

Traffic Management and Impact Plan

Proposed Development Plan

at

**88-168 Bennett Road and 15 & 94-134 McGregor Road,
Gisborne**

October, 2021
G24605R-01F

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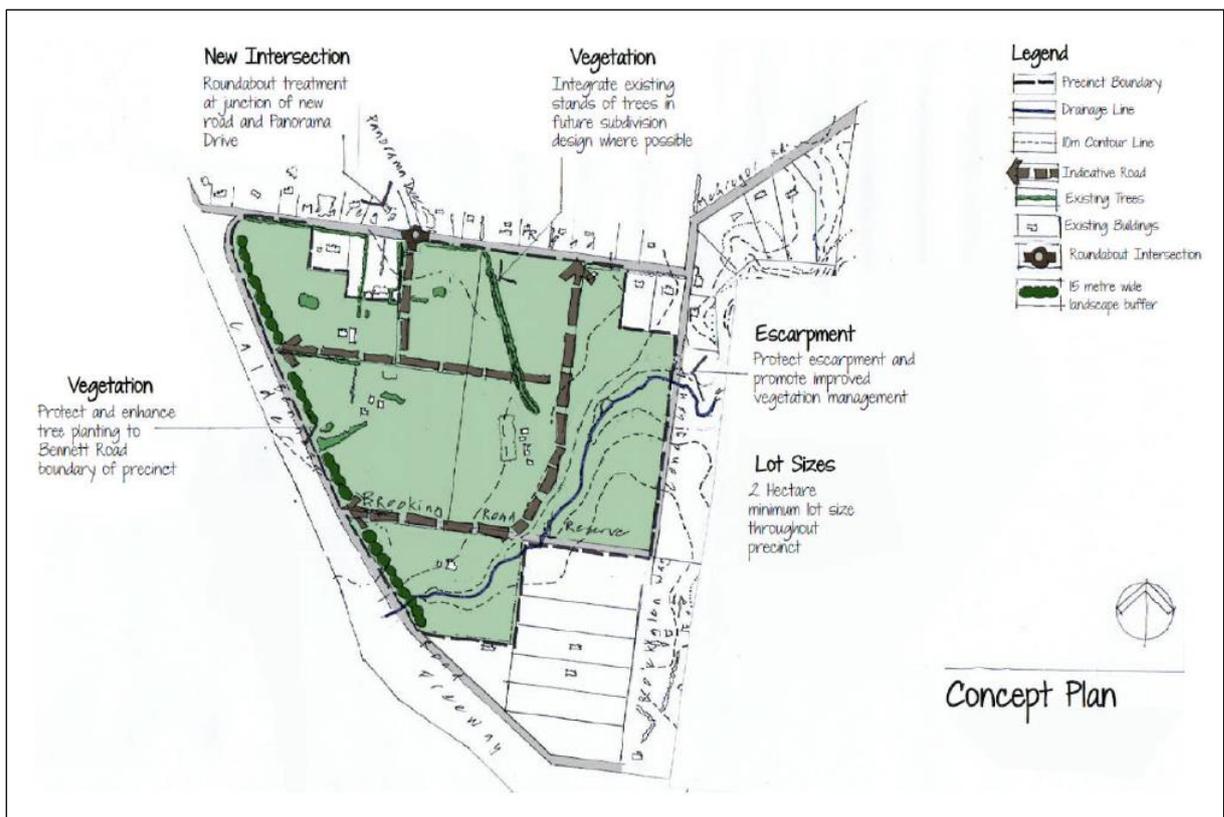
1 Introduction

Traffix Group has been engaged to prepare a Traffic Management and Impact Plan for the proposed Development Plan at 88-168 Bennett Road and 15 & 94-134 McGregor Road, Gisborne.

This report responds to the access and traffic aspects of the requirements under Schedule 18 to the Development Plan Overlay (DPO18) of the Macedon Ranges Planning Scheme, i.e. the preparation of a Traffic Management and Impact Plan.

2 DPO18 Bennett Road, Gisborne, Rural Living Area

DPO18 of the Macedon Ranges Planning Scheme requires a Development Plan to be prepared that is generally in accordance with the concept plan under Sub-Clause 5.0 (Map 1) of the DPO. This concept plan is reproduced at Figure 1.



Source: <http://planningschemes.dtpil.vic.gov.au/schemes/macedonranges>

Figure 1: Development Plan Concept



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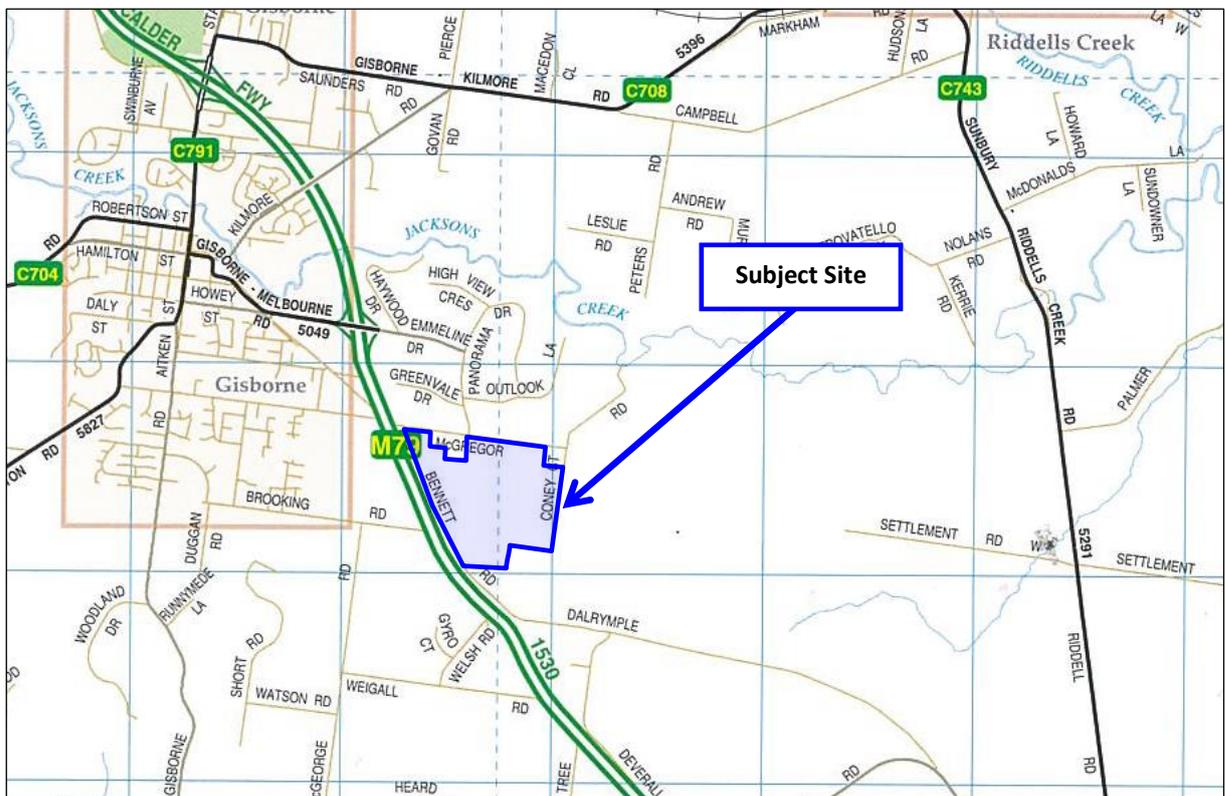
DPO18 requires that any proposed development plan must include, amongst other plans, a Traffic Management and Impact Plan which includes:

- A well defined, appropriately designed, convenient and safe internal road, cycling and pedestrian network.
- Appropriate access points and circulation areas for vehicles, cyclists and pedestrians on the existing and future road network.
- Upgrade works necessary to accommodate traffic generated by the development and to mitigate the impact of the development on the surrounding area.
- East-west and north-south road connections, including the construction of the Brooking Road extension, all with a minimum width of 20 metres.
- Roundabout intersection treatment at the Panorama Drive intersection.

3 Existing Conditions

3.1 Subject Site

The subject site is bound by Bennett Road to the west, McGregor Road and abutting land to the north, Coney Court, an unmade road and abutting land to the east and an unmade road and abutting land to the south. A locality plan and an aerial photograph of the site are presented at Figure 2 and Figure 3 respectively.



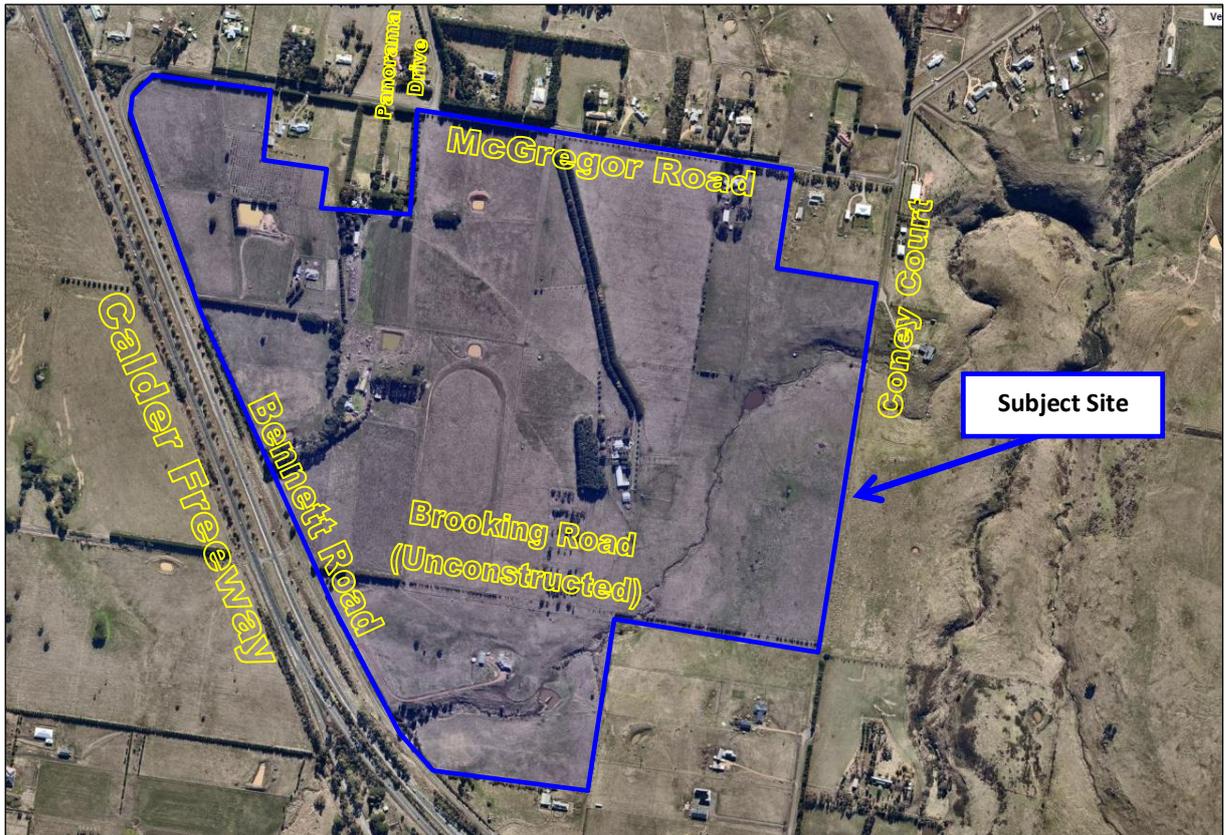
Source: RACV VicRoads Country Street Directory

Figure 2: Locality Plan



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Source: Nearmap.com

Figure 3: Aerial Photograph

Specifically, the subject site comprises various properties located in Gisborne, as follows:

- 88, 128 and 168 Bennett Road;
- 94 and 134 McGregor Road; and
- A parcel known as Lot 1 TP886104 (understood to be 15 McGregor Road).

Vehicle access for the site to/from the Gisborne township to the northwest is available via Panorama Drive and Emmeline Drive. Access to/from areas to the north of the site and Melbourne city to the southeast is available via Calder Freeway, which can also be accessed via the Panorama Drive/Emmeline Drive route, and approximately 3.5km from the south via local roads to the Coangault Road/Mundy Road freeway interchange.

The site has good access to central Sunbury to the southeast via two primary route options as follows:

- Via Dalrymple Road (to the southeast) which connects with Bennett Road directly; and
- Via Calder Freeway (via access ramps to the northwest).

Both existing route options are estimated to take approximately the same time to travel.

It is noted that no formal pedestrian or cyclist provisions, i.e. footpaths, on-road bicycle lanes or off-road bicycle paths, are constructed in the area surrounding the site, consistent with the rural nature of the area.

The site is irregular in shape and has a total site area of approximately 132 ha.



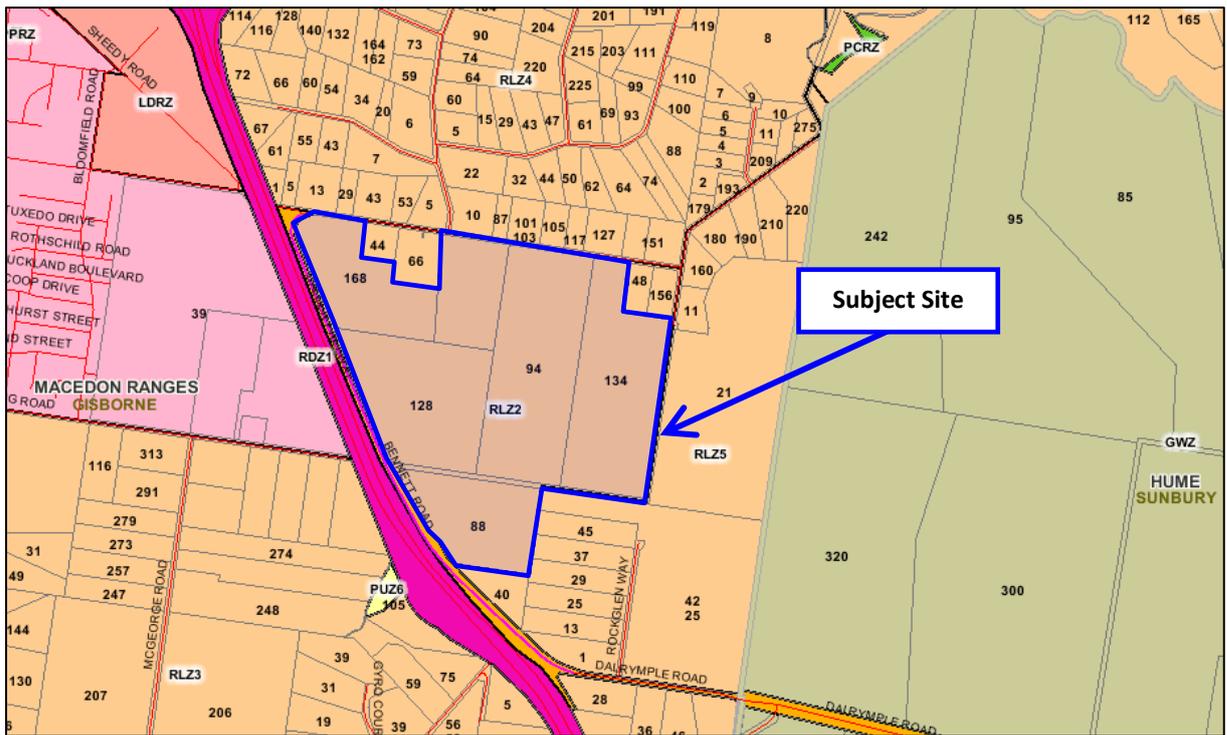
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Each property/lot is largely free of structures, with the majority of properties currently accommodating a single residential dwelling and associated structures, except for the land parcel known as Lot 1 TP886104 which does not currently have a dwelling on it.

Formal vehicle access is provided to each property via McGregor Road or Bennett Road, except for Lot 1 TP886104 which does not currently have formal vehicle access.

The subject site is located within a Rural Living Zone - Schedule 2 (RLZ2), as shown in Figure 4.



Zones Legend		
ACZ - Activity Centre	IN1Z - Industrial 1	R1Z - General Residential
B1Z - Commercial 1	IN2Z - Industrial 2	R2Z - General Residential
B2Z - Commercial 1	IN3Z - Industrial 3	R3Z - General Residential
B3Z - Commercial 2	LDRZ - Low Density Residential	RAZ - Rural Activity
B4Z - Commercial 2	MUZ - Mixed Use	RCZ - Rural Conservation
B5Z - Commercial 1	NRZ - Neighbourhood Residential	RDZ1 - Road - Category 1
C1Z - Commercial 1	PCRZ - Public Conservation & Resource	RDZ2 - Road - Category 2
C2Z - Commercial 2	PDZ - Priority Development	RGZ - Residential Growth
CA - Commonwealth Land	PPRZ - Public Park & Recreation	RLZ - Rural Living
CCZ - Capital City	PUZ1 - Public Use - Service & Utility	RUZ - Rural
CDZ - Comprehensive Development	PUZ2 - Public Use - Education	SUZ - Special Use
DZ - Dockland	PUZ3 - Public Use - Health Community	TZ - Township
ERZ - Environmental Rural	PUZ4 - Public Use - Transport	UFZ - Urban Floodway
FZ - Farming	PUZ5 - Public Use - Cemetery/Crematorium	UGZ - Urban Growth
GRZ - General Residential	PUZ6 - Public Use - Local Government	
GWAZ - Green Wedge A	PUZ7 - Public Use - Other Public Use	
GWZ - Green Wedge	PZ - Port	-- Urban Growth Boundary

Source: Planning Scheme Maps Online <http://services.land.vic.gov.au>

Figure 4: Land Use Zoning Map

Land use in the immediate vicinity of the site is predominantly rural residential. A green wedge zone is located to the east of the site.



3.2 Road Network

3.2.1 Existing Roads

Bennett Road is in the Road Zone - Category 2 (RDZ2) and is under the control of Council. Bennett Road is generally aligned in a northwest-southeast orientation between McGregor Road in the northwest (where it continues in an east-west orientation as McGregor Road) and Dalrymple Road in the southwest (where it continues in an east-west orientation as Dalrymple Road). Bennett Road is a sealed road and has a carriageway width of approximately 6.35m, which accommodates a single lane of traffic in each direction.

The default rural speed limit of 100km/h applies to Bennett Road.

Calder Freeway abuts the southwestern side of Bennett Road. One emergency vehicle connection is provided to Calder Freeway near the middle of the site's Bennett Road frontage. No public vehicle access is permitted at this connection.

Bennett Road is shown in Figure 5 and Figure 6.



Figure 5: Bennett Road (View North)



Figure 6: Bennett Road (View South)

McGregor Road in the vicinity of the subject land is generally aligned in an east-west orientation between Bennett Road in the west and Coney Court in the east. McGregor Road is a sealed road and has a carriageway width of approximately 7.0m, which accommodates a single lane of traffic in each direction.

A speed limit of 100km/h applies to McGregor Road.

McGregor Road, west of its intersection with Panorama Drive, is shown in Figure 7 and Figure 8.



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Figure 7: McGregor Road (View East)



Figure 8: McGregor Road (View West)

Coney Court is a cul-de-sac road which extends to the south from McGregor Road. Coney Court is a sealed road and has a carriageway width of approximately 3.9m. Coney Court has grass verges on either side of the carriageway which are used by vehicles to facilitate passing other vehicles.

Coney Court, near its court bowl termination, is shown in Figure 9 and Figure 10.

At the time of writing this report, permit application PLN/2018/541 has been lodged for a ten-lot subdivision of 21 Coney Court. The application proposes an access link with Rockglen Way to the south of the subject land.



Figure 9: Coney Road (View North)



Figure 10: Coney Road (View South)

Panorama Drive is generally aligned in a north-south 'loop' between McGregor Road and Outlook Lane. Panorama Drive is a sealed road and has a carriageway width of approximately 5.5m, which accommodates a single lane of traffic in each direction.

Mitchel Shire Council has advised that Panorama Drive is subject to a speed limit of 80km/h.

The Panorama Drive/McGregor Road intersection is an unsignalised T-intersection that operates under standard give-way conditions, with priority afforded to motorists along McGregor Road.



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No designated turn lanes are provided on any of the legs of the Panorama Drive/McGregor Road intersection.

Panorama Drive, at its intersection with McGregor Road, is shown in Figure 11 and Figure 12.



Figure 11: Panorama Drive (View North)



Figure 12: Panorama Drive (View South)

The road reserve of **Brooking Road** within the subject land is generally aligned in an east-west direction along the northern boundary of 88 Bennett Road and has an existing connection with Bennett Road. It is currently unconstructed within the site, i.e. no public access is currently provided.

3.2.2 Existing Traffic Conditions

Traffix Group has undertaken the following traffic counts:

- Automatic tube counts from Thursday 24 May, 2018 to Wednesday 30 May, 2018 along McGregor Road between:
 - Panorama Drive and Bennett Road, and
 - Panorama Drive and Coney Court.
- Turning movement counts on Wednesday 23 May, 2018 from 4:30pm to 6:30pm and Thursday 24 May, 2018 from 7:00am to 9:00am at the Panorama Drive/McGregor Road intersection.

A summary of the tube count results is presented in Table 1.



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Table 1: Traffic Count Summary

Direction	Weekday Daily Average	AM Peak Hour	PM Peak Hour
McGregor Road between Panorama Drive and Bennett Road (May, 2018)			
Eastbound	153 vpd	18 vph 8:00am-9:00am	22 vph 4:00pm-5:00pm
Westbound	142 vpd	18 vph 10:00am-11:00am	17 vph 3:00pm-4:00pm
Two-Way	294 vpd	32 vph 8:00am-9:00am	36 vph 4:00pm-5:00pm
McGregor Road between Panorama Drive and Coney Court (May, 2018)			
Eastbound	115 vpd	15 vph 10:00am-11:00am	21 vph 5:00pm-6:00pm
Westbound	114 vpd	22 vph 8:00am-9:00am	16 vph 2:00pm-3:00pm
Two-Way	229 vpd	32 vph 8:00am-9:00am	31 vph 5:00pm-6:00pm

The results of the turning movement counts are shown in Figure 13.

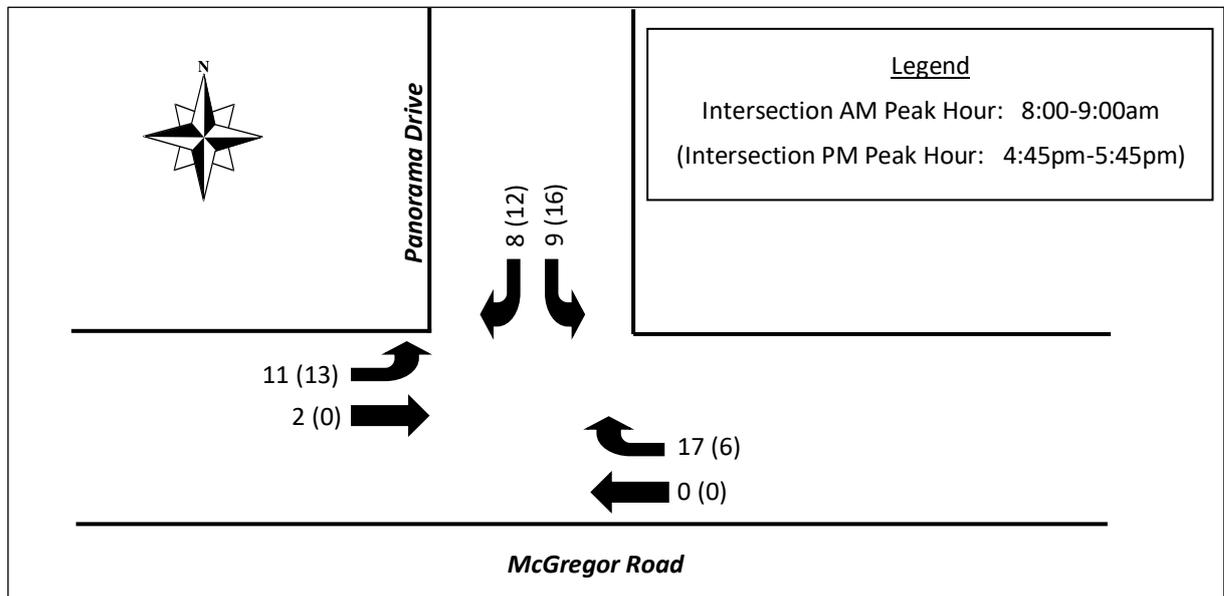


Figure 13: Peak Hour Traffic Counts Summary - Panorama Drive/McGregor Road

Full output of the tube counts and turning movement counts are attached at Appendix A and Appendix B respectively.



3.3 Public Transport

The site is not currently serviced by public transport services, which is consistent with the relatively low density of residential dwellings in the vicinity of the site. However, private school buses operate in the vicinity of the site, with an informal bus pick up/drop off location at the Panorama Drive/McGregor Road intersection.

The nearest public transport service (Bus Route 473) is located approximately 2.9km northwest of the site at Howey Street, closer to the centre of the Gisborne township.

4 Proposed Development Plan

The proposed Development Plan for the 'Bennett Road Precinct' is attached at Appendix C and includes the following key features:

- Approximately 50 future allotments provided within the subject site with a minimum lot area of 2 hectares (ha), in accordance with the requirements of DPO18;
- Four unsignalised T-intersections with the existing external road network, comprising two connections with Bennett Road and two connections with McGregor Road; and
- Vehicle access for the future allotments to be provided as follows:
 - Direct access via a number of new roads within the future subdivision, including via:
 - The formal construction of the existing Brooking Road road reserve, consistent with the DPO18 requirements; and
 - A currently unconstructed Government road along the southern boundary of 94 and 134 McGregor Road and part of the eastern boundary of 134 McGregor Road; and
 - Direct access for the future allotments that are to abut Bennett Road and McGregor Road, consistent with current access arrangements for existing allotments abutting these roads.

5 Panorama Drive/McGregor Road Intersection

As shown in Figure 1, Map 1 of DPO18 shows an indicative north-south aligned road on the west boundary of the property that abuts east boundaries of 66 McGregor Road and 168 Bennett Road, intersecting with McGregor Road opposite Panorama Drive. Map 1 of DPO18 also shows a roundabout at the Panorama Drive/McGregor Road intersection.

The proposed Development Plan shows this indicative north-south aligned road along the east boundary of the property that abuts the west boundary of 94 McGregor Road, approximately 270m east of the location shown in Map 1 of DPO18.

DPO18 requires that the Development Plan be prepared for the whole area covered by the overlay, and that the Development Plan "must be generally in accordance" with the concept plan contained in the overlay (ie Map 1 of DPO18).



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The DPO concept plan shows a north-south aligned road connecting McGregor Road to an internal east-west aligned road, which in turn connects to Bennett Road to the west and another internal road to the east. The fact that the road intersects McGregor Road at a crossroad is the reason for a roundabout being shown in the DPO concept plan. The proposed Development Plan retains this north-south aligned road, albeit moved to the east. The provision of this north-south aligned road is generally in accordance with the DPO concept plan.

The proposed alignment of this north-south road removes the need for a roundabout at the McGregor Road/Panorama Drive intersection on capacity grounds given that a standard T-intersection has the capacity to accommodate the relatively low volume of traffic that will use this intersection as discussed in greater detail at Section 6.2 of this report. In turn, the proposed alignment removes the inherent land acquisition issues that would otherwise be associated with the provision of the roundabout (ie on the northeast and northwest corners of this intersection).

The location of this north-south road allows the orderly development of land covered by the proposed Development Plan.

On this basis, it is considered that the road network contained in the proposed Development Plan is generally in accordance with the concept plan contained in DPO18.

6 Traffic Considerations

6.1 Traffic Generation and Distribution

The RTA Guide to Traffic Generating Developments (2002) (RTA Guide) sets out traffic generation rates based on survey data collected in New South Wales for a range of land uses. This guide is used by VicRoads and is generally regarded as the standard for metropolitan development characteristics.

The RTA Guide sets out the following rates for standard residential dwellings:

- *daily vehicle trips = 9.0 per dwelling*
- *weekday peak hour vehicle trips = 0.85 per dwelling*

However, the RTA Guide states that ... *“The Australian Model Code for Residential Development (AMCORD) assumes a daily vehicle generation rate of 10.0 per dwelling, with 10% of that taking place in the commuter peak period. The use of these figures provides some allowance for later dual occupancy development.”*

Conservatively adopting a rate of 10 vehicle trip-ends (vte) per day per lot, in the order of 500 vte per day would be generated by the future residential subdivision, including 50 vte during each of the AM and PM commuter peak hours¹. This results in approximately in the order of one vehicle generated every 1.2 minutes, noting that the traffic generated would be less than this given that the site already generates traffic.

¹ Previous experience with residential subdivisions indicates that an upper limit of approximately 8% of daily trips are generated in each commuter peak hour in outer metropolitan areas such as this.



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It is anticipated that the primary destinations for traffic generated by the site would include the Gisborne township, central Sunbury and Melbourne city, including other metropolitan suburbs.

The Gisborne township is located to the northwest of the site, and central Sunbury and Melbourne city are located to the southeast. Melbourne city (and other metropolitan suburbs) and central Sunbury are accessed via Calder Freeway to the northwest of the site, with central Sunbury also having an alternate route to/from the site via Bennett Road to the southeast. Access is also available to/from Calder Freeway at the Couangalt Road/Mundy Road freeway interchange via local roads to the south.

For the purposes of a conservative assessment, it is assumed that all traffic generated by the site will be distributed to/from the Gisborne township and Calder Freeway (which provides access with Sunbury central, Melbourne city and other metropolitan suburbs), i.e. to/from Panorama Drive to the north of the site. It is likely that some motorists intending to travel to/from central Sunbury may choose to instead travel via Bennett Road's southeast extension.

6.2 Traffic Impacts

A number of lots within the proposed Development Plan will take direct vehicle access off McGregor Road or Bennett Road. The remaining lots will utilise the internal road network to access the external road network at four locations.

Brooking Road/Bennett Road

A basic right turn (BAR) treatment is proposed at this location, given the intersection provides access to the proposed subdivision.

Rockglen Way/Dalrymple Road

It is not proposed to upgrade this intersection as part of the proposed Development Plan for the subject land. The volume of traffic generated by the existing and approved subdivisions that take access off Rockglen Way (understood to be in the order of 15 lots) will already require this intersection to be upgraded to a BAR. This is a matter to be addressed, if required, under the separate proposal which is the one that proposes to connect to Rockglen Way (not this Development Plan). The additional traffic likely to use this intersection from the land covered by the proposed Development Plan will be low and will replace a proportion of the traffic from the subdivisions abutting Rockglen Way that is redirected to the north as a result of the extension of Rockglen Way to the subject land. Hence, any additional traffic from the land subject to the proposed Development Plan will not trigger a requirement for a higher order intersection than is already required as a result of the subdivision of land abutting Rockglen Way.

New Roads Intersecting with Bennett Road and McGregor Road

Basic right turn (BAR) treatments are proposed at these locations, given the intersections provides access to the proposed subdivision.

Bennett Road/Brooking Road

The location of this intersection is fixed and is consistent with the concept plan in the overlay. Access is appropriately considered as part of any planning permit application. At that time, it would be appropriate to also consider the speed limit on Bennett Road in the vicinity of the area covered by the



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development plan. It is currently 100 km/h. With the proposed subdivision there will be an increase in the number of properties taking access off Bennett Road and a reduced speed limit of 80 km/h would be more appropriate. A reduced speed limit will assist in enabling appropriate sight distances to be provided at the Bennett Road/Brooking Road intersection.

Brooking Road/Proposed North-South Orientated Road

A new road is proposed to run to the north of Brooking Road (which will be constructed as part of the Development Plan). The associated intersection will be located a minimum of approximately 80m to the west of the crossing of the Djiri Djiri Creek and future detailed design of the intersection and creek crossing should have consideration for associated sight distances which would be based on the relevant future speed limit of the relevant section of Brooking Road.

It is also noted that the southern end of the future north-south road that is to run through 94 McGregor Road is identified to connect with Brooking Road further to the west than what is identified in the DPO in order to maximise sight distance. Furthermore, no access/driveways will be provided to individual allotments in the vicinity of any critical changes in the vertical alignment of Brooking Road as a result of the creek crossing.

Panorama Drive/Emmeline Drive

This intersection operates as a standard T-intersection, with priority given to Panorama Drive traffic. From Figure 13, it is evident that Panorama Drive at McGregor Road carries the following traffic:

- AM peak hour:
 - Northbound: 28 vph
 - Southbound: 17 vph
 - Two way: 45 vph
- PM peak hour:
 - Northbound: 19 vph
 - Southbound: 28 vph
 - Two way: 47 vph

This intersection also serves 81 low density residential lots to the north, south and east of the intersection, estimated to approach and depart the intersection as shown in Figure 14.



Figure 14: Panorama Drive/Emmeline Drive



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Existing traffic volumes through the Panorama Drive/Emmeline Drive intersection have been estimated as follows:

- All northbound traffic on Panorama Drive at McGregor Road turns left into Emmeline Drive.
- All southbound traffic on Panorama Drive at McGregor Road turns right from Emmeline Drive.
- All traffic from properties south of a line extending east from Emmeline Drive (42 lots) travels from the south to the west and from the west to the south through the Panorama Drive/Emmeline intersection.
- All traffic from properties north of a line extending east from Emmeline Drive (41 lots) travels from the north to the west and from the west to the north through the Panorama Drive/Emmeline intersection.
- Traffic from these 83 properties is conservatively predicted to be generated at a rate of 1 vte/hour in both peak hours, split as follows:
 - AM peak hour: In: 0.2 Out: 0.8
 - PM peak hour: In: 0.6 Out: 0.4

Application of these assumptions produces the predicted existing traffic volumes through the Panorama Drive/Emmeline Drive intersection shown in Figure 15.

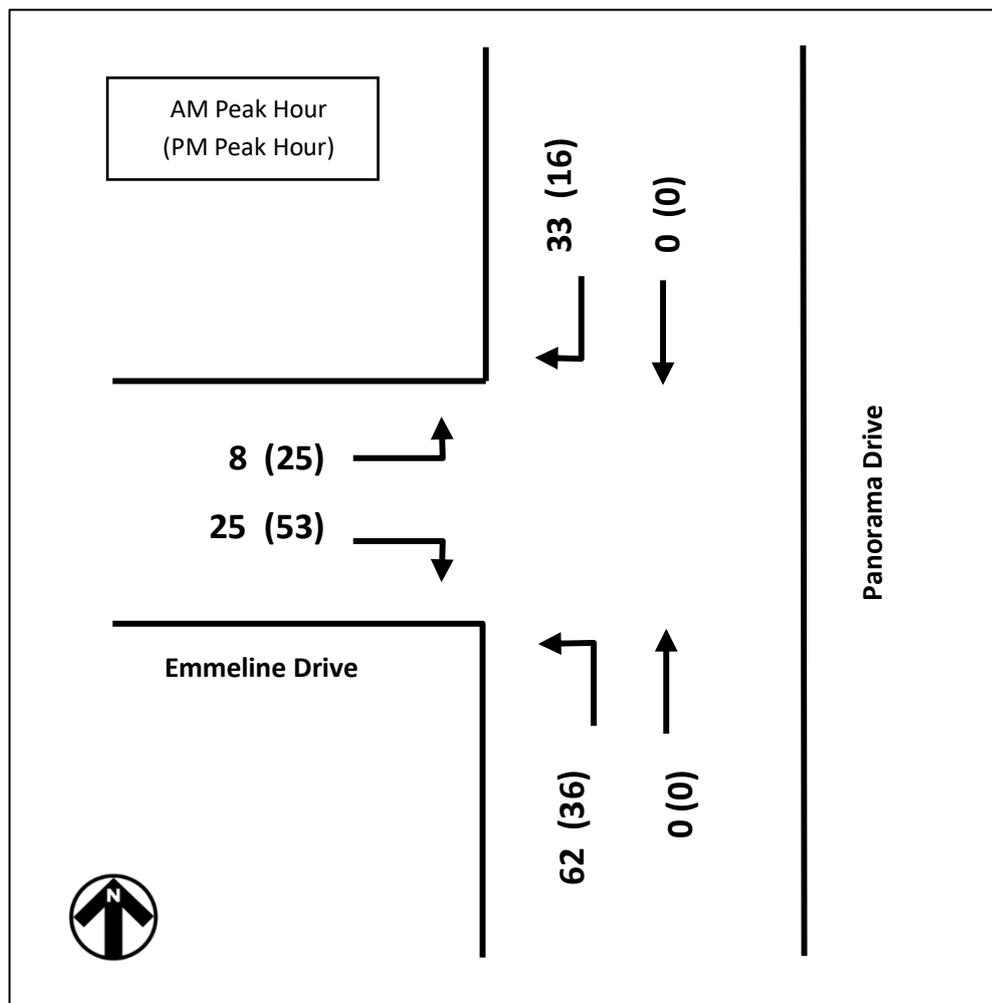


Figure 15: Panorama Drive/Emmeline Drive Existing Traffic Volumes

If all the traffic anticipated to be generated by the proposed Development Plan travelled through the Panorama Drive/Emmeline Drive intersection, this would add an additional 50 vph in both peak hours.



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This T-intersection has the capacity to readily accommodate this additional traffic without the need for modification. Priority should remain with Panorama Drive traffic.

Panorama Drive/McGregor Road

Traffic generated by the proposed Development Plan is anticipated to travel via the Panorama Drive/McGregor Road intersection. As mentioned above, this conservatively equates to in the order of one vehicle being generated every 1.2 minutes at this intersection.

When combined with existing traffic at the existing Panorama Drive/McGregor Road intersection, i.e. up to 47 vehicle movements during each commuter peak hour from Figure 13, this results in approximately in the order of 97 vehicle movements during each commuter peak hour. The T-intersection at the Panorama Drive/McGregor Road intersection has the capacity to readily accommodate the additional traffic without the need for modification as detailed following.

For the purposes of an intersection analyses we have assumed the following:

- 1 vte/hour in both the AM and PM peak hours for each of the 50 lots within the Development Plan, split as follows:
 - AM peak hour: In: 0.2 Out: 0.8
 - PM peak hour: In: 0.6 Out: 0.4
- Based on the location of the proposed lots the number of movements associated with the Development Plan that would be generated to/from the east and west along McGregor Road to its intersection with Panorama Drive is as follows:
 - To/From the East: 35 lots
 - To/From the West: 15 lots

Based on the above, and when considering the existing traffic that was observed at the intersection during our associated traffic counts, the post development traffic at the intersection is estimated to be as presented in Figure 16 (note that this is conservatively based on a former potential yield of 55 lots on the subject site).

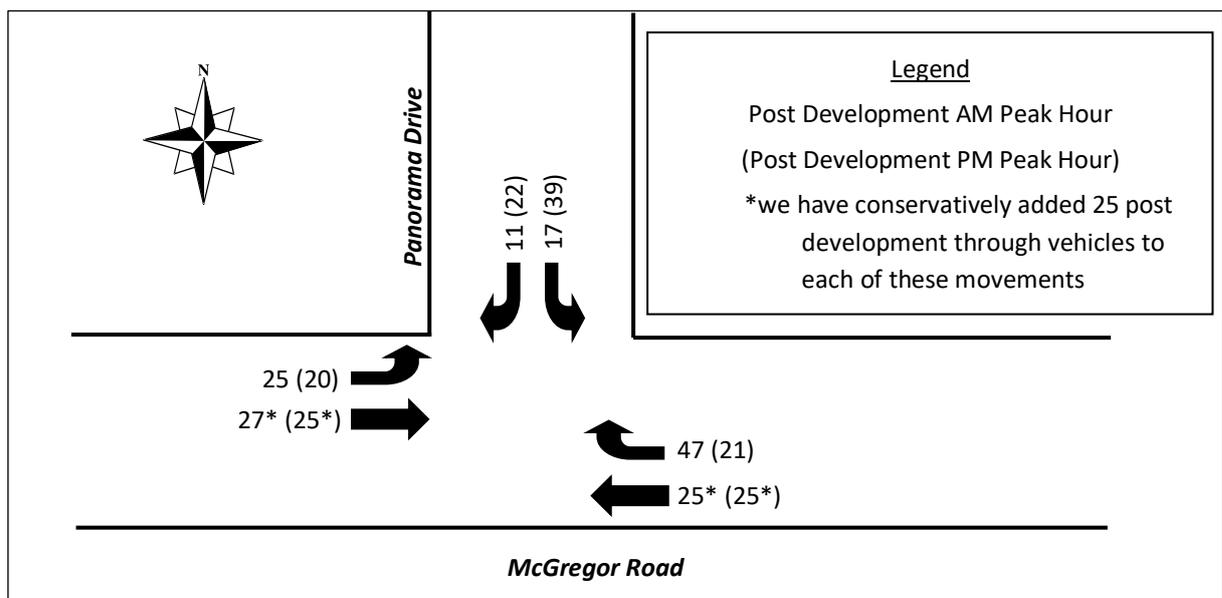


Figure 16: Post Development Peak Hour Traffic Volume Estimate (Panorama Drive/McGregor Road)



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We have undertaken analysis of the post development conditions at the Panorama Drive/McGregor Road intersection using SIDRA Intersection 8 adopting all SIDRA default values including the conservative critical-gap and follow-up headway values.

Full output of the associated post development operating conditions at the intersection are attached at Appendix D which clearly show that the intersection will continue to function with abundant spare capacity even under the existing geometry with very low Degree of Saturation, Queues and Delays expected in both the AM and PM peak hours.

Accordingly, we are satisfied that it would be appropriate for nothing more than a BAR treatment to be provided at the Panorama Drive/McGregor Road intersection.

Safe Road Access to Lots

At Bend in Bennett Road and McGregor Road

This bend has a signed advisory speed of 50 km/h. The proposed Development Plan includes indicative lots. The lot on the bend in Bennett Road and McGregor Road has its eastern boundary 80m east of the bend in the property line on Bennett Road and has its southern boundary 80m south of the bend in the property line on McGregor Road. Both these bends in the property boundary are adjacent to the point where the bend in the road commences. Accordingly, there is adequate sight distances on both roads for vehicle access to be provided in the vicinity of either of the corner lots' property boundaries, given the speed of traffic exiting the bend in the road. It is noted that sight distances to the east along McGregor Road and to the south along Bennett Road are adequate.

At 88 Bennett Road

Access to 88 Bennett Road is appropriately considered as part of any planning permit application. At that stage, a range of options could be explored to ensure appropriate access is provided to this parcel of land. Sight lines at this location are affected by the horizontal and vertical geometry of Bennett Road. They are also affected by the speed limit along Bennett Road and vegetation largely within the road reserve. These can be appropriately addressed at planning permit or detailed design stage, with removal of exotic vegetation and an 80 km/h speed limit recommended.

Conclusion

Based on the preceding, we are of the opinion that there will be no unreasonable detrimental impacts to the surrounding road network as a result of a future subdivision at the subject site and that no external traffic-related works, other than at intersections of new internal roads with Bennett Road and McGregor Road, are required.



7 Other Traffic Matters

7.1 Internal Road Cross Sections

The DPO18 specifies that “*East-west and north-south road connections*”, including Brooking Road should be constructed with a “*minimum width of 20 metres*”. All road reservations within the proposed Development Plan are identified as being a minimum of 20m wide. Accordingly, the relevant requirement under DPO18 with regards to the minimum road reservation width for internal roads is met.

Council’s *Engineering Requirements for Infrastructure Construction* policy document details the engineering requirements associated with infrastructure construction resulting from development within the Shire. Based on this document, it is apparent that Council considers the new roads to be “rural type”. Council’s engineers have advised that the following, in part, will be required:

- Carriageway width: 6.6m
- Shoulders: 0.5m both sides
- Swale drains on both sides
- 20m wide road reserve

All internal roads within the proposed Development Plan will be constructed in accordance with these requirements.

Council’s *Shire Wide Footpath Plan* has prioritised the promotion of health and wellbeing and improvement of the built environment through the upgrade of walking and cycling infrastructure within the municipality”. The footpath plan is in effect a 15 to 20 year plan to retrofit footpaths within the municipality.

The Shire-wide footpath plan for Gisborne is shown in Figure 17.



Traffic Management and Impact Plan

Proposed Development Plan: 88-168 Bennett Road and 15 & 94-134 McGregor Road, Gisborne

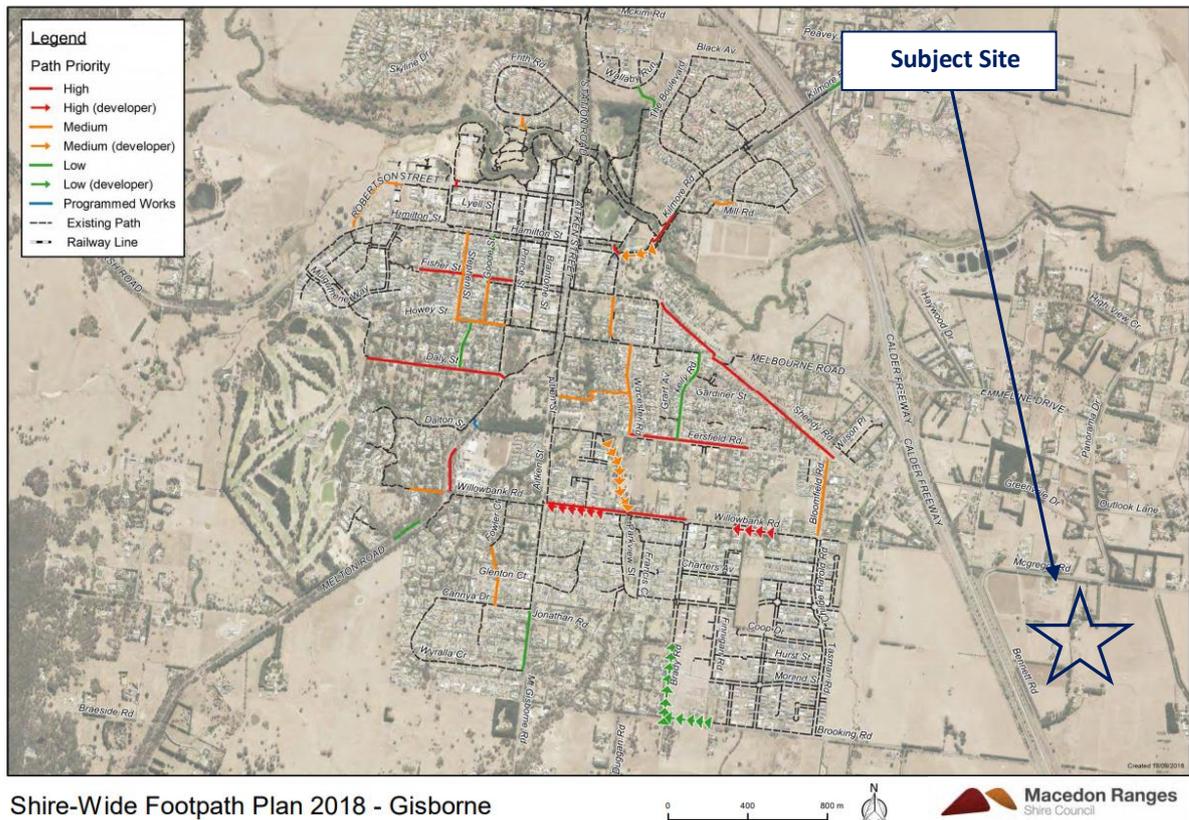


Figure 17: Shire-Wide Footpath Plan for Gisborne

The Development Plan subdivision concept plan allows for rural condition pedestrian and bike access. In particular, a 'rural pedestrian path/bike track' is proposed on the central east-west road, central north-south road and part of the north-south connection to Brooking Road, and there will also be a path along the waterway as shown in the Development Plan.

Bicycle movements can also be accommodated along the carriageway of all roads within the proposed development in a shared fashion that is consistent with typical practice.

7.2 Access for Service and Emergency Vehicles

All road carriageway widths will adequately facilitate relevant service and emergency vehicles and are consistent with the typical CFA requirements.

CFA and maintenance access is to be provided along the entire Djirri Djirri Creek Reserve.



Traffic Management and Impact Plan

Proposed Development Plan: 88-168 Bennett Road and 15 & 94-134 McGregor Road, Gisborne

7.3 Pedestrian and Cycling Access

As shown in the Development Plan, a 'rural pedestrian path/bike track' is proposed on the central east-west road, central north-south road and part of the north-south connection to Brooking Road.

A path will also be provided along the waterway as also shown in the Development Plan.

Cyclists will also be able to utilise the proposed internal and abutting road carriageways in a shared fashion consistent with typical practice on access streets within a rural residential subdivision.

7.4 Public Transport Considerations

Consistent with existing dwellings in the area surrounding the site, future allotments within the subject site will not have access to public transport services in close proximity. However, it is noted that public transport services could be extended to the subject site to service the overall area if ultimately deemed necessary.

7.5 Street Lights

Street lighting is to be provided at the four intersections with the site at Bennett and McGregor Roads as identified in the Development Plan.

7.6 Gradients

The southern end of the north-south road has been located further west than identified in the DPO so as to avoid the slope and ensure that sight lines are maximised at its intersection with Brooking Road. Terraco, the civil engineering consultant undertaking assessments in association with the site, will have regard to the existing levels on the associated feature survey plan to ensure that a suitable gradient is provided at the Brooking Road culvert crossing.

The gradient of the road reservation through the land at 94 McGregor Road towards the escarpment is not particularly steep at 1 in 19.4. It is noted that the associated Development Plan cross-section as prepared by Terraco states that *'The alignment shown has been chosen to maximise the buffer from road reserve to the existing house and sheds on 94 McGregor Road, whilst maintaining a safe and practical road location above the top of escarpment. Alignment shown is indicative only and is to be detailed in engineering design'*. Significantly, the 1 in 4.6 grade is outside of the road reservation and is further offset by a flatter 1 in 8.8 grade and the Development Plan acknowledges the same. The alignment will be detailed at subdivision stage when it is most suitable.



8 Conclusions

Having undertaken a detailed traffic engineering assessment of the proposed Bennett Road Precinct Development Plan at 88-168 Bennett Road and 94-134 McGregor Road in Gisborne, we are of the opinion that:

- a) The proposed road network is generally in accordance with Sub-Clause 5.0 (Map 1) of Schedule 18 to the Development Plan Overlay (DPO18) of the Macedon Ranges Planning Scheme;
- b) No external traffic-related works, other than at intersections of new internal roads with Bennett Road and McGregor Road and the introduction of a BAR treatment at the existing Panorama Drive/McGregor Road intersection, are required as a result of a future subdivision at the subject site;
- c) Street lighting will be provided at the four site intersections with Bennett and McGregor Roads;
- d) The proposed internal road reservations and intersections are in accordance with DPO18 and will provide safe connection and permeability for pedestrians, cyclists and motor vehicles, in a fashion that is typically better than existing arrangements in the surrounding area;
- e) An appropriate court bowl treatment capable of facilitating relevant service and emergency vehicles should be provided for the proposed dead-end road;
- f) There will be no unreasonable detrimental impacts to the surrounding road network as a result of a future subdivision at the subject land; and
- g) This Traffic Management and Impact Plan adequately addresses all associated requests of DPO18 of the Macedon Ranges Planning Scheme.



Appendix A
Tube Counts





Traffic Data Collection Services

Traffix Survey Pty Ltd
ABN 57 120 461 510

Address
Suite 8, 431 Burke Road
Glen Iris Victoria 3146

Contact
Telephone 03 9822 2888
Facsimile 03 9822 7444
survey@traffixgroup.com.au
www.traffixgroup.com.au

McGregor Road, Gisborne
Between
Panorama Drive & Bennett Road

Prepared for
Traffix Group Pty Ltd

May 2018

Reference: 38971891

TRAFFIC COUNT SUMMARY



McGregor Road, Gisborne At: west of Panorama Dr Between Panorama Drive & Bennett Road

CUSTOMER:	Traffix Group Pty Ltd	MAP REF:	678 K11
TYPE COUNT:	7 days, Speed Vol Class	ACTUAL DURATION:	9 days
DATE START:	24/05/18	DATE FINISH:	30/05/18
TIME START:	0000	TIME FINISH:	2300
DIRECTION-1:	Eastbound	DIRECTION-2:	Westbound
COUNTER NO:		SPEED LIMIT:	80
CLASSES:	1 - 12	SPEEDS:	All

ALL VEHICLES	Eastbound	Westbound	COMBINED
24 Hour Week Day Average	153	142	294
24 Hour 7 Day Average	141	134	275
A.M. Peak Hour Volume	18	18	32
A.M. Peak Hour	0800-0859	1000-1059	0800-0859
P.M. Peak Hour Volume	22	17	36
P.M. Hour	1600-1659	1500-1559	1600-1659

COMMERCIAL VEHICLE	Eastbound	Westbound	COMBINED
Total Volume	86	138	224
%	8.7%	14.7%	11.6%

SPEEDS	Eastbound	Westbound	COMBINED
	% Vol.	% Vol.	% Vol.
>119km/h	0.0	0.0	0.0
>109km/h	0.0	0.0	0.0
>99km/h	0.0	0.1	0.1
>89km/h	0.6	0.7	0.7
>79km/h	4.0	4.2	4.1
>69km/h	24.9	14.5	19.8
>59km/h	64.5	47.3	56.1
>49km/h	91.5	82.4	87.1
>39km/h	97.5	95.6	96.6
>29km/h	98.8	98.3	98.5
>19km/h	99.9	99.3	99.6
85%ile	72.2	68.8	70.8
Mean	62.7	58.7	60.7

Notes

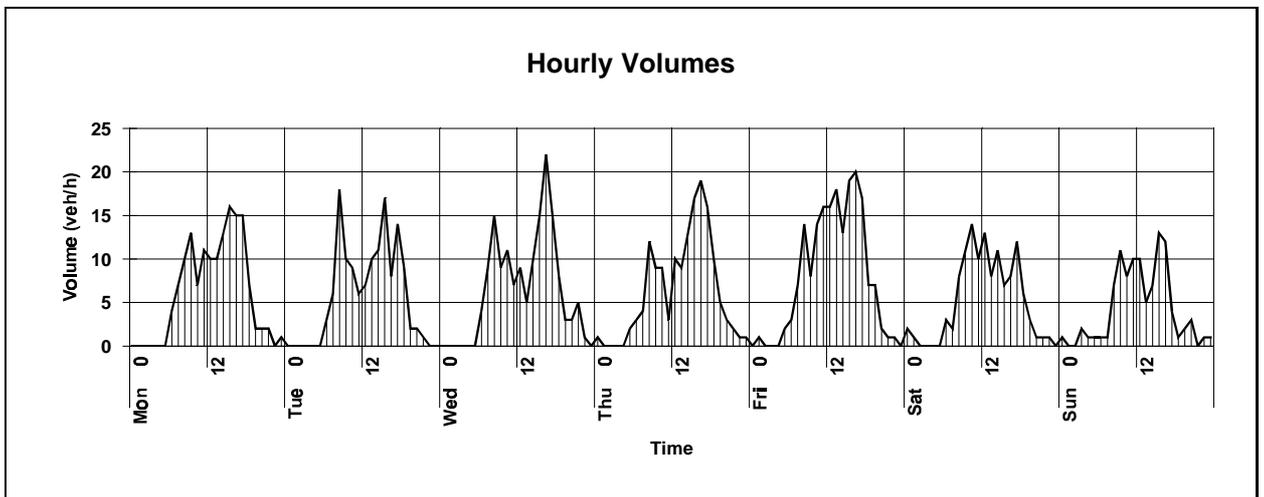
Traffix Survey Traffic Count

Traffic Volume Analysis



Site No: 3897189
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Bennett Road
Direction : Eastbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	1	0	2	1	0	1
0100-0159	0	0	0	0	1	1	0	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	0	0	0	0	2	0	0
0400-0459	0	0	0	0	0	0	1	0	0
0500-0559	0	0	0	2	2	0	1	1	1
0600-0659	4	3	4	3	3	3	1	3	3
0700-0759	7	6	9	4	7	2	1	7	5
0800-0859	10	18	15	12	14	8	7	14	12
0900-0959	13	10	9	9	8	11	11	10	10
1000-1059	7	9	11	9	14	14	8	10	10
1100-1159	11	6	7	3	16	10	10	9	9
1200-1259	10	7	9	10	16	13	10	10	11
1300-1359	10	10	5	9	18	8	5	10	9
1400-1459	13	11	10	13	13	11	7	12	11
1500-1559	16	17	15	17	19	7	13	17	15
1600-1659	15	8	22	19	20	8	12	17	15
1700-1759	15	14	15	16	17	12	4	15	13
1800-1859	7	9	8	10	7	6	1	8	7
1900-1959	2	2	3	5	7	3	2	4	3
2000-2059	2	2	3	3	2	1	3	2	2
2100-2159	2	1	5	2	1	1	0	2	2
2200-2259	0	0	1	1	1	1	1	1	1
2300-2359	1	0	0	1	0	0	1	0	0
TOTALS									
12Hr 7-19	134	125	135	131	169	110	89	139	128
24Hr 0-24	145	133	151	149	186	122	102	153	141
24/12 Fact	1.08	1.06	1.12	1.14	1.10	1.11	1.15	1.10	1.11
AM HR	0900-0959	0800-0859	0800-0859	0800-0859	1100-1159	1000-1059	0900-0959		
PEAK	13	18	15	12	16	14	11		
PM HR	1500-1559	1500-1559	1600-1659	1600-1659	1600-1659	1200-1259	1500-1559		
PEAK	16	17	22	19	20	13	13		



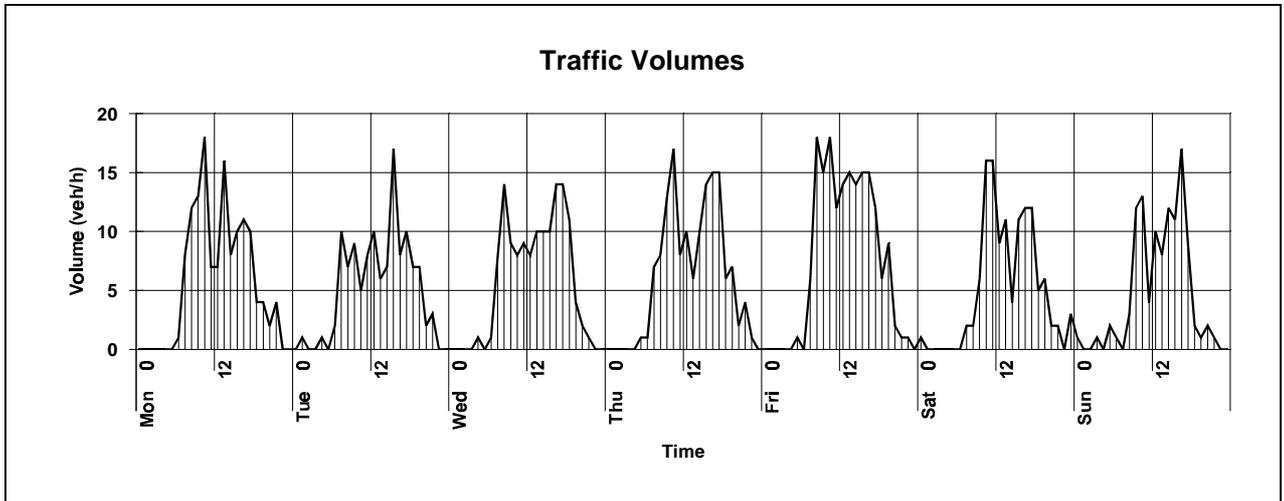
Traffic Survey Traffic Count

Traffic Volume Analysis



Site No: 3897189
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Bennett Road
Direction : Westbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	0	0	1	1	0	0
0100-0159	0	1	0	0	0	0	0	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	0	0	0	0	1	0	0
0400-0459	0	1	1	0	0	0	0	0	0
0500-0559	0	0	0	1	1	0	2	0	1
0600-0659	1	2	1	1	0	0	1	1	1
0700-0759	8	10	8	7	6	2	0	8	6
0800-0859	12	7	14	8	18	2	3	12	9
0900-0959	13	9	9	13	15	6	12	12	11
1000-1059	18	5	8	17	18	16	13	13	14
1100-1159	7	8	9	8	12	16	4	9	9
1200-1259	7	10	8	10	14	9	10	10	10
1300-1359	16	6	10	6	15	11	8	11	10
1400-1459	8	7	10	10	14	4	12	10	9
1500-1559	10	17	10	14	15	11	11	13	13
1600-1659	11	8	14	15	15	12	17	13	13
1700-1759	10	10	14	15	12	12	9	12	12
1800-1859	4	7	11	6	6	5	2	7	6
1900-1959	4	7	4	7	9	6	1	6	5
2000-2059	2	2	2	2	2	2	2	2	2
2100-2159	4	3	1	4	1	2	1	3	2
2200-2259	0	0	0	1	1	0	0	0	0
2300-2359	0	0	0	0	0	3	0	0	0
TOTALS									
12Hr 7-19	124	104	125	129	160	106	101	128	121
24Hr 0-24	135	120	134	145	174	120	110	142	134
24/12 Fact	1.09	1.15	1.07	1.12	1.09	1.13	1.09	1.10	1.10
AM HR	1000-1059	0700-0759	0800-0859	1000-1059	0800-0859	1000-1059	1000-1059		
PEAK	18	10	14	17	18	16	13		
PM HR	1300-1359	1500-1559	1600-1659	1600-1659	1300-1359	1600-1659	1600-1659		
PEAK	16	17	14	15	15	12	17		

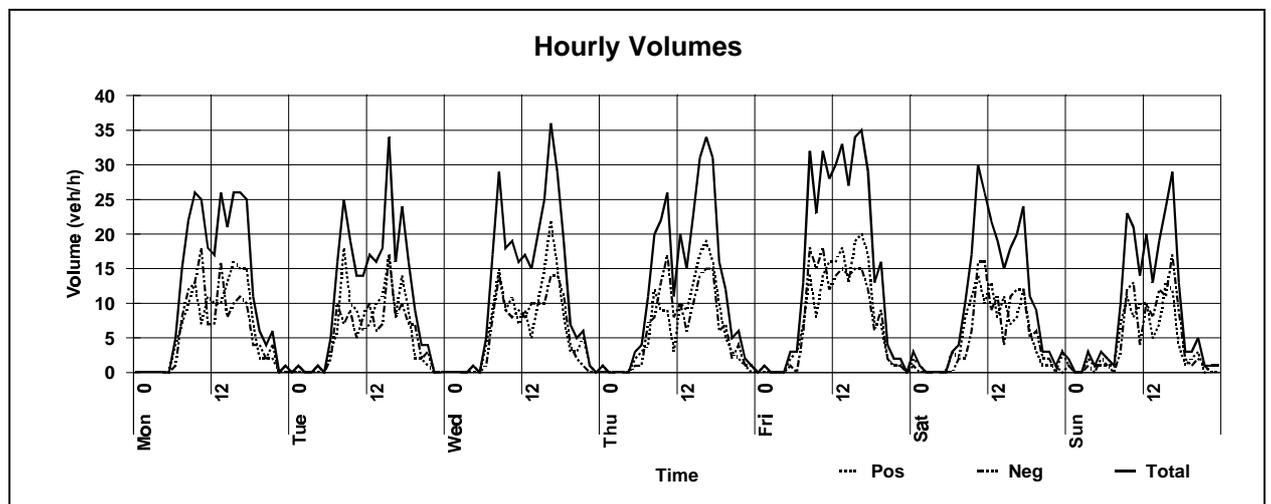


Traffix Survey Traffic Count Traffic Volume Analysis



Site No: 3897189
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Bennett Road
Direction : Eastbound & Westbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	1	0	3	2	0	1
0100-0159	0	1	0	0	1	1	0	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	0	0	0	0	3	0	0
0400-0459	0	1	1	0	0	0	1	0	0
0500-0559	0	0	0	3	3	0	3	1	1
0600-0659	5	5	5	4	3	3	2	4	4
0700-0759	15	16	17	11	13	4	1	14	11
0800-0859	22	25	29	20	32	10	10	26	21
0900-0959	26	19	18	22	23	17	23	22	21
1000-1059	25	14	19	26	32	30	21	23	24
1100-1159	18	14	16	11	28	26	14	17	18
1200-1259	17	17	17	20	30	22	20	20	20
1300-1359	26	16	15	15	33	19	13	21	20
1400-1459	21	18	20	23	27	15	19	22	20
1500-1559	26	34	25	31	34	18	24	30	27
1600-1659	26	16	36	34	35	20	29	29	28
1700-1759	25	24	29	31	29	24	13	28	25
1800-1859	11	16	19	16	13	11	3	15	13
1900-1959	6	9	7	12	16	9	3	10	9
2000-2059	4	4	5	5	4	3	5	4	4
2100-2159	6	4	6	6	2	3	1	5	4
2200-2259	0	0	1	2	2	1	1	1	1
2300-2359	1	0	0	1	0	3	1	0	1
TOTALS									
12Hr 7-19	258	229	260	260	329	216	190	267	249
24Hr 0-24	280	253	285	294	360	242	212	294	275
24/12 Fact	1.09	1.10	1.10	1.13	1.09	1.12	1.12	1.10	1.11
AM HR	0900-0959	0800-0859	0800-0859	1000-1059	0800-0859	1000-1059	0900-0959		
PEAK	26	25	29	26	32	30	23		
PM HR	1300-1359	1500-1559	1600-1659	1600-1659	1600-1659	1700-1759	1600-1659		
PEAK	26	34	36	34	35	24	29		





Traffic Data Collection Services

Traffix Survey Pty Ltd
ABN 57 120 461 510

Address
Suite 8, 431 Burke Road
Glen Iris Victoria 3146

Contact
Telephone 03 9822 2888
Facsimile 03 9822 7444
survey@traffixgroup.com.au
www.traffixgroup.com.au

McGregor Road, Gisborne
Between
Panorama Drive & Coney Court

Prepared for
Traffix Group Pty Ltd

May 2018

Reference: 38971901

TRAFFIC COUNT SUMMARY



McGregor Road, Gisborne At: east of Panorama Dr Between Panorama Drive & Coney Court

CUSTOMER: Traffix Group Pty Ltd
TYPE COUNT: 7 days, Speed Vol Class
DATE START: 24/05/18
TIME START: 0000
DIRECTION-1: Eastbound
COUNTER NO:
CLASSES: 1 - 12

MAP REF: 678 K11
ACTUAL DURATION: 9 days
DATE FINISH: 30/05/18
TIME FINISH: 2300
DIRECTION-2: Westbound
SPEED LIMIT: 80
SPEEDS: All

ALL VEHICLES	Eastbound	Westbound	COMBINED
24 Hour Week Day Average	115	114	229
24 Hour 7 Day Average	110	109	219
A.M. Peak Hour Volume	15	22	32
A.M. Peak Hour	1000-1059	0800-0859	0800-0859
P.M. Peak Hour Volume	21	16	31
P.M. Hour	1700-1759	1400-1459	1700-1759

COMMERCIAL VEHICLE	Eastbound	Westbound	COMBINED
Total Volume	126	109	235
%	16.3%	14.3%	15.3%

SPEEDS	Eastbound % Vol.	Westbound % Vol.	COMBINED % Vol.
>119km/h	0.0	0.0	0.0
>109km/h	0.0	0.0	0.0
>99km/h	0.1	0.0	0.1
>89km/h	0.9	0.8	0.8
>79km/h	5.2	7.6	6.4
>69km/h	20.9	33.9	27.4
>59km/h	54.0	66.1	60.0
>49km/h	83.5	81.5	82.5
>39km/h	96.4	91.9	94.1
>29km/h	98.4	98.6	98.5
>19km/h	99.6	99.9	99.7
85%ile	72.0	75.3	73.9
Mean	60.3	62.4	61.4

Notes

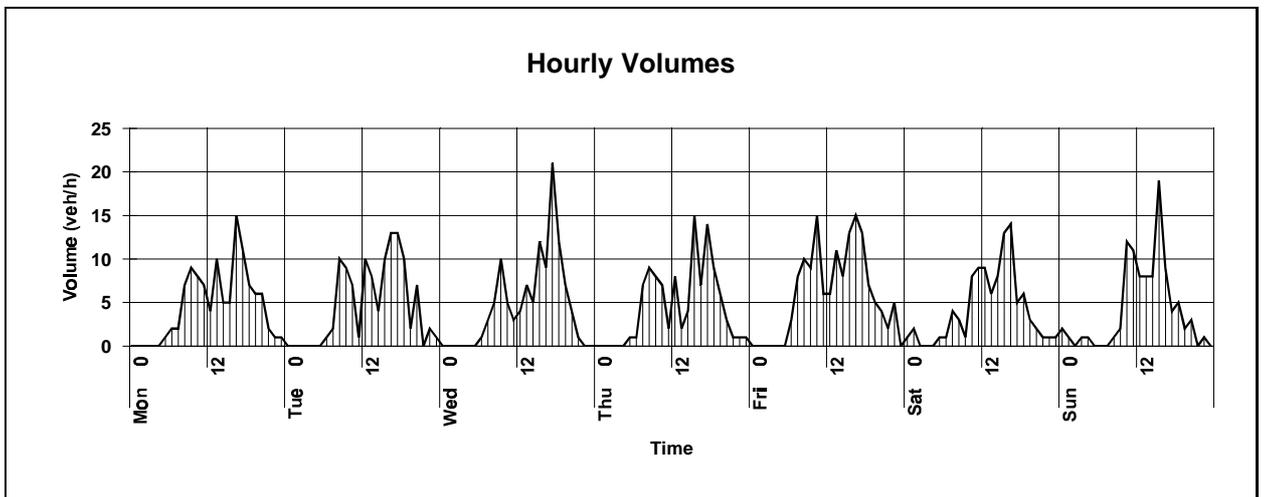
Traffix Survey Traffic Count

Traffic Volume Analysis



Site No: 3897190
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Coney Court
Direction : Eastbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	0	0	1	2	0	0
0100-0159	0	0	0	0	0	2	1	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	0	0	0	0	1	0	0
0400-0459	0	0	0	0	0	0	1	0	0
0500-0559	1	0	0	1	0	1	0	0	0
0600-0659	2	1	1	1	3	1	0	2	1
0700-0759	2	2	3	7	8	4	0	4	4
0800-0859	7	10	5	9	10	3	1	8	6
0900-0959	9	9	10	8	9	1	2	9	7
1000-1059	8	7	5	7	15	8	12	8	9
1100-1159	7	1	3	2	6	9	11	4	6
1200-1259	4	10	4	8	6	9	8	6	7
1300-1359	10	8	7	2	11	6	8	8	7
1400-1459	5	4	5	4	8	8	8	5	6
1500-1559	5	10	12	15	13	13	19	11	12
1600-1659	15	13	9	7	15	14	9	12	12
1700-1759	11	13	21	14	13	5	4	14	12
1800-1859	7	10	12	9	7	6	5	9	8
1900-1959	6	2	7	6	5	3	2	5	4
2000-2059	6	7	4	3	4	2	3	5	4
2100-2159	2	0	1	1	2	1	0	1	1
2200-2259	1	2	0	1	5	1	1	2	2
2300-2359	1	1	0	1	0	1	0	1	1
TOTALS									
12Hr 7-19	90	97	96	92	121	86	87	99	96
24Hr 0-24	109	110	109	106	140	99	98	115	110
24/12 Fact	1.21	1.13	1.14	1.15	1.16	1.15	1.13	1.16	1.15
AM HR	0900-0959	0800-0859	0900-0959	0800-0859	1000-1059	1100-1159	1000-1059		
PEAK	9	10	10	9	15	9	12		
PM HR	1600-1659	1600-1659	1700-1759	1500-1559	1600-1659	1600-1659	1500-1559		
PEAK	15	13	21	15	15	14	19		



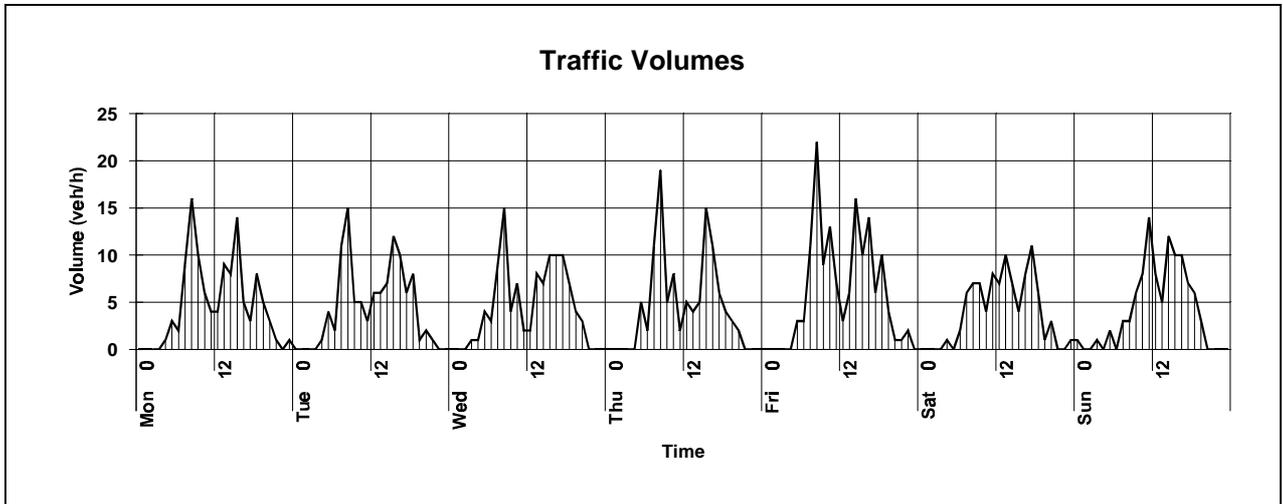
Traffix Survey Traffic Count

Traffic Volume Analysis



Site No: 3897190
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Coney Court
Direction : Westbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	0	0	0	1	0	0
0100-0159	0	0	0	0	0	0	0	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	1	0	0	0	1	0	0
0400-0459	1	1	1	0	0	1	0	1	1
0500-0559	3	4	4	5	3	0	2	4	3
0600-0659	2	2	3	2	3	2	0	2	2
0700-0759	9	11	9	11	11	6	3	10	9
0800-0859	16	15	15	19	22	7	3	17	14
0900-0959	10	5	4	5	9	7	6	7	7
1000-1059	6	5	7	8	13	4	8	8	7
1100-1159	4	3	2	2	7	8	14	4	6
1200-1259	4	6	2	5	3	7	8	4	5
1300-1359	9	6	8	4	6	10	5	7	7
1400-1459	8	7	7	5	16	7	12	9	9
1500-1559	14	12	10	15	10	4	10	12	11
1600-1659	5	10	10	11	14	8	10	10	10
1700-1759	3	6	10	6	6	11	7	6	7
1800-1859	8	8	7	4	10	6	6	7	7
1900-1959	5	1	4	3	4	1	3	3	3
2000-2059	3	2	3	2	1	3	0	2	2
2100-2159	1	1	0	0	1	0	0	1	0
2200-2259	0	0	0	0	2	0	0	0	0
2300-2359	1	0	0	0	0	1	0	0	0
TOTALS									
12Hr 7-19	96	94	91	95	127	85	92	101	97
24Hr 0-24	112	105	107	107	141	93	99	114	109
24/12 Fact	1.17	1.12	1.18	1.13	1.11	1.09	1.08	1.14	1.12
AM HR	0800-0859	0800-0859	0800-0859	0800-0859	0800-0859	1100-1159	1100-1159		
PEAK	16	15	15	19	22	8	14		
PM HR	1500-1559	1500-1559	1500-1559	1500-1559	1400-1459	1700-1759	1400-1459		
PEAK	14	12	10	15	16	11	12		

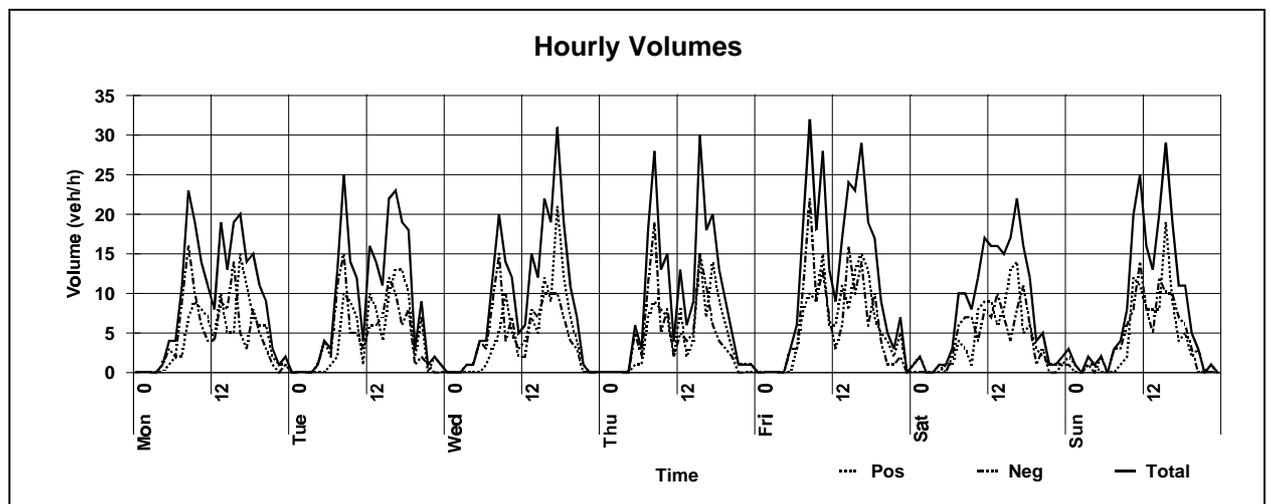


Traffix Survey Traffic Count Traffic Volume Analysis



Site No: 3897190
Site location: McGregor Road, Gisborne
Between : Panorama Drive & Coney Court
Direction : Eastbound & Westbound
Time range: 0000 24/05/18 to 2300 30/05/18
Filters: Class: 1-12, Speeds: All

Date	28/05/18	29/05/18	30/05/18	24/05/18	25/05/18	26/05/18	27/05/18	AVERAGES	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	WEEKDAY	ALL DAYS
Period									
0000-0059	0	0	0	0	0	1	3	0	1
0100-0159	0	0	0	0	0	2	1	0	0
0200-0259	0	0	0	0	0	0	0	0	0
0300-0359	0	0	1	0	0	0	2	0	0
0400-0459	1	1	1	0	0	1	1	1	1
0500-0559	4	4	4	6	3	1	2	4	3
0600-0659	4	3	4	3	6	3	0	4	3
0700-0759	11	13	12	18	19	10	3	15	12
0800-0859	23	25	20	28	32	10	4	26	20
0900-0959	19	14	14	13	18	8	8	16	13
1000-1059	14	12	12	15	28	12	20	16	16
1100-1159	11	4	5	4	13	17	25	7	11
1200-1259	8	16	6	13	9	16	16	10	12
1300-1359	19	14	15	6	17	16	13	14	14
1400-1459	13	11	12	9	24	15	20	14	15
1500-1559	19	22	22	30	23	17	29	23	23
1600-1659	20	23	19	18	29	22	19	22	21
1700-1759	14	19	31	20	19	16	11	21	19
1800-1859	15	18	19	13	17	12	11	16	15
1900-1959	11	3	11	9	9	4	5	9	7
2000-2059	9	9	7	5	5	5	3	7	6
2100-2159	3	1	1	1	3	1	0	2	1
2200-2259	1	2	0	1	7	1	1	2	2
2300-2359	2	1	0	1	0	2	0	1	1
TOTALS									
12Hr 7-19	186	191	187	187	248	171	179	200	193
24Hr 0-24	221	215	216	213	281	192	197	229	219
24/12 Fact	1.19	1.13	1.16	1.14	1.13	1.12	1.10	1.15	1.14
AM HR	0800-0859	0800-0859	0800-0859	0800-0859	0800-0859	1100-1159	1100-1159		
PEAK	23	25	20	28	32	17	25		
PM HR	1600-1659	1600-1659	1700-1759	1500-1559	1600-1659	1600-1659	1500-1559		
PEAK	20	23	31	30	29	22	29		



Appendix B
Turning Movement Counts



23/05/2018	Panorama Drive (North Approach)		McGregor Road (East Approach)		McGregor Road (West Approach)		Total Movements	Hourly Volume
	Left	Right	Right	Through	Through	Left		
16:30	0	0	2	0	0	5	7	44
16:45	5	4	2	0	0	3	14	47
17:00	3	2	1	0	0	5	11	43
17:15	3	3	2	0	0	4	12	38
17:30	5	3	1	0	0	1	10	32
17:45	2	2	3	0	1	2	10	
18:00	2	2	1	0	0	1	6	
18:15	1	2	1	0	0	2	6	
Peak Hour Volumes	16	12	6	0	0	13	47	

4.45-5.45pm (Peak Hour)

24/05/2018								
7:00	1	2	1	0	0	1	5	26
7:15	1	1	3	0	0	0	5	28
7:30	2	1	1	1	0	2	7	34
7:45	1	3	4	1	0	0	9	46
8:00	1	2	2	0	1	1	7	47
8:15	4	2	3	0	0	2	11	
8:30	2	2	8	0	1	6	19	
8:45	2	2	4	0	0	2	10	
Peak Hour Volumes	9	8	17	0	2	11	47	

8-9am (Peak Hour)

Appendix C
Proposed Development Plan





BAR treatments and street lights to be provided for all four proposed intersections onto Bennett Road and McGregor Road. Street light position shown indicatively.

Sheds on 128 Bennett Road to be relocated as necessary.

Roadside swales to terminate at lowpoints in road and allow overland drainage to watercourse. Locations are shown indicatively.

Combined maintenance and and CFA emergency access track adjacent to escarpment. To be detailed under permit application.

30m offset from drainage centreline shown in cyan. Proposed drainage reserve/creek (black) generally follows 30m offset from centreline other than where shown. Existing dams in the drainage line are to be decommissioned. See cross sections A to D on SHEET 4 for details.

Maximum of 6 lots for 134 McGregor Road superlot subject to detailed land capability assessment, avoidance of rock outcrops to maximum extent and setback of building envelopes from the waterway reserve. Building envelopes for all lots to be setback minimum 20m from reserve boundaries.

Indicative proposed road alignment along top of escarpment. See cross section E on SHEET 5.

Culvert crossing of watercourse to be detailed in future engineering design. See cross section F on SHEET 5.

Connection under proposed permit PLN 2018541.

Reserve, maintenance track, lots and building envelopes within 88 Bennett Road are subject to detailed review.

- ### NOTES
- * Contours shown represent approximate existing surface.
 - * Contour interval 1m.
 - * Road alignment to be clarified under permit application.
 - * Drainage line/creek only flows during periods of heavy rainfall.
 - * Drainage reserve to be vested in council is standard 60m wide and approx 30m from centreline and wider where shown.
 - * Dams in watercourse are to be decommissioned. All other dams are to be considered at subdivision stage for any decommissioning.
 - * Illustrative lots are shown as indicative only. Boundaries to be confirmed.
 - * Minimum 2ha lot sizes for entire precinct.
 - * Lots to be fully detailed under permit application.
 - * Pedestrian paths along watercourse - see landscape plan. To be determined under permit applications at time of subdivision.
 - * Staging of development proposed from the north-west.
 - * See Servicing and Utilities Infrastructure Report for details on servicing and infrastructure provision to development sites. It outlines that all infrastructure cost within and adjoining development parcels and any required extension of roads and other infrastructure is to be borne by each development parcel.
 - * Lot yield and lot configuration of 94 McGregor Road to be subject to detailed review.
 - * Original sheet size is A1.

BUILDING ENVELOPES

RECOMMENDED SETBACKS FOR LOTS

Front/road setback = 30m
 Side/rear setback = 10m
 Drainage line buffer setback = 20m

*** Envelopes shown are for areas flatter than 1 in 6 grade to address the most sensitive land adjacent to the drainage line.**

* Envelope areas are shown in brackets.

- ### LEGEND
- Trees within road reserve
 - Indicative rock outcrops
 - Dwelling
 - Outbuilding
 - Dam
 - Drainage line
 - Building envelope (only illustrated adjacent to drainage line)
 - Drainage line escarpment: low to moderate slope
 - Drainage line escarpment: greater slope
 - Drainage line buffer (30m as shown)
 - CFA and maintenance track
 - Rural pedestrian path/bike track
 - Existing titles
 - BAR (Basic Right-Turn) Treatment
 - Indicative drainage outfall location
 - Proposed street light at intersection

SITE AREA AND YIELD

SUBDIVISION CONCEPT SITE	AREA	LOTS
88 Bennett Road	16.2ha	6
128 Bennett Road	25.8ha	12
168 Bennett Road	16.6ha	8
15 McGregor Road	11.1ha	5
94 McGregor Road	31.9ha	12
134 McGregor Road	27.7ha	10
TOTAL	129.3ha	53

Subdivision Concept Development Plan and Subdivision Concept commissioned by 128 & 168 Bennett Road, and 134 McGregor Road. A concept for the remaining area is provided as sought by DP018 (as shown dashed).

Bennett Road Development Plan: Subdivision Concept Plan

Ver	Revision Description	Date	Checked	Approved
23	Minor Amendments	22/09/2021	J.Sens	P.Bove
22	Addressed Council Feedback	25/06/2021	J.Sens	P.Bove
21	Minor Amendments	29/07/2020	J.Sens	P.Bove
20	Addressed Council Feedback	21/07/2020	J.Sens	P.Bove
19	Amended Notations	21/02/2020	J.Sens	P.Bove
18	Amended Notations and Layout	13/12/2019	J.Sens	P.Bove
17	Amended Drainage Line Details	25/10/2019	J.Sens	P.Bove

Notes/Legend

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Scale (m) 1:14,000

All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A1)

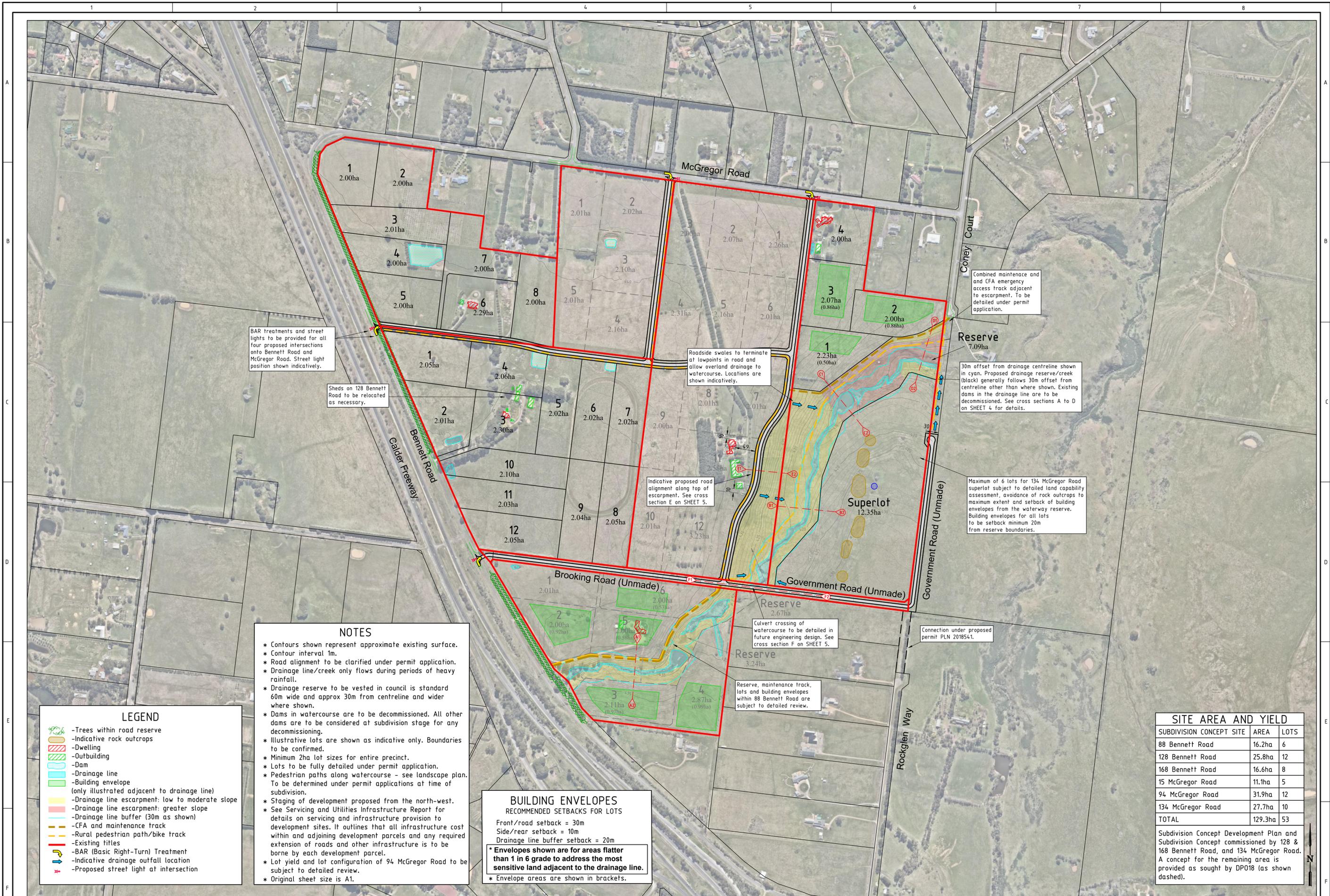
Drawing file: LTO Ref: 17085 Concept V23.dwg

Macedon Ranges Shire Council - Gisborne

Bennett Road Precinct

Council Ref: - Water Auth. Ref: - Our Ref: 17085 Version: 23 Sheet: 1 of 6

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BAR treatments and street lights to be provided for all four proposed intersections onto Bennett Road and McGregor Road. Street light position shown indicatively.

Sheds on 128 Bennett Road to be relocated as necessary.

Roadside swales to terminate at lowpoints in road and allow overland drainage to watercourse. Locations are shown indicatively.

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30m offset from drainage centreline shown in cyan. Proposed drainage reserve/creek (black) generally follows 30m offset from centreline other than where shown. Existing dams in the drainage line are to be decommissioned. See cross sections A to D on SHEET 4 for details.

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- * Illustrative lots are shown as indicative only. Boundaries to be confirmed.
- * Minimum 2ha lot sizes for entire precinct.
- * Lots to be fully detailed under permit application.
- * Pedestrian paths along watercourse - see landscape plan. To be determined under permit applications at time of subdivision.
- * Staging of development proposed from the north-west.
- * See Servicing and Utilities Infrastructure Report for details on servicing and infrastructure provision to development sites. It outlines that all infrastructure cost within and adjoining development parcels and any required extension of roads and other infrastructure is to be borne by each development parcel.
- * Lot yield and lot configuration of 94 McGregor Road to be subject to detailed review.
- * Original sheet size is A1.

BUILDING ENVELOPES
RECOMMENDED SETBACKS FOR LOTS

Front/road setback = 30m
Side/rear setback = 10m
Drainage line buffer setback = 20m
*** Envelopes shown are for areas flatter than 1 in 6 grade to address the most sensitive land adjacent to the drainage line.**
* Envelope areas are shown in brackets.

LEGEND

- Trees within road reserve
- Indicative rock outcrops
- Dwelling
- Outbuilding
- Dam
- Drainage line
- Building envelope (only illustrated adjacent to drainage line)
- Drainage line escarpment: low to moderate slope
- Drainage line escarpment: greater slope
- Drainage line buffer (30m as shown)
- CFA and maintenance track
- Rural pedestrian path/bike track
- Existing titles
- BAR (Basic Right-Turn) Treatment
- Indicative drainage outfall location
- Proposed street light at intersection

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SUBDIVISION CONCEPT SITE	AREA	LOTS
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94 McGregor Road	31.9ha	12
134 McGregor Road	27.7ha	10
TOTAL	129.3ha	53

Subdivision Concept Development Plan and Subdivision Concept commissioned by 128 & 168 Bennett Road, and 134 McGregor Road. A concept for the remaining area is provided as sought by DP018 (as shown dashed).

Bennett Road Development Plan: Subdivision Concept Plan with Aerial

Ver	Revision Description	Date	Checked	Approved
23	Minor Amendments	22/09/2021	Drafted	
22	Addressed Council Feedback	25/06/2021	Checked	
21	Minor Amendments	29/07/2020	J.Sens	
20	Addressed Council Feedback	21/07/2020	P.Bove	
19	Amended Notations	21/07/2020	Approved	
18	Amended Notations and Layout	13/12/2019		
17	Amended Drainage Line Details	25/10/2019		

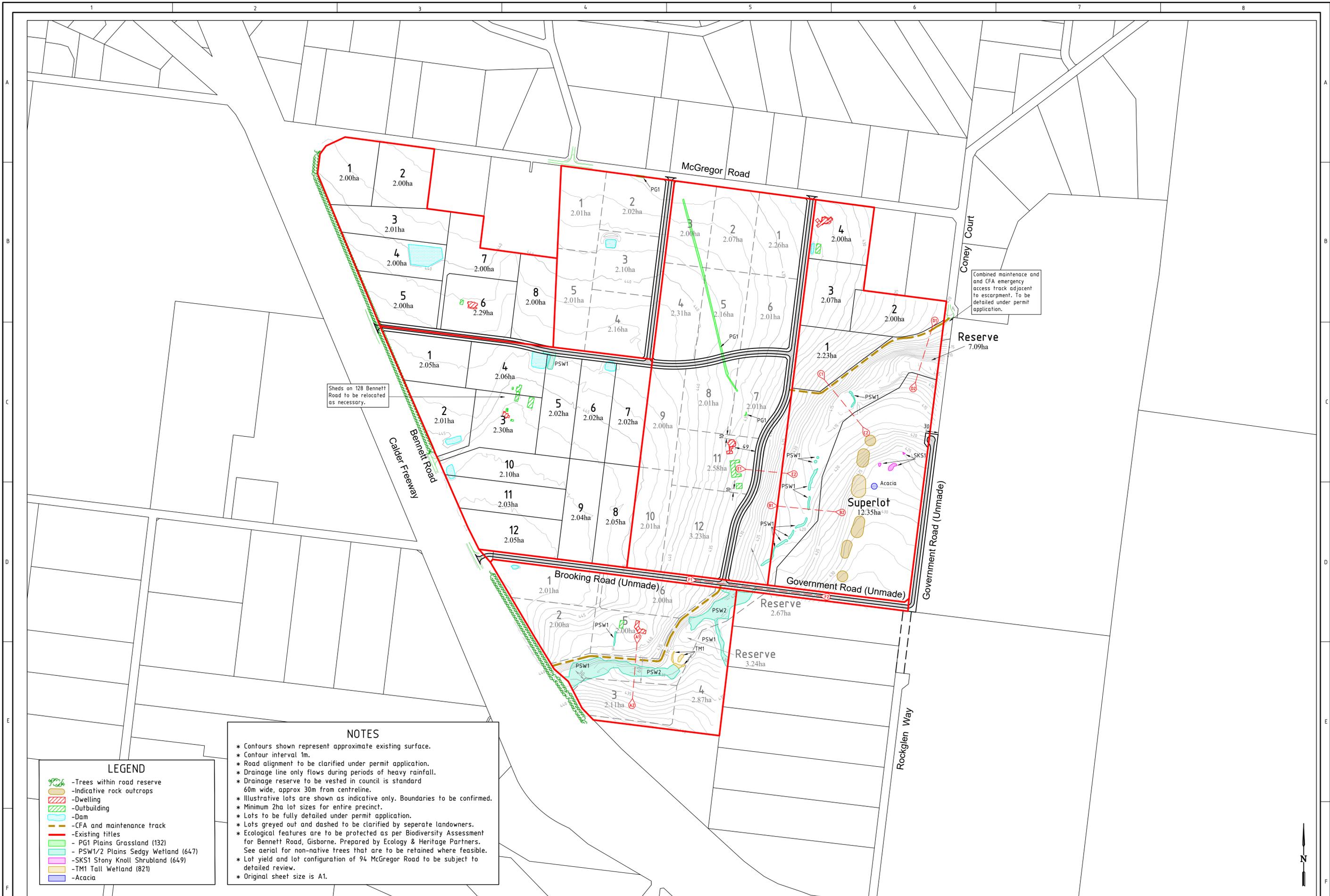
Notes/Legend

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Scale (m) 1:14,000
All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A1)

Macedon Ranges Shire Council - Gisborne						
Bennett Road Precinct						
Drawing file:	LTO Ref:	Council Ref:	Water Auth. Ref:	Our Ref:	Version	Sheet
17085 Concept V23.dwg	-	-	-	17085	23	2 of 6



Sheds on 128 Bennett Road to be relocated as necessary.

Combined maintenance and CFA emergency access track adjacent to escarpment. To be detailed under permit application.

NOTES

- * Contours shown represent approximate existing surface.
- * Contour interval 1m.
- * Road alignment to be clarified under permit application.
- * Drainage line only flows during periods of heavy rainfall.
- * Drainage reserve to be vested in council is standard 60m wide, approx 30m from centreline.
- * Illustrative lots are shown as indicative only. Boundaries to be confirmed.
- * Minimum 2ha lot sizes for entire precinct.
- * Lots to be fully detailed under permit application.
- * Lots greyed out and dashed to be clarified by separate landowners.
- * Ecological features are to be protected as per Biodiversity Assessment for Bennett Road, Gisborne. Prepared by Ecology & Heritage Partners. See aerial for non-native trees that are to be retained where feasible.
- * Lot yield and lot configuration of 94 McGregor Road to be subject to detailed review.
- * Original sheet size is A1.

LEGEND

- Trees within road reserve
- Indicative rock outcrops
- Dwelling
- Outbuilding
- Dam
- CFA and maintenance track
- Existing titles
- PG1 Plains Grassland (132)
- PSW1/2 Plains Sedgy Wetland (647)
- SKS1 Stony Knoll Shrubland (649)
- TM1 Tall Wetland (821)
- Acacia

Bennett Road Development Plan: Subdivision Concept Plan with Ecological Features

Ver	Revision Description	Date	Checked	Approved
23	Minor Amendments	22/09/2021	Drafted	
22	Addressed Council Feedback	25/06/2021	J.Sens	P.Bowe
21	Minor Amendments	29/07/2020	Sep 2021	Sep 2021
20	Addressed Council Feedback	21/07/2020		
19	Amended Notations	21/02/2020		
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17	Amended Drainage Line Details	25/10/2019		

Notes/Legend

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Scale (m) 1:14,000

All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A1)

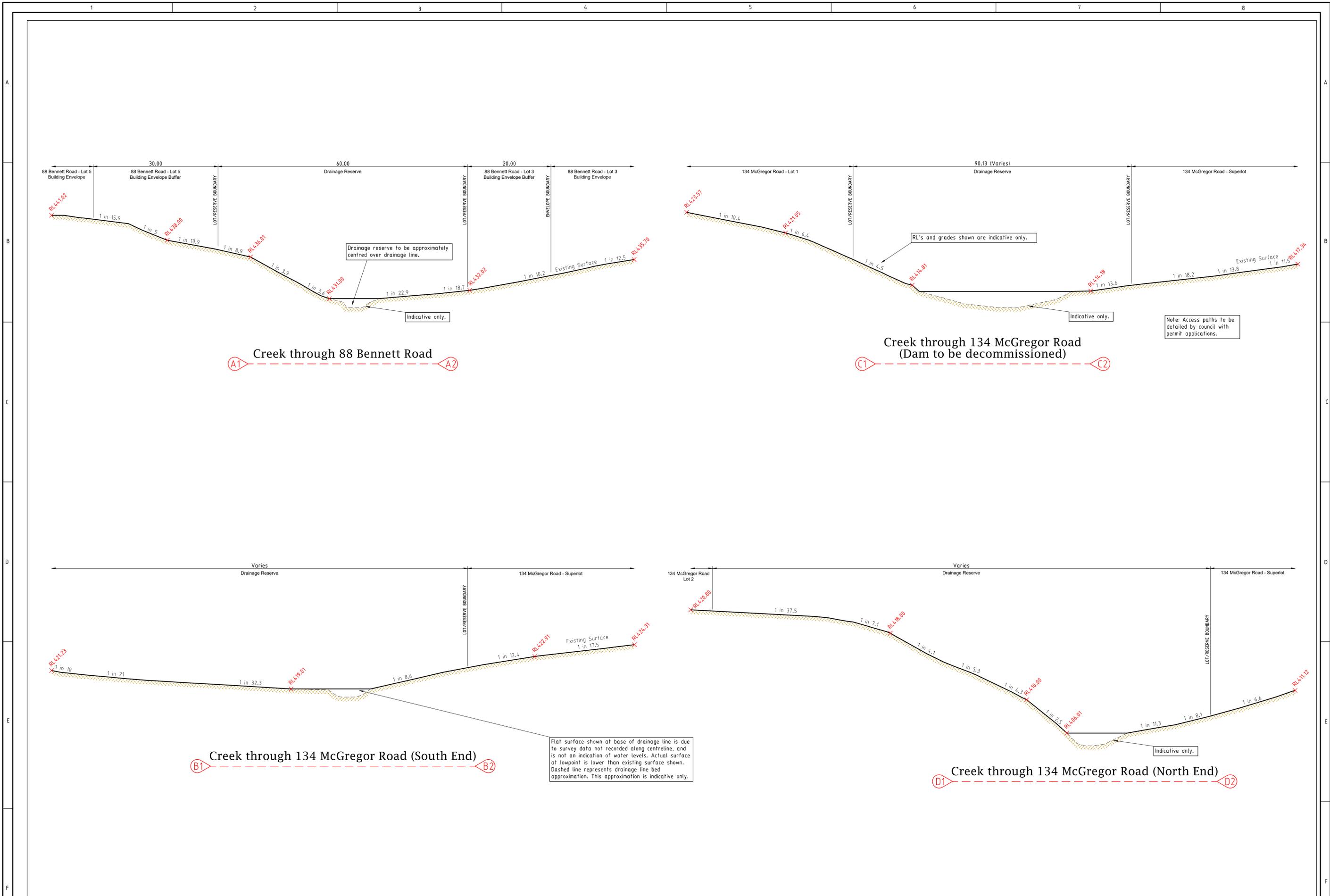
Drawing file: 17085 Concept V23.dwg

Macedon Ranges Shire Council - Gisborne

Bennett Road Precinct

Council Ref: - Water Auth. Ref: - Our Ref: 17085 Version: 23 Sheet: 3 of 6

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Bennett Road Development Plan: Drainage Line Cross Sections

Ver	Revision Description	Date	Checked	Checked Date
23	Minor Amendments	22/09/2021	Drafted	J.Sens
22	Addressed Council Feedback	25/06/2021	Checked	P.Bowe
21	Minor Amendments	29/07/2020	Approved	Sep 2021
20	Addressed Council Feedback	21/07/2020		
19	Amended Notations	21/02/2020		
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Notes/Legend

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Scale (m)

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V 12000 0	4

All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A0)

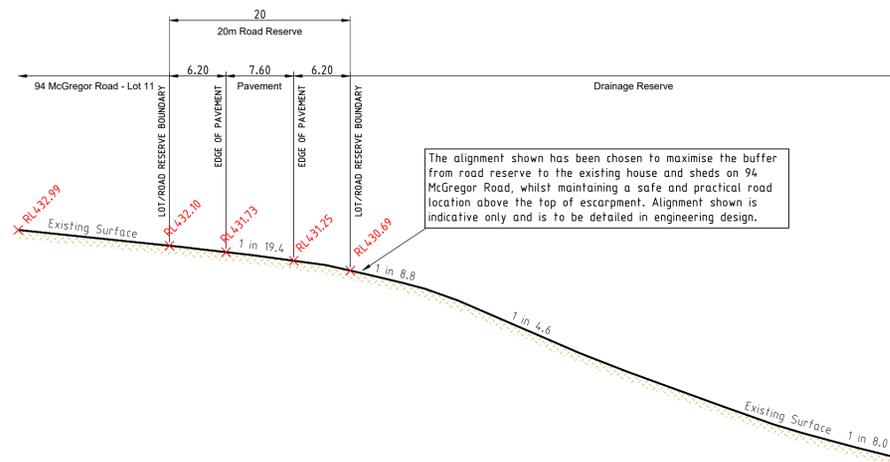
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Macedon Ranges Shire Council - Gisborne

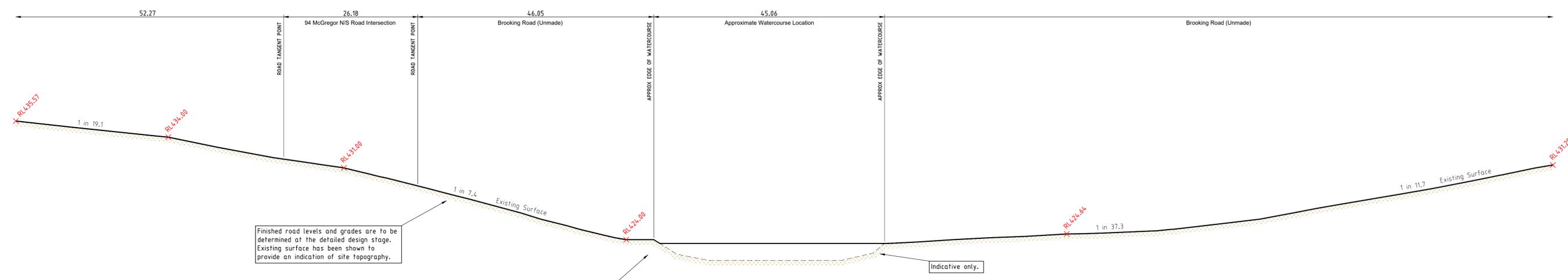
Bennett Road Precinct

Council Ref:	Water Auth. Ref:	Our Ref:	Version	Sheet
-	-	17085	23	4 of 6

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Road Alignment in 94 McGregor Road Cross Section



Culvert Crossing of Watercourse Longitudinal Section

Bennett Road Development Plan: Road Sections

Ver	Revision Description	Date
23	Minor Amendments	22/09/2021
22	Addressed Council Feedback	25/06/2021
21	Minor Amendments	29/07/2020
20	Addressed Council Feedback	21/07/2020
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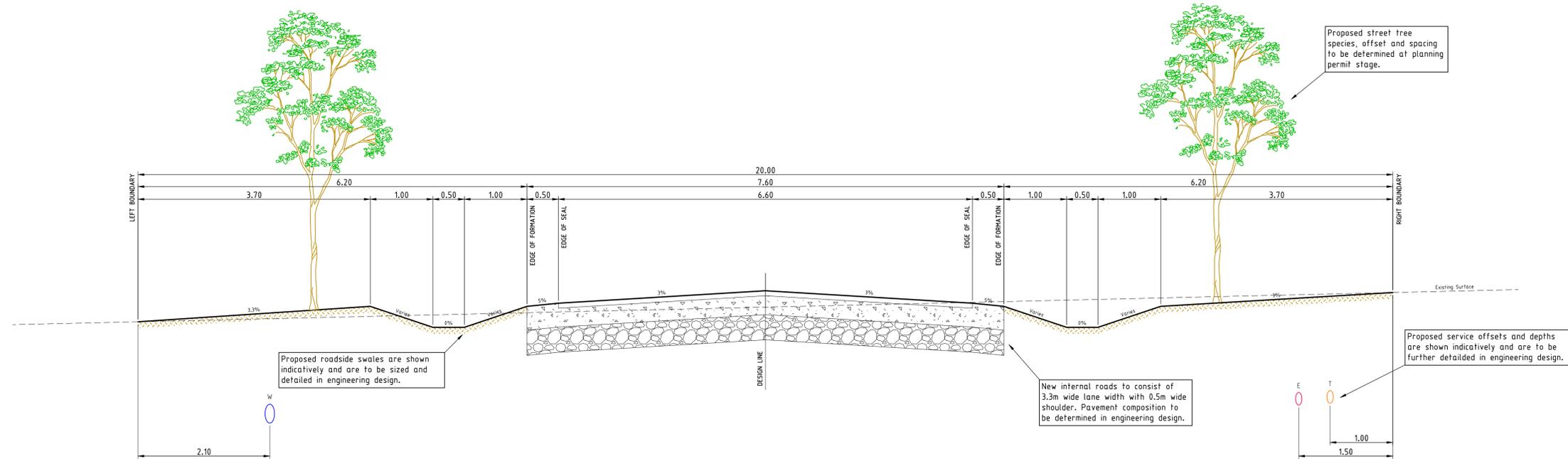
Notes/Legend
Drafted J.Sent Sep 2021
Checked P.Bowe Sep 2021
Approved

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All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A3)		Bennett Road Precinct
Drawing file:	LTO Ref:	Council Ref:
17085 Concept V23.dwg	-	-
Water Auth. Ref:	Our Ref:	Version
-	17085	23
Sheet	5 of 6	

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Typical Cross Section - Internal Roads

Bennett Road Development Plan: Typical Road Cross Sections

Ver	Revision Description	Date	Drafted J.Sens Sep 2021	Checked P.Bowe Sep 2021	Approved
23	Minor Amendments	22/09/2021			
22	Addressed Council Feedback	25/06/2021			
21	Minor Amendments	29/07/2020			
20	Addressed Council Feedback	21/07/2020			
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Notes/Legend

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V 1:20 0 0.2 0.4
All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file: 17085 Concept V23.dwg
LTO Ref: -
Council Ref: -
Water Auth. Ref: -
Our Ref: 17085
Version: 23
Sheet: 6 of 6

Macedon Ranges Shire Council - Gisborne
Bennett Road Precinct

Printed: 2021-10-11 9:50:08

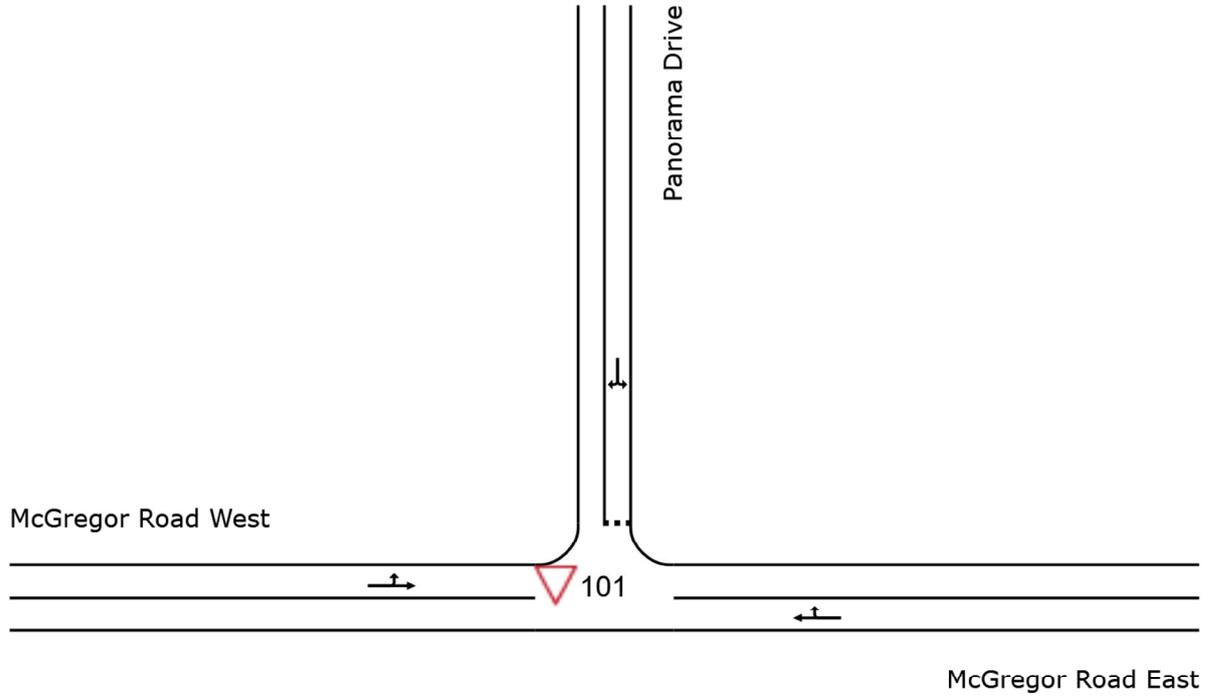
Appendix D
Post Development SIDRA Summary
Panorama Drive/McGregor Road



SITE LAYOUT

▽ Site: 101 [Panorama Drive/McGregor Road AM Peak]

Post Development AM Peak
Site Category: (None)
Giveaway / Yield (Two-Way)



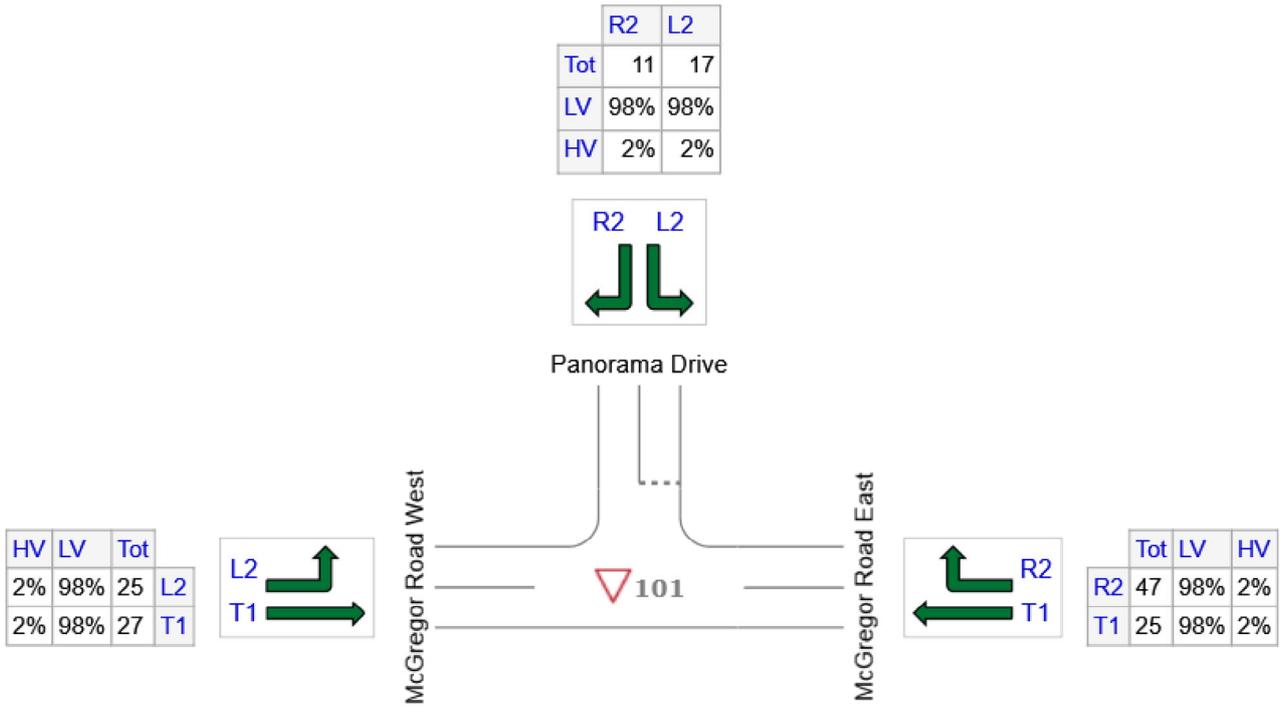
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 101 [Panorama Drive/McGregor Road AM Peak]

Post Development AM Peak
 Site Category: (None)
 Giveway / Yield (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: McGregor Road East	72	71	1
N: Panorama Drive	28	27	1
W: McGregor Road West	52	51	1
Total	152	149	3

MOVEMENT SUMMARY

Site: 101 [Panorama Drive/McGregor Road AM Peak]

Post Development AM Peak
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: McGregor Road East												
5	T1	26	2.0	0.043	0.1	LOS A	0.2	1.4	0.14	0.41	0.14	87.1
6	R2	49	2.0	0.043	7.6	LOS A	0.2	1.4	0.14	0.41	0.14	77.1
Approach		76	2.0	0.043	5.0	NA	0.2	1.4	0.14	0.41	0.14	80.3
North: Panorama Drive												
7	L2	18	2.0	0.021	7.1	LOS A	0.1	0.5	0.09	0.61	0.09	64.5
9	R2	12	2.0	0.021	7.0	LOS A	0.1	0.5	0.09	0.61	0.09	63.9
Approach		29	2.0	0.021	7.0	LOS A	0.1	0.5	0.09	0.61	0.09	64.2
West: McGregor Road West												
10	L2	26	2.0	0.029	7.9	LOS A	0.0	0.0	0.00	0.33	0.00	80.3
11	T1	28	2.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	90.6
Approach		55	2.0	0.029	3.8	NA	0.0	0.0	0.00	0.33	0.00	85.3
All Vehicles		160	2.0	0.043	5.0	NA	0.2	1.4	0.08	0.42	0.08	78.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

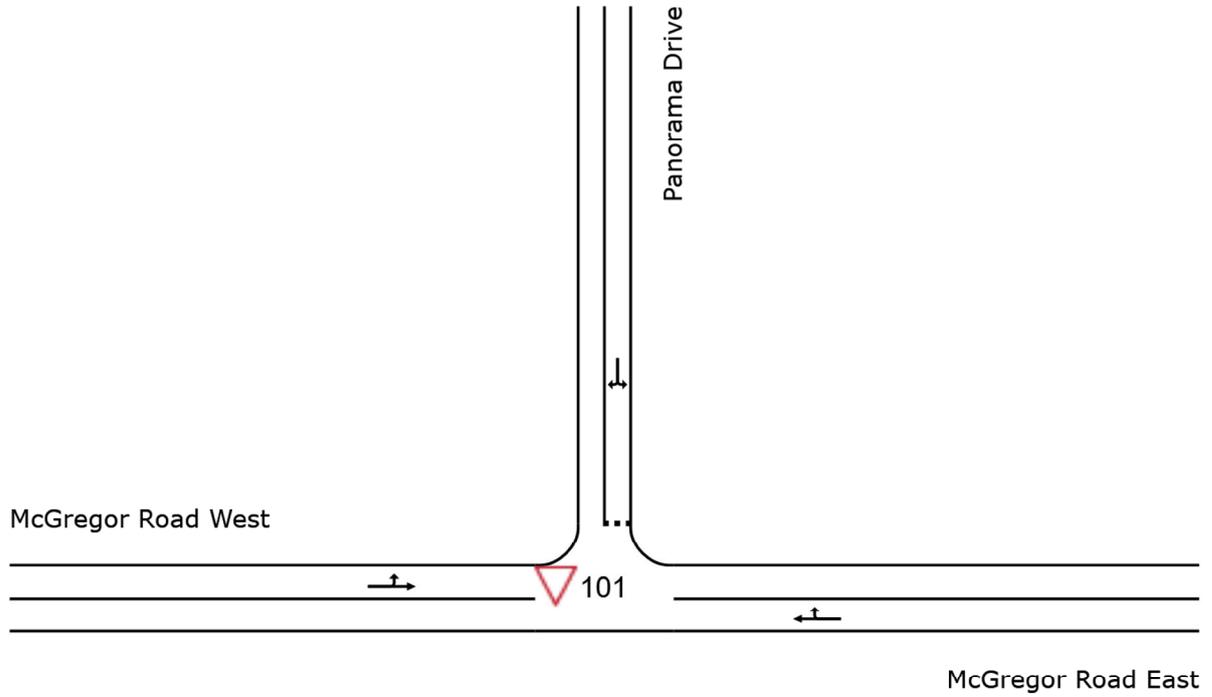
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

▽ Site: 101 [Panorama Drive/McGregor Road PM Peak]

Post Development PM Peak
Site Category: (None)
Giveaway / Yield (Two-Way)



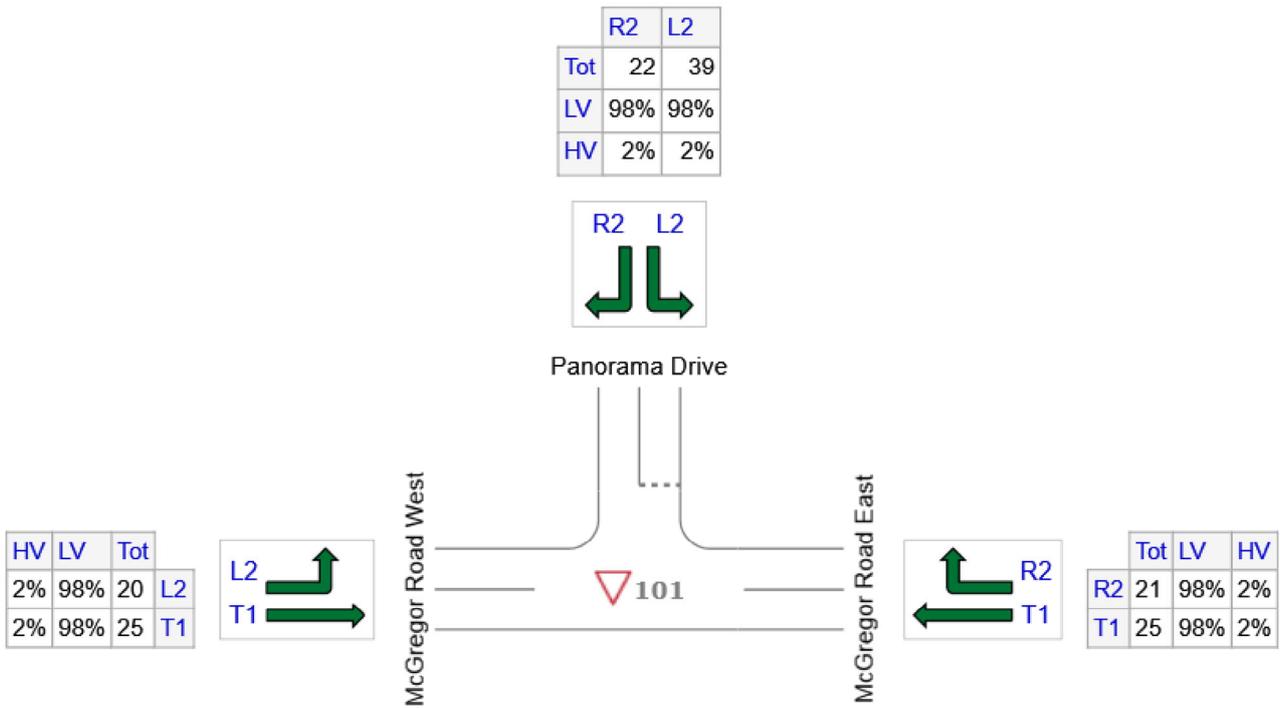
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 101 [Panorama Drive/McGregor Road PM Peak]

Post Development PM Peak
 Site Category: (None)
 Giveway / Yield (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: McGregor Road East	46	45	1
N: Panorama Drive	61	60	1
W: McGregor Road West	45	44	1
Total	152	149	3

MOVEMENT SUMMARY

Site: 101 [Panorama Drive/McGregor Road PM Peak]

Post Development PM Peak
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: McGregor Road East												
5	T1	26	2.0	0.027	0.1	LOS A	0.1	0.8	0.11	0.29	0.11	90.4
6	R2	22	2.0	0.027	7.6	LOS A	0.1	0.8	0.11	0.29	0.11	79.7
Approach		48	2.0	0.027	3.5	NA	0.1	0.8	0.11	0.29	0.11	85.2
North: Panorama Drive												
7	L2	41	2.0	0.045	7.1	LOS A	0.2	1.2	0.09	0.61	0.09	64.4
9	R2	23	2.0	0.045	6.9	LOS A	0.2	1.2	0.09	0.61	0.09	63.9
Approach		64	2.0	0.045	7.0	LOS A	0.2	1.2	0.09	0.61	0.09	64.2
West: McGregor Road West												
10	L2	21	2.0	0.025	7.9	LOS A	0.0	0.0	0.00	0.30	0.00	80.8
11	T1	26	2.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	91.3
Approach		47	2.0	0.025	3.5	NA	0.0	0.0	0.00	0.30	0.00	86.3
All Vehicles		160	2.0	0.045	4.9	NA	0.2	1.2	0.07	0.42	0.07	75.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.