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Approved Company – ISO 9001 – Quality Management Systems

Development Plan Report

69 Park Street and 128 & 132 High Street, Lancefield

DPO24: Lancefield Development Plan Area 1

Ref: 20222 Rev. 1, June 2021

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Development Plan Report

69 Park Street and 128 & 132 High Street, Lancefield

1 Introduction

Chris Smith & Associates have been engaged by the landholders of the properties at 69 Park Street, 128 High Street and 132 High Street, Lancefield to prepare a development plan in accordance with the requirements of Schedule 24 to the Development Plan Overlay. All properties are located within Area 1 of the Lancefield Development Plan Areas under Schedule 24 of the Development Plan Overlay (DPO).

In accordance with subclause 4.0 of Schedule 24 to the DPO, Area 1 may have two separately approved development plans. As such this development plan and supporting documentation apply to the abovementioned properties *only* (as indicated on the figure on page 2).

In support of this development plan a suite of specialist reports and plans have been prepared. The development plan should be considered in conjunction with this report and the following supporting documentation:

- ***Site and Context Analysis Plan*** by Chris Smith & Assoc.; Nov 2020
- ***Subdivision Layout Plan*** by Chris Smith & Assoc.; Nov 2020
- ***Infrastructure Plan*** by Chris Smith & Assoc.; Rev. 1; June 2021
- ***Stormwater Management Plan*** by Chris Smith & Assoc.; Rev. 1; June 2021
- ***Traffic Impact Assessment Report*** by Trafficworks; Nov 2020
- ***Image and Character Report*** by Chris Smith & Assoc.; June 2021
- ***Open Space and Landscape Concept Plan*** by Chris Smith & Assoc.; Nov 2020; Rev 1, 3/06/21
- ***Ecological Assessment*** by Cumbre, Nov 2020
- ***Preliminary Arborist Report*** by Axiom Tree Management, 7 November 2020

This report addresses the requirements for a development plan as set out in the schedule to the overlay and describes how the Development Plan layout responds to site features and its surrounding context to facilitate future residential development consistent with the defined character of Lancefield.

Site Overview
Area 1 of Development Plan Overlay 24 indicated by purple hatched area. Land that is the subject of this development plan application indicated by blue shaded areas.

2 Development Plan Area & Surrounds

2.1 Development Plan Area

Area 1 of Development Plan Overlay 24 is a future mixed-density residential precinct located at the north-west extent of the Lancefield township, approximately 800m from the Lancefield town centre.

This application relates to three properties in separate ownership within Area 1; herein referred to as the *"subject land"*; as detailed in the table over page.

69 Park Street is located at the north-east corner of the development plan area in the Low Density Residential Zone. The property currently contains a single dwelling and its associated curtilage. The remainder of the property is set out in paddocks for hobby farming activities.

128 & 132 High Street form a contiguous land area at the south west of the development plan area in the General Residential Zone. Each lot contains a single dwelling, associated curtilage and outbuildings.

The DP Area is gently sloping, falling from High Street in a general northerly direction through both portions of the subject land.

Address	69 Park Street, Lancefield	128 High Street, Lancefield	132 High Street, Lancefield
Land Area	4.8 ha	1.263 hectares	5448sqm
Parcel Description	Crown Allotment 68 & 69 Township of Lancefield, Parish of Lancefield	Lot 2 on PS143486	Lot 1 on PS143486
Certificate of Title	Vol. 06121 Fol. 101	Vol. 09539 Fol. 883	Vol. 09539 Fol. 882
Council Property #	1166981	1187160	1187161
Registered Proprietor/s	Narelle Stebbins	Terrance Foster	Brea Thornton

2.2 Surrounding Context

The subject land is located within Area 1 of the of Schedule 24 to the Development Plan Overlay. Land within Area 1 that is not subject to this application is mostly cleared low density/rural lifestyle properties used for low-scale hobby farming, horse keeping and outdoor storage.

The development plan area is located at the edge of the settlement boundary of Lancefield, delineated by McMasters and Showlers Lanes. The land use reflects this boundary with land to the north of the development plan area generally being farmland and to the south residential land within the established Lancefield township.

Adjoining 69 Park Street, on the opposite side of the road is the Lancefield Recreation Reserve, primary school and Area 2 of DPO24. South of High Street is an established residential area in the General Residential Zone where the predominant built form, like the vast majority of Lancefield, is a single storey detached houses.

More broadly, the attributes identified as defining the character of Lancefield are views to the surrounding hills, wide tree lined streets, grid layout of residential development and historic shopping strip in the town centre.

3 Requirements for a Development Plan

The Development Plan has been designed in accordance the objectives set out in Schedule 24 to the Development Plan Overlay, insofar as:

- The layout responds the established character and rural setting of the township by providing a graduated transition in lot size from the rural land to the north to the established residential area to the south;
- The proposed road network integrates with the existing road network and will facilitate a general grid street pattern within the development plan area;
- Provides a mix of low and standard density residential lots; and
- Integrates water sensitive urban design measures for a holistic approach to drainage and stormwater management.

Specific requirements for a development plan are set out at subclause 4.0 of Schedule 24 to the Development Plan Overlay. Area 1 may have two separately approved development plans. Accordingly, in preparing this development plan for the specified land parcels, care has been taken to remain generally in accordance with the Indicative Development Pattern at Figure 1 of Schedule 24 to the DPO as not to prejudice the preparation of a development plan for the balance of Area 1.

It should be acknowledged that this DP – including all supporting reports, assessments and design guidelines - does not apply to any land beyond the subject land. It would not be appropriate for this DP to prescribe development outcomes for land other than the subject land, as we have no instruction from those landholders, and they have had no opportunity for input into this DP submission. Further, the three landholders retain the commercial rights over all plans, assessments and reports provided herewith this submission (having paid for their preparation). Therefore CS&A and the landholders do not authorise these documents to be used and applied to other land by Council or landholders without the expressed and written permission of the landholders and CS&A.

The requirements for a DP are addressed under the below subheadings; however, this report should be considered in its entirety together with all accompanying assessments and reports when considering the development plan with respect to each requirement.

3.1 General

3.1.1 Site and Context Analysis

- *A detailed site and context analysis plan for each of Areas 1, 2 and 3, as identified on Figure 1 to this schedule, prepared by a suitably qualified person, that shows:*
    - *Topographical features.*
    - *Landscape features.*
    - *Views to and from the area. Significant heritage assets in the area, and on adjoining sites.*
    - *Existing buildings and infrastructure.*

- *The relationship of uses and development proposed on the land to existing and proposed uses and development on adjoining land.*
- *Any relevant elements or features of the land and its surrounds.*

See ***Site and Context Analysis Plan*** by Chris Smith & Associates Drg No. 20222/03 Rev. 0

The Development Plan Area is on the western periphery of the town. It consists of fifteen historical land parcels; however, we are advised that there only seven separate landholders, with most properties consisting of multiple land parcels.

The land generally slopes northward across the development plan area, with approximately 7m of fall across the High Street properties and 14m across the Park Street property. The land has been largely cleared of remnant vegetation, with vegetation on site being a mix of native and exotic species planted in the gardens and lining property boundaries and pasture and weed species in the open paddocks. There are several trees lining the High Street road reserve immediately adjacent to the subject land. The distant hills to the north are a prominent landscape feature with clear views from the subject land.

Each of the three separate properties that make up the subject land contain a single dwelling in a rural lifestyle/low density residential setting. Each dwelling has vehicle access directly from High Street or Park Street as relevant via an existing crossover. These existing dwellings are connected to water, electricity and telecommunications services via nearby existing infrastructure in the road reserves; they will be retained and incorporated into a residential lot. Reticulated sewer exists within the precinct, however not all properties are connected.

Beyond the houses and garden setting, each of the three properties are largely open and vacant with no other structures and only a few isolated paddock trees. Vegetation cover is mostly introduced pasture or weed species, as set out in the Ecological Assessment by Cumbre that forms part of this DP submission. The land does not appear to contain any areas of contamination, erosion or other natural features – other than topography - that would inhibit or influence future residential development.

High Street has a 60m wide road reserve, thus the property boundary is set well back from the road carriageway on both sides, behind wide grassed verges with open drainage and established trees. The long-established residential properties on the south side of High Street generally have low and/or open front fences and substantial gardens.

The Park Street area adjoins the Lancefield Recreation Reserve. Further south is the Lancefield Primary School. Both of these are within a Heritage Overlay. Park Street is sealed from High Street to the northern extent of the primary school. From here, it continues as a gravel track that provides access to the house on 69 Park Street. Further north, Park Street is unmade and only passable to Showlers Lane by four-wheel-drive.

The northern end of Park Street ends with a large 'crescent' area that abuts Showlers Lane. This land is a "Government Road" that has been (and continues to be) managed by the municipal council (Macedon Ranges Shire Council since 1995). We are advised that the eastern side of the crescent was previously used for landfill and – consequently – the Shire has been issued with more than one Pollution Abatement Notice from the EPA.

We are advised that the Shire engaged Senversa in early 2020 to carry out a ***Waste Dump Investigation*** that concluded that the historic dumping was likely to have been limited to deposition on the pre-existing natural surface at the eastern side of the crescent. This was subsequently capped with clean soil that now forms a slight dome. Test pit excavations around the perimeter of the landfill proved its extent and found the waste to be adequately contained. However, no test excavations were carried out beyond the perimeter of the known site, thus, it is unknown if there are other landfill sites in the crescent or unused sections of Park and Foye Streets.

The 2020 investigations carried out on behalf of Council recommended that Council periodically inspect the condition of the cap and carry out maintenance when required to ensure the integrity of the capping as well as manage the potential health risks due to direct contact with waste and impacts to groundwater.

Due to this known potential health risk and in consideration of anecdotal local knowledge of the area (local residents have varying recollections of the extent of "the old tip"), together with the lack of investigations beyond one discrete area, it is considered that there is potential for further buried landfill sites on other parts of the Council managed land.

To this end, based on enquiries and consultation carried out by the landholders, it is considered prudent that the Council carry out further investigations – including intrusive substrata test pits – along the unmade parts of the government roads where Council and other infrastructure is to be constructed commensurate with the development enabled by this DP. The landholders have been recommended that this should be carried out by Council before any design, approval or construction of infrastructure on the unmade roads.

Showlers and McMasters Lanes are gravel roads with open drainage that form the long-term boundary of the township. Beyond these roads is open paddocks that are used for grazing or seasonal fodder cropping.

The landscape continues to fall in a planar slope to the north of the DP area with open grassed farmland that provides open views to the hills and Cobows to the north and north-west.

3.1.2 Bushfire Protection Measures

- *Bushfire protection measures in the layout and development of these areas, including a fuel modified buffer in the outer perimeter of Areas 1 and 2, as identified on Figure 1 forming part of this schedule, via the use of managed open space/reserves/front gardens in conjunction with the road reserve.*
- *That the development in Areas 1, 2 and 3 has or will on completion have, no more than a BAL-12.5 rating under AS3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*

The DP Area and surrounding land are not in a Bushfire Management Overlay (BMO). The nearest BMO is approximately 2.5km to the north which is beyond Deep Creek, the Lancefield Golf Course and a low density residential neighbourhood. However, the land is within a designated bushfire prone area. To this end, Clause 13.02 of the Macedon Ranges Planning Scheme applies, particularly the provisions pertaining to use and development in a bushfire prone area for subdivisions of more than 10 lots.

The landscape setting for the DP Area – within a 10km radius – is dominated by open farmland with sporadic treed patches. Closer to the site, the surrounding landscape includes open farmland with very few isolated trees to the north and west, and the existing township to the south and east. Accordingly, the north and west peripheries of the DP Area are at the settlement interface.

The suitability of the DP Area for residential development in consideration of landscape setting and settlement planning within the *Design Guidelines – Settlement Planning at the Bushfire Interface* would have been considered as part of Planning Scheme Amendment C117. The zoning of the Area facilitates residential lots in accordance with these guidelines that state lots with areas that are practical to manage for fuel reduction, but large enough to provide separation between individual structures provide a good balance for bushfire protection.

Part 2 of the guidelines pertain to the settlement interface, including "apply the required development setback." Although Clause 44.06 of the scheme does not apply, Clause 53.02 provides a performance standard for bushfire planning.

The land to the north and west of the DP area is used for agriculture, thus is considered as "unmanaged grassland" in terms of bushfire hazard. Table 2 at Clause 53.02-5 prescribes a defendable space (separation distance between a building façade and bushfire hazard) of 22 metres for grassland that is >0 to 5 degrees downslope of the land to achieve a 12.5 BAL rating.

Lots on the periphery of the development will front onto Showlers Lane and McMasters Lane, that have a 30-metre-wide road reserves that are managed by Council, thus can be considered as defendable space. This, combined with a minimum 6 metre front setback for houses (as prescribed in this schedule) combine to provide a minimum separation distance (defendable space) of 36 metres, which comfortably exceeds the separation distance required by Clause 53.02-5; accordingly, a 12.5 BAL rating could easily be achieved.

Further, Park Street, McMasters Lane and Showlers Lane provide a perimeter road that will provide clear access for emergency services vehicles to all lots.

3.1.3 Background Reports

- *For each of Areas 1, 2 and 3, as identified on Figure 1 forming part of this schedule, an explanation of how the information in background reports required by this schedule are incorporated into and addressed by the development plan.*

The site investigations and background reports that have been carried out for the subject land and utilised to inform the design process for the DP include:

- Detailed Feature and Level Survey, as presented in the ***Plan of Existing Conditions*** by Chris Smith & Assoc.; Nov 2020
- ***Infrastructure Plan*** by Chris Smith & Assoc Rev. 1; June 2021
- ***Stormwater Management Plan*** by Chris Smith & Assoc.; Rev. 1; June 2021
- ***Traffic Impact Assessment Report*** by Trafficworks; Nov 2020
- ***Ecological Assessment*** by Cumbre, Nov 2020
- ***Preliminary Arborist Report*** by Axiom Tree Management, 7 November 2020

Further information as to how the findings of the background reports have been incorporated into this development plan is addressed throughout this report.

3.1.4 Potentially Contaminated Land

- *How, in relation to potential site contamination, the recommendations of any preliminary environmental site assessment are to be addressed.*

The potential for land within the DP Areas being contaminated was raised and discussed as part of planning scheme amendment C117 that introduced the DPO. In its explanatory report, the responsible planning authority (shire) stated:

- Ministerial Direction 1, Potentially contaminated land:

The land affected by the amendment is already zoned for residential purposes. The amendment will not introduce the use of land for a sensitive use, as sensitive uses can already be established under the existing zoning. In accordance with Planning Practice Note 30, *Potentially Contaminated Land*, 82 and 114 High Street, Lancefield are considered to have a low potential for contamination by reason of their current use, which includes the storage of old vehicles and implements. Proposed DPO24 puts in place a development plan requirement for these properties, to confirm whether there is any contamination on the land. This will enable planning decisions to be made with the knowledge of the condition of the site and the most satisfactory site management strategies.

The Panel to C117 explored the issue as to *"whether the Amendment appropriately responds to potential land contamination."* A landholder submission questioned the DPO's measures to address potential contamination both in terms of level of testing and land required to be tested.

The Panel report includes at page 24:

In response, Council advised that in the absence of specific information regarding the environmental conditions of potentially contaminated land, namely that at 82–114 High Street, Lancefield, the requirements of the DPO will provide for that information to be obtained before development. Further, the land is already zoned for residential purposes and does not require a permit for its use for this purpose, nor does the DPO enable the land to be used for a sensitive use that is not currently allowed.

Council also relied on the submissions of the EPA which identified the land as potentially having commination issues, but that the *"EPA has no concerns with the proposed amendment to this planning scheme with the information that has been provided."*

The Panel concluded *" the requirements in relation to potentially contaminated land in the DPO24 are appropriate and sufficient"*

DPO24 expressly sets out a requirement for further testing of specified land (114 and 82 High Street) as part of a DP submission. This DP submission does not include that specified land; thus no contamination assessment is required. Further, we are advised that there is no historical knowledge or visual evidence of site contamination on the subject land.

These factors have been discussed with Council officers and it has been agreed that a contamination report will not be required for this DP submission.

A description of the landfill site on adjoining Council-managed land (that we are advised is currently contained and will continue to be managed by Council) is set out at Section 3.1.1 of this report.

3.2 Subdivision Layout Plan

A subdivision layout plan generally in accordance with Figure 1 to this schedule. An accompanying report must be prepared that addresses:

- *How the subdivision layout responds to the natural topography of the land and integrates with the surrounding established Lancefield Township and rural landscape.*
- *How key view lines and corridors to the surrounding landscape have been considered.*
- *The provision of a variety of lot sizes across the development area. Where trees are identified for protection, larger lots may be required to facilitate their retention.*
- *The transition in lot sizes between larger lots in the General Residential Zone and land in rural zones.*
- *Interface treatments between proposed development areas and rural zoned land.*
- *Appropriate interface treatments between areas identified for development and areas identified as environmentally sensitive in the fauna and flora report, including waterways.*
- *The appropriate lot yield, staging of subdivision and infrastructure delivery.*

See ***Subdivision Layout Plan*** by Chris Smith & Associates Ref: 20222/02; Rev. 7; that is largely in accordance with the *Figure 1: Indicative Development Pattern* plan.

The subdivision layout takes advantage of the gently sloping topography to create a road network that is logical and will be easy to navigate as well as residential lots that will be easy to build on with a single level dwelling that will sit into the landscape.

The internal road on the Park Street property has been modified so that it follows the contour of the land and avoids the steeper sloping areas.

Lots of approximately 2,000m^2 will face onto the rural landscape to the north, whereas lots at the High Street interface will be approximately 1100m^2 to match the dwelling spacing and grid pattern of the existing township. The difference in the lot areas will provide a graduated change in density from the established township to the south and the rural land to the north.

The gently sloping land will also preserve and enhance views to the hills from both the established township and within the development itself in ensuring reduced visual prominence of new dwellings in the landscape.

A variety of lot sizes ranging from approximately 748m^2 to 1,320m^2 across the General Residential and 2,000m^2 to 2,689m^2 in the Low Density Residential area will be provided. The existing dwelling on each property will be retained along with gardens and ancillary buildings on an appropriately configured lot.

The road reserve between the site and the rural land will be a rural style road with wide grassed verges and tree plantings to provide a transitional space to the Farming Zoned land to the north.

The subdivision layout will yield an estimated 34 lots; consisting of 19 Low Density Residential lots and 15 General Residential lots. Staging and infrastructure provision will be as per the Infrastructure Report.

3.3 Movement Network Plan

- *A traffic impact assessment report prepared by a suitably qualified person addressing the impact of the development on the arterial and local road network, including mitigation works required on the existing road network. The plan must show typical road cross sections and integration of existing and proposed roads, and bicycle and pedestrian networks.*

- *A movement network that:*
  - *Generally responds to the indicative road network as shown on Figure 1 to schedule.*
  - *Indicates a plan for vehicle and pedestrian connectivity, avoids cul-de-sacs and respects the established grid street pattern of the original Lancefield Township settlement area.*
  - *Provides for rural collector streets (Showlers Land and McMasters Lane) accommodating a 7 metre carriageway and 11.5 metre verge widths to allow for swales and a shared footpath on the subdivision side of the road as shown on Figure 2 to the schedule.*
  - *Provides for internal local road reserve widths measuring a minimum of 20 metres, accommodating a 7.5 metre carriageway and 6.2 metre verge widths to allow for landscaping and footpaths, and kerb and channel, in keeping with the existing rural character as shown on Figure 3 to this schedule.*
  - *Provides for rural connector streets (Raglan, Foy and part of Park Streets) accommodating a 6.6 metre carriageway and 11.7 metre verge widths to allow for swales on both sides, landscaping and a footpath on one side of the road, in keeping with the existing rural character as shown on Figure 4 to this schedule.*
  - *Allows only one new road connection onto the arterial roads of Melbourne-Lancefield Road and Kilmore-Lancefield Road respectively, and minimises the number of road connections onto High Street.*
  - *Provides for east-west and north-south connections to allow for future integration with surrounding areas.*
  - *Provides a road alignment that is designed to allow for overland flows and stormwater runoff to be directed to identified storage and discharge areas.*

The proposed road network has been designed in accordance with Indicative Development Pattern at Figure 1 of the schedule. In accordance with this schedule and as indicated on the cross sections, McMasters Lane and Showlers Lane will be constructed to rural collector street standard, Park Street will be constructed rural connector street standard and the internal road network to a township local street standard. The layout will have just one new road connection to High Street.

The ***Traffic Impact Assessment Report*** by Trafficworks; Nov 2020, carried out assesses the existing conditions and the likely traffic impacts on the existing road network surrounding the DP Area; suitability of the road network proposed for the development and its connections to the existing network; as well as existing, proposed and likely required vehicle and pedestrian connections. It concluded that

the proposed subdivisions are expected to have no discernible impact to the surrounding road network or traffic conditions in Lancefield, thus, there are no traffic engineering reasons that should prevent the developments from proceeding.

3.4 Infrastructure Delivery and Staging Plan

- *A report addressing the provision, staging and timing of road works internal and external to the land.*

The fair and equitable provision of roads, drainage and servicing infrastructure, commensurate with development, is set out in the ***Infrastructure Plan*** by Chris Smith & Assoc.; Nov 2020 submitted with this application.

Each landholding within the DP Study Area will be required to construct the infrastructure required for its development. Subsequent developments in DP Area 1 will be able to connect to and augment this infrastructure in an efficient and coordinated manner.

3.5 Stormwater and Drainage Plan

- *A stormwater and drainage plan prepared by a suitably qualified person that:*
    - *Provides for a 1 per cent annual exceedance probability flood event and average recurrence interval events.*
    - *Designates all floodways or areas subject to inundation.*
    - *Shows the location of major drainage lines, water features, proposed stormwater outfalls and proposed retarding basins.*
    - *Provides requirements for development in or adjacent to a floodplain.*
    - *Provides for the staging and timing of stormwater drainage works.*
    - *Integrates water sensitive urban design treatments.*
    - *Provides for requirements for stormwater retardation and treatment.*
    - *Protects natural systems and water quality.*
    - *Designates a setback of 20 metres from the top bank of both sides of the waterway to be developed as wetland, floodway, drainage and stormwater quality management subject to the agreement of Melbourne Water.*
    - *Provides for shared pathways along existing waterways to allow for community access subject to the agreement of Melbourne Water.*

The Stormwater Management Plan by Chris Smith & Associates submitted herewith demonstrates how the three properties can be developed to cater for urban stormwater drainage within each development in a manner that is fair and achievable for each property, but also contributes to a coordinated overall drainage solution for the entire DP Area.

3.6 Open Space Plan & Landscape Concept Plan

- *An open space plan which shows a proposed public open space network that:*
    - *Provides links to existing or proposed open space areas.*
    - *Integrates with areas and corridors of habitat significance, where possible.*
    - *Incorporates passive and active recreation opportunities, including shared pedestrian/bicycle paths.*

- *Is fronted by roads or lots to enhance passive surveillance of the area. Includes large establish trees within pocket parks to protect the landscape character of Lancefield.*

- *A landscape concept plan that:*
  - *Demonstrates how significant view corridors and vegetation have been considered.*
  - *Identifies significant vegetation to be protected and retained in the public and/or private realm.*
  - *Shows how avenue trees within the Melbourne-Lancefield Road, Kilmore-Lancefield Road, and High Street reservations will be protected and retained.*
  - *Shows how public open space landscaping, including landscaping of roads, streets, waterways and retarding basins will be planned to create landscape corridors that contribute to Lancefield's rural setting.*
  - *Identifies any necessary arrangements for the preservation or regeneration of native vegetation, including a tree protection strategy to protect retained trees during subdivision and/or development and after the subdivision and/or development is completed.*
  - *Identifies areas of new planting and planting themes, including a list of preferred plant species based on existing vegetation themes and locally indigenous plants, appropriate to site characteristics.*
  - *Demonstrates an overall scheme of landscaping that complements the setting of the surrounding area. Identifies details of staging and timing of all landscape works.*

See ***Landscape Concept and Open Space Plan*** prepared by Chris Smith & Associates submitted with this application.

Open space and street tree plantings will be provided within the DP Area in accordance with the Indicative Development Pattern plan. Accordingly, there are no parks or open spaces within the study area.

It has been agreed with Council officers that Council will collect contributions in accordance with Clause 53.01 (5% of land value) and utilise these funds to develop and improve existing recreation and community spaces in Lancefield as determined by a study that is to be carried out by Council.

Footpaths and shared paths will be provided to road reserves in accordance with requirements of the schedule that will allow for ease of movement for pedestrians and cyclists between planned open spaces within the development plan area and the adjacent reserve on Park Street. The Park Street frontage is designed to maximise active frontage to the open space network.

The ***Ecological Assessment*** by Cumbre found no overstorey species of biodiversity value on the land. However, one very small remnant patch of vegetation was assessed, consisting of understorey species of large and medium tufted graminoids, juncus and tall sedge (indigenous grasses and small herbs). The report concluded that no feasible opportunities exist to further avoid or minimise impacts to this vegetation without compromising the proposed development. Accordingly, its loss must be offset. Enquiry as to the availability of a third party offset has been made and is provided as an appendix to the report.

The ***Preliminary Arborist Report*** by Axiom Tree Management did not identify any trees of "very high retention value", but it does identify three trees of "high retention value", which are of good or fair health and structure as well as offer amenity and being well suited to the site. These trees have been considered in the design process as follows:

Tree 37 – River Red Gum. Planted paddock tree that is located centrally within the developable area. The tree could not be incorporated into a street verge or lot in a location where it could be retained without severely compromising other urban design considerations. Accordingly, it will not be retained.

Tree 48 –Red Box. Planted garden tree that is located just inside the property boundary along High Street. This tree is positioned in the location for a new subdivision road on the Indicative Development Pattern plan, therefore could not be retained without compromising the urban design for the DP Area. Accordingly, it will not be retained.

Tree 51 – Grey Box. Planted garden tree that is located close to the property boundary of 128 High Street. This tree is positioned where it may be able to be located in the back yard of a residential lot. Accordingly, it should be considered for retention as part of the subdivision design for this property.

3.7 Image and Character Report

- *An image and character report that:*
  - *Explains how the development plan responds to the established character and rural setting of Lancefield as described in Clause 21.13-8.*
  - *Explains how key site features are integrated into the development plan.*
  - *Includes design guidelines for building siting, design (including materials and colours) and height controls for future development in order to address local character considerations and provides for variation to building forms across the area and explains how the design guidelines are to be given effect.*
  - *Shows boundary fence treatments, including height, within the Low Density Residential Zone to address local character considerations.*

An Image and Character Report has been prepared as a separate report and is submitted herewith.

3.8 Area 1 Specific Requirements

- *A development plan that:*
  - *Maximises lot width frontage onto High Street, with lots providing a minimum frontage width of 20 metres and an area of at least 700 square metres.*
  - *Minimises additional road connections to High Street.*

- *Provides lots fronting High Street with a minimum front setback of 6 metres to any building to integrate with the existing character of the township.*
- *Provides lots fronting High Street with a front fence no higher that 1.2 metres, which is visually permeable.*
- *Designs and locates shared crossovers to minimise the visual impact on High Street and avoid the removal of the existing vegetation within the road reservation.*
- *Provides for lots of at least 1,000 square metres along McMasters Lane to provide a transition between the General Residential Zone and the Farming Zone.*
- *Incorporates the same avenue tree planting as other streets within the township in Park Street, McMasters Lane and Showlers Lane.*

The proposed subdivision layout is designed to incorporate all the above requirements. Just one road connection is proposed to High Street and all frontages are at least 20m and over 700sqm in area. Lots are adequately dimensioned to incorporate a 6m front setback.

Fence requirements are set out in the development guidelines to ensure font fences comply with the requirement to be no more than 1.2m high and visually permeable. All lots facing onto McMasters Lane at least 1000sqm. Avenue plantings will accord with the Landscape Concept Plan with species selection to the satisfaction of Council.

4 Conclusion

This application for approval of a development plan for land within the Lancefield Development Plan Area 1 includes the considerations, assessments and information requirements set out in Schedule 24 to the Development Plan Overlay in the Macedon Ranges Planning Scheme.

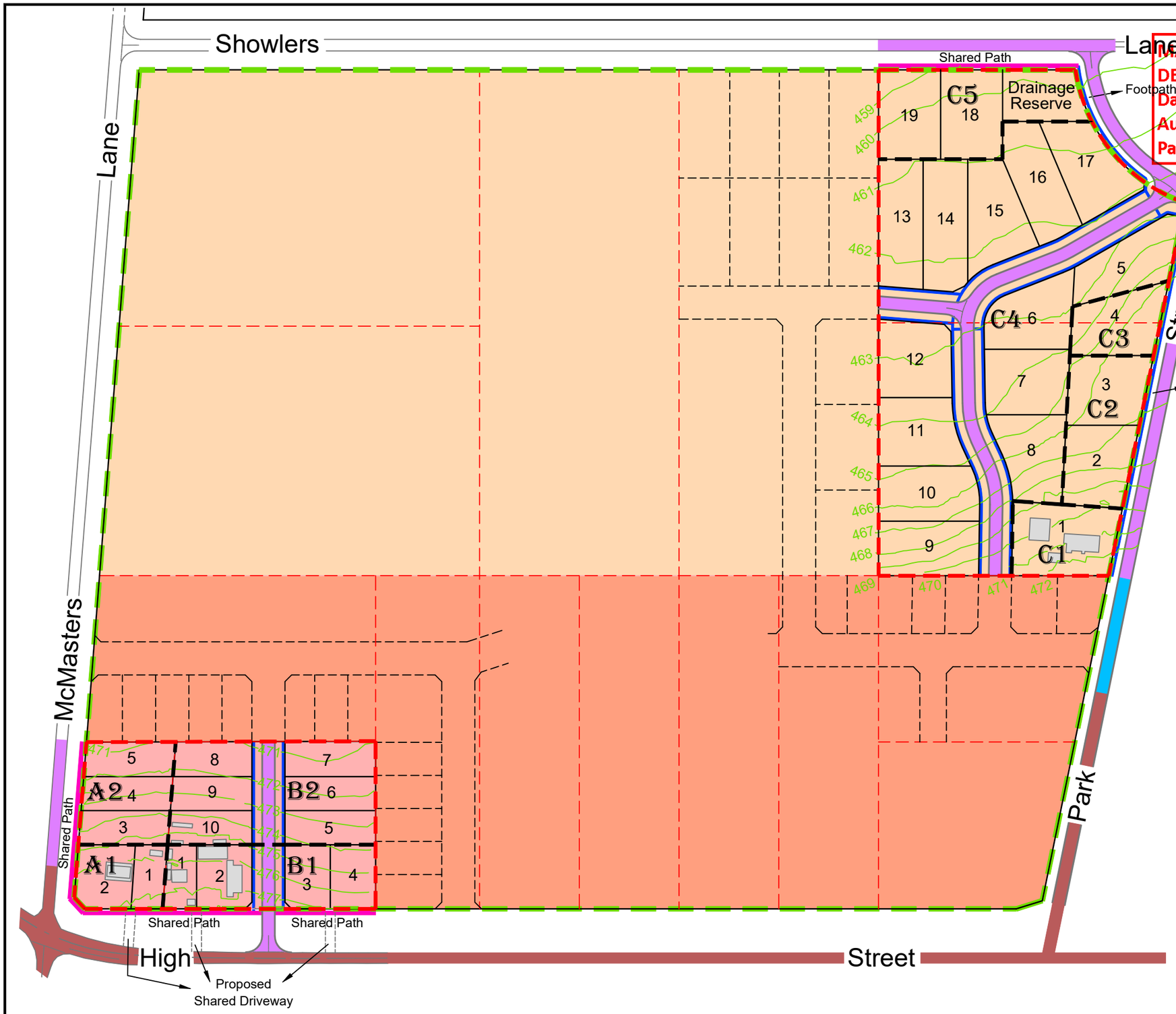
The design is based on a thorough assessment of the site's opportunities and constraints as well as consideration of the prevailing and preferred urban design outcome for Lancefield.

The development plan will enable the three landholders to pursue planning permit approval for a residential subdivision that will cater for the Lancefield community's housing needs over ensuing years.

Based on the above, the information in this report and the supporting assessments and reports, the proposal merits Council support. Accordingly, we respectfully request the Council to approve the development plan, as submitted.

Chris Smith & Associates

June 2021



Property	Address	Lot Yield	Stages
A	132 High Street	5	2
B	128 High Street	10	2
C	69 Park Street	19	5

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
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Precinct	Stage No.	Lot No.	Area
A	A1	1	748m²
A	A1	2	1320m²
A	A2	3	1112m²
A	A2	4	1112m²
A	A2	5	1130m²
B	B1	1	739m²
B	B1	2	1290m²
B	B1	3	1054m²
B	B1	4	1062m²
B	B2	5	1129m²
B	B2	6	1129m²
B	B2	7	1167m²
B	B2	8	990m²
B	B2	9	1001m²
B	B2	10	1034m²
C	C1	1	2689m²
C	C2	2	2000m²
C	C2	3	2000m²
C	C3	4	2000m²
C	C4	5	2000m²
C	C4	6	2001m²
C	C4	7	2000m²
C	C4	8	2000m²
C	C4	9	2000m²
C	C4	10	2001m²
C	C4	11	2000m²
C	C4	12	2006m²
C	C4	13	2097m²
C	C4	14	2131m²
C	C4	15	2083m²
C	C4	16	2077m²
C	C4	17	2087m²
C	C5	18	2025m²
C	C5	19	2025m²

Legend:

- DP Area 1
- DP Study Area
- Existing Title Boundary
- Potential Lot Layout on Adjoining Land (subject to separate approval)
- General Residential Zone (GRZ1)
- Low Density Residential Zone (LDRZ)
- Existing Sealed Road
- Unmade section of Park Street (construction to be coordinated between landholders & Council)
- Developer constructed road
- Footpath
- Shared path
- Stage Boundary
- A2 Stage Number

Development Plan

Utility services and infrastructure to be provided generally in accordance with the ***Infrastructure Plan*** by Chris Smith & Assoc.; June 2021

Stormwater drainage to be provided generally in accordance with the ***Stormwater Management Plan*** by Chris Smith & Assoc.; June 2021

Roads to be constructed commensurate with development in accordance with the recommendations of the ***Traffic Impact Assessment Report*** by Trafficworks; Nov 2020

Streetscape plantings and open space to be provided generally in accordance with ***Open Space and Landscape Concept Plan*** by Chris Smith & Assoc.; June 2021

For details of existing biodiversity values on the Study Area see ***Ecological Assessment*** by Cumbre, Nov 2020

For details of existing trees across the Study Area and adjoining road reserves see ***Preliminary Arborist Report*** by Axiom Tree Management, 7 November 2020

7	Development Plan notes	3/06/21	-
6	General	24/5/21	-
5	General	24/5/21	-
4	General	20/5/21	-
3	General	25/11/20	-
2	General	20/11/20	-
1	General	9/11/20	-
REVISION		DATE	ZONE

Notes:

(1) Measurements and areas are approximate only and are subject to survey and may be amended on the plan of subdivision submitted for certification.

0 12·5 25 50

Scale 1:2500 @ A3

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Designed	Col Rogers	30th October, 2020
Drawn	Col Rogers	30th October, 2020
Checked	Scott Golightly	
Approved		

Stebbins, Foster & Thornton Residential Development
128-132 High Street
& 69 Park Street, Lancefield
Subdivision Layout Plan

Drawing No. 20222/02 **Rev. 7**
Sheet No. 1 of 1 2022202v7.dwg
A3

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
Page: 18 of 173

NOTES:
Every endeavor has been taken to locate visible structures and services, however, there is no guarantee that all existing structures and services are shown or located exactly on this plan. Positions and levels of these services should be proven on site before commencement of any works.

Survey data is on MGA2020 bearing & co-ordinate datum based on the Published Co-ordinates of Lancefield PM5 & GNSS observations. Data is on Ground distances and has 'not' been scaled.

Levels are to the Australian Height Datum and are based Lancefield PM 5 (RL: 476.927).

For the purpose of plan clarity, some levels may not be displayed on this plan, however, they can been found in the 'Model Space' of this "DWG".

These notes are an integral part of this plan.

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The provision of this plan is subject to the following conditions:

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REVISION		DATE

Legend

- Major Contour (Interval 0.50m)
- Minor Contour (Interval 0.10m)
- Fence Line
- Gate
- Edge of Concrete / Concrete Kerb
- Solid Line Marking
- Dashed Line Marking
- Edge of Bitumen
- Edge of Formation / Track
- Shed / House / Shipping Container
- Top of Bank
- Toe of Bank
- Drain
- Drainage Pipe/Culvert (RCP / PVC)
- Overhead Electricity Lines
- Edge of Garden Bed
- Edge of Vegetation / Plantation
- Permanent Survey Mark (PM)
- Temporary Bench Mark (TBM)
- Tree
- Dead Tree
- Guide Post
- Sign
- Drainage Junction Pit
- Top Entry Pit (TEP)
- Sewer Manhole
- Sewer Inspection Shaft
- Fire Plug
- Sluice Valve
- Water Tap
- Irrigation Control Box
- Unclassified Utility
- Gate
- Fence Post
- Electricity Pole
- Electricity Pole with Light
- Electricity Pit
- Stay for Pole
- Telecommunications Pit
- Telecommunications Pillar
- Telecommunications Marker

MGA2020 ZONE 55

0 15 30 60

Scale 1:1500 @ A1

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Designed		
Drawn	Nicholas Nightingale	26th October 2020
Checked	David O'Halloran	27th October 2020
Approved		

Stebbins, Foster & Thornton
Feature & Level Survey

69 Park Street, 128 & 132 High Street
Lancefield, VIC 3435

Plan of Existing Conditions as of 21st October 2020

Drawing No. 20222/01 **Rev. 0**

Sheet No. 1 of 1 2022201r0.dwg

A1

REVISION	DATE	ZONE

Legend:

- DP Area 1
- DP Study Area

0 20 40 80

Scale 1:4000 @ A3

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Designed
Drawn Col Rogers 16th November, 2020
Checked Gary Steigenberger
Approved

Lancefield Development Plan
DP Area 1
High Street, Park Street, Showlers Lane
& McMasters Lane, Lancefield
Site & Context Analysis Plan

Drawing No. 20222/03 **Rev. 0**
Sheet No. 1 of 1 2022203v0.dwg
A3

Property	Address	Lot Yield	Stages
A	132 High Street	5	2
B	128 High Street	10	2
C	69 Park Street	19	5

Precinct	Stage No.	Lot No.	Area
A	A1	1	748m²
A	A1	2	1320m²
A	A2	3	1112m²
A	A2	4	1112m²
A	A2	5	1130m²
B	B1	1	739m²
B	B1	2	1290m²
B	B1	3	1054m²
B	B1	4	1062m²
B	B2	5	1129m²
B	B2	6	1129m²
B	B2	7	1167m²
B	B2	8	990m²
B	B2	9	1001m²
B	B2	10	1034m²
C	C1	1	2689m²
C	C2	2	2000m²
C	C2	3	2000m²
C	C3	4	2000m²
C	C4	5	2000m²
C	C4	6	2001m²
C	C4	7	2000m²
C	C4	8	2000m²
C	C4	9	2000m²
C	C4	10	2001m²
C	C4	11	2000m²
C	C4	12	2006m²
C	C4	13	2097m²
C	C4	14	2131m²
C	C4	15	2083m²
C	C4	16	2077m²
C	C4	17	2087m²
C	C5	18	2025m²
C	C5	19	2025m²

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
Page: 20 of 173

Street Tree Planting Themes

Landscaping in open space areas and roads to provide a consistent theme across the DP area and contribute to Lancefield's rural setting. Street trees are to be spaced at one every 12 metres or one per lot (which ever is the lesser), where space is available to accommodate tree at maturity. Street tree species selection is to be from the ***MRSC Street Tree Planting Preferred Species List*** in consideration of any existing plantings and site conditions (soil type, rainfall, aspect, etc.). Larger species (or those with invasive root systems) should be avoided where they have potential to cause damage to public infrastructure or private assets - see the *CSIRO Foundation Maintenance and Footing Performance: A Homeowner's Guide* for recommended separation between trees and buildings.

The following street tree themes to be considered:

General Residential Areas:

McMasters Lane and internal streets to be smaller formed eucalypts such as *Eucalyptus mannifera* (Little Spotty). Plantings in McMasters Lane to be along lot frontage side of road, only.

Alignment of footpath and location of vehicle crossings in High Street to be determined as part of detailed design, so as to limit any damage to existing trees. Any additional plantings (if required) to consistent with existing avenue planting of *Eucalyptus viminalis* (Manna Gum) and *Fraxinus excelsior 'Aurea'* (Golden Ash).

Low Density Residential Areas:

Internal streets to contain a consistent 'medium tree' species, selected from the preferred species list.

Road pavement, footpath and infrastructure in Park Street to consider the tree protection zone of the existing large tree close to the front property boundary of the existing house. Plantings along west side of Park Street should be consistent with any existing plantings and could be a 'large tree' species, selected from the preferred species list, dependent on physical space and infrastructure.

Plantings along the south side of Showlers Lane should be consistent with its rural interface. There could be opportunity for larger growing indigenous trees such as *Eucalyptus melliodora* (Yellow box) and *Eucalyptus microcarpa* (Grey box), dependent on physical space and infrastructure

Showlers Lane
McMasters Lane
Park Street
High Street
Shared Path
Footpath
Drainage Reserve
Lancefield Recreation Reserve
Existing large tree to be retained by limiting disturbance and urban infrastructure within the TPZ
Existing Avenue plantings to be retained
Shared Path and Driveways to Lots to be positioned to minimise impact on existing trees identified in Preliminary Arborist Report by Axiom Tree Management, 7th November, 2020.
Detailed design to be informed by a detailed Arborist's Report in consultation with the responsible authority.

Legend:
- DP Area 1
- DP Study Area
- Existing Title Boundary
- Potential Lot Layout on Adjoining Land (subject to separate approval)
- Open Space
- Street Tree
- General Residential Zone (GRZ1)
- Low Density Residential Zone (LDRZ)
- Existing Sealed Road
- Unmade section of Park Street (construction to be coordinated between landholders & Council)
- Developer constructed road
- Footpath
- Shared path
- Stage Boundary
- A2 Stage Number

REVISION		DATE	ZONE
2	GRZ Trees	9/08/21	-
1	General	3/06/21	-

Notes:

(1) Measurements and areas are approximate only and are subject to survey and may be amended on the plan of subdivision submitted for certification.

0 12·5 25 50
Scale 1:2500 @ A3

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Designed	Gary Steigenberger	27th November, 2020
Drawn	Col Rogers	30th November, 2020
Checked	Gary Steigenberger	
Approved		

Stebbins, Foster & Thornton Residential Development
128-132 High Street
& 69 Park Street, Lancefield
Landscape Concept & Open Space Plan

Drawing No. 20222/04 **Rev. 2**
Sheet No. 1 of 1 2022204v2.dwg
A3

Chris Smith & Associates

- CIVIL ENGINEERS
- LAND SURVEYORS
- URBAN & REGIONAL PLANNERS
- PROJECT MANAGERS

Approved Company – ISO 9001 – Quality Management Systems

Image & Character Report

69 Park Street and 128 & 132 High Street, Lancefield

Image: High Street, Lancefield (source Google Streetview)

Lancefield Development Plan Area 1 (DPO24)

Our Ref: 20222 August 2021

Rev. 2 | August 2021

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Document Ref: 20222_r_Image Character ReportV2_120821

Contents

Image & Character Report
69 Park St, 128 &132 High St, Lancefield

1 Introduction

This report has been prepared in conjunction with a Development Plan Report for specific land parcels within Area 1 of the Lancefield Development Plan (DPO24 within the Macedon Ranges Planning Scheme).

Specifically, this report applies to the following three land parcels within DP Area 1:

- 69 Park Street,
- 128 High Street, and
- 132 High Street,

Schedule 24 to the Development Plan Overlay requires a Development Plan application to be supported by:

- *An image and character report that:*
  - *Explains how the development plan responds to the established character and rural setting of Lancefield as described in Clause 21.13-8.*
  - *Explains how key site features are integrated into the development plan.*
  - *Includes design guidelines for building siting, design (including materials and colours) and height controls for future development in order to address local character considerations and provides for variation to building forms across the area and explains how the design guidelines are to be given effect.*
  - *Shows boundary fence treatments, including height, within the Low Density Residential Zone to address local character considerations.*

This report addresses this requirement and responds to the various components in a manner that will enable future residential development that is consistent with the defined character of Lancefield.

The *Local Areas and Small Settlements* local policy at Clause 21.13-8 of the Macedon Ranges Planning Scheme sets out Lancefield's character as being defined by wide treed avenues, small scale established residential development on a grid network and surrounding hills that give the town an attractive landscape and scenic setting.

Objectives to maintain this include: *limit residential growth within the township to the existing zoned land;* and *retain the established urban form and heritage character including the street design and grid layout.*

Strategies to achieve these objectives include:

- *Encourage the location, form and design of new development in the town to be consistent with the Lancefield Township Framework Plan included in this sub-clause.*
- *Ensure new development respects the principles of the original settlement, including grid street patterns, wider road reserves in key access streets, use of soft engineering solutions, and street tree planting consistent in pattern and structure with older parts of the town.*

2 Image and Character Report

The character of the Lancefield township is identified at Clause 21.13-8 as being defined by:

- *Surrounding hills that give the town an attractive landscape and scenic setting.*
- *Wide treed avenues into and through the town.*
- *Strip based historic town centre and streetscape.*
- *Small scale established residential development on a grid network.*

The development plan responds to and integrates with the established neighbourhood character of Lancefield. The lot layout will integrate with the existing road network and development pattern of the township. Views to the surrounding hills will be maintained to be a major contributor to the character of the emerging neighbourhood without diminishing the landscape setting of the township. Design guidelines will be implemented as a condition of any permit for subdivision to protect and enhance the significant landscape setting, as detailed below.

Existing residential streets in Lancefield contain a mixture of dwelling types that are typical of the built form, materials and style of their time of construction. Accordingly, there is no prevailing period character or consistent theme. However, nearly all houses are single storey and set back behind a front garden. Many properties do not have front fences which allows for a seamless transition from informal road edges into front gardens which adds the sense of spaciousness around houses and contributes to a semi-rural character. Where front fences are present, they are often low and permeable, constructed of timber pickets, horizontal boards, netting and low brick. Others have a hedge or raised garden bed delineating the front property boundary line.

The existing streets on the perimeter of the DP area (McMasters Lane, Showlers Lane and Park Street) have 30 metre wide road reserves and are to be landscaped to include tree plantings, wide grassed verges and footpaths to maintain the rural feel of the township in accordance with Figure 2 in Schedule 24 to Clause 43.04 of the Macedon Ranges Planning Scheme. Each landholder will be required to construct their corresponding road frontage commensurate with development, including landscaping along lot frontages (i.e. one side, only). Tree species will be chosen match that of other major tree lined streets to the satisfaction of Council.

New internal streets will be access streets with 20 metre wide road reserves in accordance with Figure 3 in Schedule 24 to Clause 43.04 of the Macedon Ranges Planning Scheme.

The subject land does not directly border the town centre; however the eventual development of the subject land will create a high-amenity, mixed density neighbourhood in close proximity to the town centre that is expected to be highly sought after. The neighbourhood will facilitate a growing population in support of a lively and sustainable town centre.

The internal road network is generally in accordance with the Indicative Development Pattern at Figure 1 to the Schedule. The layout will allow the subject land and the balance of the development plan area to be developed in a grid layout that integrates with the existing road network. Residential development on the resultant lots will

remain small scale, single dwelling developments, as dictated by the proposed development guidelines.

Key features such as existing dwellings and trees will be retained where possible. Trees are mostly concentrated around the existing dwellings. These have been incorporated into large lots to be retained where possible.

3 Design Guidelines

Schedule 24 to the DPO requires an Image and Character Report to include **design guidelines** for building siting, design (including materials and colours) and height controls for future development in order to address local character considerations and provides for variation to building forms across the area and explains how the design guidelines are to be given effect. Accordingly, design guidelines have been appended to this report.

These design guidelines have been prepared with the intention of providing a framework for high-quality residential development through the principles of best practice urban design for the following parcels of land:

- 69 Park Street,
- 128 High Street, and
- 132 High Street.

These design guidelines aim to provide a clear and concise framework for the subject land, that will promote consistent future development for the DP Area. The development plan pertains to land subdivision, only. Under the zone and overlay provisions applying to the land individual lot purchasers are able to obtain building approval for a dwelling without further planning approval. To this end, the design guidelines are limited as to what they can achieve in relation to building design, materials and colours. Notwithstanding this, the following general guidelines are provided together with a suggested implementation strategy that is reasonably achievable.

Due to the zoning applying to the subject sites, and for clarity purposes, **the guidelines have been set out in two distinct parts commensurate with the two separate zonings** applicable to the land within the DP area.

4 Implementation

Schedule 24 to the DPO requires the Image and Character Report *to explain how the design guidelines are to be given effect.*

This Image and Character Report forms part of the DP application; thus, will be endorsed as part of the approved DP applying to the subject land. Any future permit application must be generally in accordance with the approved DP. This provides the Macedon Ranges Shire Council as the responsible authority for the Macedon Ranges Planning Scheme to give statutory effect to the design guidelines through permit conditions.

It is suggested that the responsible authority could implement this with a condition on any sought permit that requires the developer to enter into an Agreement under Section 173 of the Planning and Environment Act, 1987, before Statement of Compliance. The Agreement would compel any construction (including boundary fencing) on a lot to be in accordance with the endorsed Design Guidelines applying to that lot unless otherwise agreed to in writing by the responsible authority.

Through proper implementation, this applies an enforceable mechanism to the Certificate of Title of each resultant lot. Individuals buying the lots will be legally bound to develop and maintain their lots in accordance with the design guidelines, unless they obtain the prior written consent of the responsible authority for an alternative design.

Chris Smith & Associates

August 2021

DESIGN GUIDELINE:

69 Park Street, Lancefield
Lancefield Development Area 1, Low Density Residential

Specific requirements apply to the lots specified under each of the following design guidelines. These guidelines apply to the initial development of the lot and any subsequent re-development, extension or alteration to a dwelling or building on the lot.

The guidelines cannot be altered, unless with the written consent of the responsible authority.

Preferred Built Form

Development on a lot is to incorporate the following design elements:

- Establish streetscapes of varied built form by designing and siting dwellings with varied external materials, rooflines, and built form.
- No more than one dwelling is to be constructed on a lot
- Single storey development is preferred, any double storey development must have upper levels set back behind the dwelling frontage a minimum of 3m or be incorporated into the roof form. Floor levels must consider the site's topography.
  Utilise design methods such as setting a dwelling into sloping site, split-level floor or other means to limit the height of floor levels above natural ground level.
- Aim for higher-than minimum required energy rating through considered orientation, placement of rooms and windows and use of eaves and verandahs.

Dwelling Setbacks

Limit the visual impact of buildings on the streetscape and encourage spacing between dwellings to establish a low-density amenity.

A dwelling must be set back at least:

- fifteen (15) metres from the front property boundary on Showlers Lane; and
- eight (8) metres from the front property boundary on all other streets

  In addition, for a corner lot, a dwelling must be set back from the boundary along the side street at least five (5) metres from the side street property boundary.

A dwelling must be set back along all side and rear boundaries at least:

- at least four (4) metres along the full length of at least one side, and at least three (3) metres along the full length of the other side; and
- at least five (5) metres from any rear boundary;

  Attached garages may encroach into these setbacks a maximum of 1.5 metres. Eaves may encroach into these setbacks.

Sheds and Outbuildings

Limit the visual impact of outbuildings and sheds.
Any outbuilding shed or garage that is not connected to the dwelling and of the same materials, height and built form as the dwelling must be:

- set back at least two (2) metres behind the front façade of the dwelling
- setback at least one (1) metre from any side boundary and at least three (3) metres from any rear boundary;
- no more than four (4) metres above the finished surface level of the site; and
- externally clad with brick, stone, masonry or other material matching the dwelling; or be finished in a bonded paint finish (such as Colorbond) in a muted tone that blends with the landscape.
- Zinc and galvanised iron finishes are not to be used on any external surface.

Fencing

Any fencing on a lot or on a boundary of a lot is to be of muted tones, so as to blend into the surrounding area and provide a sense of openness that will contribute to the appeal of the neighbourhood.

Fencing that is constructed on a boundary abutting a public open space reserve or a road reserve must be visually permeable

Front fences and side fences forward of the front of the building line are strongly discouraged. Any fence in front of the building line (including front and side fences) must be:

- no more than 1.2m in height; and
- visually permeable;

Side and rear boundary fences are to be of colours and materials that are consistent with the established township character. Full height sheet steel fences on side and rear boundaries are discouraged, except to the minimum extent, where necessary for security and/or privacy and where it is obscured behind the building line. Any such fencing should be of a muted tone that is compatible with the landscape setting.

DESIGN GUIDELINE:

128 & 132 High Street, Lancefield
Lancefield Development Area 1, General Residential

Specific requirements apply to the lots specified under each of the following design guidelines. These guidelines apply to the initial development of the lot and any subsequent re-development, extension or alteration to a dwelling or building on the lot.

The guidelines cannot be altered, unless with the written consent of the responsible authority.

Preferred Built Form

Development on a lot is to incorporate the following design elements:

- Establish streetscapes of varied built form by designing and siting dwellings with varied external materials, rooflines, and built form.
- No more than one dwelling is to be constructed on a lot
- Single storey development is preferred, any double storey development must have upper levels set back behind the dwelling frontage a minimum of 3m or be incorporated into the roof form. Floor levels must consider the site's topography.
  Utilise design methods such as setting a dwelling into sloping site, split-level floor or other means to limit the height of floor levels above natural ground level.
- Aim for higher-than minimum required energy rating through considered orientation, placement of rooms and windows and use of eaves and verandahs.

Dwelling Setbacks

Limit the visual impact of buildings on the streetscape and encourage spacing between dwellings to establish a low-density amenity.
A dwelling must be set back at least:

- six (6) metres from the front property boundary; or
- ten (10) metres from a property boundary along McMasters Lane; and

In addition, for a corner lot, a dwelling must be set back from the boundary along the side street at least three (3) metres from the side street property boundary.

A dwelling must be set back along all side and rear boundaries at least:

- at least one (1) metre along the full length of both sides; and
- at least three (3) metres from any rear boundary;

Sheds and Outbuildings

Limit the visual impact of outbuildings and sheds.
Any outbuilding shed or garage that is not connected to the dwelling and of the same materials, height and built form as the dwelling must be:

- set back at least one (1) metre behind the front façade of the dwelling or ten (10) metres from the front property boundary, whichever is the greater;
- setback at least one (1) metre from any side boundary or rear boundary;
- no more than four (4) metres above the finished surface level of the site; and
- externally clad with brick, stone, masonry or other material matching the dwelling; or be finished in a bonded paint finish (such as Colorbond) in a muted tone that blends with the landscape.
- Zinc and galvanised iron finishes are not to be used on any external surface.

Subdivision

Any further subdivision of any lot to create an additional lot is prohibited.

Fencing

Any fencing on a lot or on a boundary of a lot is to be of muted tones, so as to blend into the surrounding area and provide a sense of openness that will contribute to the appeal of the neighbourhood.

Front fences and side fences forward of the front of the building line are strongly discouraged. Any fence in front of the building line (including front and side fences) must be:

- no more than 1.2m in height; and
- visually permeable;

In addition, for a corner lot, boundary fencing along the side street may be solid fencing to the minimum extent required to provide privacy to the dwelling and secluded open spaces.

Side and rear boundary fences are to be of colours and materials that are consistent with the established township character. Full height sheet steel fences on side and rear boundaries are discouraged; however, any such fencing should be of a muted tone that is compatible with the landscape setting.

Infrastructure Plan

For

Three land parcels within the Lancefield Development Plan Areas –Area 1

June 2021

Revision 1

Our Ref: 20222

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Document Ref: 20222_r_InfrastructurePlanRev1_150621

Contents

1. Introduction

This report has been prepared on behalf of three land owners located in the Lancefield Development Plan Areas -Area 1, with the three land parcels described as follows:-

- 128 High Street- General residential Zone (GRZ1)
- 132 High Street- General residential Zone (GRZ1)
- 69 Park Street- Low Density Residential Zone (LDRZ)

The above mentioned land, referred to as the subject land within this report only makes up a small portion of Area 1, and hence the infrastructure discussed in this report specifically relates to that required to service the subject land and not the wider Area 1.

Key documents referred to in this report are:-

1. Schedule 24, to the Development Plan Overlay, Lancefield Development Plan Areas (Macedon Ranges Planning Scheme), hereafter referred to as DPO24
2. Storm Water Management Plan for Three land parcels within the Lancefield Development Plan Areas -Area 1 dated November 2020 by Chris Smith & Associates (hereafter referred to as the "Storm Water Management Plan").
3. Traffic Impact Assessment Report for Three Residential Subdivisions in the Western Neighbourhood (Area 1) Lancefield Township prepared by Trafficworks Pty Ltd dated November 2020 (hereafter referred to as the "Traffic Impact Assessment Report").

2. Infrastructure Requirements

2.1 Sewerage Reticulation

It is a requirement of the DPO24 that "all lots must be connected to reticulated sewerage".

Western Water is the responsible authority for sewerage reticulation for the township of Lancefield and there are existing gravity sewerage assets located within and adjacent to Area 1, refer to Western Water's Asset Plan in Appendix 2.

Area 1 has significant slope from south to north with the existing gravity sewerage traversing through the subject land in an east west direction generally following the contour of the land, title boundaries and zoning boundary between GRZ1 and LDRZ. This means that there is limited capacity for the LDRZ land located downhill from this sewer to be serviced by this existing sewer main. A plan showing the approximate commandability of the existing sewer network has been prepared by CS&A and is attached in Appendix 1.

Both 128 High Street & 132 High Street (part of the subject land) can be serviced by the existing sewer network and this will involve the extension of the existing sewer network from McMasters Lane. For 128 High Street, this will involve the

appropriation of a sewer easement along the northern boundary of 132 High Street, to facilitate this connection.

Only a small portion of 69 Park Street can be serviced by the existing sewer network. The balance of the land (69 Park Street) and the other areas of land within Area 1 (estimated at 17.4Ha total) which cannot be commanded by the existing sewer networks will require an alternative sewer connection, with three potential options to sewer this land as follows:-

- Option 1- Extension of the gravity sewer network involving the connection to the existing 225mm dia. sewer main located on the intersection of Main Road and Showlers Lane. This option would involve the construction of approximately 700m of gravity sewer along Showlers Lane to Area 1. Preliminary investigations indicate that this sewer could command all of the uncommandable area of the subject land and the majority of Area 1, given the lowest area within Area 1 was earmarked for a retention basin.
- Option 2- Construction of a new sewage pump station at the low point in Showlers Lane that would discharge via. a new sewer rising main to either the existing sewerage main in Park Street or Main Rd. From this pump station a new gravity sewerage would be constructed to service the development within Area 1.
- Option 3- A pressure sewer system to service the land within Area 1 that cannot be commanded by the existing sewer network. Given the number of lots within this catchment is likely to be less than 70, it may be more feasible to service this catchment with a pressure sewer network. This would give flexibility to staging and timing of development and avoid cost apportionments between landowners within this catchment.

It should therefore be considered that the subject land outside the existing sewer catchment can be serviced with reticulated sewer, with the preferred option subject to further investigations and advice/ consent from Western Water.

2.2 Water Reticulation

Western Water is the responsible authority for water reticulation for the township of Lancefield. The subject land is within close proximity to existing water infrastructure (refer to Western Water's Asset Plan in Appendix 2) and will be connected to reticulated potable water.

For 128 High Street, proposed lots fronting High Street will be able to connect to the existing 100mm AC water main in High Street. The proposed internal road will require a new water main extension connecting to the existing 100mm AC water main in High Street.

For 132 High Street, proposed lots with frontage to High Street will be able to connect to the existing 100mm AC water main in High Street. Lots fronting McMasters Lane will require a new water main extension along McMasters Lane connecting to the existing 100mm AC water main in High Street.

For 69 Park Street new water reticulation extensions will be required to service all lots within the proposed development. The nearest water main and most likely

connection point is the 150mm dia. AC water main located on the intersection of Showlers Lane/ Park Street (extension)/ Foy Street (extension). Considering the development of 69 Park Street is only an estimated 20 lots, a second water main connection point should not be required.

The above assumptions should be confirmed with Western Water as part of the development of the subject land.

2.3 Electricity

Powercor is the responsible authority for electrical assets for Lancefield and the surrounding area. Considering the urban nature of the proposed development it is envisaged all new development involving the construction of new roadways would involve the provision of underground electrical assets to service the new lots and provision of street lighting.

On 128 High Street the existing house is currently serviced by an overhead electrical connection from existing overhead assets in High Street. This service can probably remain to service this house after the subdivision. New lots created fronting onto High Street and the proposed internal road would be serviced by new underground reticulation connecting back to the existing overhead network in High Street, which includes both HV & LV assets. Detailed load calculation undertaken at the time of development would determine the external upgrade requirements including the need for a pole mounted transformer to service lots within this development.

On 132 High Street the existing house is currently serviced by an overhead electrical connection from existing overhead assets in High Street which contain both LV & HV assets. This service can probably remain to service this house after the subdivision. Overhead assets also exist in McMasters Lane, but only contain HV assets. New lots created from the subdivision of this land would be serviced by new underground reticulation connecting back to the existing overhead network. In McMasters Lane this would require a new pole mounted substation to service the proposed LV underground works. Detailed load calculation undertaken at the time of development would determine the external upgrade requirements.

On 69 Park Street the existing house is currently serviced by an overhead electrical connection from existing overhead assets on the western side of Park Street which terminates at the property's southern boundary. This service can probably remain to service this house after the subdivision. The existing network in Park Street contains only HV assets and it is envisaged that these overhead assets may need to continue along Park Street to the intersection of the proposed internal road to ensure an overhead transformer has range to supply underground LV assets to all lots within the development.

Powercor will advise their specific requirements in their "Letter of Conditions" at the time development proceeds including relevant fees and charges.

2.4 Telecommunications

The land, 128 & 132 High Street of the subject land, is within the National Broadband Network Company's fixed line fibre area and therefore the development would meet the NBN Co's criteria to reticulate fibre through or to the development.

The land, 69 Park Street of the subject land, is currently within the National Broadband Network Company's fixed wireless. An application would need to be made to NBN Co to service this land with fixed line fibre and given the subject land is in a wider development precinct NBN, it may be considered suitable for fixed line fibre to be reticulated throughout the development. Alternatively, the development could be serviced by fixed wireless with the usual practice of also providing a Telstra pit and pipe network to service the development.

The current practice is for the developer to fund the costs associated with the installation of the pit and pipe network. NBN Co. recover the costs of supplying and installing the fibre optic cable via fixed per lot charges. Where there is a need to upgrade external services, we understand that NBN Co. are responsible for the costs associated with these works.

A plan of the NBN coverage to this area is attached in Appendix 3.

2.5 Gas

Ausnet is the responsible authority for the distribution of gas within the Lancefield township. Whilst gas is not an essential service, the minimal installation cost generally see it installed by developers to new residential developments on GRZ1 land and subject to installation costs on LDRZ land.

The land 128 & 132 High Street is within close proximity to existing gas main located in High Street (refer to AusNet's Asset Plan in Appendix 4) and being zoned GRZ1 could easily be connected with gas through extension of the network as part of the proposed development.

The land 69 Park Street is located some distance away from the existing gas network and therefore provision of gas infrastructure would be subject to feasibility of installation costs at the time of development.

Further investigations in relation to the provision of gas to this development should be discussed with Ausnet.

2.6 Stormwater Drainage and Management

To facilitate storm water drainage and best practice management of storm water, a network of open drains and underground stormwater pipes will be constructed to convey stormwater to the legal point of discharge. Please refer to the "Storm Water Management Plan" for more detailed information.

2.7 Local Roads, Footpath and Shared Path Infrastructure

The proposed internal road infrastructure shall be constructed generally in accordance with the cross sections shown in DPO24 and summarised in the table below.

Road	Reserve width (m)	Carriageway Width (m)	Description
High Street	60	N/A	Retain existing sealed carriageway, Proposed 2.5m wide shared path along lot frontage[1]
McMasters Lane & Showlers Lane	30	7.0	Concrete edge strips with 2.5m wide shared path on one side
Park Street	30	6.6[2]	Concrete edge strips with 1.5m wide footpath on one side (along lot frontages)[3]
New Internal Roads	20	7.5	Concrete barrier kerb & channel with 1.5m wide footpath on both sides

1. High Street is a designated "collector street – level 1" that requires a shared path in accordance with IDM typical road profiles
2. The Traffic Impact Assessment by Trafficworks recommends a 7.0m wide carriageway for Park Street, so as to be consistent with other external streets, which departs from Schedule 24 to the DPO. This recommendation has not been taken up, as it is submitted that the DPO schedule is based on a thorough process with considered and deliberate outcomes, thus it is retained.
3. The Traffic Impact Assessment by Trafficworks recommends a 2.5m wide shared path along Park Street to provide for access to the primary school, which departs from Schedule 24 to the DPO. It is submitted that if the Council elects to take up this recommendation to provide the additional path for external benefit then the upgrade be funded by external contribution

The proposed development of the subject land will create footpath and shared path infrastructure with limited connectivity to the existing network. Further development of the land within Area 1 will create these links and in the interim the existing wide road reserves should offer plenty of space for a safe (unformalised) passage for pedestrian traffic to connect back into town.

Additional information in relation to the extent of upgrade and suitability of the existing road network is detailed in the Traffic Impact Assessment Report.

2.8 External Intersection Upgrades

The Traffic Impact Assessment Report did not identify any external intersections to be upgraded as part of the proposed development.

3. Staging of Infrastructure

The staging of Infrastructure to be provided to service the proposed development is setout in the table below

69 Park Street- Council Infrastructure

Stage No.	Internal Road	External Road	Footpath	Shared Path	Open Space
C1	N/A	N/A	N/A	N/A	N/A
C2	Park Street frontage of C1 & C2	Temporary Seal of unmade section of Park Street	Along frontage of C1 & C2	N/A	N/A
C3	Park Street frontage of C3	N/A	Along frontage	N/A	N/A
C4	Park Street frontage & all internal roads	N/A	Along all frontages	N/A	N/A
C5	Showlers Lane Frontage	N/A	N/A	Along Frontage	N/A

69 Park Street- Service

Stage No.	Sewerage	Water	Electricity	NBN	Gas
C1	Existing	Existing	Existing	TBC	N/A
C2	Extension	Extension	Extension & new underground	TBC	Extension, if required
C3	New connection required	Extension	Extension & new underground	TBC	Extension, if required
C4	New connection required	Extension	Extension & new underground	TBC	Extension, if required
C5	New connection required	Extension	Extension and new underground	TBC	Extension, if required

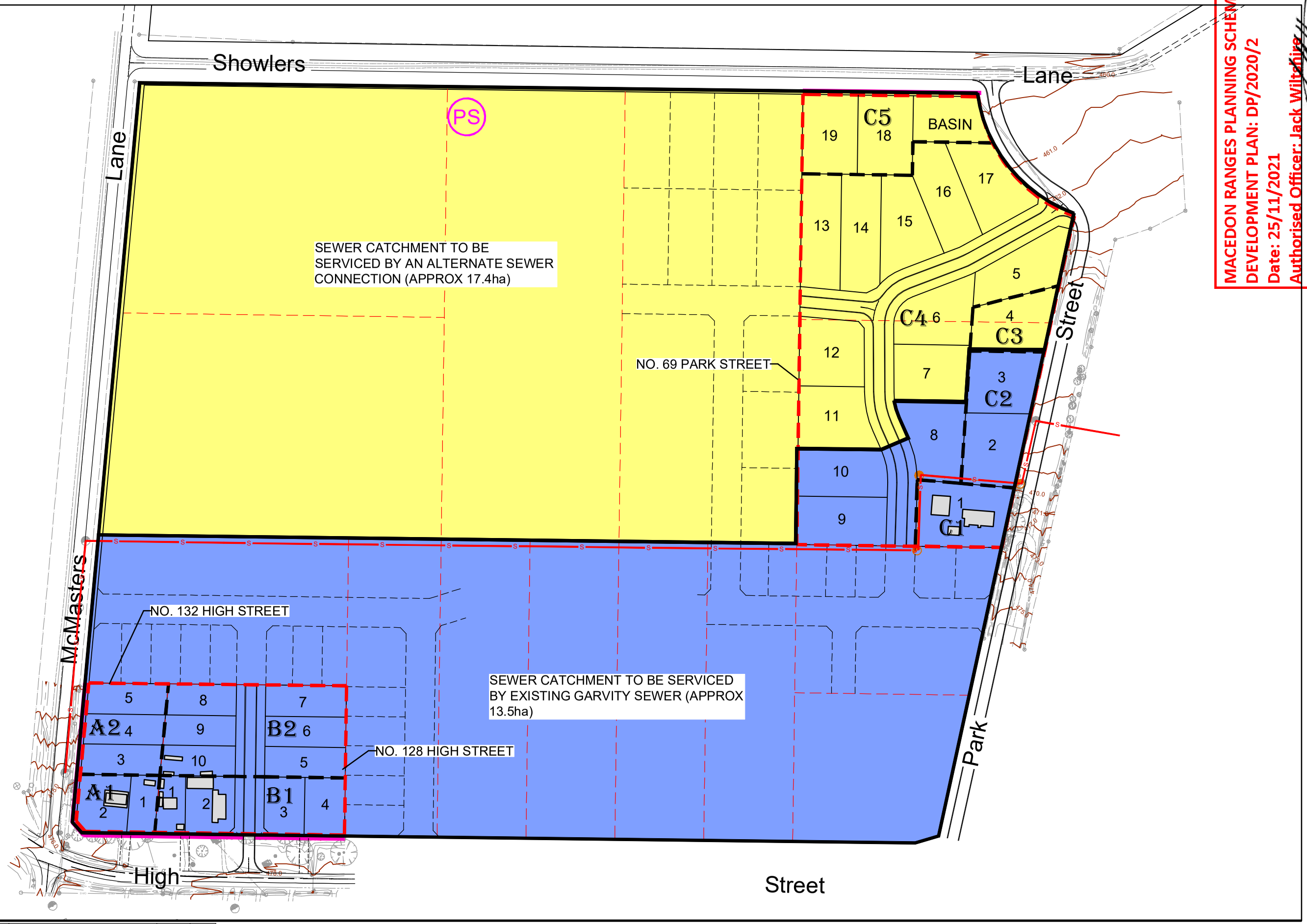
128 & 132 High Street

Stage No.	Internal Road	External Road	Footpath	Shared Path	Open Space
A1	N/A	N/A	N/A	Along frontage	N/A
A2	McMaster Road frontage	N/A	N/A	Along frontage	N/A
B1	Internal Road frontage	N/A	Along internal road frontage	Along High Street frontage	N/A
B2	Internal Road frontage	N/A	Along internal road frontage	N/A	N/A

128 & 132 High Street

Stage No.	Sewerage	Water	Electricity	NBN	Gas
A1	Extension	Existing	Existing & new underground	TBC	N/A
A2	Extension	Extension	New underground	TBC	Extension, if required
B1	Extension	Existing	Existing & new underground	TBC	Existing
B2	Extension	Extension	New underground	TBC	Extension, if required

Appendix 1 – Sewer Commandability Plan



1	Lot Layout Change	11/06/21	-
REVISION		DATE	ZONE

0 12.5 25 50

Scale 1:1250 @ A1

Chris Smith & ASSOCIATES PTY LTD
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Designed	Tom Kerrins	November 2020
Drawn	Tom Kerrins	November 2020
Checked	Scott Golightly	November 2020
Approved		

Stebbins, Foster & Thorton
Proposed Residential Development
69 Park Street, 128 & 129 High Street, Lancefield
Sewerage Concept
Concept Layout Plan
Drawing No. 20222-CS01rev1 Rev. 1
Sheet No. 1 of 1 20222-CD01rev1

Appendix 2 – Western Water Asset Plan

Sequence No: 103265020
Job No: 20502572
Location: Park Street, Lancefield, VIC 3435

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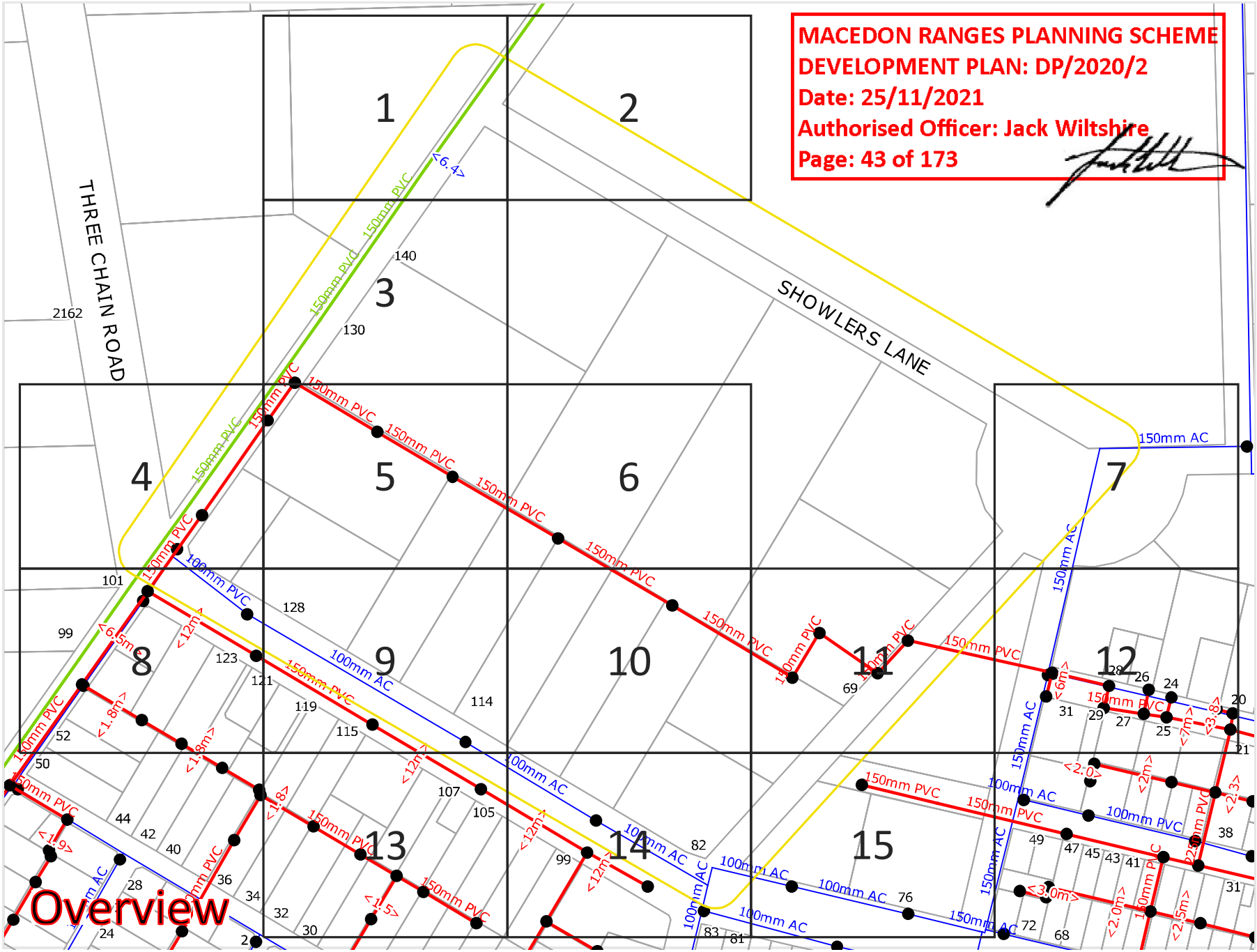
The Essential First Step.



Legend:

- Gravity Sewer
- Pressure Sewer
- Vacuum Pipe
- Water Potable
- Water Recycled
- Water Raw
- Abandoned Pipes
- Surface Fitting/Manhole
- <1.2> Estimated Offset

NOTE: Assets labelled "AC" may contain asbestos material and therefore any works near these assets must be undertaken in accordance with OHS (Asbestos) Regulations 2007.

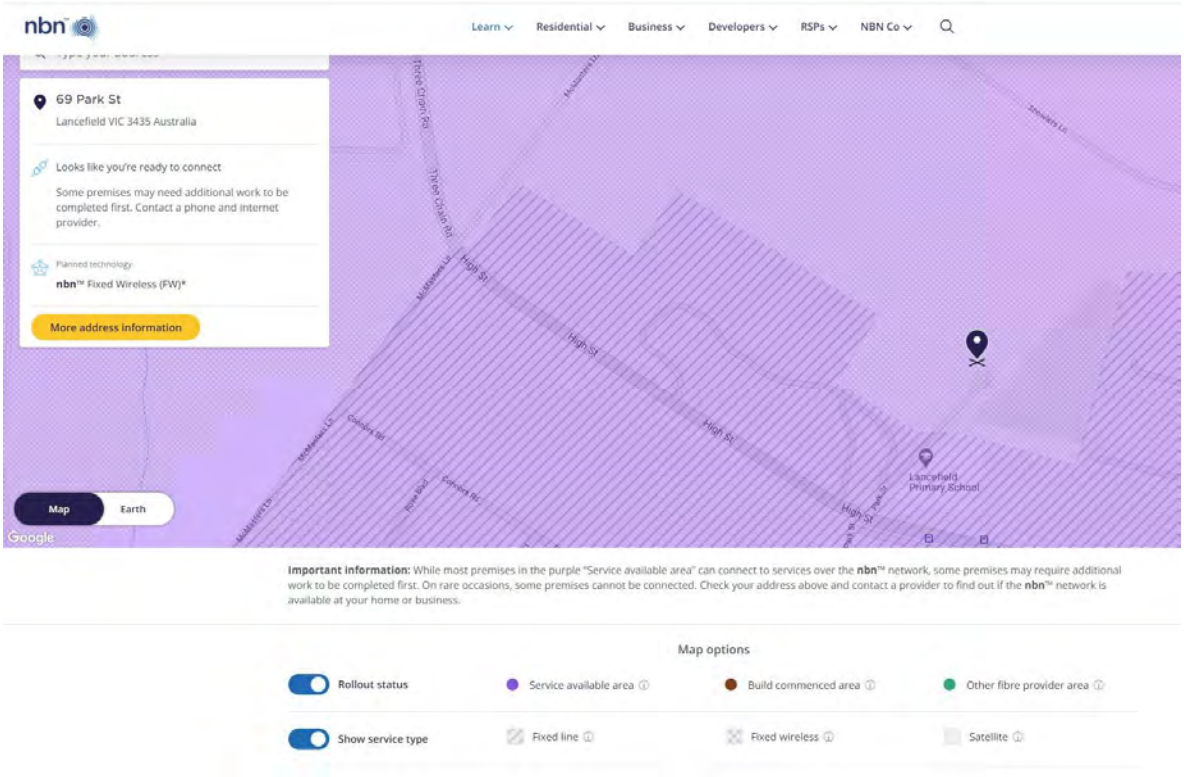
Due to the placement of Potable and Recycled pipes in the same trench, it may be difficult to distinguish the two asset types where they have been superimposed on the plans.

PLANS MUST BE PRINTED IN COLOUR

N

Scale: 1:5125
Expires: 24 Nov 2020

Appendix 3- NBN Coverage Plan

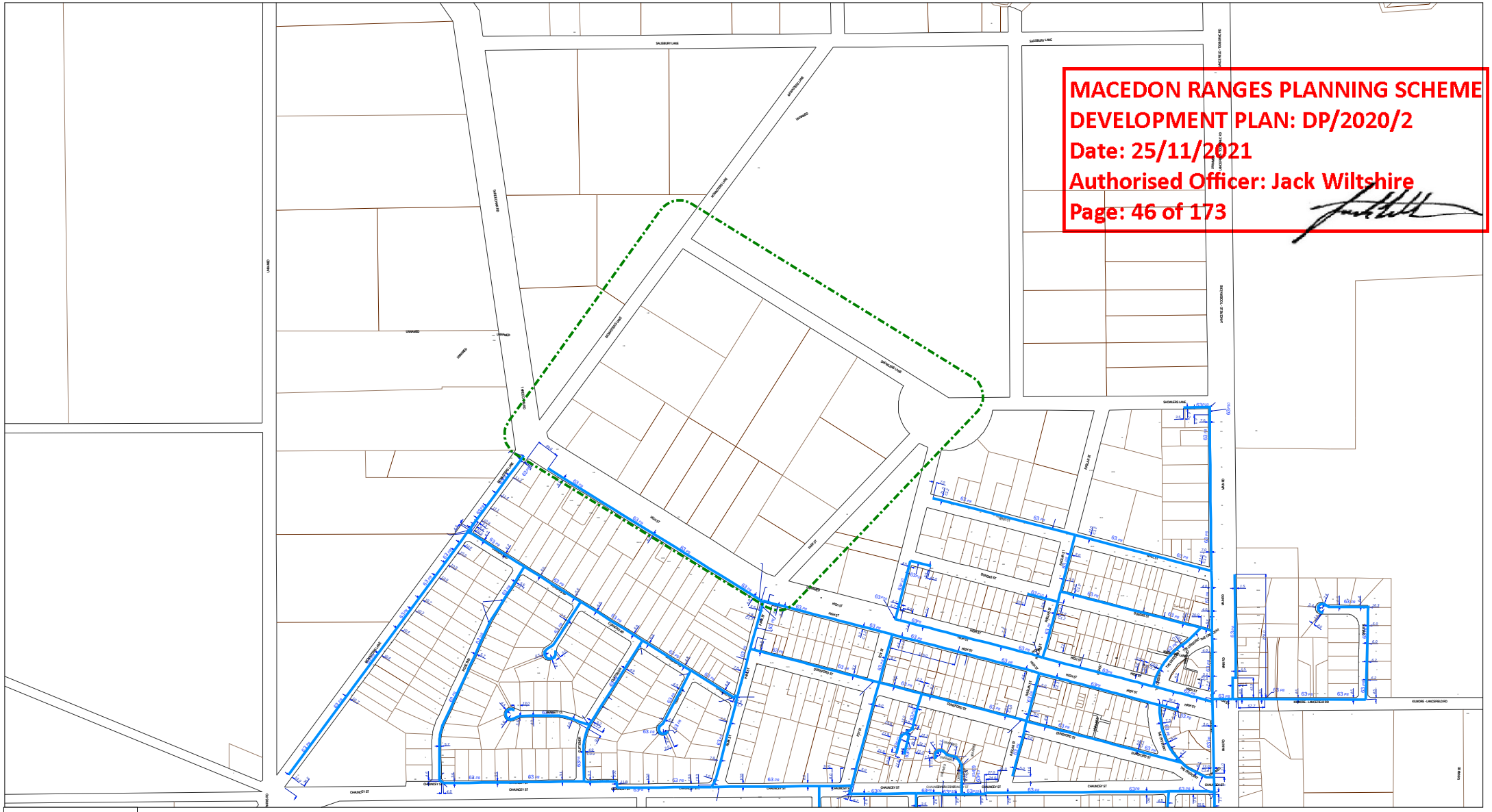


Appendix 4 – AusNet Gas Asset Plan

AusNet services

0m 500m 1000m 1500m 2000m 2500m

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
Page: 46 of 173



N
W E
S

NOTE: AusNet Services has taken care to ensure that the locations of Gas Mains shown on this plan are accurate however some variations from records do exist and complete accuracy is not guaranteed. It is essential that the position of pipes be proved on site by hand excavation. AusNet Services shall not be liable for any loss damage claim or demand incurred either directly or indirectly resulting from any act or omission which was made in reliance in whole or in part upon this plan.

Warning - Take Precautions if Printing this Plot in Black & White.
All planned mains shall be treated as live mains, as mains under pressure may be in existence.

- Gas Transmission Pipeline
- Gas Distribution Mains
- Planned Gas Assets
- Abandoned Gas Assets
- Requested Area

Chris Smith & ASSOCIATES PTY LTD

SPECIALISING IN SUBDIVISION PROJECT MANAGEMENT AND DESIGN

Storm Water Management Plan

for

Three land parcels within the Lancefield Development Plan Areas –Area 1

June 2021

Revision 1

Our Ref: 20222

Level 1, 135 Fryers Street, Shepparton, Vic, 3630
Telephone (03) 5820 7700 Facsimile (03) 5822 4878

Document Ref: 20222_r_SWMPrev1_150621

Contents

1. Introduction

This Storm Water Management Plan report has been prepared on behalf of three landowners located in the Lancefield Development Plan Areas -Area 1, with the three land parcels described as follows: -

- 128 High Street- General residential Zone (GRZ1)
- 132 High Street- General residential Zone (GRZ1)
- 69 Park Street- Low Density Residential Zone (LDRZ)

The above mentioned land, referred to as the subject land within this report only makes up a small portion of Area 1, and hence the stormwater management discussed in this report specifically relates to that required to service the subject land and not the wider Area 1.

The total area of the subject land is 6.7ha, being on a small portion of Area 1, which is approximately 30.9ha.

2. Existing Site Drainage

The entire Area 1 has generous fall in a northern direction, with approximate elevations at High Street being 480m AHD falling to the lowest point in Showlers Lane being approximately 453m AHD. Refer Figure 1 below.

Fig 1 – Area 1, with 10m contours

The upstream catchment of Area 1 has not been defined as part of this report and would not appear to include any land south of Connors Road where there are significant Council drainage assets directing stormwater runoff in a westly direction. Refer to Appendix 2 for Macedon Ranges Dial-Before-You-Dig drainage plan. It should

be noted this plan would not include Council open drainage network which is existing in High Street, Park Street & McMasters Lane.

Through onsite investigations and feature and level survey it has been determined that there are serval locations where the upstream catchment is directing water onto Area 1, being two culverts under High Street (between Park Street and McMasters Lane) and overtopping from open drains in Park Street, however only the later affects the subject land. Furthermore, the existing conditions of each site are further described below.

2.1 69 Park Street

Area	4.89 Ha
Average Grade on Land	4% (with a steep section at 10%)
Upstream Catchment	82 High Street and some over topping from Park Street Drainage
Surface Type	Lush Pasture (Short grass prairie for n co-efficient in Kinematic Wave Equation)
Impervious Assets	House & shedding
Current outfall	Open Drain in Showlers Lane

Comments: The overtopping of drainage from Park Street is only occurring due to open drains in Park Street not being sufficient for existing flows. The upstream catchment is currently undeveloped land.

2.2 128 High Street

Area	1.26 Ha
Average Grade on Land	6%
Upstream Catchment	Minimal, as pipe under High Street is directed to drain to the east of this property.
Surface Type	Lush Pasture (Short grass prairie for n co-efficient in Kinematic Wave Equation)
Impervious Assets	House & shedding
Current outfall	Across adjoining property to the north.

Comments: There is a small dam on the property at the lowest point of the northern boundary which collects water prior to flow discharging across the adjoining property to the north.

2.3 132 High Street

Area	0.55 Ha
Average Grade on Land	6%
Upstream Catchment	Minimal as upstream flows are directed away from property down McMasters Lane
Surface Type	Lush Pasture (Short grass prairie for n co-efficient in Kinematic Wave Equation)
Impervious Assets	House & shedding
Current outfall	Across adjoining property to the north.

Comments: The existing drain on the east side of McMasters Lane is not well defined but due to the lay of the land would unlikely cause runoff onto this property.

2.4 Allowable Discharge

In accordance with the IDM the stormwater discharge rate should be limited to the predeveloped discharge rate. In this instance the predevelopment discharge for each of the three sites has been calculated using the Kinematic Wave Equation and the Rational Method. The detailed drainage calculations are shown in Appendix 3, and summarised below: -

- 69 Park Street: 189.3L/s
- 128 High Street – 100.9L/s
- 132 High Street:- 44.2L/s

Co-efficients have been weighted to take into consideration existing site feature and impervious area.

3. Proposed Drainage

The proposed drainage system described below has been broken into two sections to reflect the two proposed catchments as follows: -

3.1 69 Park Street

The proposed development of 69 Park Street has been designed to assist the stormwater drainage strategy and ensure this property can be developed without impacting adjoining properties.

Minor Flows

The minor flows within the proposed residential subdivision will be catered for through a proposed pit and pipe network along the internal roadway and rear of lot drainage

where required. Park Street and Showlers Lane will be serviced by an upgraded and widened open drain system.

This proposed drainage network will convey storm water to proposed retention basin located in a dedicated drainage reserve in the north east corner of the development. The underground drainage system shall be sized to convey a 1 in 5-year average recurrence interval (ARI) storm event without creating nuisance flows on the roads.

The proposed retention basin will be adequately sized for the development 69 Park Street and along with the table drainage networks will assist to achieve water quality improvement in accordance with the Infrastructure Design Manual.

The extent of the proposed minor and major flow paths is shown on the Storm Water Management Plan 20222-CD01 in Appendix 1.

Major Flows

The road reserves shall be designed to act as open channels to safely convey the 1 in 100-year ARI storm water flows to the proposed retention basin located to the north east of the subject land. Some critical road culverts and some rear of lot drainage pipes, on lots 13-16 will also be sized to cater for 100-year ARI storm water flows, also directing flows to the proposed retention basin.

The proposed internal road is aligned to allow for all upstream water to flow towards the basin and away from adjoining land. Lots will be regraded where required to also direct flows away from adjoining properties. The basin will overflow to an improved open drain in Showlers Lane, with the entire system design to limit flows to the predevelopment discharge rate as calculated in section 2.4 of this report. As a result of this no downstream works will be required beyond the Showlers Lane frontage.

The extent of the proposed minor and major flow paths is shown on the Storm Water Management Plan 20222-CD01 in Appendix 1.

3.2 128 & 132 High Street

A stormwater management strategy has been prepared to service the proposed residential development on these allotments, to ensure stormwater runoff is not concentrated onto the adjoining land to the north.

Minor Flows

The minor flows from 128 High Street will be directed from the proposed allotments to the proposed internal roadway. Kerb and channel along with an underground pit and pipe network will be required along this internal roadway. The underground drainage system shall be sized to convey a 1 in 5-year average recurrence interval (ARI) storm event without creating nuisance flows on the roads. At the northern end of the proposed road a pipeline will be constructed between this road and McMasters Lane to direct flows to the upgraded open drainage system in McMasters Lane to avoid concentrating water onto the adjoining property.

For 132 High Street the minor flows will be directed to the upgraded open drain in McMasters Lane.

The extent of the proposed minor and major flow paths is shown on the Storm Water Management Plan 20222-CD01 in Appendix 1.

Major Flows

For the proposed lots fronting High Street, rear of lot drainage will be constructed, that will connect to the open drain in McMasters Lane. This pipeline will be sized to cater 100-year ARI storm water event.

For the proposed internal road runoff and lots fronting the proposed road within 128 High Street, the road reserve shall be designed to act as open channels to safely convey the 1 in 100-year ARI storm water flows to pipeline along the northern boundary of 128 & 132 High Street that will also connect to open drain in McMasters Lane. Suitable kerbing and drainage pits will need to be constructed at the temporary end of this road to ensure these flow are captured and directed into the underground drainage pipeline.

In addition to the above pipelines providing the 1 in 100-year ARI storm water capacity, it is also envisaged these pipelines would be significantly oversized to also provided stormwater retention to ensure the runoff from both 128 & 132 High Street is designed to limit flows to the predevelopment discharge rate as calculated in section 2.4 of this report.

The extent of the proposed minor and major flow paths is shown on the Storm Water Management Plan 20222-CD01 in Appendix 1.

4. Storm Water Retention

Stormwater retention for subject land is proposed to be provided by a combination of oversized underground drainage pipes and a retention basin (69 Park Street only). The retention storage required for each property within the subject land has been determined by retention calculations for a 24hr event for the 100 year ARI in accordance with the IDM, giving due regard to the allowable discharge calculated in section 2.4 of this report. The detailed retention calculations are provided in Appendix 3 and summarised below.

	Storage Required
69 Park Street	545m^3
128 High Street	97m^3
132 High Street	34m^3
Total	676m^3

For 128 & 132 High Street the required retention of 117m^3 could be provided by 100m of 1200mm dia. pipe or a similar equivalent.

For 69 Park Street the required retention of 545m^3 will be provided by a retention basin and/or oversized drainage pipes.

The stormwater retention basin has been located in a suitable sized reserve that takes into consideration the lay of the land, batter slopes, perimeter access and allowance for a gravity outfall.

5. Staging of Stormwater Retention Works

The proposed stormwater drainage, treatment and retention works to service the development of the three land parcels will be constructed in stages as per the following tables.

69 Park Street

Stage No.	Minor Flows	Major Flows	Retention	Water Quality
C1	Open Drain in Park Street	Open Drain in Park Street	N/A	N/A
C2	Open Drain in Park Street	Open Drain in Park Street	Storage provided in retention basin and protected by easement	Open Drain in Park Street & sed pond
C3	Open Drain in Park Street	Open Drain in Park Street	Storage provided in retention basin and protected by easement	Open Drain in Park Street & sed pond
C4	Pit & pipe along new road and rear of lot drainage where required	Overland flow along new road & oversized pipes as required	Storage provided in retention basin and handed over to Council	Sed pond & GPT
C5	Open Drain in Showlers Lane	Open Drain in Showlers Lane	Retention Basin	Sed pond & GPT

128 & 132 High Street

Stage No.	Minor Flows	Major Flows	Retention	Water Quality
A1	Underground drainage to McMasters Ln	Underground drainage to McMasters Ln	Oversized Pipes	Open Drain in McMasters Ln
A2	Underground drainage to McMasters Ln	Underground drainage to McMasters Ln	Oversized Pipes	Open Drain in McMasters Ln
B1	Underground drainage to McMasters Ln	Underground drainage to McMasters Ln	Oversized Pipes	Open Drain in McMasters Ln
B2	Pit and pipe along new road & Underground drainage to McMasters Ln	Underground drainage to McMasters Ln	Oversized Pipes	Open Drain in McMasters Ln

6. Water Quality Improvement

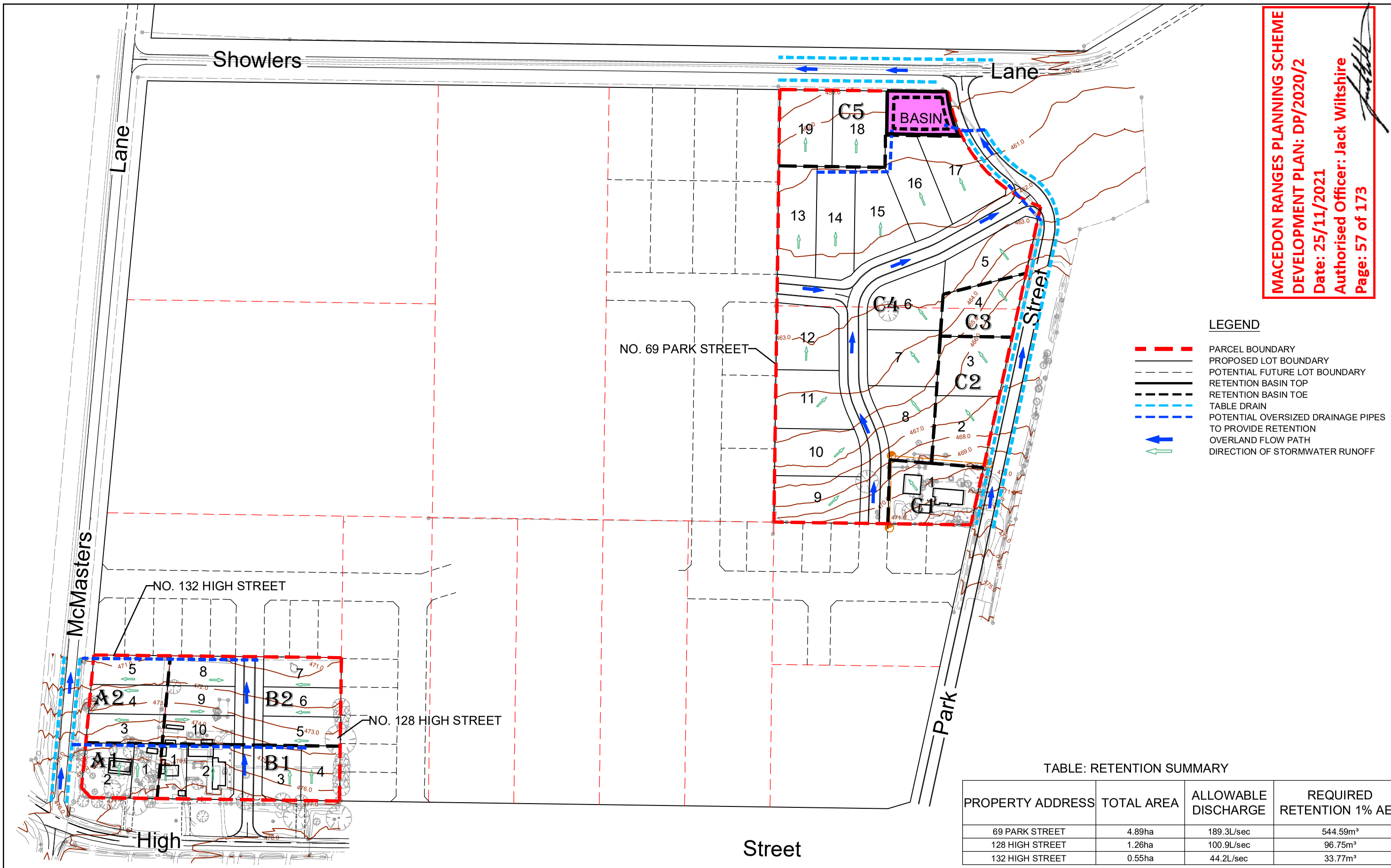
Water Sensitive Urban Design principles will be adopted throughout the detailed design of the subject land to achieve the required water quality outcomes in accordance with Best Practice requirements and/ or planning permit conditions. There are several means of providing this treatment which include the following:-

- Open drainage systems along Park Street, Showlers Lane and McMasters Lane.
- Retention Basin/ sediment pond
- Gross Pollutant trap at outfall to retention basin (if required)

The proposed treatment system for each stage of development shall be modelled to ensure the proposed system provides suitable storm water quality improvement parameters detailed in the "Urban Stormwater Best Practice Environmental Management Guidelines" 1999 as required by Council.

7. Appendix

Appendix 1 - Storm Water Management Plan 20222-CD01



MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
Page: 57 of 173

TABLE: RETENTION SUMMARY

PROPERTY ADDRESS	TOTAL AREA	ALLOWABLE DISCHARGE	REQUIRED RETENTION 1% AEP
69 PARK STREET	4.89ha	189.3L/sec	544.59m³
128 HIGH STREET	1.26ha	100.9L/sec	96.75m³
132 HIGH STREET	0.55ha	44.2L/sec	33.77m³

1	Lot Layout Change	11/06/21	-
REVISION		DATE	ZONE

0 12.5 25 50

Scale 1:1250 @ A1

Chris Smith & ASSOCIATES PTY LTD
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· URBAN & REGIONAL PLANNERS · PROJECT MANAGERS
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Designed	Tom Kerrins	November 2020
Drawn	Tom Kerrins	November 2020
Checked	Scott Golightly	November 2020
Approved		

Stebbins, Foster & Thorton
Proposed Residential Development
69 Park Street, 128 & 129 High Street, Lancefield
Stormwater Management Plan
Concept Layout Plan
Drawing No. 20222-CD01rev1 Rev. 1
Sheet No. 1 of 1 20222-CD01rev1

A1

Appendix 2 - Macedon Ranges Shire Council Drainage Asset Plan

Macedon Ranges Shire Council
PO Box 151
Kyneton VIC 3444
(03) 5422 0333
mrsc@mrsc.vic.gov.au
www.mrsc.vic.gov.au

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
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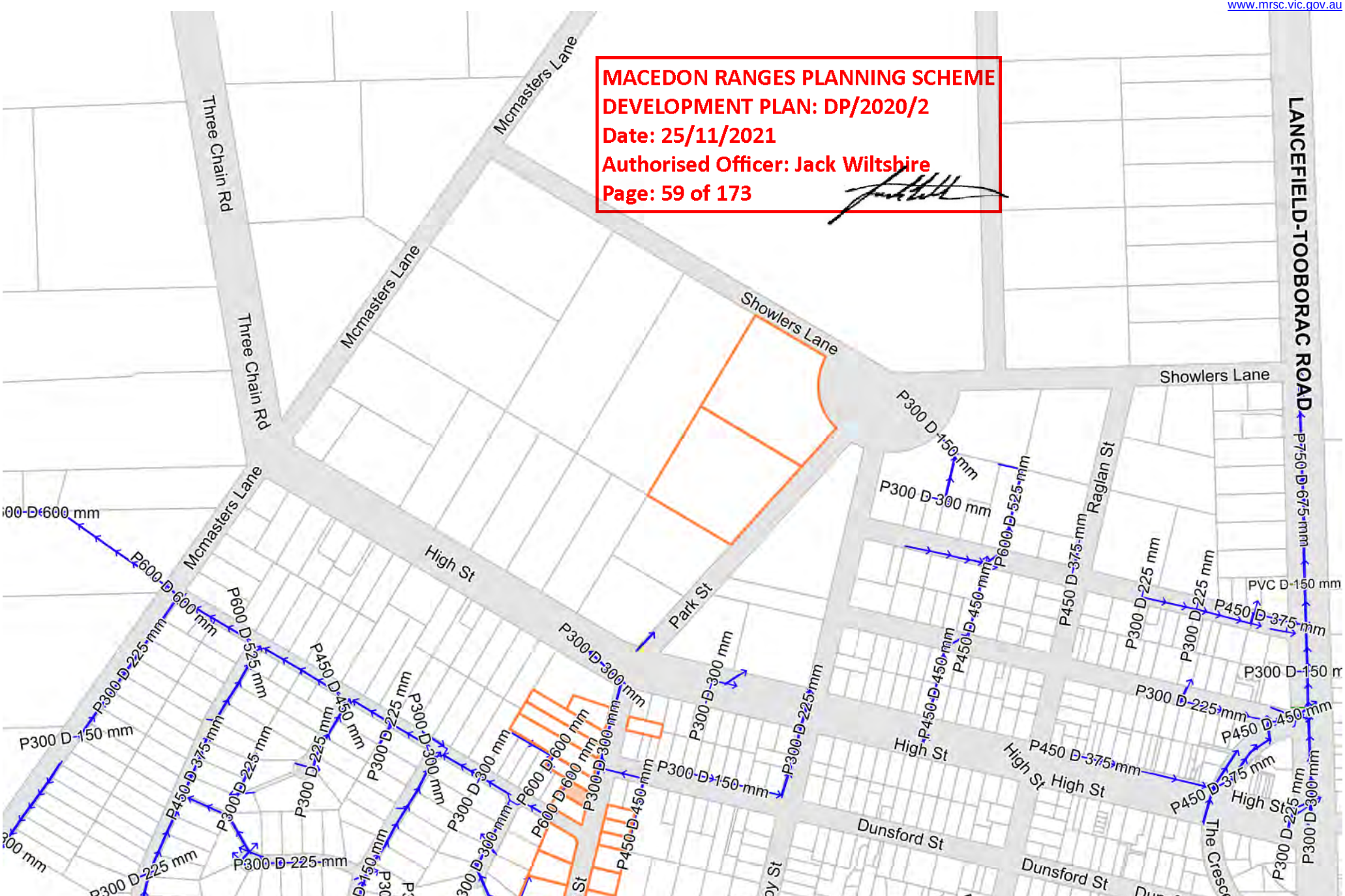

Appendix 3 – Drainage Calculations– Allowable Discharge

Project 69 Park Street Lancefield
Job No. 20222
Date Nov-20

CALCULATION TO DETERMINE EXISTING RUNOFF RATE

The Kinematic Wave Equation

$t=6.94\ (L.n^*)^{0.6} / I^{0.4}\ S^{0.3}$
where t is overland flow time (minutes)
L is flow path length (m)
n is a surface roughness or retardance coefficient*
I is rainfall intensity (mm/h)
and S is slope (m/m)

Surface Roughness or Retardance Factors

Surface Type	***Roughness Coefficient n****
Concrete or Ashphalt	*0.010 - 0.013*
Bare Sand	*0.010 - 0.016*
Graveled Surface	*0.012 - 0.030*
Bare Clay-Loam Soil (eroded)	*0.012 - 0.033*
Sparse Vegetation	*0.053 - 0.130*
Short Grass Prairie	*0.100 - 0.200*
Lawns	*0.170 - 0.480*

$$t = \frac{6.94(\mathbf{Ln^*})^{0.6}}{\mathbf{I}^{0.4}\,\mathbf{S}^{0.3}}$$

n*= 0.15 (short grass prairie, see table above)
L= 313
S= 0.041

AHD at HP 470.9
AHD at LP 458.04

$tI^{0.4}$= 182.067 Find I for ARI event 100
t= 34.000
I= 66.356

Predevelopment Runoff Rate

A- Site Area= 4.89 Ha
C-runoff coefficient (existing) = 0.21

$$Q = \frac{CIA}{3600}$$

Q= 0.189 m3
Q= 189.3 L/s being the allowable discharge from the site

Project 128 High Street, Lancefield
Job No. 20222
Date Nov-20

CALCULATION TO DETERMINE EXISTING RUNOFF RATE

The Kinematic Wave Equation

$t=6.94\ (L.n^*)^{0.6} / I^{0.4}\ S^{0.3}$
where t is overland flow time (minutes)
L is flow path length (m)
n is a surface roughness or retardance coefficient*
I is rainfall intensity (mm/h)
and S is slope (m/m)

Surface Roughness or Retardance Factors

Surface Type	***Roughness Coefficient n****
Concrete or Ashphalt	*0.010 - 0.013*
Bare Sand	*0.010 - 0.016*
Graveled Surface	*0.012 - 0.030*
Bare Clay-Loam Soil (eroded)	*0.012 - 0.033*
Sparse Vegetation	*0.053 - 0.130*
Short Grass Prairie	*0.100 - 0.200*
Lawns	*0.170 - 0.480*

$$t = \frac{6.94(\mathbf{Ln^*})^{0.6}}{\mathbf{I}^{0.4}\,\mathbf{S}^{0.3}}$$

n*= 0.15 (short grass prairie, see table above)
L= 106
S= 0.065

AHD at HP 477.57
AHD at LP 470.66

$tI^{0.4}$= 82.784 Find I for ARI event 100
t= 12.000
I= 125.001

Predevelopment Runoff Rate

A- Site Area= 1.263 Ha
C-runoff coefficient (existing) = 0.23

$$Q = \frac{CIA}{3600}$$

Q= 0.101 m3
Q= 100.9 L/s being the allowable discharge from the site

Project 132 High Street, Lancefield
Job No. 20222
Date Nov-20

CALCULATION TO DETERMINE EXISTING RUNOFF RATE

The Kinematic Wave Equation

$t=6.94\ (L.n^*)^{0.6} / I^{0.4}\ S^{0.3}$
where t is overland flow time (minutes)
L is flow path length (m)
n is a surface roughness or retardance coefficient*
I is rainfall intensity (mm/h)
and S is slope (m/m)

Surface Roughness or Retardance Factors

Surface Type	***Roughness Coefficient n****
Concrete or Ashphalt	*0.010 - 0.013*
Bare Sand	*0.010 - 0.016*
Graveled Surface	*0.012 - 0.030*
Bare Clay-Loam Soil (eroded)	*0.012 - 0.033*
Sparse Vegetation	*0.053 - 0.130*
Short Grass Prairie	*0.100 - 0.200*
Lawns	*0.170 - 0.480*

$$t = \frac{6.94(\mathbf{Ln^*})^{0.6}}{\mathbf{I}^{0.4}\,\mathbf{S}^{0.3}}$$

n*= 0.15 (short grass prairie, see table above)
L= 96
S= 0.066

AHD at HP 477.05
AHD at LP 470.72

$tI^{0.4}$= 77.739 Find I for ARI event 100
t= 11.000
I= 132.773

Predevelopment Runoff Rate

A- Site Area= 0.5448 Ha
C-runoff coefficient (existing) = 0.22

$$Q = \frac{CIA}{3600}$$

Q= 0.044 m3
Q= 44.2 L/s being the allowable discharge from the site

Appendix 4 - Drainage Calculations– Retention Calculation

SUMMARY OF RETENTION CALCULATIONS

Client : **Narelle Stebbins**

Project : **69 Park Street Lancefield**

Ref. No. :

Temporal Rainfall Pattern data for A.R.I. >30 years.			
Catchment area.		4.89	*ha*
Volumetric runoff coefficient.		0.51	From IDM
Design A.R.I.		100	Years
Diameter of outfall discharge pipe.			mm
Hydraulic gradient of pipe.	*1 in*		
Pipe roughness coefficient 'k'.			mm
Discharge rate.		189.3	l/sec

Duration		30min			60min			120min			180min			360min			720min			1440min			*Adopted	Cumulative		
Intensity			71 mm/hr			44.8 mm/hr			27.9 mm/hr			21.2 mm/hr			13.5 mm/hr			8.64 mm/hr			5.5 mm/hr		Cumulative	Runoff	Outflow	
Interval min.		%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	Equivalent Intensity mm/hr	CIA*(dt) /360 m^3	189.3 l/s	Excess m^3
0																							0			
60					100	44.8	44.8	78.4	43.7472	43.7472	65.4	41.5944	41.5944	35.9	29.079	29.079	18.9	19.59552	19.59552	9.6	12.672	12.672	44.8	1117.267	681.48	435.7872
120								21.6	12.0528	55.8	22.9	14.5644	56.1588	27.5	22.275	51.354	28.6	29.65248	49.248	22.8	30.096	42.768	56.1588	1400.544	1362.96	37.58431
180											11.7	7.4412	63.6	14.7	11.907	63.261	8	8.2944	57.5424	14.1	18.612	61.38	63.6	1586.12	2044.44	-458.32
240	Pattern													10.8	8.748	72.009	8.9	9.22752	66.76992	6.9	9.108	70.488	72.009	1795.832	2725.92	-930.088
300														6.8	5.508	77.517	5.4	5.59872	72.36864	5.1	6.732	77.22	77.517	1933.196	3407.4	-1474.2
360														4.3	3.483	81	8.2	8.50176	80.8704	4.1	5.412	82.632	82.632	2060.759	4088.88	-2028.12
420																	6.5	6.7392	87.6096	6.5	8.58	91.212	91.212	2274.736	4770.36	-2495.62
480																	4.4	4.56192	92.17152	4.4	5.808	97.02	97.02	2419.582	5451.84	-3032.26
540																	4.1	4.25088	96.4224	1.9	2.508	99.528	99.528	2482.129	6133.32	-3651.19
600																	2.7	2.79936	99.22176	3.4	4.488	104.016	104.016	2594.055	6814.8	-4220.74
660																	2.5	2.592	101.8138	2.8	3.696	107.712	107.712	2686.23	7496.28	-4810.05
720	Rainfall																1.8	1.86624	103.68	2.1	2.772	110.484	110.484	2755.36	8177.76	-5422.4
780																				2.5	3.3	113.784	113.784	2837.659	8859.24	-6021.58
840																				3.8	5.016	118.8	118.8	2962.753	9540.72	-6577.97
900																				1.5	1.98	120.78	120.78	3012.132	10222.2	-7210.07
960																				1.7	2.244	123.024	123.024	3068.096	10903.68	-7835.58
1020																				1	1.32	124.344	124.344	3101.015	11585.16	-8484.14
1080																				0.8	1.056	125.4	125.4	3127.351	12266.64	-9139.29
1140																				1.4	1.848	127.248	127.248	3173.438	12948.12	-9774.68
1200	Temporal																			1.1	1.452	128.7	128.7	3209.649	13629.6	-10420
1260																				0.9	1.188	129.888	129.888	3239.277	14311.08	-11071.8
1320																				0.7	0.924	130.812	130.812	3262.32	14992.56	-11730.2
1380																				0.4	0.528	131.34	131.34	3275.488	15674.04	-12398.6
1440																				0.5	0.66	132	132	3291.948	16355.52	-13063.6

* Used for plotting of Unit Area Envelope.

For 100 Year ARI

Maximum Retardation for no outflow condition = **3291.95 m^3**

Maximum Retardation for given outflow = **544.59 m^3**

Outflow mm dia. @ 1 in

SUMMARY OF RETENTION CALCULATIONS

Client : **Brea Thorton**

Project : **132 High Street, Lancefield**

Ref. No. :

Temporal Rainfall Pattern data for A.R.I. >30 years.			
Catchment area.		0.5448	*ha*
Volumetric runoff coefficient.		0.50	From IDM
Design A.R.I.		100	Years
Diameter of outfall discharge pipe.			mm
Hydraulic gradient of pipe.	*1 in*		
Pipe roughness coefficient 'k'.			mm
Discharge rate.		44.2	l/sec

Duration		30min			60min			120min			180min			360min			720min			1440min			*Adopted	Cumulative		
Intensity			71 mm/hr			44.8 mm/hr			27.9 mm/hr			21.2 mm/hr			13.5 mm/hr			8.64 mm/hr			5.5 mm/hr		Cumulative	Runoff	Outflow	
Interval min.		%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	Equivalent Intensity mm/hr	CIA*(dt) /360 m^3	44.2 l/s	Excess m^3
0																							0			
60					100	44.8	44.8	78.4	43.7472	43.7472	65.4	41.5944	41.5944	35.9	29.079	29.079	18.9	19.59552	19.59552	9.6	12.672	12.672	44.8	122.0352	159.12	-37.0848
120								21.6	12.0528	55.8	22.9	14.5644	56.1588	27.5	22.275	51.354	28.6	29.65248	49.248	22.8	30.096	42.768	56.1588	152.9766	318.24	-165.263
180	Pattern										11.7	7.4412	63.6	14.7	11.907	63.261	8	8.2944	57.5424	14.1	18.612	61.38	63.6	173.2464	477.36	-304.114
240														10.8	8.748	72.009	8.9	9.22752	66.76992	6.9	9.108	70.488	72.009	196.1525	636.48	-440.327
300														6.8	5.508	77.517	5.4	5.59872	72.36864	5.1	6.732	77.22	77.517	211.1563	795.6	-584.444
360														4.3	3.483	81	8.2	8.50176	80.8704	4.1	5.412	82.632	82.632	225.0896	954.72	-729.63
420																	6.5	6.7392	87.6096	6.5	8.58	91.212	91.212	248.4615	1113.84	-865.379
480																	4.4	4.56192	92.17152	4.4	5.808	97.02	97.02	264.2825	1272.96	-1008.68
540																	4.1	4.25088	96.4224	1.9	2.508	99.528	99.528	271.1143	1432.08	-1160.97
600																	2.7	2.79936	99.22176	3.4	4.488	104.016	104.016	283.3396	1591.2	-1307.86
660																	2.5	2.592	101.8138	2.8	3.696	107.712	107.712	293.4075	1750.32	-1456.91
720	Rainfall																1.8	1.86624	103.68	2.1	2.772	110.484	110.484	300.9584	1909.44	-1608.48
780																				2.5	3.3	113.784	113.784	309.9476	2068.56	-1758.61
840																				3.8	5.016	118.8	118.8	323.6112	2227.68	-1904.07
900																				1.5	1.98	120.78	120.78	329.0047	2386.8	-2057.8
960																				1.7	2.244	123.024	123.024	335.1174	2545.92	-2210.8
1020																				1	1.32	124.344	124.344	338.7131	2705.04	-2366.33
1080																				0.8	1.056	125.4	125.4	341.5896	2864.16	-2522.57
1140	Temporal																			1.4	1.848	127.248	127.248	346.6236	3023.28	-2676.66
1200																				1.1	1.452	128.7	128.7	350.5788	3182.4	-2831.82
1260																				0.9	1.188	129.888	129.888	353.8149	3341.52	-2987.71
1320																				0.7	0.924	130.812	130.812	356.3319	3500.64	-3144.31
1380																				0.4	0.528	131.34	131.34	357.7702	3659.76	-3301.99
1440																				0.5	0.66	132	132	359.568	3818.88	-3459.31

* Used for plotting of Unit Area Envelope.

For 100 Year ARI

Maximum Retardation for no outflow condition =	**359.57 m^3**
Maximum Retardation for given outflow =	**33.77 m^3**
Outflow mm dia. @ 1 in	

SUMMARY OF RETENTION CALCULATIONS

Client : **Terry Foster**

Project : **128 High Street, Lancefield**

Ref. No. :

Temporal Rainfall Pattern data for A.R.I. >30 years.			
Catchment area.		1.263	*ha*
Volumetric runoff coefficient.		0.55	From IDM
Design A.R.I.		100	Years
Diameter of outfall discharge pipe.			mm
Hydraulic gradient of pipe.	*1 in*		
Pipe roughness coefficient 'k'.			mm
Discharge rate.		100.9	l/sec

Duration		30min			60min			120min			180min			360min			720min			1440min			*Adopted	Cumulative		
Intensity			71 mm/hr			44.8 mm/hr			27.9 mm/hr			21.2 mm/hr			13.5 mm/hr			8.64 mm/hr			5.5 mm/hr		Cumulative	Runoff	Outflow	
Interval min.		%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	%	Equivalent Intensity mm/hr.	Cumulative Equivalent Intensity mm/hr.	Equivalent Intensity mm/hr	CIA*(dt) /360 m^3	100.9 l/s	Excess m^3
0																							0			
60					100	44.8	44.8	78.4	43.7472	43.7472	65.4	41.5944	41.5944	35.9	29.079	29.079	18.9	19.59552	19.59552	9.6	12.672	12.672	44.8	311.2032	363.24	-52.0368
120								21.6	12.0528	55.8	22.9	14.5644	56.1588	27.5	22.275	51.354	28.6	29.65248	49.248	22.8	30.096	42.768	56.1588	390.1071	726.48	-336.373
180	Pattern										11.7	7.4412	63.6	14.7	11.907	63.261	8	8.2944	57.5424	14.1	18.612	61.38	63.6	441.7974	1089.72	-647.923
240														10.8	8.748	72.009	8.9	9.22752	66.76992	6.9	9.108	70.488	72.009	500.2105	1452.96	-952.749
300														6.8	5.508	77.517	5.4	5.59872	72.36864	5.1	6.732	77.22	77.517	538.4718	1816.2	-1277.73
360														4.3	3.483	81	8.2	8.50176	80.8704	4.1	5.412	82.632	82.632	574.0032	2179.44	-1605.44
420																	6.5	6.7392	87.6096	6.5	8.58	91.212	91.212	633.6042	2542.68	-1909.08
480																	4.4	4.56192	92.17152	4.4	5.808	97.02	97.02	673.9494	2905.92	-2231.97
540																	4.1	4.25088	96.4224	1.9	2.508	99.528	99.528	691.3713	3269.16	-2577.79
600																	2.7	2.79936	99.22176	3.4	4.488	104.016	104.016	722.5471	3632.4	-2909.85
660																	2.5	2.592	101.8138	2.8	3.696	107.712	107.712	748.2214	3995.64	-3247.42
720	Rainfall																1.8	1.86624	103.68	2.1	2.772	110.484	110.484	767.4771	4358.88	-3591.4
780																				2.5	3.3	113.784	113.784	790.4006	4722.12	-3931.72
840																				3.8	5.016	118.8	118.8	825.2442	5085.36	-4260.12
900																				1.5	1.98	120.78	120.78	838.9983	5448.6	-4609.6
960																				1.7	2.244	123.024	123.024	854.5862	5811.84	-4957.25
1020																				1	1.32	124.344	124.344	863.7556	6175.08	-5311.32
1080																				0.8	1.056	125.4	125.4	871.0911	6538.32	-5667.23
1140	Temporal																			1.4	1.848	127.248	127.248	883.9282	6901.56	-6017.63
1200																				1.1	1.452	128.7	128.7	894.0146	7264.8	-6370.79
1260																				0.9	1.188	129.888	129.888	902.267	7628.04	-6725.77
1320																				0.7	0.924	130.812	130.812	908.6856	7991.28	-7082.59
1380																				0.4	0.528	131.34	131.34	912.3533	8354.52	-7442.17
1440																				0.5	0.66	132	132	916.938	8717.76	-7800.82

For 100 Year ARI

Maximum Retardation for no outflow condition = **916.94 m^3**

Maximum Retardation for given outflow = **96.75 m^3**

Outflow mm dia. @ 1 in

* Used for plotting of Unit Area Envelope.

Three Residential Subdivisions in the Western Neighbourhood (Area 1) Lancefield Township

Traffic Impact Assessment Report

Client:

Chris Smith & Associates

Project No. 200239

Final Report – 30/11/20

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DOCUMENT CONTROL RECORD

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Document Control				
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Project Number	200239			
Client	Chris Smith & Associates			
Client Contact	Gary Steigenberger			
Rev	Date Issued	Revision Details / Status	Prepared by	Authorised by
Draft	18/11/2020	For review by client	B Citroën	K. Kennedy
Final	30/11/2020	For issue to client	B Citroën	

EXECUTIVE SUMMARY

Trafficworks has been engaged by Chris Smith & Associates to undertake a traffic impact assessment of three independent residential subdivision development proposals in the Western Neighbourhood (Area 1) of Lancefield Township.

The Traffic Impact Assessment was carried out to:

- estimate traffic generation and distribution associated with the proposed development
- determine the suitability of the proposed access location onto the adjacent road network
- determine the likely traffic impacts on the existing road network
- identify any necessary mitigating works
- formulate a reasonable basis to apportion infrastructure development costs

A summary for the site and the proposed development is shown below.

Addresses and Zoning	Lancefield Township – Western Neighbourhood (Area 1) • 128 High Street - General Residential Zone (GRZ1) • 132 High Street - General Residential Zone (GRZ1) • 69 Park Street – Low Density Residential Zone (LDRZ)
Proposed development	• 128 High Street - 10 conventional residential lots • 132 High Street – 5 conventional residential lots • 69 Park Street – 20 low density residential lots
Road Network	High Street to the southwest McMaster Lane to the northwest Park Street to the southeast Showlers Lane to the northeast
Traffic Generation	• 128 High Street – 100 vpd • 132 High Street – 50 vpd • 69 Park Street – 200 vpd
Recommendations	**Recommendation 1:** that detailed design of internal road connections to the surrounding network ensures compliance with the Safe Intersection Sight Distance (SISD) criteria in AGRD4A **Recommendation 2:** that detailed design of individual driveway locations ensures compliance with the Entering Sight Distance (ESD) criteria in AS/NZS 2890.1 **Recommendation 3:** that landscaping and lot boundary fence design at driveways achieve the sight distance to pedestrians required in AS/NZS 2890.1 **Recommendation 4**: That the High Street shoulder opposite the connection with the internal road through No. 128 be upgraded in accordance with an Austroads Type BAR treatment **Recommendation 5:** that internal streets for the subject developments be terminated with temporary court bowls to CFA requirements

	Recommendation 6: that the pedestrian facilities in the Park Street extension be constructed to a 2.5 m wide shared path standard for the length of the subject site frontage **Recommendation 7:** that the subdivisions at No 128 and No 132 be accompanied by the construction of 2.5 m wide shared paths along the High Street frontages of these developments **Recommendation 8:** that direct access from lots onto the frontage roads be controlled by way of combined joint driveways located at lot boundaries wherever practicable, to minimise interference with traffic on the frontage roads **Recommendation 9**: that the Council be requested to initiate a review of current speed limits on the roads surrounding the development, at the appropriate time and in line with the changes suggested in this report.

Referenced Documents

References used in the preparation of this report include the following:

- Austroads *Guide to Road Design, Part 3 –Geometric Design* (referenced as AGRD3)
- Austroads *Guide to Road Design, Part 4 –Intersections and Crossings, General* (AGRD4)
- Austroads *Guide to Road Design, Part 4A – Unsignalised and Signalised Intersections* (AGRD4A)
- Austroads *Guide to Traffic Management, Part 6 –Intersections, Interchanges and Crossings* (referenced as AGTM6)
- VicRoads Supplement to Austroads *Guide to Road Design, Part 3* (VS AGRD3)
- VicRoads Supplement to Austroads *Guide to Road Design, Part 4A* (VS AGRD4A)
- Department of Transport *Open Data Portal* for casualty crash history on roads near the proposed development
- the *Macedon Ranges Planning Scheme*
- *Schedule 24 to Clause 43.04, Development Plan Overlay (*shown as DPO24 on the planning scheme map*), Lancefield Development Plan Areas*
- Local Government Infrastructure Design Association's *Infrastructure Design Manual (IDM),* Version 5.30 released 24 March 2020
- Traffic Volume Data for various roads from Macedon Ranges Shire Council
- Australian/New Zealand Standard, *Parking Facilities - Part 1: Off-street Parking* - AS/NZS 2890.1:2004
- *CFA requirements for water supply and access for subdivisions in residential 1 & 2 and township zones*, dated October 9, 2006

The assessments in this report are based on the *Subdivision Layout Plan*, drawing 20222/02, Rev 3 dated 25/11/2020 prepared by Chris Smith & Associates (reproduced in Attachment A)

TABLE OF CONTENTS

1 INTRODUCTION

Trafficworks has been engaged by Chris Smith & Associates on behalf of three landholders to undertake a traffic impact assessment to support subdivision proposals for three separate parcels within the Western Neighbourhood (development Area 1) of Lancefield Township, in Macedon Ranges Shire (refer to the Subdivision Layout Plan in Figure A1 of Attachment A).

Macedon Ranges Shire Council (the Council) has implemented a Development Plan Overlay (DPO) for various neighbourhoods in Lancefield (refer to Figure A2 in Attachment A). These include the Western Neighbourhood in which the three subject subdivisions are located. The DPO includes Indicative Development Pattern plans that are contained in Schedule 24 to Clause 43.04 and the maps in DPO24 of the Macedon Ranges Planning Scheme. The format of the three proposed subdivisions are generally in accordance with the Indicative Development Pattern for Area 1.

This Traffic Impact Assessment has been carried out to satisfy the requirements of the Planning Scheme to provide an infrastructure report that reviews the capacity of existing infrastructure to service the proposed developments and to determine what new infrastructure is required to develop the land. As such, this report is intended to:

- estimate traffic generation and distribution associated with the proposed developments
- determine the suitability of the proposed access locations onto the adjacent road network
- determine the likely traffic impacts on the existing road network
- identify any necessary mitigating works
- formulate a reasonable basis to apportion infrastructure development costs

More specifically, the Council has requested that the report also cover the following matters:

- will the proposal create any other issues in Lancefield such as parking in the town centre?
- what are the overall traffic impacts on the local network such as potential increase in 'rat running' on nearby local streets?
- what are the overall expected impacts on the township road network / infrastructure network from a traffic flow perspective? Can the traffic increases be absorbed by the township network or will it overburden the local township's infrastructure?
- provide a focus on active transport – connecting to footpaths, shared paths, and any opportunities for cycling. The Council stresses that there should be connections or considerations for upgrades to appropriately link the proposed development to existing infrastructure.
- Lancefield Primary School is situated east of the High Street / Park Street intersection. Safety and traffic impacts, particularly relating to parking and pedestrian safety, need to be carefully considered in Park Street as well as at the Park Street/ High Street intersection during school peak times.

The above matters have also been covered in this report.

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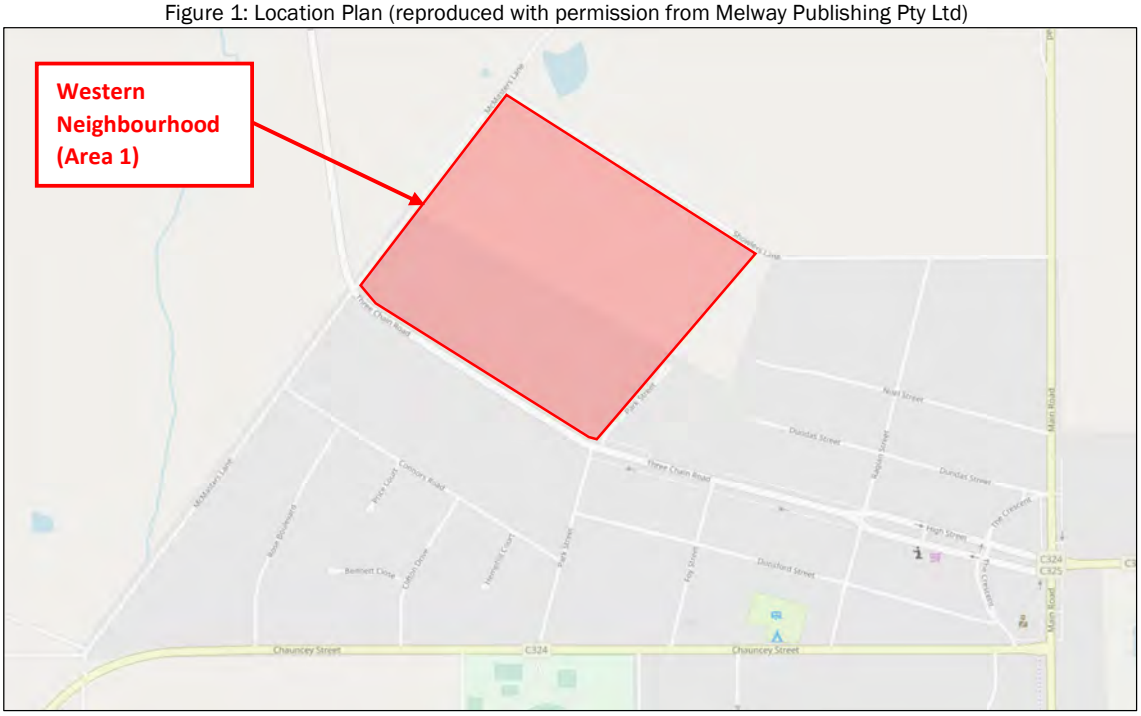
2 EXISTING CONDITIONS

2.1 Subject Site

The Western Neighbourhood (Area 1) is located in the northwest quadrant of Lancefield Township and is bounded by Showlers Lane to the northeast, Park Street to the southeast, High Street to the southwest and McMaster Lane to the northwest. The road network surrounding Area 1 is shown in Figure 1.

Figure 1: Location Plan (reproduced with permission from Melway Publishing Pty Ltd)

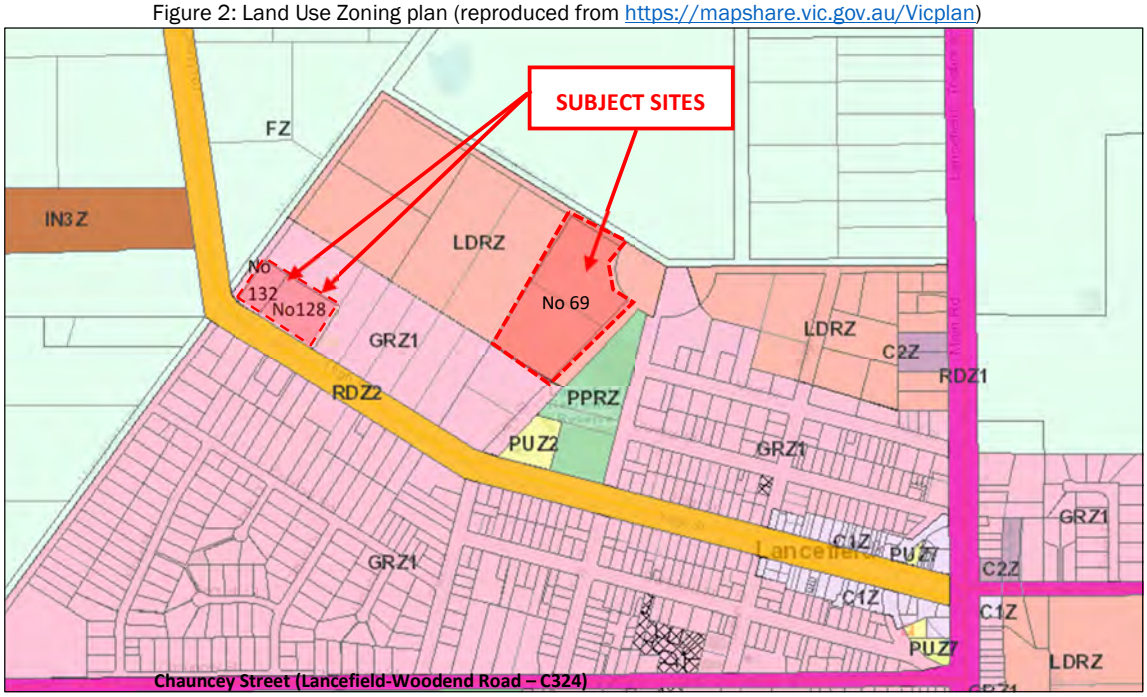


Area 1 contains the three subject sites known as:

- 128 High Street (located within the General Residential Zone (GRZ))
- 132 High Street (located within the General Residential Zone (GRZ))
- 69 Park Street (located within the Low Density Residential Zone (LDRZ))

Each of these sites is currently occupied by dwellings and outbuildings, with the location of the sites shown in the land-use zoning plan in Figure 2.

Figure 2: Land Use Zoning plan (reproduced from https://mapshare.vic.gov.au/Vicplan)



2.2 Road Network

2.2.1 High Street

High Street functions as a secondary arterial or collector/connector road. It is located in a Road Zone Category 2 (RDZ2) and is managed by the Council. It is aligned in a northwest-southeast direction and provides a connection between the western part of the township, including the primary school, and the shops in the commercial zone to the southeast, immediately west of Main Road (Melbourne-Lancefield Road). High Street extends north from the township boundary as Three Chain Road.

Adjacent to Area 1, High Street is configured as a two-way, two-lane undivided road with a carriageway width of approximately 6.6 m (2 x 3.3 m traffic lanes) located centrally in a 60 m reservation. Southeast of the intersection with Park Street, the High Street through carriageway is bounded by service roads on each side.

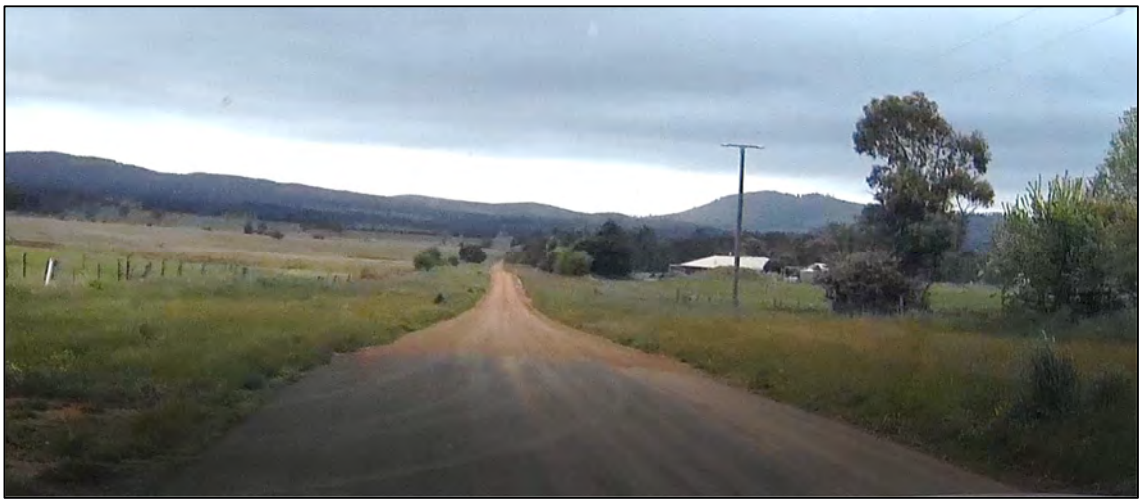
Photo 1: View southeast along High Street from just east of McMaster Lane. Area 1 is to the left

The posted speed limit in High Street changes from the rural 100 km/h limit in Three Chain Road to 70 km/h immediately north of McMaster Lane, then reduces to 60 km/h 280 m southeast of McMaster Lane. A time-based 40 km/h school speed zone applies along the frontage of the Primary School situated at the eastern corner of the High Street/Park Street intersection.

2.2.2 McMaster Lane

McMaster Lane functions as a local Access Street and is managed the Council. It is aligned in a northeast-southwest direction and provides a connection between Salisbury Lane to the northeast of the township and Rochford Road / Chauncey Street (Lancefield-Woodend Road) to the southwest. Adjacent to Area 1, McMaster Lane is configured as a two-way gravel road with a carriageway width of approximately 4.6 m, located centrally in a 30 m wide reservation.

Photo 2: View northeast along McMaster Lane from High Street. The subject land is to the right



McMaster Lane is signed to operate at 70 km/h through the residential area southwest of High Street. Along the Area 1 frontage, to the northeast of High Street, the applicable speed limit is not signed, and hence the default rural speed limit of 100 km/h can be assumed to apply.

As shown in Photo 2, the intersection bell-mouth with High Street and the first 30 m of McMaster Lane to the northeast is sealed before reverting to a gravel surface.

2.2.3 Showlers Lane

Showlers Lane is a local Access Street aligned in a southeast-northwest direction and provides a connection between Main Road to the east and McMaster Lane to the northwest. Along the frontage of Area 1 and extending east to Raglan Street, Showlers Lane is configured as an unformed track with a width between 3.0 m and 4.5 m. Between Raglan Street and Main Road the Showlers Lane formation has been upgraded to a 4.0 m wide gravel/crushed rock pavement that provides for access from Main Road to four residential properties on large lots within this block.

Although Showlers Lane is subject to the default rural speed limit of 100 km/h, the condition of this street results in current travel being restricted to an estimated speed of less than 10 km/h for the length abutting the subject land.

Photo 3: View southeast along Showlers Lane from McMaster Lane. The subject land is to the right

2.2.4 Park Street

Park Street functions as a local Access Street and is managed by the Council. It is aligned in a northeast-southwest direction. It connects with Showlers Lane to the northeast and extends to Chauncey Street (Lancefield-Woodend Road) to the southwest.

For the first 175 m northeast from High Street, along the Primary School side boundary, Park Street is configured as a sealed two-way, two-lane road providing a trafficked width of approximately 7.5 m, bounded by sealed shoulders marked out for angle car parking along both sides (to a kerbed boundary along the school frontage). Park Street extends for a further 60 m northeast of the school as a gravel formation to provide access to the residence at No 69. Park Street, then reverts to a fenced 30 m wide reservation for the remaining 310 m distance to Showlers Lane.

Photo 4: View northeast along Park Street from High Street with the school to the right and Area 1 on the left. Note the start of the High Street service road in the right-side foreground.

The trafficked section of Park Street northeast of High Street has a permanently posted speed limit of 40 km/h.

2.3 Traffic Volumes

Existing traffic volume information obtained from Macedon Ranges Shire is shown in Table 1.

Table 1: Traffic volume information obtained from the Council

Road	Location	Date	AADT	CVs
Three Chain Road	300 m northwest of McMaster Lane	6/02/2017	940 vpd	17.0%
High Street	200 m southeast of McMaster Lane	31/07/2015	958 vpd	11.1%
McMaster Lane	500 m northeast of Rochford Road	22/03/2013	156 vpd	6.4%
Noel Street	50 m east of Raglan Street	24/02/2017	99 vpd	13.1%

Applying a nominal 2% per annum compound growth factor to the High Street volume would indicate daily traffic in the order of 1,300 vpd by 2030 (10 years post completion of the subdivision of No 128). This equates to 650 vpd in each direction or one-way peak hour volumes of 65 vph.

It is noted that the traffic count in McMaster Lane was taken along the sealed section of the road in the developed area southwest of High Street. Total volumes northeast of High Street are estimated to be below 100 vpd (or one-way peaks of 5 vph) and to remain at that level for at least 10 years from now.

The Noel Street count is included as being indicative of volumes at the eastern end of Showlers Lane.

2.4 Crash History

The DoT data portal provides details of all injury crashes on roads throughout Victoria. Scrutiny of these records indicates that no casualty crashes have occurred on the roads surrounding Area 1 in the last five-year period that data is available for (1/01/2015 – 31/12/2019).

It can be concluded that this road network currently operates safely and requires no urgent road safety improvements.

2.5 Pedestrians and Cyclists

Concrete footpaths have been constructed along both the Park Street and High Street boundaries of the Primary School. There are no formal footpaths along any other sections of the roads surrounding Area 1.

No on-road or off-road cycling facilities have been provided in the vicinity of Area 1.

2.6 Car Parking

As noted earlier, angle parking spaces are provided along Park Street for use by staff and parents to the Primary School. These comprise 21 x 60-degree bays along the northwest street boundary (abutting Area 1), 15 x 60-degree bays (including three spaces designated for use by disabled) and 10 x 90-degree bays along the southeast street boundary (abutting the school).

There is no other specific parking provision in the roads surrounding Area 1.

2.7 Public Transport

A bus stop has been indented into the High Street outer separator directly opposite the school for school bus drop-offs and pick-ups. This bus stop is immediately adjacent to a flagged school crossing of High Street southeast of the Park Street intersection.

There are no public bus services in Lancefield.

3 PROPOSED DEVELOPMENT

3.1 Proposed development summary

In keeping with Council's Indicative Development Pattern, the Subdivision Layout Plan prepared by Chris Smith & Associates for the three proposed development areas includes the following (refer also to Figure A1 of Attachment A):

- 128 High Street is shown to be subdivided into 10 conventional residential lots. Four lots - one to contain the existing residence - are oriented to face High Street with each pair provided with shared driveway connections direct to High Street. The remaining six lots are accessed by a new internal road that connects with High Street at the midpoint of the site frontage. The internal road provides for ultimate extension into future subdivisional development of the abutting land to the northeast
- 132 High Street subdivided into 5 conventional residential lots, two fronting High Street with one to contain the existing residence, both gaining access direct onto High Street by way of the joint use of the current driveway. The remaining three lots are accessed from McMaster Lane
- 69 Park Street subdivided into 20 low density residential lots. The one at the south corner of the holding contains the existing residence with continued access to Park Street. Three new lots are to gain direct access to Park Street and four lots are to gain direct access to Showlers Lane. Access to the remaining 12 lots is to be provided by a new internal road that will connect to Park Street.

  In accordance with the Indicative Development Pattern, the layout plan shows that the internal road is also to provide for connectivity to future subdivisional development of adjacent land to the northwest and southwest of this holding.

The remaining 24 ha of Area 1 is in four separate ownerships, not associated with the above arrangements, and does not form part of this subdivision proposal.

3.2 Trip generation and distribution

3.2.1 Traffic generation

The RTA *Guide to Traffic Generating Developments*, *Version 2.2A, October 2002*, is a reference normally used for the establishment of traffic generation rates, based on empirical data collected by RMS[1] for a variety of land uses. Section 3.3.1 of this Guide provides traffic generation data for dwelling houses. These indicate the following:

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

Section 12.3.1 of the Infrastructure Design Manual (IDM) used by Macedon Ranges Shire Council requires traffic generation from residential lots to be based on a minimum rate of:

- 10 vehicle movements per day per lot

[1] RMS is the Roads and Maritime Services department (formerly the RTA), part of Transport for NSW

Applying the IDM daily rate and the RTA Guide peak-hourly rate to the subject developments indicates estimated traffic generation as set out in Table 2.

Table 2: Development traffic volumes

Development Component	Lots	Trip Generation Rate		Trip Generation		Access Route
		Peak Hour	Daily	Peak Hour	Daily	
128 High Street	10	0.85 vph	10 vpd	9 vph	100 vpd	High Street
132 High Street	2 3	0.85 vph 0.85 vph	10 vpd 10 vpd	2 vph 2 vph	20 vpd 30 vpd	High Street McMaster Lane
69 Park Street	16 4	0.85 vph 0.85 vph	10 vpd 10 vpd	14 vph 3 vph	160 vpd 40 vpd	Park Street Showlers Lane
Total	**35**			**30 vph**	**350 vpd**	

3.2.2 Traffic distribution

It is assumed that the three subdivisions will be accompanied by the following road construction:

- 128 High Street: internal road only. No upgrade of High Street required
- 132 High Street: will require upgrading of the first 100 m of McMaster Lane
- 69 Park Street: will require full construction of the 375 m extension of Park Street between the end of the existing seal and Showlers Lane, and will require full road construction for 180 m along the frontages of the four lots in this subdivision that front Showlers Lane to the Park Street extension.

Construction of McMaster Lane northeast of the limit of No 132 and construction of Showlers Lane beyond the limits of the frontage of No 69 (either to the northwest or to the east) is not required to service the access needs of the currently proposed subdivisions and is not envisaged as part of these development proposals.

Based on the above assumptions, distribution of traffic generated by the three subdivisions is expected to be as follows:

- 128 High Street: 100% onto High Street with 90%/10% southeast/northwest orientation
- 132 High Street: 100% of traffic onto McMaster Lane to High Street, then split 90% to the southeast and 5% each to the southwest and north.
- 69 Park Street: all traffic onto Park Street – made up from the 4 lots fronting Showlers Lane, the 4 lots fronting Park Street and the remainder along the internal road onto Park Street. Then 100% of traffic along Park Street to High Street, where it splits 90% to the southeast and 5% each to the southwest and northwest.

3.2.3 Traffic orientation

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

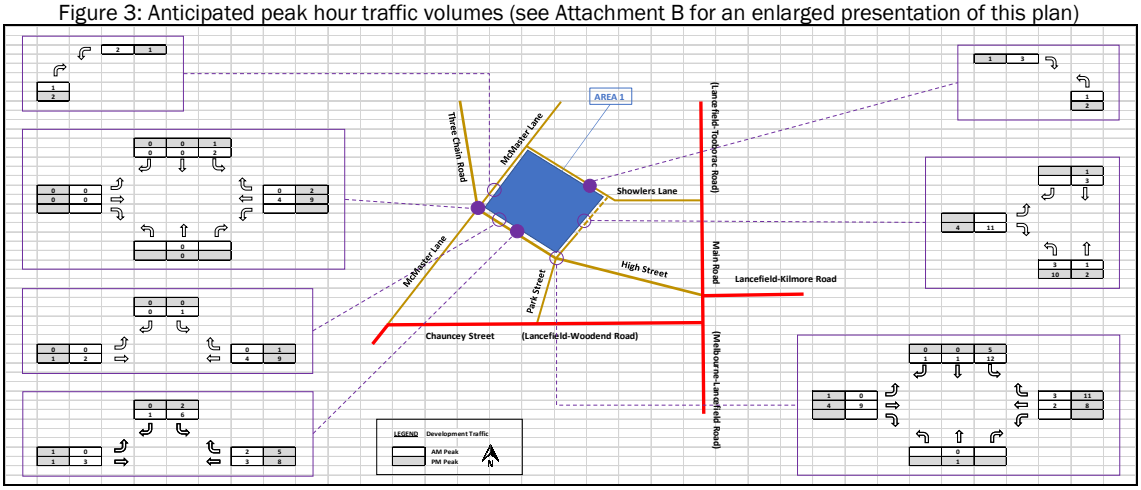
- AM Peak: 80% leaving / 20% entering
- PM Peak: 30% leaving / 70% entering

It has been assumed that all traffic generated will be to and from these subdivisions, with no allowance for internal trips that may occur.

3.2.4 Anticipated traffic volumes

The distribution splits from Section 3.2.2 and orientation assumptions from Section 3.2.3 have been applied to the volume estimates in Table 2 to obtain the anticipated peak hour traffic volumes in Figure 3 on the road network surrounding the proposed development.

Figure 3: Anticipated peak hour traffic volumes (see Attachment B for an enlarged presentation of this plan)



4 ASSESSMENT

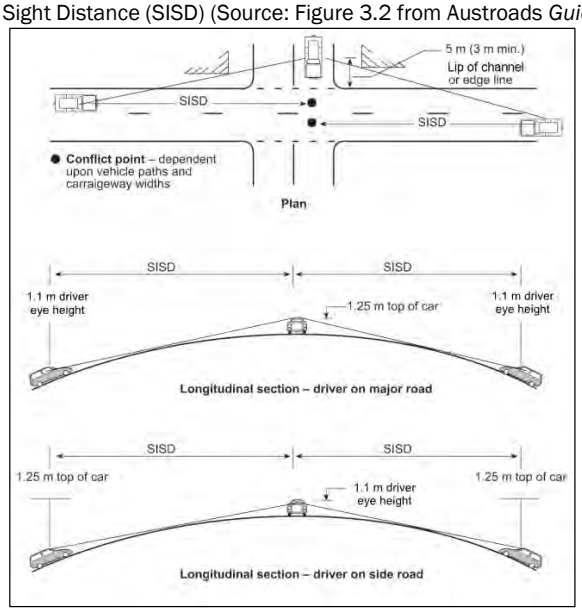
The impacts of a development on the adjacent road network are primarily related to the need to provide adequate visibility at the access point(s) for safe ingress / egress and to accommodate low speed turning manoeuvres by vehicles accessing the development. These impacts are quantified below with appropriate mitigating works being considered at the site access point from the surrounding road network. Internal and frontage road configuration have also been reviewed in this report.

4.1 Sight distance

At intersections

The visibility criterion normally applied to intersections is Safe Intersection Sight Distance (SISD). This is nominated in the Austroads Guide to Road Design, Part 4A (AGRD4A) as the minimum distance which should be provided on the major road at any intersection (refer to Section 3.2.2 in AGRD4A) and provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle from the minor access approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point (refer Figure 4).

Figure 4: Safe Intersection Sight Distance (SISD) (Source: Figure 3.2 from Austroads *Guide to Road Design Part 4A*)



The minimum SISD criterion specified in Table 3.2 of the Austroads Guide requires clear visibility for desirable minimum distances summarised in Table 3, relating to the general reaction time R_T of 2 seconds and the applicable frontage road design speed as noted. These SISD criteria have been applied to the internal road access points to the respective site frontage roads.

Table 3: SISD criteria applicable to side road accesses

Internal Road Location	Frontage Road	Speed Zoning	SISD	Comments
Through No. 128	High Street	70 km/h	151 m	
Through No. 69	Park Street	50 km/h	97 m	Assumes application of the 50 km/h residential default limit

Recommendation 1: that detailed design of internal road connections to the surrounding network ensures compliance with the Safe Intersection Sight Distance (SISD) criteria in AGRD4A, as summarised in Table 3.

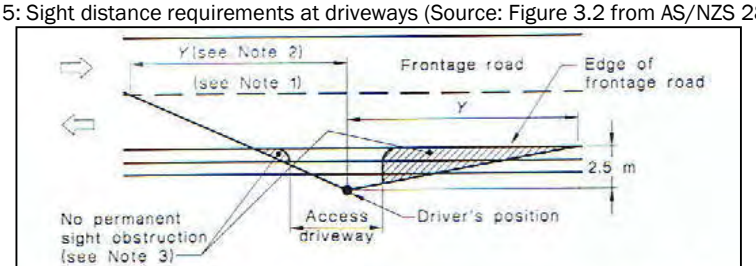
When the above sight distance criteria for a 70 km/h speed environment and 123 m in a 60 km/h speed limit are applied to the existing intersections abutting Area 1, it can be concluded that Austroads SISD requirements are satisfied at the intersections of High Street with McMaster Lane and Park Street under current conditions and requires no additional works.

At driveways

Section 3.2.4 in AS/NZS 2980.1 *Parking Facilities – Part 1: Off-street car parking*, sets out Entering Sight Distance (ESD) criteria for a driver exiting an access driveway to traffic on the frontage road, as well as sight distance to pedestrians as outlined below.

a) ***Entering sight distance:*** Unsignalised access driveways shall be located so that the intersection sight distance along the frontage road available to drivers leaving the driveway is at least that shown in Figure 3.2 of AS/NZS 2890.1 (reproduced in Figure 5).

Figure 5: Sight distance requirements at driveways (Source: Figure 3.2 from AS/NZS 2890.1)



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Detailed design of the driveway locations to individual lots should take into account the above visibility requirements. In particular, visibility from driveways should be provided as noted in Table 4.

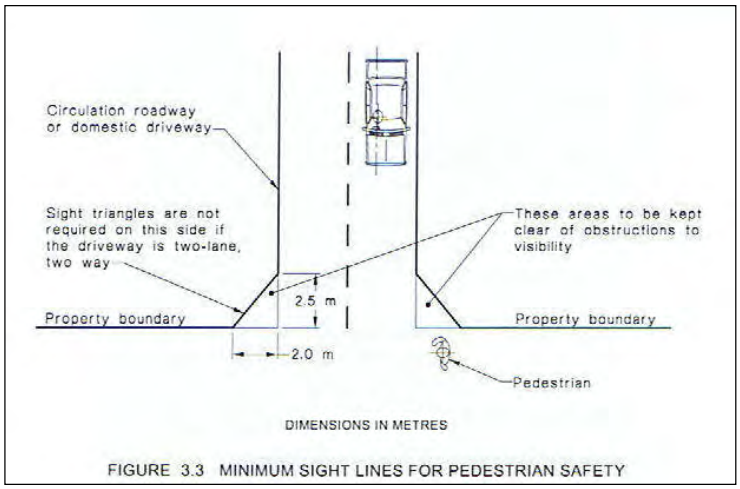
Table 4: Sight line requirements at lot access driveways

Parcel	Access Location	Speed limit	ESD	Comments
No 128	Lots facing High Street	70 km/h	70 m	Joint driveways at lot boundaries
No 132	Lots facing McMaster Lane	80 km/h	85 m	Two lots share driveway at lot boundary
No 69	Lots facing Showlers Lane	50 km/h	40 m	Joint driveways at paired lot boundaries
	Lots facing Park Street	50 km/h	40 m	Joint driveways at paired lot boundaries

Recommendation 2: that detailed design of individual driveway locations ensures compliance with the Entering Sight Distance (ESD) criteria in AS/NZS 2890.1, as summarised in Table 4.

b) ***Sight distance to pedestrians:*** Clear sight lines as shown in Figure 3.3 of AS/NZS 2890.1 (reproduced in Figure 6 below) shall be provided at the property line to ensure adequate visibility between vehicles leaving the property and pedestrians on the frontage road footpath.

Figure 6: Minimum sight lines for pedestrian safety (Source: Figure 3.3 from AS/NZS 2890.1).



These criteria apply to landscaping and lot boundary fences that should be designed to taper down towards the street boundary to ensure the required sight lines are provided between the driver in a departing vehicle and pedestrians on the frontage footpath.

Recommendation 3: that landscaping and lot boundary fence design at driveways achieve the sight distance to pedestrians required in AS/NZS 2890.1.

4.2 Impact on existing road network

4.2.1 Turn provision

Separate turn lanes are normally provided to avoid congestion and/or delays to through traffic and to improve safety for traffic movements at intersections and significant access points. The type of turn treatment is determined, based on speed environment and the combination of through and turning traffic volumes. Figure 2.26(c) of AGTM6 (reproduced in Figure 4) is used for the selection of treatment types at locations with a design speed of less than 70 km/h.

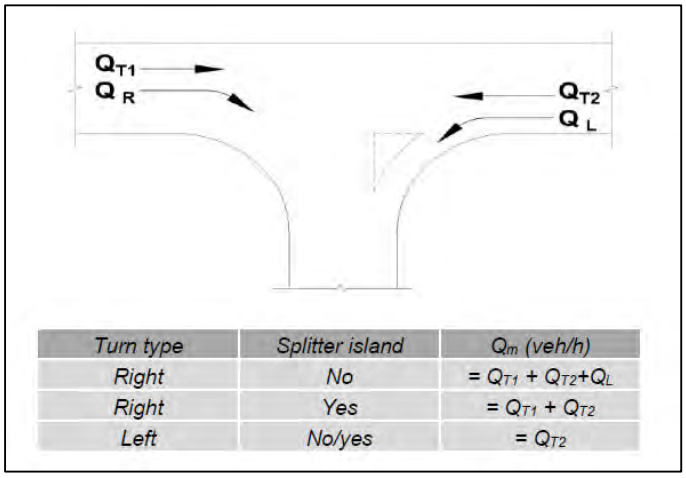
In this section of the report, these criteria have been applied the following intersections

- Internal road through No 128 onto High Street
- Internal road through No 69 onto Park Street extension

From Section 2.3 of this report, one-way traffic peak hour volumes in the respective through routes along the development are expected to be in the order of 65 vph in High Street and 5 vph in McMaster Lane. The only significant traffic in Showlers Lane and the extension of Park Street will be generated by the development and are estimated at 2 vph and 12 vph respectively (refer to Figure 3).

Superimposed over these peak traffic flows are entry movements to the development obtained from Figure 3. Using these volumes and applying them to Figure A 11 from the AGRD4 (reproduced in Figure 7), the major road traffic parameters Q_M can be established as set out in Table 5 that reflect the worst-case conditions at the minor road entries for left and right turns during the critical PM peak period.

Figure 7: Calculation of the major road traffic parameters (source Figure A11 of AGRD4).



Turn type	*Splitter island*	*Q_m (veh/h)*
Right	*No*	*= Q_{T1} + Q_{T2}+Q_L*
Right	*Yes*	*= Q_{T1} + Q_{T2}*
Left	*No/yes*	*= Q_{T2}*

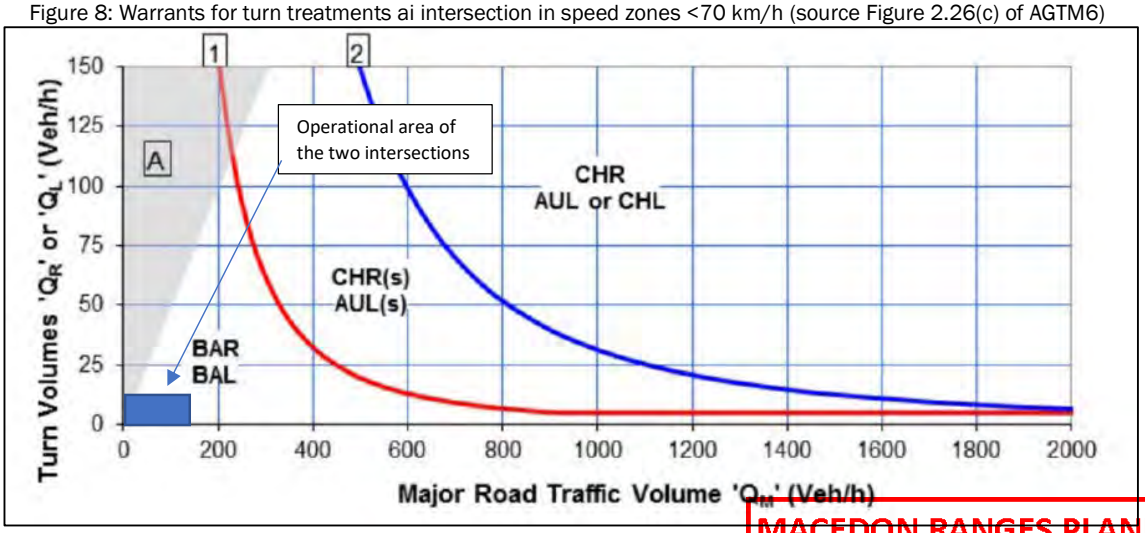
Table 5: PM peak hour turn parameters at 2030 for use in Figure 4

Major Road	Minor Road	Left Turn	Right Turn	Thru Q_T		Q_M Left Turn	Q_M Right Turn	Treatment
		Q_L	Q_R	Q_{T1}	Q_{T2}	Q_M=Q_{T2}	Q_M=Q_{T1}+Q_{T2}+Q_L	
High St	No 128	1	5	65	65	65	131	BAL & BAR
Park St	No 69	10	0	1	2	2	13	BAT & BAR

4.2.2 Turn Treatments

Applying the values from Table 5 to the graph in Figure 8, it can be concluded that the intersections at streets into the development will require the provision of basic Type BAR right turn and basic Type BAL left turn treatments to safely cater for resident entry movements during peak travel times.

Figure 8: Warrants for turn treatments ai intersection in speed zones <70 km/h (source Figure 2.26(c) of AGTM6)



The format of these treatments is illustrated in Table C1 of Attachment C and requires the provision of a widened shoulder opposite the side road to facilitate through traffic to pass to the left of a right turning vehicle for the basic right turn treatment. This will require shoulder upgrading of High Street opposite the internal road through No 128 in accordance with the layout for a BAR in Attachment C1. The frequency of a southbound vehicle in Park Street needing to manoeuvre around a vehicle turning right into the road through No 69 is considered to be so remote as to require no widening treatment in Park Street at this intersection.

No specific treatment is required for the basic left turn apart from the provision of an adequate bell-mouth radius.

Conclusion 1: that intersection treatments at the internal road connections to the surrounding streets require only basic left and right turn treatment. This will only require shoulder widening in High Street opposite the road through No. 128.

Recommendation 4: That the High Street shoulder opposite the connection with the internal road through No. 128 be upgraded in accordance with an Austroads Type BAR treatment.

For the current intersections surrounding Area 1, the existing seal width in High Street through the intersections with Park Street and McMaster Lane is widened to provide at least 6.0 m of trafficable width for northwest-bound travel. This exceeds the Austroads requirement for through traffic to safely pass to the left of right turning vehicles. In the context of their present satisfactory operation and only minor increases in right turn volumes resulting from the developments (11 at Park Street and 2 at McMaster Lane during the evening peak hour) no additional treatments are considered to be required at these two intersections.

Conclusion 2: that the intersections of High Street with Park Street and McMaster Lane do not require upgrading treatment to cater for additionally generated traffic.

4.2.3 Traffic volumes

Traffic usage of the streets surrounding Area 1 have been assessed on the basis of current or estimated volumes and anticipated additional traffic generated by the proposed subdivisions, compared with the indicative maximums for the street type nominated in the IDM. A comparison of these volumes is shown in Table 6.

Table 6: Traffic volume comparisons

Street	Class	IDM indicative maximum (vpd)	Current traffic	Estimated additional	Comment
High Street	Collector street (Level 1)	2,500-6,0000	960 vpd	150vpd	
Park Street	Access street	1,000-2,5000	300vpd est	200 vpd	At the school
McMaster Lane	Access street	1,000-2,5000	<100 vpd est	30vpd	
Showlers Lane	Access street	1,000-2,5000	<20 vpd est	40 vpd	

On the assumption that the affected lengths of McMaster Lane, Showlers Lane and the extension of Park Street are upgraded as noted in Section 4.3 of this report, the conclusions that can be drawn from the traffic comparison are as follows:

High Street

High Street, with current volumes below 1,000 vpd, is operating well below the peak capacity indicated in the IDM. Impacts from the addition of some 150 vpd from No 128 and No 132 will be negligible and no improvement works are required.

Southeast of Park Street, High Street will collect a large proportion of the additional 200 vpd generated by the subdivision of No 69 Park Street. In the context of traffic currently generated by the school, this is expected to have no discernible impact on the level of service in High Street, which will continue to operate well within the traffic parameters of a Collector Street.

Park Street

There are no counts available for Park Street. The estimate of 300 vehicle movements generated daily by the school is based on parking capacity of 46 spaces, of which about 12 are occupied by staff and the remaining 33 cater for two rotations of parent drop-offs and pick-ups at the start and end of the school day. Again, these operating volumes are well within the IDM criteria for an Access Street and can comfortably accommodate the additional 200 vpd generated by the subdivision at No 69.

In addition, AM peak traffic volumes from the estate of 15 vehicle movements for the hour are not expected to have significant impacts on the activity in Park Street at the school. The 7.5 m wide trafficable pavement along the school frontage (excluding the angle parking lanes) exceeds the IDM standard and is considered to perform satisfactorily without a need for upgrading.

The extension of Park Street from the end of the current seal to Showlers Lane will be newly constructed to appropriate standards.

McMaster Lane

Upgrading of McMaster Lane for the 100 m abutting the frontages of the three northwest-facing lots at No 132 will allow this road to accommodate the additional 30 vpd with an overall improvement in level of service.

Showlers Lane

Similar to Mc Master Lane, upgrading of Showlers Lane for the 180 m abutting the frontages of the four northeast-facing lots at No 69 will allow this road to accommodate the additional 40 daily vehicle movements to/from Park Street with an overall improvement in level of service.

Conclusion.3: the three subdivisions are expected to have no discernable impact on traffic conditions in the surrounding road network. Moreover, the additional traffic generated by these developments will have no noticeable impact on general traffic conditions in Lancefield Township.

4.3 Road configuration

Internal Streets

The internal street cross-section design, as noted on the Subdivision Layout Plan, is based on the dimension in the Movement Network Plan in Part 3.0 of DP024 that stipulates 7.5 m carriageways, bounded by kerb and channel and footpaths, within 20 m reservations. From scrutiny of the

Council's Indicative Development Pattern for Area 1 and the likely travel routes from the remainder of the area once developed, it is expected that all internal streets will operate below the 300 vpd threshold nominated in the IDM for an Access Street and the adoption of the DPO cross-section is appropriate for the internal network throughout.

Conclusion 4: the design of the internal streets is in accordance with the criteria stipulated in the DPO, provides traffic conditions consistent with those nominated in the IDM and is considered satisfactory.

As noted, these streets are to be provided with footpaths along both sides. The IDM requires no separate provision for cyclists on these internal streets.

It is noted that the internal streets through No 128 and No 69 will initially form cul-de-sacs, to be extended when adjacent land is developed in accordance with the Indicative Development Pattern. The CFA requirements for access to residential subdivisions include provision of a turning circle (with 8 m minimum radius) or T-Head at the ends of roads more than 60 m in length. The road through No 128 is scaled to have an interim length of around 110 m and the road through No 69 to be 350 m. As such, these internal streets will need to be terminated with temporary court bowls that comply with CFA requirements. The short (50 m) length of north-westerly oriented tributary street in No 69 will not need such a treatment.

Recommendation 5: that internal streets for the subject developments be terminated with temporary court bowls to CFA requirements.

External frontage roads

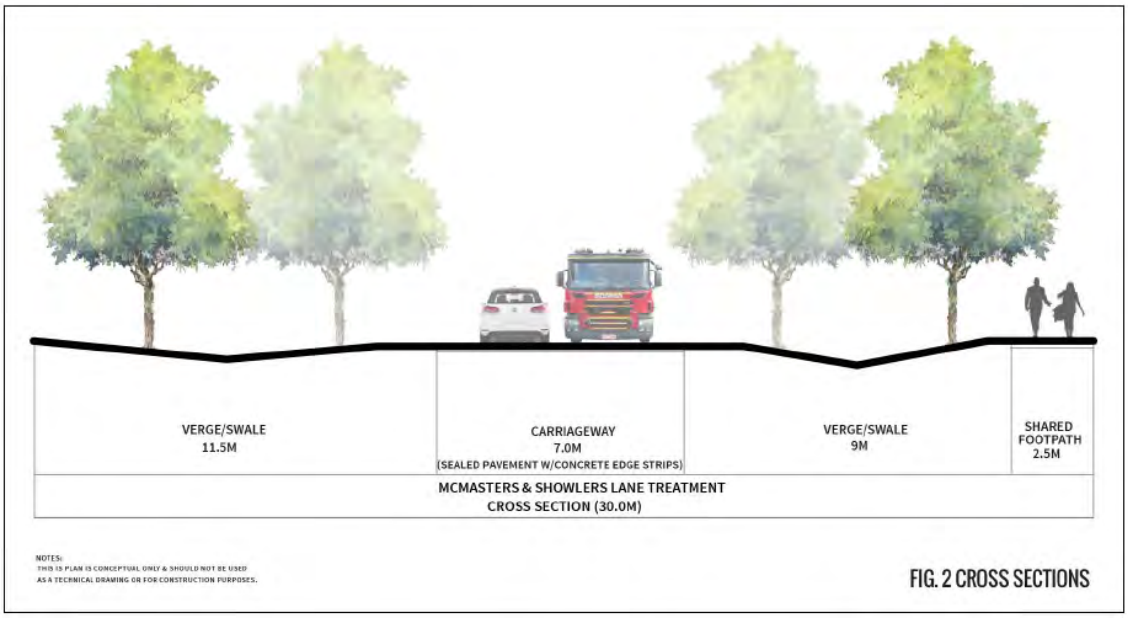
As most of the street network through the residential areas of Lancefield contain no kerb and channel, being provided with shoulders and swale drains, this report supports the external road construction around the subject subdivisions being undertaken in accordance with the cross section in Figure 2 of DPO24. This requires a 7.0 m wide sealed pavement bounded by concrete edge strips, swale drains and a 2.5 m wide shared path along the active frontage (refer Figure 9 below). The current 30 m reservations of each of McMaster Lane and Showlers Lane accommodate these requirements. The short (30 m) length of seal in McMaster Lane northeast of the High Street intersection will require upgrading to match the DPO cross-section.

It is noted that Figure 4 of the DPO prescribes an alternative cross-section for Park Street that includes a 6.6 m wide carriageway and a 1.5 m wide footpath. This is not consistent with the adjoining Showlers Lane profile. As the extension of Park Street northeast of the school to Showlers Lane presents a similar road environment to that in Showlers Lane, Council could consider adopting the DPO Figure 2 cross-section for the Park Street extension.

Even if the road cross-section for the Park Street extension is not widened, it is considered important to upgrade the footpath along the subject site frontage to a 2.5 m wide shared path as being the principal access between the new subdivision and the primary school.

Recommendation 6: that the pedestrian facilities in the Park Street extension be constructed to a 2.5 m wide shared path standard for the length of the subject site frontage.

Figure 9: Cross section for McMaster Lane and Showlers Lane from DPO24



As noted earlier in this report, it is expected that McMaster Lane will be upgraded for the first 100 m northwest of High Street. This would include the provision of a shared path along the side boundary of No 132. As it is expected that the subject development will generate no northeast-bound traffic (100% oriented southwest towards High Street) upgrading of McMaster Lane beyond the limit of this subdivision is not considered necessary to accompany the current development.

Park Street will require constructing for the full 380 m distance from the existing end of seal to its junction with Showlers Lane. In the absence of an agreement with the adjoining land owner to the southwest of No. 69 or the Council, the construction of the Park Street extension should include the unsealed 60 m link between the current end of seal and the current entry to No. 69. Construction of this link section would include sealed pavement, but not footpaths, drainage and landscaping, which would be retrofitted when urban development on the adjoining land occurs.

The Park Street extension is to be constructed in accordance with Figure 4 of the DPO, or as suggested above, consistent with Figure 2 applying to McMaster Lane and Showlers Lane. The existing 140 m long sealed section of Park Street along the school frontage to High Street complies with the IDM standard for Access Street, operates satisfactorily, and is not considered to require upgrading as a result of traffic generated by the subdivision.

Showers Lane will require constructing for the 180 m distance along the frontages of the four lots to its junction with the Park Street extension. This would be to the cross-section in Figure 2 of the DPO and include the provision of a shared path along the lot frontages to connect with the path to be provided along the Park Street frontage of No. 69. It is expected that the subject development will generate negligible traffic to the east and northwest (100% accessed via Park Street). As such upgrading of Showlers Lane beyond the limit of this subdivision is not considered necessary to accompany the current development.

In the event that undesirable 'rat running' occurs along Showlers Lane to the east of Park Street that presents maintenance and/or nuisance issues, vehicular closure of this street could be

considered between Park Street and Raglan Street until such time as extended development can justify construction of the remainder of this section of road.

As noted in Section 4.2.3, High Street requires no upgrading to cater for the additional traffic generated by the proposed developments. However, to facilitate pedestrian access from these subdivisions to the school, and the shopping precinct beyond, the subdivisions at No 128 and N 132 should be accompanied by the construction of footpaths along these property frontages. The IDM and the cross-section in Figure 3 of DPO24 would indicate these footpaths to be 1.5 m wide. In the context of an absence of cycle facilities along this section of High Street to assist off-road student travel to the school, and for consistency with the treatments in the other boundary roads to Area 1, it is suggested that the footpaths along High Street be upgraded to 2.5 m wide shared path standard. This infrastructure could be extended to the southeast by Council or as further residential development occurs within Area 1.

Recommendation 7: that the subdivisions at No 128 and No 132 be accompanied by the construction of 2.5 m wide shared paths along the High Street frontages of these developments.

4.4 Individual driveway access

No 128

The Subdivision Layout Plan indicates that the four lots facing High Street (two either side of the internal road alignment) be provided with joint driveways at the lot boundaries. This arrangement is consistent with the DPO desire to minimise the number of road connections to High Street. It will provide adequate separation to the internal road intersection and is supported. The lot containing the existing residence currently has two driveway connections to High Street. These should be replaced with a single joint driveway at the lot boundary.

No 132

The Subdivision Layout Plan indicates the two lots facing High Street being serviced by the existing driveway as a joint access at the lot boundary. This arrangement will provide adequate separation to the McMaster Lane intersection and is supported. No indicative access arrangement is shown for the three lots facing McMaster Lane. The access for two of these lots should also be shared by a single joint driveway.

No 69

The Subdivision Layout Plan indicates four lots facing Park Street (including that containing the current residence), four lots facing Showlers Lane and one lot each side of the internal road entry, with no access points nominated. The four lots along each of the Park Street and Showlers Lane frontages should be paired with joint driveways at the lot boundaries, whilst the lots at the internal road should be provided with access onto this internal road, clear of the intersection, rather than onto Park Street.

Recommendation 8: that direct access from lots onto the frontage roads be controlled by way of combined joint driveways located at lot boundaries wherever practicable, to minimise interference with traffic on the frontage roads.

4.5 Speed zoning

Current speed zoning should be reviewed as development occurs within the three subject subdivisions. This is normally initiated by the Council but requires approval by Regional Roads Victoria (RRV) and involves community consultation and discussion with Police. The following changes to existing speed limits are suggested for consideration.

High Street

As noted in Section 2.2.1, High Street contains a 300 m long 70 km/h buffer zone, commencing in Three Chain Road north of McMaster Lane and changing to the urban 60 km/h limit 280 m southeast of McMaster Lane. With the creation of additional individual access points onto High Street and an intersection with the internal road within this buffer zone, it is suggested that the current 60 km/h speed limit be extended to north of McMaster Lane (current 70 km/h limit) with appropriate 60 AHEAD signing installed at the north approach in accordance with RRV guidelines. The time-based 40 km/h school speed zone should be retained unaltered.

McMaster Lane

The expansion of residential development along McMaster Lane northeast of High Street should be accompanied by a matching extension of the 70 km/h zone currently in place to the southwest of High Street.

Park Street

The sealed length of Park Street along the school frontage is currently subject to a permanent 40 km/h speed limit. This permanent limit is appropriate and should be retained. However, with the extension of Park Street, this speed zone should be closed off with appropriate signing to introduce the 50 km/h urban default limit to the northeast of the school. Separate speed limit signing for the constructed short length of Showlers Lane is not considered necessary.

Recommendation 9: that the Council be requested to initiate a review of current speed limits on the roads surrounding the development at the appropriate time and in line with the changes suggested above.

4.6 Cost apportionment

An assessment of likely ultimate travel paths through the Western Neighbourhood, using the internal network suggested in Council's Indicative Development Pattern, indicates that further subdivisional development within Area 1 is likely to make limited use of the road sections to be constructed or upgraded as part of the subject three developments. More specifically, the majority of internally generated trips are expected to use the two future additional road connections onto High Street, with only small amounts of additional traffic directed onto McMaster Lane, Showlers Lane or through No 128. As such, it is considered that the road construction and upgrading works recommended in this report can be considered as stand-alone activities attributable to the respective subdivision, without a need to make provision for cost sharing.

As a consequence, it is suggested that:

- The full cost of upgrading the short (approximately 100 m) length of McMaster Lane be borne by the development of No 132 High Street

- The full cost of the internal road construction through No 128 High Street be borne by that development

- The development of No 69 Park Street bears the full cost of the extension of Park Street, construction of the short length of Showlers Lane and construction of the internal streets through No 69.

Conclusion 5: that each of the three subdivisions separately bears the costs associated with internal road construction through the respective sites and frontage road upgrading works abutting the respective sites.

5 CONCLUSIONS

The following conclusions are drawn from the assessment of traffic impacts resulting from the three proposed subdivision developments within the Western Neighbourhood (Area 1) of Lancefield

- intersection treatments at the internal road connections to the surrounding streets require only basic left and right turn treatment. This will only require shoulder widening in High Street opposite the road through No. 128
- the intersections of High Street with Park Street and McMaster Lane do not require upgrading treatment to cater for additionally generated traffic
- the three subdivisions are expected to have no discernable impact on traffic conditions in the surrounding road network. Moreover, the additional traffic generated by these developments will have no noticeable impact on general traffic conditions in Lancefield Township
- the design of the internal streets is in accordance with the criteria stipulated in the DPO, provides traffic conditions consistent with those nominated in the IDM and is considered satisfactory
- that each of the three subdivisions separately bears the costs associated with internal road construction through the respective sites and frontage road upgrading works abutting the respective sites
- there are no traffic engineering reasons that should prevent the developments from proceeding.

This Traffic Impact Assessment has identified a number of detailed design matters that require addressing in the preparation of plans to accompany the Planning Permit Application. Recommendations throughout the report in this regard are summarised below:

- **Recommendation 1:** that detailed design of internal road connections to the surrounding network ensures compliance with the Safe Intersection Sight Distance (SISD) criteria in AGRD4A
- **Recommendation 2:** that detailed design of individual driveway locations ensures compliance with the Entering Sight Distance (ESD) criteria in AS/NZS 2890.1
- **Recommendation 3:** that landscaping and lot boundary fence design at driveways achieve the sight distance to pedestrians required in AS/NZS 2890.1
- **Recommendation 4**: That the High Street shoulder opposite the connection with the internal road through No. 128 be upgraded in accordance with an Austroads Type BAR treatment
- **Recommendation 5:** that internal streets for the subject developments be terminated with temporary court bowls to CFA requirements
- **Recommendation 6:** that the pedestrian facilities in the Park Street extension be constructed to a 2.5 m wide shared path standard for the length of the subject site frontage

- **Recommendation 7:** that the subdivisions at No 128 and No 132 be accompanied by the construction of 2.5 m wide shared paths along the High Street frontages of these developments

- **Recommendation 8:** that direct access from lots onto the frontage roads be controlled by way of combined joint driveways located at lot boundaries wherever practicable, to minimise interference with traffic on the frontage roads

- **Recommendation 9**: that the Council be requested to initiate a review of current speed limits on the roads surrounding the development, at the appropriate time and in line with the changes suggested in this report.

ATTACHMENT A –LAYOUT PLANS

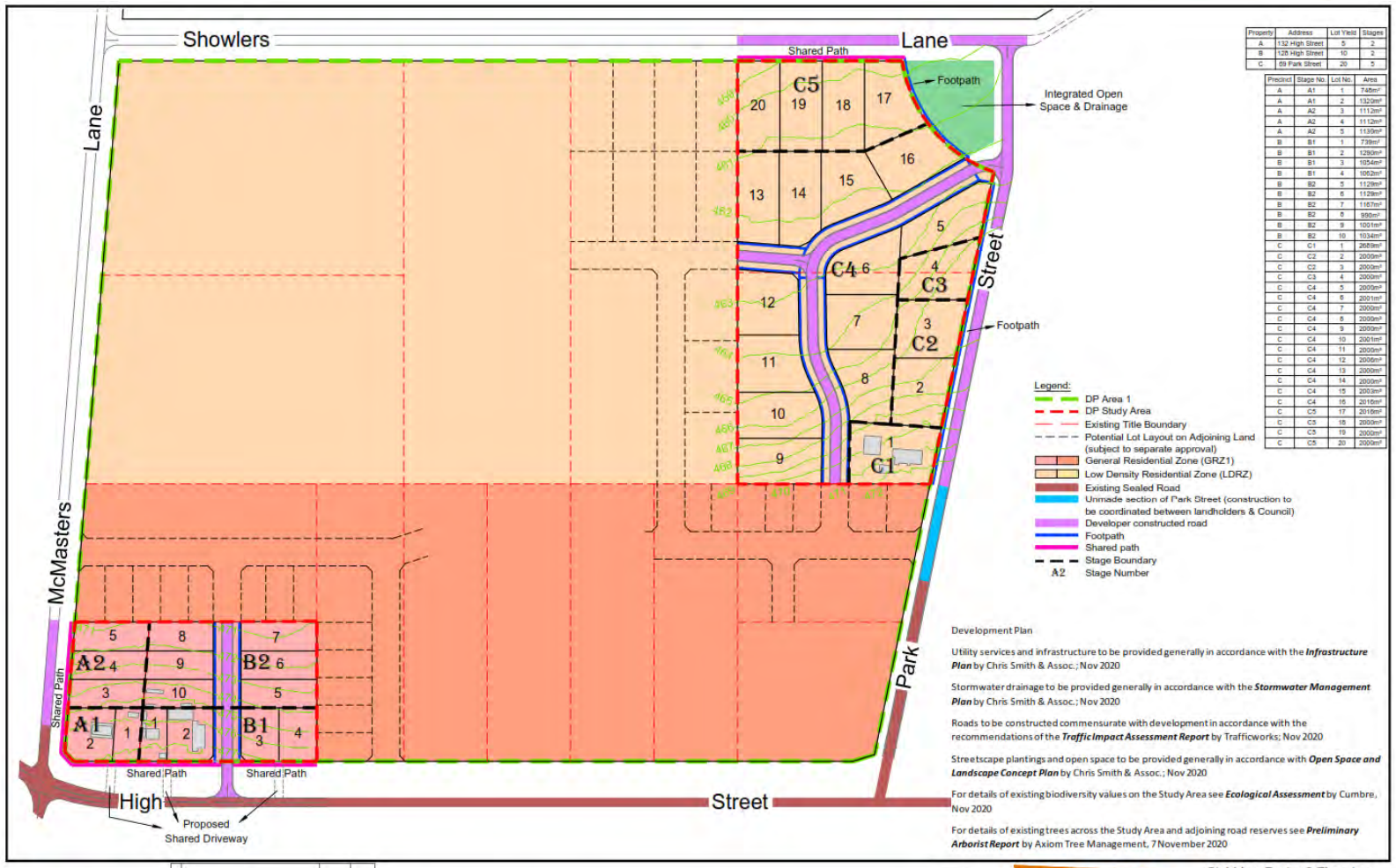


Figure A1: Subdivision Layout Plan prepared by Chris Smith & Associates

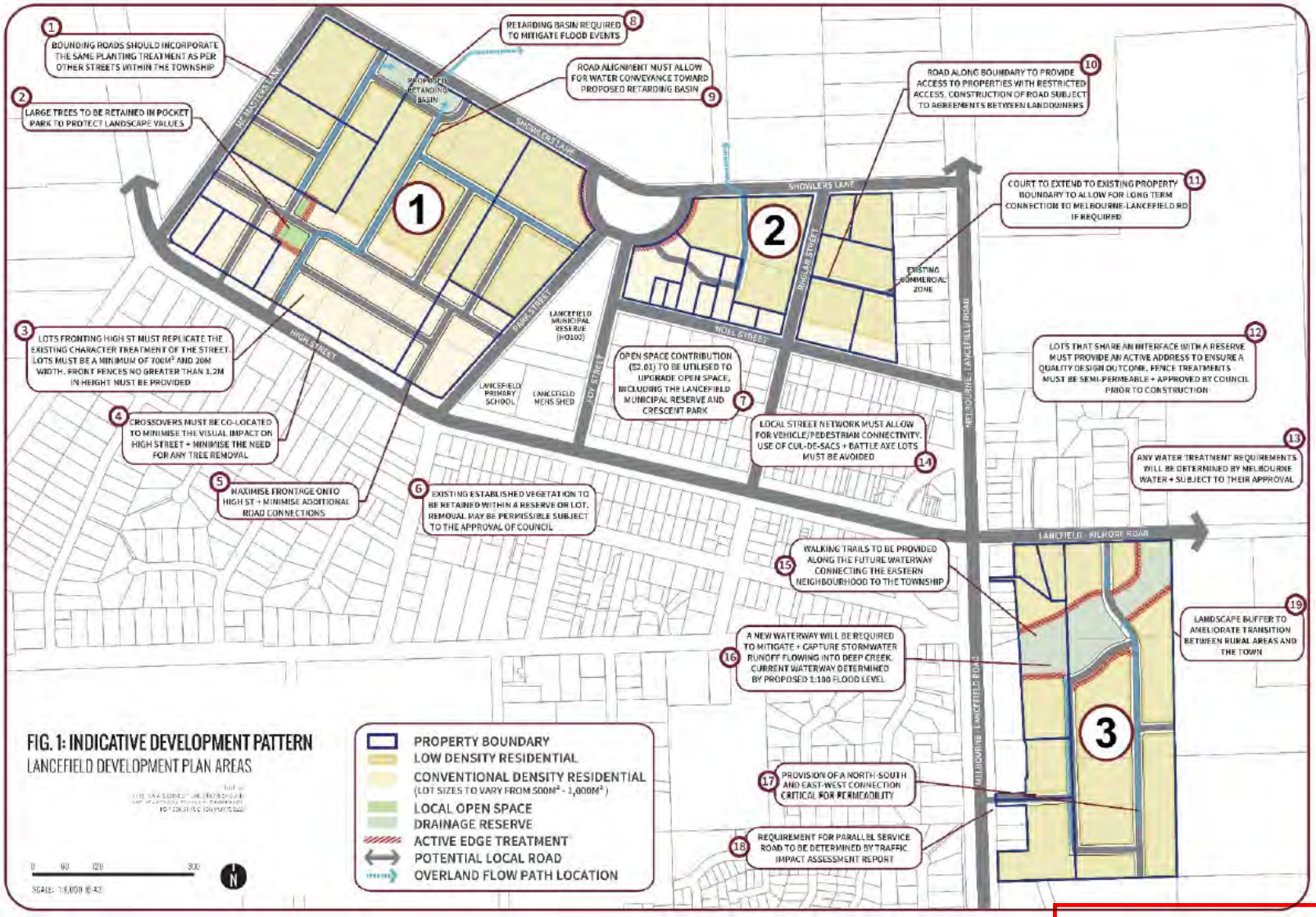
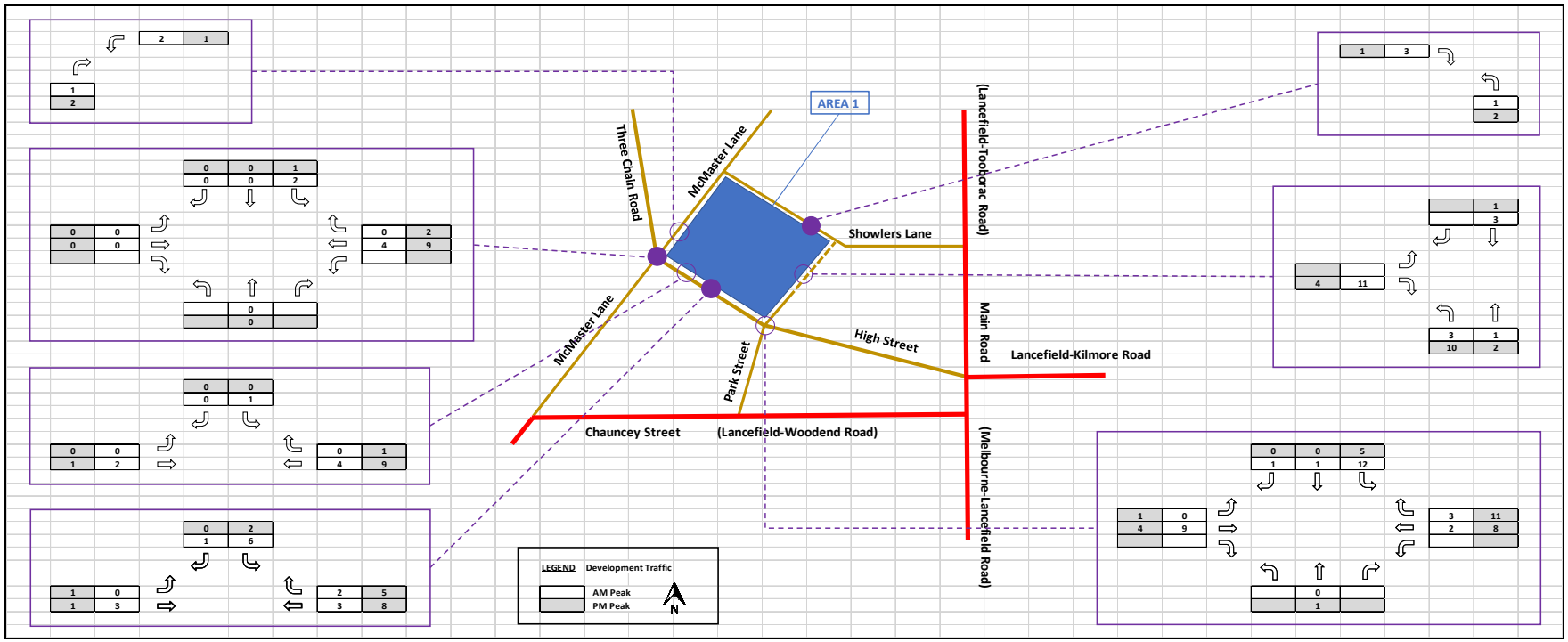


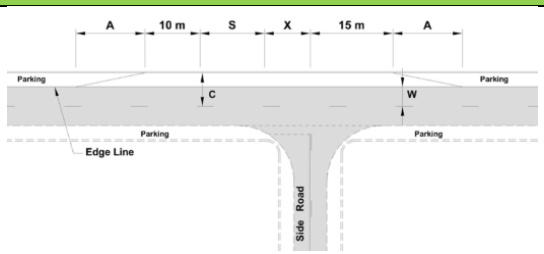
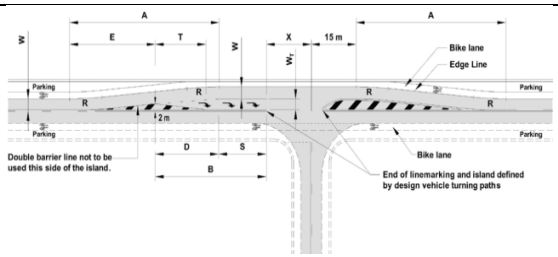
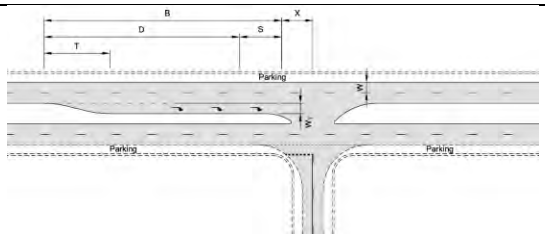
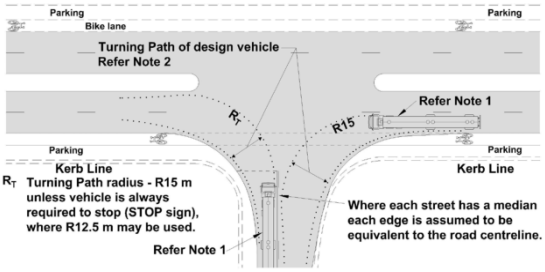
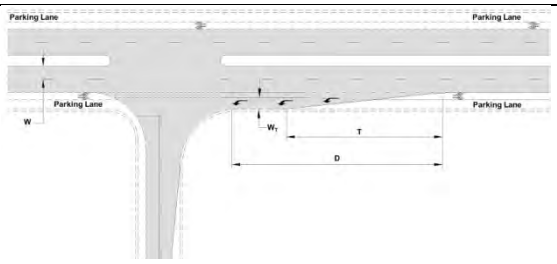
Figure A2: Indicative Development Pattern for Lancefield Development Plan Areas

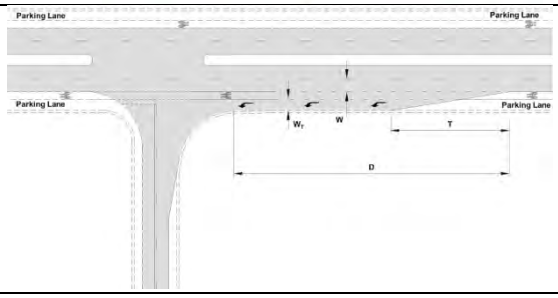
ATTACHMENT B – TRAFFIC GENERATION MATRIX



ATTACHMENT C – TURN TREATMENTS

Table C1: Turn Treatment Descriptions (Urban) (Source: *Section 7.7, 7.8 and 8.3 of AGRD Part 4A*).

Turn Treatment	Description
BAR	BAsic Right turn treatment on the major road, features a widened area (usually in place of parking) on the major road that allows through vehicles to pass to the left of turning vehicles (*Figure 7.17 of Austroads Guide to Road Design Part 4A*). 
CHR(S)	CHannelised Right (Short) turn is a shorter version of the Channelised Right turn treatment which is reduced by removing space provided for storage in the right lane. This treatment type can only be used with line marking (*Figure 7.18 of Austroads Guide to Road Design Part 4A*). 
CHR	CHannelised Right turn treatment has two vehicle travel paths (through and right turns) separated by physical or painted medians or islands (*Figure 7.19 of Austroads Guide to Road Design Part 4A*). 
BAL	BAsic Left turn treatment on the major road has a radius large enough to accommodate a design vehicle turning left into the minor road without crossing the centre line of the minor road (*Figure 8.8 of Austroads Guide to Road Design Part 4A*). 
AUL(S)	AUxiliary Left (Short) turn treatment is a shorter version of the Auxiliary Left turn treatment which is reduced by allowing some deceleration to occur in the through lane on the major road. This turn treatment also allows through vehicles to pass to the right of turning vehicles (*Figure 8.10 of Austroads Guide to Road Design Part 4A*). 

AUL	AUxiliary Left turn treatment is a left turn lane on the major road that allows through vehicles to pass to the right of turning vehicles (*Figure 8.11 of Austroads Guide to Road Design Part 4A*).	

MACEDON RANGES PLANNING SCHEME
DEVELOPMENT PLAN: DP/2020/2
Date: 25/11/2021
Authorised Officer: Jack Wiltshire
Page: 103 of 173

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Preliminary Arborist Report

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

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Saturday, 7 November 2020

Summary

Axiom Tree Management Pty Ltd has been engaged by Chris Smith and Associates to provide a Preliminary Arborist report on trees at various properties in Lancefield. Development is proposed over a number of sites and an Arborist report has been requested as part of the proposed development to assist with planning. Properties assessed as part of this report are located in the Macedon Ranges Shire Council and include:

- 69 Park Street Lancefield which covers approximately 47971 sp. m, is located within a Low-Density Residential Zone (LDRZ) and is affected by an Environmental Significance Overlay (ESO 1)
- 128 and 132 High Street Lancefield which covers approximately 12860 sq. m. and 5395sq. m. respectively, are located within General Residential Zones (GRZ1) and are not affected by overlays that restrict the pruning or removal of trees.

The subject sites cover a variety of areas and consist of residential dwellings, outbuildings and grazing land containing mainly introduced pastures species (Figure 1 & Figure 2). The sites are enclosed by post and wire fences and they border agricultural grazing land and relatively wide road reserves along Park Street, High Street and McMasters Lane.

- In total 118 trees were assessed on and directly adjoining the subject sites:
  - larger trees include *Eucalyptus viminalis, Eucalyptus microcarpa, Pinus radiata* and *Pinus halepensis;*
  - The vast majority of the trees are exotic and originate in a country other than Australia.
  - Only *Eucalyptus viminalis* occur naturally within the local area.
  - All trees assessed as part of this report have been planted over many years and are exempt from the requirements of Clause 52.17
- The health of most of the trees is 'Good':
  - The trees are commonly planted species, that have been selected for their tolerance to a range of conditions and climates.
- The structure of most of the trees is 'Fair':
  - Most of the trees are moderately sized garden specimens that have been planted and are growing close together in a relatively small area around the dwellings.
  - Larger specimens have been planted within the grazing paddocks and open areas for shelter and wind protection.
- Most of the trees are long lived native or exotic species that have the potential to live for many decades.
  - A number of large *Pinus sp.* were present at the sites which are reaching the end of the useful lives.
- Five retention values have been considered, including 'Very High', 'High', 'Medium', 'Low' and '3rd party':
  - Three trees (3) have been assigned High retention value;
  - Thirty-two trees (32) have been assigned 'Medium' retention value;
  - Sixty-two trees (62) have been assigned 'Low' retention value; and
  - Twenty-one trees (21) have been assessed within the adjoining neighbouring properties and road reserves.

The Arborist report has been undertaken to guide future subdivision and construction design. Trees have been assessed based on size, condition, and origin to determine their retention value, with the following considerations to be factored into development:

- Construction into the TPZs of trees is allowed (AS 4970 2009).
- The level of encroachment is based upon the percentage of TPZ area intruded upon with less than 10% encroachment considered minor and greater than 10% encroachment considered major.
- Where services are required to encroach into the TPZ of retained trees by greater than 10%, boring to a depth greater than 750mm below existing ground level should be explored.
- Excavation and machinery travel associated with boring activities must be located outside TPZ areas unless permitted by the project Arborist.

Contents

1 Introduction

Axiom Tree Management Pty Ltd has been engaged by Chris Smith and Associates to provide a Preliminary Arborist report on trees at various properties in Lancefield. Development is proposed over a number of sites and an Arborist report has been requested as part of the proposed development to assist with planning. Properties assessed as part of this report are located in the Macedon Ranges Shire Council and include:

- 69 Park Street Lancefield which covers approximately 47971 sp. m, is located within a Low-Density Residential Zone (LDRZ) and is affected by an Environmental Significance Overlay (ESO 1)
- 128 and 132 High Street Lancefield which covers approximately 12860 sq. m. and 5395sq. m. respectively, are located within General Residential Zones (GRZ1) and are not affected by overlays that restrict the pruning or removal of trees.

In Victoria, a permit is usually required to remove, destroy, or lop native vegetation. These regulations are known as the native vegetation removal regulations and are primarily implemented through local council planning schemes.

2 Key Objectives

As part of the report the key objectives include:

- Identify and record the dimensions of all trees that have the potential to be impacted by future development;
- Provide an assessment of the health, structure, and retention value of the tree specimens; and
- Provide tree protection measures in accordance with AS 4970 2009 for retained trees to ensure that their health and structure is maintained or improved throughout development and in the long term.

2.1 Site Methodology

On Friday, 25 September 2020, Tim Cameron conducted site inspections.

Data collected for the trees included but was not limited to:

- Botanical Name;
- Diameter at Breast Height (DBH);
- Retention Value;
- Canopy Dimensions (estimated);
- Health and Structure;
- Useful Life Expectancy (ULE).

Additional methodology includes:

- Assessments were conducted from ground level, with no instruments other than a diameter tape to measure DBH.
- A detailed visual inspection of the tree/s and the surrounding site was conducted, including a complete walk around the tree, looking at the buttress roots, trunk, branches, and leaves.
- Trees were assessed and located using differentially corrected GPS (generally +/- 1.0m accuracy) and aligned to a surveyor feature survey where available.

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:3,000
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at
128 & 132 High Street and
69 Park Street Lancefield
See Appendices for detailed maps

Legend
- Trees
- Road
- Cadastre
- Boundary
- TreeRow

N W E S

3 Observations/Discussions

3.1 Subject Site

The subject sites cover a variety of areas and consist of residential dwellings, outbuildings and grazing land containing mainly introduced pastures species (Figure 1 & Figure 2). The sites are enclosed by post and wire fences and they border agricultural grazing land and relatively wide road reserves along Park Street, High Street and McMasters Lane.

Figure 1 Weatherboard dwelling and trees at 69 Park Street from the road reserve looking west

Figure 2 Weatherboard dwelling and trees at 128 High Street from the road reserve looking north east

3.2 Trees Details

3.2.1 Species Composition

In total 118 trees were assessed on and directly adjoining the subject sites that may be impacted by future development. The larger trees consisted of *Eucalyptus viminalis, Eucalyptus microcarpa, Pinus radiata* and *Pinus halepensis* (Table 1).

All trees assessed as part of this report have been planted and are exempt from the requirements of Clause 52.17. The vast majority of the trees are exotic and originate in a country other than Australia. Of the Australian native species assessed, only *Eucalyptus viminalis* occur naturally within the local area.

Figure 3 Planted Eucalyptus within and adjoining High Street properties

Eucalyptus viminalis are located along the frontage with High Street and although the species is indigenous to the local area, these trees have been planted at regular spacings or with other non-indigenous species of the same age. Although large self-sown indigenous species are present within the High Street road reserve further to the east, the trees adjoining the subject sites are planted (Figure 3).

Table 1 Species composition

Botanical Name	Common Name	Origin	Count
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	Exotic	8
Crataegus monogyna	Hawthorn	Exotic	6
Betula pendula	Silver Birch	Exotic	6
Malus domestica	Apple	Exotic	6
Prunus cerasifera 'Nigra'	Purple Cherry Plum	Exotic	5
Eucalyptus viminalis	Manna Gum	Indigenous	5
Cytisus sp.	Broome	Exotic	3
Populus nigra 'Italica'	Lombardy Poplar	Exotic	3
Prunus cerasifera	Cherry Plum	Exotic	3
Fraxinus excelsior 'Aurea'	Golden Ash	Exotic	3
Platanus Xacerifolia	London Plane	Exotic	2
Eucalyptus camaldulensis	River Red Gum	Native	2
Eucalyptus leucoxylon	Yellow Gum	Native	2
Ulmus glabra 'Lutescens'	Golden Elm	Exotic	2
Photinia xfraseri 'Robusta'	Photinia	Exotic	2
Cotoneaster glaucophyllus	Cotoneaster	Exotic	2
Eucalyptus microcarpa	Grey Box	Native	2
Prunus serrulata	Japanese Flowering Cherry	Exotic	2

Botanical Name	Common Name	Origin	Count
Liquidambar styraciflua	Liquidamber	Exotic	2
Sambucus nigra	Common Elderberry	Exotic	2
Fraxinus oxycarpa 'Raywood'	Claret Ash	Exotic	2
Pittosporum eugenioides 'Variegatum'	Variegated Pittosporum	Exotic	2
Camellia japonica	Camellia	Exotic	2
Callistemon viminalis	Weeping Bottle Brush	Native	2
Quercus palustris	Pin Oak	Exotic	2
Pyrus communis	Common Pear	Exotic	2
Hesperocyparis macrocarpa	Monterey Cypress	Exotic	2
Other			36
Total			**118**

3.2.2 Health

The health of most of the trees is 'Good' (Table 2). The assessment of health has been assigned based on several factors including canopy growth and density, presence of pest or disease, presence of dead branches considering the time of year and typical form of the species. The trees are commonly planted species, that have been selected for their tolerance to a range of conditions and climates. Evidence of damage from grazing animals was present at the sites.

Table 2 Health, Structure and ULE ratings

Health/Structure Range	Health Count	Structure Count	ULE ratings	ULE
Good	74	16	**0-5 years**	3
Fair	36	82	**5-10 years**	26
Poor	7	17	**10-20 years**	39
Very poor/Dead	1	3	**20+ years**	50
Total	**118**	**118**	**Total**	**118**

3.2.3 Structure

The structure of most of the trees is 'Fair' (Table 2). Most of the trees are moderately sized garden specimens that have been planted and are growing close together in a relatively small area around the dwellings. Larger specimens have been planted within the grazing paddocks and open areas for shelter and wind protection. Dead branches were present in many of the larger trees (Figure 4).

Figure 4 Large exotic *Pinus halepensis* in decline surrounding by exotic gardens specimens adjacent 132 High Street

3.2.4 Useful Life Expectancy (ULE)

The ULE of a tree is assigned by the assessor based on many factors including; species longevity, suitability to the site and current age and condition both regarding health and structure. It is an estimation of how long a tree can provide amenity in the landscape at an acceptable level of risk. Most of the trees are long lived native or exotic species that have the potential to live for many decades. A number of large *Pinus sp.* were present at the sites which are reaching the end of the useful lives.

3.3 Tree Retention

Five retention values have been considered, consisting of 'Very High', 'High', 'Medium', 'Low' and 'Third party'. Retention value considers tree size and condition, ULE, contribution to landscape and individual tree significance and they provide useful information to planners, regarding which trees are considered worthy of protection in the design phase. Table 3 gives a breakdown of retention values across the site.

Table 3 Retention Values

Retention Value	Count
Very High	0
High	3
Medium	32
Low	62
Third Party	21
Total	**118**

3.3.1 High Retention

Three trees (3) have been assigned High retention value (Table 4). High retention trees are well suited to the site and offer amenity. They are normally in 'Good' to 'Fair' health and have 'Good' to 'Fair' structure. The ULE should be at least the same as the design life of any new buildings.

Table 4 High Retention

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
37	*Eucalyptus camaldulensis*	Mature	10m x 5m	55	Good	Fair
48	*Eucalyptus polyanthemos*	Mature	14m x 5m	75	Good	Fair
51	*Eucalyptus microcarpa*	Mature	17m x 7m	67	Good	Fair

3.3.2 Medium Retention

Thirty-two trees (32) have been assigned 'Medium' retention value (Table 5). The trees are moderate or large sized specimens with a general condition rating of fair. If designing around these trees is not feasible or practical, removal and replacement would be an acceptable compromise.

Table 5 Medium Retention

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
3	*Thuja plicata*	Semi mature	6m x 4m	27	Good	Fair
4	*Betula pendula*	Semi mature	2m x 3m	18	Good	Fair
5	*Fraxinus sp.*	Mature	8m x 5m	25	Good	Fair
9	*Malus domestica*	Mature	5m x 4m	22	Good	Fair
11	*Betula pendula*	Mature	13m x 12m	75	Good	Fair
13	*Photinia glabra*	Mature	6m x 3m	26	Good	Fair
17	*Callistemon viminalis*	Mature	6m x 3m	27	Fair	Fair
22	*Prunus cerasifera*	Mature	9m x 7m	80	Fair	Very poor
23	*Cotoneaster glaucophyllus*	Mature	5m x 3m	14	Good	Fair
26	*Photinia xfraseri 'Robusta'*	Mature	4m x 3m	19	Good	Fair
29	*Pistacia chinensis*	Semi mature	7m x 3m	27	Good	Good
34	*Pyrus communis*	Mature	4m x 3m	25	Fair	Poor
35	*Salix babylonica*	Mature	14m x 12m	75	Fair	Fair
38	*Pinus radiata*	Mature	20m x 14m	104	Poor	Poor
43	*Fraxinus oxycarpa*	Semi mature	6m x 3m	24	Fair	Fair
46	*Eucalyptus microcarpa*	Semi mature	16m x 6m	62	Fair	Fair
47	*Eucalyptus viminalis*	Mature	18m x 10m	92	Fair	Very poor
52	*Brachychiton populneus*	Semi mature	4m x 2m	25	Good	Good

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
66	*Betula pendula*	Semi mature	5m x 4m	22	Fair	Fair
73	*Populus nigra 'Italica'*	Semi mature	14m x 1m	26	Good	Fair
74	*Quercus palustris*	Semi mature	13m x 4m	37	Good	Good
75	*Populus nigra 'Italica'*	Mature	17m x 2m	44	Good	Fair
76	*Quercus canariensis*	Semi mature	13m x 3m	32	Good	Fair
77	*Quercus palustris*	Semi mature	14m x 6m	45	Good	Fair
80	*Ulmus glabra 'Lutescens'*	Mature	15m x 6m	50	Good	Fair
82	*Populus nigra 'Italica'*	Semi mature	15m x 2m	40	Good	Fair
93	*Betula pendula*	Mature	8m x 3m	29	Fair	Fair
95	*Betula pendula*	Mature	8m x 4m	28	Good	Fair
96	*Prunus serrulata*	Mature	6m x 5m	24	Good	Fair
106	*Fraxinus oxycarpa 'Raywood'*	Mature	15m x 12m	56	Fair	Poor
116	*Eucalyptus bicostata*	Semi mature	14m x 5m	58	Good	Fair
118	*Photinia xfraseri 'Robusta'*	Mature	5m x 5m	24	Good	Good

3.3.3 Low Retention

Sixty-two trees (62) have been assigned 'Low' retention value (Table 6). Low retention value trees are either young or semi mature common varieties that are easily replaceable or are dead and require removal. Trees in poor health or with significant defects in structure are not suitable for preservation in areas where people or structures will be located (Matheny & Clark, 1998).

Table 6 Low Retention

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
2	*Prunus sp.*	Mature	4m x 3m	11	Fair	Fair
6	*Camellia japonica*	Mature	3m x 2m	6	Good	Fair
7	*Prunus cerasifera 'Nigra'*	Mature	7m x 3m	24	Fair	Fair
8	*Rhododendron arboreum*	Mature	3m x 2m	6	Good	Fair
10	*Sambucus nigra*	Mature	5m x 3m	26	Fair	Fair
12	*Pittosporum tenuifolium*	Mature	6m x 2m	22	Fair	Fair
14	*Malus domestica*	Mature	6m x 3m	18	Good	Fair
15	*Nerium oleander*	Mature	3m x 4m	9	Good	Fair
16	*Pittosporum eugenioides 'Variegatum'*	Mature	5m x 3m	19	Fair	Fair
18	*Sambucus nigra*	Mature	3m x 4m	10	Fair	Fair
19	*Cotoneaster glaucophyllus*	Mature	3m x 4m	18	Good	Fair
20	*Pyracantha crenulata*	Mature	3m x 2m	5	Fair	Fair
21	*Callistemon viminalis*	Semi mature	3m x 1m	5	Good	Fair
24	*Camellia japonica*	Mature	3m x 2m	6	Good	Fair
25	*Ceanothus sp.*	Mature	3m x 2m	22	Fair	Fair
27	*Pittosporum eugenioides 'Variegatum'*	Mature	5m x 2m	7	Fair	Fair
28	*Cercis siliquastrum*	Mature	5m x 3m	23	Fair	Fair
30	*Garrya elliptica*	Semi mature	3m x 2m	5	Good	Good
31	*Buddleja sp.*	Mature	3m x 3m	9	Fair	Poor
32	*Unknown sp.*	Mature	3m x 2m	5	Fair	Poor
33	*Pyrus communis*	Mature	5m x 3m	29	Fair	Fair
36	*Eucalyptus leucoxylon*	Mature	8m x 4m	33	Fair	Poor
49	*Melaleuca ericifolia*	Semi mature	3m x 3m	13	Good	Fair
50	*Callistemon linearis*	Semi mature	2m x 2m	25	Good	Fair
53	*Melaleuca linariifolia*	Semi mature	2m x 2m	12	Good	Fair
54	*Acer negundo*	Mature	5m x 6m	45	Good	Poor
55	*Liquidambar styraciflua*	Young	4m x 1m	10	Good	Good
56	*Hibiscus syriacus*	Semi mature	2m x 1m	3	Good	Fair
57	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
58	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
59	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
60	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
61	*Pyrus calleryana 'Chanticleer'*	Young	1m x 1m	1	Good	Good
62	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
63	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good
64	*Pyrus calleryana 'Chanticleer'*	Young	2m x 1m	1	Good	Good

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
65	*Fraxinus oxycarpa 'Raywood'*	Young	2m x 1m	5	Good	Good
70	*Crataegus monogyna*	Mature	5m x 5m	19	Fair	Fair
72	*Alnus acuminata*	Semi mature	3m x 2m	5	Fair	Fair
78	*Prunus cerasifera 'Nigra'*	Mature	7m x 5m	30	Good	Fair
79	*Prunus cerasifera 'Nigra'*	Mature	6m x 3m	20	Good	Fair
81	*Ulmus glabra 'Lutescens'*	Young	8m x 2m	19	Good	Poor
83	*Prunus cerasifera 'Nigra'*	Semi mature	4m x 3m	15	Good	Poor
84	*Malus domestica*	Mature	7m x 5m	18	Fair	Fair
85	*Crataegus monogyna*	Mature	7m x 6m	24	Good	Fair
86	*Eucalyptus camaldulensis*	Mature	5m x 3m	32	Good	Poor
87	*Prunus cerasifera*	Mature	5m x 6m	25	Good	Fair
88	*Eucalyptus leucoxylon*	Semi mature	4m x 1m	6	Very Poor	Very poor
89	*Eucalyptus platypus*	Semi mature	12m x 2m	27	Fair	Fair
90	*Eucalyptus pulchella*	Mature	14m x 9m	54	Fair	Poor
91	*Eucalyptus kitsoniana*	Semi mature	5m x 2m	13	Fair	Fair
92	*Acacia baileyana*	Mature	4m x 5m	25	Fair	Poor
94	*Betula pendula*	Mature	8m x 3m	25	Poor	Fair
100	*Liquidambar styraciflua*	Young	3m x 1m	5	Good	Fair
101	*Prunus serrulata*	Mature	6m x 3m	22	Good	Fair
103	*Platanus Xacerifolia*	Semi mature	7m x 2m	22	Poor	Fair
104	*Liriodendron tulipifera*	Semi mature	4m x 2m	10	Fair	Poor
105	*Platanus Xacerifolia*	Semi mature	7m x 3m	22	Poor	Fair
107	*Crataegus monogyna*	Semi mature	5m x 3m	11	Good	Fair
108	*Cytisus sp.*	Semi mature	4m x 3m	5	Good	Fair
115	*Crataegus monogyna*	Mature	6m x 5m	26	Good	Fair
117	*Pinus halepensis*	Mature	17m x 30m	153	Poor	Poor

3.3.4 Third Party Trees

Twenty-one trees (21) have been assessed within the adjoining neighbouring properties and road reserves (Table 7). The trees have been assessed on the assumption that their owner requires their retention. It is neither an observation of good health of the tree or suitability for retention. Consideration must be given for their protection throughout any future proposed development on the site unless the property owner and/or responsible authority gives consent.

Table 7 Third Party Trees

ID	Botanical Name	Age	H x W	DBH (cm)	Health	Structure
1	*Fraxinus excelsior 'Aurea'*	Mature	9m x 12m	49	Fair	Fair
39	*Fraxinus excelsior 'Aurea'*	Young	2m x 1m	4	Good	Fair
40	*Eucalyptus viminalis*	Semi mature	9m x 5m	58	Poor	Fair
41	*Fraxinus excelsior 'Aurea'*	Semi mature	2m x 3m	8	Good	Fair
42	*Eucalyptus viminalis*	Mature	20m x 14m	104	Good	Fair
44	*Eucalyptus viminalis*	Young	4m x 1m	8	Good	Fair
45	*Eucalyptus viminalis*	Mature	20m x 12m	117	Fair	Fair
67	*Hesperocyparis macrocarpa*	Mature	15m x 8m	70	Good	Fair
68	*Quercus robur*	Mature	18m x 25m	90	Good	Fair
69	*Hesperocyparis macrocarpa*	Mature	14m x 7m	60	Good	Fair
71	*Sequoia sempervirens*	Mature	18m x 6m	110	Fair	Fair
97	*Prunus cerasifera 'Nigra'*	Mature	3m x 3m	11	Good	Fair
98	*Prunus cerasifera*	Semi mature	3m x 2m	9	Good	Fair
99	*Corymbia ficifolia*	Young	2m x 1m	5	Poor	Poor
102	*Cytisus sp.*	Mature	5m x 9m	40	Good	Poor
109	*Malus domestica*	Young	3m x 2m	9	Good	Fair
110	*Malus domestica*	Young	2m x 3m	11	Good	Fair
111	*Malus domestica*	Mature	4m x 5m	32	Fair	Fair
112	*Crataegus monogyna*	Semi mature	3m x 2m	10	Good	Good
113	*Cytisus sp.*	Mature	3m x 7m	20	Good	Poor
114	*Crataegus monogyna*	Mature	6m x 4m	23	Good	Fair

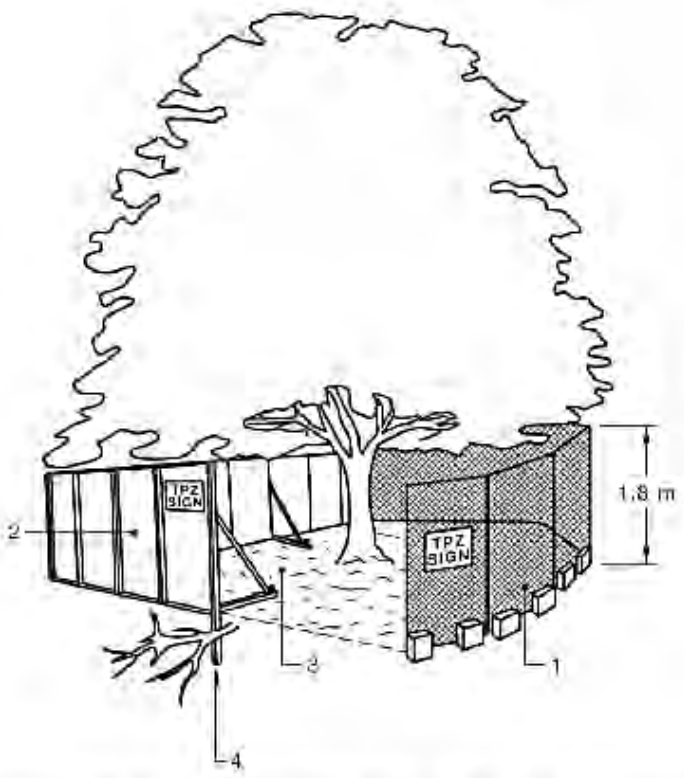
3.4 TPZ Specifications

Regardless of tree condition or retention value, any tree selected to be retained requires protection during construction. The best way to protect retained trees as part of any development is by establishing a tree protection zone (TPZ). TPZs have been calculated according to *Protection of Trees on Development Sites* (AS 4970-2009) for all trees to be retained calculating the TPZ as 12 times the trunk diameter at 1.4m above ground level (DBH).

The TPZ fence is designed to act as a physical barrier of protective fencing that is a minimum of 1.8m high. It is erected around retained specimens (at the edge of the TPZ) before site works commence.

3.4.1 TPZ Fencing

TPZ fencing should be a minimum height of 1.8m constructed of wire mesh or equivalent and supported by concrete pads (AS 4970 2009). Once TPZ fencing has been erected, the area contained within the fencing needs to be mulched with woodchips to a depth of 100mm. See Figure 5



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 5 Tree Protection Fencing

Activities excluded from the TPZ include but are not limited to-

- machine excavation including trenching (unless on approved plans);
- cultivation;
- preparation of chemicals, including cement products;
- refuelling;
- wash down and cleaning of equipment;
- lighting of fires;
- temporary or permanent installation of utilities and signs;
- excavation for silt fencing;
- storage;
- parking of vehicles and plant;
- dumping of waste;
- placement of fill;
- soil level changes;
- physical damage to the tree/s.

3.4.2 Encroachment

Encroachment into the TPZ of trees is allowed under certain circumstances depending on a number of factors including site and tree conditions.

3.4.2.1 Encroachment Less Than 10%

Encroachment of less than 10% of the TPZ and outside the SRZ is deemed to be minor encroachment according to AS 4970-2009. Detailed root investigations should not be required but must be compensated with an extension to the TPZ elsewhere (Figure 6 & Figure 7). Variations must be made by the project arborist considering other relevant factors including tree health, vigour, stability, species sensitivity and soil characteristics.

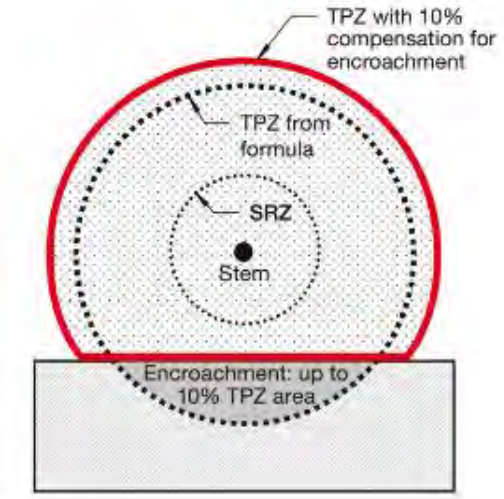


Figure 6 Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

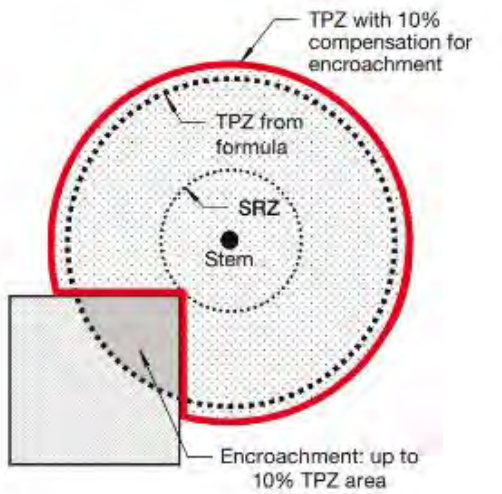


Figure 7 Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

3.4.2.2 Encroachment Greater Than 10%

Encroachment of more than 10% of the TPZ or into the SRZ will require the project arborist to demonstrate that the tree(s) will remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors tree health, vigour, stability, species sensitivity and soil characteristics.

3.4.3 SRZ

The SRZ is the minimum volume of roots required by the tree to remain stable in the ground. If the SRZ is breached the chances of windthrow are significantly increased, especially if roots are cut on the same side as prevailing winds. Windthrow is an event where the entire tree fails/falls over. Often, the tree is completely uprooted with devastating results. It is important to note that the SRZ is not related to tree health. It refers to the physical volume of roots required for the tree to remain stable in the ground. It is in no way related to the physiological requirements of the tree but is the minimum volume of roots required for the tree to remain standing.

3.5 Future design and Construction Impact

The Arborist report has been undertaken to guide future subdivision and construction design. Trees have been assessed based on size, condition, and origin to determine their retention value, with the following considerations to be factored into development:

- Construction into the TPZs of trees is allowed (AS 4970 2009).
- The level of encroachment is based upon the percentage of TPZ area intruded upon with less than 10% encroachment considered minor and greater than 10% encroachment considered major.
- Where services are required to encroach into the TPZ of retained trees by greater than 10%, boring to a depth greater than 750mm below existing ground level should be explored.
- Excavation and machinery travel associated with boring activities must be located outside TPZ areas unless permitted by the project Arborist.

3.6 General Construction Specifications

TPZ and SRZ dimensions and locations have been provided as part of this report. Where possible, construction works, and associated activities should be avoided within TPZ areas. Where low impact construction works are required within TPZ areas the following specifications should be adhered to.

Fence Construction within TPZ Areas

Construction of timber or colourbond fencing generally has a minor impact on trees due to their lightweight construction and relatively small footings. Provided the following specifications are adhered to construction impact will be low:

- Augers or excavation equipment are prohibited from within SRZ areas;
- Post holes are to be hand dug within TPZ areas, with roots no greater than 40mm to be removed or damaged;
- The location of fence posts is to be flexible to avoid damaging roots greater than 40mm in diameter;
- Apart from excavation for post holes, no excavation is permitted within TPZ areas greater than 150mm;
- Existing post holes for support post are to be utilised where possible for fence replacement.

Driveway and Footpath Construction

Construction of the driveways and footpaths has the potential to impact trees due to excavation, compaction, and mechanical damage. Where construction of path is required within large areas of TPZ and SRZ areas, the following construction techniques should be adopted in consultation with the project Arborist:

- Footpath construction within the TPZ area is to be constructed at or near grade using porous/permeable material with no greater than 150mm cut/scrape permitted for preparation;
- Cut/scrape for preparation is to be dug by hand within TPZ areas to reduce the likelihood of root damage;
- Where surface roots are identified, the finished soil level is to be raised (no greater than 150mm) to reduce the probability of root damage;
- Excavation equipment are not permitted within TPZ areas.
- Where large amounts of battering/fill is required greater than 150mm, alternative design methods/materials will be required to reduce the impact on trees.

Trenching for Drainage, Irrigation and Services

The location of services and drainage should be planned to avoid TPZ areas. To reduce the potential impact on trees the following specifications should be adhered to:

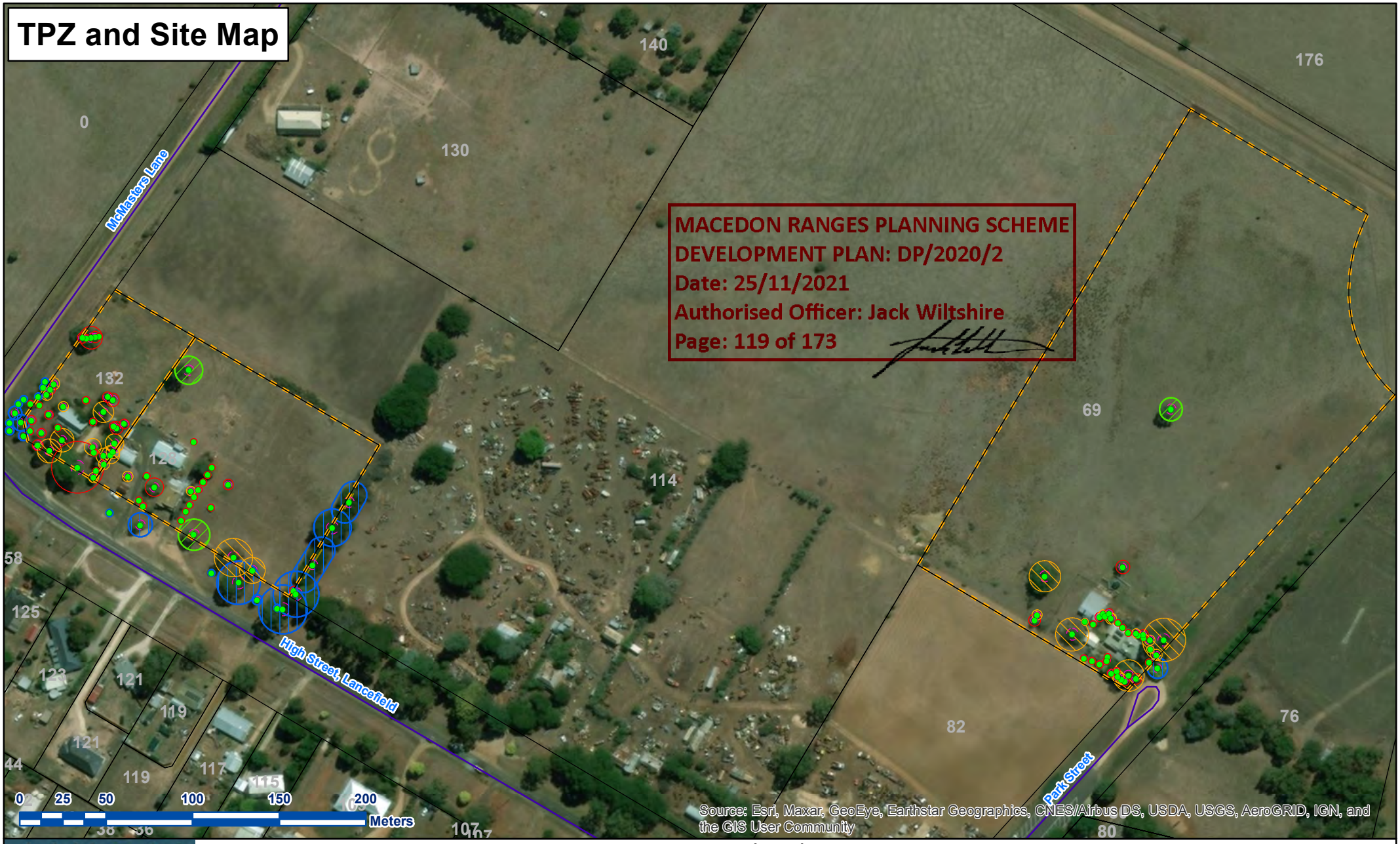
- Boring is to be explored where services occur within the TPZ of trees.
- Drainage is to be located outside TPZ areas. Where drainage is required within TPZ areas, the project Arborist is to be consulted regarding potential impacts and design.
- Installation of irrigation should not exceed 100mm below ground level within TPZ areas.

Landscaping within TPZ Areas

Unspecified landscaping may be required for within TPZ and SRZ areas. The following specifications are to be adhered to during landscaping operations:

- No machine excavation or placement of soil fill within SRZ areas;
- No machine excavation or placement of soil fill greater than 150mm within TPZ areas; and
- Holes for tree planting are to be dug by hand within the TPZ of adjoining trees with no augers or excavation machinery used.

TPZ and Site Map



AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 7/11/2020 Scale: 1:2,862
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

See Appendices for detailed maps

Legend

- Trees
- Road
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

4 Conclusion and Recommendations

Axiom Tree Management Pty Ltd has been engaged by Chris Smith and Associates to provide a Preliminary Arborist report on trees at various properties in Lancefield. Development is proposed over a number of sites and an Arborist report has been requested as part of the proposed development to assist with planning. Properties assessed as part of this report are located in the Macedon Ranges Shire Council and include:

- 69 Park Street Lancefield which covers approximately 47971 sp. m, is located within a Low-Density Residential Zone (LDRZ) and is affected by an Environmental Significance Overlay (ESO 1)
- 128 and 132 High Street Lancefield which covers approximately 12860 sq. m. and 5395sq. m. respectively, are located within General Residential Zones (GRZ1) and are not affected by overlays that restrict the pruning or removal of trees.

The subject sites cover a variety of areas and consist of residential dwellings, outbuildings and grazing land containing mainly introduced pastures species (Figure 1 & Figure 2). The sites are enclosed by post and wire fences and they border agricultural grazing land and relatively wide road reserves along Park Street, High Street and McMasters Lane.

- In total 118 trees were assessed on and directly adjoining the subject sites:
  - larger trees include *Eucalyptus viminalis, Eucalyptus microcarpa, Pinus radiata* and *Pinus halepensis;*
  - The vast majority of the trees are exotic and originate in a country other than Australia.
  - Only *Eucalyptus viminalis* occur naturally within the local area.
  - All trees assessed as part of this report have been planted over many years and are exempt from the requirements of Clause 52.17
- The health of most of the trees is 'Good':
  - The trees are commonly planted species, that have been selected for their tolerance to a range of conditions and climates.
- The structure of most of the trees is 'Fair':
  - Most of the trees are moderately sized garden specimens that have been planted and are growing close together in a relatively small area around the dwellings.
  - Larger specimens have been planted within the grazing paddocks and open areas for shelter and wind protection.
- Most of the trees are long lived native or exotic species that have the potential to live for many decades.
  - A number of large *Pinus sp.* were present at the sites which are reaching the end of the useful lives.
- Five retention values have been considered, including 'Very High', 'High', 'Medium', 'Low' and '3rd party':
  - Three trees (3) have been assigned High retention value;
  - Thirty-two trees (32) have been assigned 'Medium' retention value;
  - Sixty-two trees (62) have been assigned 'Low' retention value; and
  - Twenty-one trees (21) have been assessed within the adjoining neighbouring properties and road reserves.

The Arborist report has been undertaken to guide future subdivision and construction design. Trees have been assessed based on size, condition, and origin to determine their retention value, with the following considerations to be factored into development:

- Construction into the TPZs of trees is allowed (AS 4970 2009).
- The level of encroachment is based upon the percentage of TPZ area intruded upon with less than 10% encroachment considered minor and greater than 10% encroachment considered major.
- Where services are required to encroach into the TPZ of retained trees by greater than 10%, boring to a depth greater than 750mm below existing ground level should be explored.
- Excavation and machinery travel associated with boring activities must be located outside TPZ areas unless permitted by the project Arborist.

5 References

AS 4970, 2009, *Australian Standard, Protection of Trees on Development Sites*, Standards Australia.

Matheny, N. & Clark, J. 1998 *Trees and development – a technical guide to preservation of trees during land development*. International Society of Arboriculture, Champaign, IL USA.

6 Appendices

6.1 Definitions

Botanical name:

The genus, species and common name.

Canopy dimensions

Height (approximate) and width (measured) of the canopy in metres.

DBH

Diameter at breast height (measured at 1.4m above ground level).

Tree Origin

Term	Definition
Exotic	The species originates in a country other than Australia.
Native	The species originates within Australia.
Indigenous	The species originates within the local environs.

Health

Term	Definition
Excellent	The tree is demonstrating excellent or exceptional growth. The tree should exhibit a full canopy of foliage and be free of pest and disease problems.
Good	The tree is demonstrating good or exceptional growth. The tree should exhibit a full canopy of foliage, and have only minor pest or diseases problems.
Fair	The tree is in reasonable condition and growing well. The tree should exhibit an adequate canopy of foliage. There may be some deadwood present in the crown. Some grazing by insects or possums may be evident.
Poor	The tree is not growing to its full capacity; extension growth of the laterals is minimal. The canopy may be thinning or sparse. Large amounts of deadwood may be evident throughout the crown. Significant pest and disease problems may be evident or symptoms of stress indicating tree decline.
Very Poor	The tree appears to be in a state of decline. The tree is not growing to its full capacity. The canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health.
Dead	The tree is dead.

Structure

Term	Definition
Good	The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Major limbs are well defined. The tree is considered a good example of the species.
Fair	The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance, and some branch unions may be exhibiting minor structural faults. If the tree has a single trunk, it may be on a slight lean or exhibiting minor defects.
Poor	The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered root damage.
Very Poor	The tree has a poorly structured crown. The crown is unbalanced or exhibit large gaps with possibly large sections of deadwood. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. Branches may exhibit large cracks that are likely to fail in the future. The tree may have suffered major root damage.
Failed	The tree has a very poorly structured crown. A section of the tree has failed or is in imminent danger of failure.

Useful Life Expectancy (ULE) Rating

Useful Life Expectancy is approximately how long a tree can be retained safely and usefully in the landscape.

Term	Definition
0 years	The tree is considered dangerous in the location and has no significant amenity value.
Less than 5 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and have value for up to five years, but will need to be replaced. During this period, normal inspections and maintenance will be required. If possible, replacement trees should be planted.
5 – 10 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for up to ten years. During this period, normal inspections and maintenance will be required.
10– 20 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for up to twenty years. During this period, normal inspections and maintenance will be required.
Greater than 20 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for greater than 20 years. During this period, normal inspections and maintenance will be required.

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:3,049
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:630
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

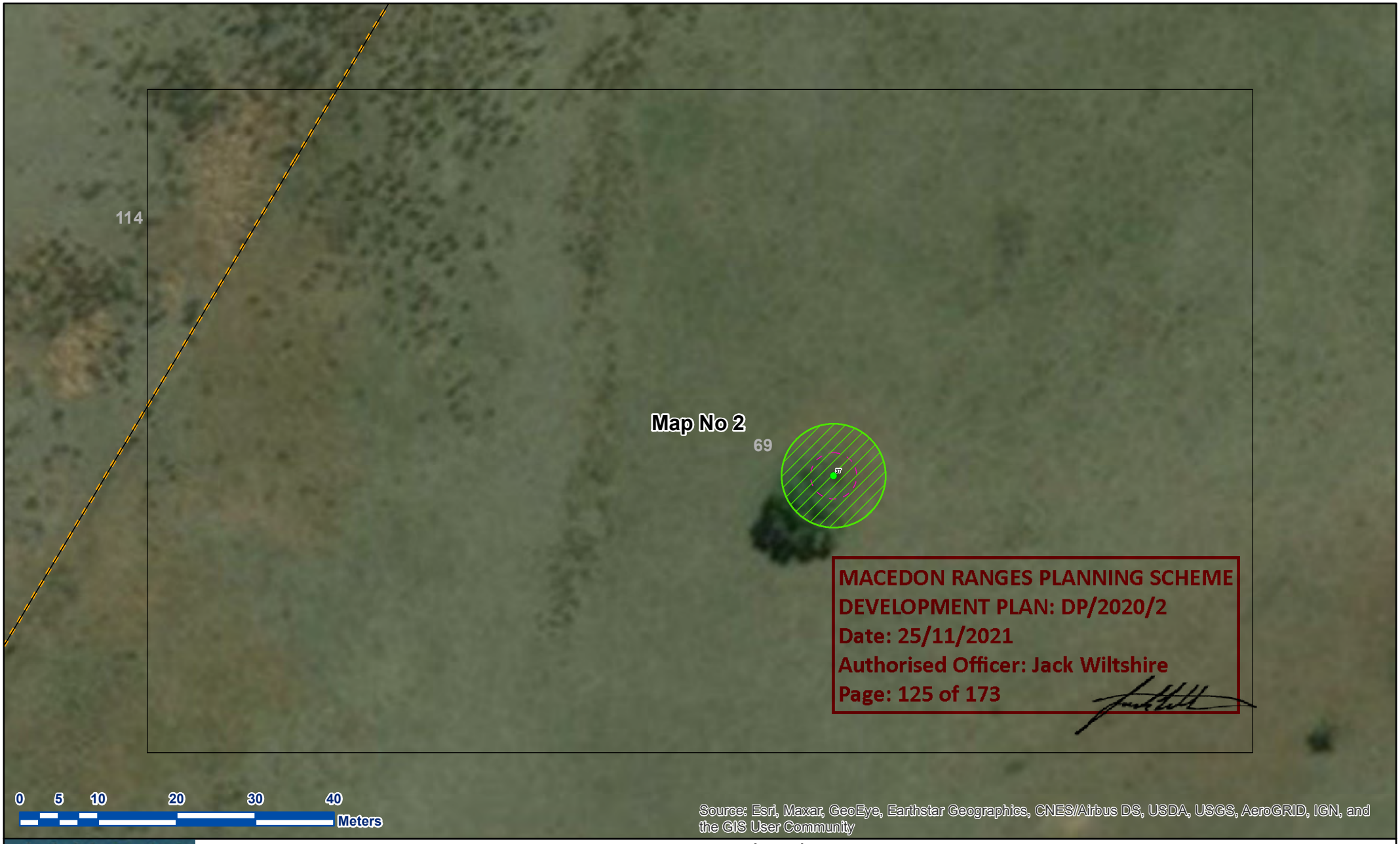
- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S



AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:630
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:630
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:630
Geographic Projection:
GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

AXIOM Tree Management Pty Ltd

Drawn and Plotted by: TDC
Date: 5/11/2020 Scale: 1:630
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GDA 1994 MGA Zone 55

Assessment of Trees at 128 & 132 High Street and 69 Park Street Lancefield

Legend

- Trees
- Road
- Maps
- Cadastre
- Boundary

TPZ - Retention value

- High
- Medium
- Low
- Third party

- SRZ
- TreeRowBuffer
- TreeRow

N W E S

6.1 Individual Tree Details Spreadsheet

ID	Botanical Name	Common Name	Age	Origin	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ m radius	SRZ m radius
1	*Fraxinus excelsior 'Aurea'*	Golden Ash	Mature	Exotic	9m x 12m	49	Fair	Fair	20+ years	Third party	5.88	2.45
2	*Prunus sp.*	Plum	Mature	Exotic	4m x 3m	11	Fair	Fair	10-20 years	Low	2	1.50
3	*Thuja plicata*	Western Red Cedar	Semi mature	Exotic	6m x 4m	27	Good	Fair	20+ years	Medium	3.24	2.05
4	*Betula pendula*	Silver Birch	Semi mature	Exotic	2m x 3m	18	Good	Fair	10-20 years	Medium	2.16	1.68
5	*Fraxinus sp.*	Ash	Mature	Exotic	8m x 5m	25	Good	Fair	10-20 years	Medium	3	2.32
6	*Camellia japonica*	Camellia	Mature	Exotic	3m x 2m	6	Good	Fair	10-20 years	Low	2	1.50
7	*Prunus cerasifera 'Nigra'*	Purple Cherry Plum	Mature	Exotic	7m x 3m	24	Fair	Fair	5-10 years	Low	2.88	2.00
8	*Rhododendron arboreum*	Tree Rhododendron	Mature	Exotic	3m x 2m	6	Good	Fair	20+ years	Low	2	1.50
9	*Malus domestica*	Apple	Mature	Exotic	5m x 4m	22	Good	Fair	20+ years	Medium	2.64	2.20
10	*Sambucus nigra*	Common Elderberry	Mature	Exotic	5m x 3m	26	Fair	Fair	10-20 years	Low	3.12	2.25
11	*Betula pendula*	Silver Birch	Mature	Exotic	13m x 12m	75	Good	Fair	10-20 years	Medium	9	3.06
12	*Pittosporum tenuifolium*	Kohuhu	Mature	Exotic	6m x 2m	22	Fair	Fair	10-20 years	Low	2.64	1.68
13	*Photinia glabra*	Japanese Photinia	Mature	Exotic	6m x 3m	26	Good	Fair	20+ years	Medium	3.12	2.05
14	*Malus domestica*	Apple	Mature	Exotic	6m x 3m	18	Good	Fair	20+ years	Low	2.16	1.61
15	*Nerium oleander*	Oleander	Mature	Exotic	3m x 4m	9	Good	Fair	10-20 years	Low	2	1.50
16	*Pittosporum eugenioides 'Variegatum'*	Variegated Pittosporum	Mature	Exotic	5m x 3m	19	Fair	Fair	5-10 years	Low	2.28	1.94
17	*Callistemon viminalis*	Weeping Bottle Brush	Mature	Native	6m x 3m	27	Fair	Fair	10-20 years	Medium	3.24	2.25
18	*Sambucus nigra*	Common Elderberry	Mature	Exotic	3m x 4m	10	Fair	Fair	5-10 years	Low	2	2.37
19	*Cotoneaster glaucophyllus*	Cotoneaster	Mature	Exotic	3m x 4m	18	Good	Fair	10-20 years	Low	2.16	1.68
20	*Pyracantha crenulata*	Firethorn	Mature	Exotic	3m x 2m	5	Fair	Fair	10-20 years	Low	2	1.50
21	*Callistemon viminalis*	Weeping Bottle Brush	Semi mature	Native	3m x 1m	5	Good	Fair	10-20 years	Low	2	1.50
22	*Prunus cerasifera*	Cherry Plum	Mature	Exotic	9m x 7m	80	Fair	Very poor	5-10 years	Medium	9.6	3.38
23	*Cotoneaster glaucophyllus*	Cotoneaster	Mature	Exotic	5m x 3m	14	Good	Fair	10-20 years	Medium	2	1.68
24	*Camellia japonica*	Camellia	Mature	Exotic	3m x 2m	6	Good	Fair	10-20 years	Low	2	1.50
25	*Ceanothus sp.*	Ceanothus	Mature	Exotic	3m x 2m	22	Fair	Fair	5-10 years	Low	2.64	2.20
26	*Photinia xfraseri 'Robusta'*	Photinia	Mature	Exotic	4m x 3m	19	Good	Fair	20+ years	Medium	2.28	1.53
27	*Pittosporum eugenioides 'Variegatum'*	Variegated Pittosporum	Mature	Exotic	5m x 2m	7	Fair	Fair	10-20 years	Low	2	1.50
28	*Cercis siliquastrum*	Judas Tree	Mature	Exotic	5m x 3m	23	Fair	Fair	10-20 years	Low	2.76	2.00
29	*Pistacia chinensis*	Chinese Pistachio	Semi mature	Exotic	7m x 3m	27	Good	Good	20+ years	Medium	3.24	2.05
30	*Garrya elliptica*	Tassel Bush	Semi mature	Exotic	3m x 2m	5	Good	Good	20+ years	Low	2	1.50
31	*Buddleja sp.*	Buddleja	Mature	Exotic	3m x 3m	9	Fair	Poor	5-10 years	Low	2	1.50
32	*Unknown sp.*	Unknown	Mature	Exotic	3m x 2m	5	Fair	Poor	5-10 years	Low	2	1.50
33	*Pyrus communis*	Common Pear	Mature	Exotic	5m x 3m	29	Fair	Fair	10-20 years	Low	3.48	2.05

ID	Botanical Name	Common Name	Age	Origin	H x W	DBH (cm)	Health	Structure	SULE	Retention Value	TPZ m radius	SRZ m radius
34	*Pyrus communis*	Common Pear	Mature	Exotic	4m x 3m	25	Fair	Poor	10-20 years	Medium	3	1.88
35	*Salix babylonica*	Weeping Willow	Mature	Exotic	14m x 12m	75	Fair	Fair	10-20 years	Medium	9	3.09
36	*Eucalyptus leucoxylon*	Yellow Gum	Mature	Indigenous	8m x 4m	33	Fair	Poor	5-10 years	Low	3.96	2.20
37	*Eucalyptus camaldulensis*	River Red Gum	Mature	Native	10m x 5m	55	Good	Fair	20+ years	High	6.6	2.93
38	*Pinus radiata*	Monterey Pine	Mature	Exotic	20m x 14m	104	Poor	Poor	5-10 years	Medium	12.48	3.51
39	*Fraxinus excelsior 'Aurea'*	Golden Ash	Young	Exotic	2m x 1m	4	Good	Fair	20+ years	Third party	2	1.50
40	*Eucalyptus viminalis*	Manna Gum	Semi mature	Indigenous	9m x 5m	58	Poor	Fair	10-20 years	Third party	6.96	2.76
41	*Fraxinus excelsior 'Aurea'*	Golden Ash	Semi mature	Exotic	2m x 3m	8	Good	Fair	20+ years	Third party	2	1.50
42	*Eucalyptus viminalis*	Manna Gum	Mature	Indigenous	20m x 14m	104	Good	Fair	20+ years	Third party	12.48	3.63
43	*Fraxinus oxycarpa*	Desert Ash	Semi mature	Exotic	6m x 3m	24	Fair	Fair	20+ years	Medium	2.88	1.91
44	*Eucalyptus viminalis*	Manna Gum	Young	Indigenous	4m x 1m	8	Good	Fair	20+ years	Third party	2	1.50
45	*Eucalyptus viminalis*	Manna Gum	Mature	Indigenous	20m x 12m	117	Fair	Fair	20+ years	Third party	14.04	3.69
46	*Eucalyptus microcarpa*	Grey Box	Semi mature	Indigenous	16m x 6m	62	Fair	Fair	20+ years	Medium	7.44	2.81
47	*Eucalyptus viminalis*	Manna Gum	Mature	Indigenous	18m x 10m	92	Fair	Very poor	5-10 years	Medium	11.04	3.38
48	*Eucalyptus polyanthemos*	Red Box	Mature	Indigenous	14m x 5m	75	Good	Fair	20+ years	High	9	3.09
49	*Melaleuca ericifolia*	Swamp Paperbark	Semi mature	Native	3m x 3m	13	Good	Fair	10-20 years	Low	2	1.68
50	*Callistemon linearis*	Narrow-leaved Bottlebrush	Semi mature	Native	2m x 2m	25	Good	Fair	10-20 years	Low	3	1.85
51	*Eucalyptus microcarpa*	Grey Box	Mature	Indigenous	17m x 7m	67	Good	Fair	20+ years	High	8.04	3.00
52	*Brachychiton populneus*	Kurrajong	Semi mature	Native	4m x 2m	25	Good	Good	20+ years	Medium	3	2.10
53	*Melaleuca linariifolia*	Snow in Summer	Semi mature	Native	2m x 2m	12	Good	Fair	5-10 years	Low	2	1.61
54	*Acer negundo*	Box Elder	Mature	Exotic	5m x 6m	45	Good	Poor	5-10 years	Low	5.4	2.61
55	*Liquidambar styraciflua*	Liquidamber	Young	Exotic	4m x 1m	10	Good	Good	20+ years	Low	2	1.50
56	*Hibiscus syriacus*	Hibiscus	Semi mature	Exotic	2m x 1m	3	Good	Fair	10-20 years	Low	2	1.50
57	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
58	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
59	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
60	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
61	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	1m x 1m	1	Good	Good	20+ years	Low	2	1.50
62	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
63	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
64	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	Young	Exotic	2m x 1m	1	Good	Good	20+ years	Low	2	1.50
65	*Fraxinus oxycarpa 'Raywood'*	Claret Ash	Young	Exotic	2m x 1m	5	Good	Good	20+ years	Low	2	1.50
66	*Betula pendula*	Silver Birch	Semi mature	Exotic	5m x 4m	22	Fair	Fair	10-20 years	Medium	2.64	1.94
67	*Hesperocyparis macrocarpa*	Monterey Cypress	Mature	Exotic	15m x 8m	70	Good	Fair	20+ years	Third party	8.4	3.01
68	*Quercus robur*	English Oak	Mature	Exotic	18m x 25m	90	Good	Fair	20+ years	Third party	10.8	3.57
69	*Hesperocyparis macrocarpa*	Monterey Cypress	Mature	Exotic	14m x 7m	60	Good	Fair	20+ years	Third party	7.2	2.85
70	*Crataegus monogyna*	Hawthorn	Mature	Exotic	5m x 5m	19	Fair	Fair	20+ years	Low	2.28	1.68

ID	Botanical Name	Common Name	Age	Origin	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ Radius	SRZ Radius
71	*Sequoia sempervirens*	Coast Redwood	Mature	Exotic	18m x 6m	110	Fair	Fair	10-20 years	Third party	13.2	3.69
72	*Alnus acuminata*	Evergreen Alder	Semi mature	Exotic	3m x 2m	5	Fair	Fair	5-10 years	Low	2	1.50
73	*Populus nigra 'Italica'*	Lombardy Poplar	Semi mature	Exotic	14m x 1m	26	Good	Fair	20+ years	Medium	3.12	2.00
74	*Quercus palustris*	Pin Oak	Semi mature	Exotic	13m x 4m	37	Good	Good	20+ years	Medium	4.44	2.30
75	*Populus nigra 'Italica'*	Lombardy Poplar	Mature	Exotic	17m x 2m	44	Good	Fair	20+ years	Medium	5.28	2.32
76	*Quercus canariensis*	Algerian Oak	Semi mature	Exotic	13m x 3m	32	Good	Fair	20+ years	Medium	3.84	2.20
77	*Quercus palustris*	Pin Oak	Semi mature	Exotic	14m x 6m	45	Good	Fair	20+ years	Medium	5.4	2.53
78	*Prunus cerasifera 'Nigra'*	Purple Cherry Plum	Mature	Exotic	7m x 5m	30	Good	Fair	10-20 years	Low	3.6	2.25
79	*Prunus cerasifera 'Nigra'*	Purple Cherry Plum	Mature	Exotic	6m x 3m	20	Good	Fair	10-20 years	Low	2.4	1.68
80	*Ulmus glabra 'Lutescens'*	Golden Elm	Mature	Exotic	15m x 6m	50	Good	Fair	20+ years	Medium	6	2.53
81	*Ulmus glabra 'Lutescens'*	Golden Elm	Young	Exotic	8m x 2m	19	Good	Poor	5-10 years	Low	2.28	1.68
82	*Populus nigra 'Italica'*	Lombardy Poplar	Semi mature	Exotic	15m x 2m	40	Good	Fair	20+ years	Medium	4.8	2.32
83	*Prunus cerasifera 'Nigra'*	Purple Cherry Plum	Semi mature	Exotic	4m x 3m	15	Good	Poor	5-10 years	Low	2	1.50
84	*Malus domestica*	Apple	Mature	Exotic	7m x 5m	18	Fair	Fair	10-20 years	Low	2.16	2.05
85	*Crataegus monogyna*	Hawthorn	Mature	Exotic	7m x 6m	24	Good	Fair	10-20 years	Low	2.88	2.25
86	*Eucalyptus camaldulensis*	River Red Gum	Mature	Native	5m x 3m	32	Good	Poor	5-10 years	Low	3.84	2.76
87	*Prunus cerasifera*	Cherry Plum	Mature	Exotic	5m x 6m	25	Good	Fair	10-20 years	Low	3	2.37
88	*Eucalyptus leucoxylon*	Yellow Gum	Semi mature	Indigenous	4m x 1m	6	Very Poor	Very poor	0 years	Low	2	1.50
89	*Eucalyptus platypus*	Moort	Semi mature	Native	12m x 2m	27	Fair	Fair	5-10 years	Low	3.24	1.94
90	*Eucalyptus pulchella*	White Peppermint	Mature	Native	14m x 9m	54	Fair	Poor	10-20 years	Low	6.48	2.74
91	*Eucalyptus kitsoniana*	Gippsland Mallee	Semi mature	Native	5m x 2m	13	Fair	Fair	5-10 years	Low	2	1.50
92	*Acacia baileyana*	Cootamundra Wattle	Mature	Native	4m x 5m	25	Fair	Poor	1-5 years	Low	3	2.37
93	*Betula pendula*	Silver Birch	Mature	Exotic	8m x 3m	29	Fair	Fair	10-20 years	Medium	3.48	2.10
94	*Betula pendula*	Silver Birch	Mature	Exotic	8m x 3m	25	Poor	Fair	5-10 years	Low	3	2.15
95	*Betula pendula*	Silver Birch	Mature	Exotic	8m x 4m	28	Good	Fair	10-20 years	Medium	3.36	2.30
96	*Prunus serrulata*	Japanese Flowering Cherry	Mature	Exotic	6m x 5m	24	Good	Fair	10-20 years	Medium	2.88	1.79
97	*Prunus cerasifera 'Nigra'*	Purple Cherry Plum	Mature	Exotic	3m x 3m	11	Good	Fair	10-20 years	Third party	2	1.82
98	*Prunus cerasifera*	Cherry Plum	Semi mature	Exotic	3m x 2m	9	Good	Fair	10-20 years	Third party	2	1.50
99	*Corymbia ficifolia*	Flowering Gum	Young	Native	2m x 1m	5	Poor	Poor	5-10 years	Third party	2	1.50
100	*Liquidambar styraciflua*	Liquidamber	Young	Exotic	3m x 1m	5	Good	Fair	20+ years	Low	2	1.50
101	*Prunus serrulata*	Japanese Flowering Cherry	Mature	Exotic	6m x 3m	22	Good	Fair	5-10 years	Low	2.64	1.91
102	*Cytisus sp.*	Broome	Mature	Exotic	5m x 9m	40	Good	Poor	5-10 years	Third party	4.8	2.25
103	*Platanus Xacerifolia*	London Plane	Semi mature	Exotic	7m x 2m	22	Poor	Fair	5-10 years	Low	2.64	1.82
104	*Liriodendron tulipifera*	Tulip Tree	Semi mature	Exotic	4m x 2m	10	Fair	Poor	5-10 years	Low	2	1.61
105	*Platanus Xacerifolia*	London Plane	Semi mature	Exotic	7m x 3m	22	Poor	Fair	5-10 years	Low	2.64	1.85
106	*Fraxinus oxycarpa 'Raywood'*	Claret Ash	Mature	Exotic	15m x 12m	56	Fair	Poor	10-20 years	Medium	6.72	2.69
107	*Crataegus monogyna*	Hawthorn	Semi mature	Exotic	5m x 3m	11	Good	Fair	20+ years	Low	2	1.61

ID	Botanical Name	Common Name	Age	Origin	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ m radius	SRZ m radius
108	*Cytisus sp.*	Broome	Semi mature	Exotic	4m x 3m	5	Good	Fair	20+ years	Low	2	1.50
109	*Malus domestica*	Apple	Young	Exotic	3m x 2m	9	Good	Fair	10-20 years	Third party	2	1.50
110	*Malus domestica*	Apple	Young	Exotic	2m x 3m	11	Good	Fair	10-20 years	Third party	2	1.50
111	*Malus domestica*	Apple	Mature	Exotic	4m x 5m	32	Fair	Fair	20+ years	Third party	3.84	2.25
112	*Crataegus monogyna*	Hawthorn	Semi mature	Exotic	3m x 2m	10	Good	Good	20+ years	Third party	2	1.50
113	*Cytisus sp.*	Broome	Mature	Exotic	3m x 7m	20	Good	Poor	5-10 years	Third party	2.4	1.79
114	*Crataegus monogyna*	Hawthorn	Mature	Exotic	6m x 4m	23	Good	Fair	20+ years	Third party	2.76	2.37
115	*Crataegus monogyna*	Hawthorn	Mature	Exotic	6m x 5m	26	Good	Fair	20+ years	Low	3.12	2.67
116	*Eucalyptus bicostata*	Eurabbie	Semi mature	Native	14m x 5m	58	Good	Fair	20+ years	Medium	6.96	2.53
117	*Pinus halepensis*	Aleppo Pine	Mature	Exotic	17m x 30m	153	Poor	Poor	1-5 years	Low	15	3.92
118	*Photinia xfraseri 'Robusta'*	Photinia	Mature	Exotic	5m x 5m	24	Good	Good	20+ years	Medium	2.88	1.94

6.1 Individual Tree Details

Tree Number: 1

Botanical Name:	*Fraxinus excelsior 'Aurea'*
Common Name:	Golden Ash
Origin:	Exotic
Tree Age:	Mature
H x W:	9m x 12m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 49
TPZ (m): 5.88
SRZ (m): 2.45

Tree Number: 2

Botanical Name:	*Prunus sp.*
Common Name:	Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	4m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 3

Botanical Name:	*Thuja plicata*
Common Name:	Western Red Cedar
Origin:	Exotic
Tree Age:	Semi mature
H x W:	6m x 4m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	Suppressed

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 2.05

Tree Number: 4

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Semi mature
H x W:	2m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	None
Comments:	Weeping

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.68

Tree Number: 5

Botanical Name:	*Fraxinus sp.*
Common Name:	Ash
Origin:	Exotic
Tree Age:	Mature
H x W:	8m x 5m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	Codominant stems with included union
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 2.32

Tree Number: 6

Botanical Name:	*Camellia japonica*
Common Name:	Camellia
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 2m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 6
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 7

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	7m x 3m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	None
Comments:	

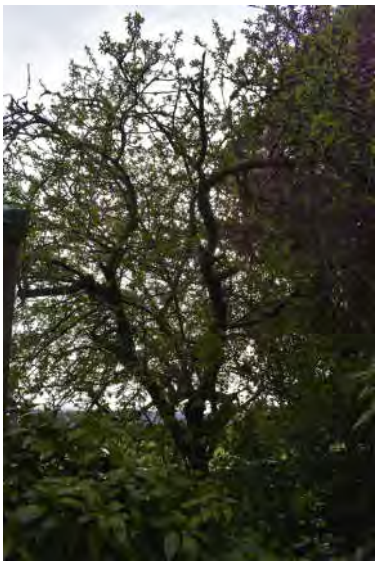
DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 2.00

Tree Number: 8

Botanical Name:	*Rhododendron arboreum*
Common Name:	Tree Rhododendron
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 2m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 6
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 9



Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 4m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 2.20

Tree Number: 10

Botanical Name:	*Sambucus nigra*
Common Name:	Common Elderberry
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant main stems and deadwood throughout the canopy
Comments:	

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.25

Tree Number: 11

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Mature
H x W:	13m x 12m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	Extended branches and deadwood throughout the canopy
Comments:	

DBH (cm): 75
TPZ (m): 9
SRZ (m): 3.06

Tree Number: 12

Botanical Name:	*Pittosporum tenuifolium*
Common Name:	Kohuhu
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 2m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

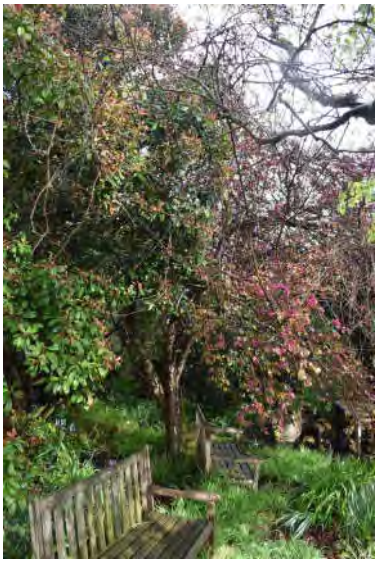
DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.68

Tree Number: 13

Botanical Name:	*Photinia glabra*
Common Name:	Japanese Photinia
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.05

Tree Number: 14



Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	Codominant stems with extended branches throughout canopy
Comments:	

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.61

Tree Number: 15

Botanical Name:	*Nerium oleander*
Common Name:	Oleander
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 4m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 9
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 16

Botanical Name:	*Pittosporum eugenioides 'Variegatum'*
Common Name:	Variegated Pittosporum
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 3m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant main stems and deadwood throughout the canopy
Comments:	

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.94

Tree Number: 17

Botanical Name:	*Callistemon viminalis*
Common Name:	Weeping Bottle Brush
Origin:	Native
Tree Age:	Mature
H x W:	6m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	Codominant stems
Comments:	

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 2.25

Tree Number: 18

Botanical Name:	*Sambucus nigra*
Common Name:	Common Elderberry
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 4m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 10
TPZ (m): 2
SRZ (m): 2.37

Tree Number: 19

Botanical Name: *Cotoneaster glaucophyllus*
Common Name: Cotoneaster
Origin: Exotic
Tree Age: Mature
H x W: 3m x 4m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: Codominant stems
Comments:

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.68

Tree Number: 20

Botanical Name: *Pyracantha crenulata*
Common Name: Firethorn
Origin: Exotic
Tree Age: Mature
H x W: 3m x 2m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None
Comments:

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 21

Botanical Name: *Callistemon viminalis*
Common Name: Weeping Bottle Brush
Origin: Native
Tree Age: Semi mature
H x W: 3m x 1m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None
Comments:

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 22

Botanical Name:	*Prunus cerasifera*
Common Name:	Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	9m x 7m
Health:	Fair
Structure:	Very poor
ULE:	5-10 years
Retention Value:	Medium
Defects:	None
Comments:	Significant age

DBH (cm): 80
TPZ (m): 9.6
SRZ (m): 3.38

Tree Number: 23

Botanical Name:	*Cotoneaster glaucophyllus*
Common Name:	Cotoneaster
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	Codominant stems
Comments:	

DBH (cm): 14
TPZ (m): 2
SRZ (m): 1.68

Tree Number: 24

Botanical Name:	*Camellia japonica*
Common Name:	Camellia
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 2m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 6
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 25

Botanical Name:	*Ceanothus sp.*
Common Name:	Ceanothus
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 2m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Decayed, codominant stems
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 2.20

Tree Number: 26

Botanical Name:	*Photinia xfraseri 'Robusta'*
Common Name:	Photinia
Origin:	Exotic
Tree Age:	Mature
H x W:	4m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Leaning main stem
Comments:	

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.53

Tree Number: 27

Botanical Name:	*Pittosporum eugenioides 'Variegatum'*
Common Name:	Variegated Pittosporum
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 2m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Leaning main stem
Comments:	

DBH (cm): 7
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 28

Botanical Name:	*Cercis siliquastrum*
Common Name:	Judas Tree
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 23
TPZ (m): 2.76
SRZ (m): 2.00

Tree Number: 29

Botanical Name:	*Pistacia chinensis*
Common Name:	Chinese Pistachio
Origin:	Exotic
Tree Age:	Semi mature
H x W:	7m x 3m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 2.05

Tree Number: 30

Botanical Name:	*Garrya elliptica*
Common Name:	Tassel Bush
Origin:	Exotic
Tree Age:	Semi mature
H x W:	3m x 2m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 31

Botanical Name:	*Buddleja sp.*
Common Name:	Buddleja
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 3m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant main stems and deadwood throughout the canopy
Comments:	

DBH (cm): 9
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 32

Botanical Name:	*Unknown sp.*
Common Name:	Unknown
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 2m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 33

Botanical Name:	*Pyrus communis*
Common Name:	Common Pear
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 2.05

Tree Number: 34

Botanical Name:	*Pyrus communis*
Common Name:	Common Pear
Origin:	Exotic
Tree Age:	Mature
H x W:	4m x 3m
Health:	Fair
Structure:	Poor
ULE:	10-20 years
Retention Value:	Medium

DBH (cm): 25
TPZ (m): 3
SRZ (m): 1.88

Defects: Decay in main stem and deadwood in canopy

Comments:

Tree Number: 35

Botanical Name:	*Salix babylonica*
Common Name:	Weeping Willow
Origin:	Exotic
Tree Age:	Mature
H x W:	14m x 12m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium

DBH (cm): 75
TPZ (m): 9
SRZ (m): 3.09

Defects: Deadwood throughout the canopy

Comments:

Tree Number: 36

Botanical Name:	*Eucalyptus leucoxylon*
Common Name:	Yellow Gum
Origin:	Native
Tree Age:	Mature
H x W:	8m x 4m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low

DBH (cm): 33
TPZ (m): 3.96
SRZ (m): 2.20

Defects: Deadwood throughout the canopy

Comments:

Tree Number: 37

Botanical Name:	*Eucalyptus camaldulensis*
Common Name:	River Red Gum
Origin:	Indigenous
Tree Age:	Mature
H x W:	10m x 5m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	High
Defects:	None
Comments:	

DBH (cm): 55
TPZ (m): 6.6
SRZ (m): 2.93

Tree Number: 38

Botanical Name:	*Pinus radiata*
Common Name:	Monterey Pine
Origin:	Exotic
Tree Age:	Mature
H x W:	20m x 14m
Health:	Poor
Structure:	Poor
ULE:	5-10 years
Retention Value:	Medium
Defects:	Exposed roots, decayed main stem and deadwood throughout the canopy
Comments:	

DBH (cm): 104
TPZ (m): 12.48
SRZ (m): 3.51

Tree Number: 39

Botanical Name:	*Fraxinus excelsior 'Aurea'*
Common Name:	Golden Ash
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 4
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 40

Botanical Name:	*Eucalyptus viminalis*
Common Name:	Manna Gum
Origin:	Indigenous
Tree Age:	Semi mature
H x W:	9m x 5m
Health:	Poor
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	Damaged, exposed roots and deadwood throughout canopy
Comments:	

DBH (cm): 58
TPZ (m): 6.96
SRZ (m): 2.76

Tree Number: 41

Botanical Name:	*Fraxinus excelsior 'Aurea'*
Common Name:	Golden Ash
Origin:	Exotic
Tree Age:	Semi mature
H x W:	2m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 8
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 42

Botanical Name:	*Eucalyptus viminalis*
Common Name:	Manna Gum
Origin:	Indigenous
Tree Age:	Mature
H x W:	20m x 14m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant main stems and deadwood throughout the canopy
Comments:	Planted

DBH (cm): 104
TPZ (m): 12.48
SRZ (m): 3.63

Tree Number: 43

Botanical Name:	*Fraxinus oxycarpa*
Common Name:	Desert Ash
Origin:	Exotic
Tree Age:	Semi mature
H x W:	6m x 3m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	None
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.91

Tree Number: 44

Botanical Name:	*Eucalyptus viminalis*
Common Name:	Manna Gum
Origin:	Indigenous
Tree Age:	Young
H x W:	4m x 1m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	None
Comments:	

DBH (cm): 8
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 45

Botanical Name:	*Eucalyptus viminalis*
Common Name:	Manna Gum
Origin:	Indigenous
Tree Age:	Mature
H x W:	20m x 12m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Deadwood throughout the canopy
Comments:	Planted

DBH (cm): 117
TPZ (m): 14.04
SRZ (m): 3.69

Tree Number: 46

Botanical Name:	*Eucalyptus microcarpa*
Common Name:	Grey Box
Origin:	Indigenous
Tree Age:	Semi mature
H x W:	16m x 6m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Leaning main stem
Comments:	

DBH (cm): 62
TPZ (m): 7.44
SRZ (m): 2.81

Tree Number: 47

Botanical Name:	*Eucalyptus viminalis*
Common Name:	Manna Gum
Origin:	Indigenous
Tree Age:	Mature
H x W:	18m x 10m
Health:	Fair
Structure:	Very poor
ULE:	5-10 years
Retention Value:	Medium
Defects:	Decay in main stem and deadwood in canopy
Comments:	Planted

DBH (cm): 92
TPZ (m): 11.04
SRZ (m): 3.38

Tree Number: 48

Botanical Name:	*Eucalyptus polyanthemos*
Common Name:	Red Box
Origin:	Native
Tree Age:	Mature
H x W:	14m x 5m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	High
Defects:	None
Comments:	Planted

DBH (cm): 75
TPZ (m): 9
SRZ (m): 3.09

Tree Number: 49

Botanical Name:	*Melaleuca ericifolia*
Common Name:	Swamp Paperbark
Origin:	Native
Tree Age:	Semi mature
H x W:	3m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.68

Tree Number: 50

Botanical Name:	*Callistemon linearis*
Common Name:	Narrow-leaved Bottlebrush
Origin:	Native
Tree Age:	Semi mature
H x W:	2m x 2m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 1.85

Tree Number: 51

Botanical Name:	*Eucalyptus microcarpa*
Common Name:	Grey Box
Origin:	Indigenous
Tree Age:	Mature
H x W:	17m x 7m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	High
Defects:	None
Comments:	

DBH (cm): 67
TPZ (m): 8.04
SRZ (m): 3.00

Tree Number: 52

Botanical Name:	*Brachychiton populneus*
Common Name:	Kurrajong
Origin:	Native
Tree Age:	Semi mature
H x W:	4m x 2m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 2.10

Tree Number: 53

Botanical Name:	*Melaleuca linariifolia*
Common Name:	Snow in Summer
Origin:	Native
Tree Age:	Semi mature
H x W:	2m x 2m
Health:	Good
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.61

Tree Number: 54

Botanical Name:	*Acer negundo*
Common Name:	Box Elder
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 6m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	Lopped, decayed main stem
Comments:	

DBH (cm): 45
TPZ (m): 5.4
SRZ (m): 2.61

Tree Number: 55

Botanical Name:	*Liquidambar styraciflua*
Common Name:	Liquidamber
Origin:	Exotic
Tree Age:	Young
H x W:	4m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 10
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 56

Botanical Name:	*Hibiscus syriacus*
Common Name:	Hibiscus
Origin:	Exotic
Tree Age:	Semi mature
H x W:	2m x 1m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 3
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 57

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 58

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 59

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 60

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 61

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	1m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 62

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 63

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 64

Botanical Name:	*Pyrus calleryana 'Chanticleer'*
Common Name:	Chanticleer Pear
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 1
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 65

Botanical Name:	*Fraxinus oxycarpa 'Raywood'*
Common Name:	Claret Ash
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 1m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 66

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Semi mature
H x W:	5m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.94

Tree Number: 67

Botanical Name:	*Hesperocyparis macrocarpa*
Common Name:	Monterey Cypress
Origin:	Exotic
Tree Age:	Mature
H x W:	15m x 8m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	None
Comments:	x3 1m from fence

DBH (cm): 70
TPZ (m): 8.4
SRZ (m): 3.01

Tree Number: 68

Botanical Name:	*Quercus robur*
Common Name:	English Oak
Origin:	Exotic
Tree Age:	Mature
H x W:	18m x 25m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Decay in the main stem and deadwood and broken branches throughout the canopy
Comments:	

DBH (cm): 90
TPZ (m): 10.8
SRZ (m): 3.57

Tree Number: 69

Botanical Name:	*Hesperocyparis macrocarpa*
Common Name:	Monterey Cypress
Origin:	Exotic
Tree Age:	Mature
H x W:	14m x 7m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Deadwood throughout the canopy
Comments:	x5

DBH (cm): 60
TPZ (m): 7.2
SRZ (m): 2.85

Tree Number: 70

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 5m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.68

Tree Number: 71

Botanical Name:	*Sequoia sempervirens*
Common Name:	Coast Redwood
Origin:	Exotic
Tree Age:	Mature
H x W:	18m x 6m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	Leaning main stem and deadwood throughout canopy
Comments:	2m from fence

DBH (cm): 110
TPZ (m): 13.2
SRZ (m): 3.69

Tree Number: 72

Botanical Name:	*Alnus acuminata*
Common Name:	Evergreen Alder
Origin:	Exotic
Tree Age:	Semi mature
H x W:	3m x 2m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 73

Botanical Name:	*Populus nigra 'Italica'*
Common Name:	Lombardy Poplar
Origin:	Exotic
Tree Age:	Semi mature
H x W:	14m x 1m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.00

Tree Number: 74

Botanical Name:	*Quercus palustris*
Common Name:	Pin Oak
Origin:	Exotic
Tree Age:	Semi mature
H x W:	13m x 4m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 37
TPZ (m): 4.44
SRZ (m): 2.30

Tree Number: 75

Botanical Name:	*Populus nigra 'Italica'*
Common Name:	Lombardy Poplar
Origin:	Exotic
Tree Age:	Mature
H x W:	17m x 2m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 44
TPZ (m): 5.28
SRZ (m): 2.32

Tree Number: 76

Botanical Name:	*Quercus canariensis*
Common Name:	Algerian Oak
Origin:	Exotic
Tree Age:	Semi mature
H x W:	13m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Codominant stems
Comments:	

DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.20

Tree Number: 77

Botanical Name:	*Quercus palustris*
Common Name:	Pin Oak
Origin:	Exotic
Tree Age:	Semi mature
H x W:	14m x 6m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Codominant stems
Comments:	

DBH (cm): 45
TPZ (m): 5.4
SRZ (m): 2.53

Tree Number: 78

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	7m x 5m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Leaning main stem with decay and dead branches throughout the canopy
Comments:	

DBH (cm): 30
TPZ (m): 3.6
SRZ (m): 2.25

Tree Number: 79

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 20
TPZ (m): 2.4
SRZ (m): 1.68

Tree Number: 80

Botanical Name:	*Ulmus glabra 'Lutescens'*
Common Name:	Golden Elm
Origin:	Exotic
Tree Age:	Mature
H x W:	15m x 6m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Mechanical damage to roots, codominant stem and extended branches in the canopy
Comments:	

DBH (cm): 50
TPZ (m): 6
SRZ (m): 2.53

Tree Number: 81

Botanical Name:	*Ulmus glabra 'Lutescens'*
Common Name:	Golden Elm
Origin:	Exotic
Tree Age:	Young
H x W:	8m x 2m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	None
Comments:	Suckers

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.68

Tree Number: 82

Botanical Name:	*Populus nigra 'Italica'*
Common Name:	Lombardy Poplar
Origin:	Exotic
Tree Age:	Semi mature
H x W:	15m x 2m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 40
TPZ (m): 4.8
SRZ (m): 2.32

Tree Number: 83

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Tree Age:	Semi mature
H x W:	4m x 3m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 15
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 84

Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Mature
H x W:	7m x 5m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Lopped main stem
Comments:	

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 2.05

Tree Number: 85

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Mature
H x W:	7m x 6m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 2.25

Tree Number: 86

Botanical Name:	*Eucalyptus camaldulensis*
Common Name:	River Red Gum
Origin:	Indigenous
Tree Age:	Mature
H x W:	5m x 3m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	Lopped decayed main stem and deadwood throughout the canopy
Comments:	

DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.76

Tree Number: 87

Botanical Name:	*Prunus cerasifera*
Common Name:	Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 6m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 2.37

Tree Number: 88

Botanical Name:	*Eucalyptus leucoxylon*
Common Name:	Yellow Gum
Origin:	Native
Tree Age:	Semi mature
H x W:	4m x 1m
Health:	Very Poor
Structure:	Very poor
ULE:	0 years
Retention Value:	Low
Defects:	Leaning main stem and deadwood in canopy
Comments:	

DBH (cm): 6
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 89

Botanical Name:	*Eucalyptus platypus*
Common Name:	Moort
Origin:	Native
Tree Age:	Semi mature
H x W:	12m x 2m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Codominant, leaning stems with deadwood throughout the canopy
Comments:	

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 1.94

Tree Number: 90

Botanical Name:	*Eucalyptus pulchella*
Common Name:	White Peppermint
Origin:	Native
Tree Age:	Mature
H x W:	14m x 9m
Health:	Fair
Structure:	Poor
ULE:	10-20 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 54
TPZ (m): 6.48
SRZ (m): 2.74

Tree Number: 91

Botanical Name:	*Eucalyptus kitsoniana*
Common Name:	Gippsland Mallee
Origin:	Native
Tree Age:	Semi mature
H x W:	5m x 2m
Health:	Fair
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 92

Botanical Name:	*Acacia baileyana*
Common Name:	Cootamundra Wattle
Origin:	Native
Tree Age:	Mature
H x W:	4m x 5m
Health:	Fair
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Defects:	Decayed stem with deadwood throughout canopy
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 2.37

Tree Number: 93

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Mature
H x W:	8m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 2.10

Tree Number: 94

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Mature
H x W:	8m x 3m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 25
TPZ (m): 3
SRZ (m): 2.15

Tree Number: 95

Botanical Name:	*Betula pendula*
Common Name:	Silver Birch
Origin:	Exotic
Tree Age:	Mature
H x W:	8m x 4m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 28
TPZ (m): 3.36
SRZ (m): 2.30

Tree Number: 96

Botanical Name:	*Prunus serrulata*
Common Name:	Japanese Flowering Cherry
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 5m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.79

Tree Number: 97

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	None
Comments:	

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.82

Tree Number: 98

Botanical Name:	*Prunus cerasifera*
Common Name:	Cherry Plum
Origin:	Exotic
Tree Age:	Semi mature
H x W:	3m x 2m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 9
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 99

Botanical Name:	*Corymbia ficifolia*
Common Name:	Flowering Gum
Origin:	Native
Tree Age:	Young
H x W:	2m x 1m
Health:	Poor
Structure:	Poor
ULE:	5-10 years
Retention Value:	Third party
Defects:	Lopped main stem
Comments:	Regrowth from stump

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 100

Botanical Name:	*Liquidambar styraciflua*
Common Name:	Liquidamber
Origin:	Exotic
Tree Age:	Young
H x W:	3m x 1m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 101

Botanical Name:	*Prunus serrulata*
Common Name:	Japanese Flowering Cherry
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 3m
Health:	Good
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Lopped main stem
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.91

Tree Number: 102

Botanical Name:	*Cytisus sp.*
Common Name:	Broome
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 9m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Third party
Defects:	Leaning main stem with unstable roots
Comments:	Bees

DBH (cm): 40
TPZ (m): 4.8
SRZ (m): 2.25

Tree Number: 103

Botanical Name:	*Platanus Xacerifolia*
Common Name:	London Plane
Origin:	Exotic
Tree Age:	Semi mature
H x W:	7m x 2m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.82

Tree Number: 104

Botanical Name:	*Liriodendron tulipifera*
Common Name:	Tulip Tree
Origin:	Exotic
Tree Age:	Semi mature
H x W:	4m x 2m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Defects:	Decay in main stem and deadwood in canopy
Comments:	

DBH (cm): 10
TPZ (m): 2
SRZ (m): 1.61

Tree Number: 105

Botanical Name:	*Platanus Xacerifolia*
Common Name:	London Plane
Origin:	Exotic
Tree Age:	Semi mature
H x W:	7m x 3m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Defects:	Deadwood throughout the canopy
Comments:	

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.85

Tree Number: 106

Botanical Name:	*Fraxinus oxycarpa 'Raywood'*
Common Name:	Claret Ash
Origin:	Exotic
Tree Age:	Mature
H x W:	15m x 12m
Health:	Fair
Structure:	Poor
ULE:	10-20 years
Retention Value:	Medium
Defects:	Codominant main stems and deadwood throughout the canopy
Comments:	Major storm damage

DBH (cm): 56
TPZ (m): 6.72
SRZ (m): 2.69

Tree Number: 107

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Semi mature
H x W:	5m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.61

Tree Number: 108

Botanical Name:	*Cytisus sp.*
Common Name:	Broome
Origin:	Exotic
Tree Age:	Semi mature
H x W:	4m x 3m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	None
Comments:	

DBH (cm): 5
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 109

Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Young
H x W:	3m x 2m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	None
Comments:	Blackberry covered

DBH (cm): 9
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 110

Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Young
H x W:	2m x 3m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Third party
Defects:	None
Comments:	

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 111

Botanical Name:	*Malus domestica*
Common Name:	Apple
Origin:	Exotic
Tree Age:	Mature
H x W:	4m x 5m
Health:	Fair
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.25

Tree Number: 112

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Semi mature
H x W:	3m x 2m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Third party
Defects:	None
Comments:	

DBH (cm): 10
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 113

Botanical Name:	*Cytisus sp.*
Common Name:	Broome
Origin:	Exotic
Tree Age:	Mature
H x W:	3m x 7m
Health:	Good
Structure:	Poor
ULE:	5-10 years
Retention Value:	Third party
Defects:	Leaning main stem with unstable root plate
Comments:	

DBH (cm): 20
TPZ (m): 2.4
SRZ (m): 1.79

Tree Number: 114

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 4m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Third party
Defects:	Codominant stems
Comments:	

DBH (cm): 23
TPZ (m): 2.76
SRZ (m): 2.37

Tree Number: 115

Botanical Name:	*Crataegus monogyna*
Common Name:	Hawthorn
Origin:	Exotic
Tree Age:	Mature
H x W:	6m x 5m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Low
Defects:	Codominant stems
Comments:	

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.67

Tree Number: 116

Botanical Name:	*Eucalyptus bicostata*
Common Name:	Eurabbie
Origin:	Native
Tree Age:	Semi mature
H x W:	14m x 5m
Health:	Good
Structure:	Fair
ULE:	20+ years
Retention Value:	Medium
Defects:	Codominant stems
Comments:	

DBH (cm): 58
TPZ (m): 6.96
SRZ (m): 2.53

Tree Number: 117

Botanical Name:	*Pinus halepensis*
Common Name:	Aleppo Pine
Origin:	Exotic
Tree Age:	Mature
H x W:	17m x 30m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Defects:	Codominant stem with brackect fungi, decay, included bark and deadwood in the canopy
Comments:	

DBH (cm): 153
TPZ (m): 15
SRZ (m): 3.92

Tree Number: 118

Botanical Name:	*Photinia xfraseri 'Robusta'*
Common Name:	Photinia
Origin:	Exotic
Tree Age:	Mature
H x W:	5m x 5m
Health:	Good
Structure:	Good
ULE:	20+ years
Retention Value:	Medium
Defects:	None
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.94