Grange Road, Warrnambool Development Plan Report

Rodger Constructions
December 2005

EarthTech

Contents

1 Introduction

Earth Tech has been engaged by Rodger Constructions to prepare a Development Plan (DP) for undeveloped land located within the Development Plan Overlay Schedule 1 (DPO1), west of Mortlake Rd, Warrnambool.

This report accompanies the DP and describes the area covered by the DP, its key influences, development features and how it responds to the objectives and principles of the Warrnambool Planning Scheme.

Our client owns part of the land within the study area and has prepared this DP to facilitate its development. Following the submission of the DP, planning permit applications will be lodged for its subdivision.

The DPO1 applies to land only included within the Residential 1 Zone (R1Z) and it is to this land only that this DP applies. The DP has been developed, however, cognisant of the Rural Zone (RUZ) and Urban Floodway Zone (UFZ) land adjacent to the Merri River which is likely to be ultimately rezoned for residential development. To this end the DP considers the development of all the land in this area with the detail provided for land within the R1Z/DPO1 and indicative networks shown for the RUZ land.

We seek approval of this DP in accordance with Clause 43.01 of the Warrnambool Planning Scheme.

2 DP area

As shown in Figure 1 below, the DPO1 applies to parts of the following properties:

- 13 Turner Drive
- 159 Mortlake Rd
- 161 Mortlake Rd
- 165 Mortlake Rd
- 167 Mortlake Rd
- 169 Mortlake Rd
- 171 Mortlake Rd
- 173 Mortlake Rd
- 175 Mortlake Rd
- 181 Mortlake Rd

This land is all included within the R1Z.

If rezoned to R1Z a future DP will be required for the remainder of these land parcels currently included within the RUZ and UFZ (as indicated in Figure 1).

As noted previously, the detail for land currently within the R1Z/DPO1 is the subject of this DP, though it has been developed cognisant of the opportunities and constraints of the RUZ/UFZ land.

Our client owns the two northern most parcels adjoining Grange Rd – 175 and 181 Mortlake Rd.

All landholders in the study area have been informed of the preparation of the DP and provided with a copy, although none have provided any input to this time.

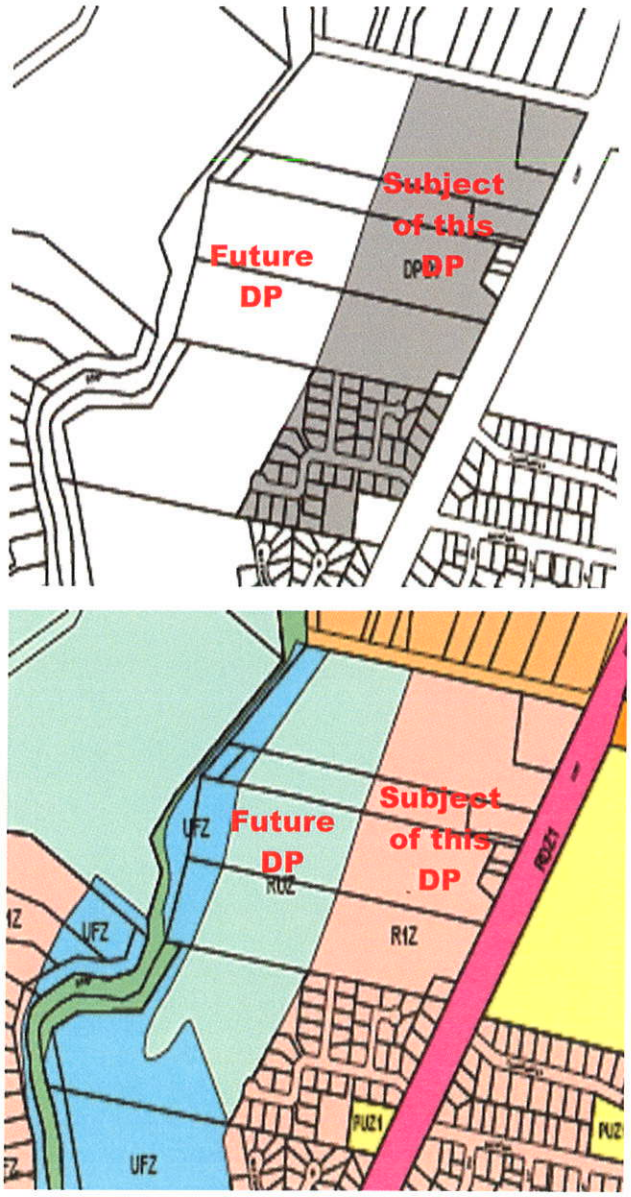


Figure 1 – DP areas

The planning process by which the land is to be developed and has been discussed with Council is:

- Preparation of DP for land included in DPO1.
- 2 lot re-subdivision of client's land in line with current zone boundaries.

- Residential subdivision of client's R1Z land.
- Rezoning of RUZ land to R1Z with a Significant Landscape Overlay along the Merri River.
- Residential subdivision of remainder of clients land.

It is noted that the middle three processes are likely to overlap and run concurrently, as will the first two . It is not proposed to apply for subdivision permits for any land other than 175 and 181 Mortlake Rd.

Section 1: Background

3 Area characteristics

The site analysis plan and aerial photo are included as Attachments A. The following key observations are made:

3.1 DP area (R1Z/DPO1 land)

- The DP area has an approximate area of 10.44ha. This includes a small section of land accessed from Turner Dr which, practically, has greater relevance to the future DP (RUZ land) area. Four dwellings are located within the DP area.
- Hopkins Hwy (Mortlake Rd) forms the eastern boundary. Many of the existing dwellings gain informal access directly from this road.
- Grange Rd forms the northern boundary, primarily providing access to the rural living lots to its north and our clients land.
- The western DP boundary is the R1Z/DPO1 boundary and does not appear strongly linked to any slope gradient changes.
- Vegetation is generally exotic and restricted to property boundaries and gardens.
- The land is flat and used for basic grazing purposes.
- Contains western views towards the Merri River.

3.2 Future DP area (RUZ/UFZ land)

- The broader DP area (R1Z, RUZ and UFZ land) has an approximate area of 25.6 hectares in area, and contains 8 dwellings.
- The Merri River forms the site's western boundary. This section of the river is constrained by flooding issues which severely affect southern parcels of the DP area.
- The DP area contains 2 large sections which are zoned both R1Z and RUZ and a small section along the river which is zoned UFZ.
- The site is significantly graded along its western edge, sometimes more than 20%, with the high slope running downwards towards the Merri River. The remainder of the site is relatively flat.

- The site contains aesthetically impressive landscapes to and along the Merri River.
- Vegetation across the area is generally exotic and restricted to the northern and north eastern edges of the area, the Merri River and existing dwellings.

3.3 Surrounds

- Land to the south is developed for residential purposes. This development, including Turner Dve and Veronica Crt, is of a curvilinear design and reflective of 1980/90s design principles. Typical of development of this period, there are few road or open space connections provided for the DP study area, with the exception of a north-south link from Turner Dve.
- All development south of the study area that fronts Mortlake Rd is provided access via a service road within the Mortlake Rd reserve. A footpath is generally also provided along this frontage.
- Land east of Mortlake Rd is also developed for residential purposes and though of a similar development period, adopts a slightly more grid like structure which affords greater connectivity options.
- Lots north of Grange Rd are low density in nature, with a general area of 2-3 acres. Dwellings are generally well setback from Grange Rd with landscaped gardens. Development patterns are similar west of Merri River.
- Some nearby land appears to be used for rural purposes, with a mixture of cropping, grazing and agistment evident.
- Nearby community facilities include St James Park, CBC Oval, Botanical Gardens, St Josephs Primary School, Warrnambool College, and the Racecourse.

4 Planning & Council policies

This section of the report briefly outlines key planning and Council policies that influence the DP.

4.1 Warrnambool Planning Scheme

4.1.1 State Planning Policy Framework

Relevant objectives of the State Planning Policy Framework include, inter alia:

- Planning for new areas includes a mix of housing types.
- New development should contribute to community and cultural life by improving safety, diversity, choice, the

quality of living and working environments, accessibility and inclusiveness and environmental sustainability.

- Require development to respond to its context in terms of urban character, cultural heritage, natural features, surrounding landscape and climate.
- Ensure urban open space provides for nature conservation, recreation and play, formal and informal sport, social interaction and peace and solitude.
- Improve road networks to integrate open space and urban design principles.
- Give more priority to walking and cycling in planning urban development and encourage walking and cycling by creating environments that are safe and attractive.
- Developing high quality pedestrian environments that are accessible to footpath bound vehicles such as wheelchairs, prams and scooters.
- To facilitate sustainable development that takes full advantage of existing settlement patterns, and investment in transport and communication, water and sewerage and social facilities.
- Ensure sensitive landscape areas are protected and new development does not detract from their natural quality.
- Ensure development recognises distinctive urban forms and layout and their relationship to landscape and vegetation.
- Improve community safety and encourage neighbourhood design that makes people feel safe by:
    - Ensuring the design of buildings, public spaces and the mix of activities contribute to safety and perceptions of safety.
    - Supporting initiatives that provide safer walking and cycling routes and improved safety for people using public transport.
- Improve the quality and distribution of open space and ensure long-term protection of public open space by:
    - Ensuring land identified as critical to the completion of open space links is transferred for open space purposes.
    - Ensuring public access is not prevented by developments along stream banks and facilities.

4.1.2 Municipal Strategic Statement

Clause 21.06 'Environment' identifies the Merri River as a significant natural ecosystem which needs to be protected. Key policies include:

- Identifying, protecting and enhancing natural environments including coastal systems - particularly the cliffs and primary dune systems, and the Hopkins and Merri Rivers.
- Recognising and preventing the degradation of scenic landscapes especially along the coast, river valleys and inland ridge lines.
- Improving public access to the rivers and coast at appropriate locations.
- Protecting water quality by preventing urban run-off leading to erosion, siltation or degradation of waterways.
- Maintaining the integrity of the existing urban floodways and identifying new floodway areas outside the urban area.

Clause 22.01-3 'Urban Floodway Local Policy' seeks to protect and maintain areas which are prone to significant flooding. Key policies include:

- Pursuant to Clause 37.03-3, the subdivision of land partly in the Urban Floodway Zone, and partly in any other zone will be controlled by the provisions of the other zone. Each new lot created must be suitable for the purposes of a dwelling to the satisfaction of the responsible authority.
- In areas subject to flooding, it is policy that as first preference no fill will be allowed. Fill under a designated building footprint, outside a building footprint or for safe and proper access to and from the site, will be discouraged.

4.1.3 Zones

The land within the DPO1, and therefore to which this DP applies, is included only within the R1Z.

The objectives of the R1Z include:

- To provide for residential development at a range of densities with a variety of dwellings to meet the housing needs of all households.
- To encourage residential development that respects the neighbourhood character of specific areas.
- In appropriate locations, to allow educational, recreational, religious, community and a limited range of other non-residential uses to serve local community needs.

A planning permit is required to subdivide land.

An indicative layout has been provided for the remainder of the area which is currently included within the RUZ and UFZ.

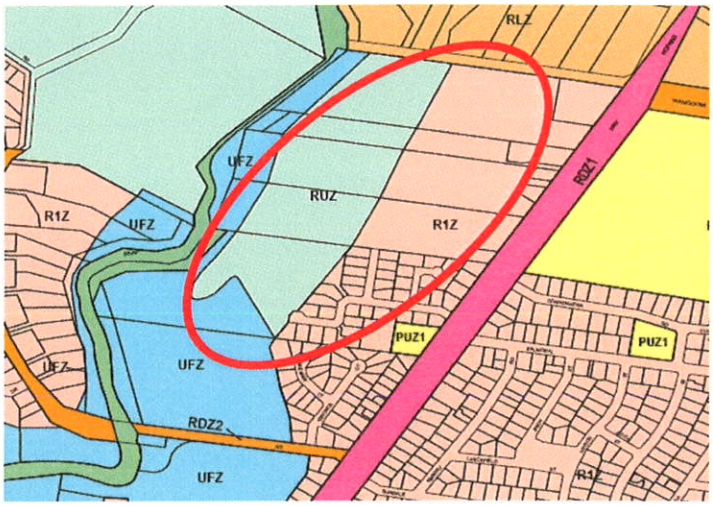


Figure 2– Zone map

The objectives of the RUZ include:

- To provide for the sustainable use of land for extensive animal husbandry (including dairying and grazing) and Crop raising (including Horticulture and Timber production).
- To ensure that subdivision promotes effective land management practices and infrastructure provision.
- To encourage:
    - An integrated approach to land management.
    - Protection and creation of an effective rural infrastructure and land resource.
    - Improvement of existing agricultural technique.

The objectives of the UFZ include:

- To identify waterways, major floodpaths, drainage depressions and high hazard areas within urban areas which have the greatest risk and frequency of being affected by flooding.
- To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.
- To protect water quality and waterways as natural resources in accordance with the provisions of relevant State Environment Protection Policies.

As shown in Figure 2 above, surrounding zones include:

- North – Rural Living Zone
- East – Residential 1 Zone
- South – Residential 1 Zone
- West – Rural Use and Residential 1 Zone

4.1.4 Overlays

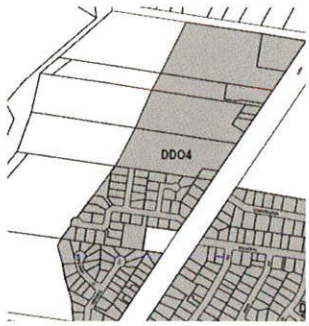
The DP area is included within the Development Plan Overlay Schedule 1 (DPO1) and the Design and Development Overlay Schedule 4 (DDO4).

Design and Development Overlay 4

The key purpose of the DDO4 is to ensure that new single dwellings are compatible with the existing scale and character of the area and to ensure that the height and visual bulk of single dwellings are acceptable . Permits are required for all works that are 7m or more above the existing ground level.

This overlay has little relevance to the DP.

Figure 3 - Design and Development Overlay Map



Development Plan Overlay Schedule 1

The key purpose of the DPO1 is to identify areas which require the form and conditions of future use and development to be shown on a development plan before a permit can be granted to use or develop the land.

The DPO1 is a generic schedule applying to 'Residential Areas'. It requires a DP to be submitted and approved by the responsible authority prior to subdivision of the land into more than two lots.

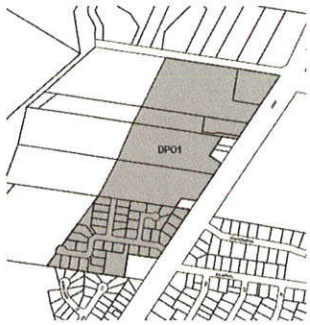


Figure 4 – Development Plan Overlay Map

The DP is required to address the following matters:

- Include a Site Analysis which shows the topography of the land, and the location of any existing vegetation, drainage lines, existing buildings, sites of conservation, heritage or archaeological significance and other features.
- Show the proposed subdivision layout including lots, roads, public open space and other features of the subdivision in a manner which is responsive to the features identified in the Site Analysis.
- Identify the means by which sites of conservation, heritage or archaeological significance will be managed during the construction phase of the subdivision.
- Identify Appropriate Building Areas on the site and within individual lots that are suitable for the construction of dwellings or other buildings, which are not affected by constraints such as slope, potential for inundation, or presence of remnant vegetation to the satisfaction of the responsible authority. If there are no constraints affecting the site, all lots should be notated as Appropriate Building Areas.
- Include a Landscaping Plan showing the location of existing vegetation to be retained and proposed vegetation.
- Show suitable road and pedestrian linkages between the site and adjacent areas.

- Outline arrangements for the provision and funding of physical infrastructure.
- Identify the staging of the subdivision.

The DPO1 specifies conditions which are to be placed on ensuing subdivision permits.

4.2 Warrnambool Land Use Study

This review was completed by Research Planning Design Group, Parsons Brinckerhoff and SGS in September 2004 and seeks to:

- Address Warrnambool's future land use and development needs over the forthcoming 20 year planning period.
- Identify future growth areas.
- Identify a fifteen year supply of residential land.
- Develop local policies for the release of residential land.

The site is not located in a designated future growth area as it is already included within the R1Z. It is wedged, however, between two defined growth areas being the North East Corridor and the North of Merri River Corridor.

In relation to the study and wider area, the following observations are made:

- There is a need to provide an additional 1950 lots in the shire over the next 15 years.
- Community nodes have been proposed both next to, and just south of, the site along Mortlake Hwy.
- There is a need to incorporate rivers and drainage line features appropriately into new residential subdivisions.
- There is a need to promote Water Sensitive Urban Design (WSUD) techniques in future development areas.
- There is a need to promote housing variety to accommodate the changing nature of households in the Shire.

Section 2: Development Plan

5 Key DP influences

The key DP influences have been generated following analysis of the issues discussed in Section 1 and during the first stages of the plans development.

Many of these influences are also evident on the site analysis plan included as Attachment A, and are associated with land included in the RUZ, not the land included within this DP. However, in order to determine an appropriate structure for this DP it is necessary to design cognisant of these influences.

- **Site slope.** The western quarter of the site slopes from approximately 8m at its lowest point to a plateau of approximately 26m. The remainder of the site varies from 26m to 31m though generally has a flat appearance.

  The slope requires consideration of lot layout and sizes in particular to ensure appropriate building envelopes are available on each. This generally necessitates larger lots in areas of slope.

  Slope also impacts upon the road orientation with the need to consider their safe construction, minimising fill, and flow of stormwater drainage.
- **Access to the Merri River.** Providing public access to the Merri River is a key State Planning Policy objective which needs to be balanced with developer objectives and the equitable provision of public open space. An open space objective is to create continuous links along the River.
- **Viewlines along the Merri River.** Currently recognised in the planning scheme via application of the RUZ, the viewlines along the Merri River need to be protected and enhanced where possible. Lots should also be designed to retain the maximum number of viewlines.
- **Responding to existing residential development.** This includes balancing the objectives of utilising existing road and open space linkages with the maintenance of the amenity of existing residential areas. Key links are available via Grange Rd, Leo Francis Dr and Turner Dr.

  Development and character patterns should also be followed where appropriate to provide a cohesive appearance.

  Retention of the existing dwellings within the DP area should also be allowed for. Designs should be flexible to

allow for their retention or removal depending on landowner/developer preferences.

- **Existing landholding patterns.** Several individual landholdings form this DP study area. Provision needs to be made to generally allow each landholder to develop of their own accord. This is not always achievable though where possible road and open space layouts should provide such options. Importantly, proposed lot layouts should not cross landholdings where possible.
- **Mortlake Rd.** As a State Hwy direct lot access is not permitted to Mortlake Rd, as illustrated by development to the south of the DP area which is generally accessed via service roads within the Mortlake Rd reservation.

  The need for service roads can be minimised through internal access, though needs to be balanced with providing a 'street address' to Mortlake Rd. This can be achieved via lot sides.

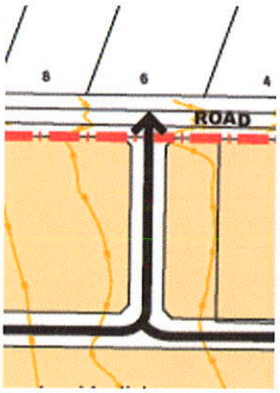
  The ability to provide a service road along Mortlake Rd in this DP area is restricted by the location of the existing dwellings, and thus internal access will need to be considered for some of the DP area at the subdivision permit stage.

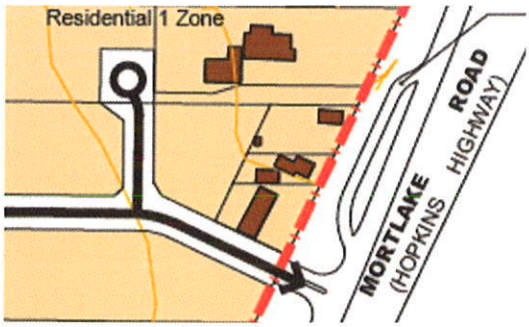
Less significant influences include the site's vegetation and floodway areas along the River.

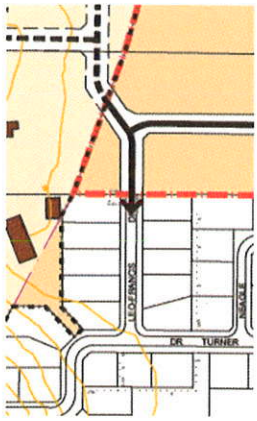
6 Development Plan

The DP is included as Attachment B. Its key features include:

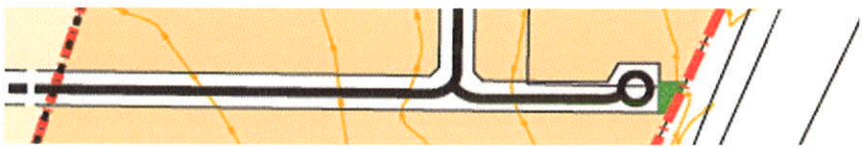
- New access points to existing road networks including:
  - A north-south connection to Grange Rd.
  - An east-west connection to Mortlake Rd.
  - North-south extension of Leo Francis Dr.







- Loosely based grid road network with a general east-west bias. This assists in managing the site slope for the RUZ land, though also facilitates access to the Merri River. Courts have been included due to landholding patterns, site slope and limited access opportunities to Mortlake Rd.
- Little open space is included within this DP with the pedestrian link to Mortlake Rd having an approximate area of 0.01ha. The majority of open space will be provided along the Merri River and will be provided when the RUZ land is rezoned and subdivided. This is further discussed at Section 7.3.



- Service road access to lots fronting Mortlake Rd. No direct lot access is permitted to Mortlake Rd with access therefore having to be provided either internally or via service road.

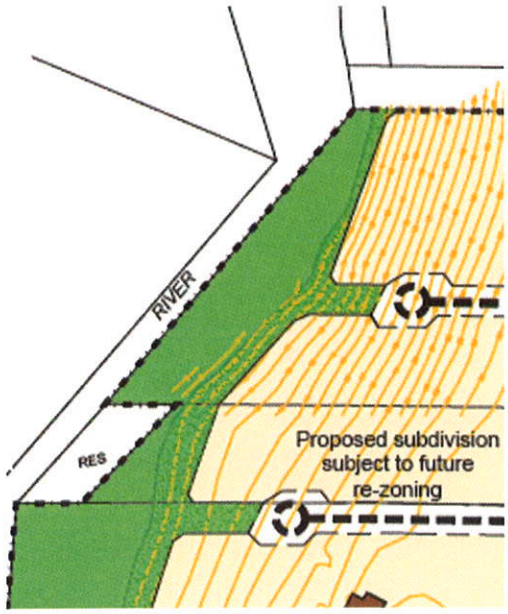
- A preliminary development analysis suggests:

Preliminary DP development analysis (R1Z land)	
DP area (existing R1Z)	**10.44ha**
Pedestrian link	0.01ha
Residential area	8.81ha (84%)
Roads	1.62ha (16%)
Number of lots	98 lots
Average lot size	900sqm
Dwelling density (based on DP area)	9.38dwellings/ha

- Retention of existing dwellings except that at 181 Mortlake Rd. The removal of this dwelling facilitates a more appropriate development layout.

In relation to the indicative DP for the RUZ land, key features include:

- Provision of open space along the Merri River. Whilst this matter is further discussed in Section 7 it is noted that each landholding will provide in excess of the 5% public open space contribution required by the Subdivision Act 1988, though this contribution will be a mixture of encumbered and unencumbered land.



- Continuation of the general east-west road grid. Courts have been used in areas of steep slope as it is not practical to run roads along the contour lines. This presents a challenge in terms of still ensuring a proper urban design outcome is achieved for the public open space (i.e. for it not to be 'back fenced'). Design guidelines should be applied to those lots directly adjacent to areas of open space to ensure they address both the street and open space.

  Road fronting open space is to be provided where the slope allows.

- A preliminary development analysis suggests:

Preliminary DP development analysis (RUZ land)	
DP area (subject to rezoning)	**15.17ha**
Public open space (encumbered)	4.27ha (28%)
Public open space (unencumbered)	1.38ha (9%)
Residential area	7.58ha (50%)
Roads	1.94ha (13%)
Number of lots	84 lots
Average lot size	900sqm
Dwelling density (based on DP area)	5.55 dwellings/ha

7 DP Details

This section of the report focuses on key details of the DP.

7.1 Provision of infrastructure

An Infrastructure Services Report has been completed by Earth Tech to assist in determining infrastructure requirements for the DP area. This report is included as Attachment C however, in summary:

7.1.1 Electricity Supply

Powercor Australia is the responsible Authority for power supply facilities at this locality and has existing assets located along Mortlake Road and Grange Road.

Local Powercor Officers have advised that it is highly probable that an upgrade of the external supply mains and provision of internal kiosk substation/s will be required to adequately service the area for domestic power consumption purposes.

Reserves to accommodate the internal kiosk substation/s will be required and must be incorporated into any proposed subdivisional layout for the development.

7.1.2 Gas Supply

Tenix is the principal service provider responsible for gas supply facilities at this locality and has existing assets located along Mortlake Road and Grange Road.

Tenix has advised that the existing supply mains, located external to the development have adequate supply capacity to extend gas services to domestic premises proposed in this development.

7.1.3 Telecommunications

Telstra is the principal service provider responsible for telecommunications facilities at this locality and has assets that are situated along this site.

Telstra has advised that telecommunications facilities can readily be made available to service the proposed development and that provision of service would be at no cost to the developer other than for some minor costs related to provision of conduits and trenching as part of the civil works.

7.1.4 Sewerage Facilities

Wannon Regional Water Authority is the responsible Authority for sewerage facilities at this locality.

Authority officers have advised that existing sewerage assets are some distance from this site. There are existing

reticulation sewers serving properties immediately to the south in the Turner Drive/Leo Francis Drive area.

Authority officers have nominated an existing 225mm sewer currently terminating at the western end of Turner Drive as the discharge point for land with an existing Residential 1 Zoning that extends from the existing urban area (Turner Drive/Leo Francis Drive area) north to Grange Road (refer to extents on the Development Plan). The area west of this land extending from Turner Drive to Grange Road adjacent to the Merri River can potentially be serviced by reticulation sewers connected to a future major pumping facility discharging via a rising main to the abovementioned 225mm sewer.

With respect to works required to sewer the subject site the first stage of the development is contained within the Residential 1 Zoned land and require extension of a sewer through private property. Authority officers have advised that a 225mm sewer extension will be required and that the Authority will contribute to the costs of such works on the basis of the difference in cost to upsize from a 150mm sewer.

As this extension will also service adjoining undeveloped land that will gain substantial benefit from such sewer works the contribution by the Authority on the basis of upsizing is neither fair nor equitable to the developer of the subject site. Further negotiations should be conducted with the Authority in this regard to ensure that there is an acceptable resolution prior to the adoption of Planning Permit conditions.

The balance of land within the subject site can readily be sewered prior to construction of the abovementioned future major pumping facility by provision of a temporary pumping station located at the lower levels of the site.

7.1.5 Water Supply

Wannon Regional Water Authority is the responsible Authority for water supply facilities.

Authority officers have advised that there are existing water mains located on the west side of Mortlake Road and the north side of Grange Road and that the existing water supply system has adequate capacity to adequately cater for development of the subject site without the need for any major water system augmentation works.

7.1.6 Drainage

Warrnambool City Council is the local Authority responsible for stormwater drainage facilities.

Based on preliminary consultation with Council officers the following drainage requirements have been initially stipulated for the subject site:

- provision of water quality controls and measures in accordance with Water Sensitive Urban Design (WSUD) principles
- provision of a stormwater retardation facility to limit peak flows from the site to pre-development 10-year ARI storm events

The water quality control requirements can readily be implemented with treatment regimes comprising swale/bioretention drains within road reserves (nature strip areas) possibly supplemented, as necessary, with either a small bioretention basin/wetland/lake or pond within areas adjacent to the Merri River.

The requirement relative to the provision of a stormwater retardation facility however seems somewhat incongruous in the context of conventional engineering practice. The subject site is located at the lower reaches of the drainage catchment and is immediately adjacent to the Merri River. Normally retardation storages are provided within developments to primarily protect downstream properties from flooding and restrict flows to acceptable levels for conveyance in piped drainage systems of existing development. As this site is adjacent to the receiving waters of the Merri River it is doubtful that such a facility would serve any purpose and certainly would have minimal impact, if any, on the attenuation/mitigation of flood events within the Merri River system.

Accordingly this latter requirement appears irrelevant with respect to provision of a conventional stormwater drainage system appropriate to this site and should be vigorously contested prior to adoption of Planning Permit conditions for the subject site.

Council officers have further advised that the main drain through the site is to be upsized to accommodate discharge from land at higher reaches within the catchment and that associated construction costs will be apportioned based on determinations in consultation with Council.

7.1.7 Roads/Streets

All roads within the development are to be fully constructed to Council's Standards and are to incorporate elements of the abovementioned water quality controls in accordance with Water Sensitive Urban Design [WSUD] principles. The specific treatment measures will be fully assessed and implemented at the detailed design stage but will primarily provide one way cross-fall on road pavements with a swale type drain on the low side of the road.

7.1.8 Discussion

Clearly all relevant infrastructure can be provided to the DP area and their actual provision will be managed at the time of subdivision permit applications.

With regards to funding of infrastructure, most items detailed above will be provided by individual land developers (i.e. individual infrastructure connections).

Items to be required by the whole DP area and jointly funded in an equitable manner include:

- Upgrade of the external electricity supply mains.
- Extension of sewer main from western end of Turner Dr.
- Upsizing of main drain through the site.

These matters are referred to at Section 8 below in relation to the DP implementation.

Provision of internal electricity kiosk substations/s should be planned across the whole DP but their installation and cost be the responsibility of individual land developers.

7.2 Traffic management

A Traffic Impact Assessment Report has been completed by JPT – John Piper Traffic Pty Ltd and is included as Attachment D. The report considers both the development of both the R1Z and RUZ land using estimated yields, and the subdivision of our clients land at 175-181 Mortlake Rd.

7.2.1 Key recommendations

Key recommendations are:

- To provide a safe environment for road users and to ensure the operational characteristics of Mortlake Road are not compromised, the proposed intersection treatment consists of providing:
    - a sheltered left turn lane on the Mortlake Rd south approach to Grange Rd
    - sheltered left and right turn lanes on Mortlake Rd (Type CH) for the new subdivisional road south of Grange Rd.
    - a service road along Mortlake Rd for lots fronting this road. The service road should be provided within the Mortlake Rd reservation as has occurred for all development south of the DP area.
- The proposed sheltered turn lane treatments on Mortlake Road should be provided as part of when the internal road network of the subdivision is constructed.

- The location of the subdivision and internal road layout ensure that all roads carry relatively little traffic (less than 1,500 vehicles per day) and that rat runs through the precinct would not occur.
- The major north south route through the subdivision is approximately 440 m long which may encourage motorists to travel at inappropriate speeds. It is suggested that a traffic calming device such as a chicane, raised pavement, or roundabout be installed at the major internal east-west local road intersection.
- Similarly the major east west road through the subdivision (which provides access onto Mortlake Road) is approximately 300 m long. Introducing a traffic calming treatment at the first internal local intersection (approximately 90 m from Mortlake Road) would ensure motorists entering the subdivision travel at an appropriate speed.
- Additional treatments along Grange Road are not proposed as it is already an existing residential street and traffic flows would still be relatively low (around 30 to 40 vehicles in the peak hours) once the ultimate residential development has occurred.

7.2.2 Discussion

Most of the works discussed above will be the responsibility of individual land developers, though it is likely the intersection works for the new subdivisional road and any traffic calming measures may need to be equitably contributed to by the 'middle' landholders.

The intersection works for Grange Rd will likely be completed by the developer of 175-181 Mortlake Rd.

The construction of service roads will be dependent upon final lot layouts of individual land parcels and if required will be provided by these developers.

7.3 Open space

As previously noted the provision of open space in this DP is limited to the pedestrian linkage from Mortlake Rd through 175 Mortlake Rd, with all other space to be provided in the future DP along the Merri River.

With regards to this area, at this time it is estimated approximately 22% of the total DP area will be contributed to public open space, far in excess of the statutory 5% required under the Subdivision Act 1988.

It will be up to individual permit applications to resolve public open space issues. In general, however, it is recommended that any permit application for land currently within the R1Z provide a 5% cash-in-lieu contribution to Council. When the

future DP area is rezoned and the DP approved, this contribution should be refunded and the designated land provided instead. This will 'safeguard' Council against the possibility that the future DP area is not developed and provide it with the ability to provide alternative spaces.

With regards to the areas of public open space, it comprises both land within the UFZ, and thus is subject to periodic flooding, and land outside of this area. An indicative public open space plan is included as Attachment E, indicating the five key landholdings within the ultimate DP area and their potential public open space contributions.

This plan indicates the smallest public open space contribution to be made is 8% of a landholding, with the largest being 60%.

Land within the UFZ is likely to be used for passive recreation purposes including pathways and access to the River.

7.4 Existing site features

As previously noted, there is little existing vegetation within the DP area. It is not proposed to retain any vegetation, instead a new landscaping regime is proposed as illustrated by the concept plan at Attachment F. This plan is further discussed below.

The plan allows for the retention of the area's existing dwellings, though also their removal if desired. The dwelling at 181 Mortlake Rd is to be removed. It is envisaged outbuildings will also be retained with any dwellings.

There are no known sites of conservation, heritage or archaeological significance. Council has contacted Framlingham Heritage Trust and no issues have been raised.

7.5 Landscape concept plan

A preliminary landscape concept plan is included as Attachment F. It recommends a new street tree planting regime for the DP area and an indicative outline for the open spaces.

The plan is conceptual only and subject to detailed design and master planning. Species chosen for street tree and open space planting are to be in accordance with the Warrnambool City Council landscape guidelines.

7.6 Appropriate building areas

A notation is made on the DP that all land within lots are designated as Appropriate Building Areas. The land within this DP area is flat and not subject to any constraints. To this

end all land should be available for dwelling construction, subject to the siting requirements of the Building Regulations.

The RUZ land will be constrained due to site slope and designated building areas may be appropriate for some of these lots. This is a matter for the future DP to consider.

7.7 Clause 56 considerations

This section refers to the objectives of Clause 56 of the Warrnambool Planning Scheme and responds accordingly. Comments are limited to the conceptual nature of the DP and do not provide design detail as sometimes required by Clause 56. This level of detail is to be provided at the planning permit application stage.

7.7.1 Community Design

The feature of this DP area is the Merri River. This DP provides the key connections to the River in terms of both vehicular and pedestrian access. Areas along the River will undoubtedly become neighbourhood focal points and help create a sense of local character and identity for the development.

This DP responds positively to the Merri River with a strong east-west grid network promoting connectivity between Mortlake Rd, the land to the east and the River. Views towards the River will be maintained through the east-west network and will be available from Mortlake Rd via both Grange Rd and the northern most new subdivisional road. The small open space linkage between this road and Mortlake Rd is important in maintaining this link.

The DP encourages development to front Mortlake Rd through the use of service roads where required, or internal access that promotes 'side fences'. Both are better outcomes than back fences as often seen along main roads.

The traffic assessment commends the movement network and considers it to provide good internal and external access for residents, maximises safety and minimises the impact of thorough traffic. Mortlake Rd will continue to provide major access to the development with the three new access points spreading the traffic. The internal road network promotes access to public transport options on Mortlake Rd. All internal roads will be fronted by development, including Grange Rd, thus maximising the safety of the street and encouraging its use as a public environment.

The development design, whilst still vehicle based, encourages walking through its permeability and connectivity. Higher densities are possible with the development layout flexible in this regard, though the site slope makes it difficult to provide this type of development adjacent to open space

where it is often located. The DP will achieve a dwelling density of 9.38 dwellings/ha, a density that is higher than 'standard' residential development which is generally around 8 dwellings/ha.

The public open space along the Merri River ultimately needs to be integrated with land to the south. It is noted much of the land to the immediate south is located within the Urban Floodway Zone and thus the opportunity will exist for this to occur. As an open space it will provide for passive uses, generally walking paths and trails with limited built infrastructure. Larger areas may be suitable for field/kick-about spaces, subject to flooding potential. Its location, flooding potential and slope mean it is generally not suitable for active open space.

7.7.2 Movement network

A network of streets is provided with Mortlake Rd to provide three access points to the development – via Leo-Francis Dve, the new subdivisional road, and via Grange Rd. These three roads will act as 'Access Streets' with other internal roads either 'Access Streets' or 'Access Places'. The detailed design process will determine this and required road reservations.

The street network is oriented north-south and east-west to facilitate the production of lots with high solar access potential and integrate the street network with natural drainage and open space systems along the River.

The traffic assessment reviews the general road network and suggests several places for additional traffic calming measures. These are to be implemented via the planning permit process. Other intersections within the design act as natural traffic calming measures.

Given the connectivity of the movement network it is important to ensure pedestrians and cyclists are adequately catered for. Given the low traffic volumes cyclists will be catered for by the road network. Pedestrians should be catered for with footpaths.

7.7.3 Pedestrians and cyclists

The residential street network is designed to:

- Provide a permeable network of low traffic volume and low traffic speed routes for cyclists.
- Promote the use of streets for on-road cycling to daily activities.
- Connect Mortlake Rd and the northern subdivision road with pedestrian and bicycle paths.

7.7.4 Public open space

The provision of public open space has been previously discussed though it is reiterated that the space to be provided in the future DP area is of appropriate quality and quantity and will contribute towards meeting the recreational and social needs of the community. This DP provides the structure for this open space network.

It will be important for the future DP to consider how the open space along the River is designed and will provide a safe environment for users and abutting and adjacent residents. Design guidelines may be needed to ensure 'back fences' are not provided along the River.

It is noted that some of the lots nearer to Mortlake Rd may not have an appropriately sized area of open space within 300m walking distance. However, it is considered the provision of all open space along the River provides a better open space outcome in terms of quality.

7.7.5 Lot size and orientation

Other than indicative lot yields, Lot size and orientation details are not provided in the DP. Densities will generally be similar to those in surrounding development, and some opportunities may exist for higher densities should the developer and market so desire.

The road layout facilitates energy efficient orientation and regular shaped lots. This ensures an appropriate building area is available and can meet the requirements of Clause 56.06-4.

7.7.6 Street design

Street design elements should be determined at the detailed design stage with regard to Council's requirements.

With regards to streetscapes, the landscape concept plan provides an indication of the new street tree and open space planting regime to be considered, again, subject to Council's requirements.

7.7.7 Street construction

This matter is to be decided at the detailed design/planning permit stage in consultation with Council.

7.7.8 Drainage systems

The infrastructure provision report discusses drainage. This matter is to be decided at the detailed design/planning permit stage in consultation with Council.

7.7.9 Utilities provision

The infrastructure provision report discusses the provision of utilities. This matter is to be decided at the detailed design/planning permit stage in consultation with Council.

8 Implementation

The DP is to be approved in accordance with Clause 43.01 of the Warrnambool Planning Scheme. Following this all planning permits issued for the subdivision of land in the DP area must be generally in accordance with the DP requirements.

As outlined in Sections 7.1 and 7.2, there are several infrastructure items that may require funding/provision over several permits/landholdings. These should be considered at the planning permit stage. It is noted most of these items are likely to require resolution for the 'middle' sections of the DP area.

The DPO1 also specifies a number of conditions that may be placed on ensuing planning permits. These need to be considered accordingly.

9 Conclusion

This DP provides conceptual detail for the development of land on Mortlake Rd currently included within the R1Z and DPO1. It also provides an indicative concept for the land currently included within the RUZ though proposed to be included within the R1Z and DPO1.

The DP responds to the requirements of the DPO1 and importantly has been developed cognisant of the opportunities the RUZ land provides, particularly in regard to open space and movement networks. The result is a development that will provide key connections to the River in terms of both vehicular and pedestrian access. Areas along the River will undoubtedly become neighbourhood focal points and help create a sense of local character and identity for the development.

The planning permit and detailed design (engineering) stages are important components of the overall development process and will support the concepts of, and provide the details to, the DP.

Attachment A

EarthTech

SITE ANALYSIS PLAN

Grange Road

Warrnambool

Scale: 1:2000 @ A1
Ref.: 105021
Date: 3 October 2005
Rev.: A
Drawn: CL

EarthTech
Planning & Urban Design
Melbourne - Tel 8517 9200

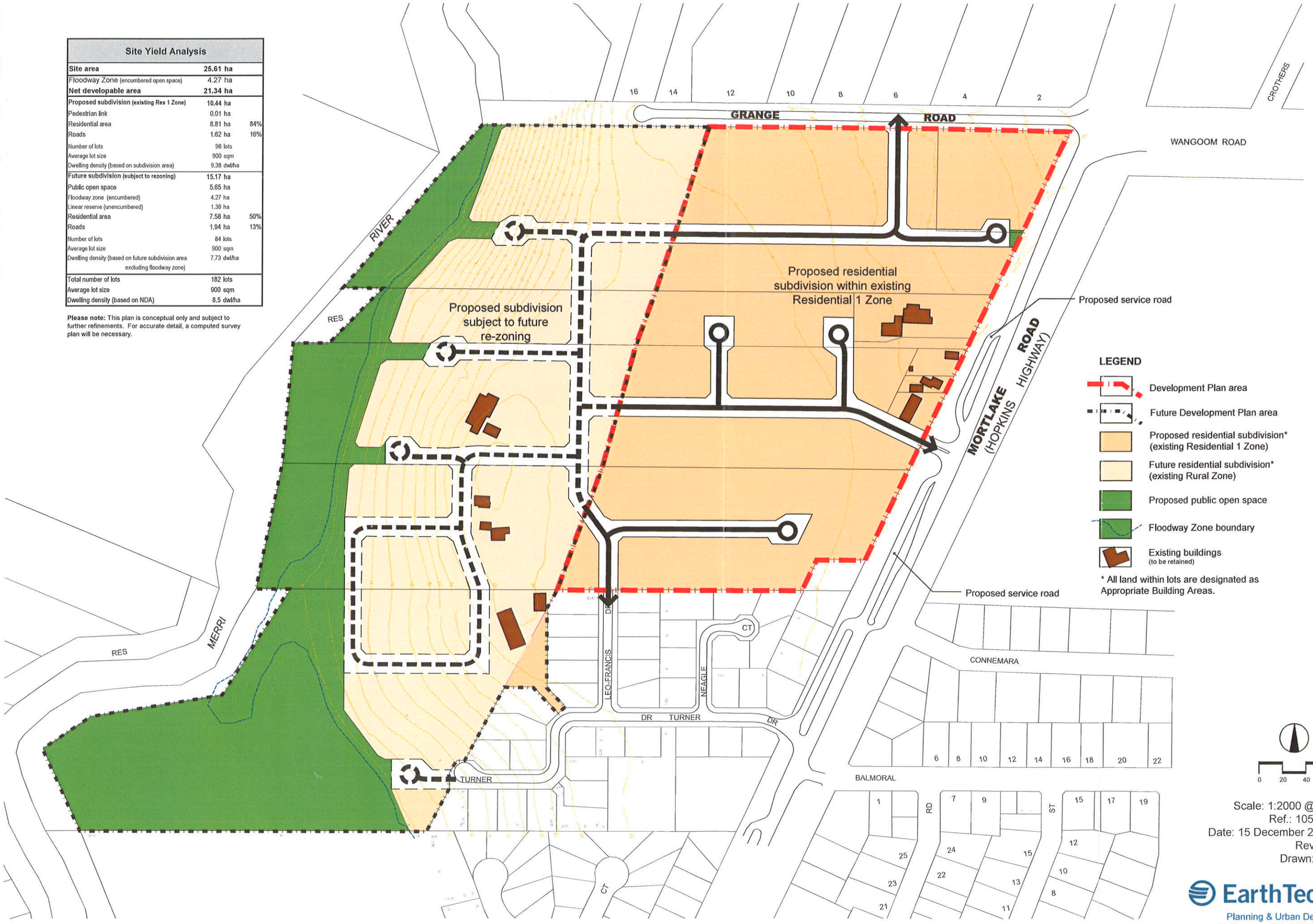
Attachment B

EarthTech

DEVELOPMENT PLAN
Grange Road
Warrnambool

Site Yield Analysis		
Site area	**25.61 ha**	
Floodway Zone (encumbered open space)	4.27 ha	
Net developable area	**21.34 ha**	
Proposed subdivision (existing Res 1 Zone)	**10.44 ha**	
Pedestrian link	0.01 ha	
Residential area	8.81 ha	84%
Roads	1.62 ha	16%
Number of lots	98 lots	
Average lot size	900 sqm	
Dwelling density (based on subdivision area)	9.38 dwl/ha	
Future subdivision (subject to rezoning)	**15.17 ha**	
Public open space	5.65 ha	
Floodway zone (encumbered)	4.27 ha	
Linear reserve (unencumbered)	1.38 ha	
Residential area	7.58 ha	50%
Roads	1.94 ha	13%
Number of lots	84 lots	
Average lot size	900 sqm	
Dwelling density (based on future subdivision area excluding floodway zone)	7.73 dwl/ha	
Total number of lots	182 lots	
Average lot size	900 sqm	
Dwelling density (based on NDA)	8.5 dwl/ha	

Please note: This plan is conceptual only and subject to further refinements. For accurate detail, a computed survey plan will be necessary.



Scale: 1:2000 @ A2
Ref.: 105021
Date: 15 December 2005
Rev.: D
Drawn: CL

EarthTech
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Attachment C

EarthTech

EarthTech

Rodger Constructions Pty Ltd.

Infrastructure Services Report

175 Mortlake Road - Warrnambool

Project: 7705597 (83870)

November 2005

Approved	Checked
Date	Date

Earth Tech Engineering Pty Ltd
ABN 61 089 482 888
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Rodger Constructions Pty Ltd

Infrastructure Services Report

175 Mortlake Road - Warrnambool

Project: 7705597 (83870)

Contents

Infrastructure Services

Infrastructure and utility services are generally located in close proximity to the proposed development site that is situated at the southwest corner of Grange Road and Mortlake Road, Warrnambool.

The availability of respective infrastructure and utility services has been investigated and are reviewed as follows:

1. Electricity Supply

Powercor Australia is the responsible Authority for power supply facilities at this locality and has existing assets located along Mortlake Road and Grange Road.

Local Powercor Officers have advised that although existing electrical assets are close to the site it is highly probable that an upgrade of the external supply mains and provision of internal kiosk substation/s will be required to adequately service this development for domestic power consumption purposes.

Reserves to accommodate the internal kiosk substation/s will be required and must be incorporated into any proposed subdivisional layout for the development.

2. Gas Supply

Tenix is the principal service provider responsible for gas supply facilities at this locality and has existing assets located along Mortlake Road and Grange Road.

Tenix has advised that the existing supply mains, located external to the development have adequate supply capacity to extend gas services to domestic premises proposed in this development.

Tenix would provide internal gas supply mains at no charge to the Developer other than for service conduit installation costs during the road construction phase.

3. Telecommunications

Telstra is the principal service provider responsible for telecommunications facilities at this locality and has assets that are situated along this site.

Telstra has advised that telecommunications facilities can readily be made available to service the proposed development and that provision of service would be at no cost to the developer other than for some minor costs related to provision of conduits and trenching as part of the civil works.

4. Sewerage Facilities

Wannon Regional Water Authority is the responsible Authority for sewerage facilities at this locality.

Authority officers have advised that existing sewerage assets are some distance from this site. There are existing reticulation sewers serving properties immediately to the south in the Turner Drive/Leo Francis Drive area.

Authority officers have nominated an existing 225mm sewer currently terminating at the western end of Turner Drive as the discharge point for land with an existing Residential 1 Zoning that extends from the existing urban area (Turner Drive/Leo Francis Drive area) north to Grange Road (refer to extents on the Development Plan). The area west of this land extending from Turner Drive to Grange Road adjacent to the Merri River can potentially be serviced by reticulation sewers connected to a future major pumping facility discharging via a rising main to the abovementioned 225mm sewer.

With respect to works required to sewer the subject site the first stage of the development is contained within the Residential 1 Zoned land and require extension of a sewer through private property. Authority officers have advised that a 225mm sewer extension will be required and that the Authority will contribute to the costs of such works on the basis of the difference in cost to upsize from a 150mm sewer. As this extension will also service adjoining undeveloped land that will gain substantial benefit from such sewer works the contribution by the Authority on the basis of upsizing is neither fair nor equitable to the developer of the subject site. Further negotiations should be conducted with the Authority in this regard to ensure that there is an acceptable resolution prior to the adoption of Planning Permit conditions.

The balance of land within the subject site can readily be sewered prior to construction of the abovementioned future major pumping facility by provision of a temporary pumping station located at the lower levels of the site.

5. Water Supply

Wannon Regional Water Authority is the responsible Authority for water supply facilities.

Authority officers have advised that there are existing water mains located on the west side of Mortlake Road and the north side of Grange Road and that the existing water supply system has adequate capacity to adequately cater for development of the subject site without the need for any major water system augmentation works.

Water mains within the new development will interconnect with existing mains in Mortlake Road and Grange Road.

6. Drainage

Warrnambool City Council is the local Authority responsible for stormwater drainage facilities.

Based on preliminary consultation with Council officers the following drainage requirements have been initially stipulated for the subject site:

- provision of water quality controls and measures in accordance with Water Sensitive Urban Design (WSUD) principles
- provision of a stormwater retardation facility to limit peak flows from the site to pre-development 10-year ARI storm events

The water quality control requirements can readily be implemented with treatment regimes comprising swale/bioretention drains within road reserves (nature strip

areas) possibly supplemented, as necessary, with either a small bioretention basin/wetland/lake or pond within areas adjacent to the Merri River.

The requirement relative to the provision of a stormwater retardation facility however seems somewhat incongruous in the context of conventional engineering practice. The subject site is located at the lower reaches of the drainage catchment and is immediately adjacent to the Merri River. Normally retardation storages are provided within developments to primarily protect downstream properties from flooding and restrict flows to acceptable levels for conveyance in piped drainage systems of existing development. As this site is adjacent to the receiving waters of the Merri River it is doubtful that such a facility would serve any purpose and certainly would have minimal impact, if any, on the attenuation/mitigation of flood events within the Merri River system.

Accordingly this latter requirement appears irrelevant with respect to provision of a conventional stormwater drainage system appropriate to this site and should be vigorously contested prior to adoption of Planning Permit conditions for the subject site.

Council officers have further advised that the main drain through the site is to be upsized to accommodate discharge from land at higher reaches within the catchment and that associated construction costs will be apportioned based on determinations in consultation with Council.

7. Roads/Streets

All roads within the development are to be fully constructed to Council's Standards and are to incorporate elements of the abovementioned water quality controls in accordance with Water Sensitive Urban Design [WSUD] principles. The specific treatment measures will be fully assessed and implemented at the detail design stage but will primarily provide one way cross-fall on road pavements with a swale type drain on the low side of the road.

Attachment D

EarthTech

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Grange Road, Warrnambool
Residential Subdivision

Traffic Impact Assessment Report

FINAL

November 2005

CLIENT:

Rodger Constructions Pty Ltd

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APPENDICES

APPENDIX A – PROPOSED SUBDIVISION LAYOUT

APPENDIX B – TRAFFIC SURVEY DATA

APPENDIX C – MORTLAKE ROAD TRAFFIC MANAGEMENT MODIFICATIONS

1. INTRODUCTION

John Piper Traffic Pty Ltd (JPT) has been engaged by Rodger Constructions Pty Ltd to undertake a traffic impact assessment of a major residential subdivision off Grange Road, Warrnambool.

The initial site (Stage 1) is approximately 7 ha with the potential to yield 56 residential allotments. It has been identified that the ultimate development to the south including the existing Turner Drive residential estate would ultimately yield around 200 allotments and:

- generally complies with the relevant traffic requirements of VicRoads and Council Standards;
- will not compromise parking or traffic conditions on the adjacent road network.

A summary for the site and the proposed development is shown in Table 1.

Address	725 Mortlake Road Warrnambool (at Grange Road)	
Proposed development	Residential subdivision	
	Stage 1 -	**56 lots**
	Remaining area	100 lots (approx.)
	Turner Drive Estate (Existing)	41 lots
	Total	**197 lots**
Traffic Generation	**Stage 1:**	
	Daily:	approx. 530 vpd
	Peak hour:	approx. 50 vehicles
	Ultimate Development:	
	Daily:	approx. 2,000 vpd
	Peak hour:	approx. 200 veh.
External road network **Traffic safety/capacity works required**	Provide: • a sheltered left turn lane from Mortlake Road into Grange Road; • a service road along Mortlake Road (i.e. no direct property access onto Mortlake Road main carriageway); • a new intersection midway between Turner Drive and Grange Road with sheltered left and right turn lanes including pedestrian/bicycle refuge island.	
Internal road layout **Traffic safety/capacity works required**	Traffic calming treatments are proposed along the major north-south and east-west access roads to encourage motorists to travel at an appropriate speed.	

Table 1. – Site and development summary.

2. BACKGROUND

It is proposed to develop no. 725 Mortlake Road, Warrnambool (adjacent to Grange Road).

The site is located on the outskirts of Warrnambool where existing residential subdivision has occurred to within approximately 400 m south of the site. There are several parcels of land which potentially could also be developed to the south of the site. To ensure the appropriate development of 725 Mortlake Road and appropriate connectivity and development of surrounding land, an overall structure plan and a development plan for the land west of Mortlake Road is proposed.

This will provide certainty for Council and land owners regarding the appropriate use and development of the land west of Mortlake Road and ensure optimal subdivision concept plans can be prepared.

2.1 Subdivision proposal and surrounding land use

The site is predominately used for grazing purposes and it is proposed to develop a residential subdivision accommodating approximately 53 allotments with an average lot size of 1,025 sqm.

The site for Stage 1 is located on the south side of Grange Road and has direct frontage to Mortlake Road (Hopkins Highway), Grange Road and the Merri River (refer to Figure 2.1.1). A detailed layout of the subdivision is shown in Appendix A. Land use zoning is shown in Figure 2.1.2.

Land further to the south, up to the existing Turner Drive residential estate may ultimately be developed with approximately 200 lots provided. In summary:

Stage 1 -	56 lots
Remaining area	100 lots (approx.)
Turner Drive Estate (Existing)	41 lots
Total	**197 lots**

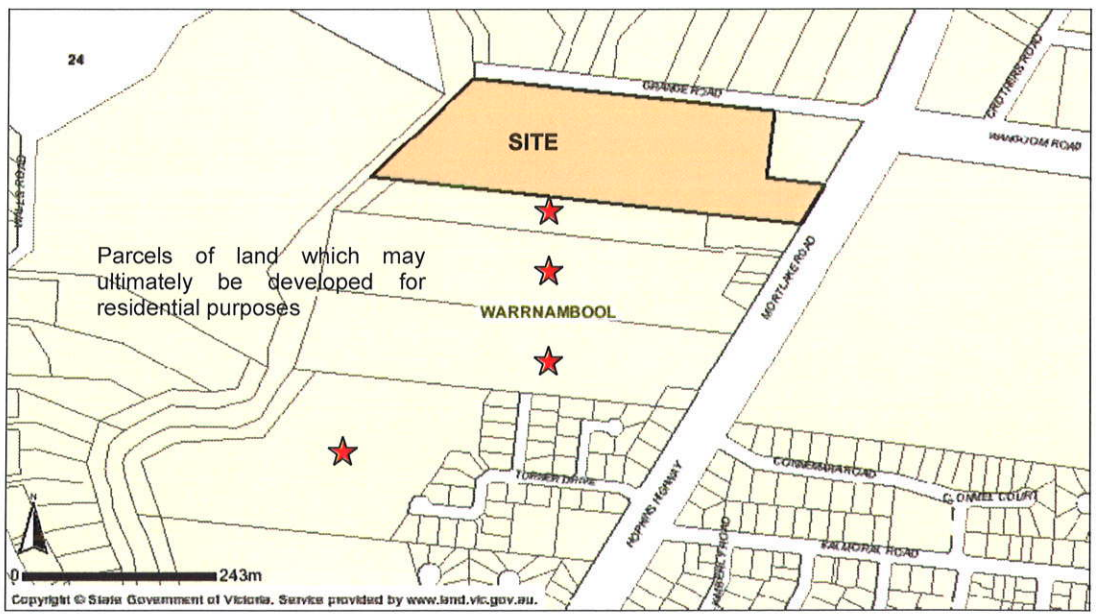


Figure 2.1 - Locality Plan

Reproduced from Land Vic web page

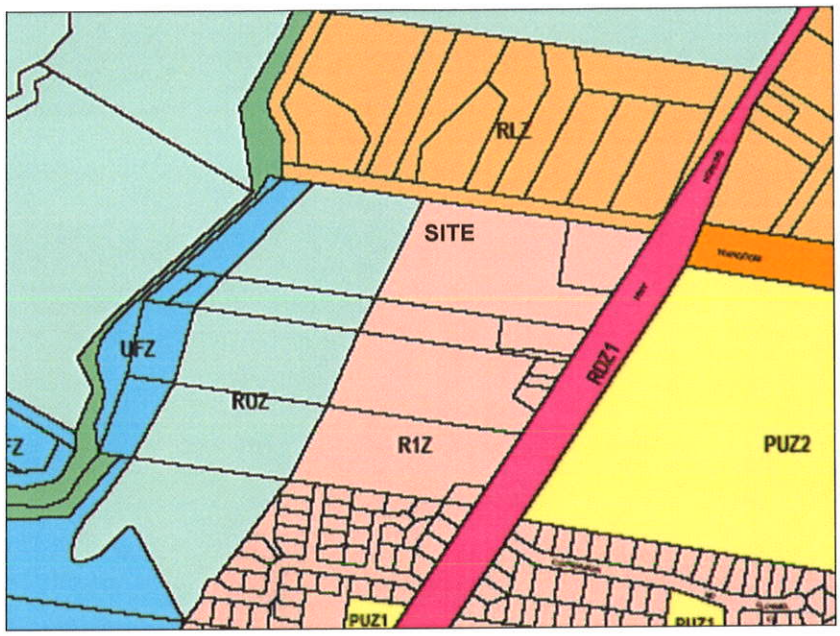


Figure 2.1.2 –Land Use Zoning – not to scale

(Part of Warrnambool Shire Planning Scheme – DSE)

Note pink shading highlights residential 1 zone, pale blue, rural urban zone, and brown, rural living zone

2.2 Existing Road Network

2.2.1 Grange Road

Grange Road is classified as a local street and currently services approximately 10 residential properties. It is estimated to carry around 100 vehicles per day (vpd) at Mortlake Road and operates with the default 50 km/h speed limit.

Grange Road is an 8.0 m sealed carriageway with kerb and channel and grass nature strips. The road reservation is approximately 19.9 m wide. Typical road conditions are shown in Figures 2.2.1 and 2.2.2.

Figure 2.2.1 Grange Rd looking east past the site (RH side of the photo)

Figure 2.2.2 Grange Rd looking east towards Mortlake Road

2.2.2 Mortlake Road (Hopkins Highway)

Mortlake Road (Hopkins Highway) is classified as a State Highway and provides access between Warrnambool, Mortlake and townships to the north, as well as connecting with the Hamilton Highway. It is a significant inter-regional route.

Traffic volumes vary significantly along Mortlake Road, and increase the closer into town due to more intense abutting development. A summary of Mortlake Road traffic volumes is shown in Table 2.2.2.

Location	Daily traffic flow (vehicles per day)	Peak traffic flow (estimate) (vehicles per hour)
North of Wangoom Road	2,000	300
South of Balmoral Road	3,500	525
South of Whites Road	13,500	2,025

Table 2.2.2 - Mortlake Road traffic flow data

Adjacent to the site, Mortlake Road consists of an undivided two lane highway with protected right turn treatment at Wangoom Road/Grange Road intersection. Further south, where there is existing residential development, service roads and generally sheltered left and auxiliary right turn lanes are provided such as at Mortlake Road/Turner Drive intersection.

A 80 km/h speed limit applies along Mortlake Road, however, it is expected that the posted speed limit would reduce to 60 or 70 km/h when full development has occurred.

Typical road conditions are shown in Figures 2.2.2.1 and 2.2.2.2.

Figure 2.2.2.1 Mortlake Road looking south past the site (RH side of the photo)

Figure 2.2.2.2 Mortlake Rd looking north towards Wangoom Rd/Grange Rd intersection

2.2.3 Turner Drive

Turner Drive will provide the southern most connection into the ultimate subdivision. Turner Drive is a local road and currently services approximately 40 residential properties.

Due to a crest in Mortlake Road at Turner Drive, vehicles are not permitted to exit Turner Drive at this location, rather motorists are required to travel approximately 250 m north along the service road to where Mortlake Road is relatively flat and sight distance is satisfactory.

Sheltered left and right turn lanes are provided on Mortlake Road for motorists wishing to enter Turner Drive.

Turner Drive is estimated to carry 410 vehicles per day and 40 vehicles in the peak hour. Typical road conditions at Turner Drive/Mortlake Road intersection are shown in Figures 2.2.3.1 and 2.2.3.2.

Figure 2.2.3.1 Turner Ave looking east, note all vehicles exiting must turn left at the service road

Figure 2.2.3.2 Mortlake Rd looking north towards Turner Drive showing sheltered left turn and auxiliary lane

2.3 Accident history

A review of the VicRoads accident database, which records casualty accidents, identified no accidents in the last 5 years:

- at Mortlake Road/Grange Road/Wangoom Road intersection;
- on Mortlake Road adjacent to the site;
- on Mortlake Road/Turner Drive intersection.

It is not anticipated that the subdivision traffic would contribute to accidents occurring at these locations.

3. TRAFFIC GENERATION & DISTRIBUTION

3.1 Traffic generation

In outer suburban and country areas, it is generally accepted that residential properties would generate around 8 to 10 vehicle movements per lot per day with a peak hour flow of around 10% of the total daily flow. Various codes and guidelines suggest these rates, and JPT has carried out surveys in new subdivisions where similar traffic generation rates have been obtained. These rates are generally higher than that for metropolitan areas because public transport facilities are generally not as prevalent in country areas.

As such, the Stage 1 subdivision (56 allotments) is anticipated to generate:

- 560 vehicle trips per day, with a peak hour flow of around 50 vehicles.

The ultimate development including the existing Turner Drive residential estate (approximately 197 allotments) is anticipated to generate:

- 2,000 vehicle trips per day with a peak hour flow of around 200 vehicles.

3.2 Distribution of traffic onto the surrounding road network

Discussions with Council officers confirm that the majority of new residents (say 80%) who are purchasing in the local area are working in Warrnambool or nearby townships. As such, the majority of traffic is likely to travel south along Mortlake Road into Warrnambool.

Peak hour traffic flow for the subdivision would generally be distributed as follows:

AM peak	80% leaving	20% entering
PM peak	40% leaving	60% entering

It has been assumed that 80% of motorists are likely to be commuting to Warrnambool along Mortlake Road. Some motorists commuting to eastern destinations may use Wangoom Road (for analysis purposes it has been assumed that only 5% of motorists would be using this route).

The estimated traffic distribution for Stage 1 and the remaining land to be developed including existing traffic associated with the Turner Drive estate is detailed in Figure B1 in Appendix B. Key findings are:

- the maximum turning volumes from Mortlake Road are at the new subdivision road where it is anticipated that up to 50 vehicles may turn left;
- right turning volumes are generally low and less than 20 vehicles per hour as the majority of traffic is to and from the south.

4. IMPACTS AND MITIGATING WORKS

4.1 Mortlake Road

The impacts of the development on Mortlake Road through traffic are primarily related to the need to accommodate low-speed turning manoeuvres into the subdivision. As discussed, the predominant traffic movements are likely to be right turn in/left turn out as residents access the Warrnambool township.

To provide a safe environment for road users and to ensure the operational characteristics of Mortlake Road are not compromised, the proposed intersection treatment consists of providing:

Mortlake Road/Grange Road/Wangoom Road:

- a sheltered left turn lane on the Mortlake Road south approach to Grange Road;
- a desirable long term treatment when full development has occurred on east side of Mortlake Road is to convert the high speed left turn slip lane to low speed treatment (stand up lane or similar) from Wangoom Road into Mortlake Road to enhance safety due to increased traffic and pedestrian movement which will occur at this location. However it should be noted that these works are not required as part of the Grange Road subdivision.

Mortlake Road/New Subdivision Road south of Grange Road:

- sheltered left and right turn lanes on Mortlake Road (Type CH).

Mortlake Road/Turner Drive:

- no specific remedial works required.

Mortlake Road which fronts the site:

Provide a service road along Mortlake Road to enhance safety for residents and other road users and provide separation between local traffic and Mortlake Road through traffic (similar to the existing treatment along Mortlake Road where residential development has already occurred). It should be noted that the Mortlake Road road reservation is wide enough to accommodate the service road without additional land from private property, which is identical to the existing residential development south of this site.

The service road is not required to extend past Lot 50 (3rd lot south of Grange Road) as these properties have access from the internal road network. Vehicular access for Lot 61 (corner of Mortlake Road/Grange Road intersection) should occur from Grange Road.

The concept plan for these treatments is included in Appendix C, with detailed discussion on the development of the solution included below.

4.1.1 Sight Distance

Safe Intersection Sight Distance (SISD), as set out in the AustRoads *Guide to Traffic Engineering Practice - Part 5,* (GTEP 5) Section 6.2.2, are the minimum visibility criteria that must generally be satisfied from a minor road at its connection to the arterial network. This provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle in the minor road approach moving into

a collision situation (in the worst case stalling across the traffic lanes), and to decelerate to a stop before reaching the collision point (refer to Figure 4.1.1 below).

GTEP 5, Table 6.3 requires this minimum distance under the conditions present at the new access road (viz. semi-rural environment 60 to 80 km/h speed zone) to be approximately 115 – 170 m. Clear visibility of a driver positioned at the new access road and offset 5 m from the conflict point is at least 200+ m in both directions which satisfies the sight distance criterion.

The existing visibility at Mortlake Road/Grange Road/Wangoom Road and Mortlake Road/Turner Drive service road are also considered satisfactory in this regard.

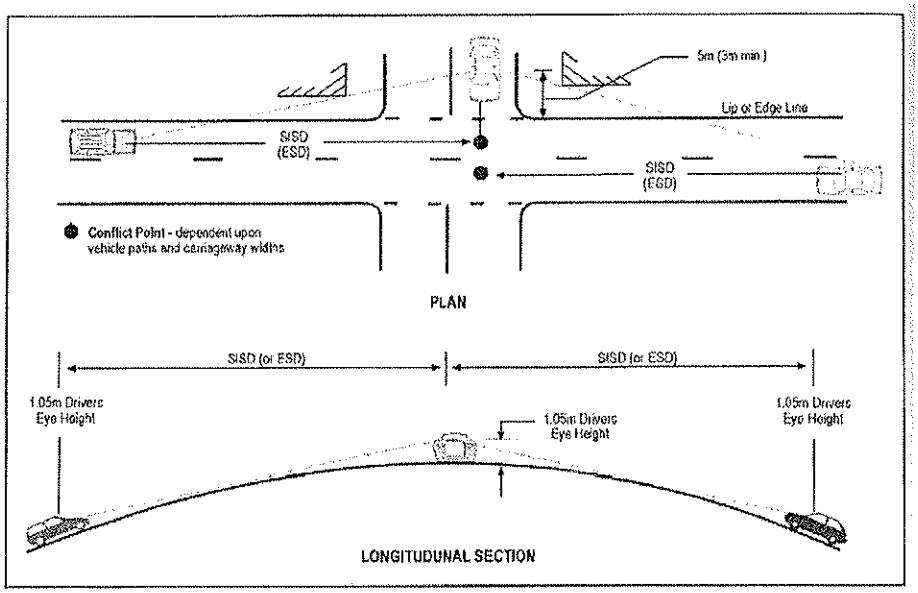


Figure 4.1.1 – Entering Sight Distance and Safe Intersection Sight Distance diagram

(Reproduced from Guide to Traffic Engineering Practice – Part 5: Intersections at Grade)

4.1.2 Turn Lane Provisions

Separate turn lanes are normally provided to avoid congestion caused by delays to through traffic where turn movements reach the threshold values outlined in the AustRoads *Guide to Traffic Engineering Practice – Part 5* (refer Figure 4.1.2.1 *Warrants for Rural Turn Lanes*).

The maximum peak hour turning volumes from Mortlake Road are at the new subdivision road where it is anticipated that up to 50 vehicles may turn left. Right turning volumes are generally low and less than 20 vehicles per hour as the majority of traffic is to and from the south.

Based on Figure 4.1.2.1 the minimum treatment would be to provide a road widening at key locations to allow a through vehicle to pass a turning vehicle, however VicRoads has advised that sheltered left and right turning lanes are to be provided. This is generally consistent with the treatment of Mortlake Road to the south, and separate left and right turning lanes provide a higher level of service, safety and amenity to road users.

In light of the above, sheltered left and right lanes should be considered for Mortlake Road at the new access locations.

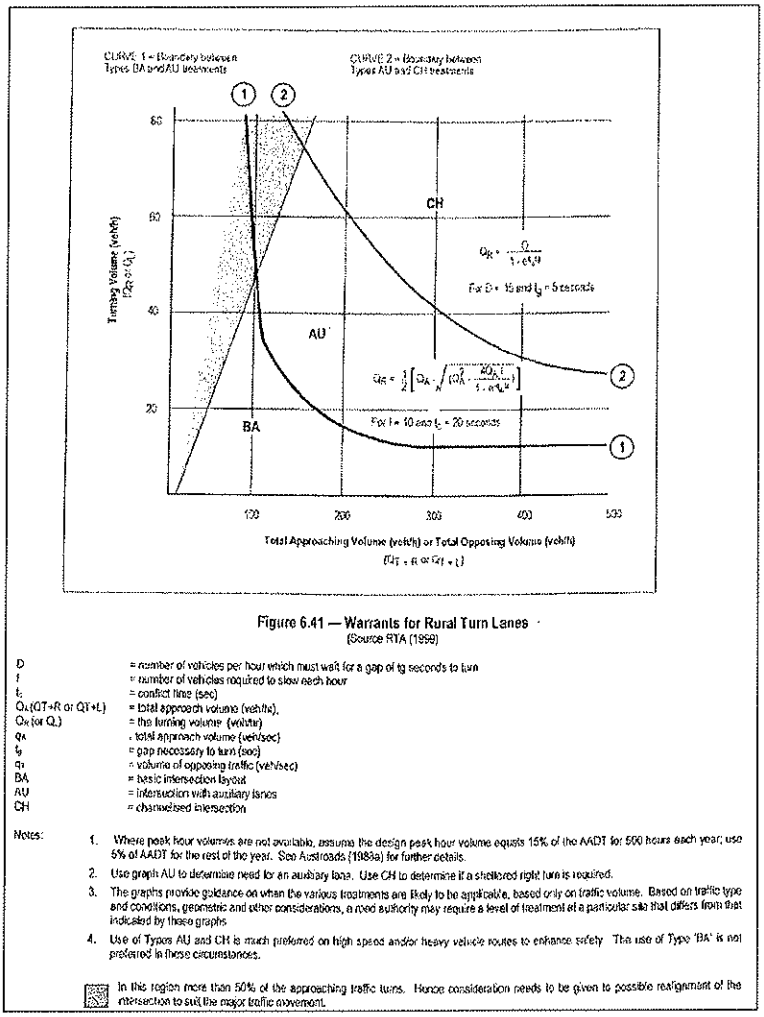


Figure 6.41 — Warrants for Rural Turn Lanes
(Source RTA (1999)

D	= number of vehicles per hour which must wait for a gap of t_g seconds to turn
f	= number of vehicles required to skew each hour
t_c	= conflict time (sec)
Q_A(QT+R or QT+L)	= total approach volume (veh/hr),
Q_R (or Q_L)	= the turning volume (veh/hr)
q_A	= total approach volume (veh/sec)
t_g	= gap necessary to turn (sec)
q_o	= volume of opposing traffic (veh/sec)
BA	= basic intersection layout
AU	= intersection with auxiliary lanes
CH	= channelised intersection

Notes:

1. Where peak hour volumes are not available, assume the design peak hour volume equals 15% of the AADT for 500 hours each year; use 5% of AADT for the rest of the year. See Austroads (1988a) for further details.
2. Use graph AU to determine need for an auxiliary lane. Use CH to determine if a sheltered right turn is required.
3. The graphs provide guidance on when the various treatments are likely to be applicable, based only on traffic volume. Based on traffic type and conditions, geometric and other considerations, a road authority may require a level of treatment at a particular site that differs from that indicated by these graphs
4. Use of Types AU and CH is much preferred on high speed and/or heavy vehicle routes to enhance safety. The use of Type 'BA' is not preferred in these circumstances.

In this region more than 50% of the approaching traffic turns. Hence consideration needs to be given to possible realignment of the intersection to suit the major traffic movement.

Figure 4.1.2.1 – Warrants for rural turn lanes

(Reproduced from Guide to Traffic Engineering Practice – Part 5: Intersections at Grade)

4.1.3 Intersection capacity

Neither the capacity of Mortlake Road, nor the operation of the subdivision access roads with Mortlake Road would be compromised by the additional traffic from the proposed development as the traffic flow associated with the development is relatively low.

AustRoads Guide to Traffic Engineering Practice Part 2 – Roadway Capacity identifies that minor road/main road intersections perform satisfactorily, and remedial works are generally not required when the volume of right turning traffic wishing to enter the subdivision is less than 250 vehicles per hour. The projected traffic associated with the subdivision is significantly below this trigger point and remedial capacity works would not be required.

4.1.4 Staging of Works

The proposed sheltered turn lane treatments on Mortlake Road should be provided as part of when the internal road network of the subdivision is constructed.

- it may form a cross road with the proposed new subdivision road as cross traffic flows are anticipated to be low (as discussed, the significant traffic movement is to and from the south). However a cross road intersection increases the number of potential conflict points for motorists and a staggered T treatment should be introduced where possible;

- a staggered T treatment for the new subdivision road from the east side should be located a minimum of 15 – 30 m to the south to create a right-left Staggered T Treatment (refer to Figure 4.1.6).

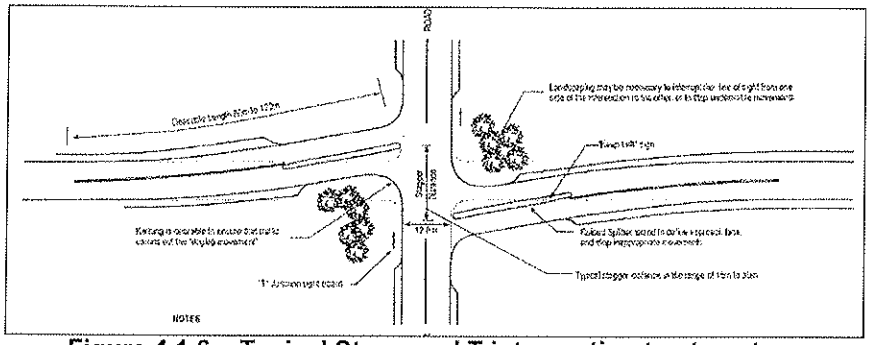


Figure 4.1.6 – Typical Staggered T intersection treatment

- a staggered left-right treatment would require the new subdivision road from the east side to be located approximately 120 m north to allow a back to back sheltered right turn treatment to be introduced. This places this intersection generally within the middle of the potential land for subdivision on the east side of Mortlake Road and approximately 80 m downstream from the exit of the high speed left turn slip lane. It is likely that this treatment would create the optimal access arrangement onto Mortlake Road.

4.1.7 Mortlake Road – Pedestrian/bicycle access

The proposed internal layout of the subdivision provides pedestrian links to the Merri River which will be attractive for the local community.

To enhance access for pedestrian and cyclists on the east side of Mortlake Road it is appropriate to provide a pedestrian refuge or a similar treatment on Mortlake Road to provide a safe crossing facility. The exact location can be determined during detailed design and in part, will depend on how the land on the east side will be developed. A suitable location would be at or near the proposed new access road onto Mortlake Road.

5. SUBDIVISION INTERNAL ROAD LAYOUT

5.1 Preamble

Warrnambool City Council provides design guidelines for residential subdivisions including traffic management works and these have been used to assess the proposed subdivision layout. These guidelines are generally consistent with those specified in the Planning Scheme.

The proposed subdivision road layout and access to the abutting road network meets good urban design principles and provides a permeable road layout.

All intersections within the subdivision are 'T' intersections which enhance safety and minimise potential confusion for motorists.

It is noted that some of the Local roads at the western end of the site grade steeply down into the Merri River Valley with short sections of longitudinal grades of 1 in 6. Larger allotments and few properties are serviced by these roads, and on balance specific remedial works or a road realignment to reduce the severity of these grades is not considered warranted.

5.2 Subdivision Road Cross Section

Due to the proposed road layout the major north-south road and east-west road are likely to serve a higher order within the subdivision and should be classified as B type Access Streets. The remaining roads within the subdivision would be lower order roads (refer to Table 5.2 Urban Residential Council Maintained Roads reproduced from Warrnambool City Council Design Guidelines) shown overleaf.

5.3 Traffic Management Work

The location of the subdivision and internal road layout ensure that all roads carry relatively little traffic (less than 1,500 vehicles per day) and that rat runs through the precinct would not occur.

Some of the internal roads have a curvilinear alignment and right angle bends, which in themselves act as natural traffic calming devices.

The major north south route through the subdivision is approximately 440 m long which may encourage motorists to travel at inappropriate speeds. It is suggested that a traffic calming device such as a chicane, raised pavement, or roundabout be installed at the major internal east-west local road intersection.

Similarly the major east west road through the subdivision (which provides access onto Mortlake Road) is approximately 300 m long. Introducing a traffic calming treatment at the first internal local intersection (approximately 90 m from Mortlake Road) would ensure motorists entering the subdivision travel at an appropriate speed.

Additional treatments along Grange Road are not proposed as it is already an existing residential street and traffic flows would still be relatively low (around 30 to 40 vehicles in the peak hours) once the ultimate residential development has occurred.

The suggested locations for these treatments are shown in Figure 5.3.

URBAN ROAD CLASSIFICATION	KERB TYPE	WIDTH OF SEAL	NATURE STRIP	CONCRETE FOOTPATH	ROAD RESERVE WIDTH
i. Access Lane – serving less than 10 dwellings & less than 300 vehicles per day		3.5 – 8m(1)	Not required	Not required if serving 5 dwellings or less. 1.5m wide on one side if serving more than 5 dwellings	10.0m (2) & (3)
ii Access Place - serving less than 30 dwellings & less than 300 vehicles per day	Semi-mountable (SM)	5.5m	4.3m	Not required if serving 5 dwellings or less. 1.5m wide on one side if serving more than 5 dwellings	15.0m(2) & (3)
iii. Access Street (A) – serving less than 1,000 vehicles per day (Through Road)	SM	7.0m	4.5m	1.5m path required on one side Allow for 1.5m path on other side at owners future request	17.0m
iv. Access Street (B) – serving 1,000 to 2,000 vehicles per day (Through Road)	SM	8.0m	4.5m	1.5m path both sides	18.0m
v. Collector Road serving 2,000VPD→6000 (Through Road)	Barrier (B)	12.0m Intended to leave 6m min clear carriageway	4.0m	1.5m path both sides	20.0m
vi. Secondary Arterial >6000 VPD	B	Duel Carriageway 2x3.5m lanes each way + 1x2.5m parking lane to each carriageway Median 4.0	5.0m	1.5m path both sides	40.0m

TABLE 2.1 – URBAN RESIDENTIAL (COUNCIL MAINTAINED) ROADS

(1) Width will be determined by requirements for off street parking accessibility.
(2) Width may be reduced by 1.5m if footpath is only required on one side of road reserve - width may be reduced furthermore if road is proposed to provide for one-way traffic only, in which case the road reserve width may be reduced by the 'variation in road width'. (i.e. 5.5m wide road reduced to 4.5m will equate to reducing the road reserve width by an additional 1.0metre)
(3) For Roads less than 50 metres long a footpath is not required, and the width may be reduced by 3.0m

Table 5.2 Urban Residential (Council Maintained) Roads reproduced from Warrnambool City Council Design Guidelines

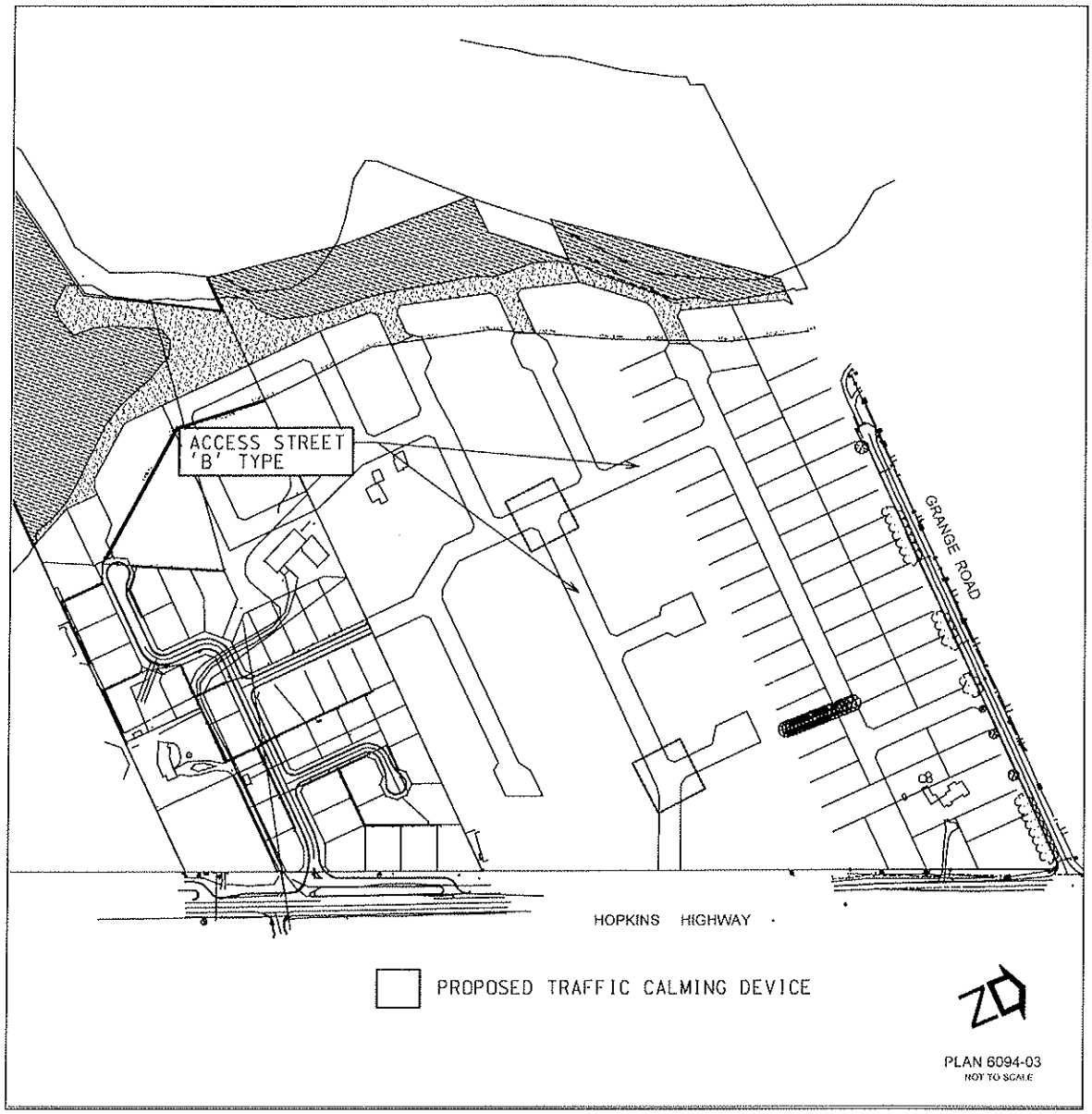


Figure 5.3 – Suggested location of traffic calming treatments

6. CONCLUSION

The proposed ultimate 200 lot residential subdivision on the west side of Mortlake Road between Turner Drive and Grange Road would not adversely impact on the safety or operation of the surrounding road network. Analysis of the existing and proposed access locations identified that all locations have sufficient capacity to accommodate the projected traffic from the subdivision.

To enhance the safety for all road users sheltered left and right turn lanes will be provided along Mortlake Road as required.

On the internal road layout, traffic calming devices are installed along the major north-south and east west access roads to ensure motorists travel at an appropriate speed.

It is considered that there would be no traffic management or operational grounds that would warrant refusal of this development.

APPENDIX A

PROPOSED SUBDIVISION LAYOUT

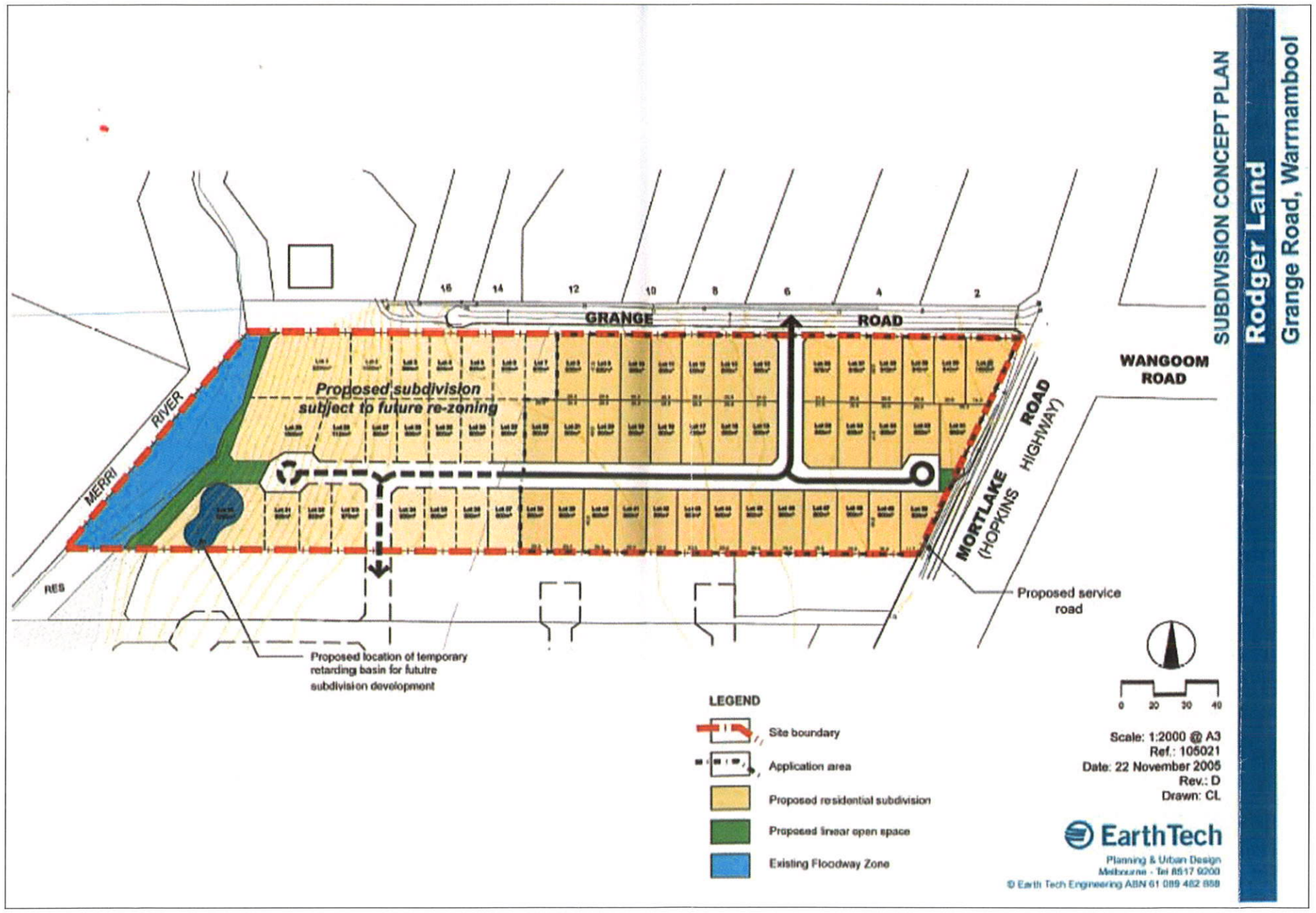
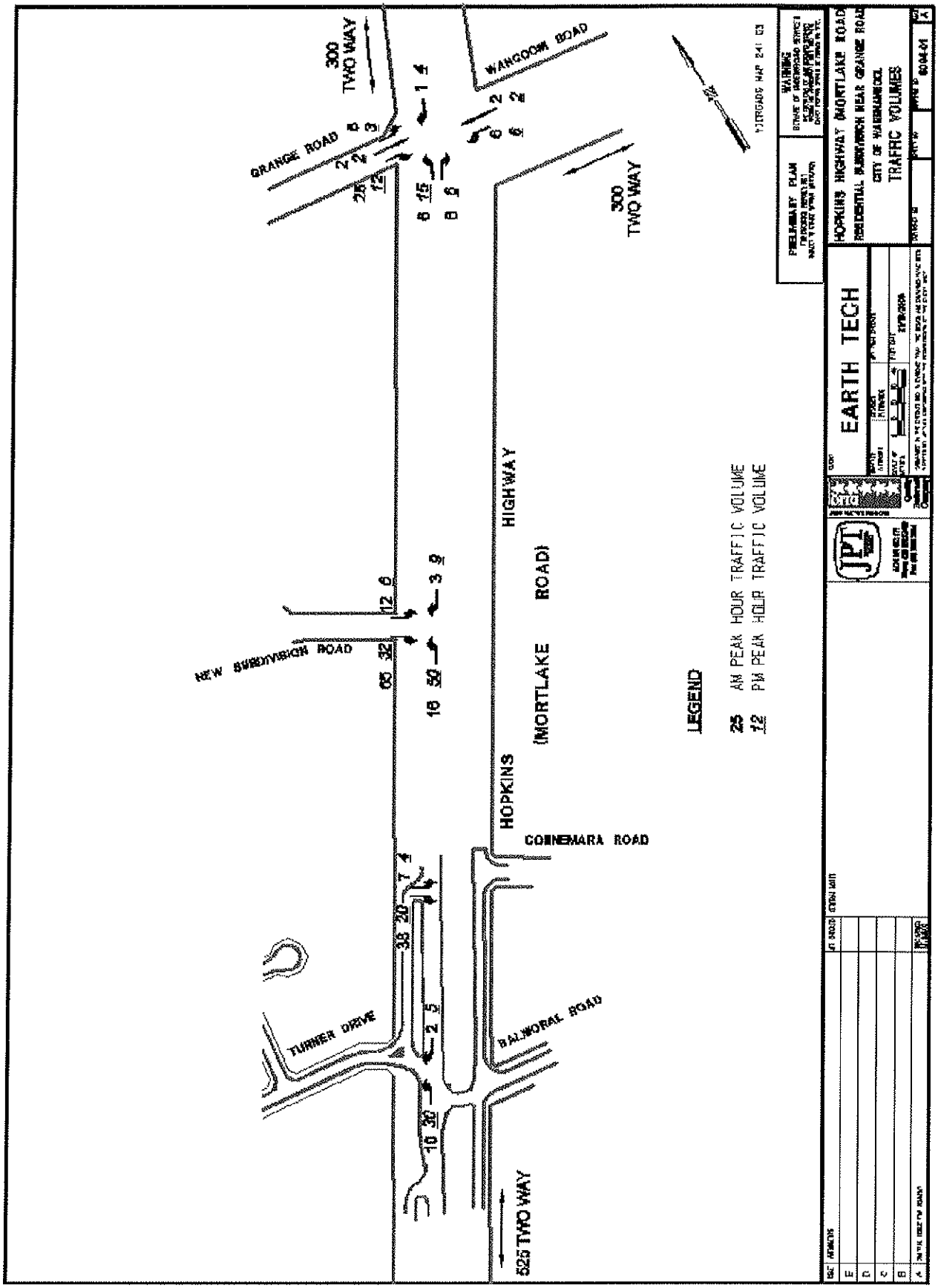


Figure A1 – Proposed subdivision layout - (not to scale)

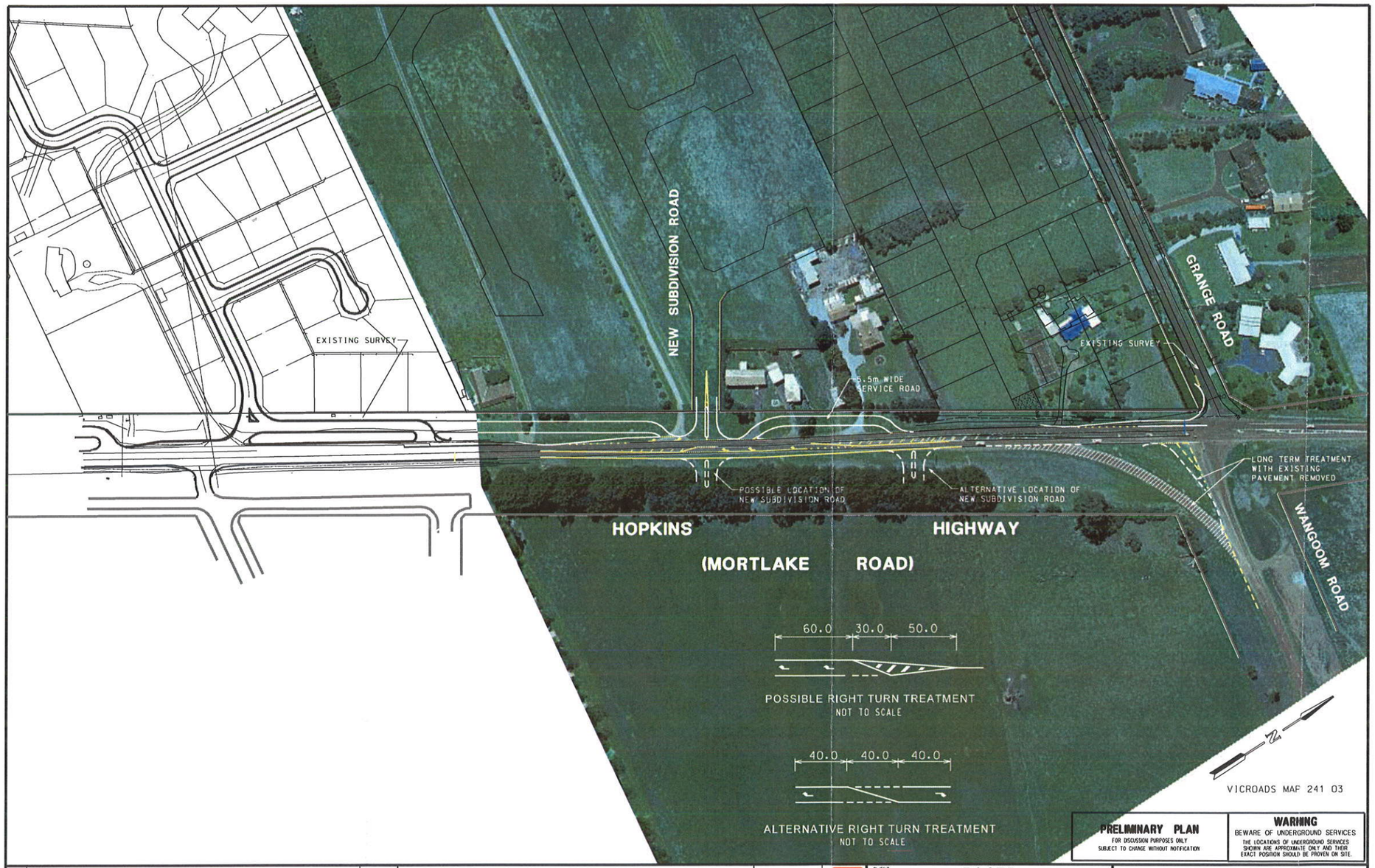
APPENDIX B

TRAFFIC TURNING MOVEMENT ASSESSMENT



APPENDIX C

MORTLAKE ROAD - TRAFFIC MANAGEMENT MODIFICATIONS



ISSUE	AMENDMENTS	JPT CHECKED	GENERAL NOTES
E			
D			
C			
B	SERVICE RD LIMITS REVISED TO SUIT NEW SUBDIVISION ARRANGEMENT	ORIG SIGNED P.E. 30/11/05	
A	INITIAL ISSUE FOR COMMENT		

JPT JOHN PIPER TRAFFIC
ACN 066 652 177
Phone: (03) 8805 3400
Fax: (03) 9800 3914
ISO 9001 Lic. No. 2627 PIQ Quality Endorsed Company

CLIENT
ROGER CONSTRUCTIONS PTY LTD

DRAFTER	DESIGNER	JPT FINAL CHECKED
A ESPOSITO	P. EDWARDS	
SCALE OF METRES 0 10 20 30 40		PLOT DATE 30/11/2005

SIGNATURE IN THE CHECKED BOX IS EVIDENCE THAT THE DESIGN AND DRAWINGS HAVE BEEN VERIFIED BY JPT AS CONFORMING WITH THE REQUIREMENTS OF THE CLIENT BRIEF.

HOPKINS HIGHWAY (MORTLAKE ROAD)
RESIDENTIAL SUBDIVISION NEAR GRANGE ROAD
CITY OF WARRNAMBOOL
PROPOSED TREATMENT

CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
		6094-02	B

Attachment E

EarthTech

OPEN SPACE PLAN
Grange Road
Warrnambool

LAND PARCEL NUMBER	SITE AREA (ha)	PUBLIC OPEN SPACE (ha) UNENCUMBERED	ENCUMBERED	TOTAL POS (ha)	% OF SITE AREA
1	7.03	0.18	0.47	0.65	9%
2	1.94	0.08	0.07	0.15	8%
3	5.44	0.22	0.53	0.75	14%
4	5.09	0.25	0.41	0.66	13%
5	5.72	0.66	2.79	3.45	60%

Please note: This plan is conceptual only and subject to further refinements.
For accurate detail, a computed survey plan will be necessary.

Scale: 1:2000 @ A2
Ref.: 105021
Date: 15 December 2005
Rev.: A
Drawn: CL

EarthTech
Planning & Urban Design
Melbourne - Tel 8517 9200

Attachment F

EarthTech

LANDSCAPE CONCEPT PLAN

Grange Road

Warrnambool

GRANGE ROAD

16 14 12 10 8 6 4 2

CROTHERS

WANGOOM ROAD

RIVER

RES

MERRI

RES

MORTLAKE ROAD (HOPKINS HIGHWAY)

Proposed service road

Proposed service road

LEO-FRANCIS DR

NEAGLE CT

DR TURNER DR

TURNER

CT

CONNEMARA

6 8 10 12 14 16 18 20 22

BALMORAL

1 25 23 21

RD

7 9 24 22 15 13 11

ST

15 17 19 12 10 8

LEGEND

- Development Plan area
- Future Development Plan area
- Proposed residential subdivision (existing Residential 1 Zone)
- Future residential subdivision (existing Rural Zone)
- Proposed street tree planting*
- Proposed open space planting*
- Proposed public open space
- Floodway Zone boundary
- Existing buildings (to be retained)

* Please Note: This plan is conceptual only, and subject to detailed design and masterplanning. Species chosen for street tree and open space planting to be in accordance with Warrnambool City Council landscape guidelines.

0 20 40 60

Scale: 1:2000 @ A2
Ref.: 105021
Date: 15 December 2005
Rev.: A
Drawn: CL

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Melbourne - Tel 8517 9200