
<td>11.</td>
<td>The assumption that only 5% of Caves Road Traffic will divert to Gracetown seems odd when there is an (unexplained) 75%-95% correlation of traffic numbers between Caves Road and Cowaramup Bay road (see report page 3)</td>
<td>The specific nature of this type of &quot;transit&quot; traffic distinguishes it from the &quot;regular&quot; Caves Road traffic. It also makes it near impossible to quantify, therefore a 5% assumption is an intuitive assumption based on professional experience. No exact data on this type of traffic is available;</td>
</tr>
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<td>12.</td>
<td>Need to address sightlines at intersection of Cowaramup Bay Road and Caves</td>
<td>Detailed assessment of Cowaramup Bay Road and Caves Road intersection is</td>
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<td>13.</td>
<td>Do roads within existing residential development need treatment upgrades to cater for additional traffic (kerbing/widening, etc)?</td>
<td>A list of recommended upgrades is provided in Section 4.7;</td>
</tr>
<tr>
<td>14.</td>
<td>Need to carefully consider treatment of road in front of beach and shops including what traffic calming devices that could be used (suggestion that cobblestones are too noisy)/more detail required on options for this;</td>
<td>The recommendations from the TMP will be provided to engineers and landscape designers who will consider the final road treatments as part of the detailed design process. Specifically, the result of the pedestrian crossing assessment suggests it needs to be relocated due to safety concerns. See Section 4.8;</td>
</tr>
<tr>
<td>15.</td>
<td>Can traffic be diverted from town (i.e. to make it easier for surfers to access destinations without entering townsite);</td>
<td>Two proposed “loop road” options were considered in this TMP as provided by the community; however, these were not recommended (see Section 4.11). The Fire Management Plan has indicated that a Second Access Road is being recommended;</td>
</tr>
<tr>
<td>16.</td>
<td>Does Cowaramup Bay Road need to be widened to cater for additional traffic?</td>
<td>The findings of the capacity analysis of Cowaramup Bay Road and Bayview Drive including the 10-year projections are reported in Section 4.2, which indicates no widening is required.</td>
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<tr>
<td>17.</td>
<td>Identify whether GRD traffic will utilise Salter or Langley and what traffic management features should exist to manage this flow;</td>
<td>The findings of the pre- and post-GRD traffic distribution analysis are detailed in Section 4.1 with relevant list of recommendations outlined in Section 4.6;</td>
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<tr>
<td>18.</td>
<td>Could a ring road around existing townsite divert tourism/surf traffic away from residential developments?</td>
<td>Refer section 4.11 of TMP;</td>
</tr>
<tr>
<td>19.</td>
<td>Can the recommended reduced 60km speed limit be reduced further to reduce traffic speed?</td>
<td>An optimal speed map for CBR was provided in the TMP (refer Section 4.11). All speed recommendations from the report will be presented to Main Roads WA for consideration and endorsement;</td>
</tr>
<tr>
<td>20.</td>
<td>Line of vision along Bayview Road (resulting from road curve and hills) is not adequate;</td>
<td>Section of Bayview Drive in the vicinity of pedestrian crossing point is assessed in this TMP under Section 4.6.1;</td>
</tr>
<tr>
<td>21.</td>
<td>Access to South Point should be via Percy street not Bayview (ie open up Percy);</td>
<td>This proposal was analysed as part of the “loop roads” options assessment in Section 4.10.</td>
</tr>
<tr>
<td>22.</td>
<td>Access to Salter from Bayview should be blocked with new access road looping Salter and providing access to left-handers. This will provide safer pedestrian access points;</td>
<td>This proposal was analysed as part of the “loop roads” options assessment in Section 4.10.</td>
</tr>
<tr>
<td>23.</td>
<td>Cobblestones are hard on feet and – another treatment should be used between shops and beach;</td>
<td>Various treatments that can be introduced to reduce the speed. The TMP makes recommendations and the data will be provided to engineers and landscape designers who will consider the final road treatments as part of the detailed design process;</td>
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<tr>
<td>24.</td>
<td>Pedestrian crossing should be introduced where beach path meets Bayview Drive;</td>
<td>See comment in item 20.</td>
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<td>25.</td>
<td>Need to readdress assumption that all Pedestrian traffic from the GRD has been</td>
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<td>internal trips were by foot;</td>
<td>assessed separately and does not effect vehicular traffic assumptions;</td>
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<td>26.</td>
<td>Need to increase occupancy of GRD from 20% occupancy rate;</td>
<td>Typical weekday occupancy rate has been increased to 30%.</td>
</tr>
<tr>
<td>27.</td>
<td>Note as a benefit that it (Second Access Road to Gracetown) could reduce response times of fire rescue/marine rescue groups faster as they are located in Margaret River;</td>
<td>Noted. This will be included in the updated Second Access Road Investigation report as a benefit;</td>
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<tr>
<td>28.</td>
<td>Parking along Cowaramup Bay Road needs increasing;</td>
<td>Parking issue is addressed in TMP under Section 4.5;</td>
</tr>
<tr>
<td>29.</td>
<td>Construction traffic from GRD will be over a potential 10 year timeframe - traffic from this will be heavy and constant;</td>
<td>Construction traffic issue is addressed in TMP under Section 4.4;</td>
</tr>
<tr>
<td>30.</td>
<td>Construction of a Second Access Road is valued by the community;</td>
<td>Whilst this is not a technical argument the community sentiment will be noted in the updated Second Access Investigation report;</td>
</tr>
<tr>
<td>31.</td>
<td>Second Access Road justified on the basis of construction traffic and increase in traffic numbers from hinterland developments;</td>
<td>Analysis has shown that negative impact from construction traffic will be limited and controlled. Second Access Road may not be in place by the time the civil construction work commence and will have limited benefit. Results of the Second Access Road Investigation are presented in Section 4.11 of TMP;</td>
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</tbody>
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