GRACETOWN RESIDENTIAL DEVELOPMENT
SECOND ACCESS ROAD INVESTIGATION

TRAFFIC ASSESSMENT REPORT

Transport planning • Traffic engineering • Project management
Gracetown Residential Development
Second Access Road Investigation

Traffic Assessment Report

Prepared for: LandCorp
June 2010

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1.0 INTRODUCTION

LandCorp has retained Transcore to assess the impact of a Second Access Road linking Caves Road with the existing Gracetown townsite and the proposed Gracetown Residential Development (hereafter GRD).

There has been a debate to date between various departmental and community bodies regarding the need for a second access road into Gracetown. However, it has been agreed by both FESA and DEC that, should a road deem to be required, it should be of a two-way sealed road standard.

Accordingly, this Traffic Assessment Report sets out to assess the traffic impact of a potential Second Access Road with respect to the existing and future (inclusion of the proposed GRD) traffic flows to and from the Gracetown townsite.

Currently Gracetown is a townsite of approximately 150 residential dwellings situated approximately 16 kilometres northwest of Margaret River overlooking Cowaramup Bay in Shire of Augusta Margaret River (AMRSC). Gracetown is currently serviced by a single access road – Cowaramup Bay Road.

The proposed LandCorp’s GRD development entails an expansion of the existing Gracetown townsite to the immediate south, at the northeast corner of the Langley Crescent and Salter Street intersection. GRD is proposed to consist of 146 residential dwellings in total (mix of individual and grouped dwellings).

The Second Access Road is envisaged as an eastbound extension of the existing Salter Street, linking the townsite and the proposed GRD to Caves Road.
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 (AMRSC). It consists of approximately 150 residential dwellings of which permanent residents occupy approximately 30% and the balance 70% are holidaymakers and others occasionally visiting these dwellings (refer Figure 1).

Caves Road is a Primary Distributor\(^1\) 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 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 1.

\(^{1}\) Main Roads WA, Functional Road Hierarchy classification
<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Traffic Volume(^2)</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>
</tbody>
</table>

Table 1. Caves Road traffic volumes sourced from Main Roads WA

Even though historical records show a drop in traffic volumes between 2006 and more recent 2008 counts, it is still considered that the 2006 traffic levels reflect more realistic traffic volumes 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.

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 11.2 km long, **Regional Distributor**\(^3\) 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 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 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).

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\(^2\) **ADT** – Average Daily Traffic  
\(^3\) **Main Roads WA, Functional Road Hierarchy** classification
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 2 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>8 Apr 2006</td>
<td>1,310 vpd</td>
<td>3.1%</td>
</tr>
<tr>
<td>West of Caves Rd</td>
<td>31 Mar 2005</td>
<td>1,353 vpd</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

Table 2. Cowaramup Bay Road traffic volumes sourced from Main Roads WA

In order to verify the data sourced from Main Roads WA and obtain the most up-to-date traffic information for Cowaramup Bay Road, Bayview Drive and 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 3 below.

A similar survey of the key Cowaramup Bay Road/Bayview Drive/Salter Street route 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

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*ADT – Average Daily Traffic*
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 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 (location east of Lefthanders Road) was more volatile and no clear trends have been identified for this part of Gracetown road network. This may be explained by the fact that Salter Street and roads extending further south lead to local tourism spots south of Gracetown where attraction is subject to day-to-day weather and sea conditions rather than seasons or holiday breaks (i.e. good surfing days). It is therefore recommended that the Salter Street set (number 6) of traffic counts (east of Lefthanders Road) be taken into consideration but treated with caution.

<table>
<thead>
<tr>
<th>Location Number</th>
<th>Survey Location</th>
<th>Typical Weekday</th>
<th>Typical Weekend</th>
<th>Easter Holiday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cowaramup Bay Road (East of North Tip Lookout)</td>
<td>1,142</td>
<td>1,145</td>
<td>2,180</td>
</tr>
<tr>
<td>2</td>
<td>Cowaramup Bay Road (South of Main Beach Carpark)</td>
<td>1,275</td>
<td>1,534</td>
<td>2,065</td>
</tr>
<tr>
<td>3</td>
<td>Bayview Drive (35m east of Salter St)</td>
<td>965</td>
<td>1,226</td>
<td>1,546</td>
</tr>
<tr>
<td>4</td>
<td>Salter Street (30m south of Bayview Dr)</td>
<td>771</td>
<td>849</td>
<td>1,141</td>
</tr>
<tr>
<td>5</td>
<td>Salter Street (30m south of Langley Cres)</td>
<td>564</td>
<td>617</td>
<td>821</td>
</tr>
<tr>
<td>6</td>
<td>Salter Street (200m south of Langley Cres)</td>
<td>469</td>
<td>527</td>
<td>588</td>
</tr>
</tbody>
</table>

Table 3. Current Traffic Count Results

The following map illustrates the recorded traffic survey results (Figure 3).
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.

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 type of dwelling is 5 daily vehicle trips (vpd) per dwelling per day (Scenario A). However, in order to allow for the more robust scenario, a sensitivity analysis was undertaken where daily trip generation rate is estimated at 7 daily vehicle trips (vpd) per dwelling per day (Scenario B).

In order to calculate the total daily vehicle trips over the existing and proposed road network, following 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 GRD development is estimated to generate 219/307 (30% occupancy) 548/767 (75% occupancy) and 730/1,022 (100% occupancy) vehicular trips (total of ins and outs) for the scenarios A and B, respectively. It should be noted that this traffic generation does not include any induced
additional traffic that may be attracted to Gracetown as a result of the new GRD development or the improved facilities. As a result of GRD project, some induced traffic increases are anticipated; however, it is difficult to estimate the level of this traffic but it is not expected to be significant.


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 vehicle trips generated by the GRD were then assigned to the road network based on the trip distribution assumptions outlined above.

The total daily traffic volumes (existing plus GRD) on the surrounding roads are shown in Figure 4.
3.0 FUTURE POTENTIAL SECOND ACCESS ROAD

As part of the Structure Plan for the GRD provision has been made to allow for consideration of a second access road alignment should it be deemed necessary by the AMRSC or other relevant agencies.

Should a second access road be required, it is likely that it will be designed as an eastbound extension of Salter Street connecting to Caves Road. This access road would provide direct connection between GRD development and Caves Road thus redistributing the future traffic, which would otherwise use the Cowaramup Bay Road as the only available access to the townsite and GRD.

Following the recommendations of the “Gracetown Development Investigation Report – Stage 1” report prepared by Koltasz Smith & Partners in February 2000, Transcore was engaged to analyse the impact of the proposed Second Access Road onto existing Gracetown traffic patterns (refer Appendix A for more details). All three options proposed in the “Gracetown Development Investigation Report – Stage 1” document suggest that this road would connect Caves Road with existing Gracetown road network via Salter Street.

In order to assess the traffic impact of this access road, the following assumptions are made based on type, location and function of the proposed development, local attractions, existing townsite/tourist/transit traffic patterns and the proposed indicative second access road alignment:

- The traffic distribution for the Gracetown bound trips is assumed as 60% to/from south and 40% to/from the north;
- With the Second Access Road in place and for the existing Gracetown traffic, 90% of all traffic originating from/destined to the north would be using Cowaramup Bay Road and 10% would be using Second Access Road while the split for all the traffic from/to the south is assumed 95% via Second Access Road and 5% via Cowaramup Bay Road, and;
- With the Second Access Road in place and for the GRD-generated traffic, 80% of all traffic from/to the north would be using Cowaramup Bay Road and 20% would be using the Second Access Road while the split is 95% via Second Access Road and 5% via Cowaramup Bay Road for all traffic from/to the south.

The existing townsite traffic and traffic generated by the proposed GRD development were assigned to the road network based on the trip distribution assumptions outlined above. The result of this exercise for the scenario with the Second Access Road is illustrated in Figure 5 (for the current traffic) and Figure 6 (for the post-GRD development traffic Scenario A and B).

It is important to note that from a road capacity point of view, construction of a Second Access Road is not warranted. The existing townsite road network, with
inclusion of the proposed array of transport network upgrade measures (for details see Transcore’s Gracetown Residential Development Traffic Management Report, Feb 2010), would successfully integrate the proposed GRD development and accommodate the estimated future traffic associated with the GRD development.

Figure 5. Redistribution of the current traffic as a result of Second Access Road implementation
Figure 6. Redistribution of estimated post-GRD traffic (Scenario A and B) as a result of Second Access Road implementation
4.0 TRAFFIC ANALYSIS BASED ON THE PROVISION OF SECOND ACCESS ROAD

For the purpose of the traffic analysis of the proposed Second Access Road, Gracetown is divided into three discrete areas, as following:

- Northern part of the townsite including the main beach and the existing shops (commercial zone);
- The centre of the town including existing residential dwellings, and;
- The eastern part of the townsite including the proposed Gracetown Residential Development (GRD).

The assessment will consider the estimated traffic volumes for four critical scenarios, as follows:

- Existing townsite traffic;
- Existing townsite traffic with the Second Access Road option;
- Existing townsite traffic plus GRD development-generated traffic (without the Second Access Road option), and;
- Existing townsite traffic plus GRD development-generated traffic with the Second Access Road option.

4.1 Assessment of the Various Scenarios

Based on the traffic assessment assumptions outlined in Section 3.0 of this report, the existing and post-development traffic volumes (for scenarios A and B) for typical weekday, typical weekend and peak are summarised in Table 4.

<table>
<thead>
<tr>
<th>Road Layout Scenarios</th>
<th>Observed key periods</th>
<th>Cowaramup Bay Road traffic (vpd)</th>
<th>Second Access Road traffic (vpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A (5 vpd/unit)</td>
<td>B (7 vpd/unit)</td>
</tr>
<tr>
<td>Existing townsite and no 2\textsuperscript{nd} Access Rd</td>
<td>Weekday</td>
<td>1,142</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Weekend</td>
<td>1,145</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Peak</td>
<td>2,180</td>
<td>N/A</td>
</tr>
<tr>
<td>Existing townsite with 2\textsuperscript{nd} Access Rd</td>
<td>Weekday</td>
<td>445</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>Weekend</td>
<td>450</td>
<td>705</td>
</tr>
<tr>
<td></td>
<td>Peak</td>
<td>850</td>
<td>1,330</td>
</tr>
<tr>
<td>Existing townsite plus GRD and no 2\textsuperscript{nd} Access Rd</td>
<td>Weekday</td>
<td>1,312</td>
<td>1,392</td>
</tr>
<tr>
<td></td>
<td>Weekend</td>
<td>1,570</td>
<td>1,775</td>
</tr>
<tr>
<td></td>
<td>Peak</td>
<td>2,785</td>
<td>3,025</td>
</tr>
<tr>
<td>Existing townsite plus GRD with 2\textsuperscript{nd} Access Rd</td>
<td>Weekday</td>
<td>460</td>
<td>490</td>
</tr>
<tr>
<td></td>
<td>Weekend</td>
<td>550</td>
<td>620</td>
</tr>
<tr>
<td></td>
<td>Peak</td>
<td>975</td>
<td>1,060</td>
</tr>
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Table 4. Summary of estimated traffic volumes for four critical options
The results of the traffic assessments illustrate the effect of the Second Access Road implementation. Traffic estimates confirm that, even with the addition of the GRD-generated traffic, reduction in the existing Cowaramup Bay Road traffic is expected. The expected traffic reduction varies depending on the timeframe but is generally estimated to be in order of 65%.

Since most of the Cowaramup Bay Road traffic eventually filters through Gracetown townsite, the introduction of a potential Second Access Road is expected to reduce traffic levels in general through the townsite. If the Second Access Road is not implemented with the addition of the GRD-generated traffic, the traffic along Cowaramup Bay Road is expected to increase by 14%/21% (during the typical weekday), 37%/55% (during the typical weekend) and 27%/39% (during the peak periods) for scenarios A and B, respectively. However, it is important to note that this level of traffic increase can be easily accommodated by the current standard of Cowaramup Bay Road, as discussed in Section 3.0 of this report.

The traffic volumes outlined in Table 4 do not include the core network of the town (areas southeast of Bayview Drive/Salter Street perimeter) as the estimated traffic volumes are expected to remain generally the same with or without a Second Access Road for both existing and existing plus GRD development scenarios. Therefore, it is concluded that the Second Access Road has no practical impact around the area defined as “the central part of the town”.

The Second Access Road is however expected to attract additional induced tourist trips to Gracetown (not factored in the traffic volumes shown in Figures 5 and 6). Quantification of this type of induced traffic is a challenging task because no similar situation is available to assist in providing indicative data on the level of induced traffic. 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, due to the creation of a ‘loop road’ effect, which allows tourists to drive through the town and along the coast without having to turn around or stop. This situation would cause increases in traffic of approximately 75/90/100 weekday/weekend/peak season vehicular trips via the Second Access and Cowaramup Bay roads, respectively. This level of traffic increase will have minimal impact on Gracetown road capacity. The induced traffic volumes are illustrated in Figure 7.
Figure 7. Redistribution of estimated post GRD traffic including the “loop road” effect along the Cowaramup Bay Road/Bayview Drive/Salter Street route with implementation of the Second Access Road

Based on the estimated traffic volumes the benefits and disbenefits of the Second Access Road for the northern and eastern part of the town are summarised as following:

**BENEFITS:**

- Reduction of traffic volumes along Cowaramup Bay Road and at the main northern entry to the town;
- Reduction in vehicular interaction at key locations including main beach access and the existing shops due to reduced traffic volumes at these locations;
- Improved general amenity and in particular pedestrian amenity at the main northern entry to the town in the vicinity of the existing shops due to reduced traffic volumes at these locations;
- Reduction in travel distance and time from the townsite to the key destinations to the south of the townsite including Margaret River;
- Reduction in travel distance and time to access the attractions immediately to the south of the town including the “lefthanders” beach if originating south of existing townsit
- Potential reduction in travel time of the fire/marine rescue groups located in Margaret River (depending on the actual fire location);
- Heavy vehicles utilising Second Access Road during the construction stages of GRD will have direct access to GRD development thus potentially bypassing the existing townsit; however, it is highly unlikely that Second Access Road will be in place during the civil construction works on GRD commence (may however have benefit during latter individual unit construction stage);
- The creation of the ‘loop road’ and the induced traffic could create positive economic effect by diverting a portion of tourist traffic to the commercial and retail outlets within the townsit, and;
- Community sentiment is strongly in favour of Second Access Road option.

**DISBENEFITS:**

- Negative impact on amenity at the south-western part of the town, proposed new residential development and existing residential dwellings along Salter Street due to traffic redistribution;
- Increased potential for vehicular/pedestrian conflict along Salter Street;
- The costs of implementation of a set of traffic management measures that may be required as a result of construction of Second Access Road to address safety issues at the south-western part of the town;
- Potential environmental impact as a result of the construction of the Second Access Road;
- High cost of the construction of the Second Access Road;
- Increased overall maintenance costs for local Government due to maintenance requirements caused by creation of a new road (Second Access Road);
- New Access Road may increase the use of a number of local informal tracks traversing the Leeuwin-Naturaliste National Park thus potentially encouraging illegal camping opportunities and the risk of fire;
- Increase in tourism traffic along Salter Street-Bayview Drive route, which will have an impact on the local amenity;
- No real benefit to the capacity of existing road network since existing road infrastructure is capable of catering for additional traffic associated with the proposed GRD, and;
- Potential visual impact of new road through bushland and over crests.
5.0 CONCLUSIONS

The installation of a Second 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 south-western 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.
APPENDIX A

PREFERRED ROUTE ALIGNMENT OPTIONS FOR THE PROPOSED SECOND ACCESS ROAD