

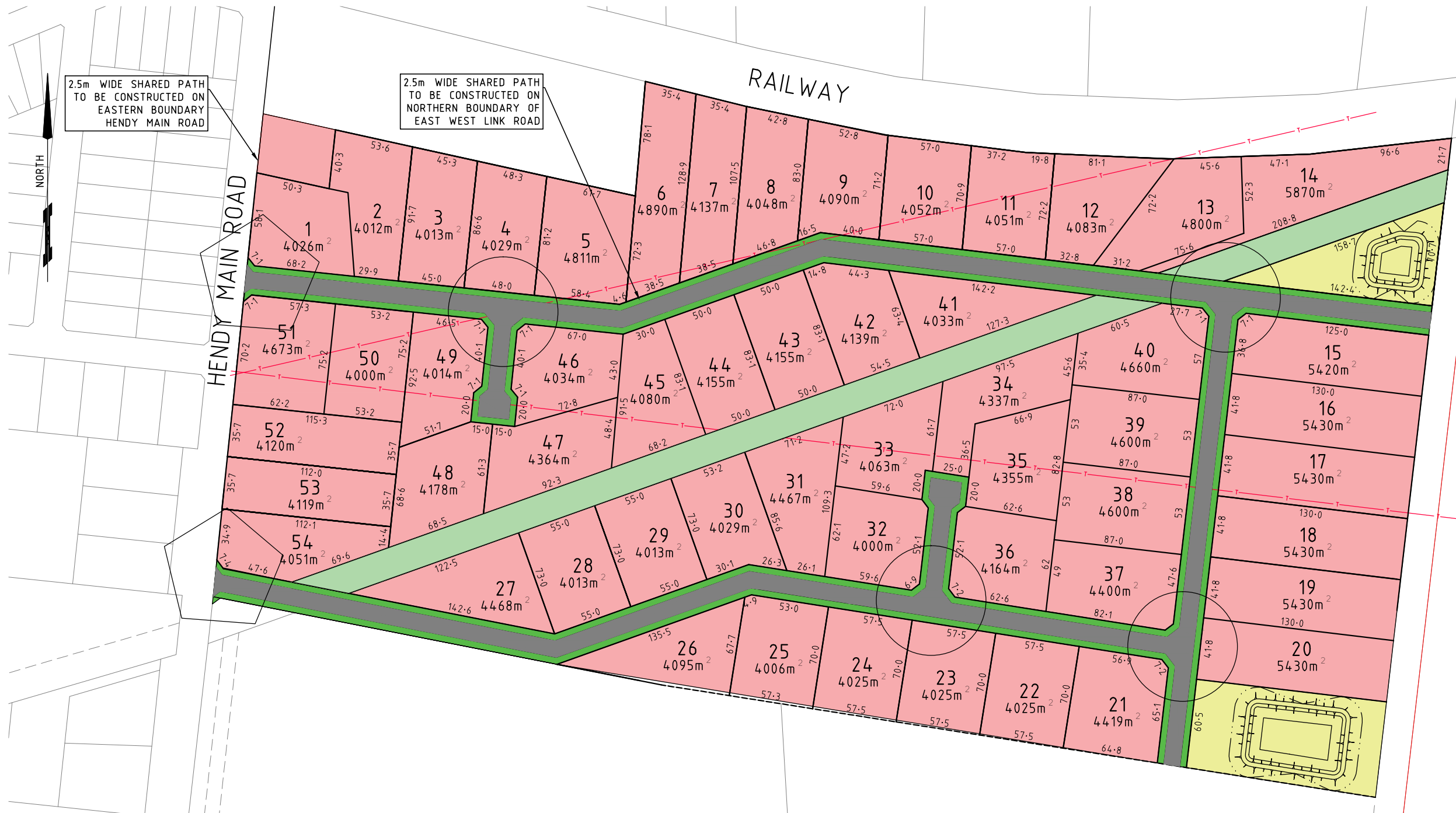
Attachment One

Urban Design Masterplan

- Road Network and Traffic Management Plan
- Road Safety Audit
- ESR Response

ROAD NETWORK PLAN HENDY MAIN ROAD MORIAC

1:1000 (A1)
11/05/2016
Rev. 04



NOTE:
EXTERNAL BASIN BATTERS
(GRADE 1 IN 8
APPROXIMATE ONLY)

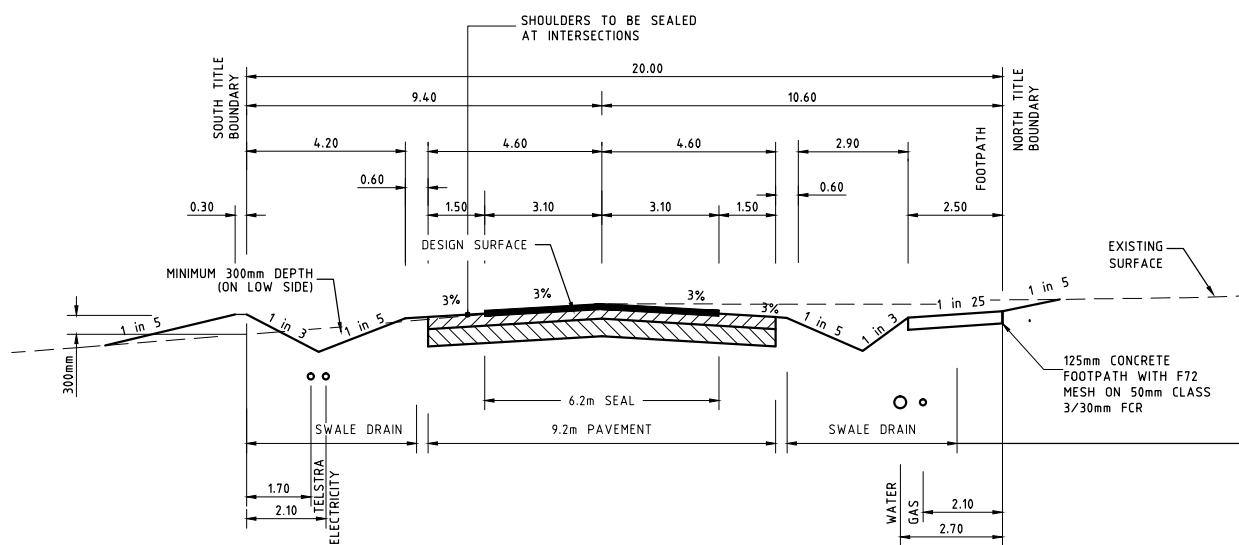
○ INTERSECTIONS TO BE
CONSTRUCTED AS
STANDARD 'T' INTERSECTION

◡ MINOR
INTERSECTIONS
WORKS

NOTE:
PROPOSED INTERSECTIONS TO
HENDY MAIN ROAD TO BE AS
PER AUSTRROADS GUIDE TO ROAD
DESIGN-PART 4A. REFER SECTION
8.2.1 RURAL BASIC LEFT TURN
TREATMENT.

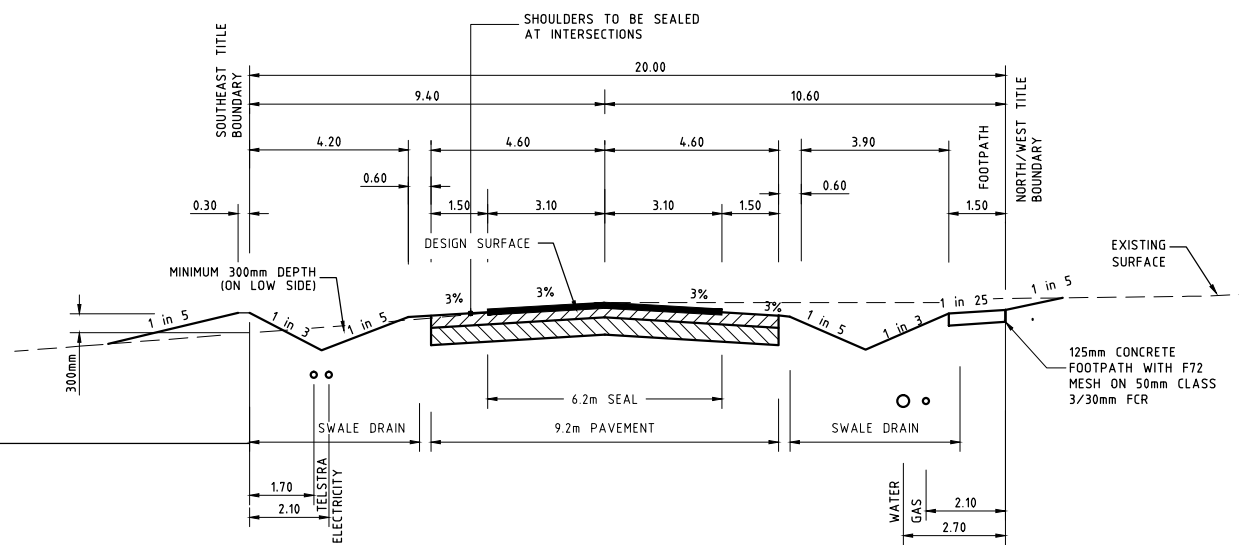
- LOW DENSITY RESIDENTIAL LOTS
- MUNICIPAL DRAINAGE RESERVE
- BARWON WATER RESERVE
- 20m WIDE ROAD

NOTE:
PROPOSED COURTBOWLS AND
MINIMUM SEAL WIDTH
ACCORDANCE WITH IDM
STANDARDS 12.4.2 (RURAL ROAD
CHARACTERISTICS).



TYPICAL ROAD SECTION - 20m ROAD RESERVE

SCALE 1:100 NORTHERN EAST WEST ROAD ONLY



TYPICAL ROAD SECTION - 20m ROAD RESERVE

SCALE 1:100



Engineering | Survey | Planning

TGM Group Geelong

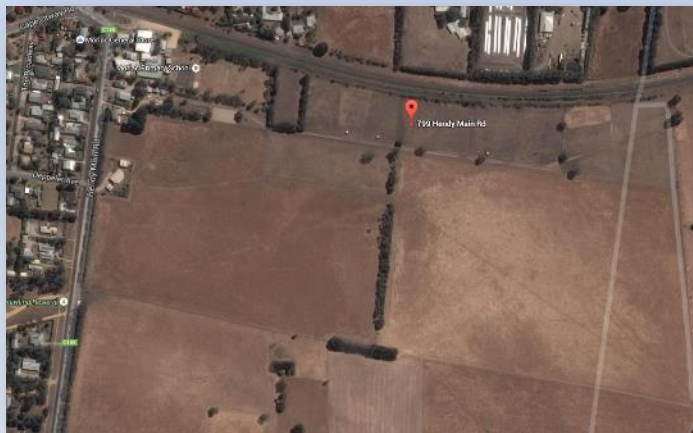
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799-815 Hendy Main Road Moriac

Proposed Development



Road Safety Audit Type: **Concept Stage**

Client: **TGM Group Geelong**

Report Date: **25 February 2016**

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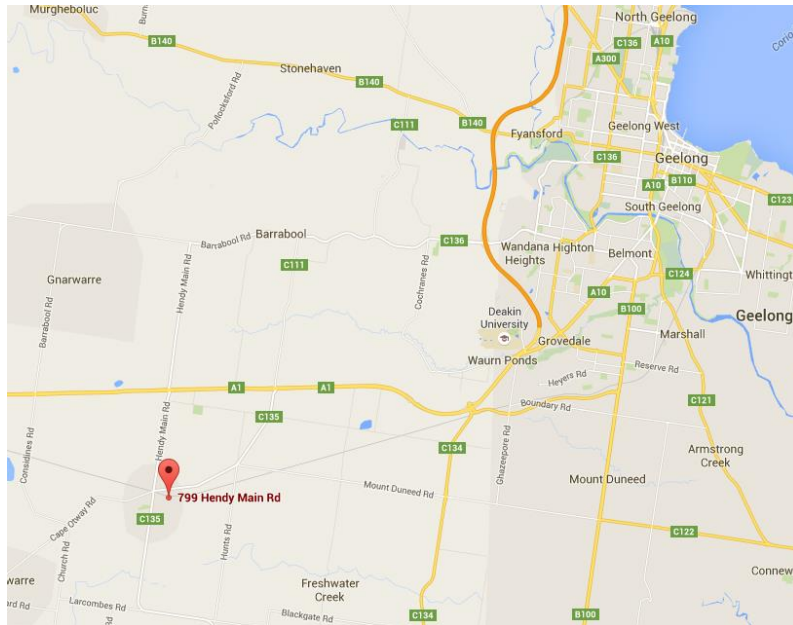
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DOCUMENT ISSUE

Filename	Report Date	Revision	Auditors	Contact
RSA-04416	25 February 2016	1	Peter Harris Raj Muthusamy	Peter Harris

1. INTRODUCTION, PROJECT AND SCOPE

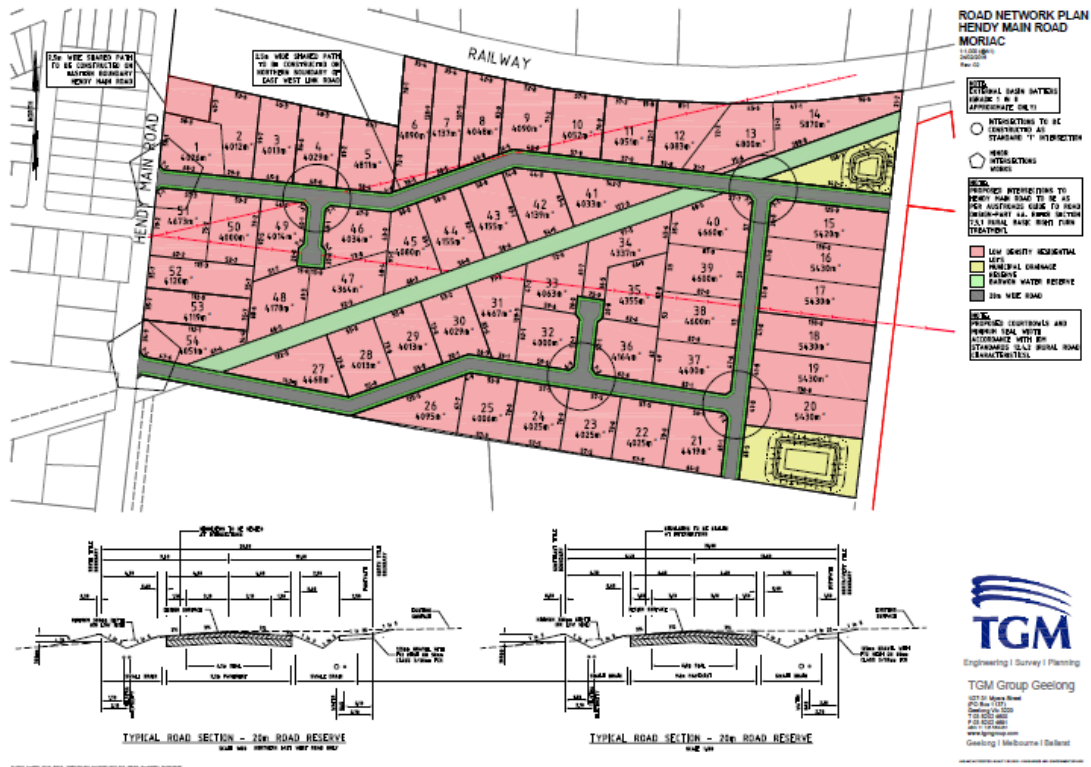
This is a concept design stage road safety audit of two intersections proposed on Hendy Main Road, Moriac. Moriac is a small town of approximately 600, located 20km south-west of Geelong. Its local government area is Surf Coast Shire.



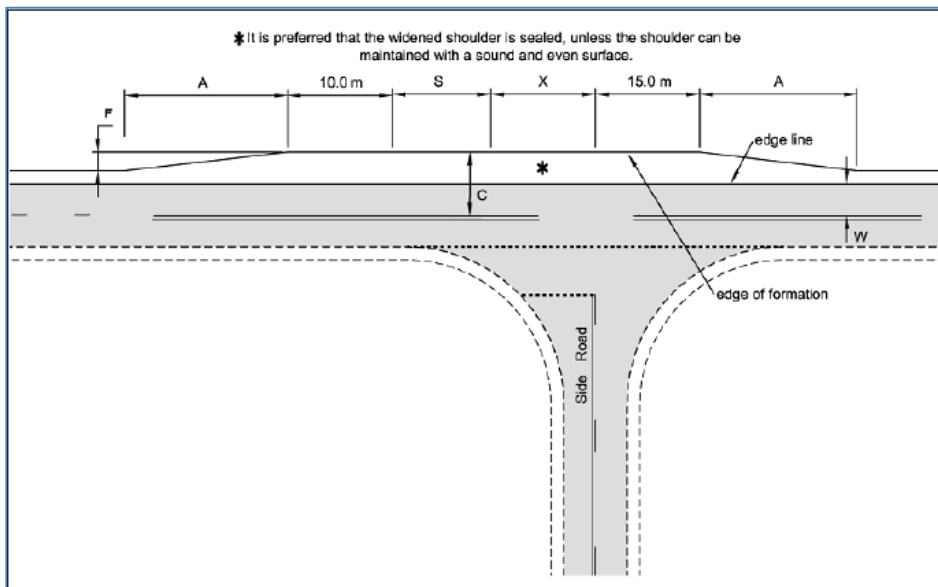
At this location on Hendy Main Road the speed limit is 60km/h. The road is undivided with one lane in each direction. Vicroads 2014 data indicates that traffic volumes are AADT (2-way) 1200 VPD (11.6% commercial vehicles). Observations during the site inspection indicated that the location of the proposed new intersections for the development are within an urban environment where operating speeds are close to 60km/h.



The plan provided was the general layout plan shown below (TGM Group Rev 2 dated 24/2/16).



The two intersections with Hendy Main Road are proposed as rural basic turn treatments (BA) as per Austroads GRD4a. This is essentially a stop or give way condition without channelized turn lanes. TGM provided the Austroads Figure 7.5 as a reference.





The agreed scope of the audit was to carry out a site visit focusing on the two Hendy Main Road intersections but trying to access the perimeter areas where possible. It focuses on the two intersections but is to make any necessary comments on the internals and other perimeter areas where necessary.

2. AUDIT TEAM


The road safety audit was carried out by Peter Harris and Raj Muthusamy, both professional road safety auditors and accredited Senior Road Safety Auditors in all states of Australia with an accreditation scheme.


3. METHODOLOGY

The audit was carried out in accordance with "Austroads Guide to Road Safety, Part 6: Road Safety Audit 2009" guidelines. A site visit was carried out on 24 February 2015 in good weather conditions.

The purpose of the audit is to raise issues or deficiencies from a road safety perspective, and while it may do so at times, the purpose of the report is not to point out compliance with standards.

4. AUDIT FINDINGS

Hendy Main Road, Moriac Concept Design Stage Road Safety Audit				
	Audit Point	Comment / Suggestion	TGM Group Geelong	
			Response	Status
Two intersections with Hendy Main Road				
4.1.	<p>Intersections: Two basic intersections are proposed. These intersection types do not reduce driver speed on Hendy Main Road (as a roundabout does).</p> <p>Although this intersection type might be a reasonable choice at this location given the volumes and speed limit and allotment size, having two intersections rather than one essentially doubles the potential for conflict. It is acknowledged that the proposed basic intersection layouts are consistent with the treatments already present along Hendy Main Road.</p>	<p>Ideally the internal roads would come together to result in one intersection only. Consider if it would be possible to only have one intersection from the development, intersecting Hendy Main Road at a roundabout.</p> <p>Review feasibility.</p>	Disagree two roads required for fire safety purpose and better distribution of traffic ,low traffic volumes and speeds do not warrant a roundabout	
<p>It appears feasible to construct a roundabout in the vicinity of 824 – 826 Hendy Main Road, approximately mid-way between the proposed two intersections.</p>				
				

	Audit Point	Comment / Suggestion	TGM Group Geelong	
			Response	Status
4.2.	Intersections: There is a school, lodge and church in the vicinity of the proposed northern BA intersection. Similarly, there is a community centre at the southern intersection. Depending on the level of activity and turning movements at the existing abutting development at both proposed intersections, there may be an increased potential for conflict.	Take into consideration the turning movement activity generated by the abutting development and how it will conflict with the turning movements at the two proposed intersections. The roundabout option as suggested in point 4.1 could eliminate conflict with movements due to existing developments at the northern and southern ends,	Not considered appropriate as traffic volumes are very low ESR have confirmed that they are satisfied with the design.	
4.3.	Spatial design: Although 'residential', lot sizes are 4000-5000m ² . It should be expected that trucks will feature prominently in this estate due to hobby farms and blue-collar employment.	Ensure the design vehicle is chosen carefully and that the intersection layout allows for this design vehicle. It should be noted that the widths at Deppeler Ave are considered to be too narrow to facilitate truck movement and should not be adopted at the proposed intersections if truck use is expected.	Proposed Road standards can facilitate truck movements also lots from 4000 to 5000m ² will not typically support farming practices requiring trucks	
4.4.	Shoulders: Existing shoulders appear to be in poor condition. 	It is expected that shoulders will be fixed as part of the proposed BA treatments at the two intersections.	Agree	
4.5.	Line marking: The line marking shown in figure 7.5 of Austroads Part 4A for BA is probably superseded by VicRoads standard markings.	Ensure further design incorporates the latest line marking details.	Will be guided by Vic Roads	



	Audit Point	Comment / Suggestion	TGM Group Geelong	
			Response	Status
4.6.	Table Drain: The V drain fore slope and back slope combinations are not consistent with Austroads guide to road design Part 3.	Review proposed V drain fore slope and back slope.	Road cross sections are in accordance with Council's IDM standards	
4.7.	Shared Use Path: The edge of the proposed 2.5m SUP along the eastern side of Hendy Main Road is hard up against the 3:1 back slope along the table drain. This arrangement is not consistent with current Austroads guidelines.	Ensure that a flat verge of at least 500mm is provided between the edge of the SUP and the table drain back slope.	Road cross sections are in accordance with Council's IDM standards	
Internal				
4.8.	Lane width: 3.10m lanes with mostly unsealed shoulders (other than at intersections) may not be suitable within an estate that is likely to have a larger 85 th percentile vehicle than urban estates.	Review proposed sealed lane widths.	Road cross sections are in accordance with Council's IDM standards	
<p><i>This development consists of 51 allotments. They are very large allotments (ie: about 8 to 10 times the size of a normal residential allotment). Normally each allotment could generate up to 8 person trips per day (400 trips per day) all of which could be expected to be made by car (there are no public transport routes). Given the size of the allotments, occupiers might adopt uses that foster "hobby farm" activities (as long as this falls within the zoning of Low Density Residential development). The proposed cross sections of each connector to Hendy Main Road is 6.2 metres with sealed shoulders at intersections. Each of the connectors to Hendy Main Road are estimated to carry 200 trips per day. The two-lane carriageways as proposed should cope satisfactorily with these volumes, However, further consideration would need to be given to geometry at the two intersections at Hendy Main Road to cater for "Hobby Farm" type vehicles, commercial vehicles and emergency vehicle swept paths. Consider sealing Hendy Main Road across the front of the property development between the connectors.</i></p>				
4.9.	Horizontal alignment: The 60-degree kinks in the road have no radius.	It is expected that appropriate curve radius and cross fall will be provided at later stages of the design. However, appropriate land reservation should be set aside not to ensure a suitable curve can be provided.	Agree	
4.10.	Linear Park: Is the Barwon Water reserve (long green line shown in the drawing supplied) a linear park which will be accessed by residents or just an unpopulated floodway? If it is accessible by residents, there is no indication of access and crossing arrangements at the park/road intersections.	Review.	Will be gated	

5. CONCLUDING STATEMENTS

The design concept is generally supported as the proposed intersection treatments are consistent with the existing measures along Henty Main Road. However, given that this is a concept design stage audit, the road safety audit raises questions and makes suggestions in relation to rationalising the number of intersections, the type of intersection treatment and lane widths to achieve a possible safer outcome.

6. RESPONDING TO THE AUDIT

The audit has been carried out in accordance with Austroads Guide to Road Safety Audit 2009. A written response should be made to all of the audit findings raised, then signed off by the project manager.

Responses to audit findings are generally not required by the auditor, and the auditor does not change the audit findings or sign off on the responses. However, the responses can be fed back to the auditor for knowledge and possible use on future audits for this project.

The audit has attempted to balance the safety needs of all road users within the site/design constraints. As per Austroads guidelines, the suggestions provided have attempted to be realistic/feasible and commensurate with the actual risk posed.

Agreement to the suggestions does not eliminate risk, but reduces risks to levels generally tolerated by the road authority and current practice. Although it attempts to raise all safety deficiencies, this is generally not practicable due to limited knowledge of the site and the design. It is suggested that road safety initiative and judgement is also practiced by the project team.

A handwritten signature in black ink, appearing to read 'Peter Harris', written in a cursive style.

Peter Harris
Senior Road Safety Auditor

A handwritten signature in blue ink, appearing to read 'Raj Muthusamy', written in a cursive style.

Raj Muthusamy
Senior Road Safety Auditor

25 February 2016

Our Ref: C0371

Mr Chris Marshall
TGM Group
1/27-31 Myers Street
GEELONG VIC 3220
transmittal: chrism@tgmgroup.com

Dear Chris,

**RE: 799 & 815 HENDY MAIN ROAD, MORIAC
ROAD NETWORK AND TRAFFIC MANAGEMENT PLAN**

I refer to the road network plan (TGM Group, Rev 3, 25/02/16) for the above site and the Surf Coast Planning Scheme Schedule 14 to the Development Plan Overlay. As you are aware, ESR Transport Planning provided design advice and prepared a Transport Impact Assessment Report (dated 29/07/14) as part of an application to rezone the subject land.

The road network plan is consistent with plans assessed by the 2014 Transport Report and incorporates transport infrastructure recommended by the report. The proposed road network ensures connectivity throughout the proposed subdivision and to adjoining land should future development occur. Footpaths are provided along internal roads and link up with the adjoining path network. Infrastructure specifications are in accordance with the Infrastructure Design Manual and Austroads Guides.

Accordingly, the proposed road network is expected to provide safe and efficient operational outcomes. And is considered to satisfy the design requirements specified in Schedule 14 to the Development Plan Overlay.

I trust the above is consistent with your requirements at this time. Feel free to contact me should you have any further queries.

Yours sincerely,
ESR Transport Planning

A handwritten signature in black ink, appearing to read 'Drew Matthews', with a long, sweeping tail stroke.

Drew Matthews
Director