NBAgroup

Planning & Implementing Success

Waterloo Road Development Plan

Lot 1 on TP822397, Lot 1 on LP67416, Lot A on LP208976, Lot 3 on TP836437, Lot 1 on TP674252, Part CP106601 & Allotment 4a Section F Parish of Yarragon

Applicant: Waterloo Grazing Pty Ltd
Version 5
February 2014

Amendment to endorsed Development Plan occurred on 31 January 2019.

Removal of 'possible community centre' and medium density lots from 110-120 Waterloo Road, Moe.

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Contents

1 Introduction

The Waterloo Road Development Plan (WRDP) comprises this document and the accompanying plans. It has been prepared for land at Waterloo Road, Moe and sets out the form and conditions for future residential use and development.

The Development Plan has been prepared in accordance with the requirements of the *Development Plan Overlay (DPO)* provisions at *Clause 43.04* of the Latrobe Planning Scheme and more particularly *Schedule 5* of the *Development Plan Overlay – Residential Growth Areas*.

A planning permit for the subdivision, use and development of land must be generally in accordance with the Development Plan.

1.1 Supporting Documentation

Accompanying this submission is the following supporting documentation:

Appendix 1	**Site Conditions**
Appendix 2	**Development Plan**
Appendix 3	**Implementation Plan**
Appendix 4	**Mobility Plan**
Appendix 5	**Landscape Concept**
Appendix 6	**Cross Sections**
Appendix 7	**Transport Impact Assessment**
Appendix 8	**Cultural Heritage Management Plan**
Appendix 9	**SWMS Concept**
Appendix 10	**Review of Surface Water Management Strategy (concept)**
Appendix 11	**Infrastructure Services Report**
Appendix 12	**Ecological Features & Constraints**
Appendix 13	**Open Space Plan**
Appendix 14	**Certificates of Title**

2 Development Plan Area

The Waterloo Road Development Plan applies to Lot 1 on TP822397, Lot 1 on LP67416, Lot A on LP208976, Lot 3 on TP836437, Lot 1 on TP674252, Part CP106601 and Allotment 4a Section F Parish of Yarragon , which comprises a total area of approximately 46.5 hectares.

This section of the report provides a description of the site's surrounding context and physical features.

2.1 Site Context

The subject area is located on the north western periphery of the Moe Township some 140km south-east of Melbourne.

The land abuts farming land to the north and west. To the east are established and newly developing residential areas (Mitchell Grove) whilst to the south are established residential areas with some small pockets of industrial land.

There is a single portion of land that abuts Waterloo Road, whilst several further links to existing and approved minor residential streets are available to the north-east and south-east. The Gippsland Railway runs adjacent to Waterloo Road.

The sites northern boundary is aligned with the municipal boundary between Latrobe and the Shire of Baw Baw.

The western boundary of the site corresponds with the limit of future residential development approved under the existing Moe / Newborough Structure Plan.

Refer to Figure 1 – Site Context Plan and Figure 2 – Site Analysis.

2.2 Site Analysis

The subject land is irregular in shape comprising of several titles, which have been divided into four groups for the purpose of this Development Plan.

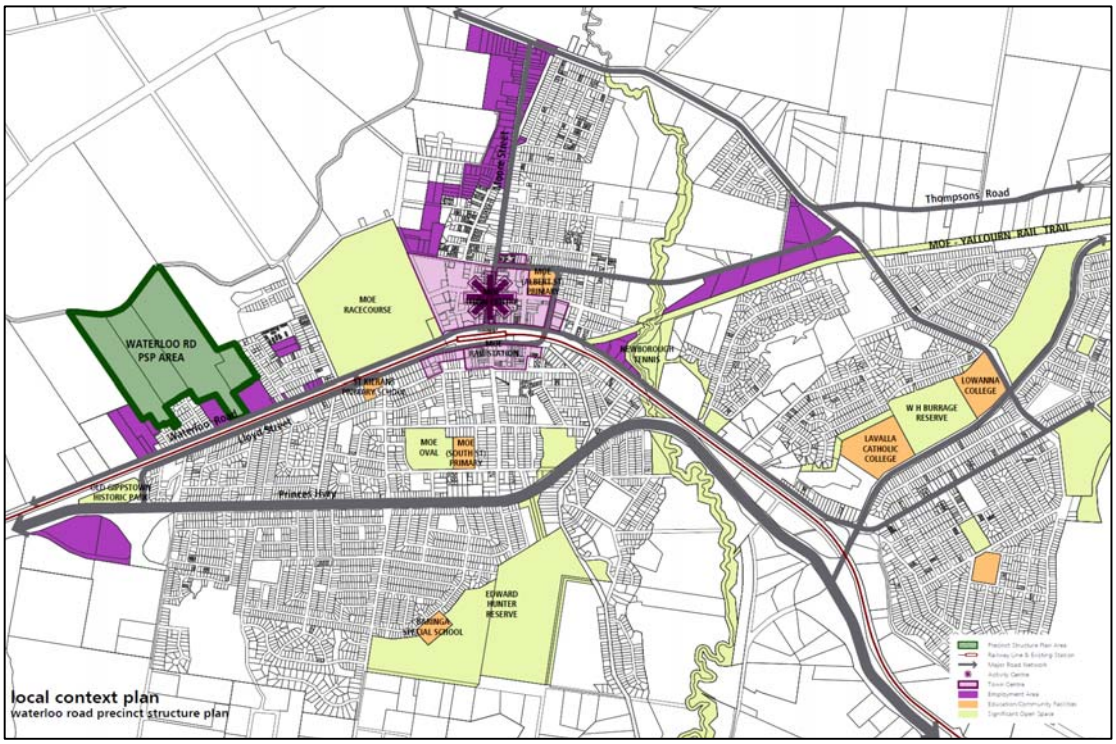
The western parcel comprises of three allotments, one of which is long and narrow and separates the remaining two lots. A single dwelling and various outbuildings are present. Two of these parcels are in the same ownership.

The eastern parcel; 98 Waterloo Rd, comprises 'part' of a lot which has split zoning. The area outside the extent of the DPO is zoned industrial whilst that included is zoned residential. The land was home to a former spinning mills, however is now unused.

The central parcel; 110-120 Waterloo Rd, comprises of two lots which are utilised as a single dairy property. A dwelling and various outbuildings are present. Both lots are in the same ownership.

The fourth group comprises a single parcel of crown land at the northern end of the site that contains the Moe Contour Drain (see the Site Conditions at Appendix 1).

Figure 1 | Site Context Plan (prepared by GAA)



Driveway access is available from Waterloo Road and Mervyn Street to each of the dwellings however a gateway is also present at Desmond Street.

As a whole the land is flat to gently undulating with a general slope from southeast to northwest and contains some minor drainage lines in addition to the Moe Contour Drain which runs along the northwest boundary.

The primary site features are its rural outlook to the north across the Moe Contour Drain (MCD), two windrows of established trees in the south-east corner (on the eastern parcel), the variety of interfacing uses and development conditions along the southern boundary as well as its proximity to Moe city centre.

The land comprises mostly of exotic vegetation, being perennial pasture and weeds. The exception is an area of indigenous vegetation adjacent to the MCD. This is identified within the Ecological Features & Constraints report (Appendix 12) as HZ1. The report describes the subject vegetation as follows:

This area of vegetation is considered to be by definition (DSE 2007a) a remnant patch of native vegetation as the cover of native vegetation exceeds 25%. To enable an assessment of vegetation quality (DSE 2004), the benchmark for EVC 83 – Swampy Riparian Woodland was used as this benchmark was considered a best fit. EVC 83 – Swampy Riparian Woodland has an Endangered Conservation Status in the Gippsland Plain Bioregion. It is considered that this remnant patch has regrown after previously being removed. The remnant patch now has a closed canopy of Prickly Tea-tree Leptospermum continentale and is without emergent eucalypts or wattles. It has low structural diversity and low flora species richness and has a Habitat Hectare (Hha) score of 0.19 (Table 3-1). The understorey and fringing Prickly Tea-tree regeneration has been heavily grazed.

It further states that:

Despite the low quality of the remnant patch native vegetation; this remnant patch has a High Conservation significance on a scale of Very High, High, Medium and Low (DNRE 2002).

In addition to the patch of vegetation approximately 0.77 hectares of land at the northern end of the central parcel has been allocated for vegetation offsetting in the Vegetation Offset Management Plan – Mitchell Grove, Moe which is approved by Latrobe City Council.

A full description of the vegetation and its ecological significance is contained in the Ecological Features & Constraints report (Appendix 12).

A registered Aboriginal place is located within 50m of the land within the Gippsland Rail Reserve and as such the site is considered to be culturally sensitive. A Desktop, Standard and Complex Assessment – Cultural Heritage Management Plan has been prepared by Benchmark Heritage Management for 110 – 120 Waterloo Road and is attached at Appendix 8. The report identified the southern end of the site as an 'area of moderate archaeological sensitivity' and the remainder of the site as an 'area of very low archaeological sensitivity'. As a result of testing it found that:

No Aboriginal cultural material was noted in the deposits.

And

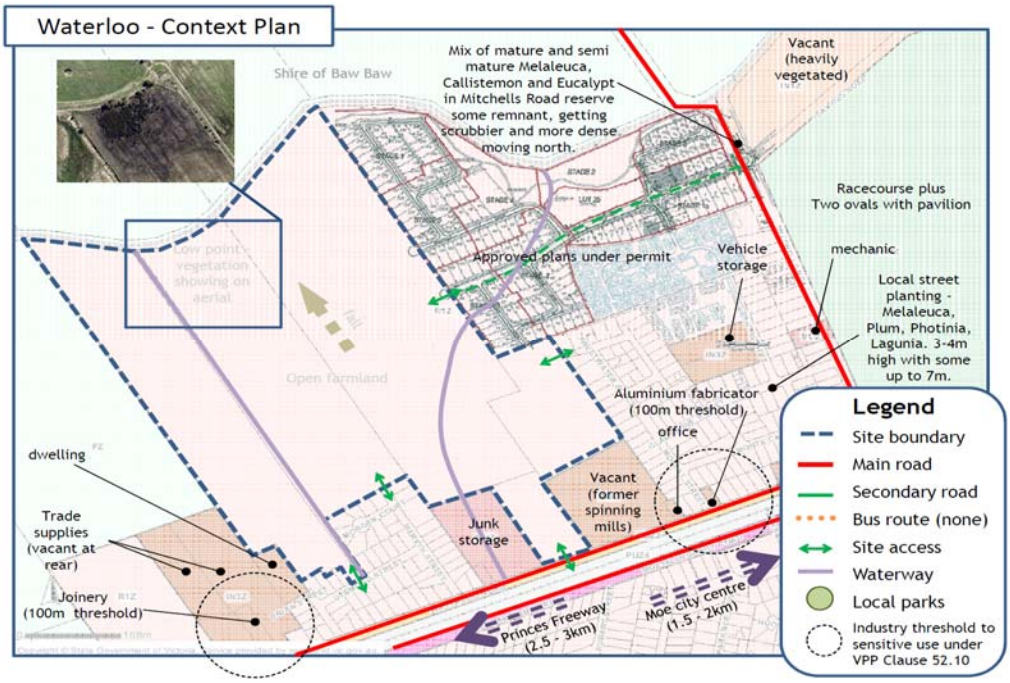
The complex assessment has revealed that the Activity Area is of low potential sensitivity for Aboriginal cultural deposits.

Sewer infrastructure dissects the land in various locations and a number of easements are present. These offer significant constraints to the development as Gippsland Water require their assets to be contained within road or open space reserves.

Overhead power lines are present on the south side of Waterloo Road and advice from SPAusnet indicates that they can support the development plan area. A series of substations will be required and they are to be detailed at subdivision application.

Refer to the Site Conditions Plan at Appendix 1.

Figure 2 | Site Analysis (prepared by GAA)



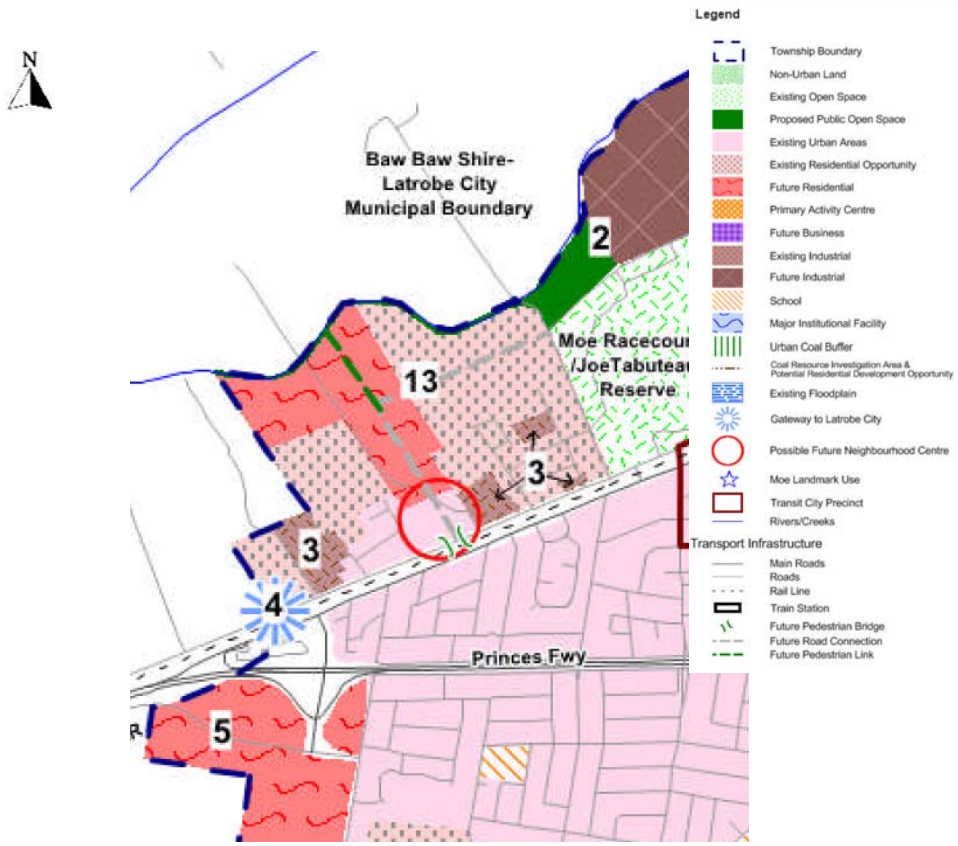
2.3 Key Influences on Development of the Site

The key influences on development of the site are:

- It's limited access to the main road network.
- The Moe/Newborough Structure Plan – identifying the site for residential development with an opportunity for local commercial facilities and a potential pedestrian bridge at Waterloo Road. The Structure Plan also shows a dog-leg connector road through the site, a pedestrian link in the north of the site and a potential pedestrian bridge across the rail line at the site's southern boundary. *Clause 21.05-2* of the Latrobe Planning Scheme seeks development to be facilitated in accordance with the Moe/Newborough Structure Plan.
- Latrobe City Bicycle Plan – shows no existing bike paths/lanes west of the city centre. However 'proposed on road local routes' are shown on Mitchells Road, Waterloo Road and Saviges Road/Discovery Boulevard.
- Latrobe Public Open Space Plan - The majority of houses in residential areas should have access to a minimum of 0.5 hectares of local public open space within a 500 metre radius. The majority of houses in residential areas should have access to district level public open space within a 3 km radius.
- The two waterways/drainage lines crossing the site.
- The location of Discovery Boulevard (Saviges Road extension) and other local road stubs at the site's boundaries.
- Likely medium to longer term land use conversion of scattered industrial sites in surrounding neighbourhood west of Mitchells Road. Particularly the status of the former Spinning Mills land at the southeast corner of the site.

- Existing Farming Zone land to the west which may be identified for residential development in the future.
- The majority of the land is shown as a Bushfire Prone Area under the Building Regulations.
- Bus 11 is located approximately 400-1200m walk to the south assuming a pedestrian bridge is delivered in line with the Moe/Newborough Structure Plan.

Figure 3 | Moe / Newborough Structure Plan (area around site only)



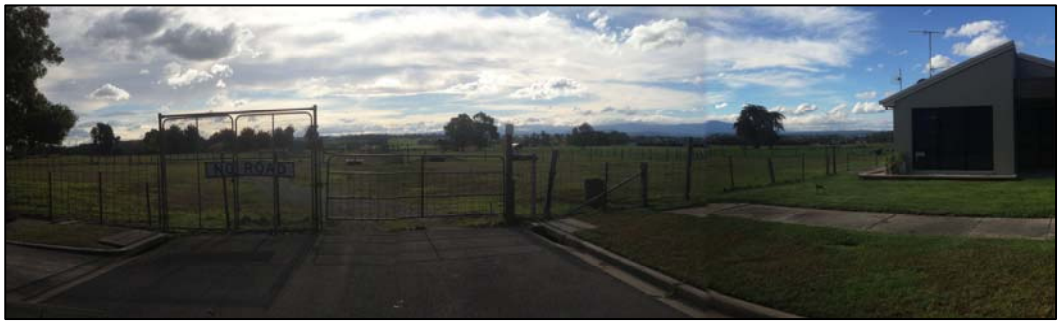
2.4 Site Photographs

Photograph 1 – Looking towards the site from Waterloo Road

Photograph 2 – Looking opposite the site from Waterloo Road

Photograph 3 – Looking east from Mervyn Street across the existing reserve to the site

Photograph 4 – Looking northwest towards the site from Mervyn Street



Photograph 5 – Looking southeast down Mervyn Street

Photograph 6 – Looking south towards the site and windrow from Sweetwater Place

Photograph 7– Looking northwest across the western parcel

Photograph 8– Looking northwest across the central parcel

3 Proposal

The proposed Development Plan seeks for all of the land to be subdivided for residential purposes.

Conventional housing densities are proposed across the majority of the site with medium density lots located abutting or overlooking open spaces. The northern end of the site adjacent to the Moe Contour Drain is indicated as open space that will accommodate wetlands as well as vegetation offsets for the development plan area and that of the adjacent estate (Mitchells Grove).

A local park and linear open space are proposed central to the site and a community facility is shown at the corner of the connector road intersection adjacent this central park. Under the residential Zone it will enable community facilities to be developed if and when required.

A further pedestrian link which encompasses an existing drainage line is proposed at the western side of the site. Open space areas provide excellent links with adjacent open spaces and streets.

Vehicle access is to be provided directly from an extension to Discovery Boulevard from the eastern edge of the site providing access to Mitchells Road. A new north-south connector road links to Waterloo Road and Discovery Boulevard, offering potential for a future road link to the north. A series of access streets offer good circulation within the development area, links to existing roads and allow for potential connections to the west in future.

The location of existing major sewerage infrastructure has informed the road and open space layout.

The proposal meets State and Local planning policy in relation to urban growth and development whilst integrating with existing and possible adjacent neighbourhoods.

4 Development Plan Overlay Requirements

Schedule 5 to the Development Plan Overlay requires the following:

A development plan must be prepared to the satisfaction of the Responsible Authority.

The plan must show the following:

4.1 Land Use and Subdivision

- ***The proposed boundaries of the development area, and provide the strategic justification for those boundaries.***

  The Development Plan (see Appendix 2) identifies the boundary of the proposed development area – Waterloo Road Development Plan (WRDP). It corresponds with the extent of the DPO5 for land on the northern side of Waterloo Road in this vicinity and is a logical boundary. Connections are provided through to undeveloped adjacent parcels to assist in the future urban expansion of the area as required.

- ***The overall subdivision of the area, including where possible, the proposed size and density of allotments which provide opportunities for a diverse range of housing types.***

  The Development Plan (see Appendix 2) indicates an overall subdivision layout for the development area. The design can be described as a grid pattern that offers flowing circulation, excellent pedestrian links and appropriate integration with open space areas whilst responding to the location of existing sewerage infrastructure and drainage lines.

  A lengthy design process has been undertaken for the site that has included consultation with the Growth Areas Authority (GAA). The evolution of the design has resulted in best practice urban design outcomes ensuring that the development responds to site features and constraints together with the aims of the planning scheme.

  The final development plan layout offers a mix of densities to cater for the varying needs of the population. It has the potential to offer 396 standard residential lots based on an average lot size of 600sqm, as well as 4.37 hectares of medium density land. Medium density sites are strategically located adjacent to public open space areas. A density of 1 dwelling per 350sqm has been assumed for the medium density sites and as such will offer 125 lots. The approximate total number of lots offered in the development plan area is 521.

  Land use percentages (of the entire site area) are as follows:

Standard lots	51.2%
Medium density lots	9.4%
Local community centre	1.1%
Open space	14.6%

The development will offer a new lifestyle precinct based on best practice urban design principles to ensure high levels of amenity and sustainable development.

- ***The overall pattern of development of the area, including any proposed re-zoning of land and proposed land uses.***

  The entire land is zoned *Residential 1* and there are no rezoning's sought. The land is to be developed for residential purposes. It is noted that varying uses are permitted in the Residential Zone and as such ample scope is available for future development of a local community centre if the demand presents.

  There are a small number of nearby Industrial (IN3Z) and Mixed Use (MUZ) zoned parcels of land. The Site Conditions Plan (Appendix 1) indicates the zoning and current land uses as well as applicable thresholds distances (determined from Clause 52.10 of the Latrobe Planning Scheme). These are summarised in the table below:

Address	Zoning	Existing Use	Threshold
168 Waterloo Road	IN3Z	Joinery	100m
166 & 170 Waterloo Road	IN3Z	Trade supplies & vacant	NA
3 Brian Street	IN3Z	Dwelling	NA
122-132 Waterloo Road	MUZ	Junk storage	NA
98 Waterloo Road	IN3Z	Vacant (former spinning mills)	NA
96 Waterloo Road	IN3Z	Office	NA
90 Waterloo Road	IN3Z	Aluminium fabricator	100m
2-4 Mena Street	IN3Z	Vehicle storage	NA
16 Mitchells Road	MUZ	Mechanic	NA

  As demonstrated there are few existing uses with threshold distances and where applicable the distances are outside of the development area. Land conditions change over time, however it is noted that the onus is on industrial land to acknowledge the sensitivity inherent in being adjacent to residential land. Industry is a section 2 use in the IN3Z, whereby a planning permit is required and all the section 1 uses which are as of right, are inoffensive.

  The nearby non-residential zonings do not pose a constraint on the development plan area however the WRDP indicates a fencing treatment to the satisfaction of Council between the residential areas and the industrial zoned land to provide appropriate buffering.

  It is noted that part of the former spinning mills site is already zoned for residential purposes and forms the Eastern Parcel of the WRDP area. This site has the potential for contamination due to the past land use and at planning permit application, further details regarding the site history together with a contamination report will be required at the time of subdivision. This is in accordance with Practice Note 30: Potentially Contaminated Land (June 2005) and may lead to further recommendations of remedial actions that may need to be undertaken following the granting of a planning permit.

- ***Street networks that support building frontages with two way surveillance.***

  The Development Plan (see Appendix 2) offers a street network and development density that encourages future buildings to overlook public spaces.

  Lots are designed in varying fashions, all of which support high levels of surveillance and avoid dwellings backing onto public areas.

They are described as follows;

Road interface– these lots front roads and generally abut other residential lots to the sides and rear. It is intended that future dwellings overlook streets.

Road & reserve interface– where appropriate, medium density housing sites are located adjacent to public open space areas to ensure that future built form addresses roads and open space areas. Development of these lots would be subject to separate town planning approval following the initial subdivision.

In some instances the sides of standard residential lots abut narrow sections of public open space, however it may be appropriate for design guidelines to be developed and implemented as planning permit conditions should the need arise. Such guidelines will enable control of the built form and in particular will ensure that houses offer a habitable interface to reserves and appropriate fencing treatments where applicable.

- ***An accessible and integrated network of walking and cycling routes for safe and convenient travel to adjoining communities (including existing and future areas included in the DPO), local destinations or points of local interest, activity centres, community hubs, open spaces and public transport.***

  The layout caters for an integrated pedestrian and cyclist network that offers external connections where considered appropriate.

  The internal street network offers a mix of collector roads and access streets, both of which are intended to cater for pedestrians and vehicles. Road reserves are narrowed adjacent to open spaces where the intention is that the path network be contained within the reserve, creating a pleasant and safe environment for users.

  A dedicated shared path runs through the large reserve at the northern end of the development to create a path network with adjacent Mitchells Grove as well as offering a potential future link to the west.

  A pedestrian link is provided to Desmond Street to ensure connectivity for residents of this existing area, with minimal implications for new and increased vehicle movements through the established neighbourhood.

  A further off road path meanders within the linear reserve running centrally through the land in a north south direction linking the large reserve at the north to an existing reserve to the south. Additional linkages are provided to existing public open space adjoining the site.

  Public transport is available to the south of the land and new paths offer suitable links. To enable access over the Gippsland Railway and ensure consistency with the Moe/Newborough Development Plan a future bridge is indicated.

  The Mobility Plan (see Appendix 4) provides a visual representation of the integrated pedestrian and cycling network.

- ***The provision of any commercial facilities and the extent to which these can be collocated with community and public transport facilities to provide centres with a mix of land uses and develop vibrant, active, clustered and more walkable neighbourhood destinations.***

  In accordance with the Moe / Newborough Structure Plan the entire area of land is dedicated to residential purposes with the exception of a local community centre which is co-located with an open space area and medium density housing site. It would be suited to a variety of uses to provide support to the community such as a child care centre, neighbourhood house, place of worship or aged care complex. Development of this site would be subject to a future development application and design objectives could be considered at that time.

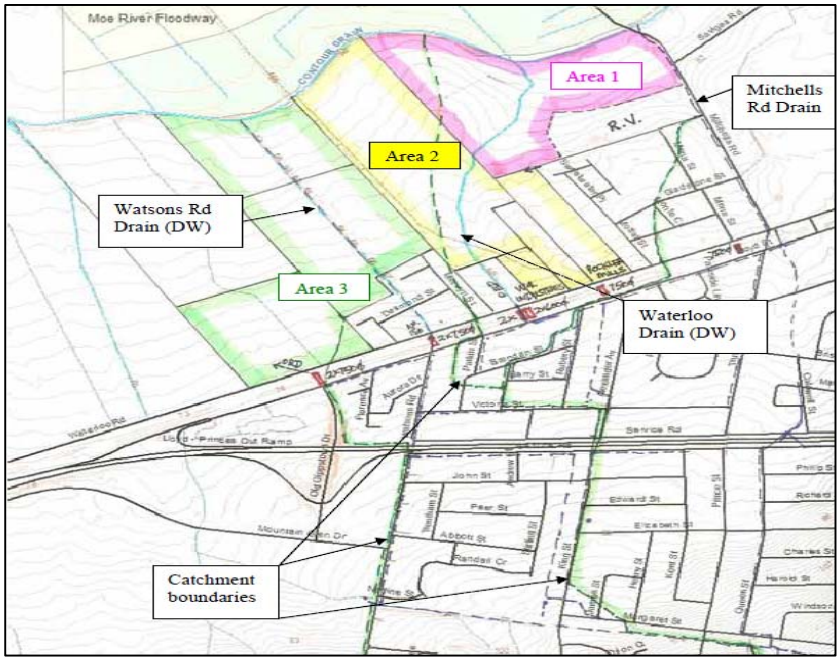
  The site layout offers a modest increase in residential lots and based on the envisaged population for this development, there is not enough demand for any additional commercial facilities. Rather, the development will increase business for existing shops. Should commercial facilities prove feasible in the future, opportunity exists on the mixed use zoned land adjacent to the precinct.

4.2 Waterways

- ***A buffer zone of 30 metres each side of waterways designated under the Water Act 1989 or a buffer based on a flood study which identifies the 100 year flood extent must be set aside for ecological purposes.***

  The Moe Contour Drain (MCD) traverses the northern portion of the site and two minor designated waterways feed into this drain from the south. There are also minor non designated waterways present (see Figure 4). The location of the designated waterways have informed the extent of the development area and where appropriate the proposed layout offers a minimum 30 metre buffer zone, elsewhere flood studies have informed appropriate corridor widths.

Figure 4 | Waterways & catchment areas within the land (Craigie 2010)



The MCD is a designated waterway under the *Water Act* 1989 and was constructed to divert minor flood flows from the southern hillslopes away from the productive agricultural flats along the Moe River floodplain. All stormwater from the subject land will also drain to the MCD. A buffer zone in excess of 30m is provided.

The other primary waterway requiring consideration as part of the development is un-named but is a designated waterway. It has been referred to as the Waterloo Drain. In consultation with the WGCMA, it is proposed that this waterway be piped given its small catchment and as such no buffers are proposed or required.

A further un-named designated waterway is present at the western end of the land and is referred to herein as the Watsons Road Drain. It is piped through the existing Desmond Street/Mervyn street residential development and then passes through the subject land as a straight open earth drain to the MCD. The Watsons Road Drain will be redirected and rehabilitated as part of the development. For the most part, it is encompassed within a 10m wide reserve which runs adjacent to a 16m wide road reserve and is consistent with the recommendations of the Surface Water Management Strategy (SWMS) (Craigie 2010) which offers the following comment:

20m minimum reserve suggested for Watsons Road Drain – alignment is flexible.

The small northern section of the reserve which abuts residential lots on both sides is 14m in width. The Cross Sections (Appendix 6) demonstrate that there is ample space to accommodate the rehabilitated drain, a footpath and landscaping.

4.3 Infrastructure Services

- ***An integrated stormwater management plan that incorporates water sensitive urban design techniques which provides for the protection of natural systems, integration of stormwater treatment into the landscape, improved water quality, and reduction and mitigation of run-off and peak flows, including consideration of downstream impacts.***

  A Surface Water Management Strategy (SWMS - Concept - Craigie 2010) and a review of the SWMS (Water Technology 2013) have been undertaken for the DPO5 area. The reports provide recommendations to ensure best practice environmental outcomes in relation to stormwater.

  The WGCMA have advised that designated waterways are to be protected and enhanced wherever possible, as open waterways. Piping of designated waterways would only be considered in instances where overall environmental benefits can be shown to be sufficiently positive for the development as a consequence of such action.

  Discussions have been held with Mr Adam Dunn of the WGCMA to determine likely requirements for the subject waterways. The Infrastructure Services Report (Appendix 11) includes the following discussion:

  It was confirmed that the Moe Contour Drain must be retained and protected as part of any development proposal. Ecological investigations completed to date support the proposition that aquatic and terrestrial values of the Drain and its vegetation should be protected, via appropriate setbacks, weed control and effective stormwater quality treatment.

In regard to Waterloo Drain, it was agreed that piping would be considered given the relatively small catchment area, provided that (a) an effective wetland system was created in or adjacent to the Contour Drain floodplain area to ensure best practice stormwater treatment standards were achieved and (b) that such wetland design was arranged to enhance and protect the values of the Contour Drain as well.

The Watsons Road Drain was not discussed with Mr Dunn at the time because Area 3 was not then known to be part of the investigation area. It might be expected that with its large upstream urban catchment, piping of the Drain will not be acceptable to the WGCMA. However with the protection afforded by the Freeway and Railway it may prove to be feasible to do this whilst complying with floodway safety standards, provided that environmental 'pluses' still outweigh the detriments of piping.

Given the known sensitivity of downstream rural lands to flooding issues along the Moe River flats it follows that the development plans for Areas 1-3 must incorporate sufficient retarding storage to prevent increase in peak discharge as a consequence of urban development.

The proposed development layout encompasses the Moe Contour Drain within a large area of public open space where it will not be impacted. A wetland will be developed to ensure that best practice water quality stormwater management objectives are met. The wetlands are not to be developed until stages 4 and 5 of the development. The Surface Water Management Strategy (SWMS - Concept - Craigie 2010) identifies three catchment areas as identified in Figure 4. Area 1 is the Mitchell Grove Estate, Area 2 generally covers the eastern side of the development plan and Area 3 generally covers the western side of the development plan. The report found that:

The summary features of the Area 1 wetlands listed in Table 5 show that a wetland area of 9,600 m2 is proposed with total increased flood storage volume of 10,890 m3. Compared with the requirements for Area 1 listed in Tables 3 and 4 it can be seen that the proposal will provide significantly greater area and volume. This can be used to offset requirements for the balance Area 2 lands as set out in Table 6.

Table 6, indicated that a total wetland area of 8,900sqm is required to treat and retard stormwater from area 1 and 2. An area of 9,600sqm has been supplied in area 1 – Mitchell Grove Estate and as such there is no additional wetland area required for proposed stages 1, 2 or 3 of the WRDP. Refer to the Implementation Plan at Appendix 3 for further details.

The Watsons Road Drain will be redirected and rehabilitated as part of the development. It will form part of the open space network.

The Waterloo Drain is proposed to be piped given its small catchment. The development of the wetland adjacent to the MCD will enable treatment of the runoff to best practice levels.

Figure 7 shows the strategy prepared by Craigie which identified the following integrated wetland retarding vegetation protection areas:

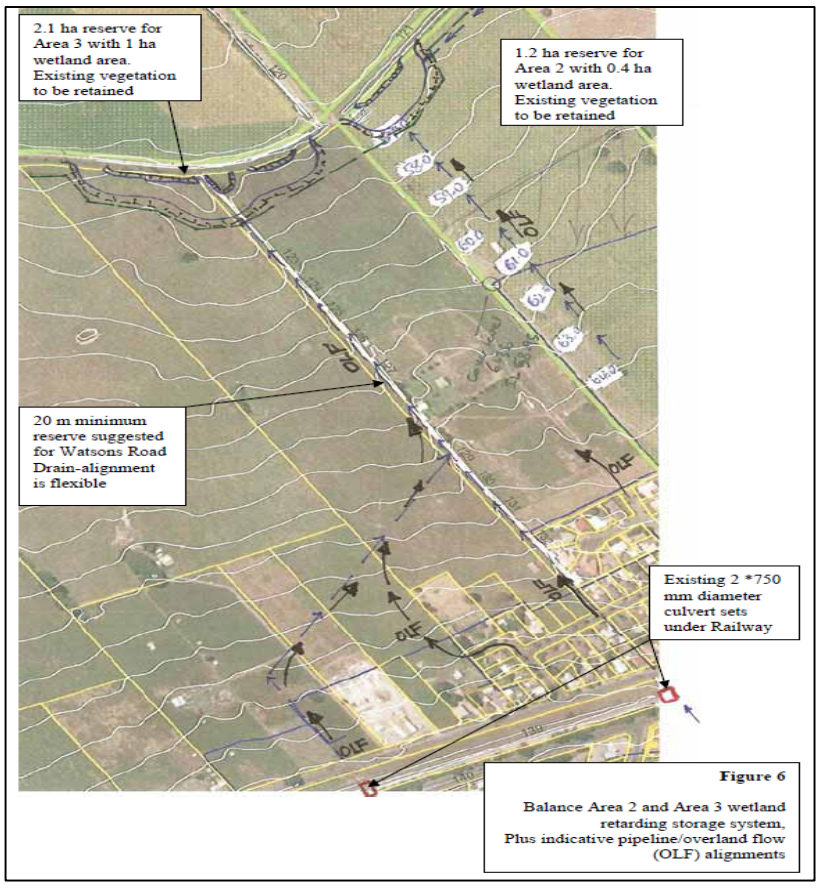
A 1.2 ha reserve will be required for the balance Area 2 frontage with wetland water surface area of about 0.4 ha;

A 2.1 ha reserve will be required in Area 3, incorporating a 1 ha wetland.

It is noted that these areas may be reduced once survey information is available. In regards to Area 3, it is noted that this can be developed as a stand-alone exercise in the following fashion:

It is suggested that for present purposes a floodway reserve of not less than 20m width should be assumed to be required in Area 3 along the current Watsons Road Drain alignment north of Desmond Street. If the integrated wetland retarding storage shown is provided, I am confident that the WGCMA would see the benefits for the Moe Contour Drain corridor and treatment of stormwater from the major upstream catchments as being sufficient benefits to offset the piping of the drain in Area 3. However my expectation is that overland flow magnitudes will exceed the safe capacity of a roadway acting as a floodway.

Figure 5 | Surface Water Management Strategy (Craigie 2010)



A MUSIC model was set-up to check the overall quality performance of the proposed integrated wetland retarding storages detailed above and reflected in the Development Plan. The system was shown to greatly exceed best practice management requirements with:

- *161% Total Suspended Solids (TSS),*
- *139% Total Phosphorus (TP),*
- *95% Total Nitrogen (TN) and*
- *265% Gross Pollutants (GP)*

This clearly shows that:

…the proposed management system offers substantial benefits for receiving environmental values compared with existing conditions.

Water Technology commented on the proposed development of the site as follows:

The reduction in study area in Zones 2 and 3 has reduced both the water quality and flood storage requirements by approximately 20% (overall). If the additional area identified by NMC is to be developed as part of this overall development then the original wetland area and storage volume figures nominated by NMC should be applied.

The SWMS concept report developed by Neil M Craigie Pty Ltd was found to be a quality strategy covering off all the main requirement s of a document pitched at the concept level. Overall Concept Plans developed by Millar Merrigan and the NBA Group have adequately addressed overland flow paths water quality requirements (footprints) as identified by Neil M Craigie Pty Ltd. Flood storage requirements were not shown on the Overall Concept Plan but are assumed to be able to be accommodated in the reserve area available at the site.

The central basin location (Zone 2) was found to be at a location which would be difficult to serve the requirements of the drainage area. Moving the basin to the southern side of the Moe Contour Drain would make the feature more functional.

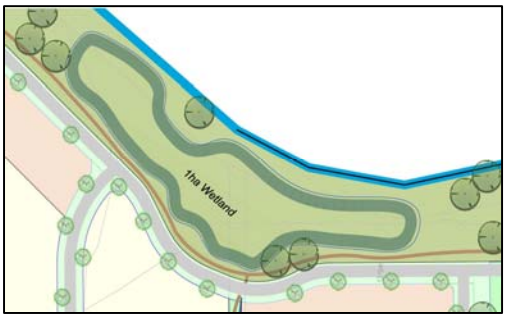
If the overall development area is to be restricted to that shown in the Overall Concept Plans reviewed in this study, then storage and water quality requirements can be reduced by approximately 20%. This is primarily due to the significant reduction in the size of Zone 3.

All drainage elements previously shown to be on the northern side of the Moe Contour Drain have been relocated to the south side as shown in the Development Plan (Appendix 2). Input from AKS industries has also allowed for the reduction in required stormwater treatment area through the use of floating wetlands. The Infrastructure Services Report (Appendix 11) notes that:

AKS industries have been engaged to assess the viability of stormwater treatment alternatives. A floating wetland has been proposed and MUSIC modelling has been undertaken to determine the area requirements. Zones 2 and 3 have been analysed and the model is shown. This shows that a total area of 1,500m^2 floating wetland is required within a body of water approximately 3,000m^2 (50% coverage).

Floating wetlands have a number of advantages over conventional shallow or fringing wetlands, the biological elements utilised are self-cleaning, which results in significant cost savings over its lifetime, and the floating wetland can deal with large fluctuations in water level (as it is located on the water surface) leading to high nutrient removal efficiency (as the microbes are consistently operating in optimal conditions). AKS industries advise that scientific trials over numerous installation sites show that floating wetlands have consistently achieved all the necessary bacteria counts and oxygen levels in treated water. By utilising floating wetlands an adequate area has been set aside in the Development Plan to accommodate the required water quality treatment.

Figure 6 | Proposed stormwater treatment



In addition to offering beneficial WSUD, floating wetlands provide habitat restoration and bring about a natural wetland / riparian look. The introduction of indigenous riparian plants offers a clear biodiversity benefit, not only with the introduction of indigenous plant species, but in that it creates habitat both above and below the water level for fauna. AKS Industries brochure *The Benefits of Floating Treatment Wetlands* states in part that:

The Riparian Edge…this is where the transition of land to water occurs and this contains some of the most species and diversity rich ecosystems in the world.
It is the riparian edge that attracts the wildlife. Floating Treatment Wetlands provide large areas riparian edge and are really a magnet for wildlife.
Fish gravitate to the Floating Treatment Wetlands for both food and protection.

The Surface Water Management Strategy (Craigie 2010) concludes in part:

The SWMS concept report developed by Neil M Craigie Pty Ltd was found to be a quality strategy covering off all the main requirement s of a document pitched at the concept level. Overall Concept Plans developed by Millar Merrigan and the NBA Group have adequately addressed overland flow paths water quality requirements (footprints) as identified by Neil M Craigie Pty Ltd. Flood storage requirements were not shown on the Overall Concept Plan but are assumed to be able to be accommodated in the reserve area available at the site.

The Development Plan enables implementation of water sensitive urban design to achieve Best Practice Environmental Management Guidelines for urban stormwater as required by Clause 56 of the Planning Scheme. A detailed WSUD analysis will be a requirement post permit for any future subdivision of the land.

- ***The pattern and location of the major arterial road network of the area including the location and details of any required:***
  - ***road widening***
  - ***intersections***
  - ***access points***
  - ***pedestrian crossings or safe refuges***
  - ***cycle lanes***
  - ***bus lanes and stops***

The Development Plan (Appendix 2) indicates a proposed road network for the subject land. It offers a logical and safe circulation network for both vehicles and pedestrians/cyclists.

GTA Consultants have prepared a Transport Impact Assessment (see Appendix 7) that provides a detailed traffic engineering assessment of the proposed subdivision layout, including the internal access arrangements as well as the likely impacts on the surrounding road network of the proposed development.

The traffic assessment concluded that:

There is sufficient capacity within the existing road network to accommodate the additional traffic movements.

The indicative street network has been designed in accordance with Clause 56 of the Latrobe Planning Scheme and the Latrobe City Design Guidelines.

It also notes that *a channelised right turn short treatment is required for the proposed intersection of Waterloo Road / site access. This treatment can be provided within the existing Waterloo Road carriageway by modifying existing line marking.*

The development plan also indicates that access to the land parcels north of the MCD (not subject to the Development Plan Overlay and within Baw Baw Shire) is to be achieved via a carriageway easement or paper road in a location to be determined in accordance with the relevant authorities.

The proposed road layout offers a functional and safe environment for internal access and creates acceptable impacts on the surrounding road network. Detailed design will be undertaken at subdivision stage in accordance with the requirements of the Responsible Authority.

Pedestrian/cyclist networks and public transport are discussed throughout this report.

- ***The pattern and location of any internal road system based on a safe and practical hierarchy of roads including safe pedestrian and bicycle connections and crossing points in accordance with Latrobe City Bicycle Plan 2007-2010 (as amended).***

  The proposed road layout is indicated on the Development Plan (Appendix 2) and has been designed in a practical fashion to ensure traffic and pedestrian/cyclist safety. The Traffic Impact Assessment (Appendix 7) discusses road hierarchy and notes the following:

  It is envisaged that the internal road network within the site will include a combination of Major Access Streets (reserve frontage, 16m Road Reserve and 18m Road Reserve) and Collector Roads, in accordance with the requirements of Clause 56.06-8 of the Latrobe Planning Scheme and the Latrobe City Design Guidelines.

  The Latrobe City Design Guidelines define a Major Access Street as:
  A street providing local residential access where traffic is subservient to local amenity. Traffic volumes are permitted to a higher level and speed limit is set to the default urban limit of 50 km/hr. Serves no external through traffic function. Traffic volumes generally up to 2,000 vehicles per day.

A Collector Road is defined as a road that:

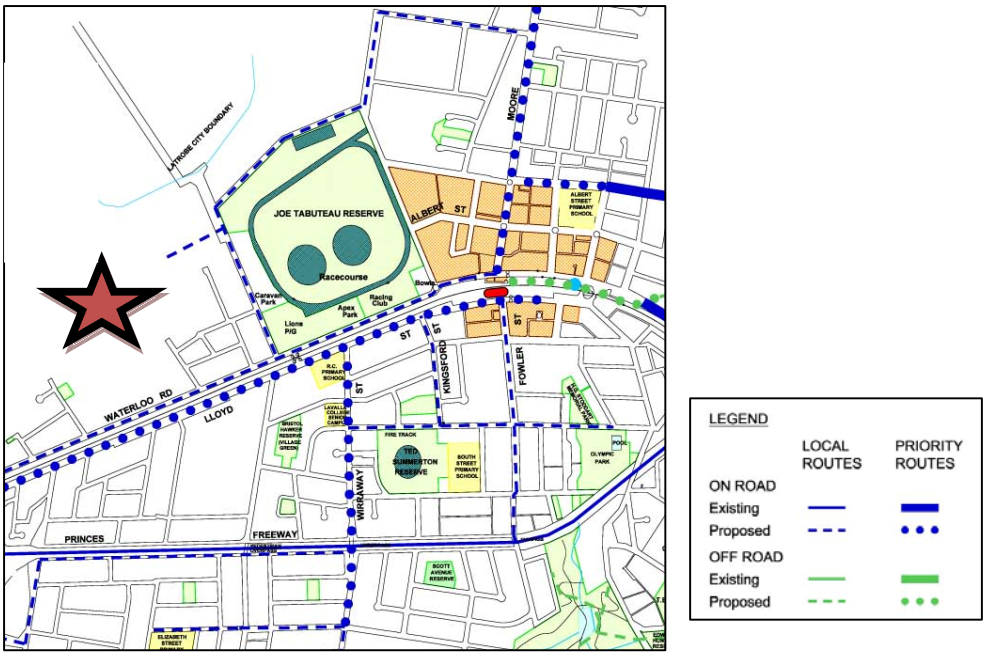
Collects traffic from the access places and access streets and connects to an Arterial road or another Collector road. Should not provide an attractive alternate route for through traffic on Arterial roads. Services traffic generated only within the Local Traffic Area. Speed limit is generally at least 60 km/hr. Traffic volumes generally up to 6,000 vehicles per day.
A potential road hierarchy is shown at Figure 9 below.

The street types utilised throughout the development facilitate pedestrian and bicycle movements and each will be designed in accordance with the applicable standards at subdivision stage. Footpaths are proposed on both sides of roads except where roads abut reserves; in this circumstance pathways are located within the open space areas (see Mobility Plan at Appendix 4). The Cross Sections (Appendix 6) demonstrate that ample space is available for footpaths, roads and street trees.

In addition, designated shared pathways are proposed within the large northern reserve to link with Mitchells Grove to the east and potential future developments to the west. The pedestrian access reserve linking with Mitchell Grove towards the southern end of the development area connects to an existing reserve and the width is consistent between the two estates.

Links to Waterloo Road will allow for connection to future on road bicycle routes planned under the Latrobe Bicycle Plan, see Figure 9 below. Links to the existing and proposed network are available via roads as well as open space areas throughout the precinct.

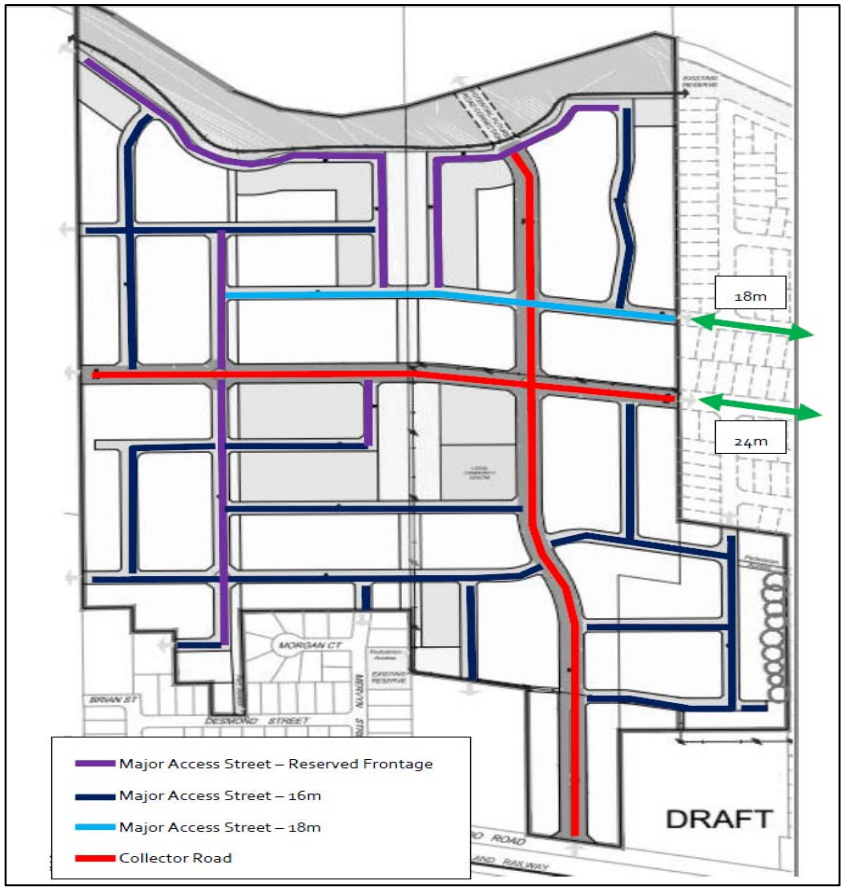
Figure 7 | Latrobe Bicycle Plan – Moe/Newborough Bicycle Network (plan cropped)



The nominated road hierarchy (Figure 8) has been designed to be consistent with the road hierarchy outlined within the Latrobe City Design Guidelines. It will be generally capable of accommodating the traffic volumes expected to be generated by the subject site.

The road network shown on the Development Plan (Appendix 2) allows for a waste collection vehicle to circulate throughout the subdivision in a forward direction. Temporary arrangements may be imposed by Council as a condition of permit for areas where collection may be challenging. (Refer to the Cross Sections (Appendix 6) for typical treatments of road reserves, including footpaths and landscaping).

Figure 8 | Road Hierarchy Plan (GTA Consultants)



- ***In consultation with relevant agencies and authorities, provision of public transport stops where appropriate within easy walking distance to residential dwellings and key destinations. Stops should also be located near active areas where possible.***

Various existing bus routes are present in Moe (see Figure 9). The Moe West route runs along Victoria Street and Lloyd Street a minimum of approximately 200m south of the site however the Gippsland Railway prevents access. A pedestrian crossing is present approximately 600m east of the land.

The Moe/Newborough Structure Plan indicates a 'future pedestrian bridge' over the Gippsland Railway. This has been removed from the Development Plan at the request of Council however once constructed will provide reasonable access to existing bus routes. The Moe – Newborough Structure Plan, see Figure 10, indicates a possible future bus route through the subject site and east through Mitchell Grove. The road network of the WRDP offers a north-south and east-west collector road to accommodate the envisaged bus network.

Figure 9 | Existing Moe Bus Network

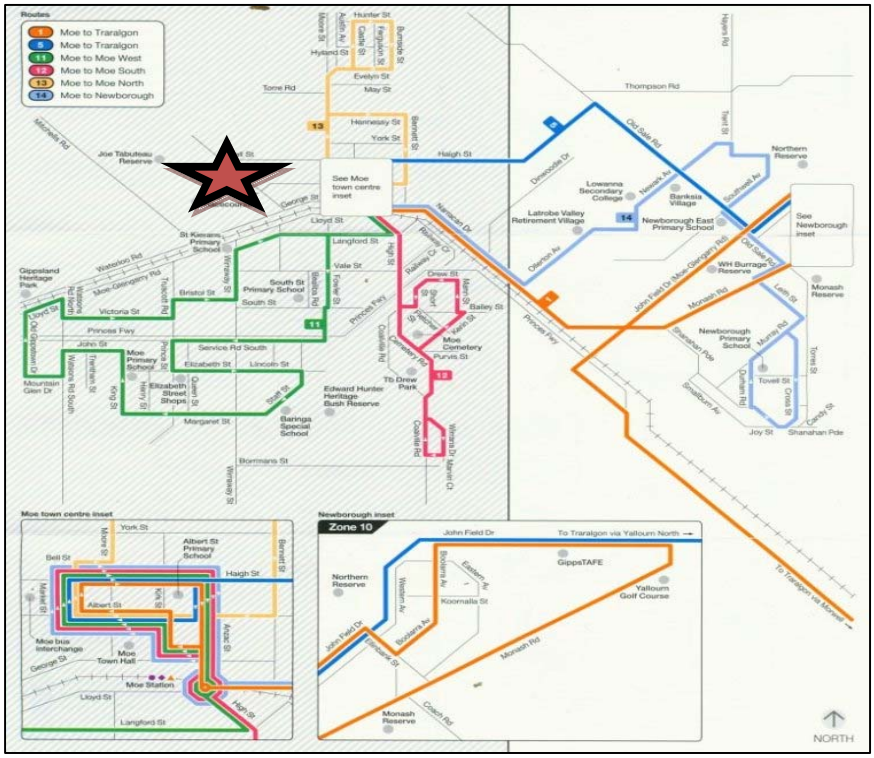
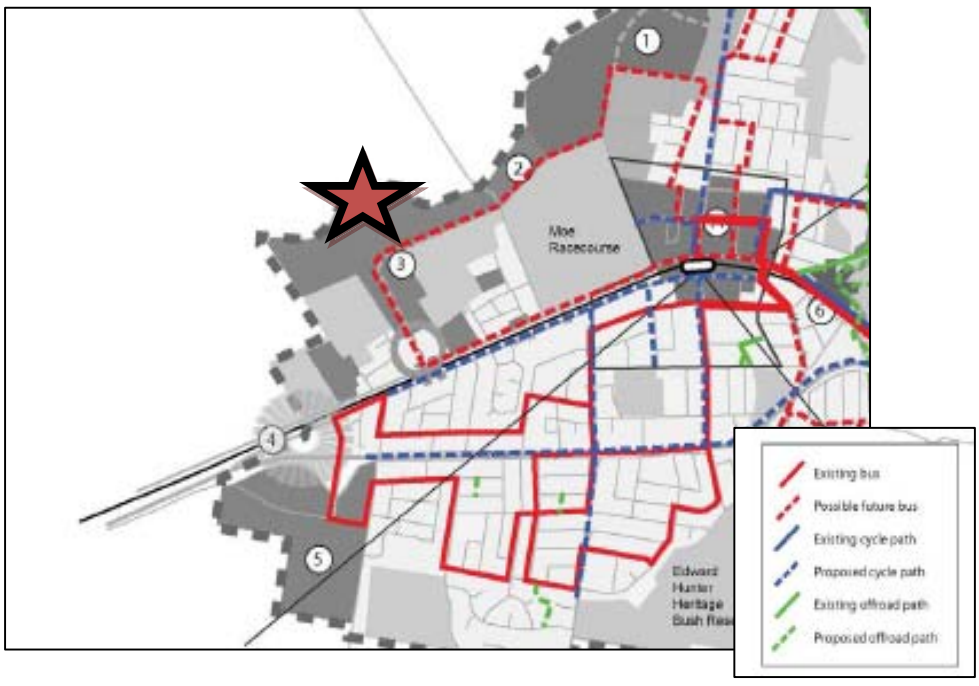


Figure 10: Moe-Newborough Structure Plan – Transport Access & Mobility, August 2007 (zoomed to site)



4.4 Open Space

- ***The location and size of the proposed open spaces that cater for a range of user groups and provide a variety of functions that perform both an active and passive role for recreation, as appropriate.***

  The Open Space Plan (Appendix 13) shows the location and size of proposed open space areas. There is a total of 6.79ha of public open space offered across the development plan area, which equates to 14.6% of the overall development area.

  Council's adopted Public Open Space Strategy (May 2013) defines open space as:

  > *Publically accessible land that is set aside for recreation, leisure, sport, conservation and/or associated environmental and urban design functions.*

  The strategy aims to employ the following policy:

  > *In residential areas, new subdivision be levied at 10% of the net developable area as total open public space, of which a minimum of 5% must be unencumbered and where required, suitable for active open space development.*

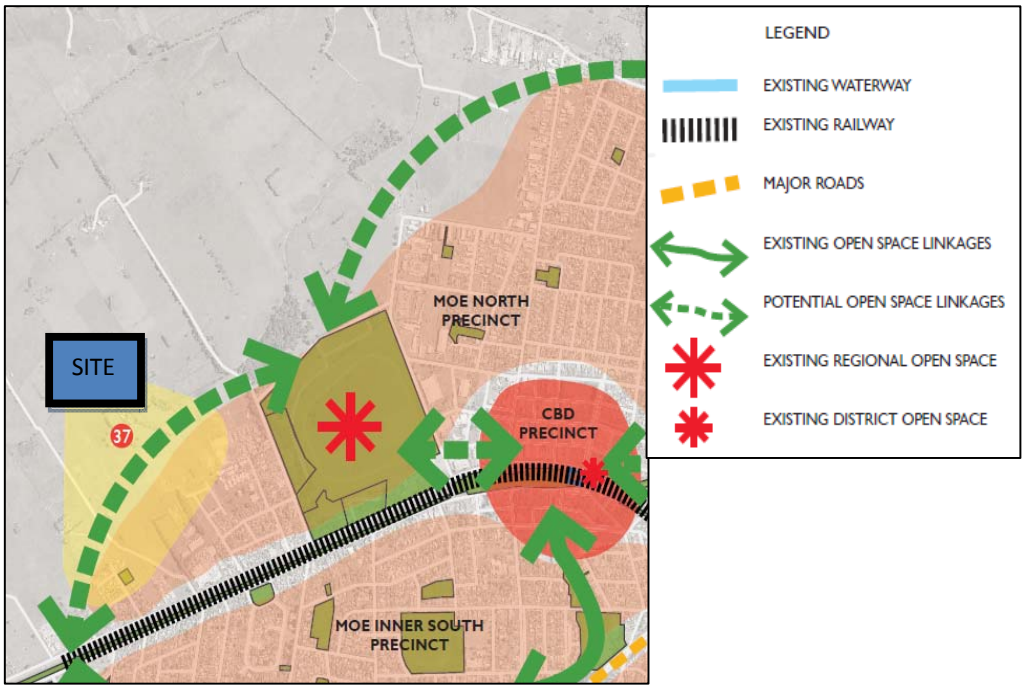
  Specifically in relation to Moe, the strategy states the following:

  - *Moe/Newborough has considerably more open space than the residential average (i.e. 31.65ha/1,000 people compared to the average of 17.62ha/1,000 people). However, a large portion of this is accounted for by Lake Narracan.*
  - *Parkland – General Use and Waterway/Drainage reserves account for a large proportion of total sites provided in Moe/Newborough (i.e. combined 71.1% of all sites), however this contributes only 40.5% of the total area provided.*
  - *Sports open space accounts for only 9.4% of the total number of sites, which is below the City as a whole (i.e. 13%), however Sports open space in Moe/Newborough accounts for 25.1% of the total land area provided (compared to 17.6% for the City as a whole).*
  - *There are 7 Conservation and Environment sites in Moe/Newborough which account for around one quarter of all hectares of open space (23.8%).*
  - *Waterway/drainage reserves account for 10% of the total size of open space available, which is significantly higher than the average for the City as a whole (i.e. 4.1%).*
  - *Northern Reserve lacks a strategic plan (i.e. Master Plan) to guide the future development and enhancement of the precinct.*
  - *There are limited open space linkages providing connections to the CBD.*

  The proposed open space areas create corridors and links in accordance with the intent of the Public Open Space Strategy (May 2013) and the associated Moe/Newborough – Recommendations Plan (see Figure 13). Recommendation 37 aims to:

  > *Ensure open space in future residential growth areas contributes to an integrated network of linear trails and local parks (refer to attached maps). Contributions to be guided by the draft Open Space Policy.*

Figure 11| Moe/Newborough – Recommendations Plan (*Public Open Space Strategy* (May 2013, zoomed to subject site and surrounding area)



Latrobe City Council's *Public Open Space Strategy* (2013) discusses open space hierarchies and recognises that:

> *Not all reserves can, or should, be developed to the same standard and that it is desirable to provide a selection of higher quality parks and reserves that provide an enhanced level of amenity, appeal and infrastructure available for community use.*

The hierarchy and desired distribution for residential areas is defined in the strategy as follows:

- ***Local*** *- The majority of houses in residential areas should have access to a minimum of 0.5 hectares of public open space within a 500 metre radius.*
- ***District*** *- The majority of houses in residential areas should have access to district level public open space within a 3 km radius.*
- ***Regional*** *- Each town with a population of over 10,000* people should have access to regional standard public open space venue/s.*

The existing open space areas located in proximity to the site are identified in Figure 12. There is a regional open space area, the Joe Tabuteau Reserve as well as numerous local reserves, including the following:

- Local Reserve with playground on Mervyn Street;
- Olympic Park (Vale Street), which offers soccer and outdoor pool;
- Ted Summerton Reserve (Vale Street), which offers football, cricket & netball facilities;
- Bristol Hawker Reserve (Bristol Street)

To ensure that all residents have ready access to public open space areas the Development Plan (Appendix 2) offers a mix of reserves that cater for a range of uses.

The Open Space Plan (Appendix 13) indicates the percentages of encumbered and un-encumbered open space areas across the WRDP area as follows:

Encumbered (MCD, Wetlands, Existing Easements, Approved Native Veg Offset area)	3.99 hectares	8.6%
Un-encumbered	2.80 hectares	6.0%

The area of land set aside as public open space within the WRDP exceeds the minimum requirements of Latrobe's *Public Open Space Strategy* (2013) and will enable a quality subdivision with high levels of amenity to be achieved.

The proposed reserves are intended as local reserves that create corridors and links in accordance with the intent of the Open Space Strategy. They will not only cater for excellent circulation through a series of interlinked paths and trails, but will also be developed into attractive and useable spaces for residents to enjoy. The reserve along the Moe Contour Drain has potential to develop into a significant linear district open space that provides connections back to Moe CBD with possible future development of adjacent land.

The vegetated areas along the MCD provide opportunity for habitat connections and improvements to the existing landscape character of the MCD.

The landscape treatment will include seating areas and shade structures as well as grassed areas for ball kick-around as demonstrated in the Landscape Concept Plan (Appendix 5).

There is an existing playground to the south of the site in a local reserve on Mervyn Street and the open space network will provide links to this reserve as well as enlarge its size.

Where public open space has not been provided, Council may consider a cash in lieu contribution in accordance with the requirements of Section 18 of the *Subdivision Act* 1988.

The Landscape Concept Plan (Appendix 5) indicates the intended overall landscape treatments for public areas to guide future development. The detailed design of these facilities should be considered in detail at the subdivision stage, as this will assist in informing the interface treatment where public open space is shared across different site boundaries.

- ***Public open spaces designed to provide:***
  - ***Public spaces of a minimum of 0.5 hectares within a 500 metre walking distance of all residents in accordance with Latrobe City Public Open Space Plan 2007, (as amended).***
  - ***The inclusion of pedestrian and cycle paths and play equipment, that encourage active recreational opportunities.***

The proposed central reserve offers almost 9000sqm of open space and is located well within 500 metres walking distance to all lots. A series of pedestrian and cycle paths provide accessibility to open space areas within the site and offer links to surrounding areas. There is ample space for play equipment and other forms of active recreation within and proximate to the site. Council's *Public Open Space Strategy* (2013) provides guidance as to the types of facilities to be constructed in the various different types of reserves.

- ***Opportunities for visual surveillance to promote safety of users, through encouraging active frontages, using buildings to frame public spaces and locating open spaces within or adjacent to activity centres where possible.***

  Best practice urban design principles have been employed to create a development with excellent levels of visual surveillance over the public realm. The layout offers a mix of reserve interfaces that utilise a combination of perimeter roads and direct lot abuttals. It is intended that all future dwellings be orientated to overlook open spaces to maximise surveillance and create a sense of safety throughout the development. The design of the community facility site can be considered in detail at the time application is made to Council.

- ***A landscape concept plan for all open space areas, indicating the location of plantings, pathways, shade, shelter and seating at activity areas as well as at intervals along pathways.***

  The Landscape Concept Plan (Appendix 5) shows an indicative plant schedule for public open space areas. Pedestrian links and possible shelter/seating areas are indicated however landscape details should be considered in more detail at the subdivision stage. It is noted there is a restriction on one parcel which provides for an offset area within that site. The WRDP provides for this are to be contained within a future municipal reserve. It is envisaged that the open space areas will be developed to a quality standard to offer a high quality development with sense of identity and character.

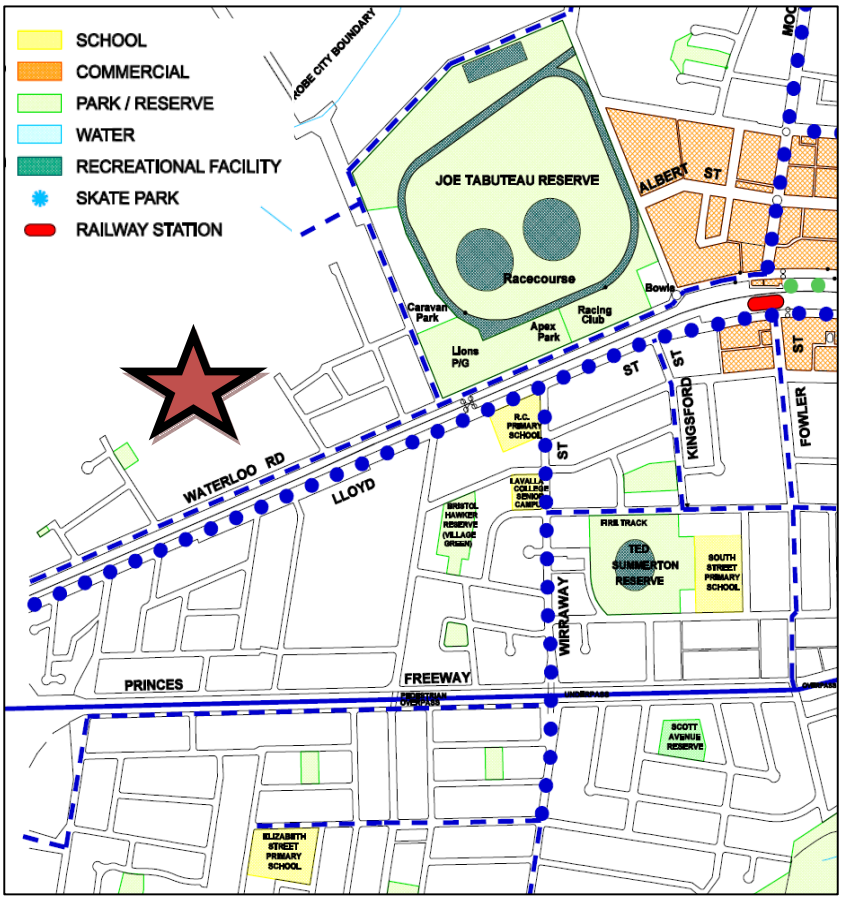
4.5 Community Hubs and Meeting Places

- ***In consultation with relevant agencies and authorities, the provision of appropriate community facilities, including schools, pre-schools, maternal child health centres, senior citizen centres and general community centres within a walkable range of 400- 800 metres across large subdivisions.***

  The subject development plan indicates the potential for 521 lots which does not warrant provision of additional major education or community facilities given the location of the site on the edge of the established Moe township. A number of schools are located within close proximity to the site as shown in Figure 12 below.

  A possible local community centre is however indicated centrally within the Development Plan area where it is within 500m of all lots and can be developed privately (ie. not Council owned) should the demand arise. The land is zoned *Residential 1* whereby a range of community facilities are permitted uses.

Figure 12 | Surrounding Education facilities



- ***Provision for access and social interaction, particularly where this encourages physical activity. For example:***
  - ***Consider the need for public amenities, including toilets and bicycle parking at key destinations in accordance with the Latrobe City Public Toilet Strategy 2006 (as amended) and Latrobe City Bicycle Plan 2007-2010 (as amended).***
  - ***The pattern and location of pedestrian and bicycle paths should provide safe and practical access to and from community hubs and meeting places.***
  - ***Spaces should be designed to accommodate community events and cultural programs including local arts activities and other festivals.***

The integrated nature of the proposed residential areas and public open spaces encourages social interaction and physical activity, particularly through the road layout and lot arrangement.

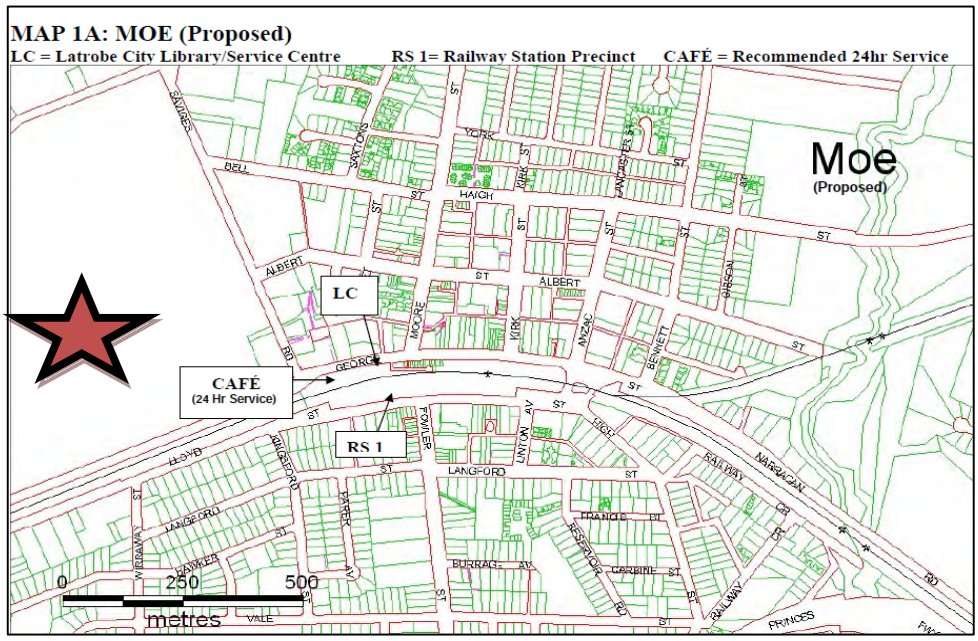
The Mobility Plan (Appendix 4) indicates the envisaged pedestrian/cycle network. It provides links to on road bicycle paths proposed as part of the Latrobe City Bicycle Plan.

The proposed circulation route offers safe and practical access to and from the local community centre site and links it with open space areas. It is co-located with open space and a medium density site to provide a community hub and meeting place.

The proposed shared path network also provides various links to existing areas whereby access to the Moe Township is available.

The Latrobe City Public Toilet Strategy (LCPTS) identifies existing toilet facilities which include the City Library, the Moe Railway Station, Joe Tabuteau Reserve, Ted Summerton Reserve and the Moe Botanical Gardens. Figure 13 indicates proposed toilet facilities, none of which are on the subject land. Given that the proposed open space areas are 'local parks' the LCPTS does not require the installation of facilities.

Figure 13 | Proposed new public toilet facilities



4.6 Flora and Fauna

- ***In consultation with the Department of Sustainability and Environment, a flora and fauna survey, prepared by a suitably qualified expert, which includes but is not limited to species surveys for Growling Grass Frog (Litoria raniformis) and Dwarf Galaxias (Galaxiella pusilla), and measures required to protect the identified species.***

Paul Kelly & Associates have prepared an Ecological Features & Constraints report (EFC) (Appendix 12) for the subject land. The assessment lists the significant fauna species potentially occurring within the area as follows:

Species Name	Common Name	Likelihood of presence on site
Anthochaera phrygia	Regent Honeyeater	Unlikely, habitat absent on site
Botaurus poiciloptilus	Australasian Bittern	Unlikely, sub optimal habitat on site
Galaxiella pusilla	Eastern Dwarf Galaxias	Possibly in Contour drain; recent record from drain downstream. Assume presence in drain.
Rostratula australis	Australian Painted Snipe	Unlikely, sub optimal habitat on site
Prototroctes maraena	Australian Grayling	Unlikely in Moe Contour Drain; no recent records from vicinity.
Potorous tridactylus	Long-nosed Potoroo	Unlikely, sub optimal habitat on site; no records from the vicinity.
Lathamus discolor	Swift Parrot	Unlikely, habitat absent on site
Litoria raniformis	Growling Grass Frog	Unlikely; sub optimal habitat on site. No records from the vicinity. Potential for use of the drain as dispersal passage.
Heleioporus australiacus	Giant Burrowing Frog	Unlikely, habitat grossly modified, majority of moist areas on site extensively pugged.
Isoodon obesulus	Southern Brown Bandicoot	Unlikely, sub optimal habitat on site, no records from vicinity
Pseudomys fumeus	Smoky Mouse	Unlikely, habitat absent on site
Pteropus poliocephalus	Grey-headed Flying-fox	Unlikely, No records for the vicinity may overfly.
Rostratula australis	Australian Painted Snipe	Unlikely incidental visitor. Habitat on site modified

The survey further states that:

No EPBC or FFG listed fauna species were observed during field investigations.

And

The riparian on the site and aquatic vegetation in the drain adjoining the site is considered to be the most likely site for the presence of any threatened species of fauna. The riparian habitat was highly modified by the dominance of exotic vegetation particularly the introduced Cumbungi Typha latifolia but more importantly the extensive pugging and trampling of the vegetation and waterway by cattle. The water of the drain was turbid most likely emanating from catchment runoff and cattle grazing close to the drain.

It is considered that the site does not contain critical habitat for any threatened species that potentially occur in the vicinity. However, there is potential for both Growling Grass Frog (GGF) and Dwarf Galaxias to utilise the adjoining drain. For the purposes of management it is assumed that both species may at times use the drain.

The development sees provision of a large open space area that encompasses the MCD and as such allows protection of significant fauna species. Revegetation will enhance habitat values and can be implemented as part of the detailed landscape design at the subdivision stage. The offset requirements imposed from the Mitchell Grove development are a relevant consideration for how this area could be vegetated and enhanced. Detailed studies may be required to be undertaken for the Dwarf Galaxias and Growling Grass Frog at the subdivision stage if required, however it should be noted that regardless of whether studies are required, opportunity exists to create suitable habitat along the Moe Contour Drain for these species, similar to the measures required for the adjoining Mitchell Grove development.

- ***An assessment of any native vegetation to be removed having regard to Victoria's Native Vegetation Management: A Framework for Action, including how it is proposed to protect and manage any appropriate native vegetation.***

The majority of the site is cleared, however it does contain one remnant patch of native vegetation (see Figure 14 below). The EFC states that:

The approved removal of this remnant patch will require an offset of 0.24 Hha of High Conservation Significance EVC 83 – *Swampy Riparian Woodland or its approved like-for-like equivalent.*

Figure 14 | Area of intact native vegetation

It further states that:

Despite this conservation significance the remnant patch is of low quality and has low species richness and structural diversity. In its current state, it does provide limited sediment management function between the grazed land and the Contour Drain and a refuge for small bush birds. It is considered that the removal and replacement of this remnant patch with a more efficient storm water/drainage facility, preferably utilising indigenous plants, would improve water quality discharge to the Contour Drain.

It further states that:

The revegetation of the reserved area adjoining the drain with indigenous species will complement the conservation values of the storm water/drainage facility. If this vegetation (HZ1) was approved for removal it would require offsets equivalent to approximately 0.24 Habitat Hectares of High Conservation Significance Swampy Riparian Complex vegetation or its approved like-for-like equivalent in the Gippsland Plain Bioregion. It is suggested that the offsets could be met, by agreement with Council, by revegetation works associated with the storm water/drainage facility and the drain reserve.

The presence of Dwarf Galaxias in the Contour Drain is assumed. As such there will be a planning requirement to ensure that Galaxias habitat is not compromised.

A similar assumption was made for the presence of Galaxias habitat in the adjoining Mitchell Run development. The Planning Permit issued for that site (Latrobe 2010/354) includes two conditions that specifically relate to the conservation of Galaxias. In summary these conditions require the preparation and approval of a Construction Management Plan to identify and mitigate impacts on existing populations of Dwarf Galaxias and that the design and construction of wetlands on the site address the specified habitat requirements of the species.

Wetland design which accounts for Dwarf Galaxias could include complementary habitat for a range of amphibians including GGF.

Revegetation works on the site should consider using Strzelecki Gums in the planting mix. An EPBC referral of the development to the federal Minister for the Environment is not considered essential but may provide improved certainty to the construction program.

An area at the northern end of the central parcel is allocated for native vegetation offsetting in accordance with the Vegetation Offset Management Plan – Mitchell Grove, Moe which is approved by Latrobe City Council and registered on the title to that parcel.

The patch of native vegetation can be factored into the detailed design at the time of subdivision of that lot to ensure that an appropriate environmental outcome can be achieved. Flexibility is provided in the layout to investigate the impacts on this patch from either the road network, open space design and wetland design. Any planning permit application for that land will need to have regard to the three step approach for native vegetation removal and the existing offset area.

Opportunity exists at the subdivision stage to ensure that appropriate regard has been given to the three step approach to native vegetation removal. There is adequate flexibility within the Development Plan documentation to ensure that the detailed design of required infrastructure applies this three step approach. Advice should be provided with future subdivision applications as to how opportunities to avoid and minimise impacts on native vegetation have been considered in the design detail.

- ***Regard must be had to the West Gippsland Native Vegetation Plan 2003.***

  In accordance with the West Gippsland Native Vegetation Plan, the Development Plan will seek an improved environmental outcome, achieved primarily through the improvements to the MCD and works required for the protection and enhancement of habitat for the Dwarf Galaxias and Growling Grass Frog.

- ***Any management plan should take into account that the Strzelecki Bioregion is one of Victoria's most fragmented Bioregions and address this as a consideration.***

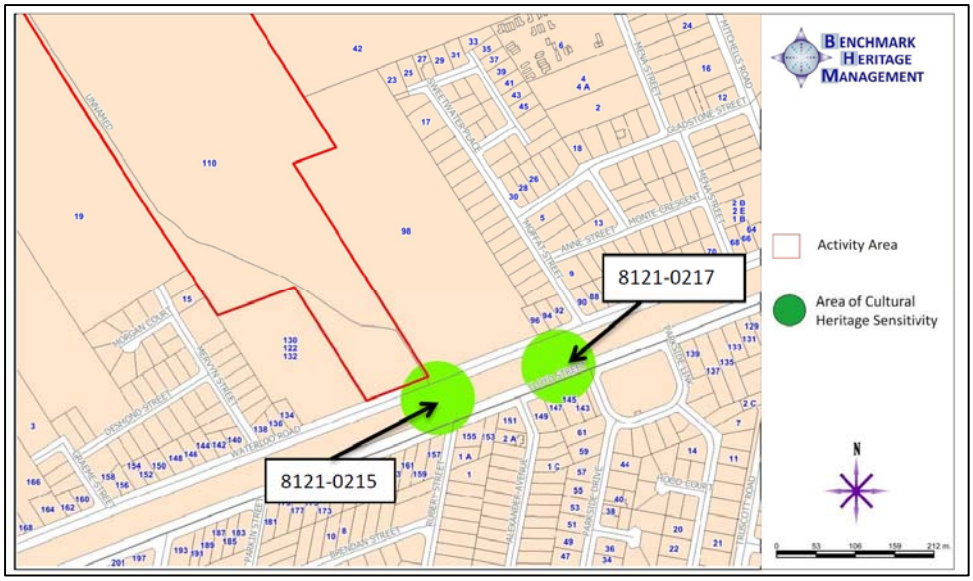
  The *Development Plan Overlay – Schedule 5* covers a range of areas within the municipality of Latrobe City. It is noted that the subject land is not contained within the Strzelecki Bioregion; rather it is within the Gippsland Plain Bioregion as outlined in the EFC (Appendix 12).

4.7 Cultural Heritage

- ***A cultural heritage assessment including how cultural heritage values will be managed.***

  A registered aboriginal place is located within 50m of the land within the Gippsland Rail Reserve and as such part of the land is considered to be culturally sensitive (see Figure 15). A Desktop, Standard and Complex Assessment has been prepared by Benchmark Heritage Management for the land at 110-120 Waterloo Road (the central parcel) and is attached at Appendix 8.

Figure 15 | Areas of Cultural Heritage Sensitivity



The Desktop study, in part concluded that:

The local distribution of Aboriginal archaeological sites clearly indicates that Indigenous people established campsites over a wide area of the alluvial plains and adjacent to existing watercourses. The archaeological sites which have been recorded in previous studies are indicative of past campsites, established by Indigenous people exploiting resources in the riverine environments, as well as resources which would have been available on the grassy plains.

Because of the close proximity of the Activity Area to the riverine environments of the Moe Swamp it is possible that Indigenous people would have established campsites in the local area, including the Activity Area, during the past. This is supported by the large number of archaeological sites which have been found in the locality surrounding the Activity Area.

There is, therefore, some potential for remains of past Indigenous campsites to occur within the Activity Area. Archaeological site types are most likely to comprise of surface scatters of stone artefacts and scarred trees. Any surface or near surface archaeological sites within the Activity Area, are likely to be highly disturbed by land clearance, grazing, slope wash and siltation.

The Standard study, in part concluded that:

Due to a lack of ground surface visibility in the Activity Area and the potential for buried archaeological sites within the Activity Area, the standard assessment has determined that there is a requirement to undertake a further complex assessment for this activity, prior to the preparation of a CHMP document.

The Complex Assessment, in part concluded that:

No Aboriginal cultural material was noted in the deposits.
And

The results indicate that there are no Aboriginal cultural remains within the upper soil profile; and hard clay was consistently found below this level. The complex assessment has revealed that the Activity Area is of low potential sensitivity for Aboriginal cultural deposits.

A CHMP will be required to be prepared for the eastern parcel (98 Waterloo Road) at subdivision application, however the western parcel is not considered to be culturally sensitive under the *Aboriginal Heritage Regulations* 2007.

4.8 Staging and Implementation

- ***The development plan should be prepared with an appropriate level of community participation as determined by the Responsible Authority.***

  The overall Development Plan has undergone a lengthy design process which has involved consultation with the Latrobe City Council, other statutory authorities and the Growth Areas Authority (GAA).

  The final Development Plan (Appendix 2) has considered all aspects of applicable policy and responded to site conditions appropriately.

- ***An implementation plan must be submitted as part of the development plan, indicating the proposed staging of the development.***

  An Implementation Plan has been prepared and is attached at Appendix 3, it is designed to ensure the outcomes of the WRDP are met logically and effectively.
  Latrobe City Council and other project stakeholders are not bound by the Implementation Plan, rather should be guided by the action items. Alterations to the plan would require consent of all stakeholders and Latrobe City Council.

A Staging Plan forms part of the Implementation Plan and indicates large stage areas that may be sub-staged at the time of planning permit application. They factor in existing title boundaries and land ownership, and assume that development of some stages is reliant upon prior development of other stages.

The residential development is proposed to be undertaken in a logical fashion, both in response to market demand and ease of infrastructure provision. Proposed public open space areas are included within the stages to enable their timely creation and development. Where reserves and associated landscaping cross stage boundaries they are to be developed in relevant stages by the developer, with detail provided as to how these reserves will be integrated at the time the adjoining development proceeds.

The development of the Mitchell Grove Estate to the east of the WRDP also has a bearing on the implementation plan, specifically in relation to the drainage strategy. It notes that:

Drainage from stage 1 is to be connected into the Wetlands to be constructed in stage 2 of the Mitchell Grove Estate and is dependent on Stages 3-5 of the Mitchell Grove Estate being constructed. Alternatively if this is not achievable the waterway reserve area abutting the Moe Contour Drain is to be constructed as required to service the development. This is to be generally in accordance with the surface water management strategy prepared by Neil Cragie dated October 2010, and review by Water Technologies dated February 2013. The existing drainage line (Waterloo Drain) within the site is also to be piped where applicable.

And

Drainage from Stage 2 is to be connected into the Wetlands to be constructed in stage 7 of the Mitchell Grove Estate. If the Mitchell Grove Estate wetlands are not constructed at the time of development or detail designs show that minimum grades to these wetlands cannot be achieved the potential wetland indicated within the waterway reserve area abutting the Moe Contour Drain is to be constructed as required to service the development. This is to be generally in accordance with the surface water management strategy prepared by Neil Cragie dated October 2010, and review by Water Technologies dated February 2013.

The wetlands contained within the extent of land covered by the WRDP are not to be developed until proposed stages 4 and 5 in accordance with the Implementation Plan. Given that the is only required to treat and retard runoff from stages 4 and 5 the required works will be funded and undertaken wholly by the owners of the western parcels at the time these stages are developed. The reserve will be transferred to Council and once standard maintenance periods are complete, will become Council's responsibility as the responsible authority to maintain.

- ***The approved Development Plan may be amended to the satisfaction of the responsible authority***

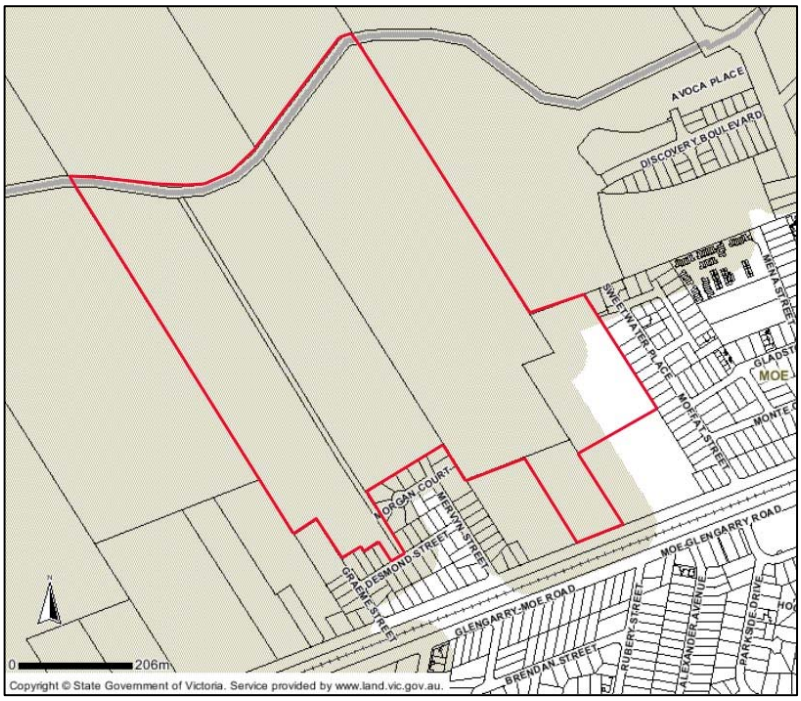
  Whilst a range of plans have been prepared to support the WRDP, it is intended that the only plan to be adopted is the Development Plan, at Appendix 2. This outlines the intended development layout without going into too much fine grained detail to avoid the requirement for the Development Plan to be amended for minor variations.

5 Bushfire Considerations

The majority of the development area is designated as a *Bushfire Prone Area* (See Figure 16) whereby special bushfire construction requirements apply. In these areas the minimum construction level imposed by *AS3959 – 2009 Construction of buildings in bushfire-prone areas* is Bushfire Attack Level (BAL) 12.5. The BAL is increased as the bushfire hazard is increased, which in turn increases building cost and as such it is favourable for the lowest BAL possible to be applied.

No bushfire planning requirements are applicable however the WRDP has appropriately considered bushfire hazard to enable ease of future development on each lot post subdivision.

Figure 16 | Bushfire Prone Area Mapping (land.vic.gov.au)



The likely form of bushfire attack to the development plan area is direct from grassfire either to houses or to the elements around housing, particularly whilst areas of the DP remain undeveloped. The staging of the WRDP responds to the potential grassfire hazard as identified in Figure 17. Staging of individual subdivisions will need to have regard to the grassfire hazard and can be conditioned accordingly.

At the completion of the development, a grassland hazard will remain to the west as the development plan area is the urban/rural interface. The residential module along this interface offers suitable depth to enable construction of a future dwelling to an appropriate BAL. Depending on the size of the dwelling, a BAL 12.5 is achievable for these future lots (See Figure 18). In addition the WRDP recommends installation of a Colorbond fence along this interface to aid in reduction of spread of grassfire.

Figure 17 | Bushfire Considerations

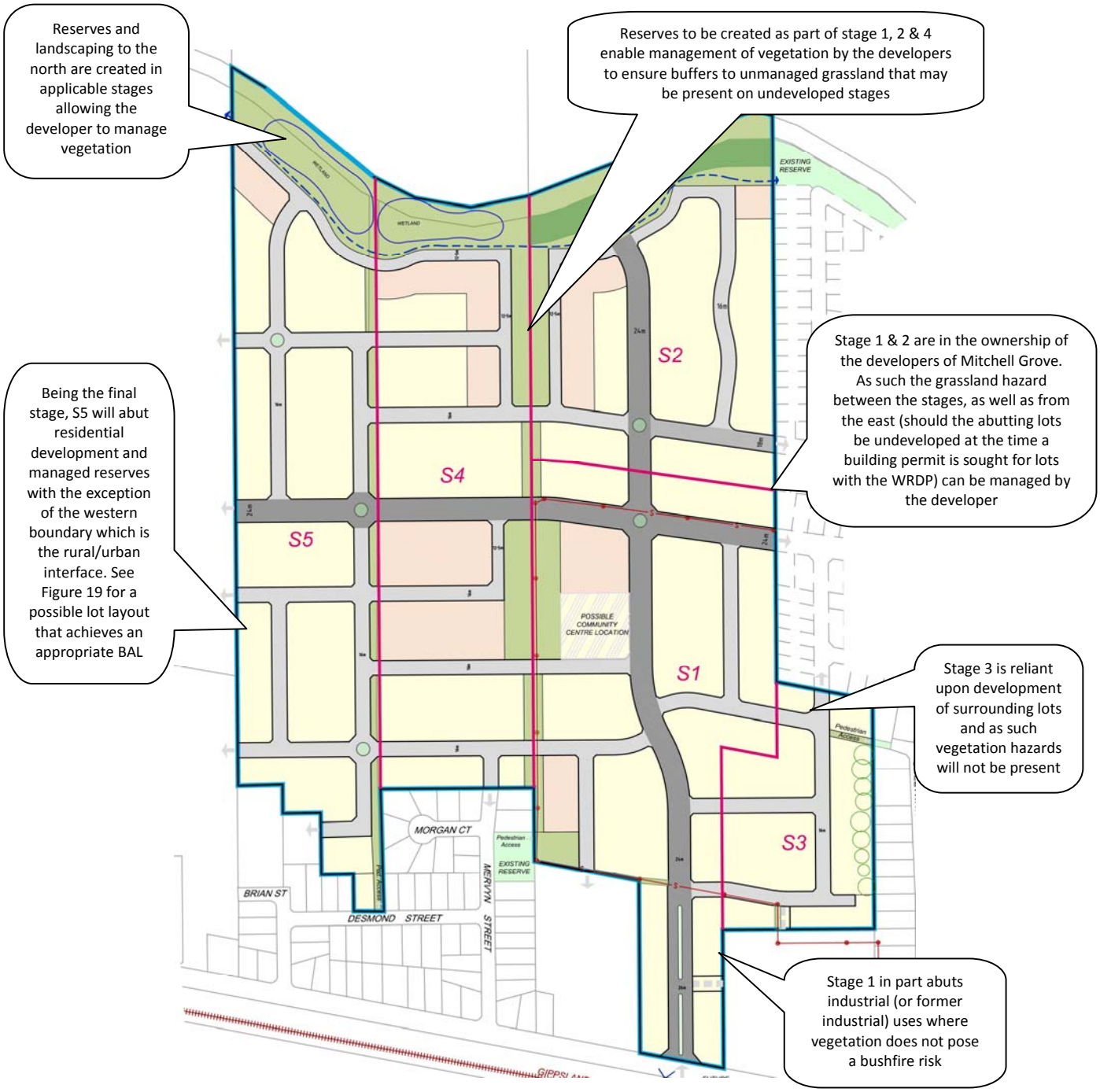
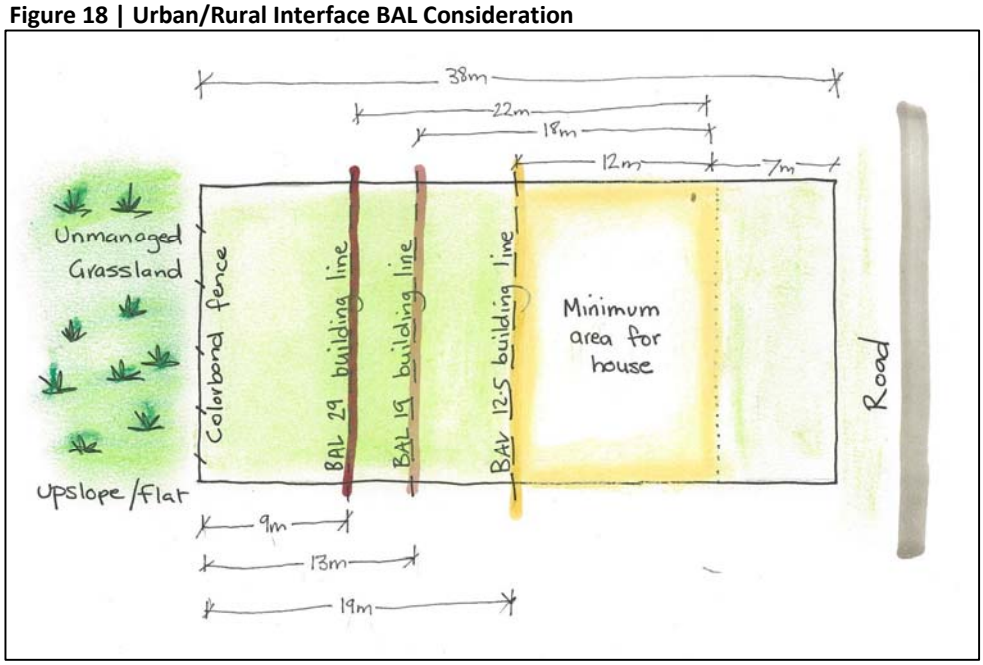


Figure 18 | Urban/Rural Interface BAL Consideration



In addition to grassfire, new landscaping, particularly the native vegetation offset area adjacent to the MCD may present a bushfire hazard to future lots. The offset area is to be planted and maintained in accordance with an approved vegetation management plan to ensure that bushfire risk is reduced to an acceptable level. The offset area within the WRDP, together with the offset area of adjacent Mitchells Grove equate to an isolated patch of vegetation of approximately 1ha in size. Future landscaping within reserves along the northern side of the WRDP must consider bushfire risk. At detailed design, landscaping should offer separation between vegetation and utilise low risk and non-combustible features where possible. These include but are not limited to managed lawn, footpaths, rocks and water bodies.

6 Conclusion

The Waterloo Road Development Plan (WRDP) indicates the form and conditions for future residential use and development. Future subdivision application must consider and be generally in accordance with the WRDP.

NBA Group Pty Ltd

7 Appendix 1 – Site Conditions

Reference: 16315DP1

8 Appendix 2 – Development Plan

Reference: 16315DP2

9 Appendix 3 – Implementation Plan

Millar Merrigan – 18th October 2013

10 Appendix 4 – Mobility Plan

Reference: 16315DP4

11 Appendix 5 – Landscape Concept

Reference: 16315DP5

12 Appendix 6 – Cross Sections

Reference: 16315DP6

13 **Appendix 7 –** Transport Impact Assessment

GTA Consultants – Revision B 17/9/2013

14 Appendix 8 – Cultural Heritage Management Plan

Desktop, Standard and Complex Assessments
Benchmark Heritage Management – 23rd April 2013

15 Appendix 9 – SWMS Concept

Neil Craigie – 12th October 2010

16 Appendix 10 – Review of Surface Water Management Strategy (concept)

Water Technology – 11th February 2013

17 Appendix 11 – Infrastructure Services Report

Millar Merrigan – April 2013

18 Appendix 12 – Ecological Features & Constraints

Paul Kelly & Associates – 23rd January 2013

19 Appendix 13 – Open Space Plan

Reference 16315DP7

20 Appendix 14 – Certificates of Title