



**Macedon
Ranges**
Shire Council

ATTACHMENTS

**Planning Delegated Committee
Meeting
Under Separate Cover**

Wednesday 6 December 2023

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SUBMISSION TO
MACEDON RANGES SHIRE COUNCIL



DEVELOPMENT PLAN

88A-90 Wedge Street, Kyneton

Crown Allotment 25, 26 & 27, Section 50, Township of Kyneton

Lot 1 and Lot 2 - PS 524086Q

Prepared for ADTS P/L for Jasper Family Trust | July 2022 | Ref: 13263

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DESCRIPTION

Address	88a – 90 Wedge Street, Kyneton
Lot Description:	Crown Allotment 25,26 & 27 Wedge Street, Kyneton and Lot 1 and 2, on Plan of Subdivision 635086Q
Project Number	13263
Project Manager	Ben Yates
Reviewed by	Sam Hockly
Revision	B
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1. INTRODUCTION

Tomkinson has been engaged by ADTS PL as Trustee for Jasper Family Trust who are seeking approval of a Development Plan at 88a - 90 Wedge Street, Kyneton. The site contains five (5) parcels totalling approximately 1.97ha. The approval of a Development Plan (DP) will enable the subsequent application for a Planning Permit to be submitted to Council for an Eighteen (18) lot subdivision.

The subject site is located within the Macedon Ranges Shire Council and is contained wholly within the Neighbourhood Residential Zone (NRZ) of the Macedon Ranges Planning Scheme with associated schedule 10.

The site is subject to the following controls:

- Development Plan Overlay (DPO) and associated schedule 17
 - The site is located within Area A of Map 1
- Environmental Audit Overlay (EAO)
- Environmental Significant Overlay (ESO) and associated Schedule 4
- Land Subject to Inundation Overlay (LSIO) and associated schedule
- Protected Settlement Boundary (PSB)
- Cultural Heritage Sensitivity

The proposed Development Plan has been informed by the relevant provisions of the Macedon Ranges Planning Scheme and satisfies all associated application requirements.

Details of the site and its surrounds are provided in Section 3 of this document, details of the proposal are provided in Section 4, and an assessment in relation to the provisions of the Macedon Shire Planning Scheme is identified in Section 5.

The following documents are incorporated within the Development Plan and must be read in conjunction with this report.

- Copy of Title/s
- Environmental Audit – Letter of Progress
- CHMP – Letter of Progress
- Site Context Plan
- Feature Level Survey
- Proposed Subdivision Layout
- Building Envelope Plan
- Landscape Plan
- Functional Layout Plan
- Stormwater Management Strategy
- Traffic Report
- Acoustic Report
- Arboricultural Assessment
- Ecology Assessment incorporating Weed Management Plan
- Preliminary Servicing Report



2. SUMMARY

The subdivision of the subject site requires that the responsible authority must first consider and approve a Development Plan application. The table below details the provision within the Macedon Ranges Planning Scheme that has triggered the need for this application.

Provision	Clause	Trigger
Development Plan Overlay – Schedule 17	43.04-2	Requirement before a permit is granted: <i>A permit must not be granted to use or subdivide land, construct a building or carry out works until a Development Plan has been prepared to the satisfaction of the Responsible Authority.</i> (Subdivision)

2.1 POTENTIALLY CONTAMINATED LAND

Noting the presence of the Environmental Audit Overlay across the whole site, An Environmental Audit Statement (EAS) under Part 8.3 of the Environment Protection Act 2017 must be issued stating that the land is suitable for the use or proposed use prior to the commencement of works associated with a sensitive use (residential use, child care centre, kindergarten, pre-school centre, primary school). Thus an EAS will be required prior to the future subdivision and development of the site and to satisfy the requirements of DPO17 for land located in 'Area A'.

The site is currently subject to an environmental audit with the view to issuing a Statement of Environmental Audit demonstrating the suitability of the site to support the proposed use, the preparation of which is ongoing. The Development Plan has been submitted in the absence of the final Environmental Audit report and EAS. A letter of progress has been provided by the auditor engaged to complete the audit and EAS demonstrating the progress of the audit to date. Based on the information currently available and subject to review of the assessment consultant's final investigation report, significant issues which would prevent the site from being made suitable for the proposed use have not been identified. Refer to Appendix 2.

2.2 ABORIGINAL HERITAGE ACT

The subject site is affected by an area of Cultural Heritage Sensitivity. The Aboriginal Heritage Regulations 2018 defines an 18-lot subdivision as a High Impact Activity. Therefore In accordance with Section 7 of the Aboriginal Heritage Regulations 2018, a Cultural Heritage Management Plan (CHMP) is required to support any Planning Permit application submitted for the subject site. Whilst not a requirement for a DP application, the preparation of a CHMP has commenced to inform the subdivision and will be submitted with a future Planning Permit application.

The Cultural Heritage Management Plan is being undertaken in consultation with Taungurung Land and Waters Council (TLaWC) and Dja Dja Wurrung Aboriginal Corporation (DDWAC), the registered Aboriginal Parties for the CHMP Activity area. This Development Plan is submitted pending the final approval of the CHMP due to delays experienced with completing the required assessments. A field assessment is currently being completed and preparation of the final documentation is ongoing.

Australian Cultural Heritage Management (ACHM) have undertaken a standard assessment and completed a partial complex assessment in consultation with TLaWC and DDWAC. Initial Excavations have revealed some flaked stone artefacts and further archaeological excavations will continue but are expected to be delayed. A letter of progress has been provided by ACHM confirming their progress on the CHMP - See Appendix 3.



3. SITE AND SURROUNDS

Collectively identified as Crown Allotments 25, 26 & 27, and Lots 1 and 2 on Plan of Subdivision 635086Q, the subject site is formally addressed as 88a – 90 Wedge Street, Kyneton.

The site comprises of five (5) parcels measuring a total of approximately 1.97ha – See Figure 1.



Figure 1 – Subject site and title parcels.

The subject land is bounded by Wedge Street to the West, an unnamed road reserve to the North, an undeveloped portion of the Powlett Street road reserve adjoins the site's Eastern frontage, Post Office Creek bounds the southernmost portion of the site.

A majority of the site is undeveloped and forms the former garden setting of an adjoining dwelling, having been previously subdivided from the balance of land to form 88 Wedge street, Kyneton. A single dwelling is located within the parcel identified as Lot 2 - 635086Q which will be subsequently removed as part of future development of the site, should a permit be approved for subdivision. Scattered vegetation, comprising of mostly planted exotic vegetation is located throughout the site. Land falls generally south across the site towards Post-Office Creek, following the general topography of the area. A disused dam is located within the southernmost portion of the site. A feature and level survey has been prepared to accompany this submission – Refer to Appendix 5 for details.

The land is situated within the northeast peripheral of Kyneton and identified as an infill residential site which has been zoned Neighbourhood Residential Zone (Schedule 10) accordingly. The site is affected in its entirety by the Development Plan Overlay – Schedule 17 and forms part of the broader former industrial zone area to which the schedule pertains. The site is partially affected by the Land Subject to Inundation Overlay (LSIO) along the southern boundary.

The site is located within proximity to all services of the Kyneton township with all utility connections available.



Figure 2 – Subject site and context – NearMap December 2021

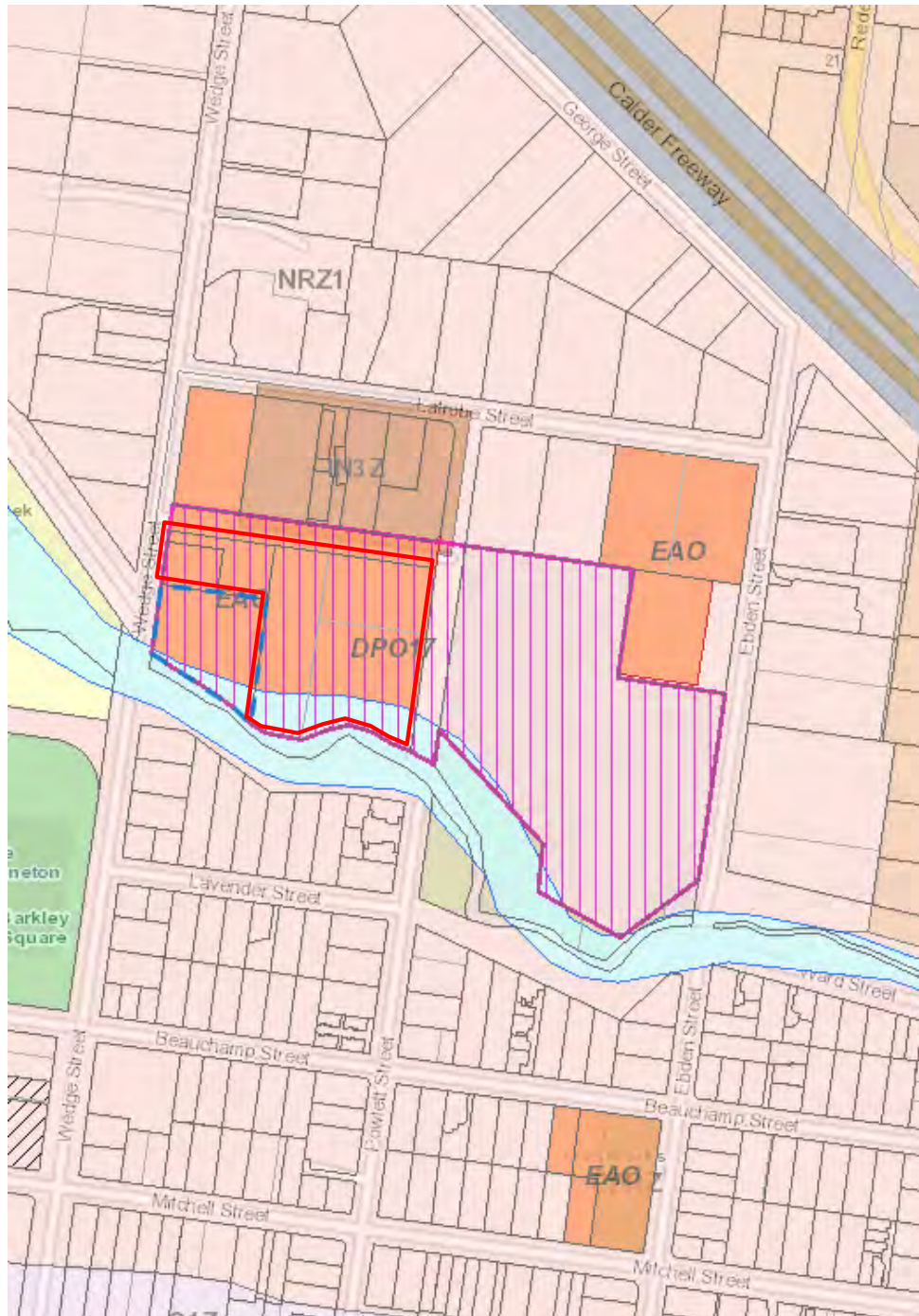


Figure 3: Zoning and Overlays



4. THE DEVELOPMENT PLAN



Figure 4: Proposed Layout and access design.

This Development Plan has been prepared to enable an application for the future subdivision of the subject land into Eighteen (18) lots and includes all of the associated requirements of DP017 for approval of a Development Plan. The Development Plan depicts and informs the future lot layout for a future planning application. See Appendix 6 for proposed layout.

Proposed lot sizes range from 605m² to 1021m² each of which have been assigned a building envelope as per the requirements of DP017 – Refer to Appendix 7 for Building Envelope Plan.

The future subdivision will be completed in one stage and comprise a total of 18 lots and a 5021m² landscaped reserve in the southern portion of the site. The reserve will incorporate existing vegetation and landscape features formerly associated with the existing garden setting of the site which have been considered in an arboricultural assessment to determine their long-term useability and contribution to biodiversity in the reserve area - Appendix 14. A Landscape Plan has been prepared to accompany the Development Plan illustrating proposed landscaping within the reserve and on roadside verges – See Appendix 8. A functional layout plan has been developed to illustrate proposed road upgrades and access required to facilitate development of proposed lots. Refer to Appendix 9 for details.

Future development of the reserve includes the partial backfilling of a dam onsite from stockpiled materials located in CA25 of the subject site which has already occurred. An Environmental Management Plan was developed to facilitate the safe movement of the stockpiled soils in Lot 25 to the former dam in the southern portion of CA 27 in accordance with EPA requirements – See Appendix 10.

The following supporting studies and plans have been undertaken in accordance with the requirements of DP017 and inform the layout of the future subdivision and management of the reserve.

- Stormwater Management Strategy – Appendix 11
- Traffic Report – Appendix 12
- Acoustic Report – Appendix 13
- Ecology Assessment – Appendix 15
- Preliminary Servicing Report – Appendix 16



5. PLANNING CONTROLS

5.1 Planning Policy Framework

The following Planning Policy Framework (PPF) clauses are considered relevant to this proposal:

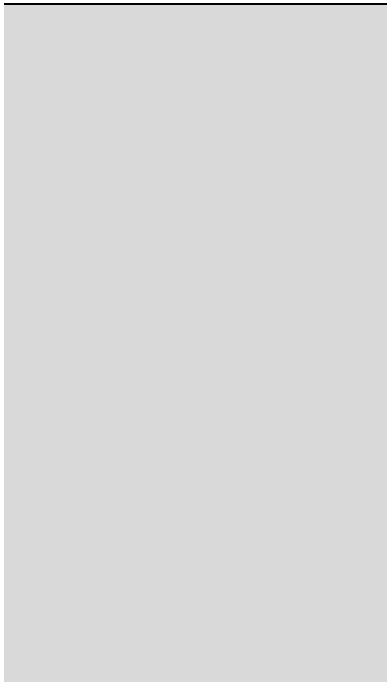
CLAUSE	RESPONSE
<p>Clause 11 – Settlement, including</p> <ul style="list-style-type: none"> - Clause 11.01-1S, Settlement - Clause 11.02-1S, Supply of urban land 	<p>The proposed Development Plan accords with the objectives of the Planning Policy Framework.</p> <p>The Development Plan Overlay requirements as contained within Schedule 17 have been satisfied to ensure that future development provides for the planned continued growth of Kyneton in a sustainable manner.</p> <p>The land once developed will provide linkages between settlements, provide for infill development and limit urban sprawl.</p> <p>The proposed Development Plan has taken into consideration the neighbourhood character requirements, in particular in terms of site layout.</p> <p>The proposed Development Plan is compatible with existing land uses in the area. An Acoustic assessment has been undertaken to determine existing noise levels from nearby industry and determine any design requirements for future dwellings to attenuate noise levels to an acceptable level, if required. See Appendix 13.</p>
<p>Clause 12: Environmental and Landscape Values, including</p> <ul style="list-style-type: none"> - Clause 12.01-1S: Protection of biodiversity - Clause 12.01-2S: Native vegetation management - Clause 12.03-1S: River corridor, waterways, lakes and wetlands 	<p>The proposed Development Plan has been informed by the provisions of the Macedon Ranges Planning Scheme and expert sub consultant reports as provided with this application in accordance with DPO17.</p> <p>The layout has been designed having regard to the existing site values. As identified within the Ecology Assessment provided with the Development Plan (Appendix 15), all vegetation on site has been planted and mostly exotic. An assessment of any threatened communities has also been completed and found that the site was absent of such communities. Of particular interest within the assessment were the high threat weeds recorded on site which are listed under the <i>Catchment and Land Protection Act 1994</i>. As a result, a Weed Management Plan has been developed and will form part of a future Planning Permit Application for subdivision.</p> <p>While much of the existing garden setting onsite will be removed, existing garden vegetation within the proposed reserve area will be retained for its contribution to amenity and biodiversity. An Arboricultural Assessment has been completed as a component of the Development Plan demonstrating the ability of vegetation in this area to provide a long-term contribution to the environmental values of the area. See Appendix 14.</p> <p>Post Office Creek is considered to be an area which requires careful consideration when developing the site, to ensure that</p>



	<p>water quality is retained and that ongoing management of the riparian buffer is guaranteed. The ecological assessment prepared to accompany this submission assists in the ongoing management of the area to ensure the protection of Post Office Creek by incorporating management strategies for the riparian buffer through the strategies of the weed management plan. In addition, all proposed lots are to be connected to reticulated sewer, assisting in protecting the quality of the waterway at Post Office Creek.</p>
<p>Clause 13 – Environmental Risks & Amenity</p> <ul style="list-style-type: none"> - 13.07-1S - Land use compatibility 	<p>The proposed Development Plan is located in an existing residential context with an interface to industrial land to the north. The development plan is compatible with the existing residential setting and no offsite impacts will occur to future development of the site in accordance with the plan.</p> <p>Sufficient separation distance from prevailing light industrial uses in the adjacent precinct is provided to future residential lots as a result of the existing adjoining road reserve and building envelope setbacks.</p> <p>An acoustic assessment has been prepared in support of the proposal demonstrating that the incidence of noise from local industry is low and is easily attenuated with standard noise mitigation construction requirements for dwellings directly adjacent to the industrial area to the north of the project site. Construction requirements may be stipulated through conditions of a future planning permit for subdivision.</p> <p>The proposed development plan will not prejudice the ability of the IN3Z land to sustain prevailing and future uses that are consistent with the purpose of the zone and vice-versa. "As of right" uses in the industrial land must meet setback requirements and criteria to ensure no impacts on surrounding residential land providing for protection of residential uses in the DP area. Any future industrial uses in adjacent IN3Z land with potential for amenity impacts will require planning approval and mitigation measures required to be implemented accordingly, thereby guaranteeing no offsite impacts.</p>
<p>Clause 14: Natural Resource Management, including</p> <ul style="list-style-type: none"> - Clause 14.02-2S: Water quality 	<p>The proposed Development Plan has taken into consideration the values of Post Office Creek. All lots are proposed to be connected to reticulated sewerage, and a Stormwater Management Strategy (Appendix 11) has been prepared. Furthermore, a weed management plan has been prepared to assist in the protection, enhancement and ongoing management of the riparian buffer of Post Office Creek.</p> <p>The aforementioned plans have been prepared to inform and assist with the future development and ongoing management of the site and riparian zone within the North bank of Post Office creek, which will in turn assist in maintaining and enhancing water quality.</p>
<p>Clause 16: Housing, including</p> <ul style="list-style-type: none"> - Clause 16.01-1S: Housing supply 	<p>The proposal will aid in delivering Kyneton additional opportunities for housing within an area already zoned appropriately for the purpose of dwellings. The proposed lot</p>



	<p>sizes are consistent with the prevailing range of lot sizes in the broader extent of the NRZ – Schedule 10 area.</p> <p>The proposed Development Plan once approved, will enable the submission of a Planning Permit Application for the subdivision of land which will, if approved provide for the construction of eighteen (18) additional dwellings in this location with lot sizes appropriate to the zone, further enhancing the area.</p>
<p>Clause 19: Infrastructure, including</p> <ul style="list-style-type: none"> - Clause 19.03-2S: Infrastructure design and provision - Clause 19.03-3S: Integrated water management 	<p>The proposal has been designed to enable connection to existing services within the area and will be extended to service the whole of the land.</p> <p>The proposed Development Plan has considered the availability of sewer and therefore will provide for reticulated services to service the site as demonstrated in a Preliminary Servicing Investigation (Appendix 16).</p> <p>Stormwater management has been considered in the development of the lot layout and a Stormwater Management Strategy (Appendix 11) has been prepared and submitted with this application.</p>
<p>Clause 21: Municipal Strategic Statement, including:</p> <ul style="list-style-type: none"> - Clause 21.02: Key issues and influences - Clause 21.04: Settlement - Clause 21.05: Environment and Landscape Values - Clause 21.06: Environmental Risks - Clause 21.08: Built Environment and Heritage - Clause 21.09: Housing - Clause 21.11: Transport - Clause 21.12: Community Development and Infrastructure - Clause 21.13: Local areas and small settlements 	<p>The proposed Development Plan supports the Local Planning Policy Framework including the Municipal Strategic Statement.</p> <p>The proposed Development Plan has considered the relevant key influences regarding Streetscapes for Kyneton contributing to the amenity and character of urban areas and consideration of Aboriginal Cultural Heritage. This is demonstrated through both the proposed Building Envelope Plan and the Landscape Plan submitted with this application.</p> <p>The Development Plan has been informed by the relevant sections of the Macedon Ranges Planning Scheme which has guided the layout.</p> <p>The Development Plan is consistent with the goals of settlement planning by providing for housing with good access to infrastructure and services. Settlement planning for Macedon Ranges recognises Kyneton as a regional centre which is acknowledged as having the highest levels of infrastructure, services, and employment within the municipality.</p> <p>Post Office Creek is the main component of this site for Environmental consideration. To assist in informing this application and the future Planning Application for subdivision, an Ecology Assessment of the site has been undertaken which includes a Weed Management Plan. The findings contained within the Ecology Assessment note that all vegetation on site is planted with extensive gardens and pathways. The findings note the absence of any matters of National Environmental Significance and note that from the threatened species assessment it was considered low likelihood of occurrence on site due to limited habitat and the highly modified condition of the site.</p> <p>Clause 21.06 is relevant to this proposal. An Environmental Audit Overlay applies to the subject land. An assessment of the site has been undertaken and development of an Environmental Audit Statement is ongoing. Progress reports are supplied as</p>



part of this application to support approval of a Development Plan.

Clause 21.08 is relevant to this proposal. A Cultural Heritage Management Plan has been prepared for the site and submitted to Aboriginal Victoria for registration and on-site management advice for the future Planning Permit Application for subdivision.

Clause 21.11, Transport and Clause 21.12 Community Development and Infrastructure are considerations for this application. Having regard to the Macedon Ranges Planning Scheme regarding the existing Zoning of the land, the site is considered an appropriate location for residential development. The location is considered to be within ideal proximity for parks/open space and is a manageable walk (within 20 minutes) to general retail. Furthermore, a Traffic Report has been prepared and forms part of the reports submitted with this application which verifies the above – Appendix 12.

The proposed Development Plan has been designed with consideration of the Strategies outlined within Clause 21.13, Precinct 3: Kyneton Post World War II, Residential Precinct, and is considered to comply with these requirements. In particular, the site being identified as a Strategic redevelopment site within the Precinct (Land north of Post Office Creek between Wedge Street and Ebden Street).



5.2 Zone/Overlays

5.2.1 Clause 32.09 Neighbourhood Residential Zone – Schedule 10

The site is included within the Neighbourhood Residential Zone (NRZ) – Schedule 10 (NRZ10) of the Macedon Ranges Planning Scheme. The purpose of the zone, as relevant to the Development Plan is stated as follows:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To recognise areas of predominantly single and double storey residential development.*
- *To manage and ensure that development respects the identified neighbourhood character, heritage, environmental or landscape characteristics.*

Pursuant to Clause 32.09-3, a planning permit is required to subdivide land.

The proposed Development Plan is consistent with the Municipal planning Statement and Planning Policy Framework and achieves a future subdivision outcome consistent with the purpose and associated Neighbourhood Character objectives of NRZ10.

5.2.2 Clause 43.04 Development Plan Overlay – Schedule 17 (DP017)

The subject site is affected by a Development Plan Overlay (DPO) and associated schedule 17 (DP017).

The purpose of the DPO is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify areas which require the form and conditions of future use and development to be shown on a development plan before a permit can be granted to use or develop the land.*
- *To exempt an application from notice and review if a development plan has been prepared to the satisfaction of the responsible authority.*

Clause 43.04-2 requires that a Development Plan must be prepared to the satisfaction of the Responsible Authority for the site before a Planning Permit can be granted to 'use or subdivide land, construct a building or construct or carry out works.'

Once a Development Plan is approved, any permit granted must:

- *Be generally in accordance with the development plan.*
- *Include any conditions or requirements specified in a schedule to this overlay.*

Preparation of the Development Plan

Clause 43.04-4 details the requirements for a Development Plan. The following table details these requirements and response as relevant to the proposal.

APPLICATION REQUIREMENT	PROPOSAL RESPONSE
The development plan may consist of plans or other documents and may, with the agreement of the responsible authority, be prepared and implemented in stages.	The Development Plan once approved will inform the future Planning Permit Application for an eighteen (18) lot subdivision and it is anticipated that the future subdivision will not be staged.
A development plan that provides for residential subdivision in the Neighbourhood Residential Zone, General Residential Zone, Residential Growth Zone, Mixed Use Zone, Township Zone, Comprehensive Development Zone and Priority Development Zone	A response to the requirements of Clause 56 as relevant to the Residential Neighbourhood Zone is provided in Section 6.2.3 of this document.



must meet the requirements of Clause 56 as specified in the zone.	
<p>The development plan must describe:</p> <ul style="list-style-type: none"> ▪ The land to which the plan applies. ▪ The proposed use and development of each part of the land. ▪ Any other requirements specified for the plan in a schedule to this overlay 	<p>This report satisfactorily responds to this requirement as detailed in Section 4 and 5.</p> <p>A response to the requirements of DPO17 is included in the content of this submission.</p>

Schedule 17 – Development Plan Overlay

Schedule 17 to Clause 43.04 details the specific requirements of a Development Plan relating to Clause 43.04, Wedge & Ebden Streets, Kyneton. The following table details these requirements and how the proposal has responded.

REQUIREMENTS FOR DEVELOPMENT PLAN	PROPOSAL RESPONSE
1.0 OBJECTIVE	
To ensure coordinated residential development in the areas (A and B) as shown on the map in this schedule and to coordinate the provision of necessary infrastructure and to ensure the protection of natural features, especially Post Office Creek.	<p>The Development Plan as submitted relates to Area A for Wedge Street, Kyneton.</p> <p>Area A contains 88, 88A and 90 Wedge Street.</p> <p>The Development Plan is associated with 88A and 90 Wedge Street</p>
4.0 REQUIREMENTS FOR DEVELOPMENT PLAN	
A Development Plan must be prepared for all of the land within Area A or B (as marked on the map within this schedule) rather than a subset of Area A or B, unless otherwise agreed to by the responsible authority. A development plan may be prepared for one of Areas A or B, or both Areas A and B.	
The development plan must include the following requirements to the satisfaction of the responsible authority, as appropriate:	
A subdivision design for all of the land covered by the plan which identifies the location, dimension and area of all lots.	<p>A subdivision layout has been prepared in accordance with the requirements of DPO17 and NRZ10.</p> <p>▶ Refer to Appendix 6.</p>
<p>The provision of convenient internal and external access.</p> <p>The provision of appropriate integration and linkages to the established road networks and linkages to allow for future access opportunities to adjacent land.</p>	<p>A functional layout design demonstrating the ability of the subdivision to integrate with the existing road network while providing safe access to future lots has been prepared as a component of this Development Plan.</p> <p>▶ Refer to Appendix 9.</p>
Lots oriented to maximise solar access and energy efficiency.	The proposed lot layout provides opportunity for development of dwellings that achieve optimum solar access. All proposed allotments will allow for development of a dwelling with a north facing aspect while avoiding overshadowing adjoining dwellings. .



<p>A building envelope for each lot which is consistent with the preferred neighbourhood character for the Kyneton Township Residential Village West Precinct.</p>	<p>A Building Envelope Plan consistent with the preferred neighbourhood character for the Kyneton Township Residential Village West Precinct has been prepared as a component of the Development plan – Appendix 7.</p> <p>The Building Envelope Plan provides for front setbacks to encourage landscaped front and rear gardens with space for establishment of mature vegetation. Consistent side setbacks will encourage a consistent pattern of detached dwellings within the new subdivision and achieve the modified clause 54/55 objectives for NRZ10.</p> <p>Consistent 5m rear setbacks allow for private open space in accordance with NRZ10 requirements.</p>
<p>Any requirements of the environmental audit that need to be addressed in Area A.</p>	<p>The subject land is located in Area A of DPO17 mapping.</p> <p>As the land is affected in its entirety by the EAO, an Environmental Audit Statement (EAS) under Part 8.3 of the Environment Protection Act 2017 must be issued stating that the land is suitable for the use or proposed use prior to the commencement of works associated with a sensitive use (residential use, child care centre, kindergarten, pre-school centre, primary school). Thus an EAS will be required prior to the future subdivision and development of the site and to satisfy the requirements of DPO17 for land located in 'Area A'.</p> <p>The site is currently subject to an environmental audit with the view to issuing a Statement of Environmental Audit demonstrating the suitability of the site to support the proposed use, the preparation of which is ongoing. The Development Plan has been submitted in the absence of the final Environmental Audit report and EAS. A letter of progress has been provided by the auditor engaged to complete the audit and EAS demonstrating the progress of the audit to date. Based on the information currently available and subject to review of the assessment consultant's final investigation report, significant issues which would prevent the site from being made suitable for the proposed use have not been identified - Refer to Appendix 2.</p>
<p>A landscaping plan for roadside verges.</p>	<p>The Development includes provision of a detailed landscape design proposing landscape treatments and plantings for roadside verges and the proposed reserve to be developed as a future component of a subdivision - Refer to Appendix 8.</p>
<p>A management plan for the riparian zone along the north bank of Post Office Creek for Area A.</p>	<p>A detailed Ecology Assessment incorporating a Weed Management plan has been prepared in conjunction with the Development Plan.</p> <p>The Weed Management Plan outlines strategies for the management of the riparian zone of Post Office Creek adjoining the subject land to ensure the long-term</p>



	<p>maintenance of the waterway and protection and retention of native vegetation and habitat in this area</p> <p>Refer to Appendix 15.</p>
<p>Stormwater and drainage design, which includes:</p> <ul style="list-style-type: none"> ▪ An integrated approach to stormwater system management designed and implemented on a catchment wide basis, that includes consideration of development impacts and provides for the stormwater management of any construction stage(s), interim stage(s) and the final development. ▪ A stormwater management system that ensures peak discharge rates, volumes and pollutant loads of all stormwater leaving a site post development are no greater than pre-development and that ensures no detriment to any surrounding area or the water quality of Post Office Creek. ▪ Identification of all land to be set aside for drainage purposes, detailing the approximate size and location of all drainage reserves and system components and that: ▪ Includes measures to safely control discharge for all storms, including 1 in 100 year ARI events. ▪ Includes designation of all floodways or areas subject to inundation. ▪ Identifies and quantifies any site discharge off the site, detailing the location and manner of discharge across the site boundary. 	<p>A Stormwater Management Strategy has been prepared for the site and forms part of the Development Plan.</p> <p>Section 3 of the Stormwater Management Strategy outlines in detail the design intent, stormwater management, water sensitive urban design and flood management.</p> <p>It is considered that the strategy has accounted for all the requirements of the Development Plan, has informed the proposed design and complies with the objectives of DP017. Refer to Appendix 11.</p>



<p>The provision of necessary physical and social infrastructure, including road and footpath works, traffic management improvements, drainage, community infrastructure elsewhere in the town that may be used by future residents in the development.</p> <p>The provision of all infrastructure reasonably required by the development of the land identified in this schedule, whether within or outside the developable area, and at no cost to the responsible authority.</p>	<p>All necessary infrastructure will be provided to the future development of the site and all preliminary investigations have been undertaken as part of this Development Plan.</p> <p>A Preliminary Servicing Report has been prepared to determine the ability of future development on the site to provide the necessary physical and social infrastructure such as utilities, footpaths, roads and drainage assets to future dwellings - Refer to Appendix 16.</p> <p>This Development Plan includes the provision of a Traffic Impact Assessment to determine existing traffic volumes and future traffic generation, distribution and impact from the future development of dwellings in accordance with the proposed layout. The assessment includes commentary on the ability of the existing and proposed road network to support the additional traffic volumes and general design advice - Refer to Appendix 13.</p>
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5.2.3 Clause 44.01 – Land Subject to Inundation Overlay

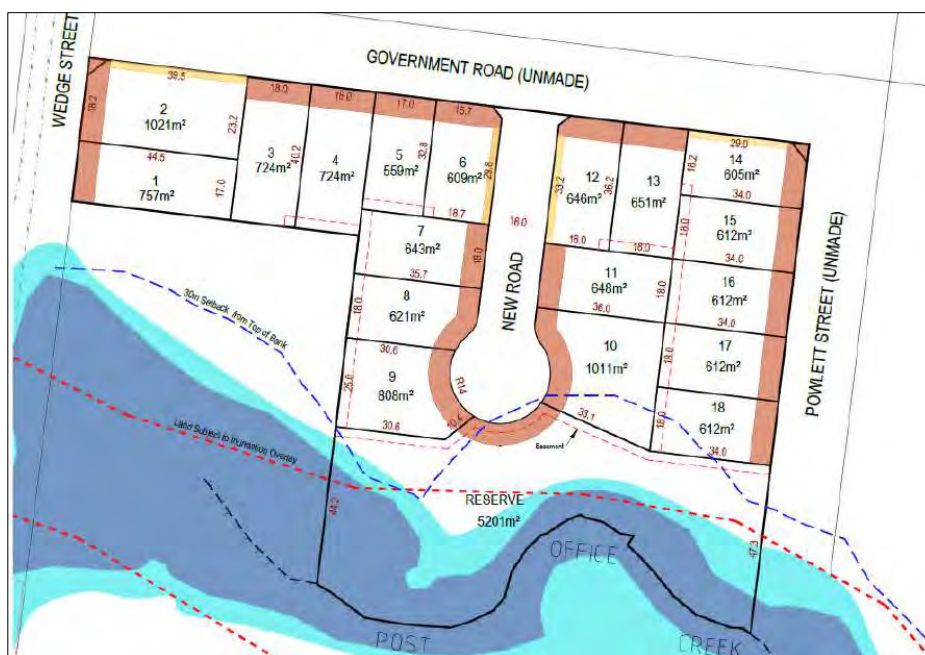


Figure 5 – Flooding extents adjoining site.

A planning permit will be required to undertake works within the LSIO affected areas of the site which form the proposed reserve. The requirements of LSIO have been considered by the development plan, and the proposed layout was developed using flooding data available from NCCMA. All allotments will be located outside LSIO affected areas, above the 1 in 100-year flood level and achieve an average setback of greater than 30m, as demonstrated above (figure 5). Refer to attachment 6 for detailed plans.



5.2.4 Clause 56 Residential Subdivision

The requirements of Clause 43.04, Development Plan Overlay (DPO) require an assessment for any subdivision of land against the relevant provisions of Clause 56 relevant to the Neighbourhood Residential Zone of the Macedon Ranges Planning Scheme.

The following table details the requirements of Clause 56 for an 18-lot subdivision and how the future subdivision proposal has responded.

CLAUSE 56 ASSESSMENT	
CLAUSE	RESPONSE
56.01-1 Subdivision Site and Context Description	The contents of this report and its attachments assist in responding to this clause. Site plan, photographs and written site and context analysis are included. Refer to Section and associated Site Context Plan (Appendix 4).
Clause 56.01-2 Subdivision Design Response	Refer to Section 4 of this report for 'Development Plan'
Standard C1 Clause 56.02-1 Strategic Implementation objective	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <p>The proposal is consistent with the strategies identified within Clause 21.13 for Kyneton. That is 'Prioritising growth within the identified town boundary, supporting infill development within existing residential zoned land, consistent with the identified neighbourhood character precinct, protecting and enhancing the landscape character, waterways and the network of open space corridors, namely Post Office Creek'. Furthermore, the proposed layout secures areas of open space adjoining Post Office Creek and contains a management plan for the protection, enhancement and ongoing management of the riparian area.</p> <p>The proposed subdivision layout complete with Building Envelope Plan and landscape plan demonstrates that the proposed Development Plan, will create a neighbourhood in keeping with surrounding streetscapes, able to be developed with detached single dwellings, front garden and street trees. These requirements have been informed by the objectives and requirements DPO17.</p>
Standard C5 Clause 56.03-4 Built environment objective	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <p>Consistent with local planning policies, the proposed subdivision increases density within the designated Kyneton residential boundaries by developing a site identified as a strategic development site. Lot sizes range from 605m² to 1021m². The proposed layout has been designed in accordance with the provisions of the DPO, specifically schedule 17. Street and boundary setbacks are demonstrated on the Building Envelope Plan and the landscape plan demonstrates an attractive environment with open space providing for a contribution to a sense of place for the neighbourhood. There is a mix of public transport available to the location, with local bus routes and the Kyneton Railway station approximately 2.5km from the subject site. The Kyneton town centre is located a driveable and bikeable distance away (1.2km) and within walking distance for general retail.</p>



<p>Standard C7 Clause 56.04-1 Lot diversity and distribution objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>Lot sizes range from 605m² to 1021m². The proposed layout has been designed in accordance with the provisions of the DPO, specially schedule 17.</p>
<p>Standard C8 Clause 56.04-2) Lot area and building envelopes objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>This subdivision has adopted an appropriate design response with orientation towards the existing (Wedge Street) and proposed upgraded street network (unnamed road to the north and east). Roads and streets front public open space where applicable.</p>
<p>Standard C9 Clause 56.04-3 Solar orientation of lots objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The new lots enable good solar exposure for proposed future residences. This subdivision has been appropriately sited to maximise solar access to each lot. The subdivision design will also allow northern light to be provided to habitable room windows.</p>
<p>Standard C10 Clause 56.04-4 Street orientation objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The proposed subdivision layout ensures that all allotments front roads and streets. No lots are orientated to arterial roads. The design incorporates a court bowl which provides pedestrian linkages to the reserve adjoining Post Office Creek, furthermore this reserve is accessible via the unmade road reserve to the east providing future connectivity for land to the East.</p> <p>There are three (3) lots immediately abutting the reserve which will be subject to a future section 173 agreement registered on title informing how future development of the lots must be designed. Driveways for the proposed lots abutting the reserve have been designed to be placed on the northern boundary to ensure that walls of any future garages do not dominate the landscape.</p>
<p>Standard C11 Clause 56.04-5 Common area objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>Not applicable - the proposed subdivision under this Development Plan application does not create any common property</p>
<p>Standard C12 Clause 56.05-1 Integrated urban landscape objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The proposed subdivision incorporates natural features into the design of streets and public open spaces, endeavours to enhance natural riparian areas and will provide landscaping that contributes to the identity of the overall development.</p>
<p>Standard C13</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p>



<p>Clause 56.05-2 Public Open Space objectives</p>	<p>The proposed subdivision contributes to public open spaces with the creation of a reserve adjoining Post Office Creek. This reserve will allow for future linkages to adjoining strategic development sites within the location (i.e. Area B), it will contribute to and encourage healthy and active communities and sustainable neighbourhoods.</p>
---	--

<p>Standard C15 Clause 56.06-2 Walking and cycling network objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p>
	<p>This proposal allows for future connections via the proposed reserve and the eastern unnamed road to connect to Ebdon Street for pedestrian and cycling network opportunities into the future.</p> <p>Integration to Wedge Street from the site is informal within the existing road reserve. Upon traversing Wedge Street bridge (Post Office Creek) in a southerly direction, Lavender Street provides for connectivity to the broader network of footpaths.</p> <p>Walkability from the site has been assessed via walkscore.com and demonstrates areas which can be accessed within a 20-minute walk from the site, see figure below.</p>

<p>Standard C17 Clause 56.06-4 Neighbourhood street network objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p>
	<p>The design and construction of street carriageways and verges will ensure that traffic speeds provide an accessible and safe neighbourhood street system.</p>

<p>Standard C18 Clause 56.06-5 Walking and cycling network detail objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p>
	<p>All proposed roads to be constructed will be in accordance with Infrastructure Design Manual standards as recommended within the Traffic Report completed and submitted as part of the application. The construction of the roads will also include footpaths to be constructed on one side as recommended within the Traffic Report and as per IDM standard.</p>



The traffic report has recognised the Kyneton Structure plan and has considered adjacent land identified for future development. The report has considered the future linkages identified by walking and cycling networks and the proposed layout of the Development Plan allows for future connectivity.



<p>Standard C19 Clause 56.06-6</p> <p>Public transport network detail objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The Kyneton town bus service has an existing stop approximately 300 metres from the subject site, this service provides passengers with access to the northern portion of Kyneton and travel to the Kyneton Railway Station.</p>
<p>Standard C20 Clause 56.06-7</p> <p>Neighbourhood street network detail objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The design and construction of street carriageways and verges will ensure that traffic speeds provide an accessible and safe neighbourhood street network. All street lengths are less than 240m. All streets will be designed and constructed in accordance with Council's Infrastructure construction policy and IDM, as per the recommendations of the Traffic Report submitted with this application.</p> <p>The proposed internal court bowl will have a road reserve width of 16m with the provision for a court bowl at the southern end. This will allow for emergency and service vehicles turning around.</p> <p>The unmade road to the north and Powlett Street to the East would be considered an Access Street level. Both roads currently not constructed, have a road reservation of approximately 20m and will be constructed in accordance with the relevant standards of Council including footpaths where required.</p>
<p>Standard C21 Clause 56.06-8</p> <p>Lot access objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>Safe vehicle access has been considered in accordance with the standard. All lots will have a vehicle cross over constructed in accordance with Council relevant standards and the location for each crossover is shown on the proposed lot layout plan which forms part of this application.</p>
<p>Standard C22 Clause 56.07-1</p> <p>Drinking water supply objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The newly created allotments will be connected to the existing town water supply, which is of a suitable standard for drinking. Connection works will be undertaken in accordance with the relevant authority's standards and conditions.</p>
<p>Standard C23 Clause 56.07-2</p> <p>Reused and recycled water objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The proposed Development Plan as submitted with this application contains a Servicing Report for the site. The Service Report identifies that reticulated water is available for the site and will be connected as part of the development. There is currently no recycled water network system available to the site. Future dwellings will be encouraged to install a rainwater tank for flushing of toilets, watering of gardens etc.</p>



<p>Standard C24 Clause 56.07-3</p> <p>Wastewater management objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>All lots will be connected to reticulated services and will be provided to the boundary of each lot.</p>
<p>Standard C25 Clause 56.07-4</p> <p>Stormwater management objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>A Stormwater Management Strategy has been prepared for the site and forms part of this application.</p> <p>Section 3 of the Stormwater Management Strategy outlines in detail the design intent, stormwater management, water sensitive urban design and flood management.</p> <p>It is considered that the strategy has considered all matters, has informed the proposed design and complies with the objective.</p>
<p>Standard C26 56.08-1</p> <p>Site management objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The site will be managed during the construction phase in accordance with Council's requirements. Management measures on the site during subdivision may include sediment barriers and traps, retention and protection of some existing vegetation, placement of stockpiles and earthworks and limitation of the number of access points. It is expected, at the time of an application for subdivision, a Management Plan will be required in accordance with the relevant standards.</p>
<p>Standard C27 Clause 56.09-1</p> <p>Shared trenching objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>Shared trenching will be utilised wherever possible in accordance with relevant standards.</p>
<p>Standard C28 Clause 56.09-2</p> <p>Electricity, telecommunications and gas objectives</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>The new allotments will be connected to the Victorian Electricity grid, telecommunications network and natural gas supply. These connections will be from existing infrastructure in proximity to the site, and to the satisfaction of the responsible authorities</p>
<p>Standard C29 Clause 56.09-3</p> <p>Fire hydrants objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>All hydrants will be installed as per the servicing report and to the standard of the relevant authority.</p>
<p>Standard C30 Clause 56.09-4</p> <p>Public lighting objective</p>	<p><input checked="" type="checkbox"/> STANDARD ACHIEVED <input checked="" type="checkbox"/> OBJECTIVE ACHIEVED</p> <hr/> <p>Street lighting will be installed to meet the relevant Australian Standards and increase the safety and surveillance to area at night. The positioning of the streetlights will be indicated an electrical plan, which is anticipated to form part of future Planning Permit conditions.</p>



6. CONCLUSION

The proposed Development Plan for 88A-90 Wedge Street, Kyneton accords with the objectives of Settlement, Built Environment, Housing and Infrastructure as stated in the Planning Policy Framework of the Macedon Ranges Planning Scheme.

The subject site can be readily serviced and provides for infill opportunities to supplement the supply of housing in Kyneton, while responding to growth pressures.

The Development Plan as submitted for Council consideration and approval, has been informed by all relevant strategic documents adopted by Council and the Macedon Ranges Planning Scheme. Furthermore, all relevant studies have been completed to ensure that the site can respond to the requirements for all necessary infrastructure.

The proposed Development Plan is commended to Council and on behalf of our client, we look forward to a positive outcome from this application to enable progression of the submission for a Planning Permit Application for approval of an eighteen (18) lot subdivision.



APPENDIX 1 – TITLES

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 01160 FOLIO 934

Security no : 124098832065V
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CROWN GRANT

LAND DESCRIPTION

Crown Allotment 25 Section 50 Township of Kyneton Parish of Lauriston.

REGISTERED PROPRIETOR

Estate Fee Simple

Sole Proprietor

ARMSTRONG DESIGN AND TECHNICAL SERVICES PTY LTD of 1 LANSELL COURT TOORAK
VIC 3142
AC375853K 01/10/2003

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AK314949V 30/04/2013

MECU LTD

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DIAGRAM LOCATION

SEE TP565648D FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 83 POWLETT STREET KYNETON VIC 3444

ADMINISTRATIVE NOTICES

NIL

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TITLE PLAN		EDITION 2	TP 565648D
Location of Land Parish: LAURISTON Township: KYNETON Section: 50 Crown Allotment 25 Crown Portion: Last Plan Reference Derived From VOL 1160 FOL 934 Depth Limitation NIL		Notations SUBJECT TO THE RESERVATIONS EXCEPTIONS CONDITIONS AND POWERS CONTAINED IN CROWN GRANT VOL 1160 FOL 934 AND NOTED ON SHEET 2 OF THIS PLAN ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN	
Description of Land / Easement Information		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED 13/07/2000 VERIFIED BH COLOUR CODE Y = YELLOW	
LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 2 sheets	

TITLE PLAN	TP 565648D	
<p style="text-align: center;">LAND DESCRIPTION INCLUDING RESERVATIONS EXCEPTIONS CONDITIONS AND POWERS SHOWN ON THE CROWN GRANT</p> <p>Township of Kyneton ALL THAT PIECE OF LAND in the said Colony containing <i>one acre more or less being Allotment twenty five of Section 50 in the Parish of Lancaster County of Victoria.</i></p> <hr/> <p>delimited with the measurements and abutals thereof in the map drawn in the margin of these presents and therein colored yellow</p> <hr/> <p>EXCEPTED however unto us our heirs and successors all gold and auriferous earth or stone and all mines containing gold within the boundaries of the said land AND ALSO reserving to us our heirs and successors free liberty and authority for us our heirs and successors and our and their agents and servants at any time or times hereafter to enter upon the said land and to search and mine therein for gold and to extract and remove therefrom any gold and any auriferous earth or stone and for the purposes aforesaid to sink shafts erect machinery carry on any works and do any other things which may be necessary or usual in mining PROVIDED ALWAYS that it shall be lawful for us our heirs and successors at any time on paying full compensation to the said GRANTEE</p> <p>his heirs executors administrators or assigns for the full value other than auriferous of the said piece of land or so much thereof as may be resumed as hereinafter mentioned and of the improvements upon the said piece of land or the part so resumed such value in case of disagreement to be ascertained by arbitration to resume the said piece of land or any part thereof for mining purposes</p> <p>AND THAT the terms conditions and events upon which such land may be resumed and the manner in which such arbitration may be conducted may be determined by regulations in such manner as the Governor in Council may from time to time direct or if at any time no such regulations shall be in force then by the regulations concerning the resumption of land for mining purposes in force at the date of this Grant unless Parliament shall otherwise determine</p>		
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AFFECTED LAND/PARCEL	LAND/PARCEL IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
		RECTIFICATION - LAND DESCRIPTION AMENDED	AG301383E	17/3/09	2	LJW

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 01160 FOLIO 936

Security no : 124098832118N
Produced 07/07/2022 02:40 PM

CROWN GRANT

LAND DESCRIPTION

Crown Allotment 27 Section 50 Township of Kyneton Parish of Lauriston.

REGISTERED PROPRIETOR

Estate Fee Simple

Sole Proprietor

ARMSTRONG DESIGN & TECHNICAL SERVICES PTY LTD of 1 LANSELL COURT TOORAK VIC
3142
AB175787U 25/03/2002

ENCUMBRANCES, CAVEATS AND NOTICES

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DIAGRAM LOCATION

SEE TP565553Q FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

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Additional information: (not part of the Register Search Statement)

Street Address: 83 POWLETT STREET KYNETON VIC 3444

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TITLE PLAN		EDITION 2	TP 565553Q
Location of Land Parish: LAURISTON Township: KYNETON Section: 50 Crown Allotment: 27 Crown Portion: Last Plan Reference Derived From: VOL 1160 FOL 936 Depth Limitation: NIL		Notations SUBJECT TO THE RESERVATIONS EXCEPTIONS CONDITIONS AND POWERS CONTAINED IN CROWN GRANT VOL. 1160 FOL 936 AND NOTED ON SHEET 2 OF THIS PLAN ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN	
Description of Land / Easement Information		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED 13/07/2000 VERIFIED G B COLOUR CODE Y=YELLOW	
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TITLE PLAN	TP 565553Q	
<p style="text-align: center;">LAND DESCRIPTION INCLUDING RESERVATIONS EXCEPTIONS</p> <p style="text-align: center;">CONDITIONS AND POWERS SHOWN ON THE CROWN GRANT</p> <p style="text-align: center;"><i>All that piece of Land in the said Colony containing one acre one rood and twenty three perches more or less being (labeled) twenty seven of section 50 in the lands of Hurston County of Northern</i> Township of Kyneton</p> <p>delimited with the measurements and abatals thereof in the map drawn in the margin of these presents and therein colored yellow</p> <p style="text-align: center;">EXCEPT: however unto us our heirs and successors all gold and auriferous earth or stone and all mines containing gold within the boundaries of the said land AND ALSO reserving to us our heirs and successors free liberty and authority for us our heirs and successors and our and their agents and servants at any time or times hereafter to enter upon the said land and to search and mine therein for gold and to extract and remove therefrom any gold and any auriferous earth or stone and for the purposes aforesaid to sink shafts erect machinery carry on any works and do any other things which may be necessary or usual in mining PROVIDED ALWAYS that it shall be lawful for us our heirs and successors at any time on paying full compensation to the said GRANTEE</p> <p>heirs executors administrators or assigns for the full value other than auriferous of the said piece of land or so much thereof as may be resumed as hereinafter mentioned and of the improvements upon the said piece of land or the part so resumed such value in case of disagreement to be ascertained by arbitration to resume the said piece of land or any part thereof for mining purposes</p> <p style="text-align: center;">AND THAT the terms conditions and events upon which such land may be resumed and the manner in which such arbitration may be conducted may be determined by regulations in such manner as the Governor in Council may from time to time direct or if at any time no such regulations shall be in force then by the regulations concerning the resumption of land for mining purposes in force at the date of this Grant unless Parliament shall otherwise determine</p>		
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CROWN GRANT

LAND DESCRIPTION

Crown Allotment 26 Section 50 Township of Kyneton Parish of Lauriston.

REGISTERED PROPRIETOR

Estate Fee Simple

Sole Proprietor

ARMSTRONG DESIGN AND TECHNICAL SERVICES PTY LTD of 1 LANSELL COURT TOORAK
VIC 3142
AC375814V 01/10/2003

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ACTIVITY IN THE LAST 125 DAYS

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Location of Land Parish: LAURISTON Township: KYNETON Section: 50 Crown Allotment: 26 Crown Portion: Last Plan Reference Derived From: VOL 1160 FOL 935 Depth Limitation: NIL		Notations SUBJECT TO THE RESERVATIONS EXCEPTIONS CONDITIONS AND POWERS CONTAINED IN CROWN GRANT VOL. 1160 FOL 935 AND NOTED ON SHEET 2 OF THIS PLAN ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN	
Description of Land / Easement Information		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED 30/06/2000 VERIFIED AK	
		COLOUR CODE Y=YELLOW	
LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 2 sheets

TITLE PLAN	TP 549691T	
<p>LAND DESCRIPTION INCLUDING RESERVATIONS EXCEPTIONS CONDITIONS AND POWERS SHOWN ON THE CROWN GRANT</p>		
<p style="text-align: center;"><i>All that piece of Land in the said Colony containing one acre two roods and twenty five perches more or less being allotment twenty six of section 50 in the Parish of Kyneton County of Ballarat</i></p> <p style="text-align: center;">Township of Kyneton</p>		
<p>delimited with the measurements and abatals thereof in the map drawn in the margin of these presents and therein colored yellow</p>		
<p>Excepting however unto us our heirs and successors all gold and auriferous earth or stone and all mines containing gold within the boundaries of the said land And also reserving to us our heirs and successors free liberty and authority for us our heirs and successors and our and their agents and servants at any time or times hereafter to enter upon the said land and to search and mine therein for gold and to extract and remove therefrom any gold and any auriferous earth or stone and for the purposes aforesaid to sink shafts erect machinery carry on any works and do any other things which may be necessary or usual in mining Provided always that it shall be lawful for us our heirs and successors at any time on paying full compensation to the said GRANTEE</p>		
<p>his heirs executors administrators or assigns for the full value other than auriferous of the said piece of land or so much thereof as may be resumed as hereinafter mentioned and of the improvements upon the said piece of land or the part so resumed such value in case of disagreement to be ascertained by arbitration to resume the said piece of land or any part thereof for mining purposes</p>		
<p>AND THAT the terms conditions and events upon which such land may be resumed and the manner in which such arbitration may be conducted may be determined by regulations in such manner as the Governor in Council may from time to time direct or if at any time no such regulations shall be in force then by the regulations concerning the resumption of land for mining purposes in force at the date of this Grant unless Parliament shall otherwise determine</p>		
<p>LENGTHS ARE IN LINKS</p>	<p>Metres = 0.3048 x Feet Metres = 0.201168 x Links</p>	<p>Sheet 2 of 2 sheets</p>

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RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER
TP549691T

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NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.**

AFFECTED LAND/PARCEL	LAND/PARCEL IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
		RECTIFICATION - LAND DESCRIPTION AMENDED	AG301383E	17/3/09	2	LJW

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10817 FOLIO 610

Security no : 124098832261H
Produced 07/07/2022 02:43 PM

LAND DESCRIPTION

Lot 1 on Plan of Subdivision 524086Q.
PARENT TITLE Volume 00687 Folio 298
Created by instrument PS524086Q 22/07/2004

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor

ARMSTRONG DESIGN & TECHNICAL SERVICES PTY LTD of LEVEL 3 222 KINGSWAY SOUTH
MELBOURNE VIC 3205
AD197533M 22/10/2004

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AT385837D 30/06/2020
THENG & KIRKHAM PTY LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE PS524086Q FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 88A WEDGE STREET KYNETON VIC 3444

ADMINISTRATIVE NOTICES

NIL

eCT Control 18407R PEARCE WEBSTER DUGDALES
Effective from 30/06/2020

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PLAN OF SUBDIVISION		STAGE No. /	LTO USE ONLY EDITION 1	PLAN NUMBER PS 524086Q				
LOCATION OF LAND PARISH: LAURISTON TOWNSHIP: KYNETON SECTION: 50 CROWN ALLOTMENT: 29 CROWN PORTION: ---- LTO BASE RECORD: DCMB (RURAL) TITLE REFERENCES: Vol. 687 Fol. 298 LAST PLAN REFERENCE: POSTAL ADDRESS: 90 WEDGE STREET KYNETON 3444 AMG Co-ordinates E 273,520 ZONE: 55 (of approx. centre of plan) N 5,875,425		COUNCIL CERTIFICATION AND ENDORSEMENT COUNCIL NAME: MACEDON RANGES SHIRE COUNCIL REF: 1. This plan is certified under section 8 of the Subdivision Act 1988 2. This plan is certified under section 11(7) of the Subdivision Act 1988 Date of original certification under section 6 mm/mm/mm 3. This is a statement of compliance issued under section 21 of the Subdivision Act 1988. OPEN SPACE (i) A requirement for public open space under section 18 of the Subdivision Act 1988 has/has not been made. (ii) The requirement has been satisfied (iii) The requirement is to be satisfied in Stage mmmm.... Council Delegate Council Seal Date 6 / 7 / 04 Re-certified under section 11(7) of the Subdivision Act 1988. Council Delegate Council Seal Date / /		LTO USE ONLY STATEMENT OF COMPLIANCE/ EXEMPTION STATEMENT RECEIVED <input checked="" type="checkbox"/> DATE 15/7/04 LTO USE ONLY PLAN REGISTERED TIME 2:39PM DATE 22/7/04 Assistant Registrar of Titles				
VESTING OF ROADS OR RESERVES <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:50%;">IDENTIFIER</th> <th style="width:50%;">COUNCIL/BODY/PERSON</th> </tr> <tr> <td style="text-align: center;">NIL</td> <td style="text-align: center;">NIL</td> </tr> </table>		IDENTIFIER	COUNCIL/BODY/PERSON	NIL	NIL	NOTATIONS DEPTH LIMITATION: NIL STAGING: This is/ is not a staged subdivision. Planning Permit No. P203-0616 SURVEY: This plan is/ is not based on survey		
IDENTIFIER	COUNCIL/BODY/PERSON							
NIL	NIL							
EASEMENT INFORMATION								
LEGEND A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)								
Easement Reference	Purpose	Width (Metres)	Origin	Land Benefitted/In Favour Of				
E-1	DRAINAGE	2	THIS PLAN	LOT 2 ON THIS PLAN				
M. F. ROGAN SURVEYORS P/L ABN 84 006588778 5 Hamilton Street, Gisborne 3437 Tel. (03) 54282015 * 83 Gap Road, Sunbury 3429 Tel. (03) 97448831				Sheet 1 of 1 Sheets				
SCALE LENGTHS ARE IN METRES		ORIGINAL SCALE 1:500 SHEET SIZE A3	LICENSED SURVEYOR (PRINT) M. F. ROGAN SIGNATURE DATE / / REF 1978/S VERSION B	DATE 6 / 7 / 04 COUNCIL DELEGATE SIGNATURE				

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10817 FOLIO 611

Security no : 124098832285G
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LAND DESCRIPTION

Lot 2 on Plan of Subdivision 524086Q.
PARENT TITLE Volume 00687 Folio 298
Created by instrument PS524086Q 22/07/2004

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor

ARMSTRONG DESIGN AND TECHNICAL SERVICES PTY LTD of 22 CLOWES STREET KYNETON
VIC 3444
AU650662D 03/08/2021

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE PS524086Q FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 90 WEDGE STREET KYNETON VIC 3444

ADMINISTRATIVE NOTICES

NIL

eCT Control 24583K CHINKA (HEP) STEEL
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PLAN OF SUBDIVISION		STAGE No. /	LTO USE ONLY EDITION 1	PLAN NUMBER PS 524086Q				
LOCATION OF LAND PARISH: LAURISTON TOWNSHIP: KYNETON SECTION: 50 CROWN ALLOTMENT: 29 CROWN PORTION: ---- LTO BASE RECORD: DCMB (RURAL) TITLE REFERENCES: Vol. 687 Fol. 298 LAST PLAN REFERENCE: POSTAL ADDRESS: 90 WEDGE STREET KYNETON 3444 AMG Co-ordinates E 273,520 ZONE: 55 (of approx. centre of plan) N 5,875,425		COUNCIL CERTIFICATION AND ENDORSEMENT COUNCIL NAME: MACEDON RANGES SHIRE COUNCIL REF: 1. This plan is certified under section 8 of the Subdivision Act 1988 2. This plan is certified under section 11(7) of the Subdivision Act 1988 Date of original certification under section 6 mm/mm/mm 3. This is a statement of compliance issued under section 21 of the Subdivision Act 1988. OPEN SPACE (i) A requirement for public open space under section 18 of the Subdivision Act 1988 has/has not been made. (ii) The requirement has been satisfied (iii) The requirement is to be satisfied in Stage mmmm.... Council Delegate Council Seal Date 6 / 7 / 04 Re-certified under section 11(7) of the Subdivision Act 1988. Council Delegate Council Seal Date / /		LTO USE ONLY STATEMENT OF COMPLIANCE/ EXEMPTION STATEMENT RECEIVED <input checked="" type="checkbox"/> DATE 15/7/04 LTO USE ONLY PLAN REGISTERED TIME 2:39 PM DATE 22/7/04 Assistant Registrar of Titles				
VESTING OF ROADS OR RESERVES <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:50%;">IDENTIFIER</th> <th style="width:50%;">COUNCIL/BODY/PERSON</th> </tr> <tr> <td style="text-align: center;">NIL</td> <td style="text-align: center;">NIL</td> </tr> </table>		IDENTIFIER	COUNCIL/BODY/PERSON	NIL	NIL	NOTATIONS DEPTH LIMITATION: NIL STAGING: This is/ is not a staged subdivision. Planning Permit No. P203-0616 SURVEY: This plan is/ is not based on survey		
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Easement Reference	Purpose	Width (Metres)	Origin	Land Benefitted/In Favour Of				
E-1	DRAINAGE	2	THIS PLAN	LOT 2 ON THIS PLAN				
M. F. ROGAN SURVEYORS P/L ABN 84 006568778 5 Hamilton Street, Gisborne 3437 Tel. (03) 54282015 * 83 Gap Road, Sunbury 3429 Tel. (03) 97448831				Sheet 1 of 1 Sheets				
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				DATE 6/7/04 COUNCIL DELEGATE SIGNATURE				



APPENDIX 2 - ENVIRONMENTAL AUDIT - LETTER OF PROGRESS



Environmental Audit Report

88a–90 Wedge Street and 83 Powlett Street, Kyneton

15 August 2023

Document Information



Document Information

Environmental Audit Report, 88a–90 Wedge Street and 83 Powlett Street, Kyneton

Prepared by:

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Level 6, 15 William Street, Melbourne, VIC 3000

tel: + 61 3 9606 0070

www.senversa.com.au

Prepared for:

ADTS as Trustee for the Jasper Family Trust

PO Box 284

Kyneton VIC 3444

Revision	Date	Approved	Detail
0	15 August 2023	Kristi Hanson	Final

Kristi Hanson

Environmental Auditor

Appointed Pursuant to the *Environment Protection Act 2017*

Disclaimer and Limitations:

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Senversa acknowledges the traditional custodians of the land on which this work was created and pay our respect to Elders past and present.

Executive Summary



Executive Summary

This report details the results of an environmental audit of the land known as 88a–90 Wedge Street and 83 Powlett Street, Kyneton Victoria (the site). The site location and boundaries are shown on **Figure 1**.

The environmental audit was completed in accordance with *Division 3 – Environmental Audits, Section 208 to Section 212 of the Environment Protection Act 2017* and the guidelines issued by the Environmental Protection Authority Victoria (EPA) for environmental audits. **Tables E1** and **E2** below summarise the results.

Table E1: Summary of Audit Information

Summary Information

Auditor	Kristi Hanson
Auditor account number	75661
Date EPA notified of audit	Initially notified on 7 August 2020. The notification was updated on 4 September due to the site owner amending the extent of audit boundary.
Environmental audit reference	0008006782
Name of person requesting audit	Graham Jasper
Relationship of person requesting audit to site	Site owner
Name of site owner	Armstrong Design and Technical Services Pty Ltd (88a–90 Wedge Street and 83 Powlett Street, Kyneton)
Date of auditor engagement	4 August 2020
Completion date of the audit	11 July 2023
Reason for audit	Planning system (environmental audit overlay)
Elements of the environment assessed	Land, water (surface and groundwater), ambient air
Planning permit number or requirement detail if applicable	DP/2022/3
EPA Region	North West
Municipality	Macedon Ranges Shire Council
Dominant – Lot on plan	1\PS524086 (88a Wedge Street)

Executive Summary



Summary Information

Additional – Lot on plan(s)	2\PS524086 (90 Wedge St) 25~50\PP5439 (83 Powlett Street) 26~50\PP5439 (83 Powlett Street) 27~50\PP5439 (83 Powlett Street)
Site/premises name	-
Building/complex sub-unit No.	-
Street/Lot – Lower No.	88a
Street/Lot – Upper No.	90
Street Name	Wedge
Street type (road, court, etc)	Street
Street suffix (North, South etc)	-
Suburb	Kyneton
Postcode	3444
Site area (in square metres)	19,687
Plan of site/premises/location showing the audit site boundary attached	Refer Figure 1
Members and categories of support team utilised	Nil
Further work or requirements	Nil
Nature and extent of continuing risk of harm	Groundwater contamination (nitrate) is present at the site, associated with regional sources and co-contributions from the site. This risk will be managed by a recommendation in the environmental audit statement that groundwater not be used without testing to confirm its suitability for the intended use. The auditor is satisfied that groundwater has been cleaned up so far as reasonably practicable (CUSFARP) and has recommended that the site is designated as a Groundwater Quality Restricted Use Zone (GQRUZ). The recommended GQRUZ extent comprises the site boundary as shown in Figure 1 .
Outcome of environmental audit report	Environmental Audit Statement with Recommendations
Land use suitability	Suitable for the proposed use subject to compliance with recommendations.
Has groundwater clean-up been undertaken as far as reasonably practicable?	Yes

Executive Summary



Summary Information

Does groundwater contamination remain at the site and is the site the source?	Groundwater contamination remains at the site due to regional sources. The site is a co-contributing source.	
If groundwater contamination remains, does it extend off-site?	No (but regional contamination is present off-site)	
Is a GQRUZ recommended?	Yes. The recommended GQRUZ extent comprises the site boundary as shown in Figure 1 .	
If applicable, please indicate which of the following are threatened environmental values of groundwater	Water dependent ecosystems and species	Yes
	Potable water supply (desirable)	Yes
	Potable water supply (acceptable)	N/A
	Potable mineral water supply	Yes
	Agriculture and irrigation (irrigation)	Yes
	Agriculture and irrigation (stock watering)	No
	Industrial and commercial use	Yes
	Water-based recreation (primary contact recreation)	No
	Traditional Owner cultural values	Yes
	Buildings and structures	No
	Geothermal properties	N/A
Is ongoing groundwater monitoring required?	No	
Is ongoing vapour/gas monitoring required?	No	
Are vapour/gas mitigation measures required	No	
List any other ongoing management requirements if applicable	Not applicable	

Executive Summary



Table E2: Physical Site Information

Physical Site Information

Current EPA Permission/s and relation Permission ID if applicable	Not applicable
Historical land use	Vacant land, residential
Current land use	Residential
Proposed land use	Sensitive uses (low density residential) and public open space
Current land use zoning	Neighbourhood Residential (NRZ10)
Proposed land use zoning	Neighbourhood Residential (NRZ10)
Surrounding land use – north (if applicable)	Vehicle access track, then light industrial businesses
Surrounding land use – south (if applicable)	Residential, then Post Office Creek and creek reserve
Surrounding land use – east (if applicable)	Vehicle access track, then vacant land
Surrounding land use – west (if applicable)	Wedge Street, then open space / recreation or vacant land
Has EPA been notified about the site under Section 40 of the Environment Protection Act 2017?	No
Nearest surface water receptor – name	Post Office Creek
Nearest surface water receptor – direction	South
Likely point of groundwater discharge	Post Office Creek
Site aquifer formation	Upper Tertiary / Quaternary basalt of the Newer Volcanics
Groundwater flow direction	South-southwest
Groundwater TDS range (mg/L)	330–600
Groundwater Segment	A1
Are there multiple aquifers impacted by pollution at the site	No
Perched groundwater depth – upper (metres below ground level (mbgl))	N/A
Perched groundwater depth – lower (mbgl)	N/A
Regional groundwater depth – upper (mbgl)	1.6

M18243_004_RPT_Rev0 | Environmental Audit Report v

Executive Summary



Physical Site Information

Regional groundwater depth – lower (mbgl)	2.2
Number of bores within 2 km	132
Closest extractive use (distance in m)	108
Zone of groundwater plume influence (m from site boundary)	Not applicable
Year groundwater last monitored	2022

A copy of the environmental audit statement (EAS) is provided in **Appendix A**.

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Appendix D: Environmental Quality Objectives

Appendix E: Clean Up So Far As Practicable Documentation

Attachment 1: Assessment Report

List of Acronyms



List of Acronyms

Acronym	Definition	Acronym	Definition
ACM	Asbestos containing material	HIL	Health investigation level
ASC NEPM	National Environment Protection (Assessment of Contamination) Measure	HSL	Health screening level
AHD	Australian Height Datum	IWRG	Industrial Waste Resource Guideline
AS	Australian Standard	LOR	Limit of reporting
BTEX	Benzene, toluene, ethylbenzene, xylenes	m AHD	Metres Australian Height Datum
CoPC	Contaminant of potential concern	m bgl	Metres below ground level
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment	NATA	National Association of Testing Authorities
CUSFARP	Clean up so far as practicable	NEPC	National Environment Protection Council
DSI	Detailed Site Investigation	NEMP	National Environment Management Plan
EAO	Environmental Audit Overlay	NEPM	National Environment Protection Measure
EAS	Environmental Audit Statement	OCP	Organochlorine pesticide
EIL	Ecological investigation level	OPP	Organophosphate pesticide
EMP	Environmental Management Plan	PAH	Polycyclic aromatic hydrocarbons
EPA	Environment Protection Authority (Victoria)	PCB	Polychlorinated Biphenyl
ERS	Environment Reference Standard	PID	Photo-ionisation detector
ESL	Ecological screening level	PFAS	per-and polyfluoroalkyl substances
FSANZ	Food Standards Australia and New Zealand	PFHxs	Perfluorohexane sulfonate
GME	Groundwater monitoring event	PFOS	Perfluorooctane sulfonate
GQRUZ	Groundwater quality restricted use zone	PSI	Preliminary Site Investigation
		QC	Quality control

List of Acronyms



Acronym	Definition
RPD	Relative percentage difference
SRA	Sample Receipt Advice
STV	Short Term Trigger Value
SVOC	Semi-volatile organic compound
SWL	Standing water level
TDS	Total dissolved solids

Acronym	Definition
TPH	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
UCL	Upper confidence limit
VOC	Volatile organic compound
VVG	Visualising Victoria's Groundwater

Introduction



1.0 Introduction

This report details the results of an environmental audit of the land known as 88a–90 Wedge Street and 83 Powlett Street, Kyneton Victoria (the site). The boundary of the audit site is shown in **Figure 1**.

The environmental audit was completed by Kristi Hanson (the auditor) in accordance with *Division 3 – Environmental Audits, Section 208 to Section 212* of the *Environment Protection Act 2017* (EP Act) and the guidelines issued by the Environment Protection Authority Victoria (EPA) for environmental audits. The environmental audit statement (EAS) associated with this report is included as **Appendix A**.

It is noted that since the commencement of this environmental audit, the street and numbering system has been updated. The current addressing system identifies site as 88a–90 Wedge Street and 83 Powlett Street, Kyneton (see **Figure 1**), however the site was previously known as 88a and 90 Wedge Street.

The site is subject to an environmental audit overlay (EAO) and is proposed to be subdivided into 18 smaller residential blocks (559–1021 m²) and open space / reserve adjacent Post Office Creek.

Copies of the relevant certificates of title and a surveyed plan of the proposed subdivision are provided in **Appendix B**.

1.1 Audit Purpose

Section 208 of the EP Act outlines the purpose of an environmental audit, which is to:

- Assess the nature and extent of the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- Recommend measures to manage the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- Make recommendations to manage the contaminated land, waste, pollution or activity.

1.2 Audit Objectives and Scope

The audit was requested as the site is proposed to be subdivided and redeveloped for a sensitive use (low density residential and public open space) and is subject to an EAO.

The specific objective of this environmental audit was to assess the suitability of the site for its proposed future use (residential and public open space).

This audit therefore relates to risk of harm from contaminated land, waste or pollution at the site, in the context of the proposed future site use.

Table 1-1 below details the defined scope of the audit, as submitted to EPA on 21 July 2022.

Note that EPA was initially notified that the audit site boundary consisted of 88a Wedge Street and part 88 Wedge Street, Kyneton, as follows:

- Lot 1 PS524086 (88a Wedge Street, Kyneton)
- Township of Kyneton Allotment 25 Section 50 (SPI: 25~50\PP5439)
- Township of Kyneton Allotment 26 Section 50 (SPI: 26~50\PP5439)
- Township of Kyneton Allotment 27 Section 50 (SPI: 27~50\PP5439)

Introduction



The audit site boundary was subsequently expanded to include Lot 2 PS524086 (90 Wedge Street, Kyneton) and the remaining lot within 88 Wedge Street (Township of Kyneton Allotment 28 Section 50 (SPI: 28~50\PP5439)).

Subsequent to this occurring, the street numbering system was updated, resulting in a portion of the site formerly identified as part 88 Wedge Street (being Lots 25 – 27~50\PP5439), being defined as 83 Powlett Street,

Further to this, the assessment consultant (Alpha) sought confirmation from a licensed surveyor that Post Office Creek forms the southern site boundary and is not included within the audit site (Section 5.2, Alpha 2023, **Attachment 1**).

On 15 June 2021, a portion of the audit site, identified as 88 Wedge Street, Kyneton (Township of Kyneton Allotment 28 Section 50 (SPI: 28~50\PP5439)) was sold. This portion of the site was removed from the audit boundary prior to completion of this report. The audit has been completed including all remaining lots within the revised audit site boundary (excluding the property that was sold) (refer to **Figure 1**).

The audit scope was submitted to EPA on 21 July 2022 and confirmation of the scope was received on 27 July 2022 (*Reference ID: 0008006782*).

Table 1-1: Audit scope

Item	Detail
Site/premises name	-
Address	88a–90 Wedge Street and 83 Powlett Street, Kyneton
Title details	Lot 1 PS524086 Lot 2 PS524086 Parcel 25~50\PP5439 Parcel 26~50\PP5439 Parcel 27~50\PP5439
Area (m ²)	19,687
Use or Proposed Use for Which the Site is Being Audited:	Sensitive use (low density residential) Public open space
Environmental elements and values assessed in the audit	<ul style="list-style-type: none"> • Ambient air: <ul style="list-style-type: none"> ▪ all environmental values considered. • Land: <ul style="list-style-type: none"> ▪ all environmental values that apply to the land use considered. • Groundwater: <ul style="list-style-type: none"> ▪ all environmental values that apply to the segment considered. • Surface water: <ul style="list-style-type: none"> ▪ all environmental values that apply to the segment considered.
Exclusions from the audit scope and rationale for these	<p>The environmental element of 'ambient sound' has been excluded from the audit scope.</p> <p>The purpose of the environmental audit was to satisfy the requirements of an EAO and determine the suitability of the site for the proposed uses in the context of land and water (surface water and groundwater) contamination.</p> <p>The ambient sound element of the environment is not considered relevant in this context.</p>

Introduction



1.3 Regulatory Framework and Audit Criteria

The legislative framework for the protection of human health and the environment from pollution and waste is set out in the *Environment Protection Act 2017* (the Act), *Environment Protection Regulations 2021* (the Regulations) and the *Environment Reference Standard* (ERS).

Land (including water, sediment and soil vapour) is defined as contaminated if a waste or substance is present (1) above the naturally occurring background level and (2) creates a risk of harm to human health or the environment. The ERS is the primary tool used to assess impacts on the risk of harm on human health and the environment from a waste or substance. The ERS identifies:

- **Environmental values**, which are the uses, attributes or functions of the environment that should be achieved and maintained.
- **Indicators**, which are the parameters or markers used to assess whether environmental values are being achieved or maintained.
- **Objectives**, which are the levels or concentrations of indicators used to assess whether an environmental value is being achieved or maintained.

For land and waters, the objectives are derived using a quantitative risk-based approach. Where pollutant or waste concentrations meet specified objectives, the risk of harm to human health or the environment is assessed as low/negligible for that environmental value¹.

In accordance with EPA Publication 2041 (*Guidelines for conducting environmental audits*; EPA, 2022a), the indicators and objectives identified in the ERS are appropriate and applicable when assessing risks to environmental values and have therefore been adopted as the primary audit criteria. **Section 5.3** further details the applicable environmental values for the environmental elements considered in the audit, and the indicators and objectives which were adopted

In addition to the ERS, there are several guidelines, standards and reference documents relevant to contaminated site investigations that have been considered by the auditor when evaluating the quantity, quality, reliability and useability of information provided by the assessment consultant for the purposes of the audit. These are referenced in **Section 4.0** of this audit report ('Quality of Information').

1.4 Audit Timeframe

The audit commenced on 4 August 2020 and was completed on 15 August 2023.

¹ The auditor notes that meeting of objectives for environmental values relevant to a given land use scenario suggests that the risk of harm to health or the environment is low for the assessed scenario at a particular point in time. However, it doesn't necessarily confirm that contamination is not present. Further assessment and/or clean up may therefore still be indicated, e.g., where the land may in the future accommodate more sensitive uses or where impacts threaten the environmental values of adjacent land.



2.0 Audit Methodology

2.1 Documentation Reviewed

Environmental investigation reports prepared by the assessment consultant that were relied on by the auditor are provided in **Attachment 1** and are listed below:

- Detailed Site Investigation, 88-90 Wedge Street, Kyneton, 22 May 2023 (DSI; Alpha, 2023).²
- Environmental Management Plan, 88a-90 Wedge Street, Kyneton, 8 February 2022 (Alpha 2022a).
- Aesthetic Soil Remediation Validation Report, 88a-90 Wedge Street, Kyneton, 28 March 2022 (Alpha, 2022b; Appendix Q of Alpha 2023).³

2.2 Site Inspections

Table 2-1 summarises site inspections undertaken by the auditor and/or her representative during the audit.

Table 2-1: Summary of Site Inspections

Date	Activity
29 October 2020	Site inspection to become familiar with the site and to view grid-based sampling being conducted by Alpha (completed by auditor and auditor's assistant). Two samples were collected during the site visit.
1 March 2022	Site inspection to observe stockpile sieving works for movement of soils to infill onsite pond (completed by auditor's representative).
20 May 2023	Final site inspection (completed by the auditor's representative)

2.3 Data Collection and Evaluation

The majority of the data evaluated by the auditor to complete the audit was collected and reported to the auditor by a separate assessment team (Alpha Environmental).

The auditor reviewed the assessment consultant's methods and results to ensure the works were conducted to a satisfactory standard for the auditor to form an independent opinion. Documentation reviewed included:

- collated site history information, in accordance with guidance provided in the National Environment Protection (Assessment of Contamination) Measure NEPM (ASC NEPM);
- work plans for intrusive investigations; and
- results, including field notes, environmental monitoring records (e.g., field quality parameters, photo-ionisation detector (PID) readings), bore logs, calibration certificates, laboratory reports and preliminary/draft reports.

² A Preliminary Site Investigation (PSI) was also prepared by Alpha in September 2020, however the PSI results were incorporated in the DSI.

³ The Aesthetic Soil Remediation Validation Report is included in Appendix Q of the Detailed Site Investigation (DSI) report (Alpha, 2023).



The auditor provided regular communication to advise of identified deficiencies or data gaps and ensure that the data obtained complied with relevant guidelines and was sufficient for the purposes of completing this environmental audit.

In evaluating the assessors workplans and monitoring data, the auditor considered the suitability of:

- The investigation scope (e.g. sampling locations, depths, media, frequency, etc) to characterise the contamination status of the site.
- Field sampling procedures, including methods used, quality assurance procedures and quality control samples collected.
- Laboratory analytical procedures, including whether laboratories were National Association of Testing Authorities (NATA) accredited for the analyses conducted.
- Selection of chemical analytes for testing.

The auditor’s evaluation of the quality, reliability and useability of information provided by the assessment consultant is further detailed in **Section 4.0**.

2.4 Auditor Verification Sampling

Two verification samples were collected during the audit. One sample was collected to assess the nature of the sediment along the edge of a previously infilled pond in the southern part of the site (see **Section 5.1**), and the other sample was collected to verify that Alpha’s sample results were reproducible. It was subsequently determined that Alpha did not submit the corresponding sample that the auditor had collected for analysis. A summary of the verification sampling conducted by the auditor is provided in the table below. Sample results are discussed in **Section 4.6**. Relevant laboratory documentation is provided in **Appendix C**.

Table 2-2: Summary of Auditor Verification Sampling

Date	Sampling Conducted	Corresponding Assessor’s Sample Details
29 October 2020	Sediment sample AV1-01 (collected from western edge of infilled pond area on Lot 27).	N/A
29 October 2020	Soil sample AV2-02	BH25/0.5*

*Corresponding consultant sample was not submitted for analysis.

2.5 Expert Support Team

The auditor relied on her own expertise in conducting this environmental audit. Additional support and assistance in conducting the audit was provided by Jantina Lalor (Senversa, Associate Environmental Scientist), who conducted site inspections on behalf of the auditor, reviewed data and reports provided by the assessment team, and assisted with audit report preparation.

Audit Methodology



2.6 Risk Assessment Approach

Consistent with methodologies set out in the ERS and the ASC NEPM, the risk of harm to environmental values of the elements considered in the audit was assessed by:

- Comparison of investigation results to objectives set out in the ERS (where available),
- Comparison with risk based human health or ecological investigation or screening levels from other sources, where these have been derived using a risk-based approach consistent with those adopted and endorsed in the ASC NEPM; and/or
- Site-specific risk assessment methodologies in accordance with the ASC NEPM, including both qualitative, semi-quantitative and quantitative approaches and considering multiple lines of evidence where possible and relevant.

The specific approach(es) to risk assessment required for the site are further discussed in **Sections 5.5 to 5.7**.



3.0 Summary of Information Reviewed

The following sections provide a summary of the environmental investigation reports reviewed and considered in the audit. The DSI report (Alpha 2023; **Section 3.1**) formed the primary information source upon which the audit findings are based. The auditor notes that a Preliminary Site Investigation (PSI) report was initially prepared by Alpha in 2020, however, the findings of the PSI were incorporated into the more current DSI report thus only the DSI has been discussed below.

3.1 Detailed Site Investigation (Alpha, 2023)

Alpha conducted a PSI / desktop site history investigation, which then informed the DSI workplan and investigations. The PSI identified that the site was vacant grassed land prior to the mid-1970s. In *circa* 1977, a house was built on 90 Wedge Street, and additional residential buildings were built on the western portion of the site between 1989 and 2002. Various landscaping works have since been conducted in the eastern and southern portions of the site, including the construction of a pond in the southern portion of the site between 2010 and 2014. The pond was then partially infilled sometime between 2014 and 2019 (approximate location shown on **Figure 1**).

While multiple draft versions of the DSI were prepared and reviewed by the auditor (each updated when additional works were completed), the final version of the DSI (May 2023) documents the following investigation works:

- Grid-based soil sampling across the site, investigating 35 bore locations.
- Additional targeted soil assessment works to delineate three identified hotspot areas (BH14, BH19 and BH31).
- Characterisation of a stockpile located in the northeastern portion of the site (source unknown but inferred to have been derived from excavation of the former pond).
- Additional sampling to the south of the previously infilled pond area (VAL01–VAL03) and to the north and south of the existing stockpile (VAL04–VAL08) to assess the potential for PFAS to have impacted the adjacent surface soils via surface runoff.
- Validation sampling beneath the stockpile following its relocation works to the infilled pond area (PV01–PV25). The stockpile relocation works were conducted in accordance with Alpha's Environmental Management Plan (EMP) (Alpha, 2022a), and as described in the Aesthetic Soil Remediation Validation Report (Alpha, 2022b; Appendix Q of Alpha, 2023).
- Sampling and analysis of an existing groundwater extraction bore on site to gain an understanding of the groundwater conditions beneath the site, noting that the existing extraction bore was installed in the deeper aquifer beneath the site (i.e., installed to a depth of 70 m).
- Sampling and analysis of surface water samples from Post Office Creek, to assess the potential for impact arising from the site or affecting the site from the creek.
- Installation and monitoring of four groundwater monitoring wells to assess whether off-site light industrial properties to the north had impacted the shallow aquifer beneath the site.

The findings of the above investigations were used to inform this environmental audit report and are discussed further in **Section 4.0** and **Section 5.0**.

3.2 Environmental Management Plan (Alpha, 2022a)

Alpha prepared an EMP to outline required management measures during movement of stockpiled soils within the 83 Powlett Street property to further infill the partially infilled pond. The EMP outlined processes to be followed during the stockpile movement to ensure protection of human health and the environment.

Summary of Information Reviewed



3.3 Aesthetic Soil Remediation Validation Report (Alpha, 2022b; Appendix Q of Alpha, 2023)

A stockpile located in the northeast part of 83 Powlett Street, estimated to be 280 m³, was excavated, sieved to remove aesthetically unsuitable material, visually inspected and reused to complete filling of a partially infilled pond area in the southern portion of the property over a three-day period.

Approximately 25 m³ of aesthetically unsuitable material (e.g. building waste and rubble) was removed from the stockpile and disposed off-site.

Several pieces of potential asbestos containing material (ACM) in the form of bonded cement sheeting were extracted during the sieving works and submitted to Alpha's NATA accredited asbestos laboratory for analysis. Results indicated that six of the eight potential ACM fragments collected contained asbestos.

Alpha provided a visual clearance inspection following sieving and removal works, which is provided as an appendix in their report.

3.4 Environmental Audits Completed Near the Site

EPA Victoria provides an online register of completed environmental audits. Audits submitted after 1 July 2021 and conducted under the *Environment Protection Act 2017* and *Environment Protection Act 1970* are included in the 'register of environmental audits'. Environmental audits submitted prior to 1 July 2021 and completed under the *Environment Protection Act 1970* are available via the 'environmental audit online tool' (available on EPA's portal).

Alpha conducted a review of properties within a 1000 m radius of the site (current as of 7 August 2020) for which a certificate or statement of environmental audit was issued under Part IXD of the *Environment Protection Act 1970*. Six sites were listed as being completed audit sites. However, it is noted that four of the completed environmental audits are part of one larger site. The details of the completed nearby environmental audit sites are included within the Lotsearch report (Alpha, 2023).

The auditor independently reviewed the completed environmental audits in the vicinity of the site to assist in the understanding of soil and groundwater conditions in the area and the potential for contamination at the subject site. A summary of the auditor's review of completed nearby environmental audits is provided in **Table 3-1**.

Summary of Information Reviewed



Table 3-1: Review of Completed Nearby Environmental Audits

EPA Reference	Audit Site Details, Auditor and Date	Approx. Distance / Direction from Site	Former Use	Soil Investigation	Groundwater Investigation	Groundwater Flow Direction	Groundwater TDS (mg/L) and Segment*	Outcome
8004730 (73695-1)	73–75 Wedge Street, Kyneton John Throssell 2016	20 m west, northwest (across Wedge Street).	Fuel and storage depot since 1965. Previously contained seven ASTs (super, unleaded, distillate, heating oil).	Typical soil profile consisted of: <ul style="list-style-type: none"> • Topsoil (0.0–0.2 m). • Silty clay (0.2–4.0 m). • Basalt (4.0–10.0 m). Total recoverable hydrocarbons (TRH) exceeded ecological screening levels (ESLs) at depths greater than 2 m, thus was concluded to not pose an ecological risk. Elevated heavy metals (chromium, nickel) were identified but were considered naturally occurring.	Five perched aquifer and four shallow aquifer groundwater wells were installed. Depth to the shallow aquifer ranged from 0.4–3.5 m below ground level (bgl). The shallow aquifer was found to be contain elevated levels of heavy metals (cadmium, copper, nickel, zinc), which were considered to be representative of background conditions (likely derived from the Newer Volcanics aquifer).	Southwest	660–850 Segment A2	Certificate
8000744 (34745-1)	1 Ebdon Street, Kyneton Fouad Abo 1998	145 m east.	Depot for the storage of agricultural chemicals and equipment for the Department of Conservation and Natural Resources between the early 1970s and 1997. The site contained two sheds, one of which was used for mixing 1080 bait and contained a floor drain, connected to a soak pit.	Fifteen soil bores were drilled across the site. The maximum depth drilled to was 2.0 m. Typical soil profile consisted of: <ul style="list-style-type: none"> • Topsoil (0.0–0.3 m). • Silty clay (0.3–1.0 m). • Basalt bedrock^ (1.0–2.0 m). Groundwater was not encountered. The floor drain was excavated, remediated and validated. Elevated natural concentrations of chromium, nickel and zinc were detected, associated with basaltic clays. Elevated arsenic was detected in the soil beneath the main shed (under the slab).	N/A	N/A	N/A	Statement

Summary of Information Reviewed



EPA Reference	Audit Site Details, Auditor and Date	Approx. Distance / Direction from Site	Former Use	Soil Investigation	Groundwater Investigation	Groundwater Flow Direction	Groundwater TDS (mg/L) and Segment*	Outcome
8000504 (30324-2)	Portion 2, Lots 9–12, 22–26 Mitchell Street, Kyneton Peter Nadebaum 2000	440 m southeast	Former gas manufacturing plant from 1858 to 1960. Tempered Liquid Petroleum Gas (TLPG) was stored at the site until the mid-1980s.	<p>Typical soil profile consisted of:</p> <ul style="list-style-type: none"> • Fill material (0.0–0.3 m). • Clay (0.3–2.0 m). • Basalt bedrock (2.0–10.0 m). <p>Remediation works included removal of tar wells, a water well, purifier boxes, and stripping and stockpiling topsoil.</p> <p>Some structures were retained for heritage reasons (at the request of Heritage Council of Victoria), including the footings of a tar well (Lot 10), retort house and gas holders (Lots 11 and 12).</p> <p>Excavations were backfilled with 0.5 m of clean imported fill, overlying a warning barrier.</p> <p>Polycyclic aromatic hydrocarbons (PAHs) and benzo(a)pyrene remained at levels exceeding clean-up criteria in some areas at a depth below 0.5 m.</p> <p>Heavy metals (arsenic, barium, lead, nickel, zinc, vanadium), benzene, toluene, ethylbenzene, xylenes (BTEX) and TRH exceeded investigation levels (ILs).</p> <p>Barium, nickel and vanadium were considered to be natural in origin.</p>	<p>Eleven groundwater monitoring wells were investigated over a five-year period. Depth to groundwater (in the fractured basalt), ranged from 5 to 7 m.</p> <p>Groundwater was contaminated with phenols, PAHs, ammonia, BTEX and some metals (chromium, copper, lead, zinc) due to gas works activities.</p> <p>Remaining residual gas works related contamination was concluded to have potential to cause ongoing impact to groundwater.</p>	North to northwest (towards Post Office Creek).	530–1,500 mg/L Segment A1-A2	Statement

Summary of Information Reviewed



EPA Reference	Audit Site Details, Auditor and Date	Approx. Distance / Direction from Site	Former Use	Soil Investigation	Groundwater Investigation	Groundwater Flow Direction	Groundwater TDS (mg/L) and Segment*	Outcome
<p>8000501</p> <p>8000502</p> <p>8000503</p> <p>(30324-11-A</p> <p>30324-11-B</p> <p>30324-11-C)</p>	<p>Portion 1, Lots 7, 8 and 13, 22–26 Mitchell Street, Kyneton</p> <p>Peter Nadebaum 1998</p>	<p>415 m southeast</p>	<p>Former gas manufacturing plant from 1858 to 1960.</p>	<p>Residual concentrations of PAHs in localised areas remained onsite in Lot 81.</p> <p>Low levels of heavy metals, inorganics, aliphatic hydrocarbons and MAHs remained in the soil.</p> <p>A 0.4–0.5 m thick layer of clean fill was placed over the site.</p>	<p>The groundwater investigation consisted of installing and sampling seven wells across three sampling events. Wells were situated onsite, cross-gradient, upgradient and downgradient.</p> <p>Depth to groundwater (in the fractured basalt), ranged from 5 to 6 m.</p> <p>Groundwater was contaminated with PAHs and phenols from gas works activities.</p> <p>Elevated concentrations of chromium, copper, lead and zinc were attributed to natural background levels.</p>	<p>North to northwest (towards Post Office Creek).</p>	<p>800–1,000 Segment A2</p>	<p>Separate Statement for each lot.</p>
<p>EA001136</p> <p>(74522-1)</p>	<p>Part of 67 Simpson Street, Kyneton</p> <p>Sally Bonham 2022</p>	<p>1.2 km south</p>	<p>Vacant grassland with small structure on southeast corner. Land owned by the Kyneton District Hospital from 1970s to 2010s.</p>	<p>Thirteen grid locations were assessed to a maximum depth of 1.0 m bgl.</p> <p>Concentrations of total chromium, cobalt, vanadium and fluoride exceeded ecological investigation levels (EILs).</p>	<p>Four groundwater wells were investigated – one located onsite, and three located off site.</p> <p>Two groundwater monitoring events (GMEs) were conducted.</p> <p>Depth to groundwater was reported to be 10.4–10.6 m bgl.</p> <p>Elevated concentrations of copper and zinc, considered representative of background / natural conditions, were reported in groundwater.</p> <p>Groundwater was polluted with nitrate (as N), originating from regional pollution.</p>	<p>West to southwest</p>	<p>520–580 Segment A1</p>	<p>EAS</p>

¹As described in the Addendum to the report (February 1988).

²It is noted that the audit report states the underlying bedrock is granite, however, reference to the bore logs attached in the assessment consultant's report confirm that the underlying bedrock is logged as basalt.

*Groundwater segments from total dissolved solids (TDS) data are based on the classification in the ERS. The audit reports listed above were completed prior to the ERS coming into effect in July 2021 and may differ to the TDS classifications listed within those reports, which were based on the State Environment Protection Policy (Waters) (2013).

Summary of Information Reviewed



The key findings from the environmental audit reports reviewed include:

- The soil profile in the audit sites adjacent to the east and west is typically described as:
 - Topsoil (0.0–0.3 m bgl)
 - Silty clay (0.2–4.0 m bgl)
 - Basalt (1.0–10.0 m bgl)
- Groundwater was generally present at depths ranging from 0.4 m to 6.0 m bgl in weathered clay overlying basalt bedrock (noting that the shallower detected groundwater levels were interpreted to be perched water at the adjacent former Mobil depot site where underground tanks were present).
- TDS concentrations in groundwater vary across the area from 530 mg/L to 1,500 mg/L, classifying groundwater as Segment A1 or A2 in accordance with the ERS.
- Various contaminants were identified on individual audit sites, based on their former site uses (e.g., BTEX, phenols, PAHs, metals).
- Groundwater contains background and/or regionally elevated concentrations of cadmium, copper, nickel and zinc.
- Nitrate is identified as a regional pollutant in the most recent audit completed in the vicinity of the site (EA001136).

3.5 Victorian Landfill Register

A review of the Victorian Landfill Register indicated that there are no registered landfills within 500 m of the site.

It is noted that Lotsearch report (Appendix G of Alpha, 2023) identifies a former landfill located 406 m northeast of the site. However this distance is indicated to be based on a 'road match' by the Lotsearch algorithm. Cross-reference with the Victoria Unearthed website indicates the former landfill is located at the Kyneton Transfer Station at 140 Redesdale Road, more than 1.7 km northeast of the site. The audit site is therefore not located within the development buffer zone of the identified former landfill.

Quality of information



4.0 Quality of information

Guidance on undertaking environmental site investigations for the purposes of identifying potential land contamination issues is provided in the following primary documents:

- *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC, 2013).
- Australia Standard (AS 4482.1): *Guide to the Investigation and Sampling of sites with Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds* (Standards Australia, 2005).⁴
- Australia Standard (AS 4482.2): *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile substances* (Standards Australia, 1999).⁴
- *Industrial Waste Resource Guidelines: Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*, EPA Publication IWRG701, June 2009 (EPA, 2009).
- *Industrial Waste Resource Guidelines: Soil Sampling*, EPA Publication IWRG702, June 2009 (EPA, 2009).
- *Hydrogeological Assessment (Groundwater Quality) Guidelines*, EPA Publication 668.1 (EPA, 2022d).
- *Groundwater Sampling Guidelines*, EPA Publication 669.1 (EPA, 2022b).
- *Guidance for the cleanup and management of contaminated groundwater*, EPA Publication 2001 (EPA, 2021).
- *PFAS National Environment Management Plan (PFAS NEMP). Version 2.0 – January 2020*. National Chemicals Working Group of the Heads of EPAs Australia and New Zealand (HEPA, 2020).

4.1 Historical information

A review of historical information and activities that have taken place on the site is documented in the DSI (Alpha, 2023) (**Attachment 1**).

The site history comprised review or searching of:

- Historical aerial photographs (from 1945 to 2019).
- Sands & McDougall's Directories of Melbourne and Suburbs (from 1944 to 1974).
- Current and historical titles.
- The EPA Priority Sites Register.
- The EPA Landfill Register.
- Worksafe Dangerous Goods Register.
- Energy Safe cathodic protection systems database.
- Melbourne Metropolitan Board of Works maps.
- Royal Historical of Victoria search.
- Council planning and building records.
- Trade Waste record search.
- Underground services plans provided by various utilities providers.
- Published information on the geology and the hydrogeology in the area.

⁴ It is noted that AS4482.1 and AS4482.2 have been withdrawn with no superseding standard developed; however they are still considered to provide relevant guidance in combination with other key guidelines listed herein.

Quality of information



Current and previous owners of the site, and occupiers of adjacent properties to the north, were also interviewed about previous and current uses of on-site and nearby off-site land.

The auditor considers the historical review undertaken by Alpha was conducted in accordance with the relevant standards and guidelines, provided an adequate understanding of the history of the site and potentially contaminating historical activities, and was sufficient for the purposes of the audit.

4.2 Soil Investigation Methodology

Soil investigations undertaken are documented in the Alpha (2023) DSI report in **Attachment 1**. Primary components of the field investigations relevant to this audit, together with the auditor’s observations and comments in relation to works conducted are summarised in **Table 4-1** and **Table 4-2**.

Table 4-1: Chronology of Soil Assessment Sampling

Date	Sample Locations	Objective of Sampling	Sampling and Analytical Program
29-30 October 2020	35 soil bores: BH01–BH35	Approximate grid-based samples to characterise the soil conditions across the site.	<p>Samples were analysed for one or more of the following:</p> <ul style="list-style-type: none"> • TRH, BTEX. • PCBs, organochlorine pesticides (OCPs), organophosphate pesticides (OPPs). • PAHs, phenols. • Metals (arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin and zinc). • Cyanide, fluoride. • PFAS.
19 November 2020	10 test pits: SP01–SP10	Characterise the (then) existing stockpile in Lot 25.	<p>Samples were analysed for one or more of the following:</p> <ul style="list-style-type: none"> • TRH, BTEX, MAHs. • PCBs, OCPs, OPPs. • PAHs, phenols. • Chlorinated hydrocarbons. • Metals (arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin and zinc). • Cyanide, fluoride. • PFAS.
	Three test pits: SP11–SP13	Investigate the pond area in the southern portion of Lot 27, which was partially infilled with stockpile material from Lot 25 prior to the audit being initiated.	<ul style="list-style-type: none"> • Lead
	13 soil bores: BH14A–BH14F BH19A–BH19G	Delineation sampling, conducted around BH14, BH19 and BH31, where elevated concentrations of contaminants of potential concern were detected from the initial phase of soil investigation works. Delineation samples were collected from the same depth as the initial grid location.	<ul style="list-style-type: none"> • Zinc
	Eight soil bores: BH31A–BH31H		

Quality of information



Date	Sample Locations	Objective of Sampling	Sampling and Analytical Program
26 March 2021	Three validation samples: VAL01–VAL03	Surface sampling to assess potential impact from surface water run-off adjacent to the south of the partially infilled pond area (prior to current stockpile movement works being undertaken)	<ul style="list-style-type: none"> • PFAS
	Three validation samples: VAL04–VAL06	Surface sampling to assess potential impact from surface water run-off adjacent to the south of the existing stockpile in Lot 25.	<ul style="list-style-type: none"> • PFAS
	Two validation samples: VAL07–VAL08	Surface sampling to assess near surface soils following movement of the northern portion of the former stockpile in Lot 25, which occurred prior to the commencement of the environmental audit*.	<ul style="list-style-type: none"> • Metals (arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, zinc) • PAHs • PFAS
28 February – 2 March 2022	N/A	Stockpile excavation and relocation works to infill the pond in Lot 27.	N/A
	Lot 25	Visual removal of ACM.	<ul style="list-style-type: none"> • Asbestos
2 March 2022	Lot 25	Visual asbestos clearance inspection.	N/A
8 June 2022	25 validation samples: PV01–PV25	Validation sampling conducted in Lot 25, following stockpile movement works to assess any potential residual elevated PFAS concentrations.	<ul style="list-style-type: none"> • PFAS

* The surface soils at sample locations VAL07 and VAL08 were disturbed during stockpile sieving and relocation works. These samples were subsequently superseded by samples PV01-PV25, which represented a more intensive grid-based sampling program in Lot 25, following stockpile relocation works. The results of samples VAL07 and VAL08 are therefore not considered in the final site condition.

The auditor notes that only materials considered to be aesthetically unsuitable for the proposed low density residential and public open space uses were removed from site (i.e., building rubble and debris). This occurred during the stockpile excavation and relocation works, discussed in the Aesthetic Soil Remediation Validation Report (Alpha, 2022b; Appendix Q, Alpha, 2023). All soils remained onsite.

Quality of information



Table 4-2: Quality of Soil Investigations

Component of Field Investigation and Relevant Guidelines/Standards	Auditor's Observations and Comments
<p>Sampling coverage Grid and target assessment AS4482.1 and AS4482.2 ASC NEPM B2</p>	<p>The property is approximately 2.5 ha. For a site of this area, AS4482.1 (2005) recommends a minimum of 35 grid based/unbiased samples.</p> <p>The number of unbiased (approximately gridded) sample locations (35) met the minimum number recommended by AS4482.1 (2005) and would be expected to detect a 31.5 m diameter hotspot with 95% confidence.</p> <p>As described in Table 4-1 above, additional targeted soil investigations were also completed to assess the contamination status of areas identified to have a higher likelihood of contamination being present (stockpiles, infilled pond area, etc) and to delineate some slightly elevated metal contamination identified in one area.</p> <p>Overall, the auditor considers that the sampling locations were selected in a manner consistent with relevant guidelines and were adequate for the purposes of the audit.</p>
<p>Sample collection techniques IWRG701, AS4482.1 and AS4482.1</p>	<p>Soil samples were collected using a hand auger, hand tool, Geoprobe core or excavator bucket collected using a clean disposable glove. All soil bores were extended into natural soil (noting that BH01 and BH02 were terminated in 'disturbed natural'). Samples were collected from near surface and underlying natural lithologies.</p> <p>The auditor considers that the sample collection techniques were consistent with relevant guidelines and adequate for the purposes of the investigation.</p>
<p>Sample equipment decontamination AS4482.1</p>	<p>Reusable sampling equipment was washed using low phosphate detergent (Decon 90) and rinsed with deionised water.</p> <p>The decontamination procedures were consistent with relevant guidelines and adequate for the purposes of the investigation.</p>
<p>Field measurements AS4482.2</p>	<p>Soil samples were screened using a PID: readings are provided in bore logs in Appendix M of the DSI report (Alpha, 2022). Calibration certificates for the PIDs used are provided in Appendix O (Alpha, 2022).</p> <p>The sample screening methodology employed in the field was observed by the auditor and/or her representative to be consistent with operational guidelines.</p>
<p>Field documentation (i.e., field notes, bore logs and chain of custody records) AS4482.1, AS4482.2, ASC NEPM B2</p>	<p>One soil sample was omitted from the chain of custody documentation: sample receipt advice (SRA) for laboratory report 753967 stated that an extra sample (BH35/0.5) was received. A review of the bore log indicated that a sample was collected at this depth. The auditor assumes this sample was erroneously omitted from the chain of custody. This sample was subsequently placed on hold and analysis was not requested.</p> <p>Notwithstanding the above discrepancy, field documentation including bore logs and chain of custody documents was generally completed to a satisfactory standard to enable the auditor to interpret the data.</p>

Quality of information



Component of Field Investigation and Relevant Guidelines/Standards

Auditor's Observations and Comments

Sample handling, preservation and storage
IWRG701 and ASC NEPM B2

Sample receipt advice received from the laboratories indicated that samples were generally received in good condition, in appropriately preserved containers for relevant analyses, with the following exceptions:

- Attempts to chill samples were evident, however, the laboratory SRA indicated that the sample temperatures exceeded 6°C in several cases with random samples from 5 different batches submitted to Eurofins being recorded at temperatures of 8.4–15.5 °C (lab reports 753967-S-V2, 760227-S-V2/760227-L, 758376-S-V2, 760165-S, 31906).
- SRA indicated that appropriate sample jars were not provided on two separate occasions:
 - "No PFAS container received for SP09/0.5" (laboratory report 760165).
 - "Samples for organics were provided without the ideal container type, a glass jar is the recommended container type" (laboratory report 23173).

The auditor does not consider this to have affected the overall quality or useability of the data, noting that:

- the recorded sample temperatures were much lower than *in situ* and samples were in transit for only a short period of time.
- The reported PFAS concentration in sample SP09/0.5 was similar to the adjacent sample (SP07/0.5) collected at the same depth and is consistent with the range of (low level) concentrations reported at the site. The reported result at this location (analysed from the general soil jar) is therefore considered representative of the actual conditions or may in fact over-represent the actual PFAS concentrations (if the lack of appropriate sample container contributed to the detected results).

Overall, the procedures used are considered adequate and consistent with the referenced guidelines.

Number and type of soil quality control samples
AS4482.1 and AS448.2.2
ASC NEPM
PFAS NEMP

Field Duplicate Samples

Field quality control samples collected during the soil investigation works included field (intra-laboratory) and secondary (inter-laboratory) duplicate samples.

Field and secondary duplicate samples should be collected at a frequency 1:20, as recommended in AS4482.1. Field and secondary duplicate samples collected for PFAS analysis should be analysed at a frequency of 1:10, as per the recommended ratio for PFAS in the PFAS NEMP.

The number of quality control samples collected and analysed is summarised below.

29-30 October 2020 (BH1-BH35)

- Three field duplicate samples (5.5%) were collected and analysed for a total number of 55 primary samples analysed which meets the minimum recommended frequency of 5%.
- Four secondary duplicate samples (7.3%) were collected and analysed for a total number of 55 primary samples analysed which meets the minimum recommended frequency of 5%.

19 November 2020 (SP01-SP13, BH14A-BH14F, BH19A-BH19G, BH31A-BH31H)

- Four field duplicate samples and four secondary duplicate samples (11.8%) were collected and analysed for a total number of 34 primary samples analysed which meets the minimum recommended frequency of 5%.
- Thirteen primary samples were also analysed for PFAS. Two field duplicate samples and two secondary duplicate samples (15%) were submitted for PFAS analysis, meeting the minimum recommended frequency of 10%.

26 March 2021 (VAL01-VAL08)

- One field duplicate sample and one secondary duplicate sample (12.5%) were collected and analysed for a total number of 8 primary samples analysed which meets the minimum recommended frequency of 5%.
- Eight primary samples were also analysed for PFAS. One field duplicate sample and one secondary duplicate sample (12.5%) were submitted for PFAS analysis, meeting the minimum recommended frequency of 10%.

Quality of information



Component of Field Investigation and Relevant Guidelines/Standards

Auditor's Observations and Comments

8 June 2021 (PV01-PV25)

- Twenty-five primary samples were analysed for PFAS only. Three field duplicate samples and three secondary duplicate samples (12%) were submitted for PFAS analysis, meeting the minimum recommended frequency of 10%.

The overall frequency of field duplicate samples collected is greater than the minimum recommended frequency of 10% for samples analysed for PFAS, and 5% for other analyses. Therefore, the auditor considers the number and type of duplicate samples collected during the audit were sufficient for interpretative purposes, i.e., were sufficient to assess reproducibility of results within and between laboratories.

Rinsate Blank Samples

Rinsate blank samples were collected during soil sampling events where reusable equipment was utilised.

A rinsate blank was not collected for the following sampling event, as it did not utilise reusable sampling equipment:

- Validation sampling undertaken following stockpile relocation work (PV01-PV25) on 8 June 2022. Samples were directly collected from the ground surface using disposable nitrile gloves between each sample location.

Trip Blank Samples

Trip blank samples were collected for soil sampling events where volatile contaminants of potential concern were analysed.

Alpha did not collect a trip blank sample for the following sampling events, as analysis was restricted to non-volatile substances:

- Surface sampling conducted on 26 March 2021 to assess potential PFAS impact from surface water run-off (VAL01 – VAL08).
- Validation sampling undertaken following stockpile relocation work (PV01-PV25) on 8 June 2022.

The auditor is satisfied that rinsate and trip blank samples were generally collected at the appropriate frequency of one per day for each piece of reusable sampling equipment, which is consistent with the reference guidance.

Further to this, all volatile analytes in soil were detected at concentrations below laboratory detection limits (except for two minor detections of toluene, which were reported during the 29-30 October 2020 sampling event where trip blanks were collected (and toluene was not detected in these)). Therefore, there is no evidence of cross contamination during transport of samples.

Selection of chemical analytes AS4482.1 and AS448.2.2

Chemical analytes for the soil investigation were selected with consideration to the site history, included the potential contaminants identified in **Section 5.4** and included broad analytical suites on selected samples.

The auditor is satisfied that the selection of chemical analytes by the assessment consultant was sufficiently comprehensive for the purposes of this environmental audit.

4.3 Groundwater Investigation Methodology

The groundwater investigations undertaken are documented in the DSI report provided in **Attachment 1**. Primary components of the field investigation relevant to this audit, together with the auditor's observations and comments in relation to works conducted are summarised in **Table 4-3**.

The objectives of the groundwater sampling were to:

- Assess the condition of the deep aquifer beneath the site, into which an on-site production bore is installed.
- Assess the contamination status of the shallow aquifer beneath the site, including whether off-site light industrial properties to the north had caused contamination.

Quality of information



Table 4-3: Quality of Groundwater Investigations

Component of Field Investigation and Relevant Guidelines/Standards	Auditor's Observations and Comments
<p>Groundwater bore coverage and construction</p> <p>EPA 668.1, 669.1, 2041 ASC NEPM</p>	<p>30 October 2020 – Alpha sampled an existing onsite production bore to assess the condition of the deep aquifer beneath the site. A construction log for this bore was not available but information in the Visualising Victoria's Groundwater (VVG) database (University of Ballarat, 2014) indicated that the well was installed in 2004 to a depth of 70 m, with a screened interval of 40–70 m bgl within 'brown basalt' (Bore ID WRK009843). The downhole pump associated with this bore was decommissioned following the sampling event.</p> <p>28 September 2022 – Alpha installed four groundwater monitoring wells (MW01–MW04; see Figure 4) in the shallow (uppermost) aquifer at the site, to assess the contamination status of the shallow aquifer beneath the site, including whether off-site light industrial properties to the north had caused contamination.</p> <p>MW01 and MW02 were installed along the northern site boundary (adjacent light industrial premises located to the north of the site) and MW03 and MW04 were installed in the southern portion of the site (inferred down-hydraulic gradient).</p> <p>Groundwater monitoring bores were advanced using solid flight auger drilling methods to a maximum depth of 5–6 m bgl. The wells were screened in natural clay (weathered basalt) from approximately 1.5–2 m bgl to the maximum depth. Standing water levels (SWLs) were recorded to range from 2.35 to 2.59 m bgl, indicating that the wells were screened across the water table.</p> <p>The wells were developed using disposable bailers the following day (29 September 2022) with 25 L of water reported to be removed from well. Alpha reported that the disposable bailer used for development of MW04 broke within the well making the well inaccessible for sampling, however the auditor considers that the remaining three wells were adequate for the purposes of the investigation (identification of contamination entering the site from off-site sources to the north and assessment of groundwater condition across the broader site).</p> <p>Overall, the auditor considers that the groundwater bore placement, construction and development was sufficient to assess the condition of groundwater beneath the site and conducted in general accordance with relevant guidelines, including EPA Publications 668.1 and 669.1, and the Minimum Construction Requirements for Water Bores in Australia (Land and Water Biodiversity Committee – Version 3, 2018).</p>
<p>Sample collection techniques</p> <p>EPA 668.1, 669.1 and IWRG 701</p>	<p>Deep Aquifer Onsite Production Bore</p> <p>The production bore was sampled using a HydraSleeve, which was placed at an approximate depth of 45 m bgl (within the screened interval) and left to equilibrate for four hours prior to sampling.</p> <p>While this sampling technique (in particular the relatively short equilibration time) has the potential to collect water that has been disturbed by placement of the sampler, Alpha notes in their DSI that the bore was 'overflowing' on the day of sampling, which indicates that the water table is confined and that the water within the bore was being actively refreshed through the screened interval at the time of sampling. The short equilibration period is therefore consistent with relevant guidance referenced in EPA Publication 669.1 (ITRC, 2007), which states that equilibration periods as short as one hour are acceptable where there is sufficient groundwater flow to stabilise groundwater conditions (which was the case here). The collected water is therefore considered representative of the surrounding formation and adequate for assessing the contamination status of the deep aquifer underlying the site.</p> <p>Shallow Aquifer Groundwater Monitoring Wells</p> <p>Shallow groundwater was sampled using low flow sampling methods more than 7 days after installation and development, which is considered adequate time for water chemistry in the well to have stabilised. As noted above, MW04 was not sampled due to a bailer breaking within the well during well development.</p> <p>The pump inlet was placed within the screened interval of the well to intersect 'representative' water as it entered the water column, and the pumping rate was sufficiently low to ensure minimal draw down of the water table, with samples collected following stabilisation of field parameters. Samples for metals analysis were filtered through a 0.45 µm filter.</p> <p>The auditor was not made aware of the shallow aquifer groundwater sampling program and therefore was not present on site to witness the sampling techniques used. Despite this being the case, the information provided from Alpha indicates that the methodology used to sample the shallow aquifer was conducted in general accordance with applicable guidance and suitable for the purpose of collecting representative groundwater from the sampled locations.</p>

Quality of information



Component of Field Investigation and Relevant Guidelines/Standards Auditor's Observations and Comments

<p>Sampling equipment decontamination</p>	<p>Deep Aquifer Onsite Production Bore Equipment decontamination was not required for the Hydrasleeve technique used as all materials were single-use.</p>
<p>EPA 669.1</p>	<p>Shallow Aquifer Groundwater Monitoring Wells Dedicated non-reusable tubing, in-line filters and pump bladders were stated to have been used for each well during groundwater sampling. The low flow pumps used for sampling were washed between sample locations using low phosphate detergent (Decon 90) and rinsed with deionised water. The auditor considers that the decontamination procedures were consistent with relevant guidelines and adequate for the purposes of the investigation.</p>
<p>Field measurements</p>	<p>GME01 (30 October 2020) – Deep Aquifer Onsite Production Bore Groundwater field parameters were measured directly in the bore prior to sampling using a YSI multi-meter probe. Parameters were monitored until they had stabilised, although it is noted that for DO only two of the final three readings had stabilised to within +/- 10% (as per EPA Publication 669.1). This is not considered to affect the investigation outcome as a no-purge sampling method was used for this bore. The production bore was not gauged as artesian conditions (water overflowing from the well head) were noted on the day of sampling.</p> <p>GME02 (6 October 2022) – Shallow Aquifer Groundwater Monitoring Wells Water quality parameters were monitored during purging using a flow through cell and AquaTROLL 500 water quality meter. Parameters had stabilised prior to the collection of samples (based on criteria specified in EPA Publication 669.1). Calibration certificates for the water quality meters were provided in the DSI. SWLs in both the shallow wells and the production bore were gauged with an oil-water interface meter during GME02. Details of the interface probe and a calibration certificate were not provided in the DSI report. Alpha subsequently provided the following additional information to the auditor:</p> <ul style="list-style-type: none"> • The interface meter used was a Solinst Interface Meter (Model: 122 S/N: 348792). • No calibration certificates are available. <p>Alpha clarified that they typically assess the probe every 6 months for function and signs of wear and the battery is replaced on an as required basis. Functionality is tested using a layer of oil (typically food oil) on water, within a solid jar to minimise light. The test involves assessing for solid and intermittent beeps. The auditor considers these procedures to be appropriate to confirm useability and working condition of the meter. The auditor is satisfied that the field measurements were undertaken consistent with operational guidelines and are representative of conditions at the time of measurement.</p>
<p>Field documentation (i.e., field notes, bore logs and chain-of-custody records)</p>	<p>Field documentation was completed to a satisfactory standard to enable the auditor to interpret the data.</p>
<p>EPA 668.1 and 669.1</p>	
<p>Sample handling, preservation and storage</p>	<p>Sample receipt advice received from the laboratories indicated that samples were received in good condition, in appropriately preserved containers for relevant analyses, with the following exception:</p>
<p>EPA 669.1 and IWRG701</p>	<ul style="list-style-type: none"> ▪ Attempts to chill samples were evident, however, sample temperature exceedances were noted by the primary laboratory on two occasions with the sample receipt temperature of 9.1°C (laboratory report 753964) and 9.5°C (laboratory report 929832). <p>The auditor does not consider this to have affected the quality or useability of the data, noting that the water temperature was lower than <i>in situ</i> and samples were in transit for only a short period of time. The procedures are considered adequate and consistent with the referenced guidelines.</p>

Quality of information



Component of Field Investigation and Relevant Guidelines/Standards	Auditor's Observations and Comments
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<p>Number and type of field quality control samples</p> <p>Adopted consistent approach with soils (AS4482.1 and AS4482.2)</p>	<p>Field Duplicate Samples</p> <p>One field duplicate and one field split was taken during each groundwater monitoring (deeper aquifer and shallow aquifer). The primary samples were submitted for analysis with a corresponding duplicate and split sample for contaminants of potential concern (CoPC). The collection of field quality control samples met the recommended frequency of one field duplicate and one secondary duplicate per 20 primary samples.</p> <p>Trip and Rinsate Blanks</p> <p>A rinsate blank was not required for the initial GME (deeper aquifer), as no re-usable sampling was used. A trip sample was collected during this sampling event.</p> <p>A trip blank and rinsate blank were collected and submitted for analyses during the second (shallow aquifer) GME. The rationale for trip and rinsate blank collection and analysis is provided in Section 12.3.2 of the Alpha (2023) DSI report.</p>
<p>Number of groundwater monitoring events undertaken</p>	<p>Groundwater monitoring bores were sampled on one occasion. While this means the data does not provide information on temporal variability in analyte concentrations, the groundwater monitoring was undertaken to confirm the presumed absence of contamination, rather than because likely groundwater sources were identified. The absence of contamination (other than analytes considered representative of naturally occurring and/or ambient regional impacts; see Section 5.5.2.4) identified in the single GME is therefore considered sufficient data for the purposes of the audit.</p>
<p>Selection of chemical analytes</p> <p>EPA 668.1 and 669.1</p> <p>Also adopted consistent approach with soils (AS4482.1 and AS4482.2)</p>	<p>Chemical analytes for the groundwater investigation were selected with consideration to the site and surrounding land use history. The laboratory analytical suite was purposefully broad and included the potential contaminants identified in Section 5.4.</p> <p>The range of chemical indicators selected for analysis was considered appropriate based on the history of the site and the surrounding area and the contaminants found in the soil.</p>

4.4 Surface Water Investigation Methodology

The surface water investigations undertaken are documented in the site investigation report provided in **Attachment 1**. Primary components of the field investigation relevant to this audit, together with the auditor's observations and comments in relation to works conducted are summarised in **Table 4-4**.

The objective of the surface water investigations was to assess the contamination status of surface water upstream of, adjacent to and downstream of the site, including assessment of whether low levels of PFAS identified in soil had impacted surface water quality.

Quality of information



Table 4-4: Quality of Surface Water Investigations

Component of Field Investigation and Relevant Guidelines/Standards	Auditor's Observations and Comments
<p>Investigation locations</p> <p>IWRG 701</p>	<p>Four surface water sampling locations were assessed over two dates:</p> <ul style="list-style-type: none"> 19 November 2020: C01 and C02 were collected in the upstream and downstream portions, respectively, of Post Office Creek adjacent the site. 26 March 2021: CR03 was collected adjacent the downstream site boundary and CR04 was adjacent the upstream site boundary, to assess chemical concentrations in surface water at the upgradient of the site, and at the downgradient boundary, <p>The auditor notes that C01 and C02 were intended by Alpha to represent conditions upstream and downstream of the site, but the auditor was not consulted about these locations prior to the investigation.</p> <p>Alpha therefore conducted another surface water monitoring event to collect samples CR03 and CR04 at locations more representative of conditions upgradient of potential runoff impacts from the site (CR04) and those leaving the site at the downgradient boundary (CR03).</p> <p>Overall, the auditor considers that the sampling locations were adequate to meet the investigation objective of assessing the contamination status of the creek upstream, adjacent to and downstream of the site.</p>
<p>Sample collection techniques</p> <p>IWRG 701</p>	<p>Surface water was sampled using grab sampling methodology with a clean disposable plastic container attached to an extendable arm. Samples were collected from 100 mm below surface of water (as per IWRG 701) and slowly decanted into laboratory supplied sample bottles.</p> <p>Further detail regarding the surface water sampling methodology is provided in Section 11.2 of the DSI report (Alpha, 2023).</p> <p>Samples collected for metals analysis were filtered through a 0.45 µm filter.</p> <p>The auditor considers that the above surface water sampling techniques used were consistent with relevant guidelines and appropriate for the investigation.</p>
<p>Sampling equipment decontamination</p> <p>IWRG 701</p>	<p>Single use plastic containers were used for sample collection and the methodology used resulted in minimal risk of other equipment (sampling pole) causing cross-contamination. Decontamination of sampling equipment was therefore not considered by Alpha to be required for surface water sampling.</p> <p>The auditor agrees with Alpha's opinion and considers that the procedures used were adequate for the purposes of the investigation.</p>
<p>Field measurements</p> <p>IWRG 701</p>	<p>SWSE01 (19 November 2020) – C1, C2</p> <p>A water quality meter was used to measure water quality parameters using a WSI multi-meter attached to the end of a 2 m extension arm, with the probe placed in the approximate position of the collected creek water samples. A calibration certificate for the meter was provided in the DSI.</p> <p>SWSE02 (26 March 2021) – CR03, CR04</p> <p>Water quality parameters were not recorded during the second surface water sampling event (SW02). The auditor does not consider that the lack of field measurements during the second surface water sampling event materially affect the useability or interpretation of the analytical results.</p>
<p>Field documentation (i.e., field notes, bore logs and chain-of-custody records)</p> <p>EPA 668.1 and 669.1</p>	<p>Field documentation was completed to a satisfactory standard to enable the auditor to interpret the data.</p>

Quality of information



Component of Field Investigation and Relevant Guidelines/Standards Auditor's Observations and Comments

Sample handling, preservation and storage
EPA 669.1 and IWRG701
 Sample receipt advice received from the laboratories indicated that samples were received in good condition, in appropriately preserved containers for relevant analyses.
 The procedures are considered adequate and consistent with the referenced guidelines.

Number and type of field quality control samples
Adopted consistent approach with soils (AS4482.1 and AS4482.2)
Field Duplicate Samples
 One field duplicate and one field split was taken during each surface water sampling event. During each sampling event, one primary sample was submitted for analysis with a corresponding duplicate and split sample for select CoPC.
 The collection of field quality control samples met the recommended frequency of one field duplicate and one secondary duplicate per 20 primary samples, and one field duplicate and one secondary duplicate per 10 primary samples for PFAS analysis.
Rinsate Blanks
 A rinsate blank was collected and submitted for analyses during SWSE01 only (19 November 2020). A rinsate sample was not collected during SWSE02 (19 March 2021).
Trip Blanks
 Trip blanks were not collected during either of the surface water sampling events (SWSE01 and SWSE02). The auditor notes that volatile contaminants were not being targeted during the surface water sampling event (despite Alpha submitting samples C1 and C2 for volatile analytes during the first surface water sampling event (SWSE01)). Therefore, the auditor is satisfied that collection of trip blanks was not required for the surface water sampling events.
 The rationale for trip and rinsate blank collection and analysis is provided in Section 12.3.2 of the DSI report (Alpha, 2023).
 While the lack of a rinsate blank sample in the second surface water monitoring event (SWSE02) is considered sub-optimal, the auditor considers the data obtained is sufficient for the purpose of the surface water assessment, since the same analytes detected in the first surface water sampling event are present at detectable levels at the same order of magnitude.

Selection of chemical analytes
EPA 668.1 and 669.1
Also adopted consistent approach with soils (AS4482.1 and AS4482.2)
 Chemical analytes for the surface water investigation were selected with consideration to the site and surrounding land use history, included the potential contaminants identified in **Section 5.4**. The initial surface water monitoring event included broad analytical suites to account for uncertainty about actual historical uses of the site and the wide range of industrial uses in the surrounding area. The subsequent surface water monitoring event was undertaken to assess the upgradient and down-gradient concentrations of PFAS in Post Office Creek.
 The range of chemical indicators selected for analysis was considered appropriate based on the history of the site and the surrounding area and the contaminants found in the soil.

4.5 Laboratory Analysis and Quality Control

Primary components of laboratory analysis relevant to this audit, together with the auditor's observations in relation to works conducted, are summarised in **Table 4-5**.

Quality of information



Table 4-5: Laboratory Analysis and Quality Control Summary

Component of Laboratory Analyses and Quality Control (QC) Objectives Auditor's Observations and Comments

NATA Accreditation

Laboratory analysis was undertaken by:

- Eurofins Environment Testing Australia Pty Ltd – primary laboratory for soil and water analysis.
- Envirolab Services Pty Ltd – secondary laboratory for soil and water analysis.
- Focus Environmental (Vic) Pty Ltd – used for asbestos analysis.
- Alpha Environmental – used for asbestos analysis.

The analytical reports confirmed that the above laboratories were accredited by National Association of Testing Authorities (NATA) to perform the requested analyses.

Sample holding times IWRG 701, AS4482.1 and AS4482.2

Soil, groundwater and surface water samples were analysed within the recommended holding times, with the following exceptions:

- Deeper aquifer – recommended technical holding times were exceeded for inter-laboratory sample in for inter-laboratory sample QC1A (PW01) for Nitrite (as N) (laboratory report 23174).
- Surface water – recommended technical holding times were exceeded for inter-laboratory sample QC1A (C02) for Nitrite (as N) (lab report 23451).

The recommended holding time exceedances were most likely attributed to delays in the primary laboratory processing samples and forwarding the duplicate samples to the secondary laboratory.

The reported holding time exceedances are not considered to have materially impacted the findings of the water investigations as the analytical results for primary, intra and inter-laboratory samples were all consistent indicating the holding time exceedance is unlikely to have affected results.

Despite the minor holding time non-conformances listed above, the auditor is satisfied that the analyses were conducted in accordance with recommended guidance and the analytical data is sufficiently representative of site conditions for the purposes of the audit.

Use of correct soil and groundwater and surface water quality objectives

Alpha adopted investigation levels based consistent with the objectives outlined in the ERS, as discussed in Sections 9.1 and 9.2 of the DSI report (2023).

The auditor notes that some of the objectives adopted by Alpha were not identical to those typically adopted by the auditor, thus the auditor conducted an independent collation of laboratory data and compared it to appropriate objectives within the Tables section of this audit report. The auditor's findings (**Section 5.0**) are based on this independent review of the data and therefore do not necessarily match those presented in Alpha's DSI.

Quality of information



Component of Laboratory Analyses and Quality Control (QC) Objectives Auditor's Observations and Comments

Laboratory reporting limits IWRG 701, AS4482.1 and AS4482.2

Limits of reporting (LORs) for the following soil analytes were higher than adopted objectives:

- 1,2-Dibromoethane
- 1,2,3-Trichloropropane
- 1,2-Dibromoethane
- Bromodichloromethane
- Chloroform
- Vinyl Chloride
- a-BHC
- Heptachlor epoxide

The exceptions noted above are not considered to have impacted the conclusions reached, as these chemicals were included in broad analytical suites for completeness but were not identified as key CoPC at the site. It is also noted that the screening levels exceeded by the LOR were predominantly USEPA RSLs based on non-threshold health effects – and these screening levels are adopted in a manner inconsistent with (and more conservative than) Australian approaches to screening level derivation with results screening levels below LORs able to achieved using typical analytical methods.

LORs for the following groundwater analytes were higher than adopted objectives:

- Chromium (VI), Mercury
- Five individual PAHs
- Two individual phenols
- Four halogenated phenol species
- Six individual halogenated benzenes
- One halogenated hydrocarbon
- Ten chlorinated hydrocarbons species
- Four explosives
- One nitroaromatic
- One amino aromatic
- Two anilines
- Nine individual semi-volatile organic compounds (SVOCs)
- Two amino aliphatics
- Nine OPPs
- Two phthalate species
- Twelve OCPs
- Two pesticides, two herbicide and one fungicide
- Perfluorooctane sulfonate (PFOS).

Despite the LOR issues noted above, the auditor still considers the data useable for the following reasons:

- Except for PFOS, none of the above chemicals were found at detectable concentrations in the groundwater beneath the site.
- The majority of the individual chemicals were considered in broad analytical screens but not considered likely to be contaminants at the site, and the achieved LORs are those that can reasonably and practicably achieved for the purposes of broad contaminant screening.

Quality of information



Component of Laboratory Analyses and Quality Control (QC) Objectives Auditor's Observations and Comments

<p>Intra-laboratory (field) & inter-laboratory (secondary) duplicates AS4482.1 and AS4482.2</p>	<p>A small number of relevant percent difference (RPD) non-conformances (>30%) were reported for some soil samples in the data validation tables provided in Appendix N of the DSI report (Alpha, 2023).</p> <p>The slight variation in reported concentrations in soil samples is attributed to general soil heterogeneity and is considered typical for a heterogeneous fill soil matrix and/or due to differences in mineralisation extent within natural soils (for metals). Many of the elevated RPDs for soil samples also reflected large relative differences at low concentrations.</p> <p>Groundwater RPD exceedances were also noted for several analytes; however, the majority of results were considered to be within the expected range of sampling and analytical variability and reflected large relative differences at low concentrations.</p> <p>The auditor notes that manganese was reported an order of magnitude higher in the primary sample (MW02; 0.21 mg/L) compared to the intra and inter-laboratory split samples (0.02 mg/L and 0.017 mg/L) – an issue which was not identified by Alpha in their DSI. The primary sample result for manganese in MW02 is considered anomalous (discussed within this table under 'reporting or unusual or anomalous results').</p> <p>Overall, with the exception of the anomalous manganese result noted above, the field duplicate results are considered to indicate acceptable levels of precision in the analyses undertaken.</p>
<p>Rinsate blanks IWRG 701, AS4482.1 and AS4482.2</p>	<p>Analyte concentrations in rinsate blanks were below the laboratory LORs indicating that cross-contamination due to sampling equipment is unlikely to have occurred.</p>
<p>Trip blanks IWRG 701, AS4482.1 and AS4482.2</p>	<p>Analyte concentrations in trip blanks were below the laboratory LORs indicating the that cross-contamination during transport of samples is unlikely to have occurred.</p>
<p>Laboratory generated quality control data</p>	<p>The auditor conducted a review of laboratory generated quality control data, inclusive of:</p> <ul style="list-style-type: none"> ▪ Frequency of quality control testing. ▪ Method blanks. ▪ Internal laboratory duplicates. ▪ Matrix spikes. ▪ Surrogate spikes. <p>While noting some non-conformances with some data, the auditor is satisfied that the laboratory QC data indicates acceptable levels of accuracy and precision were achieved, i.e. results are within the range of analytical variability expected to be achieved in laboratory analysis (±30–50%).</p>

Quality of information



Component of Laboratory Analyses and Quality Control (QC) Objectives Auditor's Observations and Comments

Reporting of unusual or anomalous results

During the course of the environmental assessment works, the following unusual or anomalous results were reported:

TRH

Initial groundwater results reported by Alpha identified detectable TRH (>C10–C16 and >C16–C34 fractions) in MW01, MW02 and MW03 with almost identical concentrations in all wells (0.13 mg/L and 0.2–0.3 mg/L for >C10–C16 and >C16–C34, respectively). The consistency of results across a large area with no identified source was considered potentially anomalous, thus the auditor requested that Alpha confirm validity of results with the laboratory. The laboratory responded that the results were due to laboratory equipment impacted by prior unrelated contaminated samples and concluded that TRH was not present in the samples at detectable levels. The laboratory report was subsequently revised to report TRH <LORs.

Manganese

The manganese result in the primary sample collected from MW02 (0.21 mg/L) is considered anomalous: the corresponding intra and inter-laboratory quality control sample results were an order of magnitude lower (0.017–0.02 mg/L) and were consistent with concentrations reported in the other wells on-site (MW01 and MW03 both reported a manganese concentration of 0.015 mg/L).

The anomalous primary result reported in MW02 is considered likely to be due to a sampling error, or a preservation issue in the laboratory supplied sample bottles and is not considered representative.

Toluene

Low detectable concentrations of toluene were reported in the shallow groundwater aquifer and the deeper aquifer (production bore) across two separate sampling events (30 October 2020 and 7 October 2022). Whilst the reported results are very low and do not exceed any adopted investigation levels, the presence of toluene in both aquifers is considered unusual, particularly since total petroleum hydrocarbons (TPHs) are not present at detectable concentrations.

Total nitrogen

The total nitrogen result in the intra-laboratory replicate sample collected from location C2 in Post Office Creek is considered anomalous: the corresponding primary and inter-laboratory quality control sample results were much lower (and similar to each other). The anomalous result in C2 intra-laboratory duplication is considered likely to be due to a sampling error, or a preservation issue in the laboratory supplied sample bottles and is not considered representative.

The auditor has considered the above in her interpretation of the laboratory analytical data.

4.6 Auditor verification samples

The auditor collected two verification samples (AV-01 and AV-02) during the site inspection conducted on 29 October 2020.

AV-01 was an independent sample collected from sediment at the western edge of the former wetland area in Lot 27 (refer to **Figure 3**). Alpha did not collect a corresponding sample from this location.

The purpose of this sample was to characterise the sediment within the former wetland area which had been partially infilled prior to site owner engagement of the environmental assessment and audit.

AV-02 was collected from the geoprobe core from BH25, at a depth of 0.5 m bgl during Alpha's first soil sampling event. It was subsequently discovered that Alpha did not submit their corresponding sample for laboratory analysis, however the soil profile was noted to be similar to the overlying and underlying sample collected by Alpha and submitted for analysis and reported results in the verification sample were consistent with the overlying and underlying sample.

Quality of information



4.7 Auditor's assessment of adequacy

In summary, sufficient sampling was undertaken to meet relevant data quality and investigation objectives, provide the auditor with assurance regarding the quality of data and to form an opinion on the contamination status of the site. In the auditor's opinion, the quality and reliability of information generated from the investigations undertaken, considering all limitations as identified in previous sections, were sufficient for the purposes of this environmental audit.

Audit Findings



5.0 Audit Findings

The following sections summarise the audit findings, based on the auditor’s review of relevant information sources (**Section 3.0**).

5.1 Site and Surrounding Land Use

The general site layout is shown in **Figure 1**. The surrounding site uses are shown in Figure 15 of the DSI report (Alpha, 2023).

Table 5-1 summarises current, historical and proposed land use information for the site and surrounding area.

Table 5-1: Previous, Current and Proposed Land Uses

Location	Identified Historical Land Use(s)	Current Land Use(s)	Proposed Land Use
Site	<p>Prior to 1970s: Vacant land, likely used for grazing.</p> <p>1970s to present: The residential properties, which currently exist on 88a and 90 Wedge Street were constructed between 1972 and 2002..</p> <p>Landscaping works, including construction of the garden and wetland area and appearance of the stockpiles in the northeastern portion of the site occurred between 2002 and 2019.</p>	Residential properties, currently present with landscaped garden areas.	Low density mixed use (residential and public open space). The proposed development plans are provided in Appendix B .
Surrounding Area	<p>North:</p> <ul style="list-style-type: none"> • Residences and commercial / light industrial businesses including: <ul style="list-style-type: none"> ▪ 25 La Trobe Street: Sievers Earthmoving. ▪ 3/23 La Trobe Street: Done-Rite Cabinetry – cabinet makers. ▪ 19 La Trobe Street: Waggle & Forage Beekeeping supplies and manufacturer. ▪ 17 La Trobe Street: Kyneton Electrics – electricians. <p>South:</p> <ul style="list-style-type: none"> • Residence at 80 Wedge Street. • Post Office Creek and vacant land. • Residential properties. • AKS Panels (panel beater). • Concrete Collaborative (concrete factory). <p>West:</p> <ul style="list-style-type: none"> • Former Mobil depot (across Wedge Street). • Post Office Creek. • Vacant land. <p>East:</p> <ul style="list-style-type: none"> • Kyneton Public Park Reserve. • Former Department of Natural Resources and the Environment (DNRE) site (storage of agricultural chemicals). 	<ul style="list-style-type: none"> • North: commercial / light industrial businesses. • South: Residential and Post Office Creek. • East: vacant land. • West: Wedge Street then open space / recreation or vacant land. 	N/A

Audit Findings



5.2 Environmental Setting

Table 5-2 below summarises the environmental setting of the site and surrounding area.

Table 5-2: Site Environmental Setting Details

Item	Description
Topography and elevation	<p>The site and immediately surrounding area are generally flat with a gentle slope to the south towards Post Office Creek. The site is situated at approximately 510 m Australian Height Datum (AHD).</p> <p>The site is predominantly unpaved, with the surface consisting of grass and vegetation. Some landscaped areas are paved or topped with gravel.</p> <p>Surface drainage is expected to follow site topography and drain south towards Post Office Creek.</p>
Geology	<p>The site contains the following geology, based on reference to the Malmsbury 1:50,000 Geological Map (Geological Survey of Victoria, 2002):</p> <ul style="list-style-type: none"> Newer Volcanics: Miocene to Pleistocene aged basalt, described as "...dominantly tholeiite to mildly alkalic olivine basalt; localised laval flows partly confined in palaeovalleys; youngest flows have stony surfaces." Quaternary aged non-marine sedimentary deposits are expected to overly the basalt in the southern section of the site in and around Post Office Creek. The sedimentary deposits are described as "Gravel, sand, silt and clay; polymictic; variable sorted and rounded; stratified, laminated or massive; flood plain, overbank, point bar and channel lag sediments in active meandering drainage systems with minor terraces...". <p>Site investigations have indicated that the geology underlying the site comprises:</p> <ul style="list-style-type: none"> Fill soil (predominantly encountered in stockpiles on site (silt, brown, intermixed with minor building rubble), up to 1 m bgl; Disturbed natural, organic matter inclusions, moist (silty clay, low plasticity, brown, tan, orange), up to 1 m bgl. Silty clay, low plasticity, brown to black, some sub-angular gravel inclusions, transitioning to highly weathered basalt up to maximum investigation depth of 6 m bgl) (inferred Newer Volcanics).
Groundwater occurrence and flow direction	<p>During groundwater investigations undertaken by Alpha (2023), a shallow water table aquifer was encountered within clay / weathered basalt with standing water levels (SWLs) in the range 1.613–2.184 m bgl (491.785 to 496.807 m AHD) during the GME conducted in October 2022.</p> <p>Based on SWLs in on-site groundwater monitoring wells, shallow groundwater flow across the site is inferred to the south-southwest, towards Post Office Creek (as shown on Figure 14 in the Alpha DSI).</p> <p>A deeper confined bedrock aquifer is also suggested to be present based on conditions observed in the on-site production bore which has a screened interval of 40–70 m bgl. Alpha observed this well to have flowing water indicative of artesian conditions when it was sampled in October 2020. In March 2021 the SWL in the deep screened production bore was gauged as 2.2 m bgl, indicating variable potentiometric head likely influenced by variable precipitation and recharge within the catchment area.</p>
Groundwater salinity and segment	<p>Groundwater salinity (measured as TDS) was reported in the range 330–600 mg/L in the on-site shallow groundwater wells. This range falls within groundwater segment A1 as defined in Table 5.3 of the ERS.</p> <p>Groundwater salinity in the deeper bedrock aquifer was reported to be 1,700–2,600 mg/L, which falls within segment B as defined in the ERS.</p>



Item Description

Groundwater use

Alpha completed a search of information within the VVG web-based geographic information systems (GIS) database (University of Ballarat, 2014), which contains Victorian Groundwater Management System data managed by the Department of Sustainability and Environment. Alpha performed the registered groundwater bore search on 7 August 2020. The search identified 149 registered bores within a 2 km radius of the site, 50 of which were registered for investigation purposes. The remaining bores were registered for domestic, stock, irrigation or commercial use, with 47 bores having no listed use. The Lotsearch report (Appendix G, Alpha, 2023) provides a detailed breakdown of the available registered borehole data, including registered uses).

The auditor completed an independent search of information within the VVG web-based GIS database (University of Ballarat, 2014), which contains Victorian Groundwater Management System data managed by the Department of Sustainability and Environment, on 18 May 2023. The search identified 132 registered bores within a 2 km radius of the site which are presented in **Figure 2**. The bores were registered for the following uses:

- Groundwater Investigation / observation (49)
- Domestic (16)
- Stock watering (1)
- Domestic and stock watering (53)
- Domestic, stock watering and irrigation (1)
- Irrigation (7)
- Commercial (1)
- Commercial, domestic, stock watering and irrigation (1)
- Mineral water (1)
- Unknown (2)

The difference in the number of registered bores identified by the assessment consultant compared to the auditor is likely due to minor variation in the focus location for the 2km radius search zone.

The on-site production bore, sampled during the audit investigation works, is registered for domestic and stock use (Bore ID WRK009843). Available details indicate that it was installed in basalt to a depth 70 m in November 2004, as described below.

Depth From (m)	Depth To (m)	Geology
0.00	3.00	Topsoil and clay
3.00	18.00	Basalt
18.00	26.00	Bluestone
26.00	70.00	Brown basalt

The downhole pump on this bore was decommissioned during the audit and the bore is not currently used for extractive purposes.

The closest registered extractive bore to the site is located approximately 108 m northwest of the site and is registered for domestic use. However, based on the inferred groundwater flow direction, groundwater originating from beneath the site would not reach this bore.

The next closest bores registered for extractive uses that are located in the inferred down-hydraulic gradient of the site (in a southerly direction) are identified as follows:

- WRK011906, located approximately 248 m to the southwest (irrigation).
- 75179, located approximately 337 m to the south (domestic).
- 114216, located approximately 363 m to the southwest (domestic and stock).
- 75129, located approximately 549 m to the south (domestic and stock).

The former three bores (WRK011906, 75179 and 114216) are inferred to be constructed with a screened interval in the deeper aquifer (with the well depths ranging from 48 to 74m), based on construction details provided in the Lotsearch report (Appendix G, DSI report (Alpha, 2023).

The latter bore (75129) was installed to a depth of 21 m with a screened interval of 9–21 m, indicating potential extraction of the shallow aquifer at this location.

Audit Findings



Item	Description
Surface water bodies	<p>The closest surface water body to the site is Post Office Creek. This is the inferred receiving surface water body for the shallow water table aquifer underlying the site and forms the southern site boundary, as illustrated on the certificate of title documents and discussed in Section 5.2 of the DSI report (Alpha, 2023).</p> <p>Post Office Creek is a small urban creek that flows from southeast to northwest in the section adjacent the site. It then flows through parklands/reserves and past the Kyneton Racecourse before reaching the Campaspe River approximately 1.2 km northwest of the site.</p>

5.3 Environmental Values and Objectives

The following sections set out the relevant environmental values, indicators and objectives used to assess the risk of harm to human health and the environment in the context of the proposed future site use.

5.3.1 Land Environment (including soil vapour)

5.3.1.1 Relevant Land Use Category

The site is proposed to be subdivided for ongoing low density residential use, with the southern portion (which is subject to inundation) designated for reserve / public open space. These are defined as 'Sensitive Use (Other (lower density))' and 'Recreation / Open space' in the ERS, of which 'Sensitive Use (Other (lower density))' is the most sensitive use.

The proposed plan of subdivision including building envelope plan as of 6 March 2023 is provided in **Appendix B**.

5.3.1.2 Environmental Values of Land Environment

From Table 4.2 of the ERS, the environmental values that apply to the proposed *Sensitive Use (Other (lower density))* and *Recreation / Open Space* land use categories are:

- Land dependent ecosystems and species – modified and highly modified ecosystems
- Human health
- Buildings and structures
- Aesthetics
- Production of food, flora and fibre (sensitive / low density residential use only)

5.3.1.3 Land Quality Indicators and Objectives

Land environment quality objectives for the applicable environmental values were adopted in accordance with Table 4.3 of the ERS, as described in **Appendix D**. The following site-specific exceptions and qualifications are noted:

- The assessment consultant calculated site-specific EILs for copper, nickel, chromium and zinc, using soil property analysis from six on-site samples collected within the natural soil profile (described as 'disturbed natural' or 'natural'). These samples were considered representative of on-site soil and were adopted by the auditor. The relevant data, assumptions and calculations are detailed in the DSI report (Alpha, 2023) and the derived site specific EILs are summarised in **Table 5-3**.

Audit Findings



Table 5-3: Adopted EIL Values for Chromium (III), Copper, Nickel and Zinc

Metal	Derived EIL (mg/kg)
Chromium (III)	530
Copper	240
Nickel	470
Zinc	520

- Regarding the application of *National Environment Protection (Assessment of Site Contamination) Measure* (ASC NEPM; NEPC, 2013) Health Screening Levels (HSLs) for assessment of human health risks due to vapour intrusion:
 - HSLs have been compared to soil and groundwater data collected at the site.
 - Based on the proposed nature of the site development (low density residential and recreation / open space), HSLs for land use category A (low density residential) and category C (recreation / open space) are appropriate, consistent with ASC NEPM guidance on application of the HSLs.
 - For soil, the most conservative values (those derived for sand lithology and with contamination at depths of 0 to <1 m depth) were adopted for initial screening.
 - For groundwater, HSLs for sand lithology and the shallowest depth range (2–4 m bgl) were adopted (consistent with shallow groundwater SWLs in the range of 2.1 to 2.8 m bgl).
 - The HSLs for petroleum hydrocarbons have been derived for typical petroleum fuel mixtures (petrol and diesel) and may not be appropriate for assessment of petroleum hydrocarbons from other sources. Hydrocarbon impacts from sources other than petroleum fuels may be present at the site, thus application of the TPH HSLs to the site is not strictly appropriate. The HSLs have therefore been considered as only one line of evidence when assessing risk posed by petroleum hydrocarbons at the site, in combination with screening levels for other indicator/target compounds associated with hydrocarbon mixtures – in particular those compounds which are usually found to be key risk drivers within these mixtures (e.g. BTEX, PAHs, chlorinated solvents).

5.3.2 Groundwater – Shallow Aquifer

5.3.2.1 Relevant Groundwater Segment

Based on the groundwater TDS range of 330 mg/L to 600 mg/L (discussed in **Section 5.2**), Table 5.2 of the ERS identifies the groundwater as Segment A1.

5.3.2.2 Point of Groundwater Discharge to Surface Water

The nearest surface water body to which groundwater may discharge is Post Office Creek (see **Section 5.2**), which falls within the *Central Foothills and Coastal Plains segment* as defined in the ERS. Waters in the inferred region of discharge are freshwater in nature.

The ERS classifies ecosystems within the *Central Foothills and Coastal Plains segment* as slightly to moderately modified, for which the applicable level of aquatic ecosystem protection is 95%.

Audit Findings



5.3.2.3 *Environmental Values of Groundwater*

From Table 5.3 of the ERS, the applicable environmental values associated with Segment A1 groundwater are:

- Water dependent ecosystems and species (in surface waters).
- Potable water supply (desirable).
- Potable mineral water supply.
- Agriculture and irrigation (irrigation).
- Agriculture and irrigation (stock watering).
- Industrial and commercial use.
- Water-based recreation.
- Traditional Owner cultural values.
- Buildings and structures.

The auditor notes:

- Geothermal properties are not considered a relevant environmental value at the site as the aquifer does not have geothermal properties (i.e., measured temperature was below 30 °C).
- Water dependent ecosystems and species (in subterranean waters) is not considered a relevant environmental value as there is insufficient information to assess whether the hydrogeological setting is conducive to the presence of troglofauna and stygofauna in Victorian waters. In the absence of this information and specific EPA guidance regarding appropriate objectives for this environmental value, it has not been further assessed.

5.3.2.4 *Groundwater Quality Indicators and Objectives*

Groundwater quality objectives for the relevant environmental values were adopted in accordance with Table 5.4 of the ERS, as described in **Appendix D**. The following site-specific exceptions are noted:

- Short-term trigger values (STVs) have been adopted to assess protection of agriculture and irrigation (irrigation). This has been selected, based on the proposed low density residential / public open space development, which does not accommodate long-term irrigation for agricultural purposes.

5.3.3 Groundwater – Deeper Aquifer

The reported groundwater TDS ranged from 1,700–2,600 mg/L in the on-site production bore within the deeper aquifer (discussed in **Section 5.2**), identifying the groundwater from the deeper aquifer within Segment B (Table 5.2, ERS).

The applicable environmental values associated with Segment B groundwater excludes potable water supply (desirable and acceptable) and are otherwise the same as those listed in **Section 5.3.2.3**.

5.3.4 Surface Water

5.3.4.1 *Relevant Surface Water Segment*

The surface waters subject to investigation (Post Office Creek located on the southern boundary of the site) fall within the *Central Foothills and Coastal Plains* segment as defined in the ERS. Waters in this region are freshwater in nature.

The ERS classifies ecosystems within the *Central Foothills and Coastal Plains* segment as slightly to moderately modified, for which the applicable level of aquatic ecosystem protection is 95%.

Audit Findings



5.3.4.2 Environmental Values of Surface Water

The applicable environmental values for surface waters within the *Central Foothills and Coastal Plains segment* are:

- Slightly to moderately modified ecosystems.
- Agriculture and irrigation.
- Human consumption of aquatic foods.
- Industrial and commercial.
- Water-based recreation (primary contact).
- Water-based recreation (secondary contact).
- Water-based recreation (aesthetic enjoyment).
- Traditional Owner cultural values.

Note that:

- Human consumption after appropriate treatment is not considered to be an environmental value as the surface water within the investigation area is not sourced for supply in a special water supply catchment area set out in Schedule 5 of the *Catchment and Land Protection Act 1994* or in accordance with the *Safe Drinking Water Act 2003*.
- Aquaculture is not considered to be an environmental value as no aquaculture licences have been approved in accordance with the *Fisheries Act 1995* within the surface water investigation area.

5.3.4.3 Indicators and Objectives

Surface water and sediment quality objectives for the identified environmental values of surface water were adopted in accordance with Table 5.7 of the ERS, as described in **Appendix D**.

5.3.5 Ambient Air

5.3.5.1 Environmental values

The environmental values of the ambient air environment apply to the whole of Victoria and are the following:

- Life, health and well-being of humans
- Life, health and well-being of other forms of life, including the protection of ecosystems and biodiversity
- Local amenity and aesthetic enjoyment
- Visibility
- The useful life and aesthetic appearance of buildings, structures, property and materials
- Climate systems that are consistent with human development, the life, health and well-being of humans, and the protection of ecosystems and biodiversity.

5.3.5.2 Indicators and Objectives

Indicators and objectives for the ambient air environment are set out in Table 2.2 of the ERS. The indicators and objectives relate primarily to key air quality indicators such as particulates, gaseous emissions (CO, NO₂, O₃, SO₂) and odours. Objectives are not specified for contaminants commonly encountered during site contamination investigations.

For the purposes of assessing whether land (including groundwater) contamination may adversely impact environmental values of air, vapour-intrusion related screening levels have been adopted as described in **Section 5.3.1**.

Audit Findings



5.4 Sources of Contamination

5.4.1 On-site

Potential on-site sources of contamination, associated hazardous substances and relevant indicator chemicals are summarised in **Table 5-4**. This information is based on the historical information obtained by Alpha (DSI, 2023) and the auditor, and observations made during site inspections. The indicator / associated chemicals for each contamination source are based on AS4482.1–2005 and/or other readily available industry-specific information. The PFAS NEMP 2.0 (HEPA, 2020) was also consulted for the purposes of identifying former site activities where PFAS may have been used.

Table 5-4: Potential Sources of Contamination (On-Site)

Contaminating source / activity	Hazardous substances	Indicator chemicals to assess presence of hazard
Imported stockpiles (unknown origin) and potential historical uncontrolled movement of fill materials on-site.	Various depending on the material origin – commonly identified contaminants include metals, petroleum hydrocarbons, PAHs, coke and ash and ACM. Less commonly encountered include pesticides, herbicides, phenolic compounds, cyanide wastes, solvents, polychlorinated biphenyls, and nutrients.	TRH, VOCs, SVOCs PAHs Metals (ASC NEPM Suite), Cyanide pH PCBs, OCPs, Herbicides PFAS ACM (visual assessment)
Small-scale agricultural activities associated with fruit and vegetable gardening	Pesticides Herbicides Fertilisers	NO ₂ , NO ₃ , NH ₃ Metals (particularly arsenic, boron, cadmium, copper, lead, mercury, molybdenum as active ingredients in pesticides, herbicides and fertilisers) OCPs (ASC NEPM suite) Herbicides (ASC NEPM suite) Sulfate, sulfur, pH
Underground sewerage / septic system infrastructure	Nutrients (ammonia, nitrates, nitrites, sulfate).	NO ₂ , NO ₃ , NH ₃ , sulfate

Notes:

ACM = asbestos containing material; OCPs = organochlorine pesticides; PAH = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls; PFAS = per and polyfluoroalkyl substances; SVOCs = semi-volatile organic compounds; TRH = total recoverable hydrocarbons; VOCs = volatile organic compounds

5.4.2 Off-site

Potential off-site sources of contamination include fill soils, as well as several current and former industrial land uses near the site (as listed in **Section 5.1**).

Associated hazardous substances and indicator chemicals comprise a wide-range of organic and inorganic chemicals, including TRH, VOCs, SVOCs, PAHs, PFAS, phenols, cyanide, nitrate/nutrients, metals/metalloids – many of which were also identified as indicator chemicals for potential on-site sources of contamination.

Audit Findings



5.5 Nature and Extent of Contamination

5.5.1 Soil

Table 5-5 summarises soil indicators reported at concentrations above adopted objectives for relevant environmental values of land within the audit site boundary. The data and adopted objectives are also tabulated in more detail in **Table 1** (within 'Tables' section at end of this report).

Note that analytical results from samples BH03, BH04, BH07, BH08, BH09, BH12, BH13 and VAL01 are included in **Table 1** but have not been considered in **Table 5-5** below, as they are located in the adjacent property known as 88 Wedge Street, which was included in investigations conducted by the assessment consultant but subsequently excluded from the audit site boundary.

Table 5-5: Summary of Indicators Exceeding Objectives in Soil*

Chemical	Range of concentrations (mg/kg)	No. of sample locations exceeding	Location/depth of exceedances	Objective exceeded		Notes
				Type	Value (mg/kg)	
Copper	<5–910	3	BH31/0.1 BH31B BH31F	EIL	240	Assessed to pose negligible risk of harm as expected average exposure concentrations are below the objective; see Section 5.5.1.1 .
Iron	48,000–85,000	5	BH10/0.5 BH15/1.1 BH24/1.0 BH29/0.2	HIL A HIL C	55,000	Assessed to be naturally occurring and therefore not contamination; see Section 5.5.1.2 .
Lead	3–800	3	BH14/0.3 BH19/0.15 BH19B	HIL A	300	These locations are not in the residential portion of the site thus concentrations do not exceed objectives for the proposed land use; see Section 5.5.1.3 .
		1	BH19B	HIL C	600	Assessed to pose negligible risk of harm as average exposure concentrations are below the objective; see Section 5.5.1.3 .
Zinc	<5–720	2	BH31/0.1 BH31F	EIL	520	Assessed to pose negligible risk of harm as expected average exposure concentrations are below the objective; see Section 5.5.1.4 .
Benzo(a)pyrene	<0.5–1.5	4	SP03/0.2 SP04/0.3 SP12/0.2 SP13/0.2 (QC2A)	ESL	0.7	Assessed to pose negligible risk of harm as concentrations do not exceed more recently derived higher reliability ESL; see Section 5.5.1.5 .

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Chemical	Range of concentrations (mg/kg)	No. of sample locations exceeding	Location/depth of exceedances	Objective exceeded		Notes
				Type	Value (mg/kg)	
PFOS	0.0002–0.019	3	SP07/0.5 SP09/0.5 PV19	EIL	0.01	Assessed to pose negligible risk of harm as average exposure concentrations are below the objective; see Section 5.5.1.6 .
Sum of PFHxS and PFOS	0.0002–0.02	5	SP07/0.5 SP09/0.5 SP10/0.5 PV19 PV25	HIL A	0.01	Assessed to pose negligible risk of harm as average exposure concentrations are below the objective; see Section 5.5.1.6 .

* Total chromium was also reported above the adopted human health-based objective in some samples, however the HIL-A used to screen total chromium concentrations is for hexavalent chromium (chromium VI) and speciated analysis indicated chromium VI was below relevant objectives. Chromium is therefore not identified as a soil contaminant at the site.

The above analytes are discussed in more detail in **Sections 5.5.1.1 to 5.5.1.6** below. Suspected ACM was also identified on the site and is discussed in **Section 5.5.1.7** below.

5.5.1.1 Copper

Reported copper concentrations exceeded the site-specific EIL (240 mg/kg) in three surface soil samples in the northeast site corner: BH31/0.1 (890 mg/kg) and associated delineation samples BH31B (510 mg/kg; primary sample only) and BH31F (910 mg/kg).

The exceedances were restricted to near surface soils with concentrations in underlying samples at BH31 (0.3, 0.5 and 1.0 m bgl) in the range 28–50 mg/kg, well below the EIL of 240 mg/kg.

Copper was not reported above the adopted objectives for protection of human health.

The pattern and distribution of copper results in the vicinity of BH31 suggest that these three elevated values are outliers, potentially associated with small metal inclusions in the soil matrix – which is not uncommon in residential surface soils. This is supported by:

- Intra- and inter-laboratory replicate analysis results for BH31/B, which reported elevated copper (above the EIL) in only one of three field replicate samples in this location. This indicates high variability over small spatial scales, as would be expected if small scattered particulate inclusions are present in the soil.
- The presence of co-located elevated zinc in the same samples that had copper exceeding the EIL (two of the three locations with copper EIL exceedances also had zinc above the EIL; see **Section 5.5.1.4** below).
- Quantile plots and outlier testing of the site-wide copper data set (held on file), which identified that the three highest values that exceed the EIL are outliers compared to the broader sitewide dataset (94 results). Specifically:
 - Rosner’s outlier test of log transformed values identified BH31/0.1, BH31B and BH31F as outliers (1% significance level).
 - A normal quantile plot of log-transformed copper concentrations showed most values on a straight line (consistent with expected log-normal distribution for environmental data sets), but results for BH31/0.1, BH31B and B31F well above this line.

The auditor also conducted independent statistical analysis of the copper results (held on file) and notes that:

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- Elevated copper concentrations were not reported in locations other than BH31 and the immediately surrounding area. Concentrations across the remainder of the site were ≤ 130 mg/kg, i.e. well below the EIL.
- Even with outliers included, the estimated geometric mean copper concentration in the nine surface soil sample locations within a 5 m radius of BH31 (BH31/0.1, BH31A–G) is 158 mg/kg (below the EIL), indicating that average exposures even in this small area are below the EIL. While the maximum (910 mg/kg) and the 95% upper confidence limit (UCL) on the mean (646 mg/kg) concentration for these nine locations exceeded the EIL, the geometric mean value is considered an appropriate metric to use given the high density of sampling in this location (9 samples within an approximate 5 m radius of BH31).
- The maximum and 95% UCL of the above nine locations are also within a factor of 4 of the EIL, which is considered to be within the expected range of uncertainty for derived screening levels. In addition, the isolated elevated results have been demonstrated to be co-located with lower concentrations (based on replicate analysis from the same sample jars), which further supports the conclusion that average concentrations to which receptors will be exposed (even within a very small area) are unlikely to exceed the EIL.

The above metrics indicate that average copper concentrations to which receptors are expected to be exposed (even including outlier concentrations suspected to be associated with very small metal inclusions in the soils) are less than the EIL. Associated risk of harm to ecological receptors is therefore considered negligible.

5.5.1.2 Iron

Iron was reported in soil up to 85,000 mg/kg, which marginally exceeds the human health-based objective (USEPA RSL) of 55,000 mg/kg. However:

- Iron was not identified as a contaminant of potential concern at the site and was analysed only for the purposes of EIL derivation.
- The range of reported concentrations reported (48,000–85,000 mg/kg) is consistent with expected naturally occurring levels. For example, Mikkonen et al. (2018) reports iron in subsurface soils (which are considered unlikely to be impacted by diffuse anthropogenic contamination) of Newer Volcanics origin in the Ballarat region in the range 12–201,000 mg/kg, with a median of 88,355 mg/kg.
- While reported concentrations slightly exceed the health-based USEPA RSL, they are considered to pose negligible risk of harm to human health or the environment. This is because the RSL is based on a tolerable daily intake (TDI) for soluble elemental iron, to protect against gastrointestinal effects associated with iron supplements. This TDI has limited relevance to naturally occurring iron within a clay soil / mineral matrix, which has very low / negligible bioavailability (e.g. Seim et al., 2013).

In summary, iron concentrations in site soils are assessed to be naturally occurring and therefore do not represent contamination). The concentrations are also assessed to pose negligible risk of harm to health or the environment.

5.5.1.3 Lead

5.5.1.3.1 Comparison to ASC NEPM HIL

Lead was detected above the HIL-A (300 mg/kg) at three locations (BH14/0.3, BH19/0.15 and BH19/B). These locations are within the area of the site that is only able to be used as public open space (as it subject to inundation).

Only one reported concentration (BH19/B; 800 mg/kg) exceeded the health-based objective for recreational / open space land use (HIL-C; 600 mg/kg).

Audit Findings



The auditor further assessed the reported lead exceedance and summary statistics for samples in the immediate vicinity of the exceedances (held on file), and notes the following:

- Elevated lead concentrations were not widespread, with reported lead concentrations in surrounding samples within a few metres of BH19 (BH19/E, BH19/F and SP13) of 18–98 mg/kg, well below the applicable HIL-C of 600 mg/kg and the HIL-A of 300 mg/kg.
- Elevated lead concentrations are restricted to near surface soils: the lead concentration in underlying samples for BH14 (1.0 m bgl) and BH19 (0.8 m bgl) were 5.1–9.7 mg/kg, well below the HIL-A and HIL-C.
- Statistical evaluation of results for shallow soils in the vicinity of the exceedance locations based on grid-based samples BH14 and BH19 (surface locations only), corresponding further investigation/delineation samples BH14A–BH14F and BH19A–BH19G, and stockpile soil samples SP01–SP13 (all depths – as these stockpiled soils were relocated to the surface of the former pond area near BH14 and BH19). The estimated values were:
 - The 95% UCL on the mean concentration was 163 mg/kg (i.e., below both the HIL-A and HIL-C).
 - The arithmetic mean lead concentration was 100 mg/kg (below both the HIL-A and HIL-C).
 - The maximum reported concentration was 800 mg/kg (133% of the HIL-C and 260% of the HIL-A)
 - The standard deviation was 157 mg/kg (~25% of the HIL-C and ~50% of the HIL-A).

The above metrics indicate that average shallow soil concentrations in the public open space area to which receptors may be exposed are less than both the HIL-A and the HIL-C, even allowing for the localised elevated value (hotspot) identified at BH19/B. Associated risk of harm to human health is therefore considered negligible.

This also indicates that, in the unlikely event that soils from the public open space / flood plain area are relocated to the residential parts of the site (which is not expected to occur but is considered possible), the associated soil concentrations in residential areas would be expected to be below the HIL-A.

5.5.1.3.2 Consideration of Risks Associated with Poultry Raising

It is noted that the ASC NEPM HIL-A may not be protective for sites used to rear poultry for human consumption of eggs, particularly for lead in soil. Because keeping of chickens is allowed under the Macedon Ranges Shire Council planning scheme on residential properties, the auditor has considered whether lead concentrations in site soils, even though below the HIL-A, could pose a risk of harm to human health in the event that poultry and eggs are raised (e.g. backyard chicken keeping).

The soil concentrations at the site were therefore compared to a soil screening level of 117 mg/kg derived by Yazdanparast et al. (2022). This is based on conclusions by Yazdanparast et al. (2022) that soil concentrations below 117 mg/kg retain egg lead concentrations to less than 100 ug/kg (the Food Safety Australia New Zealand (FSANZ) maximum level for lead in poultry meat, which is also considered protective for eggs) in Sydney urban gardens, and is considered suitable to use for screening of potential risks due to egg consumption at the site.

Lead concentrations in site soils exceeded the screening level of 117 mg/kg at some locations (BH14/0.3, BH19/0.15, BH19B, BH31/0.1 and SP03). However, only BH31 is located on the part of the site proposed to be developed for low-density residential use. The remaining locations exist within the area of the site used for public open space, where production of food, flora and fibre is not a protected environmental value.

Audit Findings



The auditor further assessed the lead concentrations detected in the areas of the site proposed to be developed for low-density residential use and notes the following (statistical analysis held on file):

- The reported lead concentration exceeded the lead screening level at one location only (BH31/0.1; 230 mg/kg).
- The 95% UCL on the mean lead concentration of all samples located in the proposed residential areas of the site was 58 mg/kg (i.e., well below the soil screening level of 117 mg/kg).
- The arithmetic mean lead concentration was 28 mg/kg (well below the screening level).
- The maximum reported concentration was 230 mg/kg⁵ (less than two times the screening level).
- The standard deviation was 61 mg/kg (~50% of the screening level).

The above metrics indicate that average lead concentrations in shallow soils to which chickens would be exposed are below the adopted screening level for rearing of poultry. Associated risk of harm to human health due to egg consumption is therefore considered negligible.

5.5.1.4 Zinc

Reported zinc concentrations exceeded the site-specific EIL (520 mg/kg) in two samples: BH31/0.1 (720 mg/kg) and delineation sample BH31F (640 mg/kg). These were reported in near surface soils with underlying samples at BH31 (0.3, 0.5 and 1.0 m bgl) reported in the range 61–120 mg/kg, well below the EIL.

Zinc was not reported above the adopted objectives for protection of human health.

The locations where zinc exceeded the EIL were the same as those reported for copper and, as discussed in **Section 5.5.1.1** above, reflect outliers from the broader data set. The auditor considers that these are potentially associated with small metal inclusions in the soil matrix – which is not uncommon in residential surface soils.

Similar to copper, the auditor notes that:

- Elevated zinc concentrations were not reported in locations other than BH31 and the immediately surrounding area. Concentrations across the remainder of the site were ≤370 mg/kg, i.e. well below the EIL.
- Even with the elevated outlier results included:
 - The estimated geometric mean zinc concentration in the nine surface soil sample locations within a 5 m radius of BH31 (BH31/0.1, BH31A–G) is 215 mg/kg (well below the EIL).
 - The 95% UCL on the mean concentration was 395 mg/kg (below the EIL).
 - The maximum concentration (720 mg/kg) was only marginally above the EIL (138% of the EIL).

The above metrics indicate that average zinc concentrations in shallow soils to which receptors are expected to be exposed are less than the EIL. Associated risk of harm to ecological receptors is therefore considered negligible.

⁵ Lead (BH01-BH03, BH05-BH07, BH10-BH12, BH15-BH18, BH21-BH23, BH26-BH28, BH31-BH33): average of results for primary, field and split duplicate; range was 5–230 mg/kg.

Audit Findings



5.5.1.5 Benzo(a)pyrene

Benzo(a)pyrene concentrations (<0.5–1.5 mg/kg) marginally exceeded the ASC NEPM ecological screening level (ESL) of 0.7 mg/kg in three sample locations, however this ESL was noted in the ASC NEPM to be of low reliability due to data limitations.

CRC CARE (2017) subsequently derived updated ESLs for benzo(a)pyrene using the ASC NEPM methodology, but incorporating additional and more recent ecotoxicity information. The revised ESL (33 mg/kg for urban residential and public open space) was derived using a species sensitivity distribution (SSD) method and is classed as a high reliability value in accordance with the ASC NEPM methodology and is therefore considered appropriate for risk screening purposes.

All benzo(a)pyrene concentrations reported on site were well below the revised ESL (33 mg/kg; CRC CARE, 2017) and benzo(a)pyrene is therefore not identified as a soil contaminant at the site.

5.5.1.6 PFAS

5.5.1.6.1 PFOS EIL Exceedances

PFOS concentrations were reported marginally above the EIL for indirect effects (bioaccumulation in the food chain) in one validation sample (PV19; 0.015 mg/kg) and in two stockpile samples (SP07/0.5; 0.011 mg/kg and SP09/0.5; 0.019 mg/kg).

However, the auditor conducted statistical analysis (held on file) of PFOS concentrations in both the stockpile soils (now present in the southern open space portion of the site) and in shallow soils in the vicinity of PV19 (collected beneath the former stockpile after it was moved to the southern part of the site), and notes the following:

- For stockpile soils (all stockpile samples SP01–SP13 including field duplicate results):
 - The 95% UCL on the mean concentration was 0.008 mg/kg (i.e. less than the EIL of 0.01 mg/kg)
 - The arithmetic mean PFOS concentration was 0.006 mg/kg (below the EIL).
 - The maximum reported concentration was 0.019 mg/kg (190% of the EIL)
 - The standard deviation was 0.0044 mg/kg (44% of the EIL).
- For validated soils beneath the stockpile (PV01–PV25 including field duplicate results):
 - The 95% UCL on the mean concentration was 0.003 mg/kg (i.e. less than the EIL of 0.01 mg/kg)
 - The arithmetic mean PFOS concentration was 0.002 mg/kg (20% of the EIL).
 - The maximum reported concentration was 0.015 mg/kg (150% of the EIL)
 - The standard deviation was 0.0036 mg/kg (36% of the EIL).

The above metrics indicate that average PFOS concentrations in shallow soils to which receptors may be exposed are less than the EIL. Associated risk of harm to ecological receptors is therefore considered negligible.

5.5.1.6.2 PFOS+PFHxS HIL Exceedances

Sum of PFHxS and PFOS concentrations were reported marginally above the HIL-A of 0.01 mg/kg in two validation samples (PV19; 0.0158 mg/kg and PV25; 0.0106) and in three stockpile samples (SP07/0.5; 0.0116 mg/kg, SP09/0.5; 0.02 mg/kg, SP10/0.5; 0.0108 mg/kg).

This stockpile was subsequently relocated to a portion of the property that can only be used for public open space as it is subject to inundation – noting that evaluation of the risk posed by the movement of these soils to the public open space area was assessed to be low and acceptable (see further discussion in **Section 5.6**).

Audit Findings



In addition, average PFOS+PFHxS concentrations in both the former stockpile soil and in shallow soils in the vicinity of PV19 (collected beneath the former stockpile after it was moved to the southern part of the site) are assessed to be less than the HIL-A:

- For stockpile soils (all stockpile samples SP01–SP13 including field duplicate results):
 - The 95% UCL on the mean concentration was 0.009 mg/kg (i.e. less than the HIL-A of 0.01 mg/kg)
 - The arithmetic mean concentration was 0.007 mg/kg (below the HIL-A).
 - The maximum reported concentration was 0.02 mg/kg (~200% of the HIL-A)
 - The standard deviation was 0.0045 mg/kg (45% of the HIL-A).
- For validated soils beneath the stockpile (PV01–PV25 including field duplicate results):
 - The 95% UCL on the mean concentration was 0.0056 mg/kg (i.e. less than the HIL-A of 0.01 mg/kg)
 - The arithmetic mean concentration was 0.0027 mg/kg (27% of the HIL-A).
 - The maximum reported concentration was 0.0158 mg/kg (~160% of the EIL)
 - The standard deviation was 0.0037 mg/kg (37% of the EIL).

The above metrics indicate that average PFOS+PFHxS concentrations in shallow soils to which receptors may be exposed are less than the HIL-A (including those within the public open space / flood prone area). Associated risk of harm to human health is therefore considered negligible.

It is also noted that the HIL-A is derived assuming that PFOS and PFHxS are present in equal proportions within soils, however almost all (>90%) of PFOS+PFHxS in site soils was comprised of PFOS. This means that the HIL-A is overly conservative for application at the site, since PFHxS is more readily transferred to homegrown fruits and vegetables and its assumed presence results in a lower soil screening level than would be derived for a mixture of >90% PFOS and <10% PFHxS. However, since the above statistics indicate that site soil concentrations are below the more conservative screening level for a 50:50 ratio of PFOS to PFHxS, it is not necessary to further refine the screening level.

5.5.1.6.3 Consideration of Risks Associated with Poultry Raising

As noted above (**Section 5.5.1.3.2**), HIL-A screening levels for bioaccumulative contaminants may not be protective for sites used to rear poultry for human consumption of eggs. Due to the bioaccumulative nature of PFAS, the auditor has considered whether PFOS and PFHxS concentrations in site soils, even though below the HIL-A, could pose a risk of harm to human health in the event that poultry and eggs are raised (e.g. backyard chicken keeping).

No generic screening levels or objectives are available for assessment of risk posed by PFAS to consumers of poultry eggs, however the auditor notes that the PFOS+PFHxS concentration range in site soils (<0.0001–0.02 mg/kg) is comparable to ambient ranges reported in Victorian riparian soils in urban and mixed land use areas (<0.002–0.030 mg/kg and <0.002–0.016 mg/kg, respectively; EPA, 2022c; Publication 2049).

Additionally, based on Senversa’s professional experience, PFOS and PFHxS concentrations in poultry eggs have not been identified above the applicable FSANZ (2017) trigger level of 11 µg/kg at other sites with similar and/or higher PFAS concentrations in soils.

These lines of evidence suggest that risks of significant PFOS+PFHxS uptake into poultry eggs, and associated risks to human health, are likely to be low at the site.

Audit Findings



5.5.1.7 *Asbestos*

During site inspections and intrusive investigations of the soil stockpile originally present in the northeast corner of the site, Alpha identified and collected the following suspected ACM:

- Two pieces of potential ACM were collected from Lot 25 during site works in October–November 2020. Subsequent analysis by Focus Environmental Laboratory confirmed both samples contained asbestos (Appendix Q of the DSI report (Appendix C of the Aesthetic Soil Remediation Validation Report, Alpha, 2022b)).
- Eight pieces of potential ACM were collected from Lot 25 during stockpile sieving works on 28 February – 1 March 2022. Laboratory analysis confirmed that six of the eight pieces contained asbestos. The laboratory reports are provided in Appendix K of the DSI report (Alpha, 2023).

Alpha (2023) reported that the ACM pieces were bonded cement sheet, approximately 50 mm x 50 mm in size and observed to be in fair condition (could not be crushed or crumbled by hand pressure).

The ACM identified within the soil stockpile was removed during stockpile sieving and relocation works (see **Section 3.3**). A Visual Asbestos Clearance Certificate documenting the removal of these materials, and that remaining surfaces were free of visible asbestos residue is provided in Appendix Q of the DSI report (Appendix D of the Aesthetic Soil Remediation Validation Report, Alpha, 2022b).

No further ACM or suspected ACM was identified in other portions of the site, i.e. on the ground surface or within soils during intrusive investigations or following movement of the stockpiled soils to the southern part of the site.

Based on the limited amount of ACM identified and its type (bonded cement sheeting consistent with that commonly found in small quantities in residential and other areas), Alpha (2023) considered that further assessment for the presence of fibrous asbestos or asbestos fines was not required. The auditor agrees with this conclusion and considers that ACM identified within site soils has been removed so far as reasonably practicable and any residual fragments which may remain in soil are not anticipated to represent a health risk to occupiers of the completed development.

5.5.1.8 *Summary*

Based on the above comparison to objectives and consideration of other information relevant to environmental values of land, **Table 5-6** below summarised the auditor’s assessment of contamination impacts on the relevant environmental values of land.

Table 5-6: Summary of Risk to Applicable Environmental Values of Land

Environmental Value	Auditor’s assessment of risk	Comment/Rationale
Land dependent ecosystems and species <i>Modified and highly modified ecosystems</i>	Low and acceptable	While maximum reported concentrations of copper, zinc, benzo(a)pyrene and PFOS exceeded adopted objectives (EILs or ESLs), average concentrations to which receptors will be exposed are assessed to be below these objectives (see discussion in Sections 5.5.1.1, 5.5.1.4, 5.5.1.5 and 5.5.1.6 above).
Human Health	Low and acceptable	While maximum reported concentrations of lead and PFOS+PFHxS exceeded adopted objectives, average concentrations to which receptors will be exposed are assessed to be below these objectives (see discussion in Sections 5.5.1.3 and 5.5.1.6 above). Iron concentrations also exceeded the adopted health-based objective, however were assessed to be naturally occurring and hence not contamination, and to pose very low health risk due to low bioavailability.

Audit Findings



Environmental Value	Auditor's assessment of risk	Comment/Rationale
Buildings and Structures	Low and acceptable	<p>The potentially elevated indicators (exceeding health or ecologically based objectives) in site soils are not present at levels that would be expected to adversely impact buildings or structures.</p> <p>The measured pH in fill soils ranged from 5.7 to 7.0, with an average pH of 6.2, which is representative of mild to non-aggressive conditions in accordance with AS2159–2009 exposure classifications. The building and structures environmental value of land is therefore not considered to be precluded by contamination at the site.</p>
Aesthetics	Low and acceptable	<p>Anthropogenic material (solid inert rubble) was removed from the former stockpile on Lot 25 prior to stockpile relocation works and disposed of off-site. An asbestos clearance certificate was obtained which noted that the surfaces of Lot 25 were free of visible asbestos residue.</p> <p>At the completion of the audit, the site was found to be generally free of anthropogenic materials and was assessed to be aesthetically suitable for the proposed future site use.</p>
Production of food, flora and fibre	Low and acceptable	<p>Average exposure concentrations of potential contaminants were assessed to be below applicable EILs and HILs, indicating that soil is not expected to adversely impact on crop/plant growth, and that health risks associated with contaminant uptake into fruits or vegetables are also low.</p> <p>The auditor has also considered potential risks associated with uptake of bioaccumulative contaminants (lead and PFAS) into poultry eggs, and concluded these risks are also low (see Sections 5.5.1.3 and 5.5.1.6).</p>

In summary, while several indicators (copper, iron, lead, zinc, benzo(a)pyrene, PFOS and PFOS+PFHxS) were reported in some soil samples at concentrations above relevant objectives for applicable environmental values, these were assessed to:

- ***Be naturally occurring and hence not contamination; and/or***
- ***Pose negligible risk to applicable environmental values of land for the current and proposed low density residential land use.***

5.5.2 Groundwater

5.5.2.1 Groundwater Conditions – Shallow Aquifer

Table 5-7 and **Figure 4** summarise groundwater indicators reported at concentrations exceeding adopted objectives (screening levels) for relevant environmental values of groundwater, based on the groundwater sampling event (October 2021). The data and adopted objectives are also detailed in **Table 3** (within 'Tables' section at end of this report).

Audit Findings



Table 5-7: Groundwater Indicators Exceeding Screening Levels / Objectives (mg/L unless otherwise noted)

Chemical	Concentration range (on-site)	Well(s) with exceedances	Objective exceeded (mg/L) and environmental value
Nitrate (as N)	2.4–15	MW03	11 Potable water supply (desirable)
		MW02, MW03	2.4 Water dependent ecosystems and species (freshwater)
Total Nitrogen (as N)	5.6–18.2	MW01, MW02, MW03	1.05 Water dependent ecosystems and species (freshwater)*
Chloride	58–190	MW02	175 Agriculture and irrigation (irrigation) (STV)
Cobalt	<0.001–0.004	MW03	0.0014 Water dependent ecosystems and species (freshwater)
Copper	0.004–0.011	MW01, MW02, MW03	0.0014 Water dependent ecosystems and species (freshwater)
Nickel	0.006–0.022	MW01, MW02	0.02 Potable water supply (desirable)
			0.011 Water dependent ecosystems and species (freshwater)
Zinc	0.006–0.033	MW01, MW02	0.008 Water dependent ecosystems and species (freshwater)

Notes:

*ERS Surface Waters (75th percentile, Central Foothills and Coastal Plains).

^QCGME02 and QCGME02A are the duplicate and triplicate sample of MW02.

5.5.2.2 Groundwater Conditions – Deeper Aquifer

The existing on-site production bore (PW01) was sampled prior to the shallow aquifer groundwater investigation works being undertaken on-site using a no purge method (hydrasleeve).

The reported results from the deeper aquifer indicated the following:

- TDS concentrations (1,700–2,600 mg/L) exceeded the objectives for the environmental value of agriculture and irrigation (stock watering) (2,000 mg/L).
- Sodium (280 mg/L) concentrations exceeded the objectives for the environmental value of agriculture and irrigation (irrigation) (115 mg/L).

The reported TDS and sodium concentrations in the deeper aquifer are consistent with those expected to naturally occur and do not represent contamination. The slightly elevated salinity (TDS and sodium) has the potential to make the water unsuitable for stock watering and irrigation, however this would depend on the specific crops and stocks raised.

As contamination was not identified in the deeper aquifer, and the only indicators exceeding relevant objectives were related to natural salinity levels, the deeper aquifer has not been further discussed or considered in the audit report.

5.5.2.3 Impacts on Applicable Environmental Values of Groundwater

Based on the ERS and results of the groundwater investigations undertaken by Alpha, the auditor’s assessment of impacts to the applicable environmental values of groundwater is summarised in **Table 5-8** below.

Audit Findings



Table 5-8: Impacts on Environmental Values of Groundwater

Environmental value	Environmental value potentially threatened?	Comment/rationale
Water dependent ecosystems and species (in surface waters)	Yes	Cobalt, copper, nickel, zinc, nitrate and total nitrogen exceeded objectives in groundwater, however this environmental value is considered at the point of discharge (Post Office Creek – which forms the southern boundary of the site and is the inferred point of groundwater discharge). The potential for these indicators in groundwater to impact on water dependent ecosystems in Post Office Creek is further considered in Section 5.5.3 below.
Potable mineral water supply	Yes	Nickel and nitrate exceeded objectives.
Potable water supply (desirable)	Yes	Nickel and nitrate exceeded objectives.
Agriculture and irrigation (irrigation)	Yes	Chloride exceeded objectives.
Agriculture and irrigation (stock watering)	No	No indicators reported above relevant objectives.
Industrial and commercial use	Yes	No investigation levels or thresholds for industrial water quality are available. However, based on the presence of indicators which threaten some other environmental values, this value is also considered to be potentially threatened.
Water based recreation	No	No indicators reported above relevant objectives.
Traditional Owner cultural values	Yes	There are no known or expected cultural values associated with groundwater on the site, and no environmental quality objectives for these values. These values may apply at the point of groundwater discharge to surface water, being Post Office Creek, which is discussed in Section 5.5.3 below.
Buildings and structures	No	Groundwater pH was >5.5 and chloride and sulfate concentrations were <1,000 mg/L, indicating mild to non-aggressive conditions for steel and concrete materials in accordance with Tables 6.4.2(C) and 6.5.2(C) of AS2159–2009.
Geothermal properties	N/A	Not applicable; the aquifer does not have geothermal properties (i.e., measured temperature was below 30 °C)

5.5.2.4 Sources and Extent of Groundwater Contamination

In considering the likely sources of the indicators exceeding relevant groundwater quality objectives, the auditor reviewed reported concentrations in nearby audit reports (see **Section 3.4**) for the shallow water table aquifer, i.e. within the same hydrogeological setting.

Groundwater data from nearby completed audits (within a 1.2 km radius of the site) is summarised and compared to the groundwater monitoring results for the site in **Table 5-9** to provide an indication of how site concentrations compare to those reported regionally.

Audit Findings



Table 5-9: Nearby Published Groundwater (Water Table Aquifer) Concentrations Compared to Most Recent On-Site Concentrations (mg/L unless otherwise noted)

Analyte	On-site Concentration range (mg/L unless noted otherwise)	CARMS: 73695-1, 73-75 Wedge Street, Kyneton^ 20 m, northwest	CARMS: 74522-1, Part of 67 Simpson Street, Kyneton* 1.2 km south	CARMS: 30324-2, Lots 9-12, 22-26 Mitchell Street, Kyneton 440 m southeast	Auditor Comment / Conclusion
Chloride	58-190	No data	No data	No data	No surrounding audit data but concentrations considered representative of natural salinity.
Nitrate (as N)	2.4-15	No data	5.2-18	No data	Similar range to region.
Total Nitrogen (as N)	5.6-18.2	No data	No data	No data	Inferred similar range to region (based on nitrate (as N) data which likely forms majority of total nitrogen).
Cobalt	<0.001-0.004	No data	<0.001-0.008	No data	Similar range to region based on data from one audit. Not identified as a contaminant in site soils (concentrations below relevant objectives. Not analysed in groundwater at other audits.
Copper	0.004-0.011	0.001-0.022	0.001-0.011	<0.005-0.48	Site range is similar to and/or lower than those at 73-75 Wedge St and 67 Simpson Street, which were concluded to be naturally occurring. Much higher concentrations were reported at 22-26 Mitchell Street, but these were concluded to be from gasworks contamination.
Nickel	0.006-0.022	0.021-0.102	0.001-0.026	No data	Site concentrations similar to and/or lower than those at 73-75 Wedge St and 67 Simpson Street, which were concluded to be naturally occurring.
Zinc	0.0006-0.033	0.04-0.194	0.012-0.038	0.006-0.047	Site concentrations similar to and/or lower than those at 73-75 Wedge St and 67 Simpson Street, which were concluded to be naturally occurring.

Notes:

On-site concentrations are from wells MW01, MW02 and MW03 (GME, October 2021).

Concentrations reported at nearby audit sites are from the most recent GME that included the chemical of concern.

^Concentration range is from the four shallow aquifer wells (MW03, MW07, MW08, MW10).

*Includes onsite and offsite wells (MW1-MW4).

Audit Findings



In summary, the data in **Table 5-9** indicates that on-site concentrations of most indicators exceeding groundwater objectives are comparable to those reported in the broader region.

With consideration to the above data and other available information, the auditor's opinion on sources of potential groundwater contaminants identified at the site is summarised in **Table 5-10**.

Table 5-10: Extent and Sources of Potential Groundwater Contaminants

Indicator / Potential Contaminant	Is groundwater contaminated?	Is the site the source of contamination?	Auditor's Opinion of Source
Chloride	No	No	Chloride concentrations in the shallow aquifer reflect the natural salinity of the regional groundwater.
Nitrate Total Nitrogen	Yes	Yes (co-contributing)	<p>Nitrate and total nitrogen are commonly associated with diffuse anthropogenic sources in urban and residential settings, due to leaking drainage and sewerage or septic infrastructure.</p> <p>Site concentrations are similar to those reported regionally and therefore may be regionally derived, however the site may also be a co-contributing source. For example, the nitrate concentration reported in the southern (down hydraulic gradient) part of the site (MW03) is higher than the those near the northern site boundary, indicating a possible contribution from site services or septic systems.</p>
Cobalt Copper Nickel Zinc	No	No	<p>Concentrations of cobalt, copper, nickel and zinc are similar to those reported regionally, which have been concluded by other environmental auditors to be naturally occurring.</p> <p>There is no evidence of the site being a discernible contributing source, based on the following:</p> <ul style="list-style-type: none"> The groundwater monitoring wells located close to the northern site boundary (up-hydraulic gradient) reported higher concentrations of copper, nickel and zinc than the well in the central area of the site (down-gradient well, MW03). Concentrations of nickel and zinc were below the objectives in the down-hydraulic gradient well. Copper, nickel and zinc were reported at higher concentrations in groundwater in the shallow aquifer beneath completed audit site at 73–75 Wedge Street, located upgradient/cross-gradient. On-site concentrations of cobalt, copper, nickel and zinc were detected at levels equal to or less than concentrations reported in other audit sites in the region (within 1.2 km).

In summary, the auditor considers the sources of elevated groundwater indicators to be as follows:

- Naturally occurring background and hence not contamination:
 - Chloride
 - Cobalt
 - Copper
 - Nickel
 - Zinc
- Co-sourced from the site:
 - Nitrate (as N)
 - Total Nitrogen

The impacted environmental values of groundwater and associated indicators that do not meet objectives are as follows:

Audit Findings



Table 5-11: Impacted Environmental Value Summary Table

Impacted environmental value	Indicator(s)
Water dependant ecosystems and species	Cobalt (B/N), copper (B/N), nickel (B/N), zinc (B/N), nitrate, total nitrogen
Potable water supply	Nickel (B/N) and nitrate
Potable mineral water supply	Nickel (B/N) and nitrate
Agriculture and irrigation (irrigation)	Chloride (B/N)
Agriculture and irrigation (stock watering)	No exceedances
Water based recreation (primary contact recreation)	No exceedances
Industrial and commercial use**	Nickel (B/N) and nitrate
Traditional Owner cultural values*	Cobalt (B/N), copper (B/N), nickel (B/N), zinc (B/N), nitrate, total nitrogen
Buildings and structures	No exceedances
Geothermal properties	NA

NOTES:

(B/N) = background elevation

(R) = regional contamination (not co-sourced from site)

(U) = upgradient source

NA = Not applicable

* = Assessed based on indicators and objectives for water dependent ecosystems and species.

** = No specific objectives are provided in the ERS or other guidance; this environmental value is considered to be potentially impacted based on identified impacts to other values, and the contaminants listed are those identified for potable water use.

5.5.2.5 Plume Stability and Future Behaviour

The sources of identified groundwater contamination are assessed to be diffuse regional impacts (noting that the site is potentially a co-contributing source of nitrate and total nitrogen), thus there are no discrete contaminant plume or plumes.

The auditor therefore expects the contaminant concentrations in groundwater will remain similar to those currently reported (and as reported in other audits completed in the area), although no formal assessment has been made.

Audit Findings



5.5.3 Surface Water

5.5.3.1 Surface Water Conditions

Post Office Creek is inferred to be the receiving surface water body for groundwater within the shallow aquifer beneath the site.

Table 5-12 and **Figure 4** summarise surface water indicators reported at concentrations exceeding adopted objectives (screening levels) for relevant environmental values of surface water, based on the surface water sampling events (November 2020 (C1, C2) and March 2021 (CR03, CR04)). The data and adopted objectives are also detailed in **Table 3** (within the 'Tables' section at end of this report).

Surface water was assessed to be flowing in a westerly direction (i.e., sample CR04 was collected hydraulically up-gradient, and CR03 was collected hydraulically down-gradient). The auditor notes that the east and west boundary samples (CR04 and CR03, respectively) were only analysed for PFAS chemicals.

Table 5-12: Surface Water Indicators Exceeding Screening Levels / Objectives (mg/L unless otherwise noted)

Chemical	Concentration range (off-site) (mg/L)	Locations with exceedances^	Objective exceeded (mg/L) and environmental value
Chloride	170–670	C1, C2	175 Agriculture and irrigation (irrigation) (STV)
		C1	250 <i>Water based recreation (primary contact) -Aesthetic</i>
Total Nitrogen (as N)	1–2.44	C2	1.05 Water dependent ecosystems and species (freshwater)*
Cobalt	0.001–0.006	C1	0.0014 Water dependent ecosystems and species (freshwater)
Copper	<0.001–0.006	C2	0.0014 Water dependent ecosystems and species (freshwater)
Manganese	0.24–1.9	C1, C2	0.1 <i>Water based recreation (primary contact) -Aesthetic</i>
		C1	0.5 <u>Agriculture and irrigation (stock watering)</u>
Zinc	0.010–0.041	C1, C2	0.008 Water dependent ecosystems and species (freshwater)
PFOS (µg/L)	0.011–0.022	C1, C2, CR03, CR04	0.00023 Water dependent ecosystems and species (freshwater)

Notes:

Sample CR03 and CR04 were only analysed for PFAS chemicals.

*ERS Surface Waters (75th percentile, Central Foothills and Coastal Plains)

QC1 and QC1A are the duplicate and triplicate sample of C2.

5.5.3.2 Impacts on Applicable Values of Surface Water

Based on the ERS and results of the surface water investigations undertaken by Alpha, the auditor's assessment of impacts to applicable environmental values of surface water is summarised in **Table 5-13** below.

Audit Findings



Table 5-13: Impacts on Environmental Values of Surface Water

Environmental value	Environmental value potentially threatened?	Comment/rationale
Water dependent ecosystems and species (in surface waters)	Yes	Total nitrogen, cobalt, copper, zinc and PFOS concentrations did not meet the objectives.
Agriculture and irrigation (irrigation)	Yes	Chloride did not meet objectives.
Agriculture and irrigation (stock watering)	Yes	Manganese did not meet objectives.
Human consumption of aquatic foods	Yes	While there are no default investigation levels or thresholds for this environmental value, the reported concentrations of PFOS and PFHxS have the potential to result in concentrations in fish tissue above FSANZ (2017) triggers.
Industrial and commercial use	Yes	No investigation levels or thresholds for industrial water quality are available. However, based on the presence of contamination and naturally occurring indicators which threaten other environmental values, this value is also considered to be potentially threatened.
Water based recreation (primary, secondary and aesthetic enjoyment)	Yes	Manganese and chloride exceeded aesthetic thresholds.
Traditional Owner cultural values	Yes	Potentially impacted based on exceedance of objectives for water dependent ecosystems and species, human consumption of aquatic foods and recreational water use.

5.5.3.3 Sources of Surface Water Contamination

In considering the likely sources of the indicators in surface water exceeding relevant water quality objectives, the auditor compared surface water results in Post Office Creek adjacent the site to on-site groundwater results and published data from the Coliban Water Monitoring Program (**Table 5-14**).

The Coliban Water Monitoring Program reports (Myers et al., 2019 and 2020) provide data on the general regional conditions of the Campaspe River System and associated tributaries. The reports were prepared to assess the health of the Campaspe River and the outcomes of the stream frontage management program on the ecological condition of the river. One of the monitoring locations (Site #5) was in Post Office Creek immediately downstream of the site and this location was therefore not considered suitable as an indicator of non-site related regional conditions. However, four monitoring locations (Sites 3, 4, 6 and 7) were located in the Campaspe River within approximately 5 kilometres upstream and downstream of its confluence with Post Office Creek and have been reviewed to provide an indication of regional conditions within the Campaspe River catchment.

Audit Findings



Table 5-14: Comparison of Surface Water Results with Published Data and Onsite Groundwater Concentrations (mg/L unless otherwise noted)

Analyte	Post Office Creek Upstream (C01 and/or CR04)	Post Office Creek Downstream (C02 and/or CR03)	Coliban Water Monitoring Program Year 2 (2019) Sites 3, 4, 6 and 7	Coliban Water Monitoring Program Year 1 (2018-2019) Sites 3, 4, 6 and 7	Onsite Groundwater Concentrations (MW01-MW03)	Off-site / Regional Groundwater Concentrations (surrounding audit reports; Table 5-9)	Auditor's Comments and Opinion of Source
Chloride	670	170–240	No data	No data	58–190	No data	Concentrations in creek are higher than those in groundwater. No evidence of increasing concentrations from upstream to downstream locations. Chloride in Post Office Creek is considered to represent background/natural conditions.
Total Nitrogen (as N)	1	1.5–1.57	0.25–1.75	0.4–1.3	2.4–15	>5.2–18*	Total nitrogen levels are similar to those reported in nearby Campaspe River system. Slightly higher concentrations reported in downstream sample but difference is within expected range of sampling and analytical variability. Total nitrogen concentrations in Post Office Creek are considered representative of regional levels due to multiple diffuse anthropogenic sources (as per groundwater). The site may be a minor co-contributing source, but there is no evidence of higher levels adjacent or downstream of the site than in other parts of the catchment.
Cobalt	0.006	0.001	No data ^	No data	<0.001–0.004	<0.001–0.008	Surface water concentrations similar to those in on-site and regional groundwater. No evidence of increasing concentrations between upstream and downstream locations. Cobalt in Post Office Creek is considered to represent background/natural conditions.
Copper	<0.001	0.004–0.006	No data ^	No data	0.004–0.011	0.001–0.022	Surface water concentrations similar to those in on-site and regional groundwater. Slightly higher concentrations reported in downstream sample but difference is within expected range of sampling and analytical variability, particularly given the low reported concentrations (<10x LOR). Copper in Post Office Creek is considered to represent background/natural conditions.

Audit Findings



Analyte	Post Office Creek Upstream (C01 and/or CR04)	Post Office Creek Downstream (C02 and/or CR03)	Coliban Water Monitoring Program Year 2 (2019) Sites 3, 4, 6 and 7	Coliban Water Monitoring Program Year 1 (2018-2019) Sites 3, 4, 6 and 7	Onsite Groundwater Concentrations (MW01-MW03)	Off-site / Regional Groundwater Concentrations (surrounding audit reports; Table 5-9)	Auditor's Comments and Opinion of Source
Manganese	1.9	0.24–0.25	No data ^	No data	0.015–0.020**	No data	Concentrations in creek are higher than those in groundwater. No evidence of increasing concentrations from upstream to downstream locations. Manganese in Post Office Creek is considered to represent background/natural conditions.
Zinc	0.041	0.010–0.012	No data ^	No data	0.023–0.033	0.006–0.194	Surface water concentrations same order of magnitude as on-site and regional groundwater ranges. No evidence of increasing concentrations between upstream and downstream locations. Zinc in Post Office Creek is considered to represent background/natural conditions.
PFOS (µg/L)	0.016–0.024	0.011–0.022	No data	No data	<0.001–0.0006	No data	Concentrations in creek are significantly higher than those in groundwater within ambient ranges reported in Victoria for mixed and urban land use settings (up to 0.048 µg/L and 0.081 µg/L for mixed and urban, respectively; EPA, 2022c). No evidence of increasing concentrations from upstream to downstream locations. PFOS in Post Office Creek is therefore considered to be associated with upstream regional source(s).

Notes:

* Minimum range based on reported nitrate concentrations. Total nitrogen levels were not measured/reported in nearby audit reports, but will be higher than nitrate levels.

^ sediment sampling only conducted.

Excludes anomalous manganese concentration (see **Section 4.5).

Audit Findings



In summary, the auditor considers the sources of elevated surface water indicators to be as follows:

- Naturally occurring and hence not contamination:
 - Chloride
 - Cobalt
 - Copper
 - Manganese
 - Zinc
- Co-sourced from site
 - Total nitrogen (however concentrations in Post Office Creek are consistent with the regional range and site is not considered likely to be a significant contributor to overall nitrogen mass flux into the creek)
- Regional contamination:
 - PFOS

5.5.4 Vapour

Volatile chemicals in soil and groundwater were either not detected or were reported well below relevant HSLs for vapour intrusion.

Vapour intrusion health risks due to volatilisation from soil and groundwater contaminants are therefore considered low and acceptable.

5.6 Risk Evaluation of Stockpile Soil On-site Reuse

As discussed in **Section 3.3** and detailed in the Alpha (2023) DSI, a stockpile of soil that was previously located in the northeast part of 83 Powlett Street ('Parcel 25') was reused in the southern portion of 83 Powlett Street in February/March 2022, to complete infilling of a partially filled pond.

The stockpiled soils were characterised by Alpha in November 2020 (see **Section 4.2**), to allow assessment of their suitability for on-site reuse, i.e. whether reuse would result in unacceptable risk to human health or the environment.

The auditor reviewed the stockpile investigation results and formed the opinion that contaminants in the stockpiled soil would not pose a risk to human health or the environment if reused to further infill the pond in the southern portion of the property. This conclusion was based on the following:

- Average and 95% UCL PFAS concentrations were below relevant health and ecological screening levels (see statistical evaluation of stockpile soils in **Section 5.5.1.6**), and within typical ranges reported for ambient riparian soils in mixed and rural land use settings Victoria (EPA, 2022c).
- Other contaminant concentrations were below health and ecological screening levels (while benzo(a)pyrene marginally exceeded the EIL published in the ASC NEPM, the concentrations were well below higher reliability values derived more recently by CRC CARE (2017).

Audit Findings



- Mass flux calculations demonstrated that the potential PFAS flux from the stockpiled soils to Post Office Creek is very low compared to background PFAS flux within the creek. Specifically:
 - Based on an average PFOS+PFHxS concentration of 7.64 µg/kg in the stockpile, the upper bound average leachable PFOS+PFHxS concentration from these soils is 0.38 µg/L (7.64 µg/kg * 1 kg / 20 L leaching fluid), assuming no source depletion and that 100% of PFAS mass is leached.
 - For the proposed approximate 500 m² area of infilling and average daily rainfall of 2.4 mm (BOM station 087036), the **maximum daily PFAS flux from the stockpiled soils to the creek** (regardless of whether this is via surface runoff or infiltration to groundwater) is: 0.38 µg/L * 0.0024 m/day * 500 m² * 1,000 L/m³ = 456 µg/day = **0.0053 µg/sec**. This is a conservative estimate since it assumes that all rainfall will reach the creek with concentrations equal to the maximum expected leachable concentration if all PFAS transfers from soil to rainfall runoff or infiltration.
 - Based on the reported PFOS+PFHxS concentrations in Post Office Creek upstream locations C01 and CR04 (0.024–0.049 µg/L), and a creek flow rate of 0.46 m³/s⁶, the lower estimate of **background mass flux in the creek from upstream PFAS sources** is: 0.024 µg/L * 0.46 m³/s * 1,000 L/m³ = **11 µg/sec**.
 - The potential contribution of PFOS+PFHxS from stockpile soils to the creek is therefore a negligible percentage (0.0053 µg/sec / 11 µg/sec = <0.05%) of the background mass flux from upstream regional PFAS sources.
 - If the estimated PFOS+PFHxS flux from stockpiled soils was assumed to mix into the background flows of Post Office Creek, the estimated (additional) concentrations would be on the order of 0.0053 µg/s / 460 L/s = 0.00001 µg/L, i.e. well below LORs and applicable water quality objectives.

In summary, the on-site reuse of stockpiled soils to complete infilling of the pond in the southern portion of 83 Powlett Street was assessed to pose low and acceptable risk to human health or the environment, including within Post Office Creek due to leaching and/or stormwater runoff migration pathways.

5.7 Risk of Harm to Human and Ecological Receptors

Based on the proposed use of the site and the nature and extent of identified contamination, receptors that may be exposed to contamination on or from the site, and the auditors assessment of risks to these receptors is summarised in **Table 5-15** below.

⁶ Based on 10% AEP peak flow of 23 m³/sec and baseflow peak ratio for 10% AEP of 0.02, as modelled and assumed by NCCMA (2019).

Audit Findings



Table 5-15: Receptors that may be exposed to contamination on or from the site (proposed use)

Location	Receptor type	Identified receptor(s)	Potential contaminant transport and exposure pathway(s)	Risk Evaluation
On-site	Human	Residents (adult and child) (post-development)	<ul style="list-style-type: none"> Incidental ingestion of soil. Dermal contact with soil. Inhalation of soil-derived dust. 	Low and acceptable; while some indicators exceeded relevant objectives, average concentrations to which receptors would be exposed were assessed to be below objectives.
		Users of the public open space	<ul style="list-style-type: none"> Uptake into and consumption of homegrown produce (fruits/vegetables) 	PFAS and lead concentrations were also assessed to pose low risk of bioaccumulation into poultry eggs.
		Maintenance workers (post-development)	<ul style="list-style-type: none"> Uptake into and consumption of eggs from farmed poultry. 	
		Construction workers (during development)		
		Residents (adult and child) (post-development)	<ul style="list-style-type: none"> Ingestion of groundwater (if extracted). 	Potentially unacceptable due to nickel and nitrate above relevant objectives for potable water. These indicators are regionally elevated and likely to be associated with sewerage/septic leaks within the wider area (nitrate) or natural aquifer geochemistry (nickel). Extractive uses of shallow groundwater are not considered likely to be realised given the proposed low density residential and public open space uses and the availability of a reticulated water supply. Associated risk is therefore assessed as low and can be further minimised by an audit statement recommendation regarding the use of groundwater.
Ecological		Terrestrial ecological receptors	<ul style="list-style-type: none"> Direct contact with soil Indirect exposure (via bioaccumulation) 	Low and acceptable; while some exceedances of objectives were reported, average concentrations to which receptors would be exposed were assessed to be below applicable investigation levels.
		Livestock or crops	<ul style="list-style-type: none"> Ingestion or exposure to groundwater (if extracted) 	Low and acceptable; indicators were not reported in groundwater above objectives/screening levels for these uses.
	Buildings and structures	Buildings, structures, infrastructure	<ul style="list-style-type: none"> Direct contact with soil or groundwater 	Low/negligible. Soil and groundwater conditions are not assessed to be corrosive or otherwise detrimental to buildings
Off-site		<p>None; site-sourced contamination is derived from similar sources to that in the surrounding region, and on-site contaminant concentrations are comparable to and/or lower than those reported in the broader region.</p> <p>Indicators exceeding objectives in off-site surface water (adjacent the site) are associated with diffuse regional sources with the site assessed as a significant contributor to overall mass discharges into the creek.</p> <p>Off-site contamination (if present) is therefore not derived from the site thus it is outside the scope of this audit to address or assess risks to off-site receptors.</p>		

Audit Findings



5.8 Clean Up So Far as Reasonably Practicable

In accordance with EPA Publications 2001 and 2041, the auditor has considered the practicability of soil or groundwater clean up to further reduce identified risks of harm in the context of the proposed low density residential and public open space land use.

The auditor has formed an opinion that soil and groundwater contamination at the site has been cleaned up so far as reasonably practicable (CUSFARP) on the basis that:

- Both soil and groundwater contamination have been assessed to pose a very low / negligible risk of harm to human health and the environment in the context of the proposed low density use of the site.
 - For soil, this conclusion is based on the negligible **degree of harm** that would result from soil exposure (since average exposure concentrations are below relevant health- and ecological based screening levels).
 - For groundwater, this conclusion is based on the low **likelihood** of groundwater use at the site.
- The **likelihood** of groundwater extraction and use (and associated risk of harm) will be further minimised through an EAS recommendation that groundwater is not used without testing and review of results to confirm its suitability for the intended use.
- Groundwater in the broader region contains the same contaminants at similar concentrations to the site, thus **available and/or suitable groundwater remediation technologies** would have no long-term effect on the groundwater quality at the site. Groundwater remediation on the site would therefore be futile and is deemed impractical. For this reason, the auditor has not conducted a detailed remediation options review for groundwater contamination.
- Given the very low risk posed by soil and groundwater contamination, any further **cost** associated with clean up would not be commensurate with the significance of the risk of harm.

On balance, when considering the likely ineffectiveness of groundwater clean-up options (in the context of regional pollution) and the low risk of harm posed by contamination, the auditor's opinion is that:

- land and groundwater contamination at the site has been cleaned up so far as reasonably practicable; and
- residual risk of harm from contamination can be minimised so far as reasonably practicable by the EAS recommendations provided in this audit report.

The auditor does not consider that ongoing groundwater monitoring is necessary as the risk posed by the groundwater contamination is low and contaminants are present at similar concentrations on the site and in the surrounding area.

In accordance with Appendix E in EPA Publication 2041 (EPA, 2022a), the audit has identified a risk of harm to environmental values of groundwater and a Groundwater Quality Restricted Use Zone (GQRUZ) has been recommended for the site. While contamination also exists off-site, it is associated with regional sources and therefore the recommended GQRUZ relevant to this audit scope is limited to the site boundary.

Appendix E contains additional CUSFARP documentation (information checklist and current groundwater analytical results summary tables) in the manner specified in EPA Publication 2001.

Conclusions



6.0 Conclusions

This report details the results of an environmental audit of the property located at 88a–90 Wedge Street and 83 Powlett Street, Kyneton, Victoria.

The site is subject to an EAO and is proposed to be redeveloped for sensitive use including low density residential and public open space. The objective of the environmental audit was to assess the suitability of the site for this proposed use, including whether there is a risk of harm from contaminated land, waste or pollution in the context of the future use.

The conclusions of the environmental audit are as follows:

- The site and surrounding area were formerly undeveloped rural land used, likely used for grazing.
- The site remained vacant until the late 1970s, when the first of several houses was built on the site. Landscaping and gardening works were conducted from the early 2000s to present. A stockpile of soil (unknown source) appeared in the northeast corner of the site during this time, which was subsequently used to infill the landscaped pond in the southern portion of the site.
- The primary potential sources of contamination identified at the site were historical importation of fill and small-scale agricultural activities. Potential off-site sources of contamination included a variety of industrial uses (former metal cutting and welding, maintenance areas and workshop associated with earthmoving machinery, historical storage of agricultural chemicals and equipment, former Mobil depot).
- The site is underlain by basaltic clays and basalt of the Newer Volcanics.
- The uppermost groundwater system at the site occurs within the Upper Tertiary / Quaternary Basalt of the Newer Volcanics at approximately 1.6 to 2.2 m bgl (491.786 to 496.797 m AHD). The inferred direction of groundwater flow beneath the site is to the south-southwest, towards Post Office Creek which abuts the site to the south.
- Groundwater TDS of the uppermost water table aquifer was reported in the range 330–600 mg/L, thus groundwater has been classified as segment A1 in accordance with the ERS for the purposes of identifying relevant environmental values.
- Soil at the site contains copper, iron, lead, zinc, benzo(a)pyrene, PFOS and PFHxS at concentrations potentially detrimental to environmental values of land. However, the risk of harm to human health and the environment was assessed to be negligible / very low in the context of the proposed mixed use low-density residential and public open space development (or other less sensitive uses).
- Fragments of bonded ACM were identified within stockpiled soils in the northeast portion of the site but were removed during stockpile sieving and reuse activities. A Visual Asbestos Clearance Inspection was conducted following these works and a Clearance Certificate was provided.
- Groundwater beneath the site is contaminated by nitrate and total nitrogen. These are derived from diffuse regional sources, but the site is assessed to be a co-contributing source.
- Groundwater contains naturally elevated concentrations of chloride, cobalt, copper, nickel and zinc. The levels are considered typical of the natural regional groundwater quality surrounding the site and therefore are not contamination as defined in the *Environment Protection Act 2017*.
- The risk of harm due to groundwater contamination on or from the site has been assessed as low due to the low likelihood of on-site use following residential subdivision, and noting that the identified groundwater contaminants are present at similar concentrations throughout the region.
- Soil and groundwater contamination has been cleaned up so far as reasonably practicable. This is based on the low risk of harm posed by contamination and because groundwater remediation at the site would not result in long term improvement in groundwater quality due to the presence of the same contaminants at similar concentrations across the broader region.

Conclusions



- Further monitoring of groundwater contamination is not considered necessary due to the low risk posed and presence of similar contaminant levels in the surrounding area.
- In the auditor's opinion, the quality and reliability of information generated from the investigations undertaken were sufficient for the purposes of this environmental audit.

The identified risk of harm due to groundwater contamination and natural groundwater indicators will be managed by a recommendation in the EAS that groundwater must not be used without testing and review of results to confirm its suitability for the intended use.

The EAS is attached in **Appendix A**.

Limitations



7.0 Limitations

This audit report and attached environmental audit statement were prepared for ADTS as Trustee for the Jasper Family Trust in accordance with Division 3 – Environmental Audits, Section 208 to Section 212 of the *Environment Protection Act 2017*.

The audit is based on a review of the subsurface condition of the site at the time of assessment, as described in the assessment reports attached to the Audit report and site inspections conducted by the auditor and their representatives. Audit reports are based on the conditions encountered and information reviewed at the time of preparation, and do not represent any changes that may have occurred since the date of completion.

In drawing conclusions, the auditor used reasonable care to avoid reliance upon data and information that may be inaccurate, however a degree of uncertainty is inherent in all subsurface investigations and there remains the possibility that variations may occur between sample locations. The audit and this report are limited by and rely upon the scope of the review, and the information provided by the client and their consultants and representatives through documents provided to the auditor. The auditor's conclusions presented in this report are therefore based on the information made available to them and arising from their own observations conducted during the audit.

Limitations



8.0 References

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Limitations



Myers, J.H., Odell, E.H., Kellar, C., Ahmed, W. and Pettigrove, V., 2020. *Coliban Water Monitoring Program: Monitoring Program for Assessing the Benefits of Environmental Offsets on the Condition of the Campaspe River: Year 2 (2019), Technical Report 40*. Aquatic Environmental Stress Research Group, RMIT University, Victoria, Australia. September 2020.

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Figures

Figure 1: Current Site Features and Layout

Figure 2: Registered Bores (2 km Radius)

Figure 3: Soil Contamination

Figure 4: Groundwater Contamination



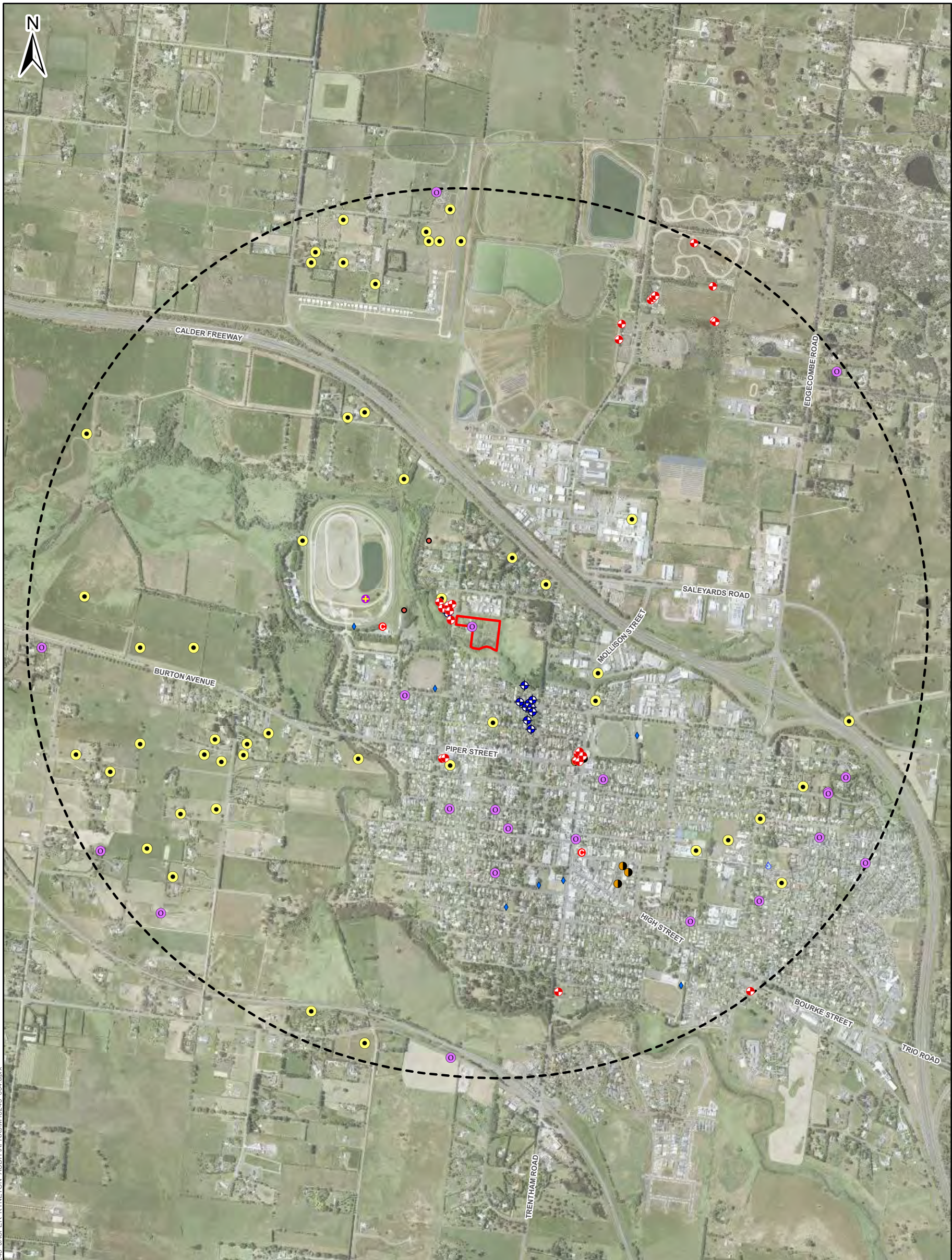
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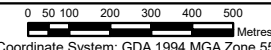
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	Infilled Pond
	Proposed Area for Public Open Space and Recreation
	Lot Boundary
	Site Boundary

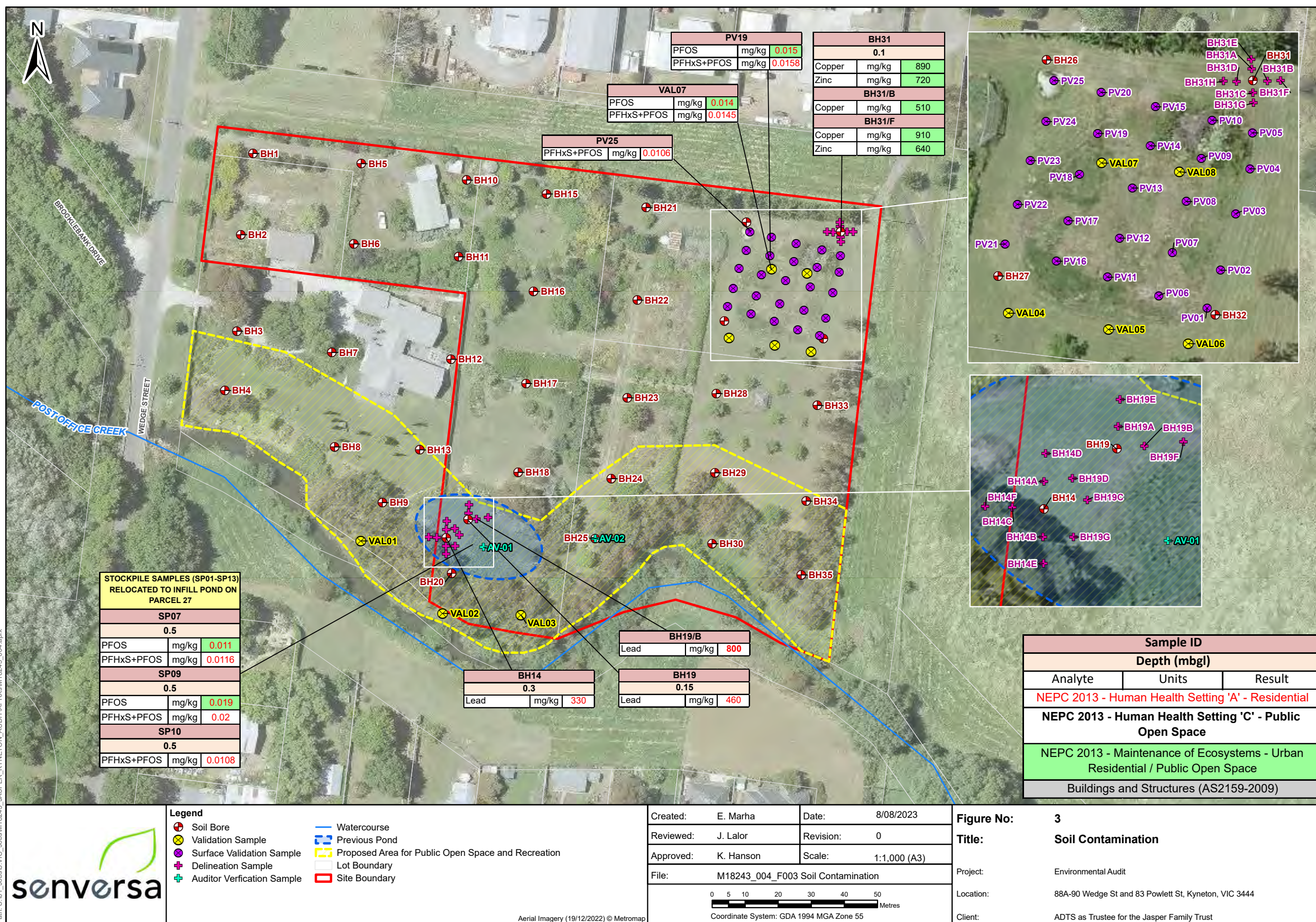
Created:	E. Marha	Date:	30/05/2023
Reviewed:	J. Lalor	Revision:	0
Approved:	K. Hanson	Scale:	1:1,500 (A3)
File:	M18243_004_F001 Current Site Features and Layout		
Coordinate System: GDA 1994 MGA Zone 55			

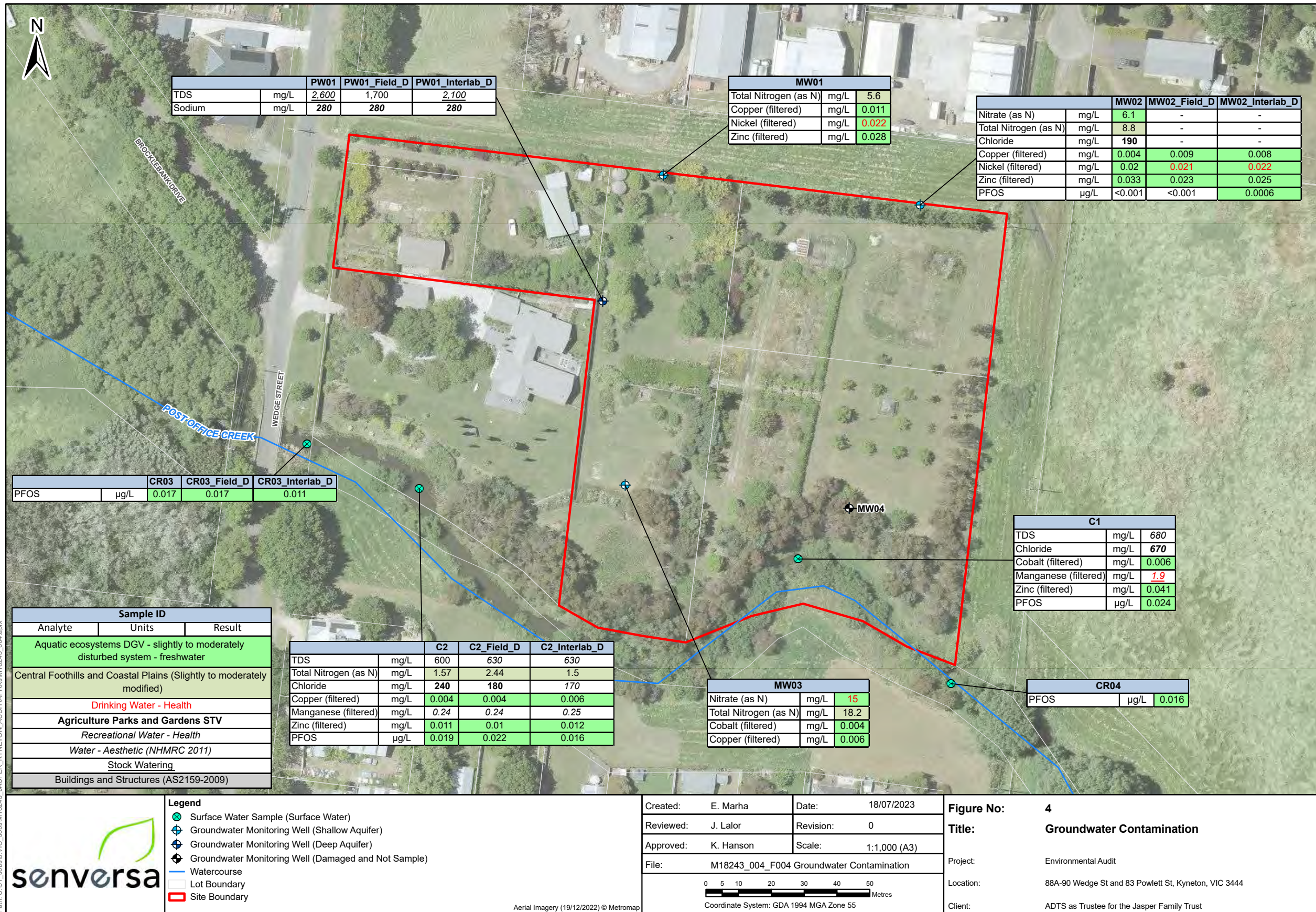
Figure No:	1
Title:	Current Site Features and Layout
Project:	Environmental Audit
Location:	88, 88a, 90 Wedge Street and 83 Powlett St, Kyneton, VIC 3444
Client:	ADTS as Trustee for the Jasper Family Trust



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	Legend Registered Bores (2 km Radius) ● Commercial ● Domestic ● Domestic and Stock ◆ Groundwater Investigation ◆ Investigation ◆ Irrigation ◆ Mineral Water ● State Observation Network ● Stock ● Use Not Known ■ Site Boundary - - Site Boundary (2 km Buffer) <small>Notes: Bores from WMIS. Aerial Imagery (19/12/2022) © Metromag</small>	Created: E. Marha	Date: 18/07/2023	Figure No: 2 Title: Registered Bores (2 km Radius)
		Reviewed: J. Lalor	Revision: 0	
		Approved: K. Hanson	Scale: 1:16,000 (A3)	Project: Environmental Audit
		File: M18243_004_F002 Registered Bores (2 km Radius)		Location: 88A-90 Wedge St and 83 Powlett St, Kyneton, VIC 3444
		 Coordinate System: GDA 1994 MGA Zone 55		Client: ADTS as Trustee for the Jasper Family Trust







Tables

Table 1: Soil Analytical Results vs Environmental Objectives

Table 2: Leachate Soil Results

Table 3: Groundwater Analytical Results vs Environmental Objectives

Table 1 - Soil Results vs Environmental Values
Environmental Audit Report
88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton
ADTS as Trustee for the Jasper Family Trust
M18243



Table with columns for Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various BH01-BH10 data points for Physical Parameters, Inorganics, Major Ions, Metals, BTEX, Total Recoverable Hydrocarbons, PAHs, and Phenols.

Table 1 - Soil Results vs Environmental Values
Environmental Audit Report
88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton
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Table with columns for Location Code (15, 16, 17, 18, 19, 19A, 19B, 19C, 19D, 19E, 19F, 19G, 19A, 19B, 19D, 19G), Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various chemical parameters like Physical Parameters, Inorganics, Major Ions, Metals, BTEX, Total Recoverable Hydrocarbons, PAHs, and Phenols. Each parameter is measured against NEPC 2013 Human Health Setting 'A' - Residential and NEPC 2013 Human Health Setting 'C' - Public Open Space, with values reported for each location code.

Table 1 - Soil Results vs Environmental Values
Environmental Audit Report
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Table with columns for Location Code (BH21 to BH30), Site Area (Residential, Open space), Field ID, Date, Depth, Sample Type, Lab Report No., Unit, EQL, NEPC 2013 Human Health Setting A-Residential, NEPC 2013 Human Health Setting C-Public Open Space, NEPC 2013 Maintenance of Ecosystems - Urban Residential/Public Open Space, Buildings and Structures (AS2159-2009), and various chemical/physical parameters (e.g., pH, Inorganics, Metals, BTEX, PAHs, Phenols).

Table 1 - Soil Results vs Environmental Values Environmental Audit Report 88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton ADTS as Trustee for the Jasper Family Trust M18243



Table with columns for Location Code (BH31, BH31/A, BH31/B, BH31/C, BH31/D, BH31/E, BH31/F, BH31/G, BH31/H, BH32, BH33, BH34, BH35), Field ID, Date, Depth, Sample Type, Lab Report No., Unit, EQL, NEPC 2013 Human Health Setting 'A' Residential, NEPC 2013 Human Health Setting 'C' Public Open Space, NEPC 2013 Maintenance of Ecosystems Urban Residential / Public Open Space, Buildings and Structures (AS2159-2009), and various chemical parameters including Physical Parameters, Inorganics, Major Ions, Metals, BTEX, Total Recoverable Hydrocarbons, PAHs, and Phenols.

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Table with columns for Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various parameters (Physical, Inorganics, Major Ions, Metals, BTEX, Total Recoverable Hydrocarbons, PAHs, Phenols) with their respective units, EQL, and NEPC 2013 values across different Residential (PV1-PV15) and Interlab (QC1, QC2, QC2A) sites.



Table 1 - Soil Results vs Environmental Values
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Location Code	Site Area	Field ID	Date	Depth	Sample Type	Lab Report No.	BH21		BH22		BH23		BH24		BH25		BH26		BH27		BH28		BH29		BH30						
							Residential	Residential	Residential	Residential	Open space	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Open space	Residential	Residential	Residential	Residential	Residential	Open space	Open space	Open space		
							QC03A	BH22/0.1	BH23/0.05	BH24/0.05	BH24/1.0	BH25/0.2	BH25/0.5 (AV-02)	BH25/1.2	BH26/0.5	BH26/1.2	BH27/0.5	BH27/1.25	BH28/0.5	BH28/1.0	QC01A	BH29/0.2	BH30/0.5	QC02							
							29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020							
							1.1	1.1	0.1	0.05	0.05	1	0.2	0.5	1.2	0.5	1.2	0.5	1.25	0.5	1	1	0.2	0.5	0.5						
		Unit	EQL	NEPC 2013 - Human Health Setting 'A' - Residential	NEPC 2013 - Human Health Setting 'C' - Public Open Space	NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space	Buildings and Structures (AS2159-2009)																								
Halogenated Phenols																															
		mg/kg	0.05	6,300 ³	6,300 ³																										
		mg/kg	0.05	49 ³	49 ³																										
		mg/kg	0.05	190 ³	190 ³																										
		mg/kg	0.05																												
		mg/kg	0.2	390 ³	390 ³																										
		mg/kg	0.1	100 ³	120 ³																										
		mg/kg	0.1	1,900 ³	1,900 ³																										
		mg/kg	0.1																												
		mg/kg	0.1																												
		mg/kg	10																												
		mg/kg	1																												
MAH																															
		mg/kg	0.5	300 ³	300 ³																										
		mg/kg	0.5	270 ³	270 ³																										
		mg/kg	0.5	1,900 ³	1,900 ³																										
		mg/kg	0.1	6,000 ³	6,000 ³																										
		mg/kg	0.5																												
Halogenated Benzenes																															
		mg/kg	0.1	1,800 ³	1,800 ³																										
		mg/kg	0.1	24 ³	24 ³																										
		mg/kg	0.5																												
		mg/kg	0.1	2.6 ³	2.6 ³																										
		mg/kg	0.5	1,600 ³	1,600 ³																										
		mg/kg	0.5	290 ³	290 ³																										
		mg/kg	0.1	280 ³	280 ³																										
Halogenated Hydrocarbons																															
		mg/kg	0.5	0.036 ³	0.036 ³																										
		mg/kg	0.5	6.8 ³	6.8 ³																										
		mg/kg	0.5	87 ³	87 ³																										
		mg/kg	0.5																												
		mg/kg	0.5	23,000 ³	23,000 ³																										
Chlorinated Hydrocarbons																															
		mg/kg	0.5	3.6 ³	3.6 ³																										
		mg/kg	0.1	230 ³	230 ³																										
		mg/kg	0.1	2 ³	2 ³																										
		mg/kg	0.1	8,100 ³	8,100 ³																										
		mg/kg	0.1	1.1 ³	1.1 ³																										
		mg/kg	0.1	0.6 ³	0.6 ³																										
		mg/kg	0.5	0.005 ³	0.005 ³																										
		mg/kg	0.1	0.46 ³	0.46 ³																										
		mg/kg	0.5	1,600 ³	1,600 ³																										
		mg/kg	0.5	2.5 ³	2.5 ³																										
		mg/kg	0.5	150 ³	150 ³																										
		mg/kg	0.5	0.29 ³	0.29 ³																										
		mg/kg	0.5	19 ³	19 ³																										
		mg/kg	0.1	0.65 ³	0.65 ³																										
		mg/kg	0.5	8.3 ³	8.3 ³																										
		mg/kg	0.5	5,400 ³	5,400 ³																										
		mg/kg	0.1	0.32 ³	0.32 ³																										
		mg/kg	0.5	110 ³	110 ³																										
		mg/kg	0.1	160 ³	160 ³																										
		mg/kg	0.5	24 ³	24 ³																										
		mg/kg	0.5																												
		mg/kg	0.2	57 ³	57 ³																										
		mg/kg	0.1	1.2 ³	1.2 ³																										
		mg/kg	0.1	24 ³	24 ³																										
		mg/kg	0.1	70 ³	70 ³																										
		mg/kg	0.5																												
		mg/kg	0.1	0.94 ³	0.94 ³																										
		mg/kg	0.1	0.059 ³	0.059 ³																										
		mg/kg	0.1																												
Solvents																															
		mg/kg	0.5	27,000 ³	27,000 ³																										
		mg/kg	0.5	33,000 ³	33,000 ³																										
		mg/kg	0.5	70,000 ³	70,000 ³																										
		mg/kg	0.5	0.72 ³	0.72 ³																										
		mg/kg	0.5	770 ³	770 ³																										
Organophosphorus Pesticides																															
		mg/kg	0.05	190 ³	190 ³																										
		mg/kg	0.2																												
		mg/kg	0.05																												
		mg/kg	0.05																												
		mg/kg	0.05	44 ³	44 ³																										
		mg/kg	0.05	160 ³	250 ³																										
		mg/kg	2	630 ³	630 ³																										
		mg/kg	0.2																												
		mg/kg	0.2																												
		mg/kg	0.05																												
		mg/kg	0.05	44 ³	44 ³																										
		mg/kg	0.05	1.9 ³	1.9 ³																										
		mg/kg	0.05	140 ³	140 ³																										
		mg/kg	0.2	2.5 ³	2.5 ³																										

Table 1 - Soil Results vs Environmental Values Environmental Audit Report 88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton ADTS as Trustee for the Jasper Family Trust M18243



Main data table with columns: Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various sampling points (PV1-PV15, QC1-QC2A) for categories like Halogenated Phenols, MAH, Halogenated Benzene, Halogenated Hydrocarbons, Chlorinated Hydrocarbons, Solvents, and Organophosphorus Pesticides.

Table 1 - Soil Results vs Environmental Values Environmental Audit Report 88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton ADTS as Trustee for the Jasper Family Trust M18243



Table with columns for Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various chemical parameters (e.g., Halogenated Phenols, MAH, Halogenated Benzene, Chlorinated Hydrocarbons, Solvents, Organophosphorus Pesticides) with their respective units and values.

Table 1 - Soil Results vs Environmental Values
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Table with columns: Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., Unit, EQL, NEPC 2013 - Human Health Setting 'A' - Residential, NEPC 2013 - Human Health Setting 'C' - Public Open Space, NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space, Buildings and Structures (AS2159-2009), AV-01, BH01, BH02, BH03, BH04, BH05, BH06, BH07, BH08, BH09, BH10.

Table 1 - Soil Results vs Environmental Values
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Table with columns for Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various chemical categories (Pesticides, Polychlorinated Biphenyls, Organochlorine Pesticides, Herbicides) with their respective units, EQL values, and NEPC 2013 Human Health and Ecosystems settings.

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Location Code Site Area	Field ID	Date	Depth	Sample Type	Lab Report No.	SP04				SP05		SP06		SP07		SP08		SP09		SP10		SP11		SF
						Open space				Open space		Open space		Open space		Open space		Open space		Open space		Open space		
						QC1	QC1	QC1A		SP05.0.3	SP06.0.3	SP06.1.0	SP06.1.0	SP07.0.5	SP07.0.5	SP08.0.2	SP08.0.2	SP09.0.5	SP09.0.5	SP10.0.5	SP10.0.5	SP11.0.2	SP11.0.2	
						19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376
						760165	758376	760165	23450	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376	760165	758376

Table 1 - Soil Results vs Environmental Values
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Location Code Site Area Field ID Date Depth Sample Type Lab Report No.	AV-01		BH01			BH02			BH03		BH04		BH05		BH06		BH07		BH08		BH09		BH10
	Open space		Residential			Residential			Off-site		Off-site		Residential		Residential		Off-site		Off-site		Off-site		Residential
	AV-01	BH01/0.1	BH01/0.5	BH02/0.15	BH02/0.6	BH02/0.6	QC05A	BH03/0.2	BH04/0.2	BH05/0.1	BH05/1.0	BH06/0.2	BH06/1.0	BH07/0.2	BH08/0.2	BH09/0.3	BH09/1.0	QC06	BH10/0.5				
	29/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	
Mecoprop	mg/kg	0.02	600 ^{#1}	800 ^{#7}																			
Picloram	mg/kg	0.02	4,500 ^{#2}	5,700 ^{#7}																			
Triclopyr	mg/kg	0.02																					
Fungicides																							
Hexachlorobenzene	mg/kg	0.05	10 ^{#4}	10 ^{#7}																			
Particle Size	%	1																					
% Clay*	%								13													29	
(n:2) Fluorotelomer Sulfonic Acids																							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001																					
6:2 Fluorotelomer Sulfonate (6:2 FTS)	mg/kg	0.0001																					
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0001																					
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0001																					
Perfluoroalkane Carboxylic Acids																							
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001																					
Perfluorododecanoic acid (PFDDA)	mg/kg	0.0001																					
Perfluorononanoic acid (PFNA)	mg/kg	0.0001																					
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0001																					
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0001																					
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001																					
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002																					
Perfluorodecanoic acid (PFDA)	mg/kg	0.0001																					
Perfluoroundecanoic acid (PFUdA)	mg/kg	0.0001																					
Perfluorododecanoic acid (PFDDA)	mg/kg	0.0001																					
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	0.1 ^{#13}	10 ^{#23}																			
Perfluoroalkane Sulfonic Acids																							
Perfluoronanesulfonic acid (PFNS)	mg/kg	0.0001																					
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0001	0.01 ^{#14}	1 ^{#24}	0.01 ^{#28}																		
Perfluoropentanesulfonic acid (PFPeS)	mg/kg	0.0001																					
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0001	0.01 ^{#14}	1 ^{#24}																			
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0001																					
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0001																					
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	19 ^{#3}	19 ^{#3}																			
Perfluoropropanesulfonic acid (PFPS)	mg/kg	0.0001																					
Sum of PFHxS and PFOS	mg/kg	0.0001	0.01 ^{#13}	1 ^{#23}																			
Perfluoroalkyl Sulfonamides																							
N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	mg/kg	0.0005																					
(N)MeFOSAA	mg/kg	0.0002																					
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEFOSAA)	mg/kg	0.0002																					
N-Ethyl perfluorooctane sulfonamide (EFOSA)	mg/kg	0.0005																					
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005																					
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005																					
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0005																					
PFAS																							
Sum of en-Health PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.0001																					
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.0001																					
Sum of PFAS	mg/kg	0.0001																					

- Comments**
- #1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
 - #2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
 - #3 USEPA RSLs (November 2021 Update) - Residential.
 - #4 NEPC (2013) - HIL 'A'.
 - #5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
 - #6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
 - #7 NEPC (2013) - HSL 'A'.
 - #8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
 - #9 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
 - #10 HSL based on vapour intrusion pathway (sand <1 m depth).
 - #11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
 - #12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
 - #13 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS
 - #15 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
 - #16 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
 - #17 NEPC (2013) - HIL 'C'.
 - #18 NEPC (2013) - HIL 'C'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
 - #19 NEPC (2013) - HIL 'C'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
 - #20 Friebel & Nadebaum (2011) - HSL-C.
 - #21 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.
 - #22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
 - #23 PFAS NEMP 2.0: Health, Public open space (HIL C).
 - #24 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS
 - #25 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEMP.
 - #26 NEPC (2013) EIL - Urban Residential and Public Open Space. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
 - #27 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
 - #28 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg
 - #29 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.
 - #30 NEPC (2013) ESL - Urban Residential and Public Open Space. Fine soil value (most conservative) adopted for initial screening.
 - #31 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
 - #32 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.
 - #33 ESL for coarse soil adopted for initial screening.
 - #34 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
 - #35 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
 - #36 PFAS NEMP 2.0: Ecological, indirect exposure.
 - #37 Refer to AS2159-2009 Tables 6.4.2(C) and 6.5.2 (C); value is most stringent of thresholds for mild to non-aggressive exposure classification for concrete or steel piles.



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Main data table with columns: Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., Unit, EQL, NEPC 2013 - Human Health Setting 'A' - Residential, NEPC 2013 - Human Health Setting 'C' - Public Open Space, NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space, Buildings and Structures (AS2159-2009), and various soil parameters like Mecoprop, Picloram, Triclopyr, etc.

Comments

- #1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#3 USEPA RSLs (November 2021 Update) - Residential.
#4 NEPC (2013) - HIL 'A'.
#5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#7 NEPC (2013) - HSL 'A'.
#8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
#9 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
#10 HSL based on vapour intrusion pathway (sand <1 m depth).
#11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
#12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
#13 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A)
#14 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS
#15 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#16 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#17 NEPC (2013) - HIL 'C'.
#18 NEPC (2013) - HIL 'C'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#19 NEPC (2013) - HIL 'C'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#20 Friebel & Nadebaum (2011) - HSL-C.
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#22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
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#24 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS
#25 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEMP.
#26 NEPC (2013) EIL - Urban Residential and Public Open Space. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
#27 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
#28 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg
#29 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.
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#31 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
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#34 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
#35 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
#36 PFAS NEMP 2.0: Ecological, indirect exposure.
#37 Refer to AS2159-2009 Tables 6.4.2(C) and 6.5.2 (C); value is most stringent of thresholds for mild to non-aggressive exposure classification for concrete or steel piles.

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Location Code	BH21		BH22		BH23		BH24		BH25		BH26		BH27		BH28		BH29		BH30	
	Residential	Residential	Residential	Residential	Residential	Open space	Residential	Open space	Residential	Open space	Residential	Open space	Residential	Open space	Residential	Open space	Residential	Open space	Residential	Open space
Site Area	QC03A		BH220.1		BH230.05		BH241.0		BH250.2		BH260.5		BH271.25		BH280.5		BH291.0		BH300.5	
Field ID	29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020	
Date	29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020		29/10/2020	
Depth	1.1		0.1		0.05		0.05		0.2		0.5		1.2		0.5		1.25		0.5	
Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Lab Report No.	753967		23173		753967		753967		753967		753967		753967		753967		753967		753967	
Mecoprop	mg/kg	0.02	600 ^{#1}	800 ^{#7}		<0.5	<0.5	<0.04			<0.5					<0.5				
Picloram	mg/kg	0.02	4,500 ^{#1}	5,700 ^{#7}		<0.5	<0.5	<0.04			<0.5					<0.5				
Trifluralin	mg/kg	0.02						<0.04												
Fungicides																				
Hexachlorobenzene	mg/kg	0.05	10 ^{#4}	10 ^{#7}		<0.05	<0.05				<0.05					<0.05				
Particle Size																				
% Clay*	%	1					28	20										32		
(n-2) Fluorotelomer Sulfonic Acids																				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001																		
6:2 Fluorotelomer Sulfonate (6:2 FTS)	mg/kg	0.0001																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0001																		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0001																		
Perfluoroalkane Carboxylic Acids																				
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001																		
Perfluorododecanoic acid (PFDDA)	mg/kg	0.0001																		
Perfluorononanoic acid (PFNA)	mg/kg	0.0001																		
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0001																		
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0001																		
Perfluorohexadecanoic acid (PFHxDA)	mg/kg	0.0001																		
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002																		
Perfluorodecanoic acid (PFDA)	mg/kg	0.0001																		
Perfluoroundecanoic acid (PFUeDA)	mg/kg	0.0001																		
Perfluoroundecanoic acid (PFUeDA)	mg/kg	0.0001																		
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	0.1 ^{#13}	10 ^{#23}																
Perfluoroalkane Sulfonic Acids																				
Perfluoronanesulfonic acid (PFNS)	mg/kg	0.0001																		
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0001	0.01 ^{#14}	1 ^{#24}	0.01 ^{#24}															
Perfluoropentanesulfonic acid (PFPeS)	mg/kg	0.0001																		
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0001	0.01 ^{#14}	1 ^{#24}																
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0001																		
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0001																		
Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0001	19 ^{#3}	19 ^{#3}																
Perfluoropropanesulfonic acid (PFPS)	mg/kg	0.0001																		
Sum of PFHxS and PFOS	mg/kg	0.0001	0.01 ^{#13}	1 ^{#23}																
Perfluoroalkyl Sulfonamides																				
N-Ethyl perfluorooctane sulfonamide (EFOSE)	mg/kg	0.0005																		
N-MeFOSSA	mg/kg	0.0002																		
N-ethyl-perfluorooctanesulfonamide (NEFOSSA)	mg/kg	0.0002																		
N-Ethyl perfluorooctane sulfonamide (EFOSSA)	mg/kg	0.0005																		
N-Methyl perfluorooctane sulfonamide (MeFOSSA)	mg/kg	0.0005																		
N-Methyl perfluorooctane sulfonamide (MeFOSE)	mg/kg	0.0005																		
Perfluorooctane sulfonamide (FOSSA)	mg/kg	0.0005																		
PFAS																				
Sum of en-Health PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.0001																		
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.0001																		
Sum of PFAS	mg/kg	0.0001																		

Comments

#1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.

#2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.

#3 USEPA RSLs (November 2021 Update) - Residential.

#4 NEPC (2013) - HIL 'A'.

#5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.

#6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.

#7 NEPC (2013) - HSL 'A'.

#8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.

#9 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.

#10 HSL based on vapour intrusion pathway (sand <1 m depth).

#11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.

#12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.

#13 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS

#14 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS

#15 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.

#16 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.

#17 NEPC (2013) - HIL 'C'.

#18 NEPC (2013) - HIL 'C'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.

#19 NEPC (2013) - HIL 'C'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.

#20 Friebel & Nadebaum (2011) - HSL-C.

#21 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.

#22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.

#23 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS

#24 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS

#25 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEMP.

#26 NEPC (2013) EIL - Urban Residential and Public Open Space. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.

#27 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.

#28 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg

#29 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.

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#31 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.

#32 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.

#33 ESL for coarse soil adopted for initial screening.

#34 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.

#35 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.

#36 PFAS NEMP 2.0: Ecological, indirect exposure

#37 Refer to AS2159-2009 Tables 6.4.2(C) and 6.5.2 (C); value is most stringent of thresholds for mild to non-aggressive exposure classification for concrete or steel piles.

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Table with columns for Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., and various NEPC and PFAS screening values across multiple residential and public open space locations.

Comments
#1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#3 USEPA RSLs (November 2021 Update) - Residential.
#4 NEPC (2013) - HIL 'A'.
#5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#7 NEPC (2013) - HIL 'A'.
#8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
#9 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
#10 HSL based on vapour intrusion pathway (sand <1 m depth)
#11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
#12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
#13 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS
#14 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS
#15 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
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#17 NEPC (2013) - HIL 'C'.
#18 NEPC (2013) - HIL 'C'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#19 NEPC (2013) - HIL 'C'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#20 Friebel & Nadebaum (2011) - HSL-C.
#21 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.
#22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
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Location Code Site Area	Field ID	Date	Depth	Sample Type	Lab Report No.	PV1		PV2	PV3	PV4	PV5	PV6	PV7	PV8	PV9	PV10	PV11		PV12	PV13	PV14	PV15
						Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential
Mecoprop																						
Picloram																						
Triclopyr																						
Fungicides																						
Hexachlorobenzene																						
Particle Size																						
% Clay*																						
(n2) Fluorotelomer Sulfonic Acids																						
4:2 Fluorotelomer sulfonic acid (4:2 FTS)																						
6:2 Fluorotelomer Sulfonate (6:2 FTS)																						
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Perfluorododecanoic acid (PFDDA)																						
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Perfluoropentanoic acid (PFPeA)																						
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Perfluoropentanesulfonic acid (PFPeS)																						
Perfluorohexanesulfonic acid (PFHxS)																						
Perfluorooctanesulfonic acid (PFOS)																						
Perfluorodecane sulfonic acid (PFDS)																						
Perfluorobutane sulfonic acid (PFBS)																						
Perfluoropropanesulfonic acid (PFPS)																						
Sum of PFHxS and PFOS																						
Perfluoroalkyl Sulfonamides																						
N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)																						
NMeFOSAA																						
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEFOSAA)																						
N-Ethyl perfluorooctane sulfonamide (EFOSA)																						
N-Methyl perfluorooctane sulfonamide (MeFOSA)																						
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)																						
Perfluorooctane sulfonamide (FOSA)																						
PFAS																						
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*																						
Sum of US EPA PFAS (PFOS + PFOA)*																						
Sum of PFAS																						

Comments

- #1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
- #2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
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- #5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
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- #22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
- #23 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS
- #24 PFAS NEMP 2.0: Health, Public open space (HIL C). Value is for PFOS+PFHxS
- #25 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEMP.
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- #28 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg
- #29 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.
- #30 NEPC (2013) ESL - Urban Residential and Public Open Space. Fine soil value (most conservative) adopted for initial screening.
- #31 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #32 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.
- #33 ESL for coarse soil adopted for initial screening.
- #34 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
- #35 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
- #36 PFAS NEMP 2.0: Ecological, indirect exposure.
- #37 Refer to AS2159-2009 Tables 6.4.2(C) and 6.5.2 (C); value is most stringent of thresholds for mild to non-aggressive exposure classification for concrete or steel piles.

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Table with 32 columns (Location Code, Site Area, Field ID, Date, Depth, Sample Type, Lab Report No., PV16-PV25, SP01-SP03) and multiple rows listing various chemical and physical parameters with their respective units, EQL values, and environmental values.

- Comments
#1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#3 USEPA RSLs (November 2021 Update) - Residential.
#4 NEPC (2013) - HIL 'A'.
#5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#7 NEPC (2013) - HSL 'A'.
#8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
#9 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
#10 HSL based on vapour intrusion pathway (sand <1 m depth).
#11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
#12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
#13 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A).
#14 PFAS NEMP 2.0: Health, Residential with garden/accessible soil (HIL A). Value is for PFOS+PFHxS
#15 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#16 NEPC (2013) - HIL 'C'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#17 NEPC (2013) - HIL 'C'.
#18 NEPC (2013) - HIL 'C'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#19 NEPC (2013) - HIL 'C'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
#20 Friebel & Nadebaum (2011) - HSL-C.
#21 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.
#22 NEPC (2013) - HIL 'C'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
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Table 1 - Soil Results vs Environmental Values
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Table with columns for Location Code, Site Area, SP04-SP11 (Open space), SF, Unit, EQL, NEPC 2013 - Human Health Setting 'A' - Residential, NEPC 2013 - Human Health Setting 'C' - Public Open Space, NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space, and Buildings and Structures (AS2159-2009). Rows include various chemical compounds like Mecoprop, Picloram, Triclopyr, Fungicides, Hexachlorobenzene, and various Sulfonic Acids.

- Comments
#1 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#2 NEPC (2013) - HIL 'A'. Value is for free cyanide but has also been compared to other forms (total, WAD, SAD) for screening purposes.
#3 USEPA RSLs (November 2021 Update) - Residential.
#4 NEPC (2013) - HIL 'A'.
#5 NEPC (2013) - HIL 'A'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
#6 NEPC (2013) - HIL 'A'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
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#8 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
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#10 HSL based on vapour intrusion pathway (sand <1 m depth).
#11 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
#12 NEPC (2013) - HIL 'A'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
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Lab Report No.	Unit	EQL	NEPC 2013 - Human Health Setting 'A' - Residential	NEPC 2013 - Human Health Setting 'C' - Public Open Space	NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space	Buildings and Structures (AS2159-2009)	Location Code															
							SP13				VAL01	VAL02	VAL03	VAL04	VAL05	VAL06	VAL07	VAL08				
							Open space				Open space	Open space	Open space	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential	Residential
							SP12/0.2	SP13/0.2	SP13/0.2	QC2	QC2A	VAL01	VAL02	VAL03	VAL04	VAL05	VAL06	VAL07	VAL08	VAL08C1	VAL08C2	VAL08C3
760165	mg/kg	0.02	600 ^{HA}	800 ^{HT}																		

- Comments**
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Table 2 - Leachate Soil Results
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Location Code	BH02	BH12	BH14	BH17	BH19	BH19B	BH31	SP01	SP02	SP03	SP04	SP05
Field ID	BH02/0.6	BH12/0.3	BH14/0.3	BH17/0.2	BH19/0.15	BH19B	BH31/0.1	SP01/0.3	SP02/0.3	SP03/0.2	SP04/0.3	SP05/0.3
Date	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	19/11/2020	30/10/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020
Depth	0.6	0.3	0.3	0.2	0.15		0.1	0.3	0.3	0.2	0.2	0.3
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Report No.	756102	756102	756102	756102	756102	760227	756102	762237	762237	762237	762237	762237
Unit	EQL											
Physical Parameters												
pH (Initial)	pH Units	0.1	7.6	8.1	7.9	7.6	7.9	6.9	7.9	-	-	-
pH (Final)	pH Units	0.1	6.2	5.0	5.1	5.0	5.0	5.3	5.0	7.2	5.1	7.6
Metals												
Chromium(VI)	mg/L	0.05	-	-	-	<0.05	-	-	-	-	-	-
Copper	mg/L	0.01	-	-	-	-	-	0.05	-	-	-	-
Lead	mg/L	0.01	-	-	0.05	-	0.04	0.02	-	-	-	-
Mercury	mg/L	0.001	-	-	-	-	<0.001	-	-	-	-	-
Nickel	mg/L	0.01	<0.01	0.02	-	-	-	-	-	-	-	-
Zinc	mg/L	0.01	-	-	-	-	-	0.92	-	-	-	-
PAHs												
Benzo(a)pyrene	µg/L	1	-	-	-	-	-	-	-	<1	-	-
(n:2) Fluorotelomer Sulfonic Acids												
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer Sulfonate (6:2 FIS)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoroalkane Carboxylic Acids												
Perfluorohexanoic acid (PFHxA)	µg/L	0.001	-	-	-	-	-	0.006	0.003	0.010	0.007	0.009
Perfluorododecanoic acid (PFDoDA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorononanoic acid (PFNA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	µg/L	0.001	-	-	-	-	-	0.006	0.003	0.011	0.008	0.003
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoroheptanoic acid (PFHpA)	µg/L	0.001	-	-	-	-	-	0.003	0.001	0.004	0.004	0.002
Perfluorobutanoic acid (PFBA)	µg/L	0.005	-	-	-	-	-	0.012	0.011	0.010	0.005	0.014
Perfluorodecanoic acid (PFDA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanoic acid (PFOA)	µg/L	0.001	-	-	-	-	-	0.005	0.003	0.003	0.003	0.009
Perfluoroalkane Sulfonic Acids												
Perfluorononanesulfonic acid (PFNS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.001
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.001	-	-	-	-	-	0.054	0.079	0.059	0.088	0.11
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	0.001	<0.001	<0.001
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.001	-	-	-	-	-	0.014	0.015	0.082	0.077	0.022
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	0.001	0.001	<0.001
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.002
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropropane sulfonic acid (PFPrS)	µg/L	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Sum of PFHxS and PFOS	µg/L	0.001	-	-	-	-	-	0.068	0.094	0.141	0.165	0.132
Perfluoroalkyl Sulfonamides												
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorooctane sulfonamide (FOSA)	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
PFAS												
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	0.073	0.097	0.144	0.168	0.141
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	0.059	0.082	0.062	0.091	0.119
Sum of PFAS	µg/L	0.005	-	-	-	-	-	0.1	0.115	0.181	0.193	0.169



Table 2 - Leachate Soil Results
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 88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton
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Location Code	SP07			SP09			SP10		SP12			SP13	
	Field ID	SP07/0.5	SP07/0.5	SP07/0.5	SP09/0.5	SP09/0.5	SP10/0.5	SP10/0.5	SP12/0.2	SP12/0.2	SP12/0.2	SP13/0.2	SP13/0.2
Date	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020
Depth	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2	0.2	0.2	0.2
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Report No.	760227	762237	762237	762237	762237	762237	762237	762237	760227	762237	762237	762237	762237
Unit	EOL												
Physical Parameters													
pH (Initial)	pH Units	0.1	7.0	-	-	-	-	-	6.8	-	-	-	-
pH (Final)	pH Units	0.1	5.3	5.1	6.8	5.0	7.5	5.1	6.6	5.3	5.1	7.7	5.1
Metals													
Chromium(VI)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.01	0.01	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-
PAHs													
Benzo(a)pyrene	µg/L	1	-	-	-	-	-	-	-	<1	-	-	-
(n-2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
6:2 Fluorotelomer Sulfonate (6:2 FIS)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluoroalkane Carboxylic Acids													
Perfluorohexanoic acid (PFHxA)	µg/L	0.001	-	0.028	0.014	0.016	0.009	0.026	0.003	-	0.004	0.004	0.035
Perfluorododecanoic acid (PFDoDA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluorononanoic acid (PFNA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	µg/L	0.001	-	0.003	0.001	0.003	0.001	0.003	<0.001	-	<0.001	<0.001	0.006
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluoroheptanoic acid (PFHpA)	µg/L	0.001	-	0.001	<0.001	0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	0.002
Perfluorobutanoic acid (PFBA)	µg/L	0.005	-	0.009	<0.005	0.012	0.011	0.009	<0.005	-	<0.005	<0.005	0.009
Perfluorodecanoic acid (PFDA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Perfluorooctanoic acid (PFOA)	µg/L	0.001	-	0.006	0.004	0.006	0.004	0.005	0.001	-	0.003	0.002	0.017
Perfluoroalkane Sulfonic Acids													
Perfluoronanesulfonic acid (PFNS)	µg/L	0.001	-	0.001	0.003	0.004	0.010	<0.001	<0.001	-	<0.001	<0.001	0.004
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.001	-	0.59	0.68	0.91	1.5	0.023	0.026	-	0.17	0.18	1.6
Perfluoropentanesulfonic acid (PFPeS)	µg/L	0.001	-	0.001	<0.001	0.001	0.001	0.013	0.009	-	<0.001	<0.001	0.004
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.001	-	0.043	0.031	0.066	0.064	0.23	0.24	-	0.020	0.022	0.17
Perfluoroheptanesulfonic acid (PFHpS)	µg/L	0.001	-	0.002	0.001	0.002	0.003	<0.001	<0.001	-	<0.001	<0.001	0.005
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.001	-	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	-	<0.001	<0.001	0.004
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	0.006	0.003	-	<0.001	<0.001	0.002
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Sum of PFHxS and PFOS	µg/L	0.001	-	0.633	0.711	0.976	1.564	0.253	0.266	-	0.19	0.202	1.77
Perfluoroalkyl Sulfonamides													
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
Perfluorooctane sulfonamide (FOSA)	µg/L	0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
PFAS													
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.001	-	0.639	0.715	0.982	1.568	0.258	0.267	-	0.193	0.204	1.787
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.001	-	0.596	0.684	0.916	1.504	0.028	0.027	-	0.173	0.182	1.617
Sum of PFAS	µg/L	0.005	-	0.684	0.734	1.021	1.607	0.316	0.282	-	0.197	0.208	1.854

Table 3 - Groundwater and Surface Water Results vs Environmental Values
Environmental Audit Report
88, 88a, 90 Wedge Street and 83 Powlett Street, Kyneton
ADTS as Trustee for the Jasper Family Trust
M18243



Table with columns: Location Code, Aquifer, Field ID, Date, Sample Type, Lab Report No., and various chemical parameters (e.g., 2-Nitrophenol, 2,4-Dimethylphenol, Halogenated Phenols, MAH, Halogenated Benzenes, Halogenated Hydrocarbons, Chlorinated Hydrocarbons) with corresponding values and units.



Table 3 - Groundwater and Surface Water Results vs Environmental Values
 Environmental Audit Report
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Location Code	Aquifer																Lab Report No.
	C1		C2		C3				C4	MW01		MW02		MW03	PW01		
	Field ID	Date	Field ID	Date	QC1	QC1A	CR03	CR0C		CR0C1A	CR04	MW01	MW02		QCME02	QCME02A	
	Sample Type	Normal	Normal	Field D	Interlab D	Normal	Field D	Interlab D	Normal	Field D	Normal	Field D	Interlab D	Normal	Field D	Interlab D	
	758539	758539	758539	23451	783265	783265	783265	25077	783265	929832	929832	929832	33944	929832	753964	753964	23174
Vinyl Chloride	µg/L	0.05	100 ¹¹														
Total Other Chlorinated Hydrocarbons	µg/L	5															
Solvents																	
Methyl Ethyl Ketone (MEK)	µg/L	1															
4-Methyl-2-pentanone	µg/L	1															
Acetone	µg/L	1															
Allyl chloride	µg/L	1															
Carbon disulfide	µg/L	1															
Cyclohexane	µg/L	1															
Isophorone	µg/L	5															
Explosives																	
1,3-Dinitrobenzene	µg/L	5															
2,4-Dinitrobenzene	µg/L	5															
2,6-Dinitrobenzene	µg/L	5															
Nitrobenzene	µg/L	5															
Nitroaromatics																	
2-Picoline	µg/L	5															
4-Aminobiphenyl	µg/L	5															
Pentachloronitrobenzene	µg/L	5															
Amino Aromatics																	
1-naphthylamine	µg/L	5															
2-naphthylamine	µg/L	5															
Diphenylamine	µg/L	5															
Anilines																	
2-nitroaniline	µg/L	5															
3-nitroaniline	µg/L	5															
4-chloroaniline	µg/L	5															
4-nitroaniline	µg/L	5															
2-methyl-5-nitroaniline	µg/L	5															
Aniline	µg/L	5															
SVOCs																	
Dibenz(a,h)acridine	µg/L	5															
2-Acetylamino Fluorene	µg/L	2															
3,3-Dichlorobenzidine	µg/L	5															
4-(Dimethylamino) Azobenzene	µg/L	5															
4-Bromophenyl Phenyl Ether	µg/L	5															
4-Chlorophenyl Phenyl Ether	µg/L	5															
Azobenzene	µg/L	5															
Benzyl alcohol	µg/L	5															
Bis(2-chloroethoxy) methane	µg/L	5															
Bis(2-chloroethoxy) ether	µg/L	5															
Bis(2-chloroisopropyl) ether	µg/L	5															
Carbazole	µg/L	5															
Dibenzofuran	µg/L	5															
Hexachloropropene	µg/L	2															
Methacrylonitrile	µg/L	10															
N-Nitrosomorpholine	µg/L	5															
N-Nitrosopiperidine	µg/L	5															
Phenacetin	µg/L	5															
Amino Aliphatics																	
N-nitrosodi-n-butylamine	µg/L	5															
N-nitrosodi-n-propylamine	µg/L	5															
Organophosphorus Pesticides																	
Azinphos methyl	µg/L	2															
Bromophos ethyl	µg/L	2															
Chlorpyrifos	µg/L	2															
Chlorpyrifos-methyl	µg/L	2															
Coumaphos	µg/L	2															
Diazinon	µg/L	2															
Dichlorvos	µg/L	2															
Dimethoate	µg/L	2															
Disulfoton	µg/L	2															
Ethion	µg/L	2															
Ethyl methanesulfonate	µg/L	5															
Fenitrothion	µg/L	2															
Fenthion	µg/L	2															
Malathion	µg/L	2															
Methidathion	µg/L	2															
Methyl parathion	µg/L	2															
Mevinphos (Phosdrin)	µg/L	2															
Phorate	µg/L	2															
Ronnel	µg/L	2															
Safrole	µg/L	5															
Phosalone	µg/L	2															
Pesticides																	
Fenamiphos	µg/L	2															
Parathion	µg/L	2															
Phthalates																	
Bis(2-ethylhexyl) Phthalate	µg/L	5															
Butyl Benzyl Phthalate	µg/L	5															
Diethyl Phthalate	µg/L	5															
Dimethyl Phthalate	µg/L	5															
Dibutyl Phthalate	µg/L	5															
Di-n-octyl Phthalate	µg/L	5															
Organochlorine Pesticides																	

Table 3 - Groundwater and Surface Water Results vs Environmental Values
 Environmental Audit Report
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Location Code	C1		C2		CR03				CR04	MW01	MW02			MW03	PW01		
	Field ID	C1	C2	QC1	QC1A	CR03	CRQC	CRQC1A	CR04	MW01	MW02	OCGME02	OCGME02A	MW03	PW01	QC1	QC1A
Date	19/11/2020	19/11/2020	19/11/2020	19/11/2020	26/03/2021	26/03/2021	26/03/2021	26/03/2021	26/03/2021	07/10/2022	07/10/2022	07/10/2022	07/10/2022	07/10/2022	30/10/2020	30/10/2020	30/10/2020
Sample Type	Normal	Normal	Field D	Interlab D	Normal	Field D	Interlab D	Normal	Normal	Normal	Field D	Interlab D	Normal	Normal	Field D	Interlab D	
Lab Report No.	758539	758539	758539	23451	783265	783265	25077	783265	929832	929832	929832	33944	929832	753964	753964	23174	
	Unit	EQL	Aquatic ecosystems DGV - slightly to moderately disturbed system - freshwater	Central Foothills and Coastal Plains (Slightly to moderately modified)	Drinking Water - Health	Irrigation STV	Recreational Water - Health	Water - Aesthetic (NHMRC 2011)	Stock Watering	Buildings and Structures (AS2159-2009)							

Comments
 * Value concluded to be anomalous due to lab error - see Section 5.5
 #1 ANZG (2018)
 #2 Derived by NZ NIWA (2013) using ANZECC (2000) methodology. ANZECC (2000) value was withdrawn due to calculation errors.
 #3 ANZG (2018). The more conservative value (Arsenic AsV) out of the available arsenic species was adopted for initial screening purposes.
 #4 ANZG (2018). Adjust DGVs for site-specific hardness using the hardness-dependent algorithm in Warne et al. (2018).
 #5 ANZG (2018). The more conservative value (Chromium CrVI) out of the available chromium species was adopted for initial screening purposes.
 #6 ANZG (2018). Unknown species protection level
 #7 ANZG (2018). Higher species protection level adopted as recommended
 #8 CRWB (2019). Lowest of values for gasoline (C4-C12) and diesel (C8-C21) range hydrocarbons.
 #9 CRWB (2019). Value for diesel (C8-C21) mixture.
 #10 CRWB (2019). Value for diesel (C8-C21) mixture. No value derived for TPH >C21 as not considered soluble; diesel value used for screening.
 #11 ANZG (2018). Marine DGV adopted as an unknown reliability value as recommended
 #12 ANZG (2018) Draft DGV. Considered to supersede the previous (also DRAFT) DGV reference in the PFAS NEMP 2.0
 #13 NHMRC (2011) - Health. Converted from guideline for nitrate (as nitrate)
 #14 NHMRC (2011) - Health. Converted from guideline for nitrite (as nitrite)
 #15 NHMRC (2011) - Health
 #16 NHMRC (2011) - Health. Guideline for Cr (VI) conservatively adopted for comparison to total chromium. Speciated analysis should be undertaken where guideline is exceeded.
 #17 USEPA Tap Water RSL (TR=1E-06; THQ=0.1)
 #18 WHO (2008). Lowest derived value for aliphatic and aromatic fractions in this range
 #19 WHO (2008). Lowest derived value for aliphatic and aromatic fractions in this range rounded to EQL of 100 ug/L.
 #20 NHMRC (2011) - Health. Derived as per NHMRC (2011) based on TDI used for NEPM HSL derivation.
 #21 NHMRC (2011) - Health. Value is for BoP but applies to TEQ
 #22 NHMRC (2011) - Health. Value is for total TCBS but applies to individual isomers also
 #23 WHO Guidelines for drinking-water quality
 #24 WHO Guidelines for drinking-water quality. Provisional guideline due to uncertainties in the health database
 #25 NHMRC (2011) - Health. Value is for total 1,2-DCE but also applied to individual isomers.
 #26 NHMRC (2011) - Health. Value is for Aldrin + Dieldrin
 #27 NHMRC (2011) - Health (value for PFOS+PFHxS also applied to PFOS)
 #28 NHMRC (2011) - Health (value for PFOS+PFHxS also applied to PFHxS)
 #29 ANZECC/ARMCANZ 2000: Primary Industries - Water Quality for Irrigation and General Water Use - LTV (Long Term Trigger Values)
 #30 ANZECC/ARMCANZ 2000: Primary Industries - Water Quality for Irrigation and General Water Use - STV (Short Term Trigger Values)
 #31 NHMRC (2011) - Health. Converted from guideline for nitrate (as nitrate). Multiplied by a factor of x10
 #32 NHMRC (2011) - Health. Converted from guideline for nitrite (as nitrite). Multiplied by a factor of x10
 #33 NHMRC (2011) - Health. Multiplied by a factor of x10
 #34 NHMRC (2011) - Health. Guideline for Cr (VI) conservatively adopted for comparison to total chromium. Speciated analysis should be undertaken where guideline is exceeded. Multiplied by a factor of x10
 #35 USEPA Tap Water RSL (TR=1E-06; THQ=0.1). Multiplied by a factor of x10
 #36 WHO (2008). Lowest derived value for aliphatic and aromatic fractions in this range. Multiplied by a factor of x10
 #37 Lowest derived value for aliphatic and aromatic fractions in this range (90 ug/L). Multiplied by a factor of x10
 #38 NHMRC (2011) - Health. Derived as per NHMRC (2011) based on TDI used for NEPM HSL derivation. Multiplied by a factor of x10
 #39 NHMRC (2011) - Health. Value is for BoP but applies to TEQ. Multiplied by a factor of x10
 #40 NHMRC (2011) - Health. Value is for total TCBS but applies to individual isomers also. Multiplied by a factor of x10
 #41 WHO Guidelines for drinking-water quality. Multiplied by a factor of x10
 #42 WHO Guidelines for drinking-water quality. Provisional guideline due to uncertainties in the health database. Multiplied by a factor of x10
 #43 NHMRC (2011) - Health. Value is for total 1,2-DCE but also applied to individual isomers. Multiplied by a factor of x10
 #44 NHMRC (2011) - Health. Value is for Aldrin + Dieldrin. Multiplied by a factor of x10
 #45 NHMRC (2019) Guidance on PFAS in Recreational Waters
 #46 Converted from guideline for ammonia (as NH3)
 #47 Value is for total xylenes but has also been applied to individual isomers.
 #48 Value is for total trichlorobenzenes but has also been applied to individual isomers.
 #49 ANZECC (2000) Livestock Drinking Water Quality. Value is lowest of those expected to have no adverse effects on animals.
 #50 ANZECC (2000) Livestock Drinking Water Quality. Higher levels may be tolerated if nitrate in feed is not high. Concentrations above 340 mg/L NO3 (as N) are likely to be toxic.
 #51 ANZECC (2000) Livestock Drinking Water Quality
 #52 ANZECC (2000) Livestock Drinking Water Quality. Value assumes fluoride present in livestock feed. Guideline where no fluoride in feed is 2 mg/L.
 #53 ANZECC (2000) Livestock Drinking Water Quality. Up to 5 mg/L may be tolerated if levels of arsenic in the diet are low.
 #54 ANZECC (2000) Livestock Drinking Water Quality. Value is for sheep. Higher levels may be tolerated by cattle, pigs and poultry.
 #55 Refer to AS2159-2009 Tables 6.4.2(C) and 6.5.2 (C); value is most stringent of thresholds for mild to non-aggressive exposure classification for concrete or steel piles.



Appendix A: Environmental Audit Statement

Environmental audit statement

Under Part 8.3 of the *Environment Protection Act 2017*

Publication F1032 published September 2021



The purpose of an environmental audit is:

- a) to assess the nature and extent of the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- b) to recommend measures to manage the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- c) to make recommendations to manage the contaminated land, waste, pollution or activity.

This statement is a summary of the findings of an environmental audit conducted under Part 8.3 of the *Environment Protection Act 2017* for:

88a–90 Wedge Street and 83 Powlett Street, Kyneton, Victoria 3444 (1\PS524086, 2\PS524086, 25~50\PP5439, 26~50\PP5439, 27~50\PP5439)

Further details are provided in the environmental audit report that accompanies this statement.

Section 1: Environmental audit overview

Environmental audit ID number: 0008006782

Environmental auditor details

Name: Kristi Hanson
 Company: Senversa Pty Ltd
 Address: Level 6, 15 William Street
 Melbourne Victoria 3000
 Phone: 0411 438 477
 Email: Kristi.hanson@senversa.com.au

Site owner or occupant

Name:
 Company: Armstrong Design and Technical Services Pty Ltd

Environmental auditor engaged by

Name: Graham Jasper
 Company: Armstrong Design and Technical Services Pty Ltd
 Relationship to site owner: Site owner

Environment Protection Authority Victoria
 GPO BOX 4395 Melbourne VIC 3001
 1300 372 842 (1300 EPA VIC) epa.vic.gov.au



Environmental audit statement

Reason for the environmental audit

- Requirement under the *Planning and Environment Act 1987* (e.g. planning permit)
Development Plan Application DP/2022/3 (Macedon Ranges Shire Council)

- Requirement under the *Environment Protection Act 2017* (e.g. remedial notice or licence)

- Requirement under other legislation

- Other

Section 2: Environmental audit scope

Details of the site in respect of which the environmental audit was conducted

Site/premises name:	
Address:	88a–90 Wedge Street and 83 Powlett Street, Kyneton
Title details:	1\PS524086 2\PS524086 25~50\PP5439 26~50\PP5439 27~50\PP5439
Area (m ²):	19,687

- a plan of the site is attached

Use or proposed use for which the site is being audited

Sensitive land use categories

Note that sensitive land uses in the *Environment Reference Standard* (ERS 2021) are categorised as lower and high density. Lower density is where there is generally substantial access to soil and high density is restricted to developments that make maximum use of available land space, and there is minimal access to soil. For planning purposes, the *Ministerial Direction No.1* (MD No.1) considers secondary schools and children’s playgrounds to be sensitive land uses.

- High density
- Residential land use
- Other (lower density)
- Child care centre
- Pre-school
- Primary school
- Secondary school
- Children’s playground (indoor)
- Children’s playground (indoor)



Environmental audit statement

Other land use categories

- Recreation/open space
- Parks and reserves
- Agricultural
- Commercial
- Industrial
- Other land uses not captured by the above as described here:

Elements of the environment assessed in the environmental audit

- Ambient air
 - all environmental values were considered
 - all environmental values other than the following were considered:

- Ambient sound
 - all environmental values were considered
 - all environmental values other than the following were considered:

- Land
 - all environmental values that apply to the land use category were considered
 - all environmental values that apply to the land use category, other than the following, were considered:

- Water
 - Surface water
 - all environmental values that apply to the applicable segment were considered OR
 - all environmental values that apply to the applicable segment, other than the following, were considered:
 - Groundwater
 - all environmental values that apply to the applicable segment were considered OR
 - all environmental values that apply to the applicable segment, other than the following, were considered:

Standards and reference documents considered

- Environment Reference Standard 2021
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)
- Environment Protection Regulations 2021
- Guidelines for conducting environmental audits (EPA publication 2041)
- Guideline on clean up and management contamination groundwater (EPA publication 2001)
- Assessing and controlling contaminated land risks: a proposed guide to meeting the duty to manage for those in management or control of land (EPA publication 1977)
- Groundwater sampling guidelines (EPA publication 669.2)
- Hydrogeological assessment (groundwater quality) guidelines (publication 668.1)
- AS4482.1 and AS4482.2; Guide to the sampling and investigation of potentially contaminated soil (Parts 1 and 2)
- PFAS National Environment Management Plan (PFAS NEMP). Version 2.0 – January 2020.
- Industrial Waste Resource Guidelines: Sampling and Analysis of Waters, Wastewaters, Soils and Wastes (EPA Publication IWRG701)

Assumptions made during the environmental audit or any limitations

page. 3



Environmental audit statement

Nil

Exclusions from the environmental audit and the rationale for these

Ambient Sound is not applicable or relevant to the audit objective (site suitability for low density residential use).

This statement is accompanied by the following environmental audit report:

Title:	Environmental Audit Report, 88a–90 Wedge Street and 83 Powlett Street, Kyneton
Report no:	M18243_004_RPT_Rev0
Date:	15 August 2023

Section 3: Results and recommendations of the environmental audit

Land use suitability

Based on my assessment of the site in relation to the risk of harm to human health or the environment from contaminated land, waste or pollution, I am of the opinion that the site is **suitable for the following land uses if the recommendations I have made in this statement are complied with:**

Sensitive land use categories

- High density
- Residential land use
- Other (lower density)
- Child care centre
- Children’s playground (indoor)
- Pre-school
- Children’s playground (indoor)
- Primary school
- Secondary school

Other land use categories

- Recreation/open space
- Parks and reserves
- Agricultural
- Commercial
- Industrial
- Other land uses not captured by the above as described here:

Results of the environmental audit

Based on my assessment of the risk of harm to human health or the environment **from contaminated land/waste/pollution for the properties known as 88a–90 Wedge Street and 83 Powlett Street, Kyneton**, I conclude that the site is suitable for the proposed sensitive low density residential use (and other less sensitive uses as indicated above), subject to the recommendations detailed below.

Soil at the site contains copper, iron, lead, zinc, benzo(a)pyrene, PFOS and PFHxS at concentrations potentially detrimental to environmental values of land. However, the risk of harm to human health and the environment was assessed to be negligible / very low in the context of the proposed mixed use low-density residential and public open space development (or other less sensitive uses).

Groundwater beneath the site is contaminated by nitrate and total nitrogen. These are derived from diffuse regional sources, but the site is assessed to be a co-contributing source.



Environmental audit statement

Groundwater contains naturally elevated levels of chloride, cobalt, copper, nickel and zinc.

Soil and groundwater contamination has been cleaned up so far as reasonably practicable. This is based on the low risk of harm posed by contamination and because groundwater remediation at the site would not result in long term improvement in groundwater quality due to the presence of the same contaminants at similar concentrations across the broader region.

Recommendations

- R1 Groundwater beneath the site is contaminated with nitrate and may not be suitable for *Potable Water Supply, Potable Mineral Water Supply and Industrial or Commercial Use*. The groundwater should not be used without prior testing and review of results by a suitably qualified professional to confirm its suitability for the intended use. It may be extracted for the purpose of environmental monitoring or remediation.
- R2 Asbestos containing materials were found on the audit site and have been removed as far as reasonably practicable. Small quantities of bonded asbestos cement (AC) fragments may remain within the soil and be uncovered during excavation works. These AC fragments are not anticipated to represent a health risk to occupiers of the completed development. If encountered during future development or use of the audit site, any fragments must be handled and disposed in accordance with relevant regulations.
-

Other related information

- i. Groundwater at the site contains naturally elevated concentrations of chloride, cobalt, copper, nickel and zinc. The levels are considered typical of the natural groundwater quality surrounding the site and do not constitute contamination in accordance with *clause 4 of the Environment Reference Standard 2021*.
 - ii. Groundwater monitoring bores present at the site should be decommissioned within 12 months of cessation of use, in accordance with the requirements of "Minimum Construction Requirements for Water Bores in Australia", published by the Land and Water Biodiversity Committee.
 - iii. Scattered pieces of bricks and other inert debris have been removed as far as reasonably practicable, but minor occurrences may remain within the soil and be exposed during excavation works, development or occupation of the audit site.
 - iv. Soil at the audit site contains naturally elevated concentrations of iron. The levels are considered typical of the regional soil quality surrounding the audit site and do not indicate the presence of contaminated land or represent a health or ecological risk. Local natural plants, grasses and fauna are likely to be adapted to these concentrations of analytes, however there may be some impact on the development of some introduced plants, grasses, and fauna.
 - v. Any soil proposed to be excavated and disposed off-site after the completion of the audit, must be classified by a suitably qualified profession in accordance with the Environment Protection Regulations 2021 and any relevant EPA designations and guidance.
 - vi. Any fill material proposed to be imported to the audit site after the completion of the environmental audit, must be tested and classified as 'Fill Material' in accordance with the Environment Protection Regulations 2021 and any relevant EPA designations and guidance.
-

Section 4: Environmental auditor's declaration

page. 5



Environmental audit statement

I state that:

- I am appointed as an environmental auditor by the Environment Protection Authority Victoria under the *Environment Protection Act 2017*.
- The information contained in this statement represents a true and accurate summary of the findings of the environmental audit that I have completed.

Date:	15 August 2023
Signed:	_____
Name:	Kristi Hanson
	Environmental Auditor



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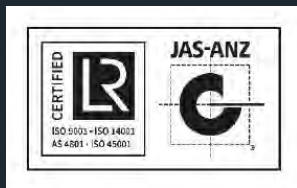
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Information sheet for environmental audits and preliminary risk screen assessments (PRSAs)



Publication 2009 June 2021

Victoria's audit system

An environmental audit system has operated in Victoria since 1989. The *Environment Protection Act 2017* (the Act) provides for the appointment of environmental auditors. It also provides for Environment Protection Authority (EPA or the Authority) to have a system of preliminary risk screen assessments (PRSAs) and environmental audits. These are used in the planning, approval, regulation and management of activities, and in protection of human health and the environment.

Under the Act, the functions of an environmental auditor include to:

- conduct PRSAs and environmental audits
- prepare and issue PRSA statements and reports, and environmental audit statements and reports.

The purpose of a PRSA is to:

- assess the likelihood of the presence of contaminated land
- determine if an environmental audit is required
- recommend a scope for the environmental audit if an environmental audit is required.

The purpose of an environmental audit is to:

- assess the nature and extent of the risk of harm to human health or the environment from contaminated land, waste, pollution, or any activity
- recommend measures to manage the risk of harm to human health or the environment from contaminated land, waste, pollution, or any activity
- make recommendations to manage any contaminated land, waste, pollution or activity.

Upon completion, all PRSAs and environmental audits require preparation of either a PRSA statement, accompanied by a PRSA report, or an environmental audit statement, accompanied by an environmental audit report.

A person may engage an environmental auditor to conduct a PRSA or an environmental audit.

EPA administers the environmental audit system and ensures an acceptable quality of environmental auditing is maintained. This is achieved by assessing auditor applications and conducting a quality assurance program. These measures ensure that PRSAs and environmental audits that environmental auditors undertake are completed in accordance with the relevant sections of the Act or any other Act, and with the guidelines the Authority or other government agencies have published.

Environment Protection Authority Victoria
 GPO BOX 4395 Melbourne VIC 3001
 1300 372 842 (1300 EPA VIC) epa.vic.gov.au



Information sheet for environmental audits and preliminary risk screen assessments (PRSAs)

File structures

EPA stores digital statements and reports from PRSAs and environmental audits in three parts:

- Part A, the PRSA or environmental audit report
- Part B, report appendices
- Part C, the PRSA statement and executive summary or environmental audit statement and executive summary.

Report executive summaries, findings and recommendations should be read and relied upon only in the context of the whole document, including any appendices and the PRSA statement or environmental audit statement.

Currency of PRSAs and environmental audits

PRSAs and environmental audits are based on the conditions encountered and information reviewed at the time of preparation. They don't represent any changes that may have occurred since the completion date. As it's not possible for the PRSA or audit report to present all data that could be of interest to all readers, consideration should be made to any appendices or referenced documentation for further information.

When information about the site changes from what was available at the time the PRSA or environmental audit was completed, or where an administrative error is identified, an environmental auditor may amend or withdraw PRSA or environmental audit statements and/or reports. Users are advised to check EPA's website to ensure documents' currency.

PDF searchability and printing

EPA can only provide PRSAs and environmental audit statements, reports and appendices that the environmental auditor provided to EPA via the EPA portal on the EPA website.

All statements and reports should be in a Portable Document Format (PDF) and searchable; however at times some appendices may be provided as image-only PDFs, which can affect searchability.

The PDF is compatible with Adobe Acrobat Reader, which is downloadable free from Adobe's Website (www.adobe.com).

Further information

For more information on Victoria's environmental audit system, visit EPA's website or contact EPA's Environmental Audit Unit.

Web: www.epa.vic.gov.au

Email: environmental.audit@epa.vic.gov.au



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Document Information



Document Information

Environmental Audit Report, 88a–90 Wedge Street and 83 Powlett Street, Kyneton

Prepared by:

Senversa Pty Ltd

ABN: 89 132 231 380

Level 6, 15 William Street, Melbourne, VIC 3000

tel: + 61 3 9606 0070

www.senversa.com.au

Prepared for:

ADTS as Trustee for the Jasper Family Trust

PO Box 284

Kyneton VIC 3444

Revision	Date	Approved	Detail
0	15 August 2023	Kristi Hanson	Final

Kristi Hanson

Environmental Auditor

Appointed Pursuant to the *Environment Protection Act 2017*

Disclaimer and Limitations:

Senversa prepared this document in a manner consistent with the level of care and skill ordinarily exercised by members of Senversa's profession practising in the same locality under similar circumstances at the time the services were performed.

Senversa requires that this document be considered only in its entirety and reserves the right to amend this report if further information becomes available. This document is issued subject to the technical principles, limitations and assumptions provided herein in **Section 7.0**.

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Senversa acknowledges the traditional custodians of the land on which this work was created and pay our respect to Elders past and present.

Executive Summary



Executive Summary

This report details the results of an environmental audit of the land known as 88a–90 Wedge Street and 83 Powlett Street, Kyneton Victoria (the site). The site location and boundaries are shown on **Figure 1**.

The environmental audit was completed in accordance with *Division 3 – Environmental Audits, Section 208 to Section 212 of the Environment Protection Act 2017* and the guidelines issued by the Environmental Protection Authority Victoria (EPA) for environmental audits. **Tables E1** and **E2** below summarise the results.

Table E1: Summary of Audit Information

Summary Information

Auditor	Kristi Hanson
Auditor account number	75661
Date EPA notified of audit	Initially notified on 7 August 2020. The notification was updated on 4 September due to the site owner amending the extent of audit boundary.
Environmental audit reference	0008006782
Name of person requesting audit	Graham Jasper
Relationship of person requesting audit to site	Site owner
Name of site owner	Armstrong Design and Technical Services Pty Ltd (88a–90 Wedge Street and 83 Powlett Street, Kyneton)
Date of auditor engagement	4 August 2020
Completion date of the audit	11 July 2023
Reason for audit	Planning system (environmental audit overlay)
Elements of the environment assessed	Land, water (surface and groundwater), ambient air
Planning permit number or requirement detail if applicable	DP/2022/3
EPA Region	North West
Municipality	Macedon Ranges Shire Council
Dominant – Lot on plan	1\PS524086 (88a Wedge Street)

Executive Summary



Summary Information

Additional – Lot on plan(s)	2\PS524086 (90 Wedge St) 25~50\PP5439 (83 Powlett Street) 26~50\PP5439 (83 Powlett Street) 27~50\PP5439 (83 Powlett Street)
Site/premises name	-
Building/complex sub-unit No.	-
Street/Lot – Lower No.	88a
Street/Lot – Upper No.	90
Street Name	Wedge
Street type (road, court, etc)	Street
Street suffix (North, South etc)	-
Suburb	Kyneton
Postcode	3444
Site area (in square metres)	19,687
Plan of site/premises/location showing the audit site boundary attached	Refer Figure 1
Members and categories of support team utilised	Nil
Further work or requirements	Nil
Nature and extent of continuing risk of harm	Groundwater contamination (nitrate) is present at the site, associated with regional sources and co-contributions from the site. This risk will be managed by a recommendation in the environmental audit statement that groundwater not be used without testing to confirm its suitability for the intended use. The auditor is satisfied that groundwater has been cleaned up so far as reasonably practicable (CUSFARP) and has recommended that the site is designated as a Groundwater Quality Restricted Use Zone (GQRUZ). The recommended GQRUZ extent comprises the site boundary as shown in Figure 1 .
Outcome of environmental audit report	Environmental Audit Statement with Recommendations
Land use suitability	Suitable for the proposed use subject to compliance with recommendations.
Has groundwater clean-up been undertaken as far as reasonably practicable?	Yes

Executive Summary



Summary Information

Does groundwater contamination remain at the site and is the site the source?	Groundwater contamination remains at the site due to regional sources. The site is a co-contributing source.	
If groundwater contamination remains, does it extend off-site?	No (but regional contamination is present off-site)	
Is a GQRUZ recommended?	Yes. The recommended GQRUZ extent comprises the site boundary as shown in Figure 1 .	
If applicable, please indicate which of the following are threatened environmental values of groundwater	Water dependent ecosystems and species	Yes
	Potable water supply (desirable)	Yes
	Potable water supply (acceptable)	N/A
	Potable mineral water supply	Yes
	Agriculture and irrigation (irrigation)	Yes
	Agriculture and irrigation (stock watering)	No
	Industrial and commercial use	Yes
	Water-based recreation (primary contact recreation)	No
	Traditional Owner cultural values	Yes
	Buildings and structures	No
	Geothermal properties	N/A
Is ongoing groundwater monitoring required?	No	
Is ongoing vapour/gas monitoring required?	No	
Are vapour/gas mitigation measures required	No	
List any other ongoing management requirements if applicable	Not applicable	

Executive Summary



Table E2: Physical Site Information

Physical Site Information

Current EPA Permission/s and relation Permission ID if applicable	Not applicable
Historical land use	Vacant land, residential
Current land use	Residential
Proposed land use	Sensitive uses (low density residential) and public open space
Current land use zoning	Neighbourhood Residential (NRZ10)
Proposed land use zoning	Neighbourhood Residential (NRZ10)
Surrounding land use – north (if applicable)	Vehicle access track, then light industrial businesses
Surrounding land use – south (if applicable)	Residential, then Post Office Creek and creek reserve
Surrounding land use – east (if applicable)	Vehicle access track, then vacant land
Surrounding land use – west (if applicable)	Wedge Street, then open space / recreation or vacant land
Has EPA been notified about the site under Section 40 of the Environment Protection Act 2017?	No
Nearest surface water receptor – name	Post Office Creek
Nearest surface water receptor – direction	South
Likely point of groundwater discharge	Post Office Creek
Site aquifer formation	Upper Tertiary / Quaternary basalt of the Newer Volcanics
Groundwater flow direction	South-southwest
Groundwater TDS range (mg/L)	330–600
Groundwater Segment	A1
Are there multiple aquifers impacted by pollution at the site	No
Perched groundwater depth – upper (metres below ground level (mbgl))	N/A
Perched groundwater depth – lower (mbgl)	N/A
Regional groundwater depth – upper (mbgl)	1.6

M18243_004_RPT_Rev0 | Environmental Audit Report v

Executive Summary



Physical Site Information

Regional groundwater depth – lower (mbgl)	2.2
Number of bores within 2 km	132
Closest extractive use (distance in m)	108
Zone of groundwater plume influence (m from site boundary)	Not applicable
Year groundwater last monitored	2022

A copy of the environmental audit statement (EAS) is provided in **Appendix A**.



Appendix A: Environmental Audit Statement

Environmental audit statement

Under Part 8.3 of the *Environment Protection Act 2017*

Publication F1032 published September 2021



The purpose of an environmental audit is:

- a) to assess the nature and extent of the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- b) to recommend measures to manage the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity; and
- c) to make recommendations to manage the contaminated land, waste, pollution or activity.

This statement is a summary of the findings of an environmental audit conducted under Part 8.3 of the *Environment Protection Act 2017* for:

88a-90 Wedge Street and 83 Powlett Street, Kyneton, Victoria 3444 (1\PS524086, 2\PS524086, 25~50\PP5439, 26~50\PP5439, 27~50\PP5439)

Further details are provided in the environmental audit report that accompanies this statement.

Section 1: Environmental audit overview

Environmental audit ID number: 0008006782

Environmental auditor details

Name: Kristi Hanson

Company: Senversa Pty Ltd

Address: Level 6, 15 William Street
Melbourne Victoria 3000

Phone: 0411 438 477

Email: Kristi.hanson@senversa.com.au

Site owner or occupant

Name:

Company: Armstrong Design and Technical Services Pty Ltd

Environmental auditor engaged by

Name: Graham Jasper

Company: Armstrong Design and Technical Services Pty Ltd

Relationship to site owner: Site owner

Environment Protection Authority Victoria
GPO BOX 4395 Melbourne VIC 3001
1300 372 842 (1300 EPA VIC) epa.vic.gov.au



Environmental audit statement

Reason for the environmental audit

- Requirement under the *Planning and Environment Act 1987* (e.g. planning permit)
Development Plan Application DP/2022/3 (Macedon Ranges Shire Council)

- Requirement under the *Environment Protection Act 2017* (e.g. remedial notice or licence)

- Requirement under other legislation

- Other

Section 2: Environmental audit scope

Details of the site in respect of which the environmental audit was conducted

Site/premises name:	
Address:	88a–90 Wedge Street and 83 Powlett Street, Kyneton
Title details:	1\PS524086 2\PS524086 25~50\PP5439 26~50\PP5439 27~50\PP5439
Area (m ²):	19,687

- a plan of the site is attached

Use or proposed use for which the site is being audited

Sensitive land use categories

Note that sensitive land uses in the *Environment Reference Standard* (ERS 2021) are categorised as lower and high density. Lower density is where there is generally substantial access to soil and high density is restricted to developments that make maximum use of available land space, and there is minimal access to soil. For planning purposes, the *Ministerial Direction No.1* (MD No.1) considers secondary schools and children’s playgrounds to be sensitive land uses.

- High density
- Residential land use
- Other (lower density)
- Child care centre
- Pre-school
- Primary school
- Secondary school
- Children’s playground (indoor)
- Children’s playground (indoor)



Environmental audit statement

Other land use categories

- Recreation/open space
- Parks and reserves
- Agricultural
- Commercial
- Industrial
- Other land uses not captured by the above as described here:

Elements of the environment assessed in the environmental audit

- Ambient air
 - all environmental values were considered
 - all environmental values other than the following were considered:

- Ambient sound
 - all environmental values were considered
 - all environmental values other than the following were considered:

- Land
 - all environmental values that apply to the land use category were considered
 - all environmental values that apply to the land use category, other than the following, were considered:

- Water
 - Surface water
 - all environmental values that apply to the applicable segment were considered OR
 - all environmental values that apply to the applicable segment, other than the following, were considered:
 - Groundwater
 - all environmental values that apply to the applicable segment were considered OR
 - all environmental values that apply to the applicable segment, other than the following, were considered:

Standards and reference documents considered

- Environment Reference Standard 2021
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)
- Environment Protection Regulations 2021
- Guidelines for conducting environmental audits (EPA publication 2041)
- Guideline on clean up and management contamination groundwater (EPA publication 2001)
- Assessing and controlling contaminated land risks: a proposed guide to meeting the duty to manage for those in management or control of land (EPA publication 1977)
- Groundwater sampling guidelines (EPA publication 669.2)
- Hydrogeological assessment (groundwater quality) guidelines (publication 668.1)
- AS4482.1 and AS4482.2; Guide to the sampling and investigation of potentially contaminated soil (Parts 1 and 2)
- PFAS National Environment Management Plan (PFAS NEMP). Version 2.0 – January 2020.
- Industrial Waste Resource Guidelines: Sampling and Analysis of Waters, Wastewaters, Soils and Wastes (EPA Publication IWRG701)

Assumptions made during the environmental audit or any limitations

page. 3



Environmental audit statement

Nil

Exclusions from the environmental audit and the rationale for these

Ambient Sound is not applicable or relevant to the audit objective (site suitability for low density residential use).

This statement is accompanied by the following environmental audit report:

Title:	Environmental Audit Report, 88a–90 Wedge Street and 83 Powlett Street, Kyneton
Report no:	M18243_004_RPT_Rev0
Date:	15 August 2023

Section 3: Results and recommendations of the environmental audit

Land use suitability

Based on my assessment of the site in relation to the risk of harm to human health or the environment from contaminated land, waste or pollution, I am of the opinion that the site is **suitable for the following land uses if the recommendations I have made in this statement are complied with:**

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- High density
- Residential land use
- Other (lower density)
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Other land use categories

- Recreation/open space
- Parks and reserves
- Agricultural
- Commercial
- Industrial
- Other land uses not captured by the above as described here:

Results of the environmental audit

Based on my assessment of the risk of harm to human health or the environment **from contaminated land/waste/pollution for the properties known as 88a–90 Wedge Street and 83 Powlett Street, Kyneton**, I conclude that the site is suitable for the proposed sensitive low density residential use (and other less sensitive uses as indicated above), subject to the recommendations detailed below.

Soil at the site contains copper, iron, lead, zinc, benzo(a)pyrene, PFOS and PFHxS at concentrations potentially detrimental to environmental values of land. However, the risk of harm to human health and the environment was assessed to be negligible / very low in the context of the proposed mixed use low-density residential and public open space development (or other less sensitive uses).

Groundwater beneath the site is contaminated by nitrate and total nitrogen. These are derived from diffuse regional sources, but the site is assessed to be a co-contributing source.



Environmental audit statement

Groundwater contains naturally elevated levels of chloride, cobalt, copper, nickel and zinc.

Soil and groundwater contamination has been cleaned up so far as reasonably practicable. This is based on the low risk of harm posed by contamination and because groundwater remediation at the site would not result in long term improvement in groundwater quality due to the presence of the same contaminants at similar concentrations across the broader region.

Recommendations

- R1 Groundwater beneath the site is contaminated with nitrate and may not be suitable for *Potable Water Supply, Potable Mineral Water Supply and Industrial or Commercial Use*. The groundwater should not be used without prior testing and review of results by a suitably qualified professional to confirm its suitability for the intended use. It may be extracted for the purpose of environmental monitoring or remediation.
- R2 Asbestos containing materials were found on the audit site and have been removed as far as reasonably practicable. Small quantities of bonded asbestos cement (AC) fragments may remain within the soil and be uncovered during excavation works. These AC fragments are not anticipated to represent a health risk to occupiers of the completed development. If encountered during future development or use of the audit site, any fragments must be handled and disposed in accordance with relevant regulations.
-

Other related information

- i. Groundwater at the site contains naturally elevated concentrations of chloride, cobalt, copper, nickel and zinc. The levels are considered typical of the natural groundwater quality surrounding the site and do not constitute contamination in accordance with *clause 4 of the Environment Reference Standard 2021*.
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 - iii. Scattered pieces of bricks and other inert debris have been removed as far as reasonably practicable, but minor occurrences may remain within the soil and be exposed during excavation works, development or occupation of the audit site.
 - iv. Soil at the audit site contains naturally elevated concentrations of iron. The levels are considered typical of the regional soil quality surrounding the audit site and do not indicate the presence of contaminated land or represent a health or ecological risk. Local natural plants, grasses and fauna are likely to be adapted to these concentrations of analytes, however there may be some impact on the development of some introduced plants, grasses, and fauna.
 - v. Any soil proposed to be excavated and disposed off-site after the completion of the audit, must be classified by a suitably qualified profession in accordance with the Environment Protection Regulations 2021 and any relevant EPA designations and guidance.
 - vi. Any fill material proposed to be imported to the audit site after the completion of the environmental audit, must be tested and classified as 'Fill Material' in accordance with the Environment Protection Regulations 2021 and any relevant EPA designations and guidance.
-

Section 4: Environmental auditor's declaration


page. 5



Environmental audit statement

I state that:

- I am appointed as an environmental auditor by the Environment Protection Authority Victoria under the *Environment Protection Act 2017*.
- The information contained in this statement represents a true and accurate summary of the findings of the environmental audit that I have completed.

Date:	15 August 2023
Signed:	
Name:	Kristi Hanson

Environmental Auditor



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APPENDIX 3 - CHMP - LETTER OF PROGRESS



Tomkinson
Att: Emma Kubeil
For ADTS PL as Trustee for Jasper Family Trust

Dear Emma,

We are currently in the process of preparing a Cultural Heritage Management Plan (CHMP) for the proposed subdivision of 88A-90 Wedge Street, Kyneton. This CHMP is being undertaken in consultation with Taungurung Land and Waters Council (TLaWC), the Registered Aboriginal Party for the CHMP activity area.

At present, we are in the midst of completing the field assessment for the CHMP. We have undertaken a standard assessment (archaeological survey) and partially completed the complex assessment (archaeological excavations). Our assessment thus far has identified several flaked stone artefacts within the activity area. These artefacts, based on our preliminary results, are considered to be components of a single Aboriginal archaeological site. However, further archaeological excavations may alter our current understanding of this site. We are due to recommence our field assessment in early July 2022. Unfortunately, the completion of the assessment has been delayed by TLaWC's limited availability to conduct fieldwork.

Following the completion of the field assessment, further consultation will be undertaken with TLaWC to decide how harm can be minimised to the Aboriginal archaeological site(s) identified during the assessment. Following this consultation and the registration of the Aboriginal site, the CHMP will then be submitted for evaluation. Based on our current timeline, we are aiming to have an approved CHMP by early-mid October 2022.

Please contact me should you have any questions regarding the CHMP.

Yours faithfully,

Rochelle Bensted
Heritage Advisor
M: 0436 470 332
E: Rochelle.Bensted@achm.com.au

www.achm.com.au

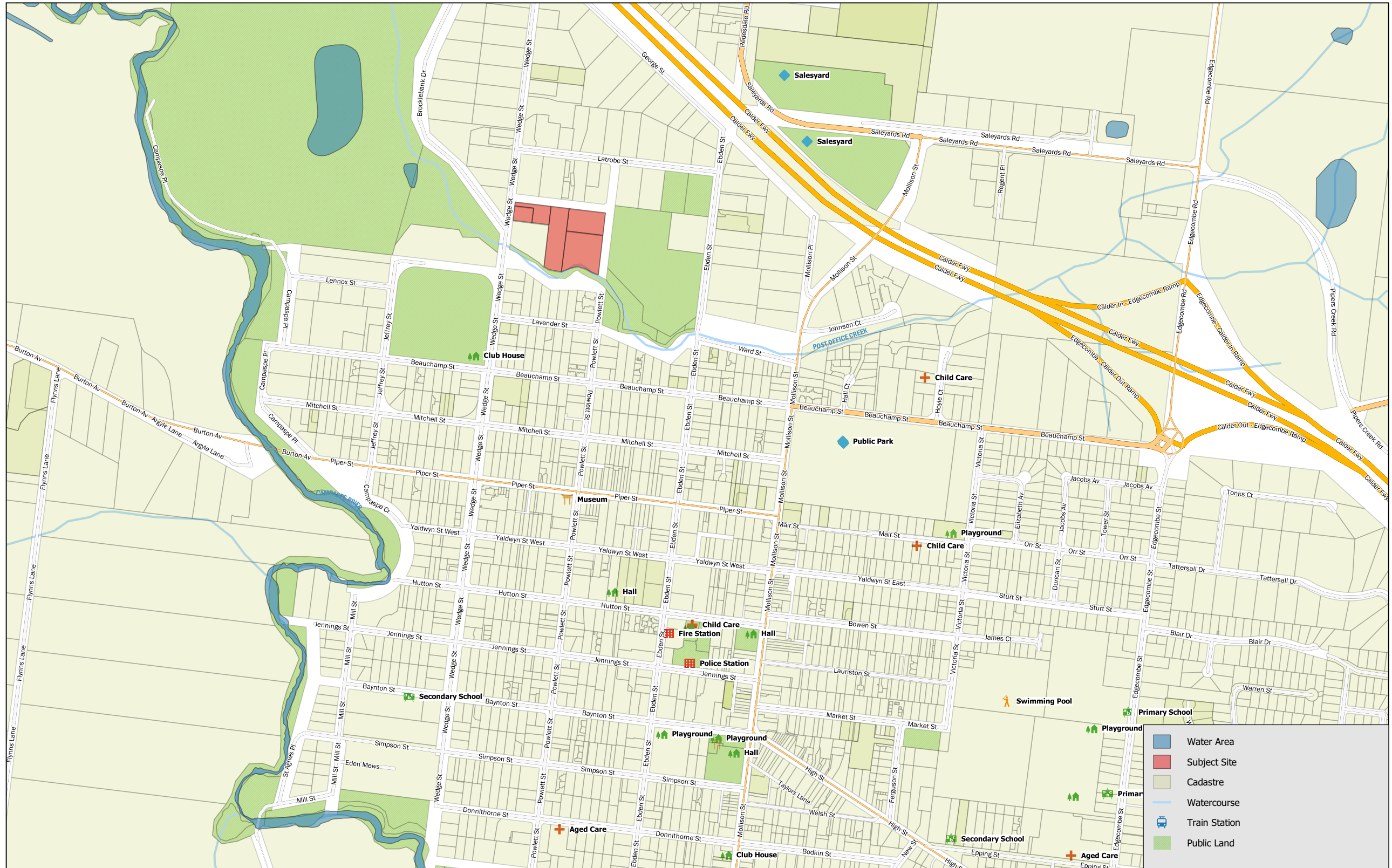
1300 724 913

email@achm.com.au


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PERTH LEVEL 3, 12 ST GEORGES TERRACE, PERTH, WA, 6000 ADELAIDE 48/69 SIR DONALD BRADMAN DRIVE, HILTON, SA, 5033



APPENDIX 4 - SITE CONTEXT PLAN



A	BY	BY	SH	7/7/22
REV	REVISION	DES	DWG	CHK	DATE



Tomkinson

HEAD OFFICE: 57 MYERS STREET
BENDIGO 3550 | PH 03 5455 8700
ABN 11 103 336 358 WWW.TOMKINSON.COM

NOTES:
Mapping Data: Spatial Data Mart - February 2021

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1:7,500 at A3

WEDGE STREET DEVELOPMENT PLAN
SITE CONTEXT PLAN

88a-90 Wedge Street/83 Ebdon Street, Kyneton

MACEDON RANGES SHIRE COUNCIL DWG STATUS: PROJECT & DWG NO:
ADTS PL as Trustee for the Jasper Family Trust 13263 - SCP



APPENDIX 5 - FEATURE LEVEL SURVEY



GENERAL NOTES

1. UNDERGROUND SERVICE LOCATIONS SHOWN ARE APPROX. ONLY AND MUST BE VERIFIED ON SITE BEFORE COMMENCING ANY CONSTRUCTION.
2. ONLY VISIBLE SERVICES ARE SHOWN. ALL SERVICES MUST BE VERIFIED ON SITE BEFORE COMMENCING CONSTRUCTION.
3. THIS PLAN HAS BEEN ORIENTATED TO MGA84 ZONE 55 VIDE LAURISTON PM 22 & PM 21.
4. LEVELS QUOTED ARE TO AHD VIDE GPS VIC POS GNSS. SUBTRACT 0.05m FOR AHD VIDE LAURISTON PM23 (RL 504.697). SUBTRACT 0.07m FOR AHD VIDE LAURISTON PM22 (RL 497.588).
5. CONTOURS ARE PLOTTED AT 0.2m INTERVALS.
6. PIPE SIZES SHOWN ARE APPROXIMATE ONLY AND MUST BE VERIFIED ON SITE.
7. TREES HAVE BEEN PLOTTED TO SCALE BY APPROX. TRUNK DIAMETER.
8. THE ACCURACY OF THIS DRAWING IS LIMITED TO THE SCALE OF THIS DRAWING.
9. THIS PLAN HAS BEEN PREPARED FOR PLANNING PURPOSES ONLY. CRITICAL LOCATIONS SHOULD BE CONFIRMED BY THIS OFFICE.
10. BUILDING LOCATIONS ARE TO CONCEPT ACCURACY. ANY STRUCTURAL OR OTHERWISE PRECISE DIMENSIONS WILL NEED TO BE EXACTLY DETERMINED AS REQUIRED.
11. EVERY EFFORT HAS BEEN MADE TO OBTAIN DRAINAGE PIT INVERTS A NUMBER OF LIDS WERE UNABLE TO BE LIFTED.
12. THE AERIAL PHOTO SHOW HAS BEEN POSITIONED BY APPROXIMATION ONLY TO SHOW CONTEXT OF THE SITE.

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B	MINOR BOUNDARY CORRECTION (+0.05m)	KH	MK	MK	01/10/21
A	FOR INTERNAL REVIEW	TC	TC	MK	17/09/21
REV	REVISION	SUR	DWG	CHK	DATE



Tomkinson
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SCALE 1:1,000
LENGTHS ARE IN METRES - PAPER SIZE A3

**88-90 WEDGE STREET
KYNETON
FEATURE & LEVEL SURVEY PLAN**

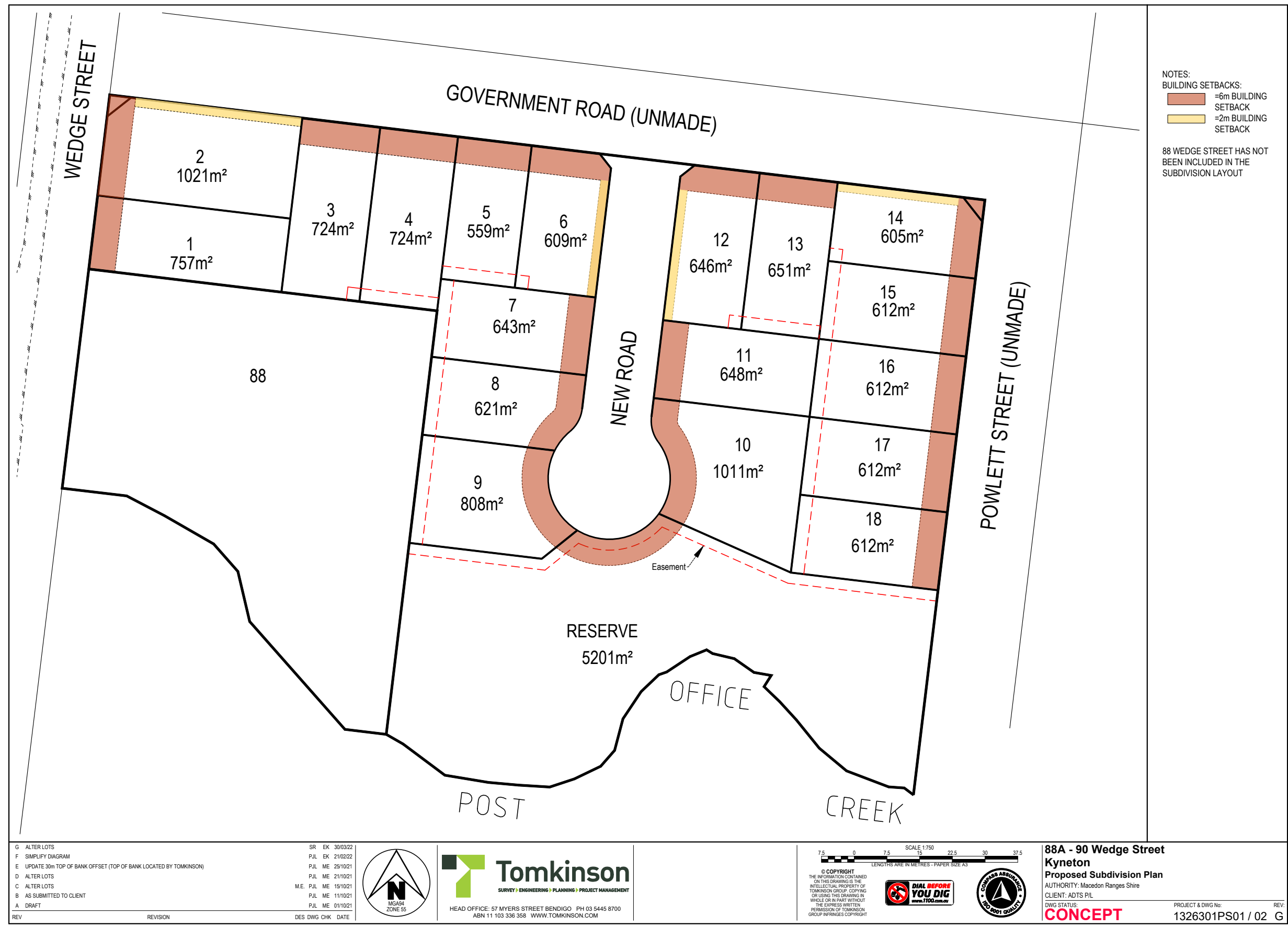
ADTS P/L as Trustee for the Jasper Family Trust

DWG STATUS: **AS SURVEYED** PROJECT & DWG No: 1326301 C

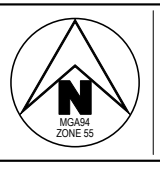
REV: B



APPENDIX 6 – PROPOSED PLAN OF SUBDIVISION



G	ALTER LOTS	SR	EK	30/03/22	
F	SIMPLIFY DIAGRAM	P.JL	EK	21/02/22	
E	UPDATE 30m TOP OF BANK OFFSET (TOP OF BANK LOCATED BY TOMKINSON)	P.JL	ME	25/10/21	
D	ALTER LOTS	P.JL	ME	21/10/21	
C	ALTER LOTS	M.E.	P.JL	15/10/21	
B	AS SUBMITTED TO CLIENT	P.JL	ME	11/10/21	
A	DRAFT	P.JL	ME	01/10/21	
REV	REVISION	DES	DWG	CHK	DATE



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SCALE 1:750
 LENGTHS ARE IN METRES - PAPER SIZE A3

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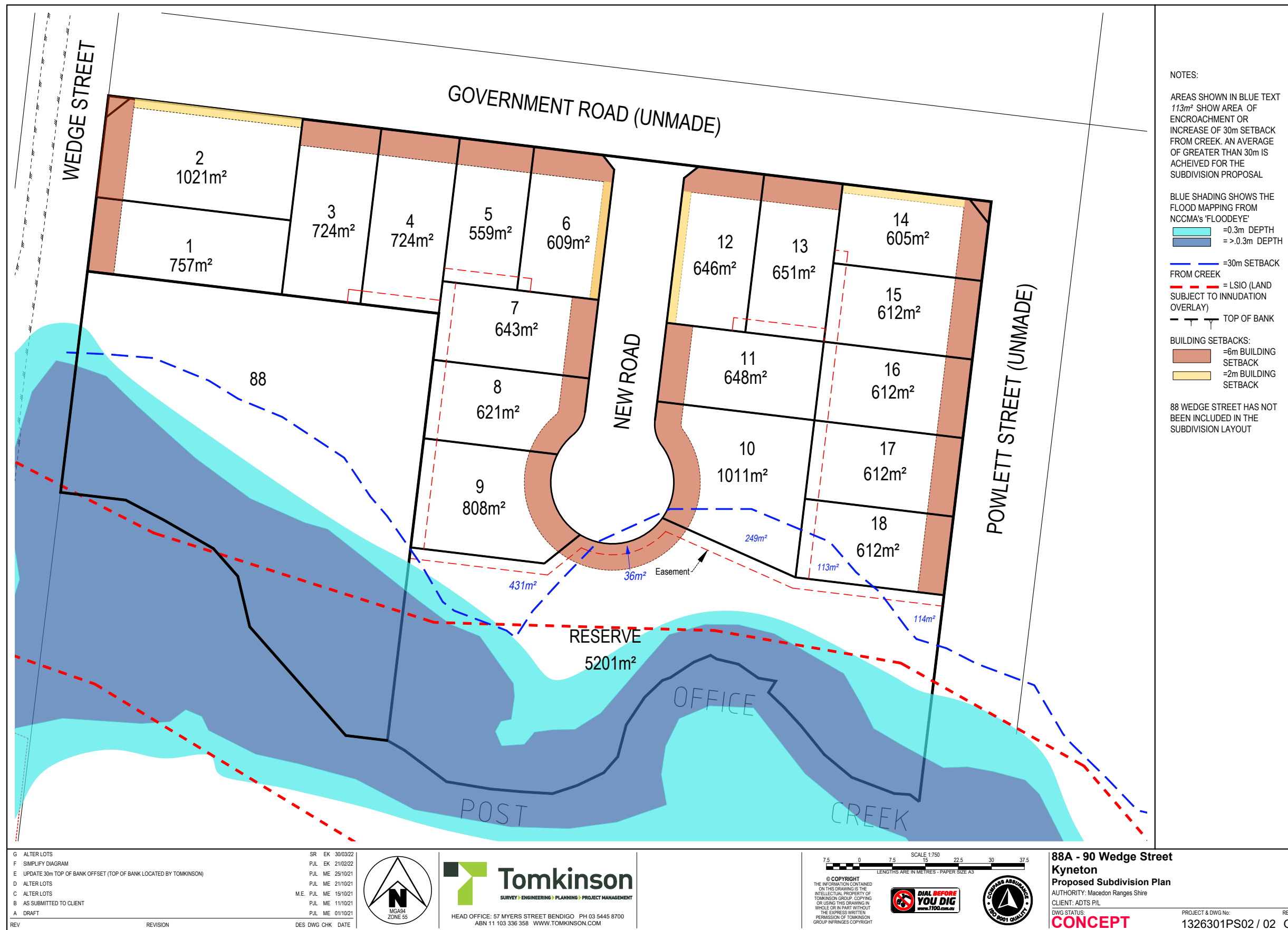
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COMPASS ADVANTAGE
 ISO 9001 QUALITY

88A - 90 Wedge Street
Kyneton
Proposed Subdivision Plan

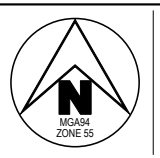
AUTHORITY: Macedon Ranges Shire
 CLIENT: ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301PS01 / 02

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 PLOT DATE: 17/02/2023 FILE: C:\TD\1326301\1326301PS01\1326301PS01_02.DWG



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 PLOT DATE: 17/02/2023 FILE: C:\TD\DATA\1326301\1326301PS02\1326301PS02.DWG

G	ALTER LOTS	SR	EK	30/03/22	
F	SIMPLIFY DIAGRAM	P.JL	EK	21/02/22	
E	UPDATE 30m TOP OF BANK OFFSET (TOP OF BANK LOCATED BY TOMKINSON)	P.JL	ME	25/10/21	
D	ALTER LOTS	P.JL	ME	21/10/21	
C	ALTER LOTS	M.E.	P.JL	15/10/21	
B	AS SUBMITTED TO CLIENT	P.JL	ME	11/10/21	
A	DRAFT	P.JL	ME	01/10/21	
REV	REVISION	DES	DWG	CHK	DATE



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SCALE 1:750
 LENGTHS ARE IN METRES - PAPER SIZE A3

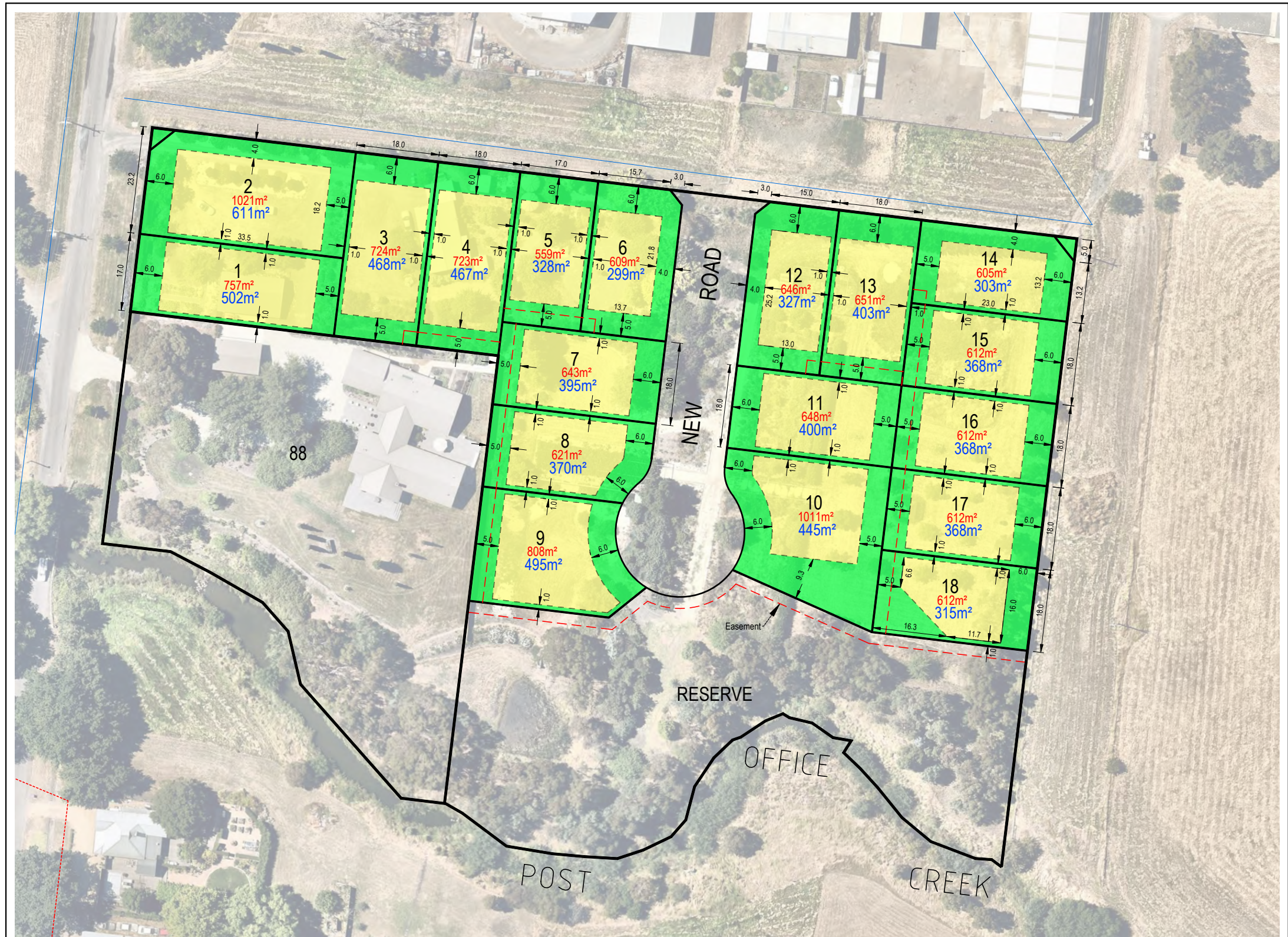
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 ISO 9001 QUALITY



APPENDIX 7 - BUILDING ENVELOPE PLAN



NOTES:

AREAS SHOWN IN BLUE TEXT
113m² SHOW AREA OF
ENCROACHMENT OR
INCREASE OF 30m SETBACK
FROM CREEK. AN AVERAGE
OF GREATER THAN 30m IS
ACHEIVED FOR THE
SUBDIVISION PROPOSAL

BLUE SHADING SHOWS THE
FLOOD MAPPING FROM
NCCMA'S 'FLOOD EYE'

=0.3m DEPTH
 = >.0.3m DEPTH
 =30m SETBACK
 = LSIO (LAND
SUBJECT TO INUNDATION
OVERLAY)
 TOP OF BANK

BUILDING SETBACKS:
 =BUILDING
ENVELOPE

AREAS:
 LOTS = RED TEXT
 BUILDING ENVELOPE = BLUE TEXT

88 WEDGE STREET HAS NOT
BEEN INCLUDED IN THE
SUBDIVISION LAYOUT

NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPGRADED. IT IS THE RESPONSIBILITY OF THE USER TO CONSIDER THAT THIS IS A CURRENT COPY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS. PLOT DATE: 17/02/2023 FILE: C:\1326301\PROSUB\88-ADTS\1326301\PROSUB\1326301\BUILDING ENVELOPE PLAN REV.DWG

B AMENDED LOT 10 & 18 BUILDING ENVELOPE & AMENDED SIDE SETBACKS BB BY 06/03/23
 A BUILDING ENVELOPE PLAN SR EK 22/03/22
 REV REVISION DES DWG CHK DATE



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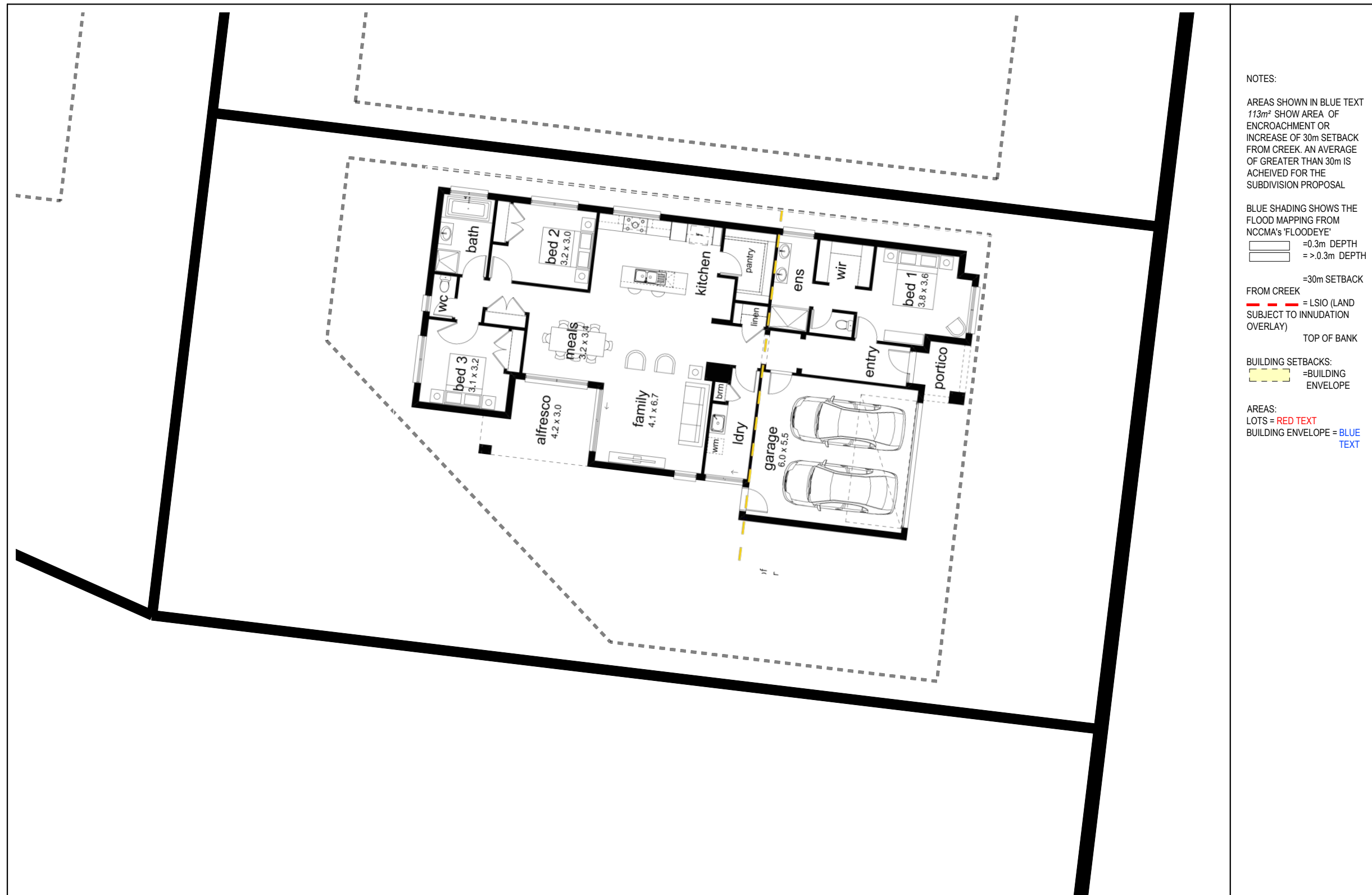
SCALE 1:800
 LENGTHS ARE IN METRES - PAPER SIZE AS SHOWN

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88A - 90 Wedge Street
Kyneton
BUILDING ENVELOPE PLAN
 AUTHORITY: Macedon Ranges Shire
 CLIENT: ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301 PROSUB B



NOTES:

AREAS SHOWN IN BLUE TEXT
113m² SHOW AREA OF
ENCROACHMENT OR
INCREASE OF 30m SETBACK
FROM CREEK. AN AVERAGE
OF GREATER THAN 30m IS
ACHEIVED FOR THE
SUBDIVISION PROPOSAL

BLUE SHADING SHOWS THE
FLOOD MAPPING FROM
NCCMA's 'FLOOD EYE'

▬ = 0.3m DEPTH
▬ = >0.3m DEPTH

▬ = 30m SETBACK
FROM CREEK

▬ = LSIO (LAND
SUBJECT TO INUNDATION
OVERLAY)
TOP OF BANK

BUILDING SETBACKS:
▬ = BUILDING
ENVELOPE

AREAS:
LOTS = RED TEXT
BUILDING ENVELOPE = BLUE
TEXT

NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPGRADED. IT IS THE RESPONSIBILITY OF THE USER TO CONSIDER THAT THIS IS A CURRENT COPY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS. PLOT DATE: 16/02/2023 FILE: C:\TD\DRAWING\8650-12\8650\11\1326301 FP\1326301 BUILDING ENVELOPE PLAN REV.BDWG

B	AMENDED LOT 10 & 18 BUILDING ENVELOPE	BB	BY	06/03/23	
A	BUILDING ENVELOPE PLAN	SR	EK	22/03/22	
REV	REVISION	DES	DWG	CHK	DATE



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SCALE 1:125
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ISO 9001 QUALITY

88A - 90 Wedge Street
Kyneton
POTENTIAL FLOOR PLAN - LOT 18

AUTHORITY: Macedon Ranges Shire
CLIENT: ADTS P/L

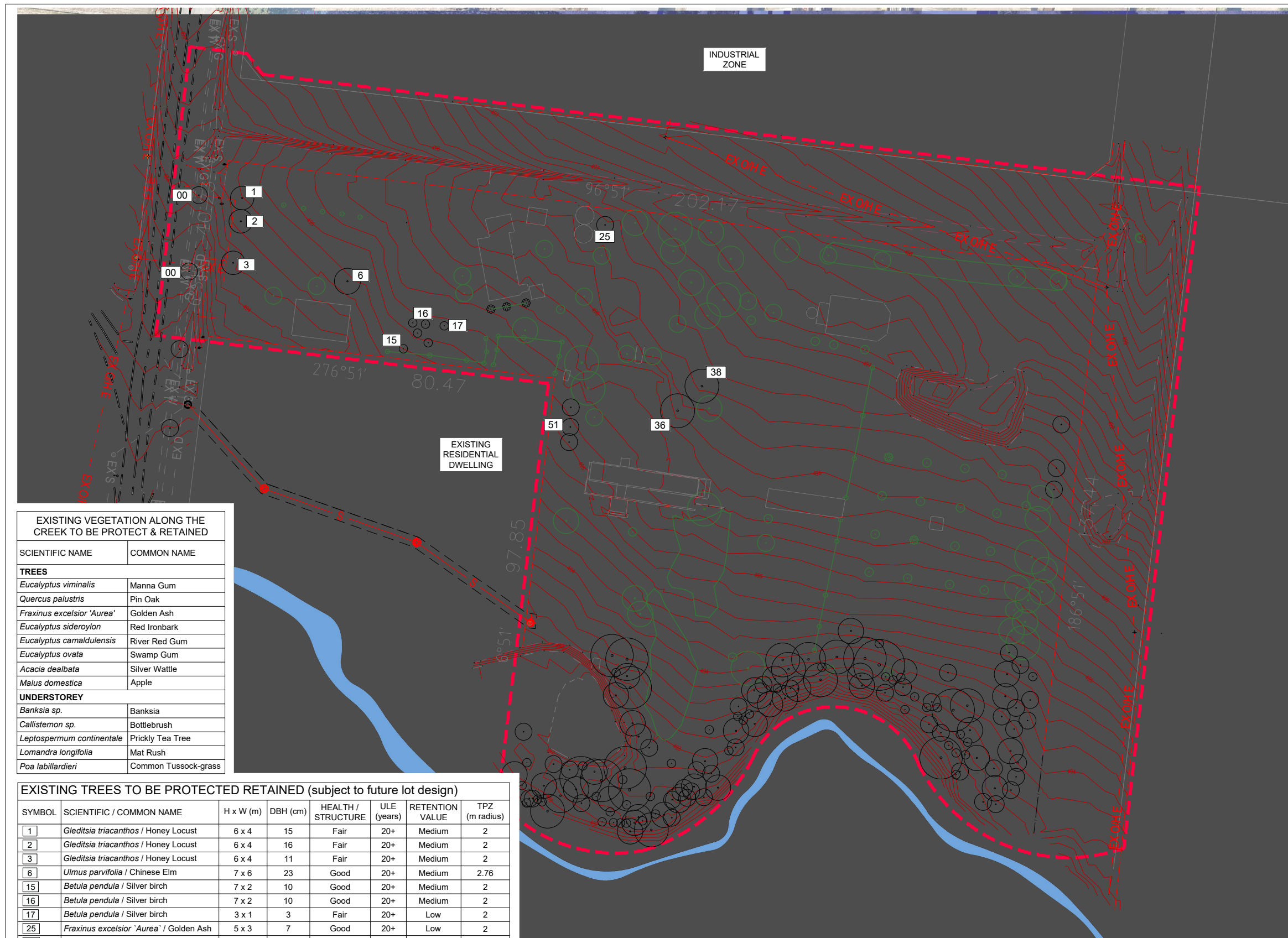
DWG STATUS: **CONCEPT**

PROJECT & DWG No: 1326301 FP

REV: B



APPENDIX 8 - LANDSCAPE PLAN



REVISIONS	

- LEGEND**
- Title boundary
 - Pre-developed contours at 200mm intervals
 - Existing fence
 - Post Office Creek
 - Extent of landscape works
 - Existing vegetation to be retained. Subject to future lot design
 - Existing vegetation to be removed
- SERVICES LEGEND**
- Existing overhead power
 - Existing gas
 - Existing drainage
 - Existing sewer pit
 - Existing electrical pit
 - Existing water meter

Notes:

- Refer Survey Plan & Engineering Drawings prepared by Tomkinson for further detail.

- GENERAL NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OTHER DRAWINGS OF THE SET.
 - THIS DRAWING IS NOT TO BE SCALED.
 - ALL MATERIALS, CONSTRUCTIONS ETC. ARE TO COMPLY WITH ALL RELEVANT CODES, BY-LAWS, BUILDING CODE OF AUSTRALIA ETC.
 - NO VARIATION IS TO BE MADE TO THIS DRAWING WITHOUT THE PRIOR APPROVAL OF THE PROPRIETOR AND/OR LANDSCAPE ARCHITECT.
 - CONTRACTOR TO NOTE THAT THE REQUIRED LOCATION AND DIMENSIONS OF WORKS MAY NOT CORRESPOND EXACTLY WITH EXISTING CONDITIONS.
 - CONTRACTOR TO VERIFY ALL DIMENSIONS AND LEVELS PRIOR TO THE COMMENCEMENT OF WORKS.
 - CONTRACTOR TO VERIFY THE LOCATIONS OF ALL SERVICES PRIOR TO THE COMMENCEMENT OF WORKS.
 - STORMWATER/AGRICULTURAL DRAINAGE TO BE CONSTRUCTED IN AN APPROVED MANNER AND CONNECTED TO THE EXISTING SYSTEM IN A MANNER APPROVED BY THE RELEVANT AUTHORITY.
 - ALL LANDSCAPE AREAS TO HAVE MINIMUM CROSSFALLS TO ALLOW DRAINAGE TOWARDS PITS, GUTTERS OR NOMINATED DRAINAGE POINTS IN ACCORDANCE WITH ARCHITECTS SPECIFICATION.
 - NEW SURFACES ARE TO MATCH EXISTING WHERE APPLICABLE.
 - FOUNDATIONS, EXCAVATIONS, REINFORCEMENT PLACEMENT ETC. TO BE INSPECTED AND APPROVED BY THE BUILDING SURVEYOR PRIOR TO ANY CONCRETE PLACEMENT.



Project:
88-90 Wedge Street,
KYNETON

Drawing Title:
Existing Vegetation Assessment

Prepared for:
Macedon Ranges Shire Council
Date: February 7, 2023
Scale: 1:400 @ A1 sheet size
Drawn: YL / OJ
Checked: HM
Drawing No.: 2141 - LP01
Planning Permit No.: N/A

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LANDSCAPE ARCHITECTS

130 Howards Rd, Wattle Flat VIC 3352
T 03 5334 5321 W www.thomsonhay.com



EXISTING VEGETATION ALONG THE CREEK TO BE PROTECT & RETAINED

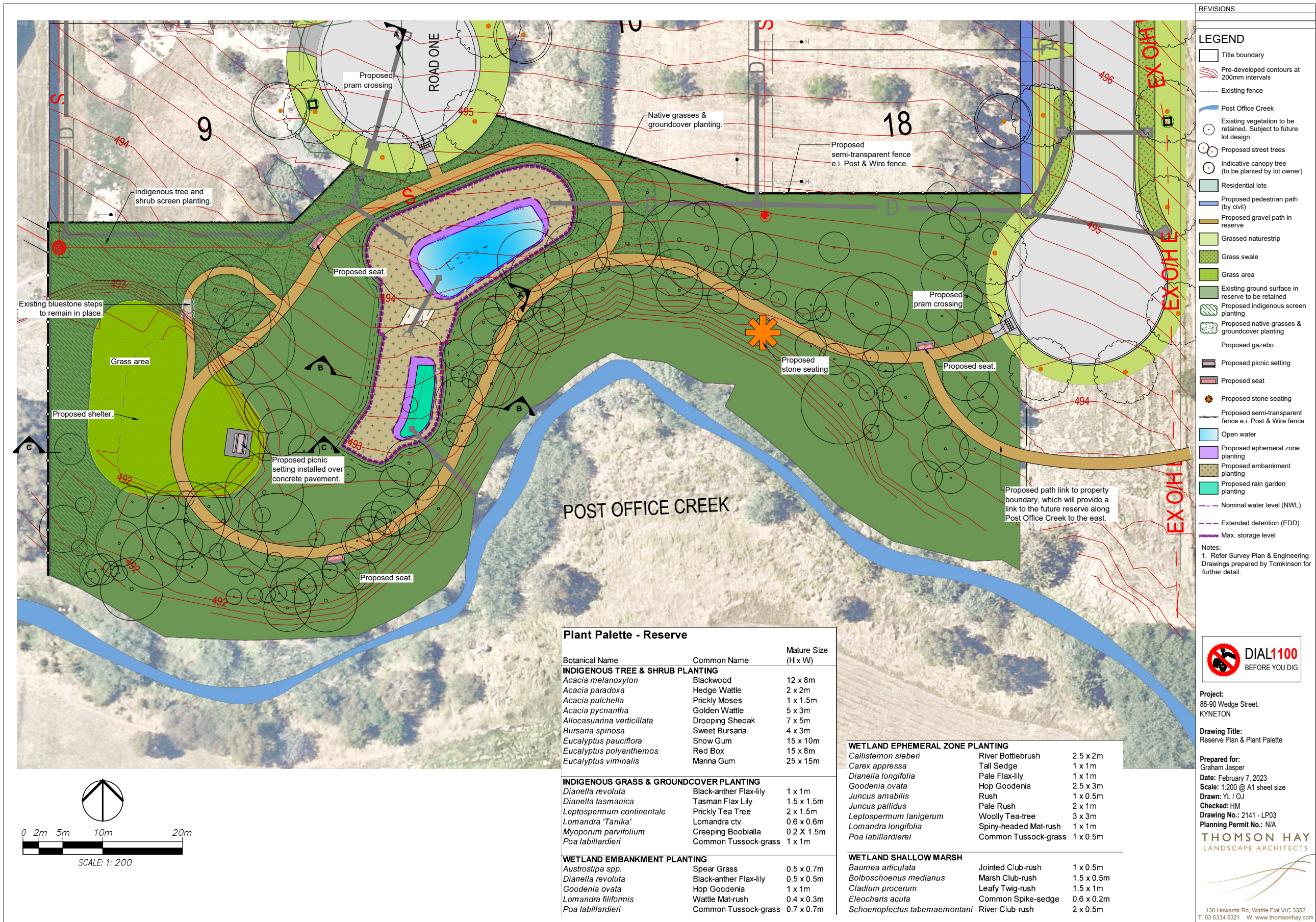
SCIENTIFIC NAME	COMMON NAME
TREES	
<i>Eucalyptus viminalis</i>	Manna Gum
<i>Quercus palustris</i>	Pin Oak
<i>Fraxinus excelsior 'Aurea'</i>	Golden Ash
<i>Eucalyptus sideroxylon</i>	Red Ironbark
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus ovata</i>	Swamp Gum
<i>Acacia dealbata</i>	Silver Wattle
<i>Malus domestica</i>	Apple
UNDERSTOREY	
<i>Banksia sp.</i>	Banksia
<i>Callistemon sp.</i>	Bottlebrush
<i>Leptospermum continentale</i>	Prickly Tea Tree
<i>Lomandra longifolia</i>	Mat Rush
<i>Poa labillardieri</i>	Common Tussock-grass

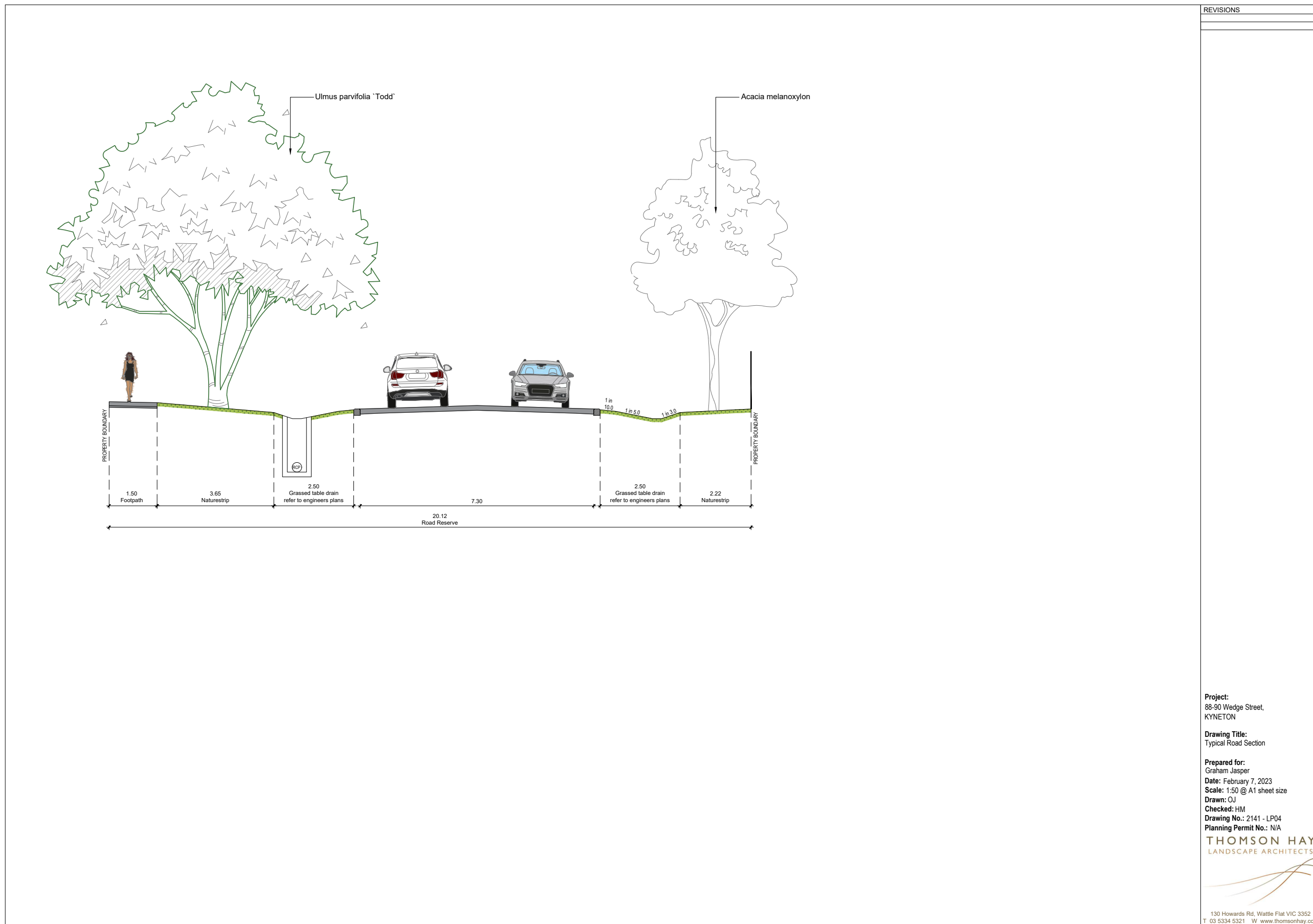
EXISTING TREES TO BE PROTECTED & RETAINED (subject to future lot design)

SYMBOL	SCIENTIFIC / COMMON NAME	H x W (m)	DBH (cm)	HEALTH / STRUCTURE	ULE (years)	RETENTION VALUE	TPZ (m radius)	
1	<i>Gleditsia triacanthos</i> / Honey Locust	6 x 4	15	Fair	20+	Medium	2	
2	<i>Gleditsia triacanthos</i> / Honey Locust	6 x 4	16	Fair	20+	Medium	2	
3	<i>Gleditsia triacanthos</i> / Honey Locust	6 x 4	11	Fair	20+	Medium	2	
6	<i>Ulmus parvifolia</i> / Chinese Elm	7 x 6	23	Good	20+	Medium	2.76	
15	<i>Betula pendula</i> / Silver birch	7 x 2	10	Good	20+	Medium	2	
16	<i>Betula pendula</i> / Silver birch	7 x 2	10	Good	20+	Medium	2	
17	<i>Betula pendula</i> / Silver birch	3 x 1	3	Fair	20+	Low	2	
25	<i>Fraxinus excelsior 'Aurea'</i> / Golden Ash	5 x 3	7	Good	20+	Low	2	
36	<i>Quercus palustris</i> / Pin Oak	12 x 6	32	Good	20+	Medium	3.84	
38	<i>Quercus palustris</i> / Pin Oak	12 x 6	32	Good	20+	Medium	3.84	
51	<i>Malus domestica</i> / Apple	3 x 2	12	Fair	10-20	Low	2	
00	<i>Quercus robur</i> / English oak	Existing street trees to be protected & retained						

NOTE: Refer to Arborist report by Axiom dated 18.11.2021 for further details.







REVISIONS

Project:
88-90 Wedge Street,
KYNETON

Drawing Title:
Typical Road Section

Prepared for:
Graham Jasper

Date: February 7, 2023

Scale: 1:50 @ A1 sheet size

Drawn: OJ

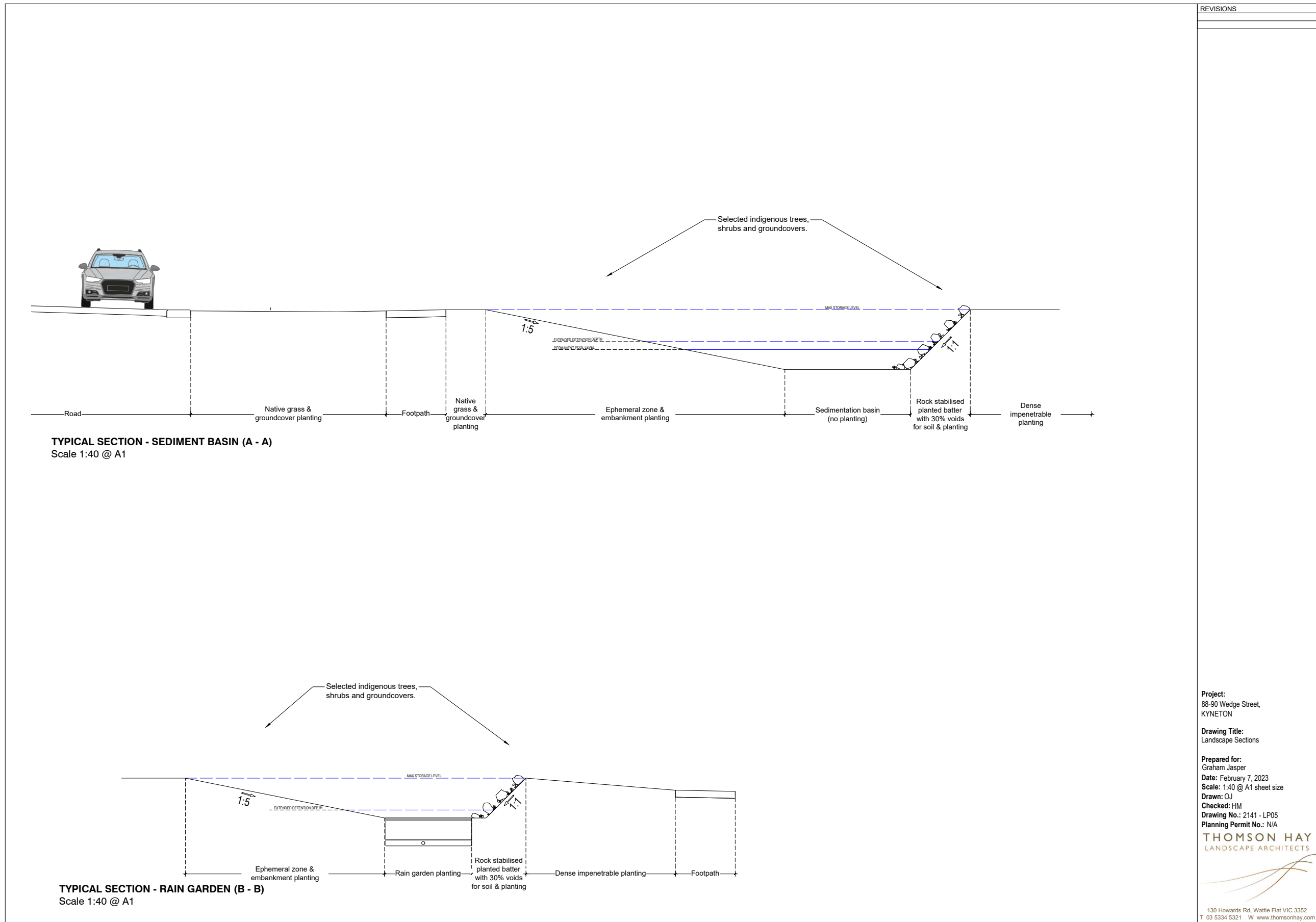
Checked: HM

Drawing No.: 2141 - LP04

Planning Permit No.: N/A

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LANDSCAPE ARCHITECTS

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REVISIONS

Project:
88-90 Wedge Street,
KYNETON

Drawing Title:
Landscape Sections

Prepared for:
Graham Jasper

Date: February 7, 2023

Scale: 1:40 @ A1 sheet size

Drawn: OJ

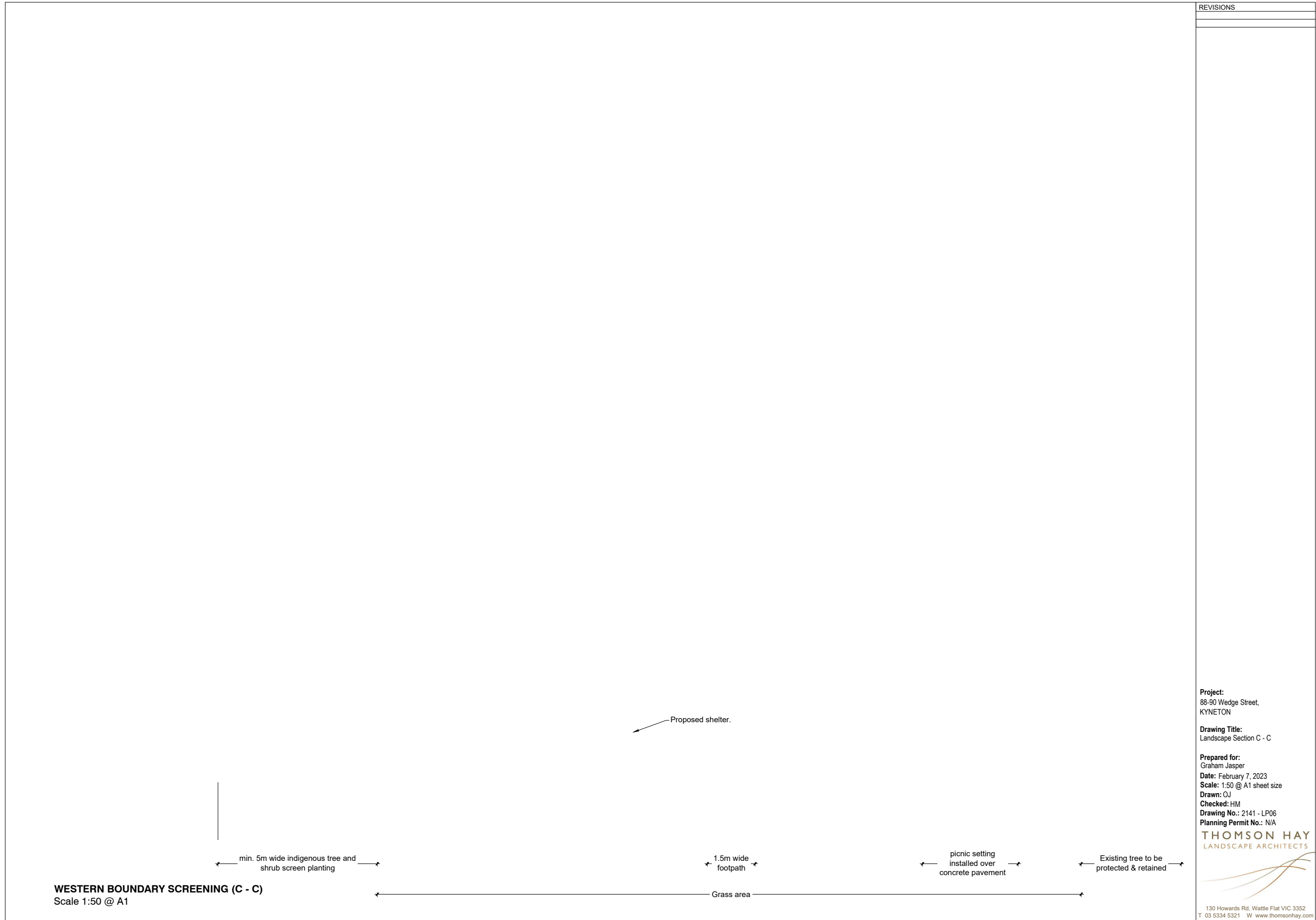
Checked: HM

Drawing No.: 2141 - LP05

Planning Permit No.: N/A

THOMSON HAY
LANDSCAPE ARCHITECTS

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REVISIONS

Project:
88-90 Wedge Street,
KYNETON

Drawing Title:
Landscape Section C - C

Prepared for:
Graham Jasper

Date: February 7, 2023

Scale: 1:50 @ A1 sheet size

Drawn: OJ

Checked: HM

Drawing No.: 2141 - LP06

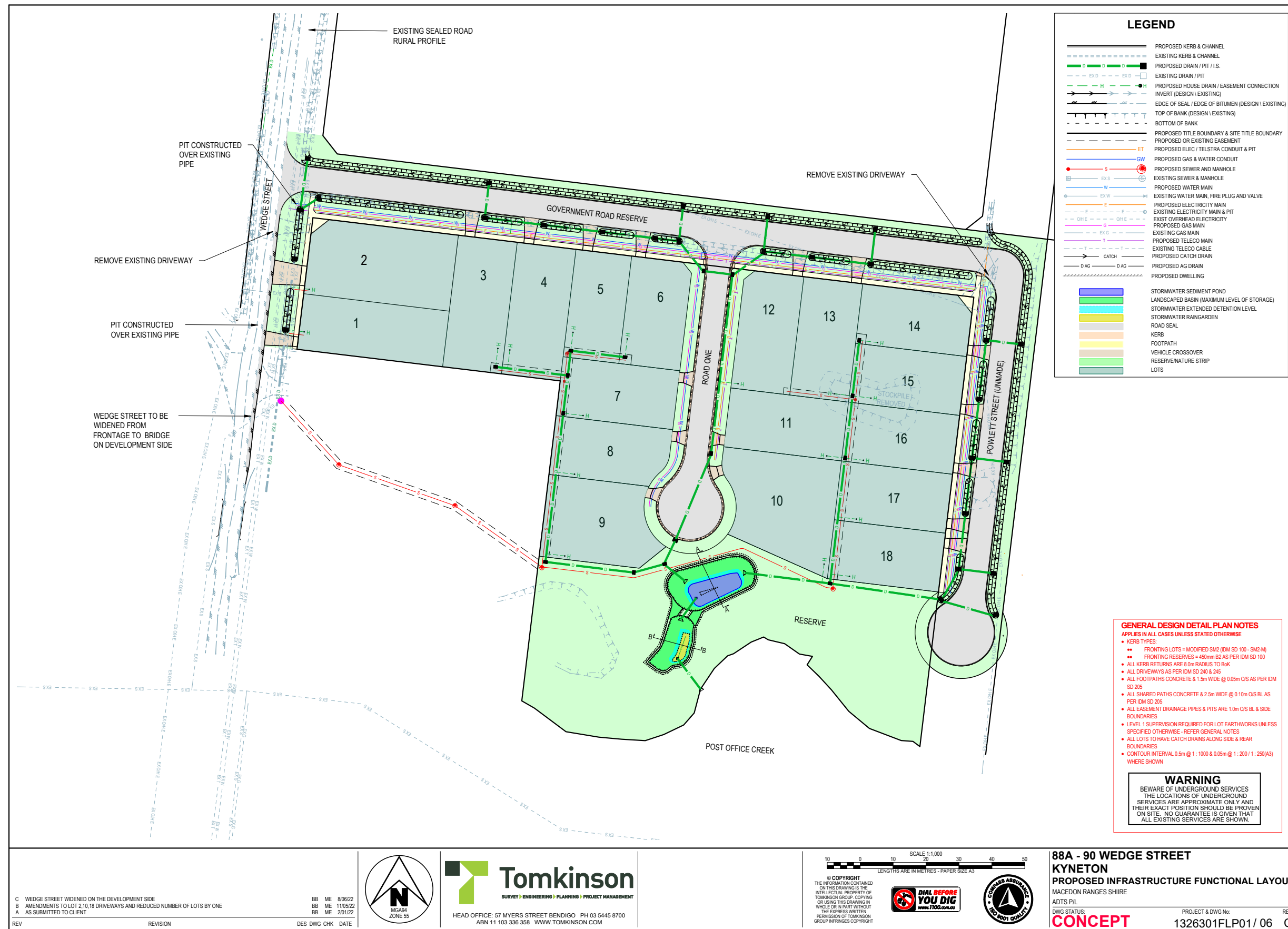
Planning Permit No.: N/A

THOMSON HAY
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APPENDIX 9 – FUNCTIONAL LAYOUT PLAN



C WEDGE STREET WIDENED ON THE DEVELOPMENT SIDE
 B AMENDMENTS TO LOT 2, 10, 18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE
 A AS SUBMITTED TO CLIENT

BB ME 9/06/22
 BB ME 1/09/22
 BB ME 20/1/22



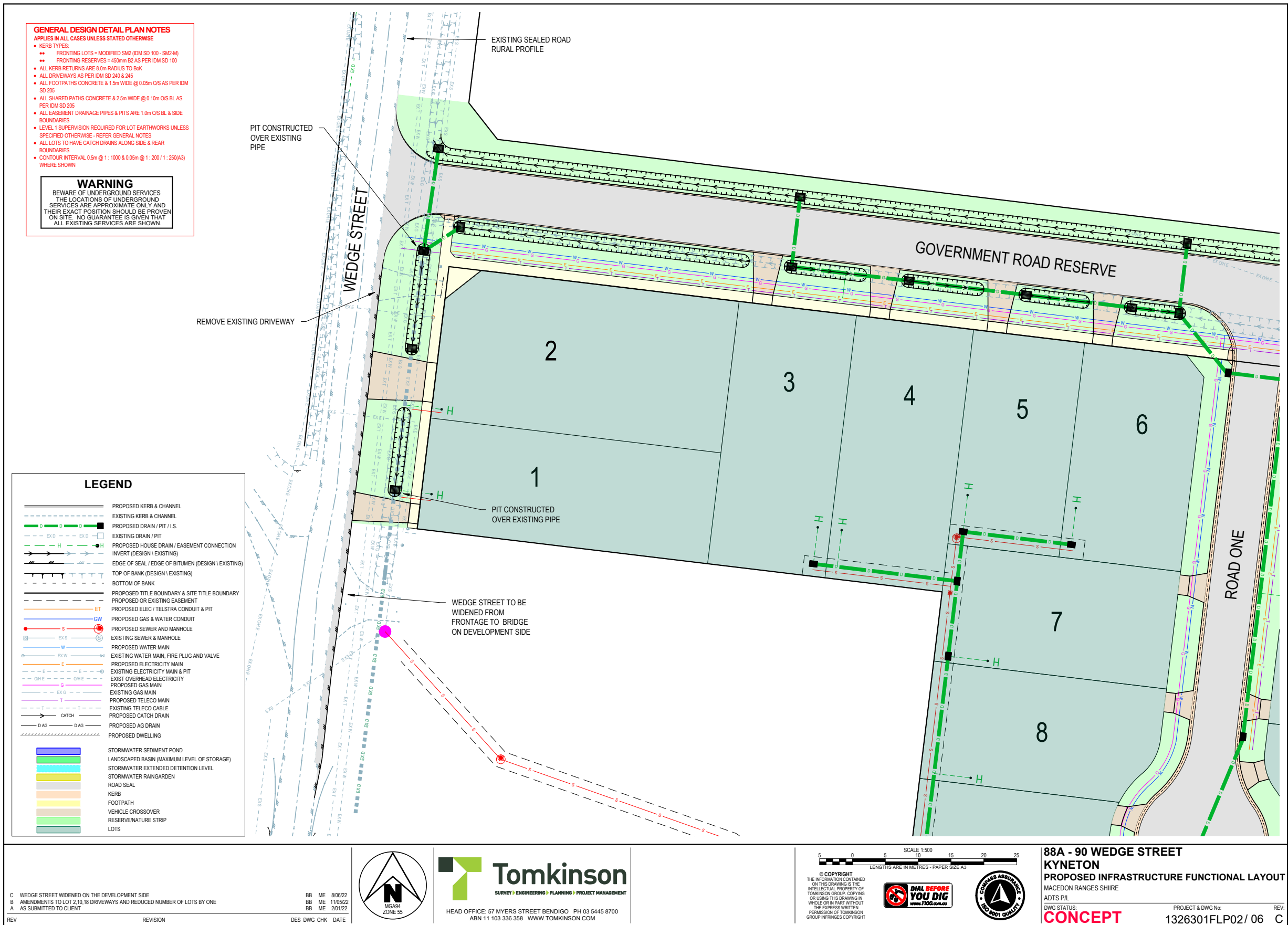
Tomkinson
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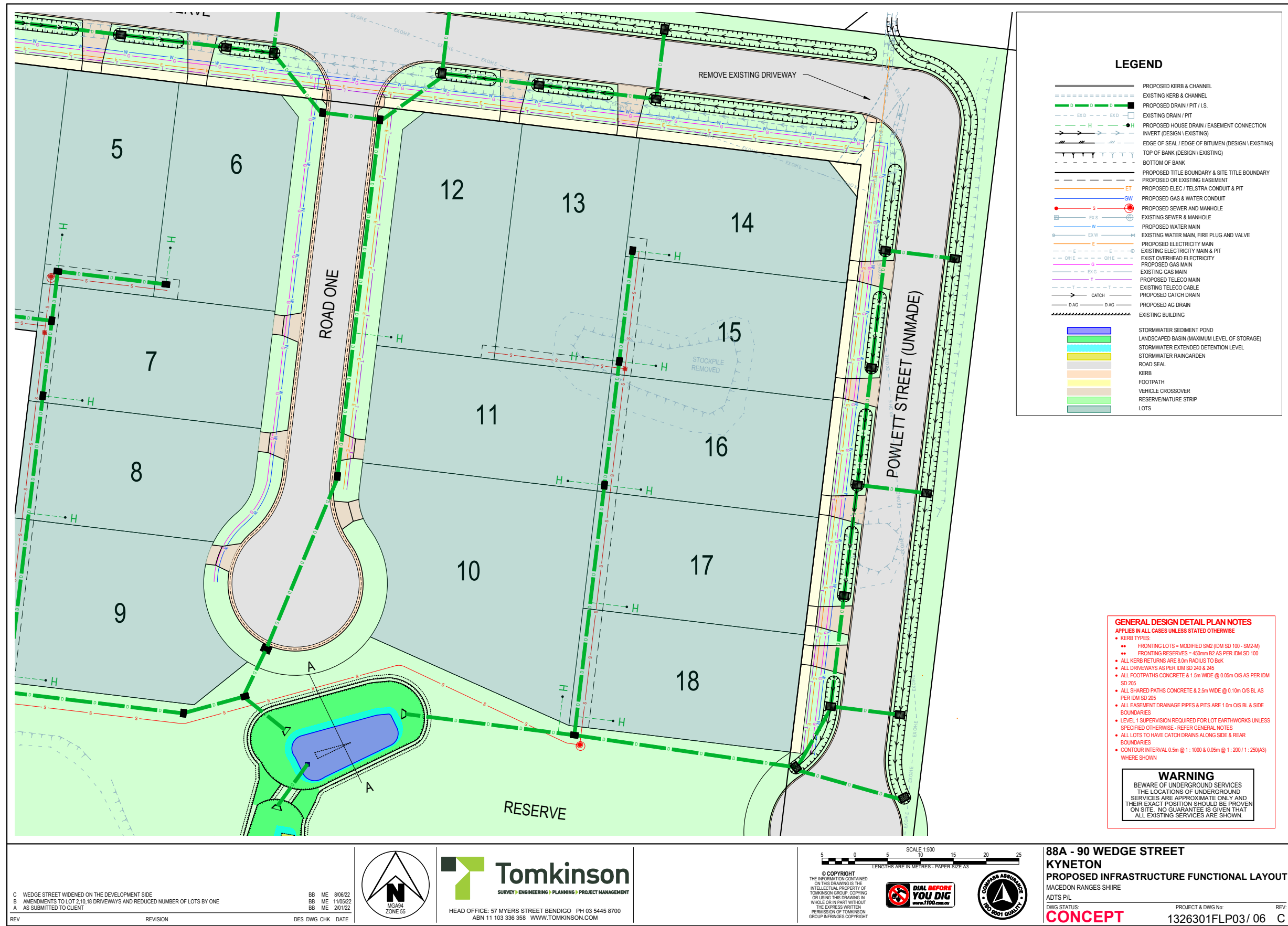
HEAD OFFICE: 57 MYERS STREET BENDIGO PH 03 5445 8700
 ABN 11 103 336 358 WWW.TOMKINSON.COM

SCALE 1:1,000
 LENGTHS ARE IN METRES - PAPER SIZE A3

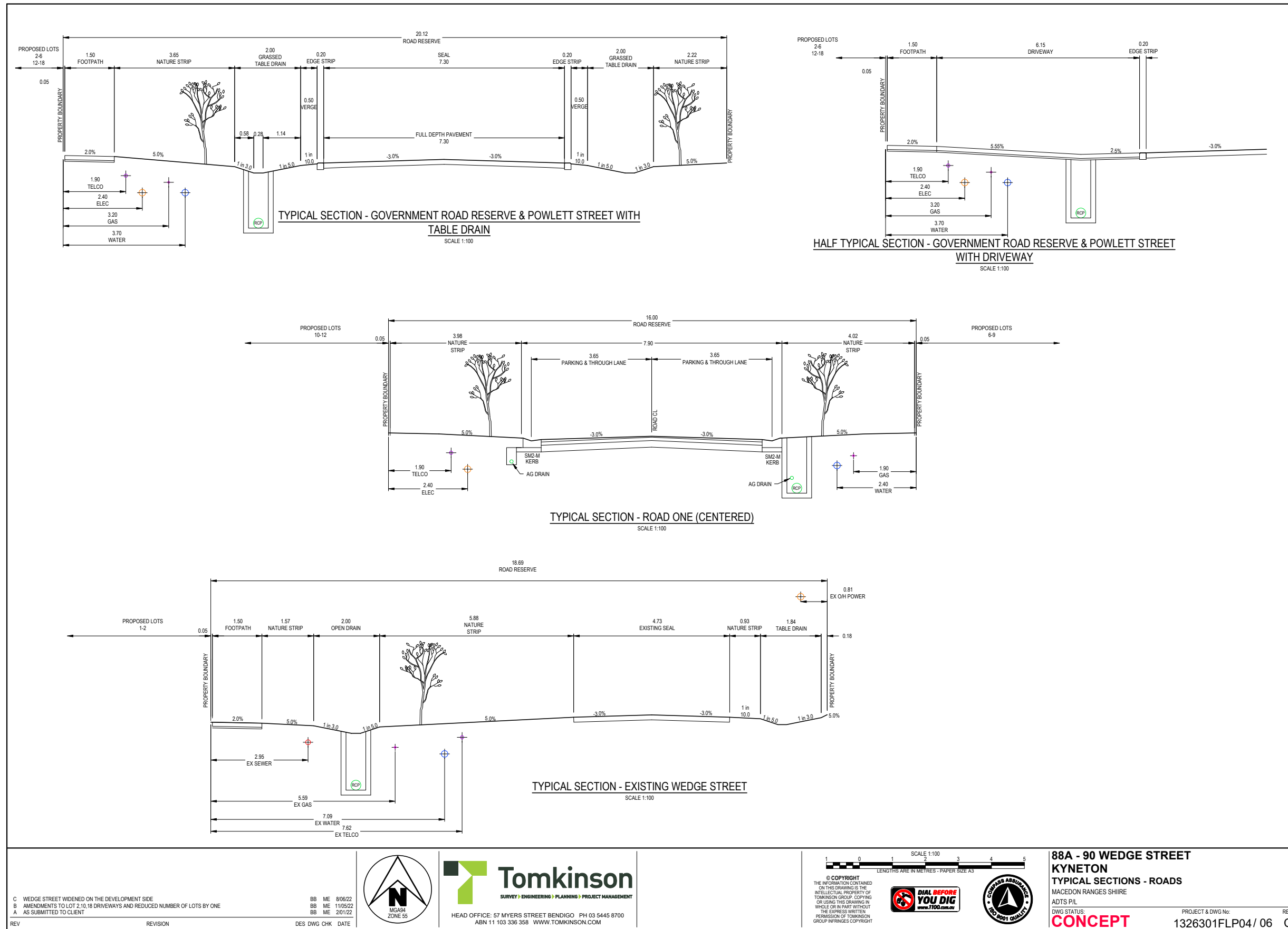
88A - 90 WEDGE STREET
KYNETON
PROPOSED INFRASTRUCTURE FUNCTIONAL LAYOUT
 MACEDON RANGES SHIRE
 ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301FLP01/06
 REV: C

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 PLOT DATE: 19/07/2022 FILE: C:\D\B\10\1326301\88A-90 WEDGE STREET\1326301 FLP 01.DWG





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 PLOT DATE: 18/07/2022 FILE: C:\1326301\1326301-FLP\1326301-FLP-03-06-CONCEPT.dwg



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 PLOT DATE: 18/07/2022 FILE: C:\TD\DRAWING\880-1205\11\1285 - ADTS P/L AS TRUSTEE FOR THE JASPER FAMILY TRUST - KINNETON_TOWNSHIP\00\04\00\CURRENT\128501FLP_04.DWG

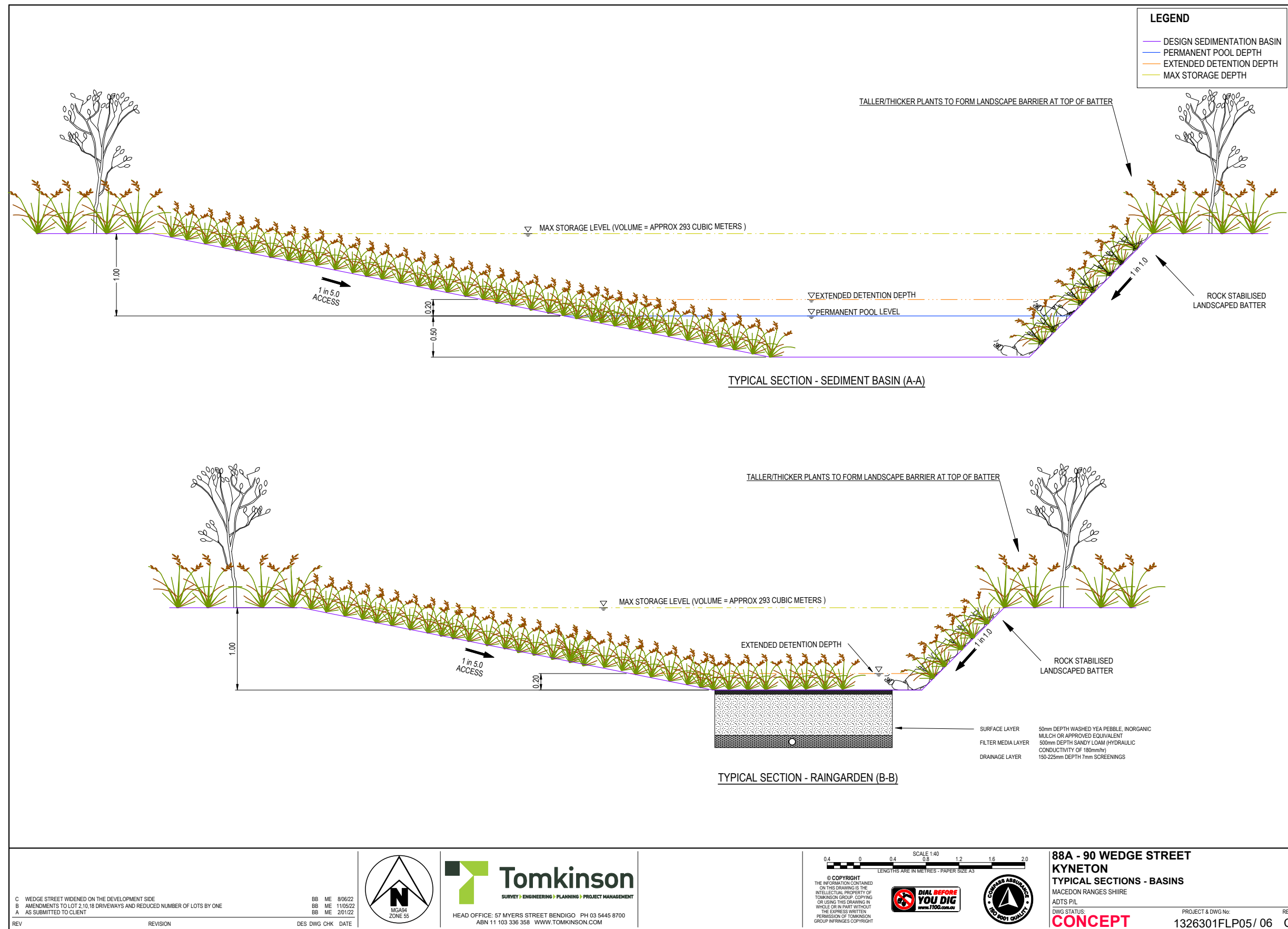
C	WEDGE STREET WIDENED ON THE DEVELOPMENT SIDE	BB	ME	9/06/22	
B	AMENDMENTS TO LOT 2, 10, 18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE	BB	ME	11/09/22	
A	AS SUBMITTED TO CLIENT	BB	ME	20/12/22	
REV	REVISION	DES	DWG	CHK	DATE



1 0 1 2 3 4 5
SCALE 1:100
LENGTHS ARE IN METRES - PAPER SIZE A3

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88A - 90 WEDGE STREET
KYNETON
 TYPICAL SECTIONS - ROADS
 MACEDON RANGES SHIRE
 ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301FLP04/ 06
 REV: C



NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPDATED. IT IS THE RESPONSIBILITY OF THE USER TO VERIFY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS.
PLOT DATE: 18/07/2022 FILE: C:\EDD\DATA\10\1326301\88A-90\1326301FLP05\1326301FLP05.DWG



LEGEND

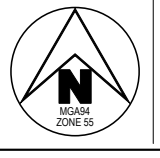
	PROPOSED KERB & CHANNEL
	EXISTING KERB & CHANNEL
	PROPOSED DRAIN / PIT / I.S.
	EXISTING DRAIN / PIT
	PROPOSED HOUSE DRAIN / EASEMENT CONNECTION INVERT (DESIGN) EXISTING
	EDGE OF SEAL / EDGE OF BITUMEN (DESIGN) EXISTING
	TOP OF BANK (DESIGN) EXISTING
	BOTTOM OF BANK
	PROPOSED TITLE BOUNDARY & SITE TITLE BOUNDARY
	PROPOSED OR EXISTING EASEMENT
	PROPOSED ELEC / TELSTRA CONDUIT & PIT
	PROPOSED GAS & WATER CONDUIT
	PROPOSED SEWER AND MANHOLE
	EXISTING SEWER & MANHOLE
	PROPOSED WATER MAIN
	EXISTING WATER MAIN, FIRE PLUG AND VALVE
	PROPOSED ELECTRICITY MAIN & PIT
	EXISTING ELECTRICITY MAIN & PIT
	EXIST OVERHEAD ELECTRICITY
	PROPOSED GAS MAIN
	EXISTING GAS MAIN
	PROPOSED TELECO MAIN
	EXISTING TELECO CABLE
	PROPOSED CATCH DRAIN
	PROPOSED AG DRAIN
	PROPOSED DWELLING
	STORMWATER SEDIMENT POND
	LANDSCAPED BASIN (MAXIMUM LEVEL OF STORAGE)
	STORMWATER EXTENDED DETENTION LEVEL
	STORMWATER RAINGARDEN
	ROAD SEAL
	KERB
	FOOTPATH
	VEHICLE CROSSOVER
	RESERVE/NATURE STRIP
	LOTS

GENERAL DESIGN DETAIL PLAN NOTES
 APPLIES IN ALL CASES UNLESS STATED OTHERWISE

- KERB TYPES:
 - FRONTING LOTS = MODIFIED SM2 (DM SD 100 - SM2-M)
 - FRONTING RESERVES = 400mm BS AS PER DM SD 100
 - ALL KERB RETURNS ARE 9.0m RADIUS TO B&K
 - ALL DRIVEWAYS AS PER DM SD 240 & 245
 - ALL FOOTPATHS CONCRETE & 1.5m WIDE @ 0.05m O/S AS PER DM SD 205
 - ALL SHARED PATHS CONCRETE & 2.5m WIDE @ 0.10m O/S BL AS PER DM SD 205
 - ALL EASEMENT DRAINAGE PIPES & PITS ARE 1.0m O/S BL & SIDE BOUNDARIES
- LEVEL 1 SUPERVISION REQUIRED FOR LOT EARTHWORKS UNLESS SPECIFIED OTHERWISE - REFER GENERAL NOTES
- ALL LOTS TO HAVE CATCH DRAINS ALONG SIDE & REAR BOUNDARIES
- CONTOUR INTERVAL 0.5m @ 1:1000 & 0.05m @ 1:200 / 1:250(A3) WHERE SHOWN

WARNING
 BEWARE OF UNDERGROUND SERVICES
 THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

C	WEDGE STREET WIDENED ON THE DEVELOPMENT SIDE	BB	ME	9/06/22	
B	AMENDMENTS TO LOT 2, 10, 18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE	BB	ME	11/05/22	
A	AS SUBMITTED TO CLIENT	BB	ME	20/11/22	
REV	REVISION	DES	DWG	CHK	DATE



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APPENDIX 10 – ENVIRONMENTAL MANAGEMENT PLAN



Management Plan for Post Office Creek

88a-90 Wedge St, Kyneton

June 2023

Project Number: 230006



NSW • ACT • QLD • VIC
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Management Plan

88a-90 Wedge St, Kyneton

Document verification

Project Title:	88a-90 Wedge St, Kyneton
Project Number:	230006
Project File Name:	Management Plan for Post Office Creek

Revision	Date	Prepared by	Reviewed by	Approved by
Draft V1.0	10/03/2023	Stella O'Dwyer	Michelle Patrick	Louiza Romane
Final V1.0	21/06/2023	Clare Vincent	Michelle Patrick	Michelle Patrick
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Management Plan
88a-90 Wedge St, Kyneton

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Acronyms and abbreviations

Item	Definition
AEP	Annual exceedance probability
CaLP Act	<i>Catchment and Land Protection Act 1994</i>
CMA	Catchment management area
DELWP	Department of Environment, Land, Water and Planning
DPIPWE	Department Of Primary Industries, Parks, Water and Environment (Tas)
EPA	Environmental Protection Agency
EVC	Ecological vegetation class
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
ha	hectares
km	kilometres
LGA	Local government area
LSIO	Land Subject to Inundation Overlay
MNES	Matters of National Environmental Significance
MRSC	Macedon Ranges Shire Council
TEC	Threatened Ecological Communities

Management Plan

88a-90 Wedge St, Kyneton

1. Introduction

1.1. Background

NGH Pty Ltd was engaged by Tomkinson Group Pty Ltd (2022) to undertake an ecological assessment for the proposed subdivision at 88A-90 Wedge Street, Kyneton. This ecological assessment was completed in June 2022 and determined the potential impacts on threatened entities, the extent of native vegetation present on site, and subsequent offset requirements (NGH 2022). The management plan is an addition to the ecology report based on Macedon Ranges Shire Council Request for further Information for further management of Post Office Creek riparian area.

The proposal entails an 18-lot subdivision that is located at 88A Wedge St (Lot 1 PS524086) and 90 Wedge St (Lot 2 PS524086 and CA25, CA26 and CA27\PP5439 (multiple lots)). The proposed subdivision Development Footprint covers an area of 1.95 hectares (ha).

Post Office Creek has historically been cleared of the remnant native vegetation, however, has been revegetated with a mix of native Australia plants, local native plants and some exotic vegetation covering 0.55 ha. No revegetation is proposed to be removed along the creek except for a small dam which will be filled and altered for the subdivision stormwater management.

1.2. Purpose of this report

This report is in response to the Macedon Ranges Shire Council's (MRSC) Request for Further Information (RFI), following the submission of the Ecology Assessment in June 2022. This management plan aims to address the following questions from the RFI:

14. An overall management plan is required for the riparian zone along the north bank of the Post Office Creek. This should not only detail weed management (as submitted), but also detail any specialist habitat areas, stabilisation of the bank and overland drainage, ongoing vegetation management (including weeding and additional planting of indigenous plants). This management plan should include how the area is to be maintained, how ongoing maintenance will be financed and a regular review period of the area once every five years to ensure that the creek bank is being maintained appropriately.

17. Although the ecology report submitted provides details about weed management now and into the future for the Post Office Creek area, no overall management plan has been provided to articulate how the north bank of the Creek will be maintained. This should include any specialist habitat areas, stabilisation of the bank and overland drainage, ongoing vegetation management (including weeding and planting of indigenous plants), etc. This management plan should include how the area is to be maintained and a regular review period of the area once every 5 years to ensure that the Creek bank is being maintained appropriately.

NGH proposes to incorporate the weed management plan from the ecology assessment (NGH 2022) and expand this to include the following:

- Weed management and control measures.
- Identify areas for additional planting to increase species diversity (improve habitat areas) and contribute to bank stabilisation.
- Ongoing vegetation management and maintenance including timing schedule.
- Replacement planting strategy
- Ongoing financial management

Management Plan

88a-90 Wedge St, Kyneton

1.3. Location and natural features

88A-90 Wedge Street, Kyneton is in the Macedon Ranges Local Government Area (LGA). The property is approximately 1.6 kilometres (kms) from the centre of Kyneton. Post Office Creek reserve has been planted with a mix of local indigenous and regional Australian trees, shrubs and understorey covering 0.55 ha. This management plan does not propose to remove any of this vegetation but to enhance the biodiversity values through additional planting.

The Post Office Creek Reserve is located in the Central Victorian Uplands Bioregion. The geology formations of the Central Victorian Uplands include Lower Palaeozoic deposits with dissected uplands at higher elevations, among granitic and sedimentary (with Tertiary colluvial aprons) terrain with metamorphic and old volcanic rocks which have formed steeply sloped peaks and ridges (DELWP, 2022).

1.4. Waterway management and stream bank stabilisation

The Post Office Creek Reserve is located within the Campaspe River basin of the North Central Catchment Management Area (NCCMA) (North Central Catchment Management Authority, 2023). Post Office Creek joins Campaspe River to the northwest of the site. There is also a dam on site that covers 0.19 ha (Figure 1-1). The dam will be removed and reshaped as part of the subdivision stormwater management.

A Stormwater Management Strategy for the Post Office Creek Reserve, prepared by Tomkinson, shows peak flood modelling for a 1% Annual Exceedance Probability (AEP) (1 in 100-year event) (Tomkinson, 2023). Using the NCCMA 'Floodeye' tool, an indicative flood depth for a 1% AEP was modelled for the Post Office Creek Reserve (Tomkinson, 2023). The report mapped the south of the site to lie within a Land Subject to Inundation Overlay (LSIO), triggering flood management measures to ensure the development does not impede the existing waterway and flood plain (Tomkinson, 2023). To meet NCCMA and Goulburn-Murray Water requirements, the lots and the proposed dwellings will achieve a setback of 30 m from the top of the creekbank (Tomkinson, 2023). The raingarden is proposed to be located in land subjected to inundation, and appropriate measures have been taken to ensure damage is mitigated during times of inundation (Tomkinson, 2023).

The creek banks are currently covered with exotic grasses and considered stable. There is potential during peak flow periods, for stream bank erosion to increase due to the increased creek velocity. This management plan will include passive stream bank management through supplementary planting. No earthworks are considered as part of this management plan for streambank erosion management given the stream bank is currently stable and vegetation cover, although exotic, reduces erosion. Any future earthworks for bank stabilisation should be completed in consultation in the NCCMA.

Management Plan
88a-90 Wedge St, Kyneton



Figure 1-1 Locality Map

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Management Plan

88a-90 Wedge St, Kyneton

2. Site Results

A site inspection was conducted by Michelle Patrick, NGH Ecologist, on October 11, 2021 (as part of the Ecological Assessment). This site inspection included an assessment of vegetation (planted, native & exotic), and noxious weeds.

2.1. Native and Planted Native Vegetation

The vegetation along Post Office Creek includes trees, shrubs and understorey that was a mix of native planted and exotic vegetation. The vegetation present is planted Eucalypts and Acacias from the locality/region planted on the upper slopes of Post Office Creek. The creekline vegetation will be retained and covers 0.55 ha. This planted vegetation will not be impacted. No large trees were recorded on site. The tree and shrub plantings proposed as part of this rehabilitation plan aim to fill in open canopy spaces. The species listed in Sections 5.1 & 5.2 can also be used for future revegetation and replacement plantings.

2.1.1. Ecological Vegetation Class (EVC)

Historically, the EVC of the Post Office Creek Reserve is mapped as EVC 55 – Central Victorian Uplands. This historic mapping is based on Pre-1750 European EVCs Modelling (DSE 2004).

EVC 55 Plains Grassy Woodland is described by (DSE, 2004):

“An open, eucalypt woodland to 15m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer.”

Figure 2-1 below shows the extent of EVC 55, the locality of the Post Office Creek Reserve prior to 1750.

Management Plan
88a-90 Wedge St, Kyneton

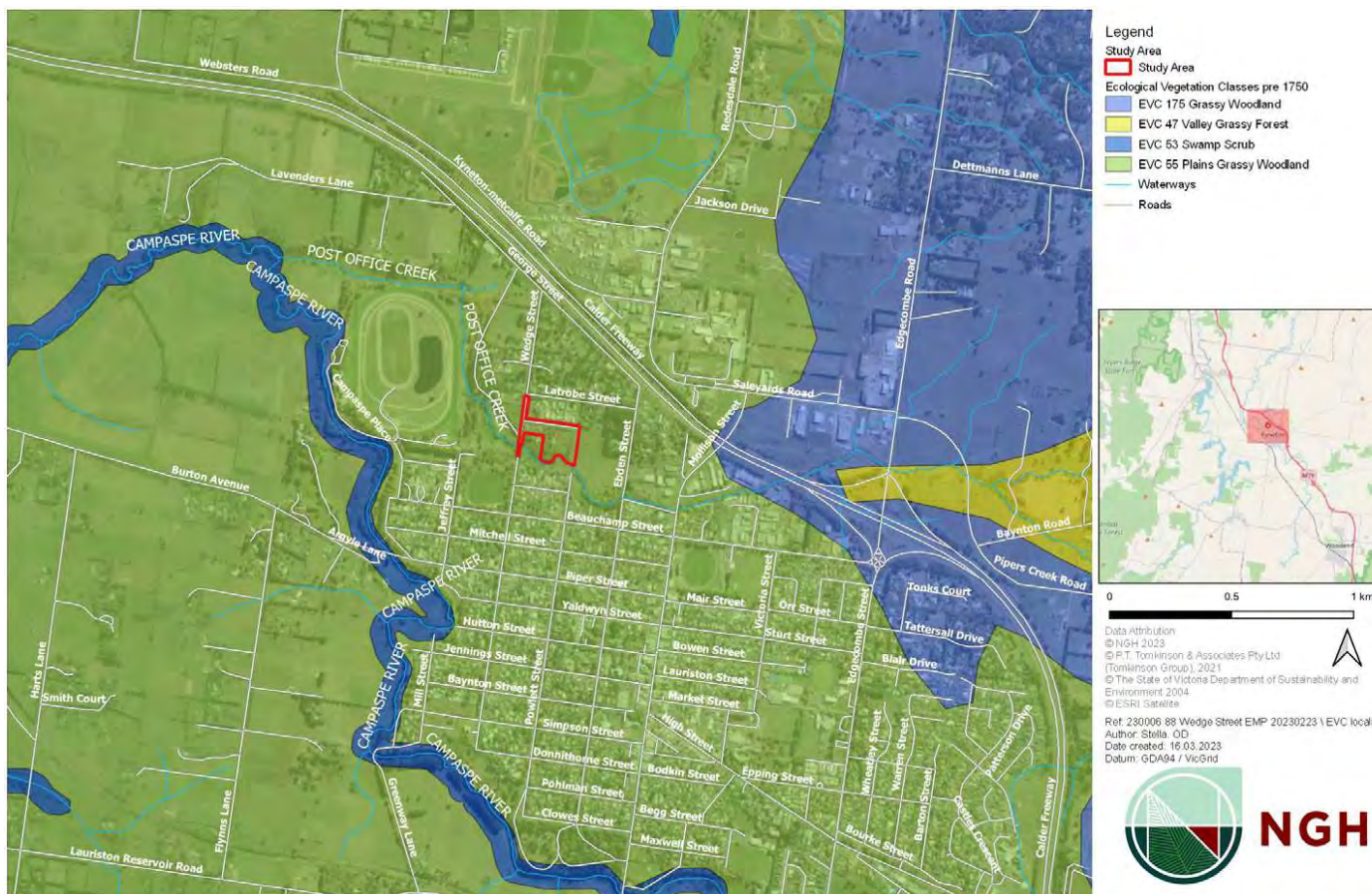


Figure 2-1 Pre 1750 EVC mapping of the Study Area, Post Office Creek Reserve and Locality

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Management Plan

88a-90 Wedge St, Kyneton

2.2. Exotic Vegetation

The understorey vegetation and stream bank vegetation are an exotic mix of herbs and grasses and noxious weeds. The exotic grasses and herbs will only be controlled in areas set aside for revegetation. Noxious weed control is outlined in the next section.

2.2.1. Noxious weed control

The high threat weeds recorded on site are listed under the *Catchment and Land Protection Act, 1994* (CaLP Act). Noxious weeds are classified by NCCMA (The Shires of Mitchell, Macedon Ranges and Mount Alexander, 2015). The weeds present on site and their catchment classification is listed in Table 2-1 and shown in Figure 2-2 below.

Table 2-1 Declared noxious weeds recorded on site.

Scientific Name	Common Name	CaLP Act Weed Listing Status
<i>Allium triquetrum</i>	Angled Onion	Restricted
<i>Rosa rubiginosa</i>	Sweet Briar	Regionally Controlled
<i>Salix fragilis</i>	Crack Willow	Restricted
<i>Foeniculum vulgare</i>	Fennel	Restricted
<i>Cirsium vulgare</i>	Spear Thistle	Regionally Controlled
<i>Crataegus monogyna</i>	Hawthorn	Regionally Controlled

2.2.2. Weed control.

Weed control includes manual removal and hand weeding as the preferred control methods (Table 2-2) in the riparian areas of Post Office Creek due to appropriate water protection and limited chemical use (DPIPWE, 2022).

Weed control near waterbodies requires a long-term commitment to eradication, perhaps 5–10 years or more, as the seed banks of many ‘woody’ weed species (e.g., Hawthorn, Sweet Briar) may remain viable for decades (DPIPWE, 2022). Weeds can also spread along watercourses, making their control difficult. Gradual and consistent weed control and re-establishment of local native plant species are integral to sustainable restoration and management of riparian areas (EPA, 2017).

Recommendations for weed control in the Macedon Ranges includes the following control methods detailed in Table 2-2 (The Macedon Ranges Shire Council, 2015) (Atlas Ecology, 2013).

Management Plan
 88a-90 Wedge St, Kyneton

Table 2-2 Control methods for noxious weeds.

Weed Species	Control Methods	Frequency	Optimal Time Period
Angled Onion <i>Allium triquetrum</i>	- Chemical - Manual removal - Grooming	- Seasonal (before species flowers) - Annually for 5 subsequent years	June - November
Sweet Briar <i>Rosa rubiginosa</i>	- Chemical - Manual removal - Cut and paint with appropriate herbicide	- Seasonal (before species flowers) - Annually for 5 subsequent years	October - December
Crack Willow <i>Salix fragilis</i>	- Chemical - Manual removal - Drill and fill	- Seasonal (before species flowers) - Annually for 5 subsequent years	All year
Fennel <i>Foeniculum vulgare</i>	- Chemical - Manual removal	- Seasonal (before species flowers) - Annually for 5 subsequent years	Winter – spring June - November
Spear Thistle <i>Cirsium vulgare</i>	- Chemical - Manual removal	- Seasonal (before species flowers) - Annually for 5 subsequent years	August - December
Hawthorn <i>Crataegus monogyna</i>	- Chemical - Manual removal - Cut and paint with appropriate herbicide. - Grooming	- Seasonal (before species flowers) - Annually for 5 subsequent years	October - February

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88a-90 Wedge St, Kyneton



Figure 2-2 Noxious weed species in Post Office Creek Reserve

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Management Plan

88a-90 Wedge St, Kyneton

3. Site Preparation

Restoring native vegetation helps to reduce the presence of weed species, ensures the stability of banks, shades the waterway (which helps prevent future weed invasion), and provides habitat for native fauna and flora (DPIPWE, 2022). Site preparation is required prior to any revegetation.

3.1. Weed Management

Post Office Creek will require site preparation. Site preparation includes weed management to reduce weed competition to improve the survival rate of the revegetation.

Weed control includes spraying or hand weeding the areas set aside for planting. Weed control should be planned approximately three weeks before planting. As part of the planting stage, a native blend of potting mix with a suitable slow-release fertiliser to improve water retention and plant establishment can be applied. All plants should be well watered at planting and follow up watering for the first 12 months.

Groundstorey plants can be densely planted to reduce weed competition and would not require tree guards, however, hand weeding should continue during watering in the first 12 months. If weed cover of exotic grasses is high, bark mulch may be applied.

Trees and shrubs should have tree guards to assist in creating a suitable microclimate, protection from frost and improve water retention. The trees and shrubs should also include a native blend of potting mix and bark mulch at the planting stage to reduce weed competition. Bark mulch only needs to extend just beyond the tree guard but can be extended to cover a larger area. The area inside the tree guards requires hand weeding when watering. Watering should be regular depending on weather conditions. For example, monthly or fortnightly in wetter months, or weekly in drought or hotter months for the first 12 months, or the maintenance period. Consistent watering and weed control will improve survival rates and decrease the risk of replacing plants during the maintenance period.

A planting schedule which details the recommended endemic flora species and timings for revegetation is detailed in Section 5.1 & 5.2.

Management Plan

88a-90 Wedge St, Kyneton

4. Planting Schedule

Revegetation should begin three weeks post weed control to minimise the risk of weed species re-establishing in the area.

Planting is recommended to occur in autumn (prior to frost) or early spring. This timing will allow the plants to establish before frost or the summer heat.

Revegetation species were selected based EVC modelling, site parameters and species common in Macedon Ranges that survive well based on climate and soil conditions. Post Office Creek runs along the southern boundary of the study area, where revegetation efforts are intended to occur, it is important that the species chosen are somewhat flood tolerant to increase their survival rate.

The planting schedule is separated into two types, 1) shrub and tree species, and 2) groundcover species. The shrub and tree species revegetation areas are shown in Figure 4-1 below. Table 5-2 details the chosen species for revegetation and number of each species to be planted in Planting Areas 1 and 2 on the map.

Revegetation of groundcover species has not been defined to particular areas. The areas can be selected along Post Office Creek in suitable locations. There are five recommended plots covering 25 m². The groundcover species and the recommended number to occur in each plot is detailed in Table 5-1.

Management Plan
88a-90 Wedge St, Kyneton



Figure 4-1 Revegetation planting zones for tree and shrub species

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5. Maintenance Schedule

5.1. Ground Cover Planting Schedule

Table 5-1 Ground cover species planting schedule

Scientific Name	Common Name	Number of plants					Timing
		Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily	25	25	25	25	25	April-May
<i>Hardenbergia violacea</i>	Purple Coral-pea	25	25	25	25	25	April-May
<i>Lomandra longifolia</i>	Spiny-head Mat-rush	25	25	25	25	25	April-May
<i>Poa labillardierei</i>	Common Tussock-grass	25	25	25	25	25	April-May

5.2. Trees and Shrubs Planting Schedule

Table 5-2 Tree and shrub species planting schedule

Scientific Name	Common Name	Plant Type	Number of plants		Timing
			Plant Area 1	Plant Area 2	
<i>Eucalyptus viminalis</i>	Manna Gum	Tree	2	0	April - May
<i>Eucalyptus rubida</i>	Candlebark	Tree	2	0	April - May
<i>Eucalyptus ovata</i>	Swamp Gum	Tree	2	0	April - May
<i>Acacia melanoxylon</i>	Blackwood	Shrub	2	2	April - May
<i>Acacia dealbata</i>	Silver Wattle	Shrub	2	2	April - May
<i>Acacia mearnsii</i>	Black Wattle	Shrub	2	2	April - May
<i>Goodenia ovata</i>	Hop Goodenia	Shrub	1	3	April - May
<i>Solanum laciniatum</i>	Large Kangaroo Apple	Shrub	1	3	April - May

Management Plan

88a-90 Wedge St, Kyneton

Scientific Name	Common Name	Plant Type	Number of plants		Timing
			Plant Area 1	Plant Area 2	
<i>Bursaria spinosa</i>	Blackthorn	Shrub	1	3	April - May
<i>Callistemon sieberi</i>	River Bottlebrush	Shrub	1	3	April - May
<i>Banksia spinulosa</i>	Hairpin Banksia	Shrub	1	3	April - May

5.3. Site Maintenance

Table 5-3 Site maintenance tasks

Task	Method	Aim	Timing
Weed control for revegetation areas	Hand weeding should be carried out for all revegetation areas particularly around plants as part of the watering schedule. Spread bark mulch to reduce exotic grasses and herbs re-establishing	Improve the survival rate for the planted vegetation.	- Monthly or fortnightly as part of watering schedule for the maintenance period - Annually for 5 subsequent years
Plant revegetation beds	The riparian zone should be replanted with species detailed in the planting schedule. During summer, the planted areas should be regularly watered. Add additional potting mix (native blend) with plants with native fertiliser.	Improve habitat connectivity, minimise erosion, create habitat for native flora and fauna	- Planting should occur in autumn or early spring.
Watering	Watering for all revegetation areas	Improve the survival rate for the planted vegetation.	- Monthly or fortnightly as part of watering schedule for the maintenance period - Increase to weekly if drought or in the summer months for the maintenance period
Replacement planting	Replace any plants that do not survive during the maintenance period. Select plants from tables 5.1 and	Retain the plant cover and diversity to improve the biodiversity values of Post Office Creek.	- Autumn each year following the planting schedule in this plan.

Management Plan
88a-90 Wedge St, Kyneton

Task	Method	Aim	Timing
	5.2 based on what is surviving and establishing.		

Management Plan

88a-90 Wedge St, Kyneton

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APPENDIX 11 – STORMWATER MANAGEMENT STRATEGY



Our Ref: 13263

**88A-90 WEDGE STREET,
KYNETON**

STORMWATER MANAGEMENT STRATEGY

Prepared by: TOMKINSON

Rev C – FEBRUARY 2023



Our Ref: 13263

P T TOMKINSON & Associates PTY LTD
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B	Revised lot layout	May-2022	Brody Brown	Matthew Elliot	
C	Revised catchment	February-2023	Brody Brown	Matthew Elliot	Alex Reid



Our Ref: 13263

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1 INTRODUCTION

Tomkinson, on behalf of the Jasper Family Trust, has been engaged to prepare a Stormwater Management Strategy for the proposed Development Plan application for a Multi Lot Subdivision at 88A-90 Wedge Street, Kyneton. The Development Plan will also include 88 Wedge Street site, but is not part of the sponsors ownership or the future subdivision application. The subject site is located between Wedge Street, Powlett Street, and Post Office Creek in Kyneton, with street frontage to Wedge Street, Powlett Street, and the current unmade Government Road. The site is approximately 2.50 hectares in area.

Macedon Ranges Council Shire is the responsible authority for the drainage facilities within the development area and the North Central Catchment Management Authority (NCCMA) and GMW is responsible for the management of Post Office Creek. The Stormwater Management Strategy is intended to provide an outline of existing site conditions, the proposed development, and to provide recommendations for the stormwater management requirements for this site. This report aims to identify suitable stormwater quality and quantity mitigation measures for the proposed development conforming to the *Infrastructure Design Manual, Urban Stormwater - Best Practice Environmental Management Guidelines (1991)*, and local authority standards detailed in the Macedon Ranges Planning scheme.



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2 BACKGROUND

2.1 Site & Surrounds

The Subject Site is located on the southern side of the Calder Freeway and to the west of Mollison Street as shown in Figure 1 below. The 88A to 90 Wedge Street site comprises of multiple parcels approximately 2.50 hectares in area and is proposed to be subdivided into 18 lots with a reserved area for stormwater detention and treatment (See attached plan in Appendix A).

The site is typically grassed and contains various tree and vegetation clusters. The topography of the subject site generally falls from north to south towards Post Office Creek.

Post Office Creek flows in a west direction. The site contains one dwelling that is proposed to be removed.

The 88 Wedge Street site is 0.57 hectares and contains a dwelling and outbuildings. Due to the flood and location of the dwelling extents, 30m creek buffer, this site is unlikely to be further subdivided. For the purposes of this Development plan and Stormwater Management Plan report this site is assumed to remain in its existing state.



Figure 1: Locality Plan



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2.2 Planning Zone & Overlays

The subject site is currently zoned Neighborhood Residential (NRZ) and lies within the Macedon Ranges Planning scheme. The site is subject to Land Subject to Inundation Overlay (LSIO) for portions of the land adjacent to Post Office Creek. Refer to Figure 2 below for the extent of the LSIO.

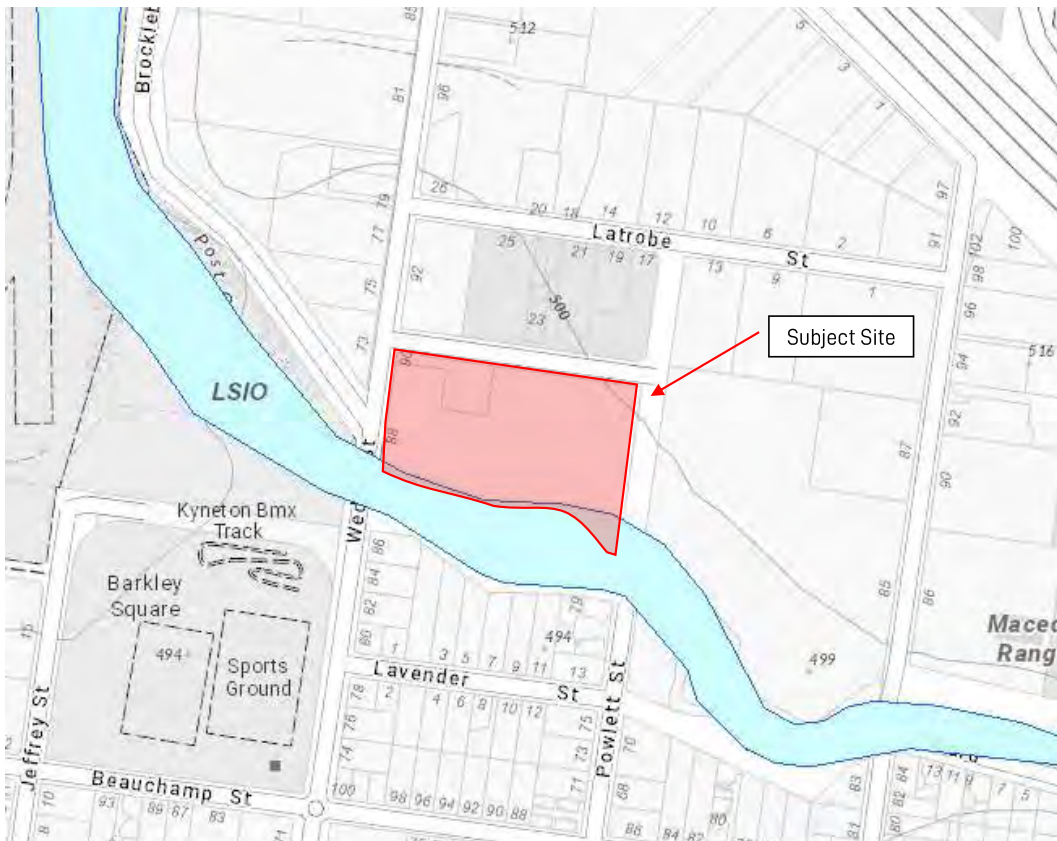


Figure 2: LSIO Extents



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2.3 Past Flood Studies

Using NCCMA's 'Floodeye' tool an indicative flood depth is shown for a 1% AEP event across the subject site. (Figure 3 below). These flood depths will not be assessed in detail as part of this report, rather used as a guideline for the proposed design elements of the subdivision. All proposed lots are clear of this flooding footprint.

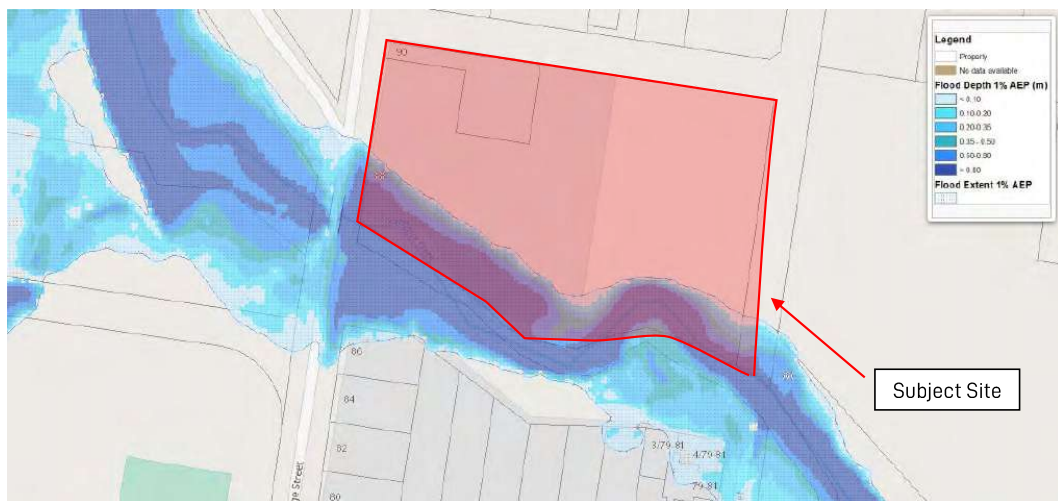


Figure 3: NCCMA 'Floodeye' Map



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3 DESIGN INTENT

The proposal for this site will address the requirements for stormwater quantity and quality management by recommending suitable drainage infrastructure to achieve Stormwater Quality and Quantity objectives. The catchment plan within Appendix A shows the preliminary stormwater layout, swale catchment extents (catchment A and B), overall catchment extents (A, B, and C), and general topography of the catchment.

For the detailed drainage layout, refer to the Preliminary Development Servicing Report, Appendix A provided by Tomkinson.

3.1 Stormwater Management

Underground pipe and pit drainage sized for the 10% AEP storm event will be provided within the development to collect and convey stormwater. This drainage will discharge to the proposed Sedimentation Basin and Raingarden incorporated into a detention basin for WSUD located at the site's southern end. The proposed rain garden will outfall the Post Office Creek to the south via underground drainage.

Overland flows for both internal and external catchments for events exceeding 10% AEP up to 1% AEP will be conveyed via the road network to the South and East of the site and overflow into Post Office Creek.

The sedimentation basin and rain garden will provide appropriate storage to restrict the stormwater generated in 50% AEP storm event to the peak predeveloped flow rate calculated as per Appendix B.

The 88 Wedge Street site currently discharges to Post Office Creek and is proposed to remain unchanged.

3.2 Water Sensitive Urban Design (WSUD)

In combination with stormwater detention, the basin and rain garden will provide stormwater treatment measures to improve stormwater quality and meet the objectives of *Urban Stormwater - Best Practice Environmental Management Guidelines 1997* (BPEM)* reduction measures outlined in Table 1 below.

Pollutant	Percent Reduction
Suspended Solids	80%
Phosphorus	45%
Nitrogen	45%
Gross Pollutants	70%

Table 1: Stormwater Quality Pollution Reduction Standards



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3.3 Flood Management

The south of the site lies within an LSIO, triggering flood management measures to be undertaken to ensure the development does not impede or adversely affect the existing waterway and flood plain. NCCMA requires the waterway to be managed so that future flood flows do not pose risk to proposed and existing properties and ensure safe access is maintained to every property.

To meet NCCMA and GMW guidelines dwellings have an average setback of 30m from the top of the creek bank is proposed for lots with floor heights being nominated above the 1% AEP flood level as required by the authorities to ensure proposed dwellings are constructed above flood level.

The raingarden is proposed to be located in land that is subject to inundation. Appropriate measures have been taken to ensure damage is mitigated during times of inundation. These measures include a stabilised batter to minimize erosion from runoff and vegetated batters to catch gross pollutants.

4 CATCHMENT ANALYSIS

The stormwater catchments considered as part of this assessment include the subject site and part of the Powlett Street Road reserve.

Internally, catchment C will capture the stormwater runoff inside the property and direct towards WSUD elements. The external catchments considered are A and B as the stormwater runoff at these locations will be directed into the property’s drainage infrastructure through the swale drains. The small remaining catchments (D, E, F and G) in the analysis have been considered as uncontrolled. The northern site falls southwest into the proposed table drain and will therefore discharge into the existing Wedge Street network. The majority of the Powlett Street Road reserve catchment will flow into the swale and discharge into either the Post Office Creek or the existing Wedge Street network, as illustrated in the stormwater management plan. However, the 88 Wedge Street property has not been considered in the assessment due to the property being developed and with little opportunity for further development in the future due to the flood extents on the site. The property’s catchment already runs directly into Post Office Creek so will have no change to post development flows.

An estimation for the stormwater flows generated in pre and post-developed site conditions have been undertaken utilising the Rational Method is presented in Table 2 below. The Major / Minor design approach to urban drainage will be followed to design the underground drainage and overland flow paths within the proposed subdivision for the 10% AEP and 1% AEP storm events, respectively.

Total Catchment	Area (ha)	C _{10%}	C _{1%}	T _c (min)	I _{10%} (mm/hr)	I _{1%} (mm/hr)	Q _{10%} (m ³ /s)	Q _{1%} (m ³ /s)
Pre-Developed	1.52	0.30	0.30	21	58.9	101.4	0.075	0.128
Post-Developed								
A	0.18	0.7	0.7	7	103.1	177.5	0.036	0.062
B	0.10	0.7	0.7	7	103.1	177.5	0.020	0.035
C	1.24	0.7	0.7	7	103.1	177.5	0.249	0.428
Total	1.52	0.7	0.7	7	103.1	177.5	0.305	0.525

Table 2: Catchment Flow Calculations for Major / Minor Storm Events

Additional flow calculations have been undertaken for the design of WSUD elements proposed for the Southern end of the site. Table 3 below shows flow calculations for the 4EY (3 month) and the 50% AEP (2 year) under pre and post-developed site conditions.



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Total Catchment	Area (ha)	C	Tc (min)	I _{4EY} (mm/hr)	I _{50%} (mm/hr)	Q _{4EY} (m ³ /s)	Q _{50%} (m ³ /s)
Pre-Developed	1.52	0.30	21	14.9	32	0.019	0.041
Post-Developed							
A	0.18	0.7	7	25.7	56.5	0.009	0.020
B	0.10	0.7	7	25.7	56.5	0.005	0.011
C	1.24	0.7	7	25.7	56.5	0.062	0.136
Total	1.52	0.7	7	25.7	56.5	0.076	0.167

Table 3: Catchment Flow Calculations for WSUD

Runoff Coefficients have been adopted from Section 16.7 of the *Infrastructure Design Manual*. When assessing the pre-developed site conditions a C-Value of 0.3 was adopted. Most proposed lots are between 600m² to 700m² in size, therefore, a C-Value of 0.7 was utilised for post-developed conditions.

Rainfall intensities have been obtained from the BOM website and are relevant to this site. The proposed time of concentration (Tc) has been calculated using a 6-minute lot Tc and flow velocity of 1.0m/s within the piped network.

5 STORMWATER QUALITY & QUANTITY

The proposed stormwater treatment nodes are to be located in the reserve at the southern end of the site. Access to these nodes will be provided by the proposed internal court bowl for future maintenance of this infrastructure.

These structures will cater for stormwater detention and treatment to provide a practical solution that can be easily maintained and integrated into the overall landscaping of the site. The rain garden will outfall to the South via underground drainage to the creek and this will be the Legal Point of Discharge for the development. This outfall point to the creek will be constructed to relevant Authority and NCCMA standards.

5.1 Stormwater Quantity

The objective of the proposed stormwater detention storage within the basin and rain garden is to restrict the post-developed stormwater flows generated from the site to a pre-developed rate. Excess stormwater generated from post-developed site conditions is stored and released at a rate that does not exceed the pre-developed rate for a determined storm event, protecting the downstream stormwater network.

Storage detention will be provided to meet *Water Sensitive Urban Design Guidelines 2009* and *Best Practice Environmental Guidelines* requirement to limit 50% AEP storm flows to be detained to pre-developed levels. Appropriate freeboard will be provided above the 50% AEP storage level to allow for suitable conveyance of storm flows greater than the design storage.

Retardation of greater than 50% AEP is considered unnecessary due to the close proximity to the creek, and the resultant time of concentration of the peak flow (Tc) against the much larger Tc of the Creek. Providing significant site retardation will more likely align peak Tc's. Therefore not providing significant event retardation will separate the two peak flows for an improved outcome.

The outfall will be controlled by an appropriately sized outlet with the end configuration to be determined in a detailed design. In addition to this outlet structure an appropriate overflow system



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will be designed for 10% AEP, 1% AEP and greater storm events for the safe conveyance of these flows to Post Office Creek.

Detention volumes required for the design storm noted above have been estimated using Boyd's Method of OSD. A summary outlining the required stormwater detention volumes for the proposed development is shown in Table 4 below and Appendix B.

Storm Event - AEP (%)	Peak Inflow (L/s)	Peak Outflow (L/s)	S _{max} (m ³)
WSUD Storm - 50%	101	41	68.33

Table 4: Total Catchment 50% AEP Detention Volume Summary

5.2 Stormwater Quality

Water Sensitive Urban Design Guidelines 2009 and *Best Practice Environmental Management Guidelines (BPEM)* set out water quality standards required to be achieved using WSUD treatment elements. The catchment size largely determines the type and size of treatment required to achieve the design objectives.

A combination of Primary and Secondary treatment is proposed in the form of roadside swales, a sedimentation basin, and a bioretention/rain garden system. The treatment train has been designed per BPEM and its effectiveness verified within stormwater quality modeling software MUSIC. (See Appendix C)

Roadside Swales

The roadside swales on the north and eastern road reserves will act as a primary treatment for these catchments. These swales will be grassed to allow for the screening and removal of gross pollutants such as litter and coarse sediment. It will also provide additional benefits through providing some nutrient removal and delaying the stormwater runoff into the system.

Sedimentation Basin

The sedimentation basin will form the first part of the main treatment train and additional primary treatment to the swale catchments. The purpose of the sedimentation basin is to remove larger sediments from the stormwater before Secondary Treatment along with some removal of nutrients. To achieve these objectives a sedimentation basin with a permanent pool area of 75m² and a 0.2m extended detention depth was proposed. The sedimentation basin will be located in the drainage reserve which will be approximately 530m².

Bio-Retention System

The bioretention system will be used as a secondary treatment node within the treatment train to remove dissolved nutrients and fine sediments not removed by the sedimentation basin. Vegetation will be utilised within the bioretention system design to further improve nutrient uptake and provide a landscaping feature integrated into the overall reserve and basin design.

The bioretention system is designed to be vegetated with a filter media area of 25m² and an extended detention depth of 0.2m. The detention requirements for the basin provide substantial room for the bioretention system required and allow for flexibility with the location and shape which is to be determined in detailed design.



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Music Modelling

Internal Catchments

The proposed treatment system has been modeled in MUSIC software to appropriately size the treatment nodes and ensure the design meets BPEM objectives for this site. The pollution reduction is achieved, and the results are shown in Table 7.

Pollutant	Percent Reduction Target	Percent Reduction Achieved
Suspended Solids	80%	89%
Phosphorus	45%	63.5%
Nitrogen	45%	53%
Gross Pollutants	70%	100%

Table 7: Stormwater Quality Pollution Reduction Results – Internal

Both the Water Quality System and Detention System are proposed to be designed as an integrated system, with the sedimentation basin and bioretention system to be constructed within the floor of the detention basin. This approach is commonly used resulting in efficient use of space and a reduction in ongoing maintenance.

The general arrangement of the stormwater detention and treatment system is subject to detailed design and is subject to change. However, the preliminary design solution proposed in this report confirms the minimum requirements for stormwater quality can be achieved with the external catchments being untreated as illustrated in the stormwater management plans.

Internal and External Catchments

The external catchments have been included in a separate MUSIC model to demonstrate that BPEM objectives have largely been achieved for both internal and external catchments by an overcompensation of the internal catchments.

It is recommended that the industrial site to the north provides its own treatment methods in the future to achieve the BPEM objectives.

Pollutant	Percent Reduction Target	Percent Reduction Achieved
Suspended Solids	80%	88.7%
Phosphorus	45%	63.3%
Nitrogen	45%	34.1%
Gross Pollutants	70%	100%

Table 8: Stormwater Quality Pollution Reduction Results – Internal and External



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6 CONSTRUCTION PHASE STORMWATER MANAGEMENT

During the construction phase of the subdivision the primary civil contractor will be required to manage stormwater on site including sediment & erosion control. Prior to starting construction, the contractor is required to prepare a construction environmental management plan for the site to EPA guidelines. Some critical items to be included in the construction management plan are:

- Sedimentation basin is to be excavated early in the development to provide an adequate location to direct flows
- Confining land disturbance to as small an area as possible
- Stabilising finished areas as soon as practicable
- Installing temporary and/or permanent erosion and sediment control facilities on drainage lines from all disturbed areas with the use of silt fences, diversion channels, and hay bales
- Locating stockpiles outside hazard areas including drainage lines
- Catch drains are to be completed at soonest possibility to direct runoff away from construction areas towards swales and basin.
- Isolation and disposal of contaminated water if encountered.

7 CONCLUSION

This Stormwater Management Plan demonstrates that the proposed subdivision can meet the required objectives for stormwater quality and quantity management. Utilising the proposed drainage infrastructure outlined in this report, this system has met the following requirements:

- Best Practice Environment Guidelines through a network of swales and underground drainage conveying flows to a detention basin containing a sedimentation pond and rain garden. These WSUD elements treat the conveyed flows to achieve adequate reduction in pollutants while also detaining the 50% AEP event.
- Macedon Ranges Planning scheme requirements through integrating the proposed system into surrounding networks, ensuring the system discharge rate does not exceed the calculated predevelopment conditions, and identifying land that is to be reserved for drainage system components including nominating the discharge point of the proposed development.

The proposed drainage infrastructure outline in this report is subject to change throughout the detailed design process following the obtainment of a planning permit.



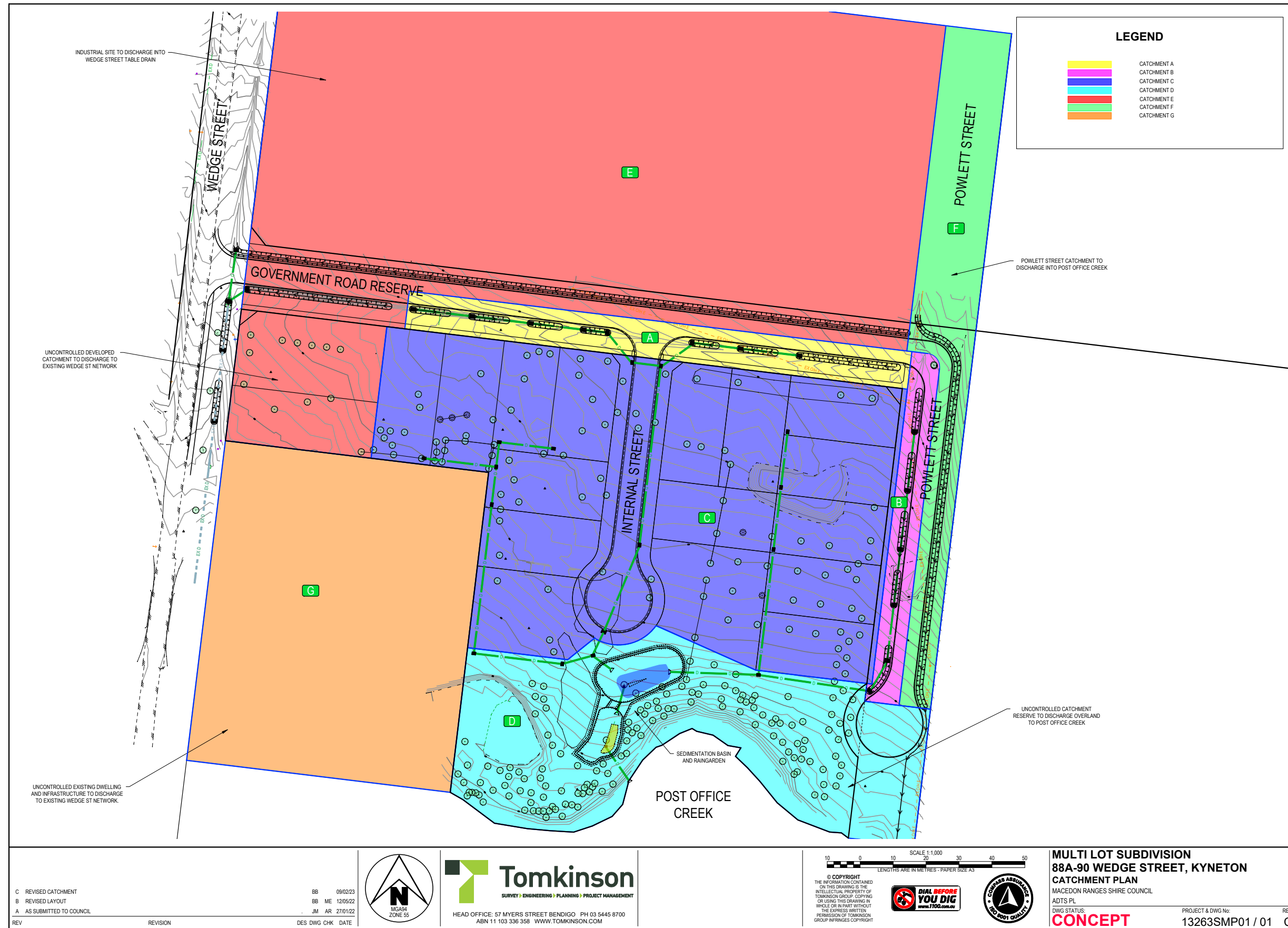
Our Ref: 13263

8 APPENDICIES



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APPENDIX A – CATCHMENT PLAN



DETENTION CALCULATION

BOYDS FORMULA



Date: Nov-21
Project: Wedge St Kyneton
Job Number: 1326301
Address: 88A-90 Wedge Street Kyneton
Prepared By: B Brown

Description: Detention calculation for WSUD treatment

Design AEP	50	%
Catchment Tc	17	min
Manual Outlet Discharge Rate	0.041	m ³ /s
Factor of Safety	1	

Initial Storm Duration	5	min
Storm Increment	1	min

Sub-Catchment Details:

	Runoff		
	Area ha	Coefficient	CA
SC 1:	0.18	0.7	0.126
SC 2:	0.1	0.7	0.07
SC 3:	1.24	0.7	0.868
SC 4:			
Total	1.52	0.7	1.064

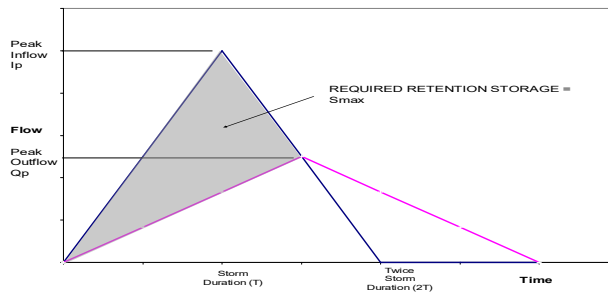
Outlet Calculations:

Orifice Calculation:			
Outlet RL			m
Basin Floor RL			m
Maximum Water Level			m
Discharge Coefficient		0.8	
Outlet Diameter			mm
Peak Discharge		0.000	m ³ /s

Detention Results: Critical Storm Duration

	T _d min	I mm/hr	I _p m ³ /s	Q _p m ³ /s	V ₁ m ³	S _{MAX} m ³
Critical Storm Duration	19	34.01	0.101	0.041	114.60	68.33

Detention Theory: Boyds Method





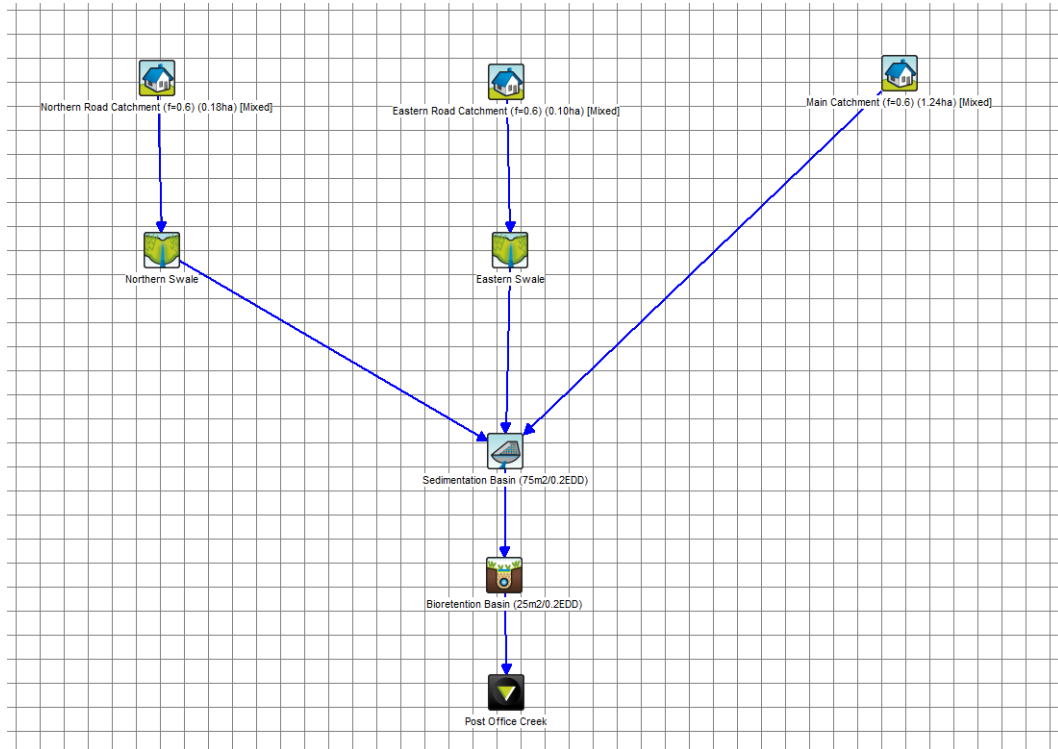
Our Ref: 13263

APPENDIX B – Detention Calculations (Boyd's Method)



Our Ref: 13263

APPENDIX C – MUSIC Model





APPENDIX 12 – TRAFFIC REPORT

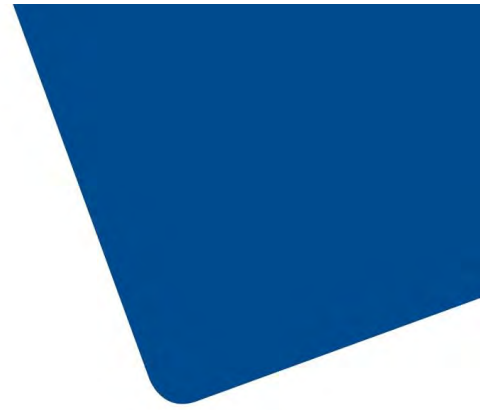


TRAFFIC IMPACT ASSESSMENT

PROPOSED RESIDENTIAL SUBDIVISION

88A & 90 WEDGE STREET, KYNETON

20 JULY 2023



88A & 90 WEDGE STREET, KYNETON
CLIENT: Armstrong Design and Technical Services Pty Ltd

OBT JOB NUMBER: 21768



Suite 2.03, 789 Toorak Road
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5	ASSESSMENT OF THE PROPOSED ROAD NETWORK	7
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1 INTRODUCTION

O'Brien Traffic has been engaged by Armstrong Design and Technical Services Pty Ltd to undertake a traffic impact assessment of a proposed residential subdivision at 88A & 90 Wedge Street, Kyneton.

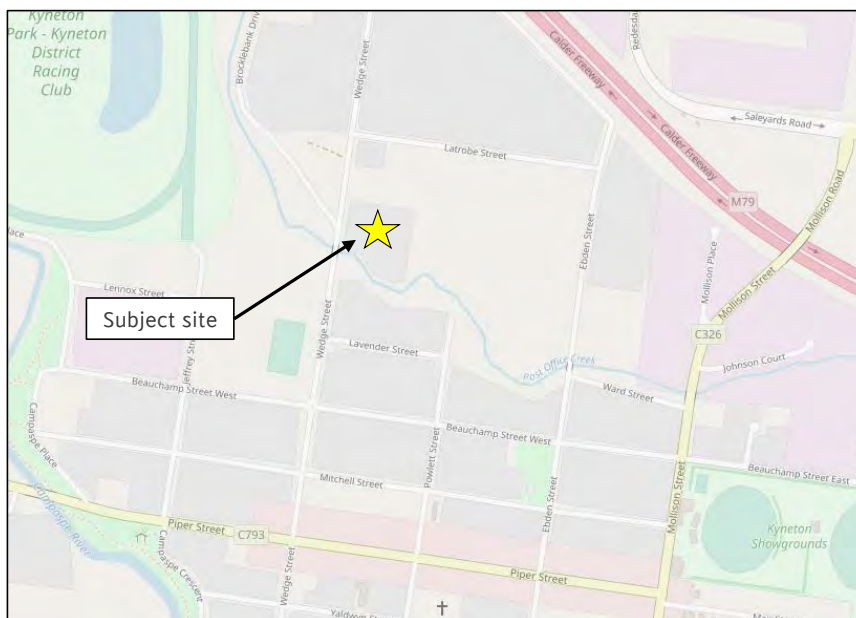
In the course of preparing this report:

- Concept layout plan prepared by Tomkinson Group (Drawing number: 890296CP03 sheet 2, dated 11 September 2018) and other relevant documentation have been examined;
- The subject site and surrounding area have been inspected via aerial photos; and
- The traffic implications of the proposal have been assessed.

2 EXISTING CONDITIONS

2.1 LOCATION AND LAND USE

The subject site is located on the eastern side of Wedge Street, approximately 550 m north of Piper Street. The northern and eastern boundaries of the site are bound by an unnamed road reserve and the Powlett Street road reserve, respectively. Post Office Creek runs along the southern boundary of part of the site. The location of the subject site and surrounding area is shown in **Figure 1**. A recent aerial photograph is shown in **Figure 2**.



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FIGURE 1: LOCATION OF SUBJECT SITE



FIGURE 2: AERIAL PHOTO OF SUBJECT SITE

The site is zoned *Neighbourhood Residential (NRZ)* in the Macedon Ranges Planning Scheme and subject to a Development Plan Overlay (Schedule 17).

The overall site area is approximately 2 hectares. Two buildings (dwelling and a shed) are located in the north western portion of the site, with vehicle access currently provided via a driveway from Wedge Street.

2.2 SURROUNDING LAND USE

The subject site is surrounded by a mixture of residences, businesses and vacant land, including small factories and workshops in the light industrial area along Latrobe Street. A paddock occupies much of the space to the eastern side of the Powlett Street road reserve. To the south of the site is Post Office Creek.

A zoning map of the area is provided in **Figure 3**.

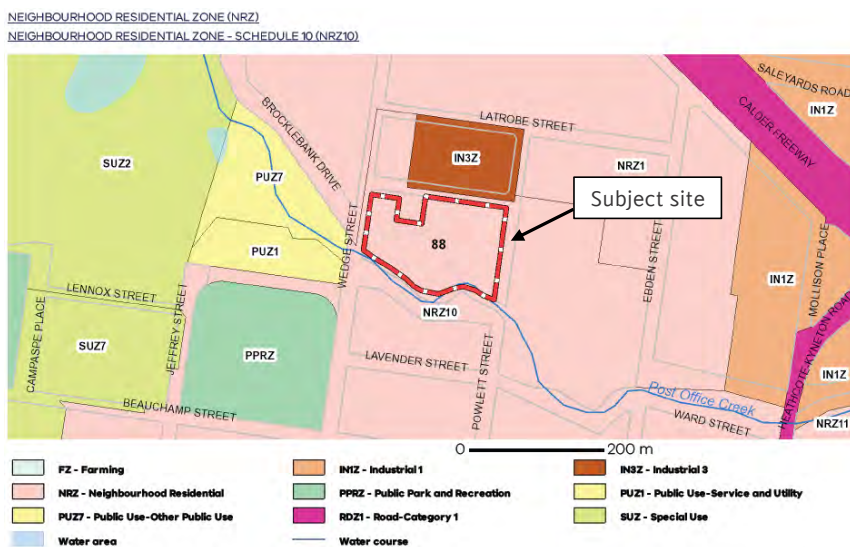


FIGURE 3: ZONING MAP

2.3 ROAD NETWORK

Wedge Street is a local street under the management of Council. It runs in a north-south orientation from Donnithorne Street at its southern end to George Street at its northern end, where it terminates at edge of the Calder Freeway reserve. Adjacent to the subject site, Wedge Street has a pavement width of approximately 5m. South of Post Office Creek, the pavement width increases to approximately 6m. A view of Wedge Street adjacent to the subject site is provided in **Figure 4**.



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FIGURE 4: VIEW OF WEDGE STREET ADJACENT TO SUBJECT SITE, FACING SOUTH

Powlett Street is a local street under the management of Council. It runs parallel to Wedge Street although terminates south of Post Office Creek. North of Post Office Creek, the Powlett Street road reserve continues to Latrobe Street.



Ebden Street is a local street under the management of Council. It also runs in a north-south orientation from south of Piper Street to George Street near the Calder Freeway reserve. In the vicinity of the subject site, Ebden Street has a pavement width of approximately 6.4-6.6m.

All of the streets surrounding the subject site are subject to the default 50 km/h urban speed limit.

2.4 EXISTING TRAFFIC VOLUMES

Existing traffic volumes on Wedge Street past the subject site are not known. However, it is anticipated that the road would carry a two-way volume of less than 500 vehicles per day north of Post Office Creek.

2.5 CASUALTY CRASH HISTORY

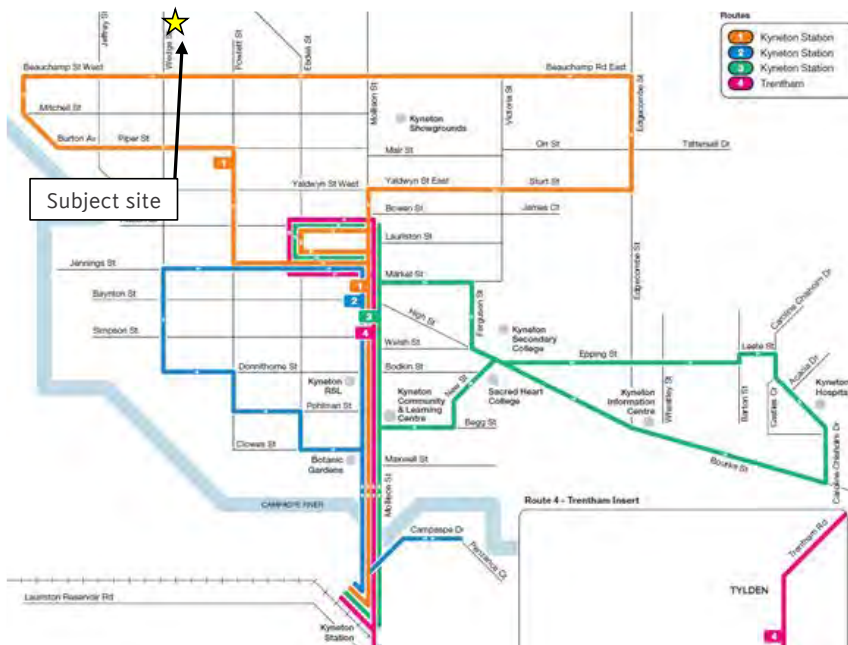
There have been no casualty crashes recorded along any of the streets surrounding the subject site during the last five years of available data (2015-2019).

2.6 PUBLIC TRANSPORT

Kyneton's Route 1 bus operates along Beauchamp Street West, passing within approximately 370 m of the subject site. This route circles the northern portion of Kyneton and then travels south to Kyneton railway station. The route would be accessible to residents of the proposed subdivision by walking along Wedge Street to Beauchamp Street West.

Bus services for Kyneton are shown in **Figure 5**.

Kyneton railway station is located 2.8 km to the south of the subject site, on Mollison Street. V/Line trains run north to Bendigo and south to Melbourne.



SOURCE: PUBLIC TRANSPORT VICTORIA (PTV) WEBSITE

FIGURE 5: PUBLIC TRANSPORT SERVICES

3 THE PROPOSAL

It is proposed to demolish all existing buildings on the subject site and subdivide the land into 18 residential lots with an average lot size of 700 m² plus approximately 4,800 m² of reserve in the southern portion of the subdivision, adjacent to Post Office Creek.

Access to the proposed subdivision would be provided from Wedge Street via:

- a new street (unnamed) along the northern boundary of the site in an existing road reserve, providing access to Lots 3-6, 12 and 13;
- construction of Powlett Street along the eastern boundary of the site, providing access to Lots 14-18; and
- an internal court accessed from the unnamed east-west street, providing access to Lots 7-11 of the residential lots and the reserve.

The proposed subdivision concept plan is provided in **Appendix A**.



4 KYNETON STRUCTURE PLAN

The Kyneton Structure Plan, dated June 2013, sets out the long-term plan to achieve Council’s vision for the township of Kyneton.

The Structure Plan for the precinct is provided in **Figure 6**. The subject site, which is highlighted on the plan, sits within an area earmarked for residential development, which extends north to the boundary of the Calder Freeway reserve.

The Structure Plan shows a pedestrian and bicycle link along Post Office Creek connecting to a trail along the Campaspe River to the west, and to Mollison Street and the Showgrounds to the east. While the Structure Plan does not nominate which side of Post Office Creek the trail would be provided, it would be appropriate to construct the path on the southern side given there is an existing road reserve on that side.



SOURCE: KYNETON STRUCTURE PLAN (JUNE 2013)

FIGURE 6: OVERALL KYNETON STRUCTURE PLAN



5 ASSESSMENT OF THE PROPOSED ROAD NETWORK

5.1 STREET DESIGN

Council's infrastructure construction policy, titled *Engineering Requirements for Infrastructure Construction* (June 2010) lists requirements for street design including carriageway widths and footpath provision. This includes:

- An Access Place (for up to 5 lots) – requires a road reserve width of 16 m and a shared carriageway of 5.5 m.
- An Access Place (6-20 lots) – requires a road reserve width of 18 m, a carriageway width of 6.6 m, and a footpath on one side of the street.
- An Access Street Level 1 (21-50 lots) – requires a road reserve of 20 m, a carriageway width of 6.6 m and footpath on both sides of the street.

The Infrastructure Design Manual (IDM), of which Macedon Ranges is a participating Council, has the following requirements for street design:

- Access Place (0-300 vpd) – road reserve width of 14 m, carriageway width of 6.0 m, footpath both sides.
- Access Street (0-2,500 vpd) – road reserve width of 16.0m, carriageway width of 7.3m, footpath both sides.

Desirably, street design would be consistent with the rural profile characteristics of other streets in the area, noting that the planning zoning encourages preservation of existing streetscape.

Internal Court

The concept subdivision plan indicates that the internal court within the subdivision would have a road reserve width of 16 m, with provision for a court bowl at the southern end. This exceeds the minimum reserve width for an Access Place in the IDM. The court bowl should have a turning radius of 8 m to facilitate vehicles, including emergency and service vehicles, turning around.

Unnamed access street

The existing road reserve along the subdivision's northern boundary appears to have a road reservation width of approximately 20 m. It is understood a carriageway width of 7.3m is proposed (in accordance with the IDM for an Access Street), with flush kerbs in keeping with other rural profiles in the area. A footpath is proposed on one side of the street (i.e. adjacent to the subdivision) which is considered appropriate, particularly given there is no pedestrian access to the light industrial uses on the northern side of the street.

Powlett Street

The existing Powlett Street road reserve also appears to have a road reservation width of approximately 20 m. It is understood a carriageway width of 7.3m is proposed (in accordance with the IDM for an Access Street), with flush kerbs in keeping with other rural profiles in the area. A footpath is proposed on one side of the street (i.e. adjacent to the subdivision) which is considered appropriate, particularly given the land to the



east is currently undeveloped.

At the southern end of Powlett Street, a court bowl with a turning radius of 8 m should be provided to facilitate vehicles, including emergency and service vehicles, turning around.

5.2 PEDESTRIAN & CYCLIST PROVISION

The recommended footpaths above would cater for pedestrian movements. No separate cyclist provision is required for an Access Place as per the IDM or Council’s *Engineering Requirements for Infrastructure Construction*.

5.3 LOCAL AREA TRAFFIC MANAGEMENT

All intersections constructed as part of the subdivision would be T-intersections. This is appropriate from a road safety perspective.

Street lengths are less than 240 m, which is in accordance with Clause 56.06-7 to control traffic speeds.

5.4 EMERGENCY AND SERVICE VEHICLE ACCESS

Country Fire Authority (CFA) requirements for fire truck access are specified in the document *Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones*. The requirements outlined in this guide would be met with the road cross-sections recommended above. This also ensures appropriate access for other emergency and service vehicles.

6 TRAFFIC GENERATION, DISTRIBUTION & IMPACT

6.1 TRAFFIC GENERATION

The proposed subdivision includes 18 residential lots. Each lot is anticipated to generate an average of 10 daily trips per lot. This equates to a total of 180 vehicle trips per day, of which 10% are anticipated to occur in each of the AM and PM peak hours (18 trips in each peak hour).

6.2 TRAFFIC DISTRIBUTION

To determine the peak hour residential traffic distribution, the typical residential splits between entry and exit movements have been adopted, which are:

- AM peak hour: 20% IN and 80% OUT; and
- PM peak hour: 60% IN and 40% OUT.

This equates to a total of 4 residential trips to the subdivision and 14 residential trips from the subdivision in the AM peak, and 11 trips to the subdivision and 7 trips from the subdivision in the PM peak.

As discussed in Section 3, access to the subdivision would be via Wedge Street. Having regard to the road network, it is anticipated that:



- 80% of trips would be to/from Wedge Street south (eg. to/from Kyneton town centre and Calder Freeway via Beauchamp Street);
- 20% would be to/from Wedge Street north (eg. to/from Calder Freeway or Mollison Street north of freeway via Latrobe Street, Ebden Street and Ward Street).

Based on the above, the AM and PM peak hour traffic distribution to/from the proposed subdivision is shown in **Figure 7**.



FIGURE 7: PEAK HOUR TRAFFIC DISTRIBUTION

6.3 TRAFFIC IMPACT

As noted above, all traffic to/from the proposed subdivision would be via Wedge Street. On the basis of the above traffic distribution, an additional 150 vehicles per day (15 vph in the AM and PM peak hours) are anticipated on Wedge Street south of the new unnamed access street, and 40 vehicles per day on Wedge Street north of the unnamed access street (4 vph in the AM and PM peak hours).

6.3.1 Wedge Street

As noted in Section 2.3, Wedge Street has a pavement width of approximately 5 m north of Post Office Creek, widening to approximately 6 m south of Post Office Creek. It is recommended that Wedge Street between Post Office Creek and the new unnamed access street be widened to 6 m to accommodate the additional traffic and be consistent with the carriageway width further south.

Where Wedge Street crosses Post Office Creek, the road width is constrained by the bridge barriers. The pavement width across the bridge is approximately 4.9m, effectively operating as a one-lane bridge.

Given that the constrained situation occurs over a short distance only (approximately 35m), it will have no significant impact on the operation of the road. However, it is recommended that Give Way control be implemented in one direction at the bridge to



formalise priority. A similar arrangement is shown in **Figure 8**. Speed humps could also be provided at each end of the bridge to reduce vehicle speeds, if desired.



FIGURE 8: GIVE WAY ARRANGEMENT AT ONE-LANE BRIDGE – BROUGHAM STREET, ELTHAM

Widening of Wedge Street north of the unnamed access road is not considered necessary as additional traffic would be negligible.

6.3.2 Future development east of Powlett Street

It is understood that the land to the east of the subject site, between the Powlett Street road reserve and Ebden Street, is likely to be subdivided in the future. Based on the area of vacant land, it is likely that a future subdivision would provide approximately 36 residential lots. It is understood that a future subdivision would provide east-west connectivity between Powlett Street and Ebden Street.

Based on a 36 lot subdivision, up to 360 vehicle trips per day could be expected to be generated. Vehicle trips would likely be split between Ebden Street and Wedge Street (via Powlett Street). Assuming 80% of vehicles use Ebden Street and 20% use Wedge Street to access the subdivision, there would be an additional 288 vpd on Ebden Street (29 vph in each of the AM and PM peak hours) and 72 vpd on Wedge Street (7 vph in the AM and PM peak hours).

It is noted that Council’s Road Register categorises Ebden Street as Category 1 – a Sealed Link road, suitable for carrying high traffic volumes (>2000 vpd). Wedge Street is a Category 3 – Sealed Access road with a typical ADT of 500-1000 vpd. With the additional traffic generated by the two subdivisions, traffic volumes on Wedge Street and Ebden Street would fall comfortably within these traffic volume ranges.

Therefore, there would be no need for an additional road connection over Post Office Creek at Powlett Street. That is, there would be no need to connect the new section of Powlett Street (constructed as part of the proposed subdivision at 88 Wedge Street) to Powlett Street south of the creek.

It is noted that Map 1 of Schedule 17 to the Development Plan Overlay shows a road connection of Powlett Street north to Latrobe Street. Such a road connection would



serve little or no benefit to the proposed development or future development east of Powlett Street. With east-west connectivity between Wedge Street and Ebdon Street, traffic from these developments is anticipated to distribute directly to Wedge Street or Powlett Street. Negligible traffic associated with the developments would use a connection of Powlett Street to Latrobe Street.

6.3.3 Summary

The proposed street network would accommodate the additional traffic volumes generated by the proposed subdivision at 88A & 90 Wedge Street, and potential future subdivision east of Powlett Street, subject to widening of Wedge Street between the new unnamed access street and Post Office Creek.

7 CONCLUSION

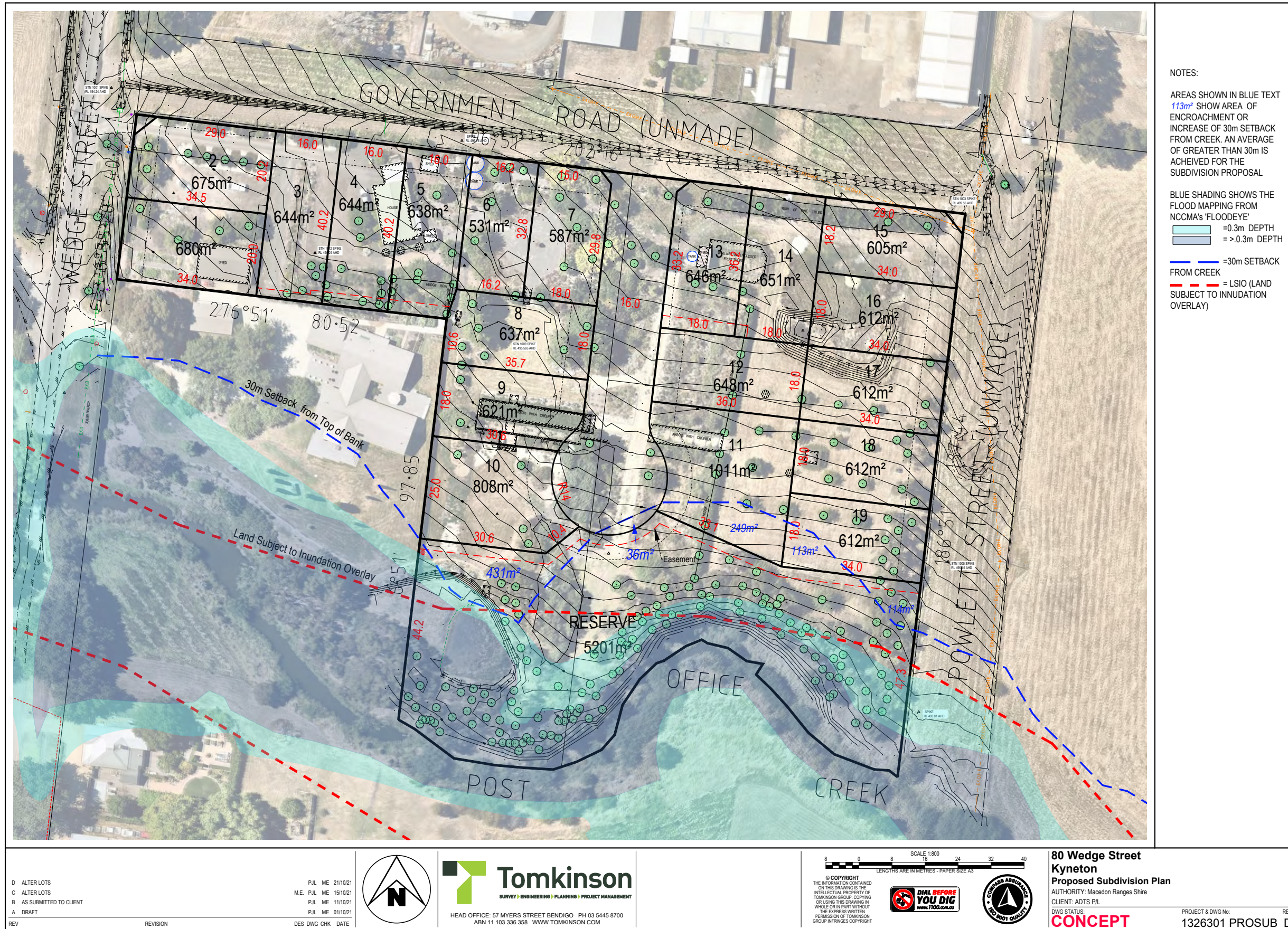
Based on the investigations made during the preparation of this report, we are of the opinion that:

- The proposed residential subdivision is in accordance with the Kyneton Structure Plan;
- The existing/proposed street network would accommodate the additional traffic generated by the proposed subdivision at 88 Wedge Street, and potential future subdivision east of Powlett Street, subject to widening of Wedge Street between the new unnamed access street and Post Office Creek.
- The proposed new streets can be designed appropriately in accordance with the IDM and/or Councils *Engineering Requirements for Infrastructure Construction*.

Therefore, we see no traffic related grounds to prevent the proposed development from proceeding.



SUBDIVISION CONCEPT PLAN



NOTES:

AREAS SHOWN IN BLUE TEXT 113m² SHOW AREA OF ENCROACHMENT OR INCREASE OF 30m SETBACK FROM CREEK. AN AVERAGE OF GREATER THAN 30m IS ACHIEVED FOR THE SUBDIVISION PROPOSAL

BLUE SHADING SHOWS THE FLOOD MAPPING FROM NCCMA'S 'FLOOD EYE'

Light Blue = 0.3m DEPTH
 Dark Blue = >0.3m DEPTH

Blue dashed line = 30m SETBACK FROM CREEK
 Red dashed line = LSI/O (LAND SUBJECT TO INUNDATION OVERLAY)

NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPDATED. IT IS THE RESPONSIBILITY OF THE USER TO CONSIDER THAT THIS IS A CURRENT COPY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS.
 PLOT DATE: 24/10/2021 FILE: C:\DTP\UNCONTROLLED\1326301\1326301 PROSUB.DWG

D ALTER LOTS	P.J.L ME 21/10/21
C ALTER LOTS	M.E. P.J.L ME 15/10/21
B AS SUBMITTED TO CLIENT	P.J.L ME 11/10/21
A DRAFT	P.J.L ME 01/10/21
REV	DES DWG CHK DATE

N

Tomkinson
SURVEY • ENGINEERING • PLANNING • PROJECT MANAGEMENT

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SCALE 1:800
LENGTHS ARE IN METRES - PAPER SIZE A3

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80 Wedge Street Kyneton
 Proposed Subdivision Plan
 AUTHORITY: Macedon Ranges Shire
 CLIENT: ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301 PROSUB D



APPENDIX 13 – ACOUSTIC REPORT



HEAR DATA PTY LTD ABN 39 006 317 924 Trading as

AUDIOMETRIC & ACOUSTIC SERVICES

Telephone: (03) 9817 5517

28 Hilda Street, Balwyn, Victoria, 3103

Facsimile: (03) 9817 5411

Email: noiseconsult@bigpond.com

20th November 2021

Report No. 21076.2

Title: Acoustic assessment and report for a proposed development at 88A-90 Wedge Street, Kyneton, Victoria regarding possible external noise intrusion from nearby industry.

Brief: Investigate existing noise levels at 88-90 Wedge Street, Kyneton Victoria from surrounding industry, and provide recommendations for suitable construction to achieve design criteria if required for the development known as 88A-90 Wedge Street, Kyneton, Victoria.

Client: Armstrong Design and Technical Services Pty Ltd
22 Clowes Street
Kyneton
VIC 3444

Contact: Katie Xiao
Tomkinson Group
10/33-35 Macedon Street
Sunbury
VIC 3429

Executive Summary

Audiometric and Acoustic Services (A&AS) has been commissioned by Armstrong Design and Technical Services Pty Ltd to investigate existing noise levels from surrounding industry at a proposed residential development proposed for 88A-90 Wedge Street, Kyneton, Victoria.

The incidence of noise from local industry is low and is easily attenuated with standard construction assemblies providing they are installed as per Section 6 for dwellings directly adjacent to the industrial area to the north of the project site.

The key upgrades for dwellings directly adjacent to the industrial area as per Figure 3 are as follows:

Acoustic Upgrades for Dwellings Directly Adjacent to Pratts Park Road

System	Acoustic Engineering Measures
External Walls	<p>External walls must be standard brick veneer construction with an air cavity, 10 mm plasterboard lining and R1.5 insulation within the 90 mm studwork. Although the minimum attenuation values (R_w) are low, lightweight construction is unlikely to have sufficient surface density to attenuate any noise in the lower to mid frequencies such as compressors located in the industrial area.</p> <p>Therefore, any lightweight sections must achieve $R_w > 31$ for habitable rooms and be located on the northern side of the proposed dwellings that face the industry to the north.</p> <p>Ensuites should receive the same acoustic treatment as bedrooms.</p>
Roof / Ceiling Assemblies	<p>Standard metal deck or tiled roofing with insulation of min R2.5 fibrous with internal lining of standard 10 mm plasterboard will be adequate to meet the requirements for all rooms however installers should also ensure the fibrous insulation extends fully into any eaves to reduce any noise ingress.</p>
Ventilation	<p>To meet attenuation requirements, all doors and windows would theoretically have to remain closed, so cooling systems such as an evaporative cooler is not suited to noise exposed houses.</p> <p>A split system air conditioner would be suited, if required. Note that these installations must comply with the EPA's Environmental Protection Regulations 2021 (State of Victoria, 2021).</p> <p>A forced mechanical ventilation system is not necessary.</p> <p>Any Whirly Birds should not be situated over any of the bedrooms.</p>

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1 Introduction

Audiometric and Acoustic Services (A&AS) has been commissioned by Armstrong Design and Technical Services Pty Ltd to investigate existing noise levels from surrounding industry at a proposed residential development located at 88-90 Wedge Street, Kyneton Victoria.

The development is understood to be for single storey, free standing, class 1 dwellings.

Directly adjacent to the north of the site lies existing light industry.

It is understood that an acoustic report is required to assess the feasibility of the proposed subdivision and development with respect to the amenity of future residents.

The approach taken is to measure the effective noise level on site by use of noise logging equipment and apply the Standard; AS2107 :2016 Acoustics - Recommended design sound levels and reverberation times for building interiors for calculation of bedrooms and living spaces.

The Standard sets recommended internal noise level criteria and is commonly used to assess proposed internal noise level of habitable rooms where sites are affected by external noise.

This methodology also generally conforms with the Better Apartment Design Standards (DELWP 2016) and Clause 55.07-6 of the Victorian Planning Scheme regarding noise impacts for apartments.

As the above VPP only applies to apartments and similarly VPP Clause 55.04-8 applies for noise impact objectives for townhouses and unit dwellings – it is recommended that the application of AS2107 is suitable for the proposed free standing single dwellings and more conservative than the VPP when designing for dwellings near minor roads.

The noise sources to be included in the assessment therefore include the following:

- Light industry assessed as an L_{Aeq} as per 'AS2107 – 2016 Acoustics - Recommended design sound levels and reverberation times for building interiors' (Standards Australia, 2016).

This report presents the measured noise levels affecting the project site and provides recommended construction for example dwellings to meet internal acoustic design criteria for proposed residential dwellings.

A glossary of the acoustic terminology used in this report is presented in Appendix A.

1.1 Reference Documentation

The Report is based on the following reference documentation:

Table 1 Reference Documentation

Document	Author	Issue
Email: To: info@noiseconsult.com.au Subject: [#TG13263] Request for Fee - 88 Wedge Street, Kyneton	Katie Xiao	4 May 2021

2 Site Description

The project site is located at 88-90 Wedge Street, Kyneton Victoria as shown below in Figure 1 Light industry is located to the north of the project site.

The proposed development will be known as 88A-90 Wedge Street, Kyneton, Victoria. It is understood the existing dwelling presented in Figure 1 will remain as 88 Wedge Street, Kyneton Victoria.

The topography in the immediate area of the site and nearby area is relatively flat with a slight fall from the northeast to the southwest.

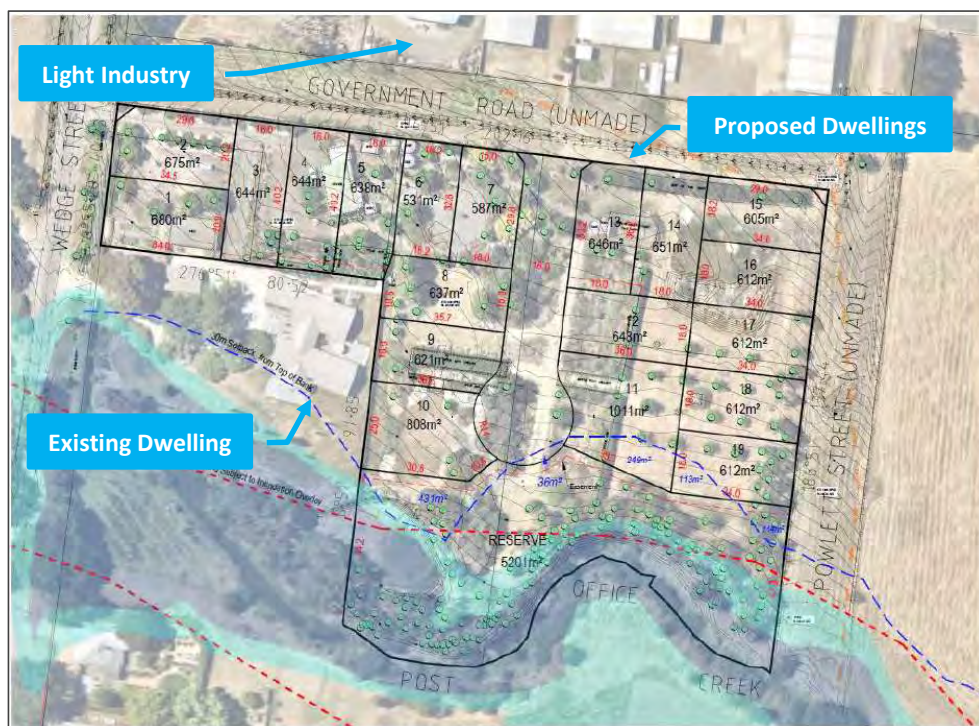


Figure 1 Location of Proposed Dwellings (Image Source: Tomkinson 2021)

The noise levels received on site are observed to be generally of intermittent traffic, wildlife and some low-level noise from compressors and condensers from the light industry to the north.

3 Design Criteria

The following design criteria are applied to the site regarding external noise intrusion.

3.1 Noise from Industry

'AS2107 – 2016 Acoustics - Recommended design sound levels and reverberation times for building interiors' (Standards Australia, 2016) provides guidance on internal noise levels and reverberation times for different types of spaces.

The methodology provided is relevant to the development in respect of noise intrusion from external sources.

The external façade of the proposed residential dwellings must attenuate external noise levels to within the recommended design sound levels specified in AS2107 for habitable rooms.

Table 2 AS2107 – 2016 Design Sound Levels for Houses and Apartments in Suburban Areas Near Minor Roads

Activity	Design Sound Level ($L_{Aeq,t}$) range (dB(A))	
Living Areas	30	40
Sleeping areas (night-time)	30	35
Work Areas	35	40

Note AS2107 does not specify sound levels for wet areas such as laundries and bathrooms. Therefore, these have not been calculated.

4 Existing Noise Levels

Audiometric and Acoustic Services undertook environmental noise logging from Monday, 28 June 2021 until Monday, 5 July 2021 to establish effective noise levels that would be received at the project site.

Noise loggers were placed at two positions as per Figure 2 along the northern perimeter of the project site in order to measure long term noise levels from existing noise sources that would be received at the facade of the proposed dwellings.

The loggers were not within 2 m of an acoustically reflective surface and therefore require a facade adjustment of +2.5 dB as per AS 1055 - 2018 Acoustics - Description and measurement of environmental noise. The raw data is presented in the subsections below.

Weather was cool with minimal wind during the measurement periods however the evening of Friday, 2 July 2021 has been omitted due to intermittent adverse weather increasing the L_{Aeq} measurements.



Figure 2 Location of Noise Loggers

4.1 Noise Levels Received at Proposed Facade

Table 3 presents the noise levels measured from the logging device at 15 min intervals located at the north-eastern boundary.

Table 3 Noise Levels from Logging Device at MP1

Date	Average L _{Aeq} (16hour) (dB)	Average L _{Aeq} (8hour) (dB)	Night Period 95 th Percentile L _{Amax} (dB)
Monday, 28 June 2021	-	46	63
Tuesday, 29 June 2021	49	44	61
Wednesday, 30 June 2021	51	43	76
Thursday, 1 July 2021	49	44	69
Friday, 2 July 2021	52	43	71
Saturday, 3 July 2021	50	44	74
Sunday, 4 July 2021	50	39	56
Average	50	43	69
Façade Adjustment	+2.5	+2.5	+2.5
Total	53	46	71

Table 4 presents the noise levels measured from the logging device at 15 min intervals located at the northern boundary. Note the battery on the logger located at the middle northern boundary went flat at approximately 1:15 pm on Saturday afternoon 3rd July 2021.

Table 4 Noise Levels from Logging Device at MP2

Date	Average L _{Aeq} (16hour) (dB)	Average L _{Aeq} (8hour) (dB)	Night Period 95 th Percentile L _{Amax} (dB)
Monday, 28 June 2021		46	67
Tuesday, 29 June 2021	49	44	62
Wednesday, 30 June 2021	50	42	64
Thursday, 1 July 2021	49	43	64
Friday, 2 July 2021	51	40	59
Saturday, 3 July 2021	49	-	-
Sunday, 4 July 2021	-	-	-
Average	50	42	65
Façade Adjustment	+2.5	+2.5	+2.5
Total	52	45	67

4.1.1 Effective Noise Levels

The effective noise level at the proposed facade for the most affected dwellings on the northern side of the development has been calculated to be $L_{Aeq} = 53$ dB(A) for the day period and $L_{Aeq} = 46$ for the night period.

Extraction of this data indicates that the prevailing noise level affecting the proposed dwellings is from distant traffic noise most likely from the Calder Freeway and from a compressor or condenser located within the industrial zone at the north.

The compressor was noted to be audible whilst on site and recorded as audio as part of the noise logging. The compressor was measured as an $L_{Aeq} = 45$ dB at MP2.

The minimum 15 min background for the day, evening, and night periods at MP2 was measured as an $L_{A90} = 41, 43$ and 36 dB respectively.

It is surmised that while the compressor is audible above the background sound level and is understood to run at any time during a 24 hr period. It is likely compliant with the relevant EPA Regulations at the proposed dwellings. Regardless the agent of change is the proposed dwellings and therefore should be designed to attenuate any industry noise.

Dwellings at greater distance from the industrial area will be less affected and shielded by the dwellings adjacent to the industrial area.

5 Nominated Standard Construction Details

The following construction is assumed for the proposed dwellings at the project site.

5.1 External Wall Construction

External wall construction is understood to be the following:

Standard brick veneer construction with an air cavity, 10 mm plasterboard lining and R1.5 insulation within the 90 mm studwork.

5.2 Roofing

The roof construction is taken to be metal deck roofing with insulation taken to be of min R2.5 fibrous with internal lining of standard 10 mm plasterboard to the ceiling.

5.3 Glazing

Minimum glazing is taken to be 4 mm single glazing in aluminium frames. This is conservatively estimated to have an $R_w > 27$.

It is acknowledged that double glazing is more likely to be used due to its thermal qualities and requirements of an energy star rating however single glazing is assumed as a conservative approach.

5.4 Doors

To provide a comparable sound insulation to the glazing specified.

5.5 Ventilation

To be designed so as to not de-rate the overall performance of the building façade. Refer section 6.3 of this report.

6 Recommendations to Attenuate Noise from Traffic and Local Light Industry

The building components used in this situation must attenuate the external noise from local light industry to achieve the indoor design noise levels.

Typical rooms including one bedroom with 3 exposed sides and a large living / kitchen / dining area with 2 exposed sides is calculated for confirmation.

Table 5 Typical Rooms

Room	Construction Item	R _w Rating	Standard Construction
Bed 1	Roof / Ceiling	26	OK
	Glazing	19	OK
	External Walls	27	OK
Bed 2	Roof / Ceiling	24	OK
	Glazing	17	OK
	External Walls	22	OK
Bed 3	Roof / Ceiling	27	OK
	Glazing	20	OK
	External Walls	31	OK
Study	Roof / Ceiling	28	OK
	Glazing	24	OK
	External Walls	29	OK
Family, Meals, Kitchen	Roof / Ceiling	28	OK
	Glazing	23	OK
	External Walls	24	OK

Mitigation measures based on typical room sizes and area of glazing for the dwellings directly adjacent to the industrial area as per Figure 3 are required as per the following subsections.

The lots to be burdened include lots 2, 3, 4, 5, 6, 7, 13, 14, and 15 inclusive.

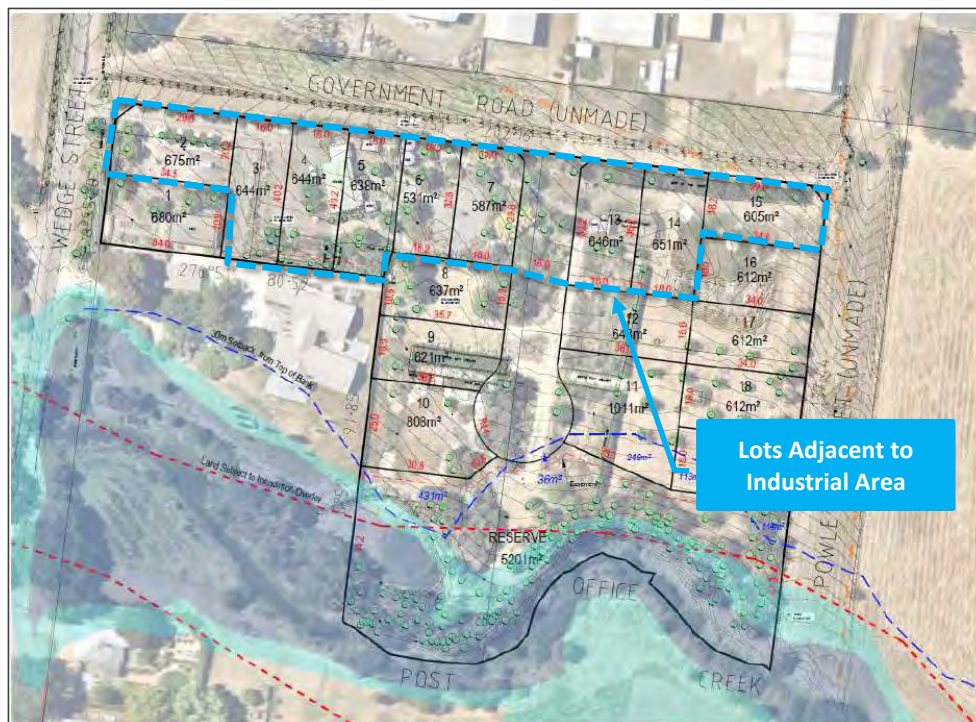


Figure 3 Lots Requiring Treatment for Noise (Image Source: Tomkinson Group)

6.1 External Walls

External walls must be standard brick veneer construction with an air cavity, 10 mm plasterboard lining and R1.5 insulation within the 90 mm studwork.

Although the minimum attenuation values (R_w) are low, lightweight construction is unlikely to have sufficient surface density to attenuate any noise in the lower to mid frequencies such as compressors located in the industrial area.

Therefore, any lightweight sections must achieve $R_w > 31$ for habitable rooms and be located on the southern side of the proposed dwellings that face the light industry to the north.

Ensuites should receive the same acoustic treatment as bedrooms.

6.2 Roof and Ceiling

Standard metal deck or tiled roofing with insulation of min R2.5 fibrous with internal lining of standard 10mm plasterboard will be adequate to meet the requirements for all rooms however installers should also ensure the fibrous insulation extends fully into any eaves.

6.3 Ventilation

To meet attenuation requirements, all doors and windows would theoretically have to remain closed, so cooling systems such as an evaporative cooler is not suited to noise exposed houses.

A split system air conditioner would be suited, if required. Note that these installations must comply with the EPA's Environmental Protection Regulations 2021 (State of Victoria, 2021).

A forced mechanical ventilation system is not necessary.

Any Whirly Birds should not be situated over any of the bedrooms.

7 Summary

Audiometric and Acoustic Services (A&AS) has been commissioned by Armstrong Design and Technical Services Pty Ltd to investigate existing noise levels from surrounding light industry at a proposed residential development known as 88A-90 Wedge Street, Kyneton, Victoria.

The incidence of noise from local light industry is low and is easily attenuated with standard construction assemblies providing they are installed as per Section 6 for dwellings directly adjacent to the industrial area to the north of the project site.

Please feel free to contact us should any additional detail be required. This applies to any parties that have legitimate access to this report.

Respectfully



Scott Henderson

Senior Acoustic Consultant

BEnv, DipDes M.A.A.S

Proofread: Richard Unkles M.A.A.S.

8 References

Standards Australia. (2016). AS/NZS 2107:2016 Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors.

State of Victoria. (2021). Environmental Protection Regulations S.R. No. 47/2021. Victoria, Australia: EPA.

Appendix A Definitions of Terminology

Sound Pressure Level:

The root-mean-square values of the pressure fluctuations above and below atmospheric pressure caused by the passage of a sound wave, usually expressed in deci Bels (re 20 µ Pa)

decibel: Unit usually used to define sound pressure level relative to a reference pressure.

$$dB = 20 \log_{10} \left(\frac{P}{P_{ref}} \right)$$

(A): Reference to particular weighting network within a Sound Level Meter which modifies the linear response. 'A' weighting is designed to approximate the response of the human ear.

R_w Weighted Sound Reduction Index. A single figure rating of the acoustic attenuation of materials either singly or as multiples.

L₉₀ The noise level exceeded for 90% of a measurement period. Commonly accepted as the natural Background Noise Level.

L_{eq} Equivalent Continuous Sound Level. This is calculated on the basis of average of the Sound Pressure Level (acoustic energy) over a period of time and is expressed in deci Bels.

L_{Aeq} The 'A' weighted Equivalent Continuous Sound Level.

L_{Aeq(8hr)} The LAeq for the night period between 10 pm and 6 am.

L_{Aeq(16hr)} The LAeq for the day period between 6 am and 10 pm.

L_{Amax} The root-mean-square (rms) maximum sound pressure level measured with sound level meter using the 'A' frequency weighting and the 'F' (Fast) time weighting. Often used for noise assessments other than aircraft.

Fast - F: Dynamic characteristic - time averaging constant is 125m sec.

Appendix B Instrumentation

Equipment Used

Convergence	Sound Sentry NSRT MK3 Type 1 Serial No. CltWr%04W1+1AjPwy+BRvD
NTI XL2-TA	Device Info: XL2, Serial No. A2A-16630-E0, FW4.21 Type Approved Mic Type: NTi Audio M2230, Serial No. 8481 NATA Laboratory calibration due 5 th September 2021
Quest	CA-22 Acoustic Calibrator Serial No. J..1060008 NATA Laboratory calibration due 6 December 2021

The instruments were check calibrated before and after the measurements. No significant change was found to have occurred.



APPENDIX 14 - ARBORICULTURAL ASSESSMENT



Arboricultural Report

Assessment of Trees at 88A-90 Wedge Street, Kyneton

Report Details

Client:	Tomkinson Group 12/99-101 Western Avenue, Westmeadows 3049
Intended Audience:	Macedon Ranges Shire Council Others as required by Tomkinson
Subject site details:	88A-90 Wedge Street, Kyneton
Date of assessment	Wednesday, 7 July 2021
Date of report:	Friday, 3 June 2022
Planning permit details:	
Council details:	Macedon Ranges Shire Council
Zone and relevant overlays:	Neighbourhood Residential Zone (NRZ) Development Plan Overlay (DPO) Environmental Audit Overlay (EAO) Environmental Significance Overlay (ESO)
Relevant Standards:	AS 4970:2009- Protection of Trees on Development Sites AS 4373:2007 - Pruning of Amenity Trees AS 4687:2007 - Temporary Fencing and Hoardings
Plans, maps or other construction information:	Subdivision Plans - Tomkinson Group, (dwg No: 1326301 Export)
Other relevant Arborist, Ecology or Development Impact Reports:	
Axiom Tree Management Job Number:	10671
Prepared By:	<i>Tim Cameron - Consulting Arborist/Director</i> Email: timcameron@axiomtrees.com Qualifications: -Graduate Certificate Arboriculture -Diploma Horticulture (Arboriculture) – AQF Level 5 and/or <i>Aaron Monro - Consulting Arborist</i> Email: aaronm@axiomtrees.com Qualifications: Diploma Arboriculture – AQF Level 5
Reviewed By:	<i>Robyn Cameron – Axiom Tree Management Administration Co-ordinator</i>
Axiom Tree Management Business Information	Axiom Tree Management Pty Ltd (Office Address) Office 2/ 8 Sauer Rd, New Gisborne VIC 3438 (Postal Address) 48 Montgomerys Lane, Woodend 3442 Ph: 0428 896 951 ABN: 11 612 205 099

Axiom Tree Management Pty Ltd
ABN: 11 612 205 099

Arboricultural Report
88A-90 Wedge Street, Kyneton



Summary

Axiom Tree Management Pty Ltd has been engaged by Tomkinson Group to provide a report on trees at 88A-90 Wedge Street, Kyneton. A Preliminary Arborist report has been requested as part of the proposed development to assist with planning.

The subject site is a large residential property in the rural town of Kyneton. The site is relatively flat and covers approximately 1.97 hectares and is bordered on the south by the Post Office Creek. The site contains a single storey weatherboard dwelling, outbuildings, and water tanks. The site contains extensively managed gardens with large numbers of young and semi-mature specimens planted as individuals and groups.

One hundred and twenty-five trees (125) were assessed on and directly adjoining the subject site that may be impacted by future development. The trees have been planted as tube stock in rows and groups and are not subject to Clause 52.17 of the planning scheme.

- The health of most of the trees is 'Good'.
 - The trees are growing close to a water course which provide favourable growing conditions with deep sub surface soil and few limitations to root growth and water movement. The trees are also relatively young and managed in a garden context with modern horticultural techniques used to improve the health of the trees.
- The structure of most of the trees is 'Good'.
 - The trees are exhibiting form typical of planted specimens throughout the Macedon Ranges area being well adapted to local conditions. The trees are growing as groups, rows and individuals with corrective pruning carried out on trees from an early age to improve structure.
- ULE is an estimation of how long a tree can provide amenity in the landscape at an acceptable level of risk.
 - Most of the trees have been assigned a long ULE of greater than 20 years (Table 2). Most of the trees are relatively young long-lived specimens that are growing in favourable soil conditions and have the potential to live for many decades and centuries.

Four retention values have been considered, consisting of 'High', 'Medium', 'Low' and 'Third party'.

- No trees (0) have been assigned High retention value
- Seventy-four trees (74) have been assigned 'Medium' retention value
- Forty-eight trees (48) have been assigned 'Low' retention value
- Three trees (3) have been assessed within the adjoining neighbouring properties

It is proposed to subdivide the site into eighteen (18) residential lots including construction of internal roads, drainage, services. Land adjoining the creek is proposed to set aside as public open space as part of the design.

Seventy-nine (79) trees and groups of trees all within the subject site are proposed to be removed. Forty-six (46) trees and groups of trees within the creek reserve and nature strip are to be retained and protected throughout construction works.

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88A-90 Wedge Street, Kyneton



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Disclaimer: This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Axiom Tree Management and the client. This includes the information contained in the report, maps, photos and any other documentation. The scope of services was defined in consultation with the client, by time and budgetary constraints, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information.

Arboricultural Report
88A-90 Wedge Street, Kyneton



1 Introduction

Axiom Tree Management Pty Ltd has been engaged by Tomkinson Group to provide a report on trees at 88A-90 Wedge Street, Kyneton. A Preliminary Arborist report has been requested as part of the proposed development to assist with planning.

A concept plan has been provided by Tomkinson Group and has been used to locate and assess trees (Job Ref: 890296CP03 Rev B, Date: 11/09/2018).

The site is in a Neighbourhood Residential Zone (NRZ), located within Macedon Ranges Shire Council. The relevant overlays that may restrict the removal or pruning of trees include:

- Neighbourhood Residential Zone (NRZ)
- Development Plan Overlay (DPO)
- Environmental Audit Overlay (EAO)
- Environmental Significance Overlay (ESO)

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.

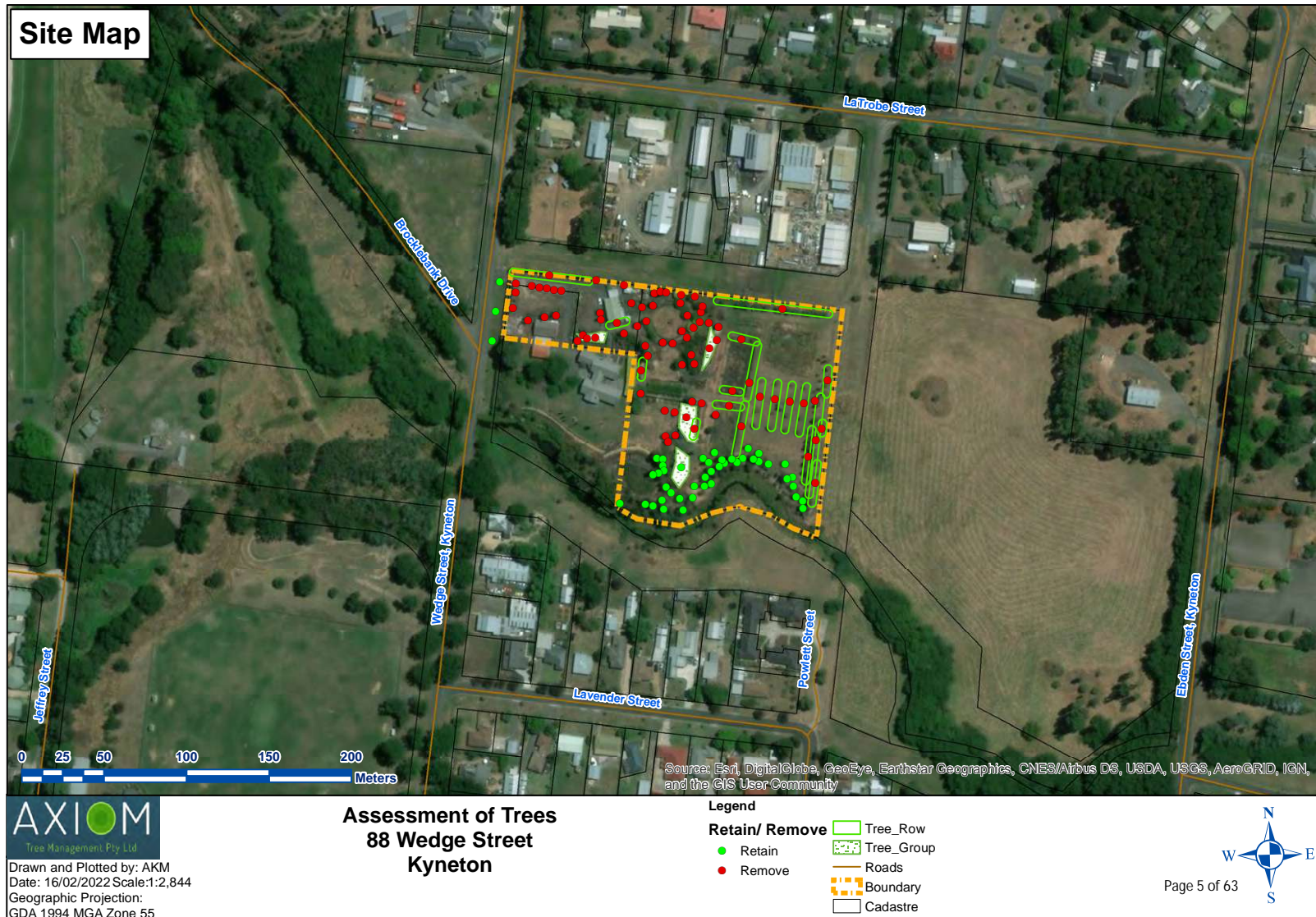
2.1 Site Methodology

On Wednesday, 7 July 2021, Aaron Monro conducted a site inspection. 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.



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88A-90 Wedge Street, Kyneton



3 Observations/Discussions

3.1 Subject Site

The subject site is a large residential property in the rural town of Kyneton. The site is relatively flat and covers approximately 1.97 hectares and is bordered on the south by the Post Office Creek. The site contains a single storey weatherboard dwelling, outbuildings, and water tanks. The site contains extensively managed gardens with large numbers of young and semi-mature specimens planted as individuals and groups (Figure 1 & Figure 2).



Figure 1. Subject site looking east showing planted rows of eucalyptus trees and planted exotics



Figure 2. Subject site looking south showing population of planted indigenous trees along Post Office Creek

Arboricultural Report
88A-90 Wedge Street, Kyneton



3.2 Trees Details

3.2.1 Species Composition

One hundred and twenty-five trees (125) were assessed on and directly adjoining the subject site that may be impacted by future development. Most of the trees are *Eucalyptus viminalis*, *Eucalyptus ovata* and *Quercus palustris* (Table 1). The trees have been planted as tube stock in rows and groups and are not subject to Clause 52.17 of the planning scheme.

- *Eucalyptus viminalis* is a tall forest tree, usually single stemmed with smooth cream, grey and white bark. It is indigenous to much of Victoria, particularly sites with high rainfall and the eastern half of Tasmania (Nicolle, 2006).
- *Eucalyptus ovata* (Swamp Gum) is a small too tall woodland to forest tree to 25m tall. It has loose fibrous bark on the lower trunk then smooth upper stems and branches. It exists widely in the wetter parts of Victoria and Tasmania (Nicolle,2006).
- *Quercus palustris* is a broadly conical deciduous tree originating from North America (Spencer, 1997). Widely planted as an avenue and park tree the species can reach a height of 25m at maturity.

Table 1. Species composition

Botanical Name	Common Name	Origin	Count
<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	24
<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	9
<i>Quercus palustris</i>	Pin Oak	Exotic	8
<i>Pyrus calleryana</i>	Callery Pear	Exotic	8
<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	7
<i>Acer rubrum</i>	Red Maple	Exotic	6
<i>Malus domestica</i>	Apple	Exotic	6
<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	5
<i>Juglans regia</i>	Walnut	Exotic	4
<i>Gleditsia triacanthos</i>	Honey Locust	Exotic	3
<i>Betula pendula</i>	Silver Birch	Exotic	3
<i>Buddleja davidii</i>	Butterfly Bush	Exotic	3
<i>Eucalyptus sideroxylon</i>	Red Ironbark	Native	3
<i>Fraxinus excelsior</i> 'Aurea'	Golden Ash	Exotic	3
<i>Ulmus parvifolia</i>	Chinese Elm	Exotic	3
<i>Quercus canariensis</i>	Algerian Oak	Exotic	3
Other			27
Total			125

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 taking into account the time of year and typical form of the species. The trees are growing close to a water course which provide favourable growing conditions with deep sub surface soil and few limitations to root growth and water movement. The trees are also relatively young and managed in a garden context with modern horticultural techniques used to improve the health of the trees.

3.2.3 Structure

The structure of most of the trees is 'Good' (Table 2). The trees are exhibiting form typical of planted specimens throughout the Macedon Ranges area being well adapted to local conditions. The trees are growing as groups, rows and individuals with corrective pruning carried out on trees from an early age to improve structure.

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88A-90 Wedge Street, Kyneton



Table 2. Health, Structure and ULE ratings

Health/Structure Range	Health Count	Structure Count	ULE ratings	ULE
Good	111	64	0-5 years	4
Fair	12	57	5-10 years	1
Poor	0	2	10-20 years	16
Very poor/Dead	2	2	20+ years	104
Total	125	125	Total	125

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 have been assigned a long ULE of greater than 20 years (Table 2). Most of the trees are relatively young long-lived specimens that are growing in favourable soil conditions and have the potential to live for many decades and centuries.

3.3 Tree Retention

Four retention values have been considered, consisting of ‘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
High	0
Medium	74
Low	48
Third Party	3
Total	125

3.3.1 High Retention

No trees (0) have been assigned High retention value. 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. Most of the trees are young and semi-mature and have not reached the size or age to be assigned ‘High’ retention value.

3.3.2 Medium Retention

Seventy-four trees (74) have been assigned ‘Medium’ retention value. 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.

3.3.3 Low Retention

Forty-eight trees (48) have been assigned ‘Low’ retention value. 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).

3.3.4 Third Party Trees

Three trees (3) have been assessed within the adjoining neighbouring properties. 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.

Arboricultural Report
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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 3

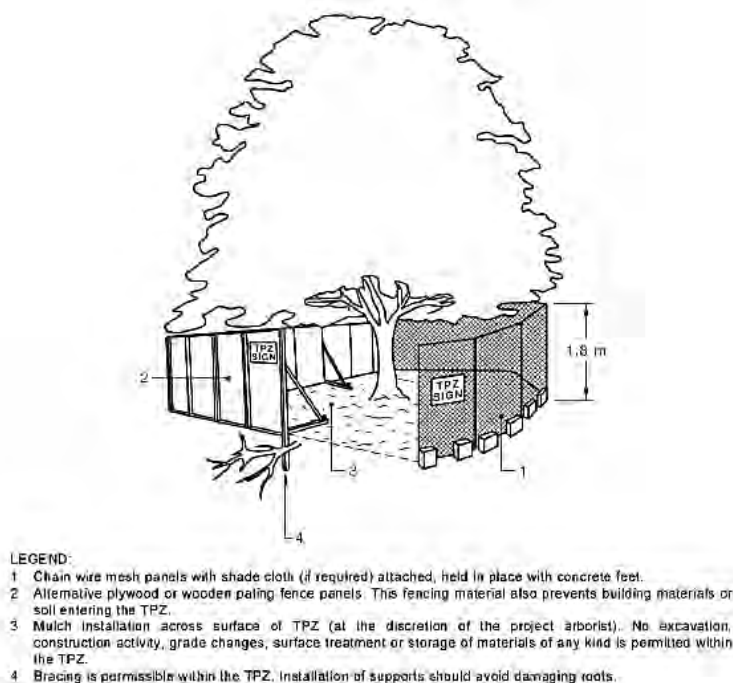


Figure 3. Tree Protection

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 4 & Figure 5). Variations must be made by the project arborist considering other relevant factors including tree health, vigour, stability, species sensitivity and soil characteristics.

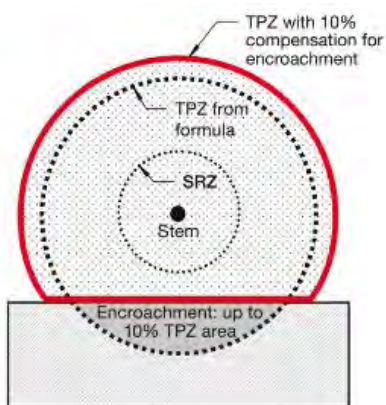


Figure 4 Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

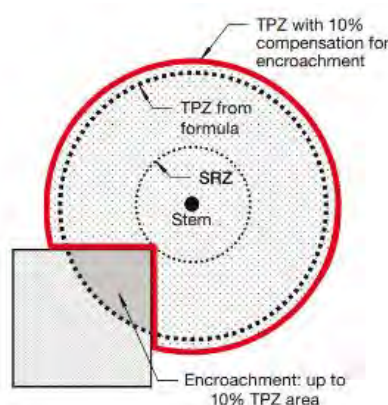


Figure 5 Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

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 Design Proposal and Construction Impact

It is proposed to subdivide the site into eighteen (18) residential lots including construction of internal roads, drainage, services. Land adjoining the creek is proposed to set aside as public open space as part of the design. Seventy-nine (79) trees and groups of trees all within the subject site are proposed to be removed. Forty-six (46) trees and groups of trees within the creek reserve and nature strip are to be retained and protected throughout construction works.

Arboricultural Report
88A-90 Wedge Street, Kyneton



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.

Footpath Construction within TPZ's

Construction of the 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 100mm 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.

Landscaping within TPZ Areas

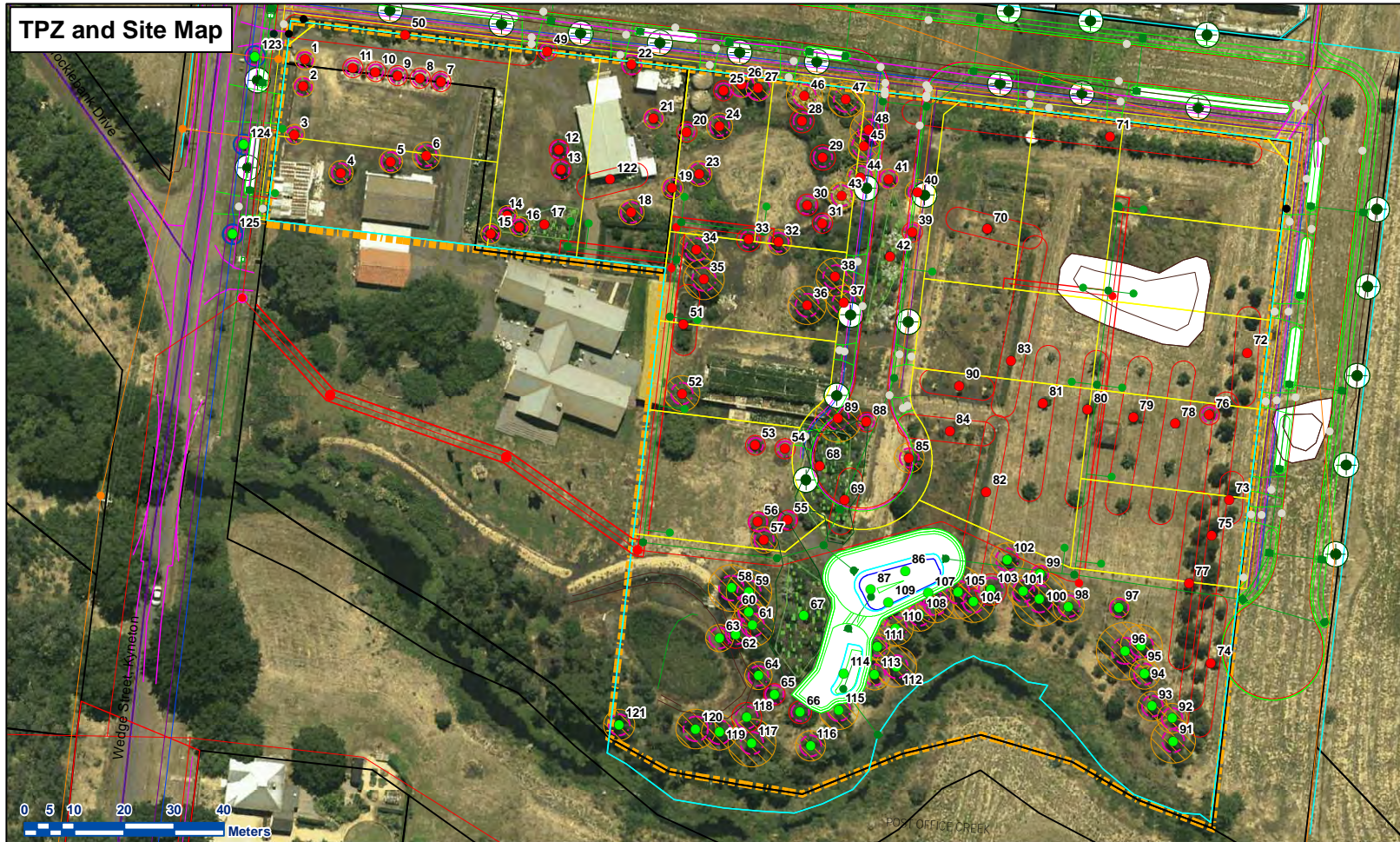
Unspecified landscaping may be required for within TPZ and SRZ areas. The following specifications are to be adhered to during landscaping operations:

- 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.

Pruning

Pruning works may be required for clearance where footpath and areas of congregation are proposed within the creek reserve. Qualified arborists should carry out all pruning works.

- The minimum qualification should be Certificate in Arboriculture AQF Level 3.
- All pruning should conform to the Australian Standard Pruning of Amenity Trees (AS 4373-2007).



Drawn and Plotted by: AKM
 Date: 3/06/2022 Scale: 1:994
 Geographic Projection:
 GDA 1994 MGA Zone 55

**Assessment of Trees
 88A-90 Wedge Street
 Kyneton**

Legend

- | | | |
|----------|---------------|--------------|
| ● Remove | ▨ Medium | ▭ Cadastre |
| ● Retain | ▭ Low | ▭ Boundary |
| ▭ SRZ | ▭ Third party | ▭ Tree_Group |
| | | ▭ Roads |



Arboricultural Report
88A-90 Wedge Street, Kyneton



4 Conclusion and Recommendations

Axiom Tree Management Pty Ltd has been engaged by Tomkinson Group to provide a report on trees at 88A-90 Wedge Street, Kyneton. A Preliminary Arborist report has been requested as part of the proposed development to assist with planning.

The subject site is a large residential property in the rural town of Kyneton. The site is relatively flat and covers approximately 1.97 hectares and is bordered on the south by the Post Office Creek. The site contains a single storey weatherboard dwelling, outbuildings, and water tanks. The site contains extensively managed gardens with large numbers of young and semi-mature specimens planted as individuals and groups.

One hundred and twenty-five trees (125) were assessed on and directly adjoining the subject site that may be impacted by future development. The trees have been planted as tube stock in rows and groups and are not subject to Clause 52.17 of the planning scheme.

- The health of most of the trees is 'Good'.
 - The trees are growing close to a water course which provide favourable growing conditions with deep sub surface soil and few limitations to root growth and water movement. The trees are also relatively young and managed in a garden context with modern horticultural techniques used to improve the health of the trees.
- The structure of most of the trees is 'Good'.
 - The trees are exhibiting form typical of planted specimens throughout the Macedon Ranges area being well adapted to local conditions. The trees are growing as groups, rows and individuals with corrective pruning carried out on trees from an early age to improve structure.
- ULE is an estimation of how long a tree can provide amenity in the landscape at an acceptable level of risk.
 - Most of the trees have been assigned a long ULE of greater than 20 years (Table 2). Most of the trees are relatively young long-lived specimens that are growing in favourable soil conditions and have the potential to live for many decades and centuries.

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Seventy-nine (79) trees and groups of trees all within the subject site are proposed to be removed. Forty-six (46) trees and groups of trees within the creek reserve and nature strip are to be retained and protected throughout construction works.

5 References

AS 4373, 2007, *Australian Standard, Pruning Amenity Trees*, 2nd Edition Standards Australia

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

Arboricultural Report
88A-90 Wedge Street, Kyneton



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.

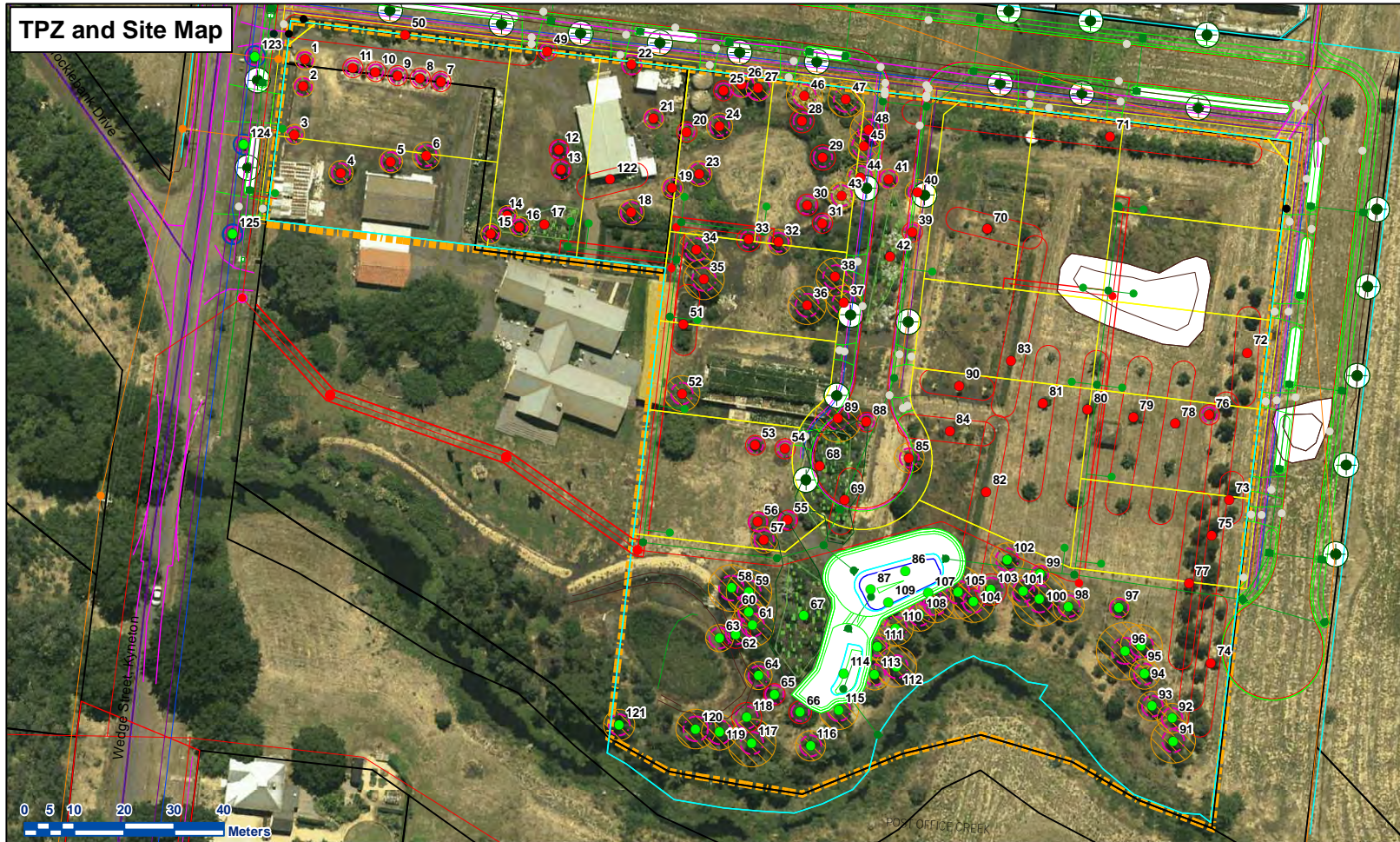
Arboricultural Report
88A-90 Wedge Street, Kyneton



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.



Drawn and Plotted by: AKM
 Date: 3/06/2022 Scale: 1:994
 Geographic Projection:
 GDA 1994 MGA Zone 55

**Assessment of Trees
 88A-90 Wedge Street
 Kyneton**

Legend

- | | | |
|----------|---------------|--------------|
| ● Remove | ▨ Medium | ▭ Cadastre |
| ● Retain | ▭ Low | ▭ Boundary |
| ▭ SRZ | ▭ Third party | ▭ Tree_Group |
| | | ▭ Roads |



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6.1 Individual Tree Details Spreadsheet

ID	Botanical Name	Common Name	Origin	Age	Subject to 52.17	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Retain/Remove
1	<i>Gleditsia triacanthos</i>	Honey Locust	Exotic	S mature	No	6m x 4m	15	Good	Fair	20+ years	Medium	2	1.57	Remove
2	<i>Gleditsia triacanthos</i>	Honey Locust	Exotic	S mature	No	6m x 4m	16	Good	Fair	20+ years	Medium	2	1.68	Remove
3	<i>Gleditsia triacanthos</i>	Honey Locust	Exotic	S mature	No	6m x 4m	11	Good	Fair	20+ years	Medium	2	1.50	Remove
4	<i>Ulmus parvifolia</i>	Chinese Elm	Exotic	S mature	No	5m x 5m	20	Good	Good	20+ years	Medium	2.4	1.82	Remove
5	<i>Ulmus parvifolia</i>	Chinese Elm	Exotic	S mature	No	5m x 6m	19	Good	Good	20+ years	Medium	2.28	1.85	Remove
6	<i>Ulmus parvifolia</i>	Chinese Elm	Exotic	S mature	No	7m x 6m	23	Good	Good	20+ years	Medium	2.76	2.05	Remove
7	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	4m x 1m	7	Good	Good	20+ years	Low	2	1.50	Remove
8	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	4m x 1m	7	Good	Good	20+ years	Low	2	1.50	Remove
9	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	4m x 1m	7	Good	Good	20+ years	Low	2	1.50	Remove
10	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	4m x 1m	6	Good	Good	20+ years	Low	2	1.50	Remove
11	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	4m x 1m	6	Good	Good	20+ years	Low	2	1.50	Remove
12	<i>Prunus cerasifera</i>	Cherry Plum	Exotic	S mature	No	6m x 5m	16	Good	Fair	10-20 years	Low	2	1.68	Remove
13	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	6m x 5m	9	Fair	Very poor	1-5 years	Low	2	1.65	Remove
14	<i>Acer rubrum</i>	Red Maple	Exotic	S mature	No	5m x 3m	13	Good	Good	20+ years	Medium	2	1.53	Remove
15	<i>Betula pendula</i>	Silver Birch	Exotic	S mature	No	7m x 2m	10	Good	Good	20+ years	Medium	2	1.50	Remove
16	<i>Betula pendula</i>	Silver Birch	Exotic	S mature	No	7m x 2m	10	Good	Good	20+ years	Medium	2	1.50	Remove
17	<i>Betula pendula</i>	Silver Birch	Exotic	Young	No	3m x 1m	3	Good	Fair	20+ years	Low	2	1.50	Remove
18	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	11m x 4m	21	Good	Good	20+ years	Medium	2.52	2.05	Remove
19	<i>Pyrus ussuriensis</i>	Manchurian Pear	Exotic	S mature	No	6m x 6m	18	Good	Fair	20+ years	Medium	2.16	1.72	Remove
20	<i>Platanus Xacerifolia</i>	London Plane	Exotic	Young	No	4m x 1m	4	Good	Fair	20+ years	Low	2	1.50	Remove
21	<i>Platanus Xacerifolia</i>	London Plane	Exotic	S mature	No	6m x 4m	13	Good	Fair	20+ years	Medium	2	1.75	Remove
22	<i>Buddleja davidii</i>	Butterfly Bush	Exotic	S mature	No	4m x 4m	10	Good	Fair	10-20 years	Low	2	1.94	Remove
23	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	11m x 5m	21	Good	Fair	20+ years	Medium	2.52	2.05	Remove
24	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	7m x 5m	22	Good	Fair	20+ years	Medium	2.64	1.94	Remove
25	<i>Fraxinus excelsior 'Aurea'</i>	Golden Ash	Exotic	S mature	No	5m x 3m	7	Good	Good	20+ years	Low	2	1.53	Remove
26	<i>Populus nigra 'Italica'</i>	Lombardy Poplar	Exotic	S mature	No	11m x 2m	21	Good	Fair	20+ years	Medium	2.52	2.39	Remove
27	<i>Populus nigra 'Italica'</i>	Lombardy Poplar	Exotic	S mature	No	10m x 2m	21	Good	Fair	20+ years	Medium	2.52	2.34	Remove
28	<i>Malus domestica</i>	Apple	Exotic	S mature	No	5m x 6m	20	Good	Fair	20+ years	Low	2.4	1.75	Remove
29	<i>Malus domestica</i>	Apple	Exotic	S mature	No	5m x 6m	21	Good	Fair	20+ years	Low	2.52	1.88	Remove
30	<i>Cedrus deodara</i>	Deodar Cedar	Exotic	S mature	No	6m x 3m	18	Good	Fair	20+ years	Low	2.16	1.79	Remove
31	<i>Prunus cerasifera 'Nigra'</i>	Purple Cherry Plum	Exotic	S mature	No	5m x 2m	9	Good	Fair	10-20 years	Low	2	1.50	Remove
32	<i>Malus ioensis 'Plena'</i>	Prairie Crabapple	Exotic	S mature	No	4m x 3m	21	Good	Good	20+ years	Medium	2.52	1.91	Remove
33	<i>Malus ioensis 'Plena'</i>	Prairie Crabapple	Exotic	S mature	No	3m x 3m	20	Good	Good	20+ years	Low	2.4	1.68	Remove

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ID	Botanical Name	Common Name	Origin	Age	Subject to 52.17	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Retain/Remove
34	<i>Platanus orientalis</i> 'Digitata'	Cut-leaf Plane	Exotic	S mature	No	12m x 6m	31	Good	Good	20+ years	Medium	3.72	2.28	Remove
35	<i>Platanus orientalis</i> 'Digitata'	Cut-leaf Plane	Exotic	S mature	No	12m x 6m	34	Good	Good	20+ years	Medium	4.08	2.34	Remove
36	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	12m x 6m	32	Good	Good	20+ years	Medium	3.84	2.34	Remove
37	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	12m x 6m	29	Good	Good	20+ years	Medium	3.48	2.28	Remove
38	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	12m x 6m	32	Good	Good	20+ years	Medium	3.84	2.37	Remove
39	<i>Cedrus deodara</i>	Deodar Cedar	Exotic	S mature	No	4m x 1m	9	Good	Good	20+ years	Low	2	1.50	Remove
40	<i>Fraxinus oxycarpa</i>	Desert Ash	Exotic	S mature	No	7m x 5m	21	Good	Good	20+ years	Medium	2.52	1.82	Remove
41	<i>Eucalyptus pauciflora</i>	Snow Gum	Indigenous	S mature	No	6m x 3m	16	Good	Fair	20+ years	Medium	2	1.72	Remove
42	<i>Fraxinus oxycarpa</i>	Desert Ash	Exotic	Young	No	3m x 1m	7	Fair	Fair	10-20 years	Low	2	1.50	Remove
43	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	5m x 4m	22	Good	Fair	20+ years	Medium	2.64	2.05	Remove
44	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	5m x 4m	23	Good	Fair	20+ years	Medium	2.76	2.30	Remove
45	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	8m x 5m	26	Good	Fair	20+ years	Medium	3.12	2.32	Remove
46	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	5m x 6m	30	Good	Fair	20+ years	Medium	3.6	2.30	Remove
47	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	8m x 5m	30	Good	Fair	20+ years	Medium	3.6	2.43	Remove
48	<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	S mature	No	7m x 4m	31	Good	Fair	20+ years	Medium	3.72	2.10	Remove
49	<i>Buddleja davidii</i>	Butterfly Bush	Exotic	S mature	No	3m x 3m	10	Good	Good	10-20 years	Low	2	1.50	Remove
50	<i>Buddleja davidii</i>	Butterfly Bush	Exotic	S mature	No	2m x 2m	3	Fair	Fair	10-20 years	Low	2	1.50	Remove
51	<i>Malus domestica</i>	Apple	Exotic	S mature	No	3m x 2m	12	Fair	Fair	10-20 years	Low	2	1.53	Remove
52	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	6m x 8m	30	Fair	Fair	10-20 years	Medium	3.6	2.15	Remove
53	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	3m x 2m	10	Fair	Poor	5-10 years	Low	2	1.50	Remove
54	<i>Pyrus calleryana</i>	Callery Pear	Exotic	Young	No	2m x 2m	3	Fair	Fair	10-20 years	Low	2	1.50	Remove
55	<i>xCupressocyparis leylandii</i>	Leyland Cypress	Exotic	S mature	No	5m x 3m	14	Good	Fair	10-20 years	Low	2	1.75	Remove
56	<i>Eucalyptus leucoxylon</i>	Yellow Gum	Indigenous	S mature	No	5m x 4m	16	Very Poor	Fair	1-5 years	Low	2	1.82	Remove
57	<i>Eucalyptus leucoxylon</i>	Yellow Gum	Indigenous	S mature	No	5m x 5m	22	Good	Fair	20+ years	Medium	2.64	1.94	Remove
58	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 5m	39	Good	Good	20+ years	Medium	4.68	2.49	Retain
59	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 6m	38	Good	Good	20+ years	Medium	4.56	2.34	Retain
60	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 2m	24	Good	Fair	20+ years	Medium	2.88	2.10	Retain
61	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 5m	36	Good	Fair	20+ years	Medium	4.32	2.30	Retain
62	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 3m	24	Dead	Poor	0 years	Low	2.88	2.05	Retain
63	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	9m x 4m	23	Good	Good	20+ years	Medium	2.76	2.05	Retain
64	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	9m x 4m	23	Good	Fair	10-20 years	Medium	2.76	1.97	Retain
65	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	5m x 3m	18	Good	Fair	10-20 years	Low	2.16	1.82	Retain
66	<i>Malus domestica</i>	Apple	Exotic	S mature	No	5m x 5m	19	Good	Fair	10-20 years	Low	2.28	1.79	Retain

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ID	Botanical Name	Common Name	Origin	Age	Subject to 52.17	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Retain/Remove
67	<i>Acacia melanoxylon</i>	Blackwood	Indigenous	Young	No	4m x 2m	9	Good	Fair	20+ years	Low	2	1.50	Retain
68	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	5m x 2m	10	Good	Good	20+ years	Low	2	1.50	Remove
69	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	4m x 2m	9	Good	Good	20+ years	Low	2	1.50	Remove
70	<i>Pyrus ussuriensis</i>	Manchurian Pear	Exotic	S mature	No	3m x 2m	11	Good	Good	20+ years	Low	2	1.50	Remove
71	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	S mature	No	6m x 3m	16	Good	Good	20+ years	Low	2	1.68	Remove
72	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	6m x 2m	21	Good	Good	20+ years	Medium	2.52	1.94	Remove
73	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	6m x 2m	20	Good	Good	20+ years	Medium	2.4	1.91	Remove
74	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	6m x 2m	14	Good	Fair	20+ years	Medium	2	1.65	Remove
75	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	6m x 2m	22	Good	Good	20+ years	Medium	2.64	2.00	Remove
76	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	4m x 2m	10	Fair	Good	10-20 years	Low	2	1.50	Remove
77	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	6m x 2m	22	Good	Good	20+ years	Medium	2.64	2.00	Remove
78	<i>Juglans regia</i>	Walnut	Exotic	S mature	No	4m x 2m	11	Good	Good	20+ years	Low	2	1.50	Remove
79	<i>Juglans regia</i>	Walnut	Exotic	S mature	No	4m x 2m	11	Good	Good	20+ years	Low	2	1.50	Remove
80	<i>Juglans regia</i>	Walnut	Exotic	S mature	No	4m x 2m	11	Good	Good	20+ years	Low	2	1.50	Remove
81	<i>Juglans regia</i>	Walnut	Exotic	S mature	No	4m x 2m	11	Good	Good	20+ years	Low	2	1.50	Remove
82	<i>Carpinus betulus</i>	Hornbeam	Exotic	S mature	No	2m x 1m	5	Fair	Fair	20+ years	Low	2	1.50	Remove
83	<i>Carpinus betulus</i>	Hornbeam	Exotic	S mature	No	2m x 1m	5	Fair	Fair	20+ years	Low	2	1.50	Remove
84	<i>Malus domestica</i>	Apple	Exotic	Young	No	3m x 2m	6	Good	Good	20+ years	Low	2	1.50	Remove
85	<i>Pyrus calleryana</i>	Callery Pear	Exotic	S mature	No	6m x 5m	25	Good	Fair	10-20 years	Medium	3	1.91	Remove
86	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	12m x 6m	22	Good	Good	20+ years	Medium	2.64	1.97	Retain
87	<i>Fraxinus excelsior 'Aurea'</i>	Golden Ash	Exotic	S mature	No	5m x 3m	13	Good	Good	20+ years	Low	2	1.53	Retain
88	<i>Pinus radiata</i>	Monterey Pine	Exotic	Young	No	3m x 1m	7	Good	Good	20+ years	Low	2	1.50	Remove
89	<i>Pyrus calleryana</i>	Callery Pear	Exotic	Mature	No	0m x 5m	39	Good	Fair	20+ years	Medium	4.68	2.20	Remove
90	<i>Malus domestica</i>	Apple	Exotic	Young	No	3m x 1m	7	Good	Fair	20+ years	Low	2	1.50	Remove
91	<i>Eucalyptus sideroxylon</i>	Red Ironbark	Native	S mature	No	10m x 4m	37	Good	Fair	20+ years	Medium	4.44	2.20	Retain
92	<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	S mature	No	10m x 3m	25	Good	Fair	20+ years	Medium	3	2.05	Retain
93	<i>Eucalyptus sideroxylon</i>	Red Ironbark	Native	S mature	No	10m x 3m	25	Good	Good	20+ years	Medium	3	2.08	Retain
94	<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	S mature	No	10m x 3m	25	Good	Good	20+ years	Medium	3	2.10	Retain
95	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	10m x 3m	35	Fair	Fair	20+ years	Medium	4.2	2.30	Retain
96	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	12m x 6m	48	Good	Fair	20+ years	Medium	5.76	2.63	Retain
97	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	6m x 3m	16	Good	Good	20+ years	Medium	2	1.82	Retain
98	<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	S mature	No	10m x 4m	26	Good	Good	20+ years	Medium	3.12	2.13	Retain
99	<i>Quercus palustris</i>	Pin Oak	Exotic	S mature	No	6m x 3m	13	Good	Good	20+ years	Medium	2	1.68	Retain
100	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	12m x 6m	46	Good	Good	20+ years	Medium	5.52	2.67	Retain
101	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 5m	26	Good	Good	20+ years	Medium	3.12	2.15	Retain
102	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 5m	28	Good	Fair	20+ years	Medium	3.36	2.25	Retain

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ID	Botanical Name	Common Name	Origin	Age	Subject to 52.17	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Retain/Remove
103	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	10m x 4m	26	Good	Very poor	1-5 years	Low	3.12	2.39	Retain
104	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	12m x 4m	35	Good	Fair	20+ years	Medium	4.2	2.23	Retain
105	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	12m x 5m	44	Good	Fair	20+ years	Medium	5.28	2.28	Retain
106	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	14m x 6m	32	Good	Good	20+ years	Medium	3.84	2.30	Retain
107	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	14m x 6m	38	Good	Good	20+ years	Medium	4.56	2.43	Retain
108	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	14m x 4m	27	Good	Fair	20+ years	Medium	3.24	2.15	Retain
109	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	14m x 4m	37	Good	Good	20+ years	Medium	4.44	2.43	Retain
110	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	Native	S mature	No	12m x 5m	29	Good	Good	20+ years	Medium	3.48	2.25	Retain
111	<i>Acacia dealbata</i>	Silver Wattle	Indigenous	S mature	No	7m x 6m	21	Good	Fair	20+ years	Medium	2.52	1.88	Retain
112	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	10m x 4m	34	Good	Fair	20+ years	Medium	4.08	2.30	Retain
113	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	12m x 3m	25	Good	Fair	20+ years	Medium	3	2.10	Retain
114	<i>Fraxinus excelsior</i> 'Aurea'	Golden Ash	Exotic	S mature	No	5m x 3m	11	Good	Good	20+ years	Low	2	1.53	Retain
115	<i>Eucalyptus sideroxylon</i>	Red Ironbark	Native	S mature	No	10m x 4m	33	Good	Fair	20+ years	Medium	3.96	2.28	Retain
116	<i>Eucalyptus camaldulensis</i>	River Red Gum	Indigenous	S mature	No	10m x 4m	25	Good	Good	20+ years	Medium	3	2.10	Retain
117	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	12m x 5m	40	Good	Good	20+ years	Medium	4.8	2.25	Retain
118	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	9m x 4m	25	Fair	Fair	10-20 years	Low	3	2.23	Retain
119	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	13m x 6m	30	Good	Good	20+ years	Medium	3.6	2.39	Retain
120	<i>Eucalyptus ovata</i>	Swamp Gum	Indigenous	S mature	No	13m x 6m	33	Good	Good	20+ years	Medium	3.96	2.47	Retain
121	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous	S mature	No	11m x 4m	26	Good	Good	20+ years	Medium	3.12	2.10	Retain
122	<i>Hesperocyparis arizonica</i> 'Glauca'	Arizona Cypress	Exotic	Young	No	2m x 1m	6	Good	Good	20+ years	Low	2	1.50	Remove
123	<i>Quercus canariensis</i>	Algerian Oak	Exotic	Young	No	6m x 4m	15	Good	Good	20+ years	Third party	2	1.72	Retain
124	<i>Quercus canariensis</i>	Algerian Oak	Exotic	Young	No	6m x 4m	9	Good	Good	20+ years	Third party	2	1.50	Retain
125	<i>Quercus canariensis</i>	Algerian Oak	Exotic	Young	No	6m x 4m	11	Good	Good	20+ years	Third party	2	1.53	Retain

6.1 Individual Tree Details

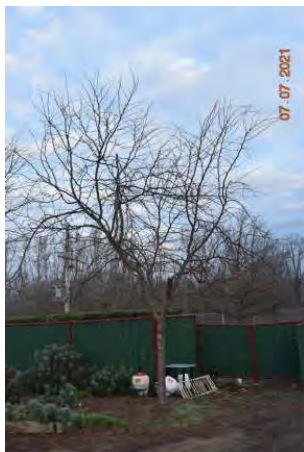
Axiom Tree Management Pty Ltd
ABN: 11 612 205 099

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Preliminary Arborist Report
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Tree Number: 1



Botanical Name: *Gleditsia triacanthos*
Common Name: Honey Locust
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Broken branches throughout the canopy
Comments: Evidence of previous branch failure

DBH (cm):	15
TPZ (m):	2
SRZ (m):	1.57

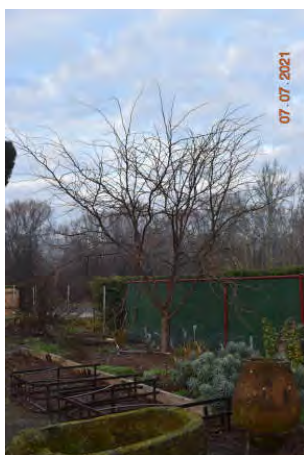
Tree Number: 2



Botanical Name: *Gleditsia triacanthos*
Common Name: Honey Locust
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Decay in main stem
Comments: Evidence of previous branch failure

DBH (cm):	16
TPZ (m):	2
SRZ (m):	1.68

Tree Number: 3



Botanical Name: *Gleditsia triacanthos*
Common Name: Honey Locust
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: Evidence of previous branch failure

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

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Tree Number: 4



Botanical Name: *Ulmus parvifolia*
Common Name: Chinese Elm
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 20
TPZ (m): 2.4
SRZ (m): 1.82

Comments:

Tree Number: 5

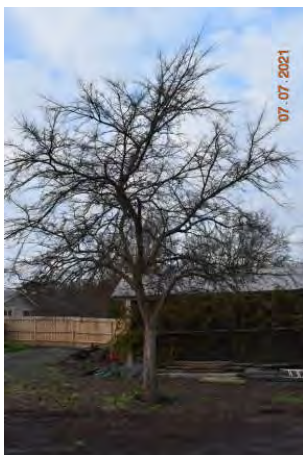


Botanical Name: *Ulmus parvifolia*
Common Name: Chinese Elm
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.85

Comments:

Tree Number: 6



Botanical Name: *Ulmus parvifolia*
Common Name: Chinese Elm
Origin: Exotic
Tree Age: Semi mature
H x W: 7m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

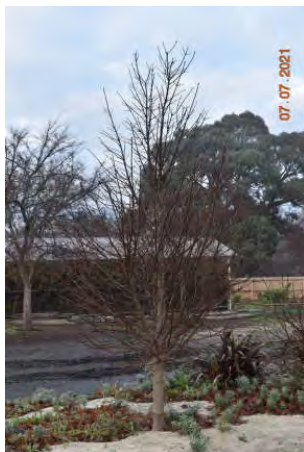
DBH (cm): 23
TPZ (m): 2.76
SRZ (m): 2.05

Comments:

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Tree Number: 7



Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 8



Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 9



Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

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Tree Number: 10

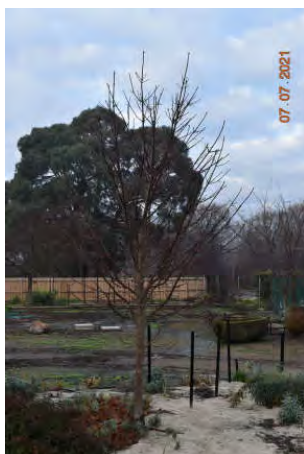


Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 11



Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 12



Botanical Name: *Prunus cerasifera*
Common Name: Cherry Plum
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 5m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

DBH (cm): 16
TPZ (m): 2
SRZ (m): 1.68

Comments:

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Tree Number: 13

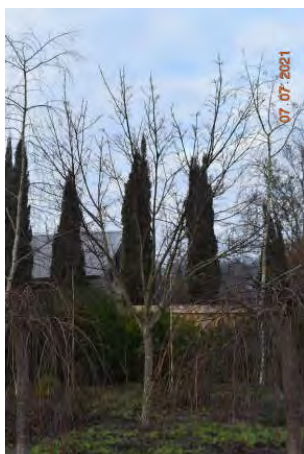


Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 5m
Health: Fair
Structure: Very poor
ULE: 1-5 years
Retention Value: Low
Defects: Lopped, decayed main stem

DBH (cm):	9
TPZ (m):	2
SRZ (m):	1.65

Comments: Evidence of previous branch failure

Tree Number: 14

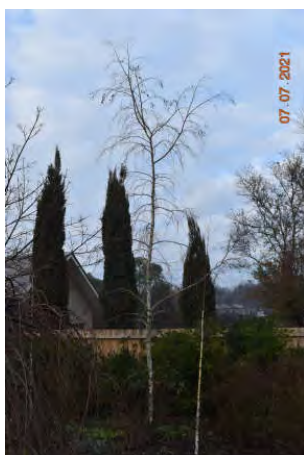


Botanical Name: *Acer rubrum*
Common Name: Red Maple
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	13
TPZ (m):	2
SRZ (m):	1.53

Comments:

Tree Number: 15



Botanical Name: *Betula pendula*
Common Name: Silver Birch
Origin: Exotic
Tree Age: Semi mature
H x W: 7m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

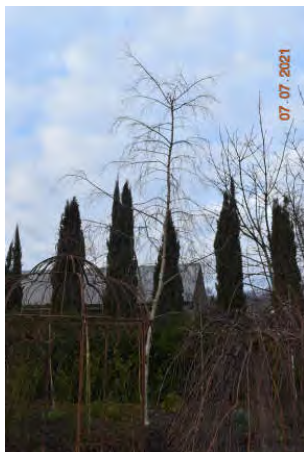
DBH (cm):	10
TPZ (m):	2
SRZ (m):	1.50

Comments:

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Tree Number: 16



Botanical Name: *Betula pendula*
Common Name: Silver Birch
Origin: Exotic
Tree Age: Semi mature
H x W: 7m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

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

Comments:

Tree Number: 17



Botanical Name: *Betula pendula*
Common Name: Silver Birch
Origin: Exotic
Tree Age: Young
H x W: 3m x 1m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 23 individuals

Tree Number: 18



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 11m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 2.05

Comments:

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Tree Number: 19



Botanical Name: *Pyrus ussuriensis*
Common Name: Manchurian Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.72

Comments:

Tree Number: 20



Botanical Name: *Platanus Xacerifolia*
Common Name: London Plane
Origin: Exotic
Tree Age: Young
H x W: 4m x 1m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 21



Botanical Name: *Platanus Xacerifolia*
Common Name: London Plane
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems with included union

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.75

Comments:

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Tree Number: 22

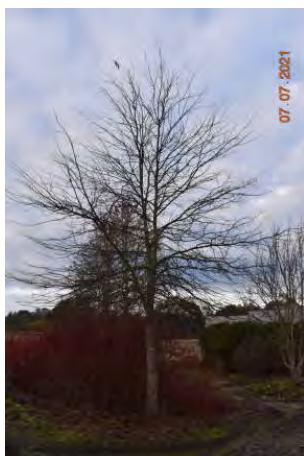


Botanical Name: *Buddleja davidii*
Common Name: Butterfly Bush
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 4m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

DBH (cm): 10
TPZ (m): 2
SRZ (m): 1.94

Comments:

Tree Number: 23



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 11m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems with included union

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 2.05

Comments:

Tree Number: 24



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 7m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Leaning main stem

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

Comments:

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Tree Number: 25



Botanical Name: *Fraxinus excelsior 'Aurea'*
Common Name: Golden Ash
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm): 7
TPZ (m): 2
SRZ (m): 1.53

Comments:

Tree Number: 26



Botanical Name: *Populus nigra 'Italica'*
Common Name: Lombardy Poplar
Origin: Exotic
Tree Age: Semi mature
H x W: 11m x 2m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 2.39

Comments:

Tree Number: 27



Botanical Name: *Populus nigra 'Italica'*
Common Name: Lombardy Poplar
Origin: Exotic
Tree Age: Semi mature
H x W: 10m x 2m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 2.34

Comments:

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Tree Number: 28



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm): 20
TPZ (m): 2.4
SRZ (m): 1.75

Comments:

Tree Number: 29



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 1.88

Comments:

Tree Number: 30



Botanical Name: *Cedrus deodara*
Common Name: Deodar Cedar
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 3m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: Codominant stems with included union

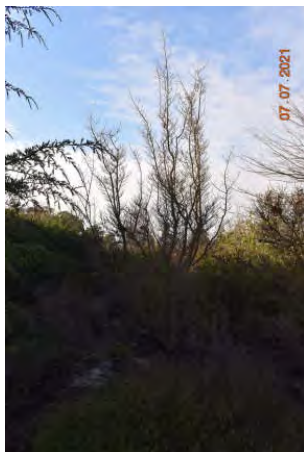
DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.79

Comments:

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Tree Number: 31



Botanical Name: *Prunus cerasifera 'Nigra'*
Common Name: Purple Cherry Plum
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 2m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: Codominant, leaning stems

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

Comments:

Tree Number: 32



Botanical Name: *Malus ioensis 'Plena'*
Common Name: Prairie Crabapple
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	21
TPZ (m):	2.52
SRZ (m):	1.91

Comments:

Tree Number: 33



Botanical Name: *Malus ioensis 'Plena'*
Common Name: Prairie Crabapple
Origin: Exotic
Tree Age: Semi mature
H x W: 3m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

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Tree Number: 34



Botanical Name: *Platanus orientalis 'Digitata'*
Common Name: Cut-leaf Plane
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 31
TPZ (m): 3.72
SRZ (m): 2.28

Comments:

Tree Number: 35



Botanical Name: *Platanus orientalis 'Digitata'*
Common Name: Cut-leaf Plane
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 34
TPZ (m): 4.08
SRZ (m): 2.34

Comments:

Tree Number: 36



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

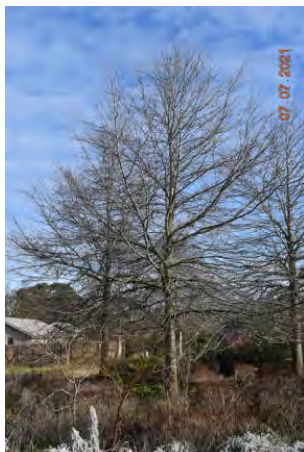
DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.34

Comments:

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Tree Number: 37



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 2.28

Comments:

Tree Number: 38



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.37

Comments:

Tree Number: 39



Botanical Name: *Cedrus deodara*
Common Name: Deodar Cedar
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

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Tree Number: 40



Botanical Name: *Fraxinus oxycarpa*
Common Name: Desert Ash
Origin: Exotic
Tree Age: Semi mature
H x W: 7m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	21
TPZ (m):	2.52
SRZ (m):	1.82

Comments:

Tree Number: 41

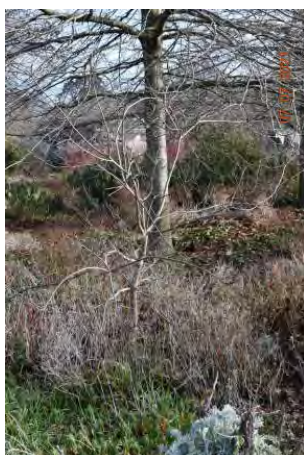


Botanical Name: *Eucalyptus pauciflora*
Common Name: Snow Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 3m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems

DBH (cm):	16
TPZ (m):	2
SRZ (m):	1.72

Comments:

Tree Number: 42



Botanical Name: *Fraxinus oxycarpa*
Common Name: Desert Ash
Origin: Exotic
Tree Age: Young
H x W: 3m x 1m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 13 individuals

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Tree Number: 43



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	22
TPZ (m):	2.64
SRZ (m):	2.05

Comments:

Tree Number: 44



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	23
TPZ (m):	2.76
SRZ (m):	2.30

Comments:

Tree Number: 45



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 8m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	26
TPZ (m):	3.12
SRZ (m):	2.32

Comments:

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Tree Number: 46



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	30
TPZ (m):	3.6
SRZ (m):	2.30

Comments:

Tree Number: 47



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 8m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	30
TPZ (m):	3.6
SRZ (m):	2.43

Comments:

Tree Number: 48



Botanical Name: *Eucalyptus camaldulensis*
Common Name: River Red Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 7m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	31
TPZ (m):	3.72
SRZ (m):	2.10

Comments:

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Tree Number: 49



Botanical Name: *Buddleja davidii*
Common Name: Butterfly Bush
Origin: Exotic
Tree Age: Semi mature
H x W: 3m x 3m
Health: Good
Structure: Good
ULE: 10-20 years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 50

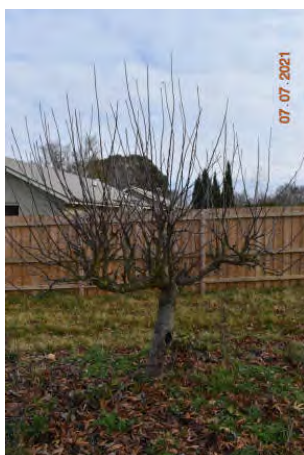


Botanical Name: *Buddleja davidii*
Common Name: Butterfly Bush
Origin: Exotic
Tree Age: Semi mature
H x W: 2m x 2m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 16 individuals

Tree Number: 51



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Semi mature
H x W: 3m x 2m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

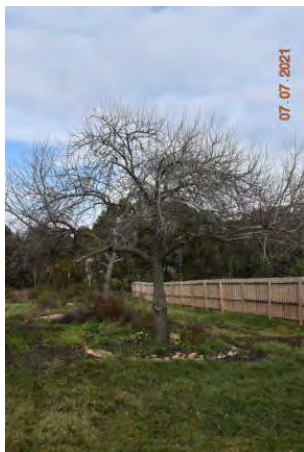
DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.53

Comments: Group of approximately 3 individuals

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Tree Number: 52



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 8m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Medium
Defects: None

DBH (cm):	30
TPZ (m):	3.6
SRZ (m):	2.15

Comments:

Tree Number: 53



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 3m x 2m
Health: Fair
Structure: Poor
ULE: 5-10 years
Retention Value: Low
Defects: Lopped main stem

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

Comments:

Tree Number: 54



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Young
H x W: 2m x 2m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

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

Comments:

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Tree Number: 55



Botanical Name: *xCupressocyparis leylandii*
Common Name: Leyland Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

DBH (cm):	14
TPZ (m):	2
SRZ (m):	1.75

Comments:

Tree Number: 56



Botanical Name: *Eucalyptus leucoxylon*
Common Name: Yellow Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 5m x 4m
Health: Very Poor
Structure: Fair
ULE: 1-5 years
Retention Value: Low
Defects: None

DBH (cm):	16
TPZ (m):	2
SRZ (m):	1.82

Comments:

Tree Number: 57



Botanical Name: *Eucalyptus leucoxylon*
Common Name: Yellow Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 5m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

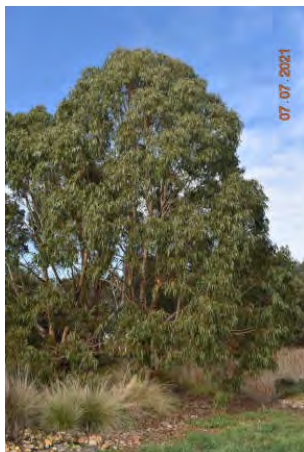
DBH (cm):	22
TPZ (m):	2.64
SRZ (m):	1.94

Comments:

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Tree Number: 58



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 39
TPZ (m): 4.68
SRZ (m): 2.49

Comments:

Tree Number: 59



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 38
TPZ (m): 4.56
SRZ (m): 2.34

Comments:

Tree Number: 60



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 2m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

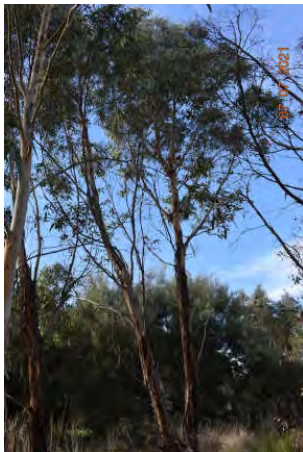
DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 2.10

Comments:

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Tree Number: 61

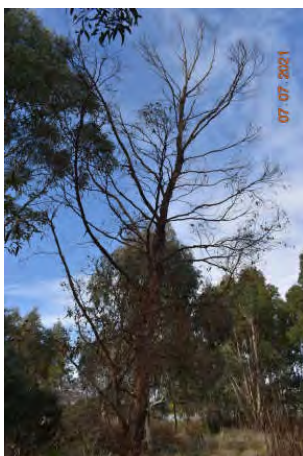


Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems

DBH (cm):	36
TPZ (m):	4.32
SRZ (m):	2.30

Comments:

Tree Number: 62



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 3m
Health: Dead
Structure: Poor
ULE: 0 years
Retention Value: Low
Defects: None

DBH (cm):	24
TPZ (m):	2.88
SRZ (m):	2.05

Comments:

Tree Number: 63



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 9m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

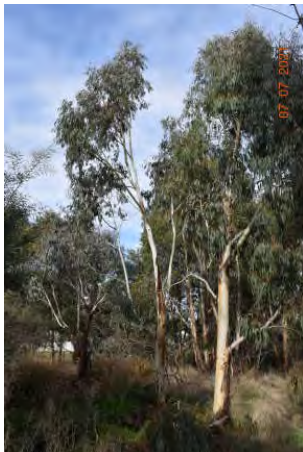
DBH (cm):	23
TPZ (m):	2.76
SRZ (m):	2.05

Comments:

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Tree Number: 64



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 9m x 4m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Medium
Defects: Broken branches throughout the canopy

DBH (cm):	23
TPZ (m):	2.76
SRZ (m):	1.97

Comments: Evidence of previous branch failure, soil built up around base

Tree Number: 65



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

DBH (cm):	18
TPZ (m):	2.16
SRZ (m):	1.82

Comments:

Tree Number: 66



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 5m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: None

DBH (cm):	19
TPZ (m):	2.28
SRZ (m):	1.79

Comments:

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Tree Number: 67



Botanical Name: *Acacia melanoxylon*
Common Name: Blackwood
Origin: Indigenous
Tree Age: Young
H x W: 4m x 2m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 14 individuals, Blackwood and mixed exotic species

Tree Number: 68



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 14 individuals

Tree Number: 69



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

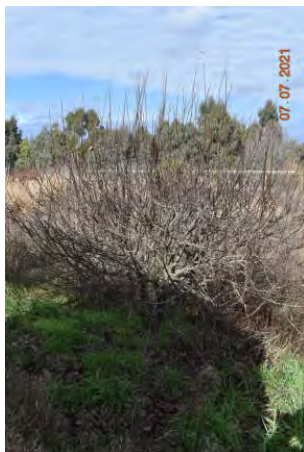
DBH (cm): 9
TPZ (m): 2
SRZ (m): 1.50

Comments: Group of approximately 4 individuals

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Tree Number: 70



Botanical Name: *Pyrus ussuriensis*
Common Name: Manchurian Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 3m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 3 individuals

Tree Number: 71



Botanical Name: *Hesperocyparis macrocarpa*
Common Name: Monterey Cypress
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm):	16
TPZ (m):	2
SRZ (m):	1.68

Comments: Group of approximately 24 individuals

Tree Number: 72



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	21
TPZ (m):	2.52
SRZ (m):	1.94

Comments: Group of approximately 3 individuals

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Tree Number: 73



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 20
TPZ (m): 2.4
SRZ (m): 1.91

Comments: Group of approximately 2 individuals

Tree Number: 74



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 2m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 14
TPZ (m): 2
SRZ (m): 1.65

Comments: Group of approximately 5 individuals

Tree Number: 75



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

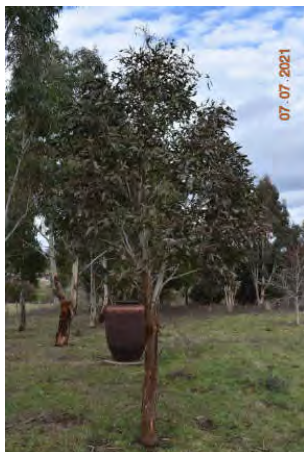
DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 2.00

Comments: Group of approximately 10 individuals

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Tree Number: 76



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 4m x 2m
Health: Fair
Structure: Good
ULE: 10-20 years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 77



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 6m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 2.00

Comments: Group of approximately 7 individuals

Tree Number: 78



Botanical Name: *Juglans regia*
Common Name: Walnut
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 4 individuals

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Tree Number: 79

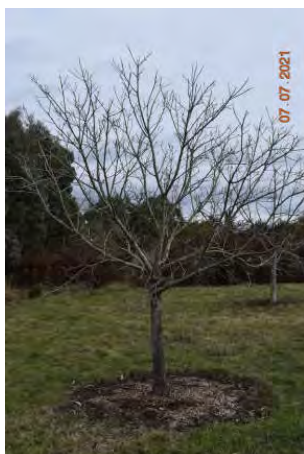


Botanical Name: *Juglans regia*
Common Name: Walnut
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 4 individuals

Tree Number: 80

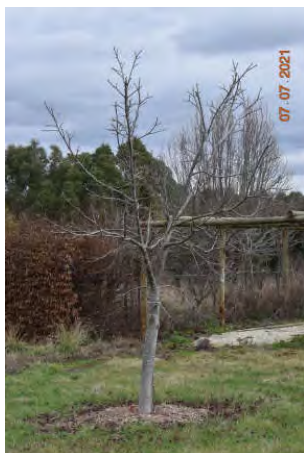


Botanical Name: *Juglans regia*
Common Name: Walnut
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 4 individuals

Tree Number: 81



Botanical Name: *Juglans regia*
Common Name: Walnut
Origin: Exotic
Tree Age: Semi mature
H x W: 4m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 4 individuals

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Tree Number: 82



Botanical Name: *Carpinus betulus*
Common Name: Hornbeam
Origin: Exotic
Tree Age: Semi mature
H x W: 2m x 1m
Health: Fair
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 30 individuals

Tree Number: 83



Botanical Name: *Carpinus betulus*
Common Name: Hornbeam
Origin: Exotic
Tree Age: Semi mature
H x W: 2m x 1m
Health: Fair
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 30 individuals

Tree Number: 84



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Young
H x W: 3m x 2m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

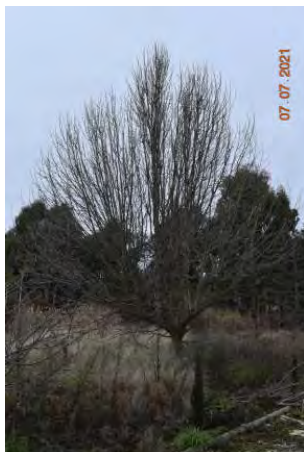
DBH (cm):	6
TPZ (m):	2
SRZ (m):	1.50

Comments: Group of approximately 6 individuals

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Tree Number: 85



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 5m
Health: Good
Structure: Fair
ULE: 10-20 years
Retention Value: Medium
Defects: None

DBH (cm):	25
TPZ (m):	3
SRZ (m):	1.91

Comments: Evidence of previous branch failure

Tree Number: 86



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	22
TPZ (m):	2.64
SRZ (m):	1.97

Comments:

Tree Number: 87



Botanical Name: *Fraxinus excelsior 'Aurea'*
Common Name: Golden Ash
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm):	13
TPZ (m):	2
SRZ (m):	1.53

Comments:

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Tree Number: 88

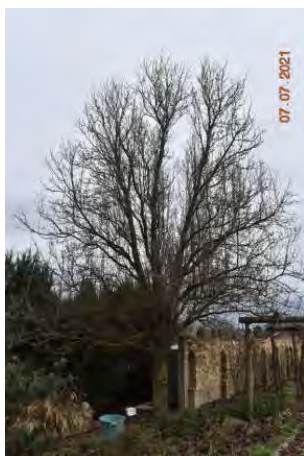


Botanical Name: *Pinus radiata*
Common Name: Monterey Pine
Origin: Exotic
Tree Age: Young
H x W: 3m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments:

Tree Number: 89



Botanical Name: *Pyrus calleryana*
Common Name: Callery Pear
Origin: Exotic
Tree Age: Mature
H x W: 0m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 39
TPZ (m): 4.68
SRZ (m): 2.20

Comments:

Tree Number: 90



Botanical Name: *Malus domestica*
Common Name: Apple
Origin: Exotic
Tree Age: Young
H x W: 3m x 1m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 3 individuals

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Tree Number: 91



Botanical Name: *Eucalyptus sideroxylon*
Common Name: Red Ironbark
Origin: Native
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems with included union

DBH (cm):	37
TPZ (m):	4.44
SRZ (m):	2.20

Comments:

Tree Number: 92



Botanical Name: *Eucalyptus camaldulensis*
Common Name: River Red Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 3m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems with included union

DBH (cm):	25
TPZ (m):	3
SRZ (m):	2.05

Comments:

Tree Number: 93



Botanical Name: *Eucalyptus sideroxylon*
Common Name: Red Ironbark
Origin: Native
Tree Age: Semi mature
H x W: 10m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: Included union

DBH (cm):	25
TPZ (m):	3
SRZ (m):	2.08

Comments:

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Tree Number: 94



Botanical Name: *Eucalyptus camaldulensis*
Common Name: River Red Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

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

Comments:

Tree Number: 95



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 3m
Health: Fair
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	35
TPZ (m):	4.2
SRZ (m):	2.30

Comments:

Tree Number: 96



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	48
TPZ (m):	5.76
SRZ (m):	2.63

Comments:

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Tree Number: 97



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 16
TPZ (m): 2
SRZ (m): 1.82

Comments:

Tree Number: 98

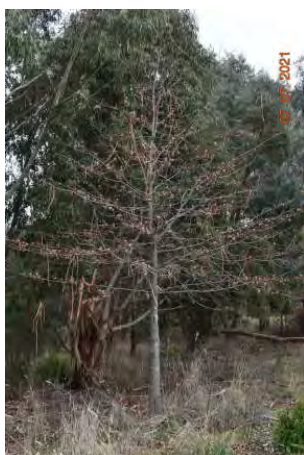


Botanical Name: *Eucalyptus camaldulensis*
Common Name: River Red Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.13

Comments:

Tree Number: 99



Botanical Name: *Quercus palustris*
Common Name: Pin Oak
Origin: Exotic
Tree Age: Semi mature
H x W: 6m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

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

Comments:

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Tree Number: 100



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 46
TPZ (m): 5.52
SRZ (m): 2.67

Comments:

Tree Number: 101



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.15

Comments:

Tree Number: 102



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 28
TPZ (m): 3.36
SRZ (m): 2.25

Comments:

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Tree Number: 103



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Very poor
ULE: 1-5 years
Retention Value: Low
Defects: Codominant included stems with broken branches throughout the canopy
Comments: Evidence of previous branch failure

DBH (cm):	26
TPZ (m):	3.12
SRZ (m):	2.39

Tree Number: 104



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None
Comments:

DBH (cm):	35
TPZ (m):	4.2
SRZ (m):	2.23

Tree Number: 105



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 5m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: Codominant stems
Comments:

DBH (cm):	44
TPZ (m):	5.28
SRZ (m):	2.28

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Tree Number: 106



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 14m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 32
TPZ (m): 3.84
SRZ (m): 2.30

Comments:

Tree Number: 107



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 14m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 38
TPZ (m): 4.56
SRZ (m): 2.43

Comments:

Tree Number: 108



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 14m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 2.15

Comments: Evidence of previous branch failure

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Tree Number: 109



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 14m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 37
TPZ (m): 4.44
SRZ (m): 2.43

Comments:

Tree Number: 110

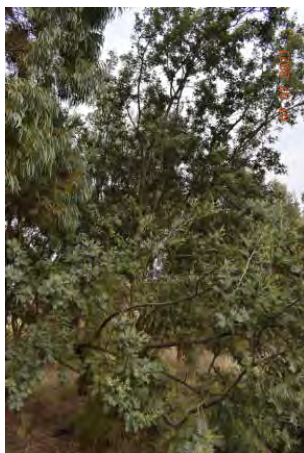


Botanical Name: *Eucalyptus nicholii*
Common Name: Narrow-leaved Black Peppermint
Origin: Native
Tree Age: Semi mature
H x W: 12m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 2.25

Comments:

Tree Number: 111



Botanical Name: *Acacia dealbata*
Common Name: Silver Wattle
Origin: Indigenous
Tree Age: Semi mature
H x W: 7m x 6m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 1.88

Comments:

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Tree Number: 112



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 34
TPZ (m): 4.08
SRZ (m): 2.30

Comments:

Tree Number: 113



Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 3m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

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

Comments:

Tree Number: 114



Botanical Name: *Fraxinus excelsior 'Aurea'*
Common Name: Golden Ash
Origin: Exotic
Tree Age: Semi mature
H x W: 5m x 3m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.53

Comments:

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Tree Number: 115



Botanical Name: *Eucalyptus sideroxylon*
Common Name: Red Ironbark
Origin: Native
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Fair
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	33
TPZ (m):	3.96
SRZ (m):	2.28

Comments:

Tree Number: 116



Botanical Name: *Eucalyptus camaldulensis*
Common Name: River Red Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 10m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

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

Comments:

Tree Number: 117



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 12m x 5m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	40
TPZ (m):	4.8
SRZ (m):	2.25

Comments:

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Tree Number: 118



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 9m x 4m
Health: Fair
Structure: Fair
ULE: 10-20 years
Retention Value: Low
Defects: Decay in main stem

DBH (cm):	25
TPZ (m):	3
SRZ (m):	2.23

Comments:

Tree Number: 119



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 13m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	30
TPZ (m):	3.6
SRZ (m):	2.39

Comments:

Tree Number: 120



Botanical Name: *Eucalyptus ovata*
Common Name: Swamp Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 13m x 6m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm):	33
TPZ (m):	3.96
SRZ (m):	2.47

Comments:

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Tree Number: 121

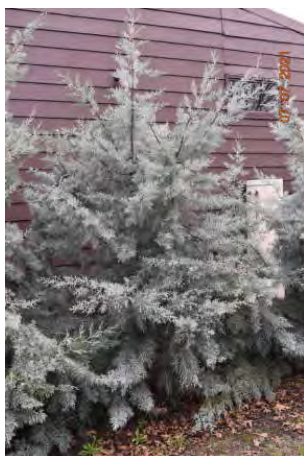


Botanical Name: *Eucalyptus viminalis*
Common Name: Manna Gum
Origin: Indigenous
Tree Age: Semi mature
H x W: 11m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Medium
Defects: None

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 2.10

Comments:

Tree Number: 122



Botanical Name: *Hesperocyparis arizonica 'Glauca'*
Common Name: Arizona Cypress
Origin: Exotic
Tree Age: Young
H x W: 2m x 1m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Low
Defects: None

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

Comments: Group of approximately 6 individuals

Tree Number: 123



Botanical Name: *Quercus canariensis*
Common Name: Algerian Oak
Origin: Exotic
Tree Age: Young
H x W: 6m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Third party
Defects: None

DBH (cm): 15
TPZ (m): 2
SRZ (m): 1.72

Comments:

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88A-90 Wedge Street, Kyneton



Tree Number: 124

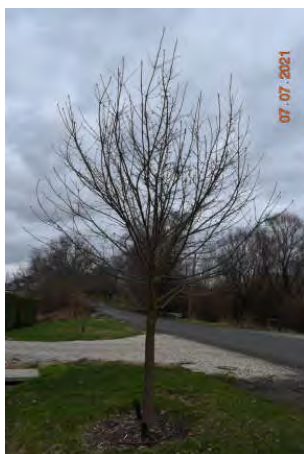


Botanical Name: *Quercus canariensis*
Common Name: Algerian Oak
Origin: Exotic
Tree Age: Young
H x W: 6m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Third party
Defects: None

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

Comments:

Tree Number: 125



Botanical Name: *Quercus canariensis*
Common Name: Algerian Oak
Origin: Exotic
Tree Age: Young
H x W: 6m x 4m
Health: Good
Structure: Good
ULE: 20+ years
Retention Value: Third party
Defects: None

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.53

Comments:



APPENDIX 15 - ECOLOGY ASSESSMENT



Ecology Assessment

88a-90 Wedge St, Kyneton

June 2022

Project Number: 21-325



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*Ecology Assessment
88a-90 Wedge St, Kyneton*

Document verification

Project Title: 88a-90 Wedge St, Kyneton

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Draft V1.0	02/12/2021	Michelle Patrick	Beth Noel	Beth Noel
Final V1.0	07/06/2022	Michelle Patrick	Julie Gooding	Julie Gooding

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Acronyms and abbreviations

ASL	Above sea level
AWS	Automatic weather station
BOM	Australian Bureau of Meteorology
CaLP Act	<i>Catchment and Land Protection Act, 1994</i>
CEMP	Construction environmental management plan
Cwth	Commonwealth
DELWP	Department of Environment, Land, Water and Planning
DoEE	(Cwth) Department of the Environment and Energy
DSE	Department of Sustainability and Environment
EPBC Act	(Cwth) <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESD	Ecologically Sustainable Development
EVC	Ecological Vegetation Community
FFG	<i>Flora and Fauna Guarantee Act, 1988</i>
ha	hectares
km	kilometres
m	Metres
MNES	Matters of National Environmental Significance
P&E Act	<i>Planning and Environment Act, 1987</i>
sp/spp	Species/multiple species
The guidelines	Guidelines for the removal, destruction or lopping of native vegetation
VBA	Victorian Biodiversity Atlas
VQA	Vegetation Quality Assessment



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Executive Summary

NGH Pty Ltd has been engaged by Tomkinson Group to undertake an ecological assessment at 88a-90 Wedge St, Kyneton to assess the potential impacts on threatened entities and determine the native vegetation present on site and subsequent offset requirements.

The Study Area for the proposed 18 lot subdivision is located on 88A Wedge St (Lot 1 PS524086) and 90 Wedge St (Lot 2 PS524086 and CA25, CA26 and CA27\PP5439 (multiple lots)). The proposal includes a 18 lot subdivision site that is approximately 1.6 kms from the centre of Kyneton in Macedon Ranges Shire Council Area. The study area covers approximately 3.125 hectares which includes the unmade road reserves and Wedge St.as well as the development footprint for the proposed subdivision. The subdivision includes 18 residential lots and one reserve that covers a combined area of 1.95 hectares.

The property is zoned as a Neighbourhood Residential Zone (NRZ10) with the following overlays:

- Design and Development Overlay (DDO17)
- Environmental Audit Overlay (EAO)
- Environmental Significance Overlay (ESO4)
- Protected Settlement Boundary (PSB)

The property has an extensive garden with exotic trees, planted garden beds and pathways. The native vegetation in the development footprint is planted. The planted native vegetation on the banks and upper slopes of Post Office Creek will be retained. The planted vegetation includes local indigenous and regional Australian trees, shrubs and understorey.

There are some high threat weeds in this area that will require management as part of the Weed Management Plan. The noxious weeds include Cracked Willow, Hawthorn, Blackberry, Briar Rose, Spear Thistle and Fennel.

This ecological assessment addresses the planning permit application triggers under Clause 52.17 of the *Planning and Environment Act, 1987*. Under this Clause, there is a planning permit trigger for the removal, destruction or lopping of native vegetation.

The following offset requirements are needed in the offset strategy:

- General offset amount – 0.006 General Habitat Units
- Vicinity – North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council
- Minimum strategic biodiversity value score – 0.192
- Large trees - 0

If a planning permit is granted, a third party offset is to be secured. The next steps involves contacting Vegetation Link to enter into a purchase agreement.

There is no impact on threatened vegetation communities, flora or fauna from the proposed subdivision.

1. Introduction

NGH Pty Ltd has been engaged by Tomkinson Group Pty Ltd to undertake an ecological assessment for the proposed subdivision at as 88A-90 Wedge Street Kyneton.

The purpose of this ecological assessment includes addressing the following information:

- Undertake a desktop search of threatened species and communities listed under the *Flora and Fauna Guarantee Act, 1988 (FFG)* and the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC)*
- Undertake a desktop assessment of the EVC modelling and aerial imagery to determine if there is any native vegetation within the defined Study Area
- Determine if a planning permit is required under Clause 52.17 – native vegetation as outlined in the *Planning and Environment Act, 1987*
- Undertake a site assessment to determine the extent of native vegetation and high threat weeds
- Summarise findings in an Ecological Report
- Complete a Weed Management Plan
- Advise if any offsets are required for native vegetation removal

1.1 Locality

88A-90 Wedge Street, Kyneton is located in Maceon Ranges Local Government Area. The property is approximately 1.6 kms from the centre of Kyneton. 88A-90 Wedge Street covers approximately 1.95 hectares. The property is extensive gardens with exotic trees, planted garden beds and pathways. The native vegetation on site is planted. The creek area has been planted with a mix of local indigenous and regional Australian trees, shrubs and understorey. There are three rows of planted Manna Gums (*Eucalyptus viminalis*). There are some high threat weeds including Willows, Hawthorn, Blackberry, Briar Rose and Fennel (See Figure 6-1).

Post Office Creek is located to the south of the property which is mainly covered in willows and revegetation. The immediate north and eastern boundaries are unmade road reserves. There is an open paddock to the east of the Study Area. There is a small industrial area to the north of the site.

1.2 Development proposal

The Study Area for the proposed subdivision is located on 88A Wedge St (Lot 1 PS524086) and 90 Wedge St (Lot 2 PS524086 and CA25, CA26 and CA27\PP5439 (multiple lots)). The proposed subdivision includes 18 lot subdivision that covers 1.95 hectares. The revegetation along the banks of Post Office Creek will be retained. No vegetation removal is proposed along the creek except for management of high threat weeds. A weed management plan can be found in Section 6 in this report.

1.3 Bioregion

Bioregions in Victoria are determined by climate, geomorphology, soils and vegetation to classify the environment at a landscape scale (DELWP 2021). There are 28 bioregions in Victoria and the Study Area is located in the Central Victorian Uplands Bioregion.

Ecology Assessment

88a-90 Wedge St, Kyneton

The Central Victorian Uplands geology formation include Lower Paleozoic deposits with dissected uplands at higher elevations, amongst granitic and sedimentary (with Tertiary colluvial aprons) terrain with metamorphic and old volcanic rocks which have formed steeply sloped peaks and ridges (DELWP 2021).

The vegetation communities on less fertile hills support Grassy Dry Forest and Heathy Dry Forests (DELWP 2021). Fertile soils are dominated by Herb-rich Foothill Forest and Shrubby Foothill Forests and the granitic and sedimentary (with Tertiary colluvial aprons) terrain is dominated by Grassy Woodlands (DELWP 2021). The vegetation communities in low lying valleys and plains includes Valley Grassy Forest and Plains Grassy Woodland (DELWP 2021).

1.4 Waterways and wetlands

One waterway flows through the Study Area, known as Post Office Creek. It is located to the south of the study area and flows north (see Figure 1-1). Post Office Creek joins Campaspe River to the northwest of the site. The site is located in the North Central Catchment Management Area.

The nearest wetlands are series of wetlands within 5 kms of the Study Area. These wetlands are termed Freshwater meadows with no official name. The nearest Reservoirs are Malmsbury and Lauriston which are within 7.5 kms of the Study Area.

The nearest RAMSAR wetlands are Gunbower Forest and NSW Central Murray State Forests which are 100-150 kms downstream.

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88a-90 Wedge St, Kyneton



Figure 1-1 Location Map

2. Legislative Requirements

This section details the legislative requirements in relation to the ecology assessment. Table 2-1 details the legislation and where it is assessed in the report.

Table 2-1 Legislative requirements for the assessment of the proposal

Legislation	Requirements	Section of this Report
<i>Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC)</i>	Matters of National Environmental Significance for threatened entities and RAMSAR wetlands	Section 5
<i>Victorian Planning and Environment Act, 1987 (P&E)</i>	Municipal Planning Schemes including Planning Zones and Overlays Clause 52.17 – Native Vegetation	Section 2.1
<i>Victorian Flora and Fauna Guarantee Amendment Act, 2019 (formerly Flora and Fauna Guarantee Act 1988) (FFGA)</i>	Threatened entities and critical habitat listed in Victoria	Section 4.2
<i>Victorian Wildlife Act 1975</i>	Protection of native fauna	Section 2.3
<i>Catchment and Land Protection Act, 1994</i>	Declared noxious weeds and pest animals.	Section 6

2.1 Planning and Environment Act, 1987

The *Planning and Environment Act* was introduced in 1987. The purpose of this act is to establish a framework for planning the use, development, and protection of land in Victoria in the present and long-term interests of all Victorians. Each municipality has a Local Planning Scheme setting out policies and clauses specific to zones and overlays that relate to an area or parcel of land. The Study Area is in the Macedon Ranges Planning Scheme. The Study Area includes the following lots:

- 88A Wedge St - Lot 1 PS524086
- 90 Wedge St - Lot 2 PS524086
- 88 Wedge St – CA25, CA26 and CA27\PP5439

The zone for the Study Area is.

- Neighbourhood Residential Zone (NRZ10).

Overlays include:

- Design and Development Overlay (DDO17)
- Environmental Audit Overlay (EAO)
- Environmental Significance Overlay (ESO4)
- Protected Settlement Boundary (PSB)

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Other overlays include

- Land Subject to Inundation (LSIO) -
- Clause 52.17 – Native Vegetation
- Areas of Aboriginal Cultural Heritage Sensitivity

The planning permit triggers for these Zones and Overlays relevant to native vegetation or biodiversity are Clause 52.17 – Native Vegetation and the Environmental Significance Overlay (ESO4). The objective and permit requirements are addressed in more detail below. The other zones and overlays are not required to be addressed further as a part of this ecology report.

2.1.1 Environmental Significance Overlay (ESO4).

The objectives of this overlay are:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To identify areas where the development of land may be affected by environmental constraints.
- To ensure that development is compatible with identified environmental values.

The environmental significance and objectives of this schedule (4) are:

- Lake Eppalock is a major water storage and recreational facility located within the Campaspe River catchment. It is a major source of water for irrigation, stock and domestic and urban water supplies for towns within the municipality.
- To ensure the protection and maintenance of water quality and water yield within the Eppalock Water Supply Catchment Area as listed under Section 5 of the *Catchment and Land Protection Act 1994*.

The permit requirement in regard to vegetation is as follows:

Remove, destroy or lop any vegetation, including dead vegetation. This does not apply:

- If a schedule to this overlay specifically states that a permit is not required.
- If the table to Clause 42.01-3 specifically states that a permit is not required.
- To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16.

2.1.2 Clause 52.17- Native Vegetation

Native plants that are indigenous to the region and important for biodiversity have the potential to be present in the Study Area. Based on an assessment of aerial imagery, native vegetation is likely to be present in the Study Area. This may include native trees, shrubs, herbs, grasses or aquatic plants. There are a range of regulations that may apply including need to obtain a planning permit under Clause 52.17 of the local planning scheme.

The purpose of Clause 52.17 is to ensure no net loss to Victoria's biodiversity as a result of the removal, destruction or lopping of native vegetation (DELWP 2017a). By applying the three step approach, by avoiding, minimising and offsetting native vegetation loss set out in the native vegetation guidelines. The three step approach includes:

1. Avoid the removal, destruction or lopping of native vegetation.

Ecology Assessment
88a-90 Wedge St, Kyneton

2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

The requirements to remove native vegetation in Victoria must consider the following criteria in Table 2-2.

Table 2-2 Planning permit requirements for native vegetation removal.

Criteria
Has the assessment pathway and reason for the assessment pathway been determined? Has the location category of the native vegetation proposed to be removed identified?
A description of the native vegetation to be removed
Maps showing the native vegetation
The offset requirement determined in accordance with section 5 of the Guidelines.
Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.
Recent, dated photographs of the native vegetation.
Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.
An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.
A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the <i>Conservation, Forests and Lands Act 1987</i> that applies to the native vegetation to be removed
Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defensible space is in conjunction with an application under the Bushfire Management Overlay.
If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 6.
An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured.
A site assessment report of the native vegetation to be removed, completed by an accredited native vegetation assessor.

Criteria
Information about impacts on rare or threatened species habitat.

2.1.3 Native vegetation assessment pathway

The development footprint is located predominantly in assessment pathway Location 1 with small patches of Location 2 as shown on Figure 2-1. The native vegetation guidelines (DELWP 2017a) identify assessment pathways as basic, intermediate, and detailed and these are divided into three location categories across the state of Victoria. These assessment pathways are determined to reduce overall impacts to Victoria’s biodiversity.

From the DELWP Guidelines (2017a), Table 3 (p. 19 of the guidelines; DELWP 2017a) shows the assessment pathway and location category thresholds below. The Study Area is in location 1 and planted native vegetation is proposed to be removed, this triggers a planning permit under Clause 52.17 and ESO4.

Table 2-3 Planning permit thresholds for native vegetation removal (Source: Table 3 from the Guidelines; DELWP 2017)

Extent of native vegetation	Location category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

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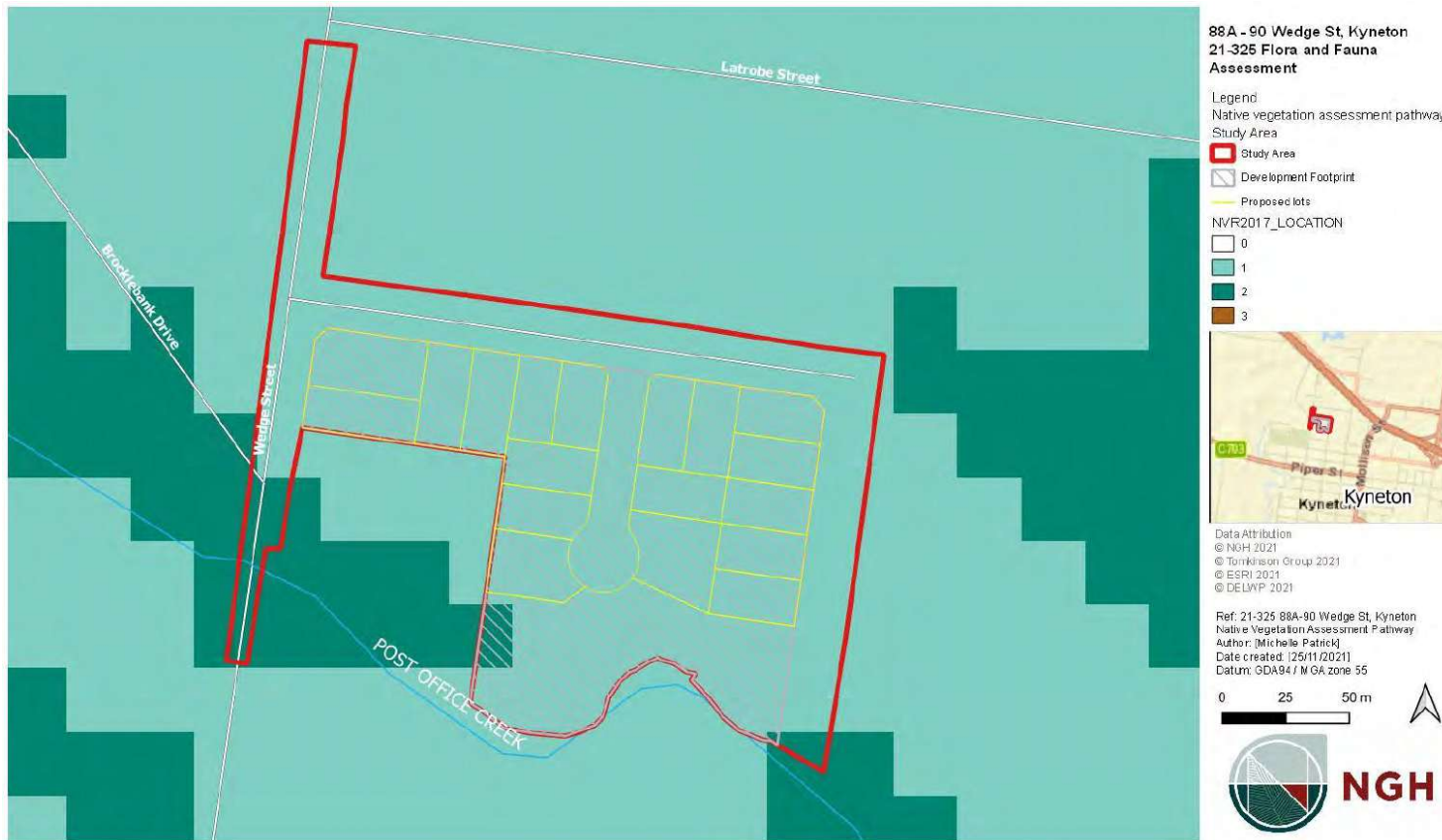


Figure 2-1 .Native Vegetation Assessment Pathway

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2.2 Flora and Fauna Guarantee Act, 1988

The *Flora and Fauna Guarantee Act 1988 (FFG Act)* was amended to the *Flora and Fauna Amendment Act in 2019*. The flora and fauna conservation and management objectives are:

- a) to guarantee that all taxa of Victoria's flora and fauna, other than taxa specified in the excluded list, can persist, and improve in the wild and retain their capacity to adapt to environmental changes; and
- b) to prevent taxa and communities of flora and fauna from becoming threatened and to recover threatened taxa and communities so their conservation status improves; and
- c) to protect, conserve, restore and enhance biodiversity, including -
 - a. flora and fauna and their habitats; and
 - b. genetic diversity; and
 - c. ecological communities; and
 - d. ecological processes; and
- d) to identify and mitigate the impacts of potentially threatening processes to address the important underlying causes of biodiversity decline; and
- e) to ensure the use of biodiversity as a natural resource is ecologically sustainable; and
- f) to identify and conserve areas of Victoria in respect of which critical habitat determinations are made.

An assessment of the threatened vegetation communities and threatened species listed under the FFG Act has been undertaken. It has been determined there is low potential impact on all threatened species and threatened species from the proposed development.

2.3 Wildlife Act 1975

Under the *Wildlife Act 1975* all native wildlife is protected in Victoria. It is an offence to kill, take, control or harm wildlife under the *Wildlife Act 1975*. It is also an offence to use poisons to kill, destroy or take wildlife. Severe penalties (including imprisonment and fines) apply to those found guilty of an offence under the *Wildlife Act*.

There is potential impact on wildlife during vegetation removal, mitigation measures include fauna salvage and relocation of wildlife by an appropriately qualified wildlife handler during vegetation removal. There are limited hollows present in the native vegetation to be removed, however there may be active nests and wildlife utilising the gardens and vegetation that required appropriate management. Any handling of wildlife must be undertaken by qualified wildlife handlers to ensure no wildlife are injured.

2.4 Catchment and Land Protection Act, 1994

Under the *Catchment and Land Protection Act, 1994 (CaLP Act)* control of declared noxious weeds and pest animals will require ongoing management prior, during and post construction.

A weed management plan should consider any new and emerging weeds and any necessary prevention methods. Weed and pest animal management should consider best practice methods.

Appropriately qualified contractors should be engaged to undertake weed (Accredited Chemical Users Permit (ACUP)) and pest animal control (1080 and PAPP).

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Hygiene practices for reducing and spreading weeds and pathogens should be included in any Construction Environmental Management Plan.

The weeds and pest animals recorded during the site assessment are addressed in Section 6.1

Declared noxious weeds

In Victoria, the CaLP Act separates noxious weeds into four categories (DJPP 2019). The CaLP Act defines four categories of noxious weeds as:

- State Prohibited Weeds.
- Regionally Prohibited Weeds.
- Regionally Controlled Weeds.
- Restricted Weeds.

State prohibited weeds

State Prohibited Weeds may not occur in Victoria or any known infestations are very small. The Victorian Government is responsible for eradicating State Prohibited Weeds and all known infestations should be eradicated. These weeds are considered a significant threat if introduced (DJPP 2019).

Regionally prohibited weeds

Regionally prohibited weeds are capable of spreading across a region and the aim should be to eradicate them. Regionally prohibited weeds are not widely distributed so landowners must take all reasonable steps to eradicate these weeds to prevent them spreading further. Landowners (including public authorities) are responsible for the eradication of these weeds on their land (DJPP 2019).

Regionally controlled weeds

These regionally controlled weeds are usually widespread and highly invasive. Landowners need to take all reasonable steps to prevent the growth and spread of regionally controlled weeds on their land (DJPP 2019).

Restricted weeds

Restricted weeds cannot be traded, and this includes plants, seeds or propagules or contaminants (DJPP 2019). Restricted weeds are at risk of spreading within Victoria or other States or Territories of Australia (DJPP 2019). It is a landowner's responsibility to prevent the spread of these weeds.

3. Method

3.1 Site assessment

The site assessment was completed by an NGH Senior Ecologist, Michelle Patrick on October 11, 2021. The weather was cool, cloudy with periodic rainfall throughout the site assessment. The site assessment included an assessment of native vegetation, scattered tree assessment, and incidental fauna observations. The methods used are outlined in the following sections.

3.2 Background searches

The background searches included:

- A desktop search for threatened species using the Victorian Biodiversity Atlas (VBA). The VBA search included the Study Area and a buffer area of 5 km.
- An assessment of the threatened communities (FFG listed)
- A Matters of National Significance (MNES) desktop search with a 10 km buffer for nationally threatened flora, fauna and vegetation communities.

3.2.1 Assessment of threatened species and vegetation communities

Based on the background search results, the likelihood of occurrence (Table 3-1) is a broad way to categorise the likelihood of threatened flora and fauna presence based on the MNES results, VBA records and habitat features observed on site.

Table 3-1 Likelihood of threatened species being observed on site

Likelihood of Occurrence	Reasoning
Nil/Absent	Suitable habitat is not present within the Study Area.
Low	Considered unlikely to occur due to older records, unsuitable or degraded habitat.
Moderate	Potential habitat occurs on site. Low record numbers or species not recorded in the area for many years. Considered that the species may occur infrequently.
High	Observed on site. Important habitat occurs onsite (i.e., nesting sites, suitable habitat).

3.3 Flora

The flora survey was completed on foot. The flora survey includes using the habitat hectares methodology. The entire Study Area was assessed (as required under Clause 52.17 – Native Vegetation), to determine patches of native vegetation, scattered trees and any revegetation areas.

The methodology applied for the native vegetation assessment is described below in 3.3.1.

3.3.1 Native vegetation assessment

Native vegetation

The native vegetation assessment was undertaken based on the Guidelines of Clause 52.17 of the P&E Act for the removal, destruction or lopping, of native vegetation, (DELWP 2017a). The guidelines state native vegetation is assessed to ensure it meets the following criteria:

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native; or
- Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the current wetlands map, available in department of environment, land, water and planning (DELWP) systems and tools.

During the site assessment, the habitat hectare method was applied to any native vegetation patch determined to have greater than 25% perennial ground cover.

Results of the assessment are described in Section 4.

Scattered and large trees within a habitat zone

Based upon the criteria in the guidelines (DELWP 2017a), a scattered tree is defined as a tree that is indigenous to the area which is:

- A native canopy tree (large or small in size) that does not form part of a patch; or
- A large, scattered tree that is greater than or equal to the diameter at breast height (DBH) as determined by the EVC benchmark.

All large trees within a habitat zone were recorded where the tree was greater than the EVC benchmark DBH. All stags (dead canopy trees) were recorded if they were greater than 40 cm DBH. Within the habitat zone, only tree stags that are greater than the EVC benchmark DBH are recorded.

For each scattered tree, large tree or stag the following information was recorded:

- Plant species identified (including scientific and common name).
- Location recorded using a handheld GPS.
- DBH measured and recorded.
- Tree health.
- Presence of habitat features such as hollows or nests.

3.3.2 Ecological Vegetation Classes (EVC)

The vegetation communities found in the Wimmera Bioregion are termed Ecological Vegetation Classes (EVCs). These EVCs were mapped by the Victorian Government based on landscape attributes to determine the pre-European native vegetation extent (DSE 2004b). Each Bioregion consists of a number of EVCs. Each EVC has pre-determined benchmarks which are used in the habitat hectare assessment to determine the site condition score (DSE 2004a).

The Ecological Vegetation Class results are provided in Section 4.1.1.

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3.3.3 Habitat hectares methodology

The habitat hectare methodology compares the EVC benchmark with site attributes and landscape components to determine the vegetation site condition (DSE 2004a).

Each area defined as native vegetation, where the perennial ground cover is more than 25% or three or more canopy trees driplines touch forming a canopy, a habitat hectares assessment is required to be undertaken. These areas are defined as habitat zones and are identified throughout the Study Area. The habitat zones are divided by similarities in their habitat components and vegetation condition.

The habitat hectares results are included in Section 4.1

3.4 Mapping

The site assessment was undertaken with the use of aerial imagery created using Quantum GIS. Features were mapped on site using a Samsung Android using QField. All data layers were sourced from the layers publicly available from the Victorian Government. Mapping accuracy is within a few metres.

4. Results

The results of the site assessment including a summary of EVCs, scattered trees, site observations of flora and fauna and assessment of threatened species habitat is provided in the following sections.

4.1 Flora

The results of the list of flora species identified whilst on site, are listed in Appendix A. The flora observations documented a total of 47 plant species. There were 11 native species, 14 planted native species and 22 exotic plants (excluding the planted trees and garden).

A comprehensive species list is recommended to be compiled over many seasons and it is likely more flora species will be found across the site in wetter conditions. This does not have any further implications for this proposed subdivision.

The vegetation map is shown in Figure 4-9.

4.1.1 Planted Native Vegetation

The vegetation along Post Office Creek includes trees, shrubs and understorey. The vegetation present is planted Eucalypts and Acacias from the locality/region planted on the upper slopes of Post Office Creek. The creekline vegetation will be retained and covers 0.32 hectares. This planted vegetation will not be impacted. No large trees were recorded on site. There were 30 planted trees on the eastern boundary. All other native trees were included in the creekline revegetation patch. The exotic trees were assessed and included in the Arborist Report (Axiom 2021).

Examples of Planted Native Vegetation can be found in Figure 4-1 to .



Figure 4-1. Planted Native Vegetation

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Figure 4-2. Planted Native Vegetation



Figure 4-3. Planted native trees

4.1.2 EVC 821 Tall Marsh

EVC 821 Tall Marsh is the small dam that covers 0.19 hectares that forms Habitat Zone 1A. The dam is near the creekline vegetation. There is some indigenous aquatic species. This area will be impacted and the offset requirements are outlined in Section 7.



4.1.3 Habitat hectare results

Table 4-1 presents the habitat hectare results for habitat zone 1A.

Table 4-1 Habitat hectare scores for habitat zone 1A.

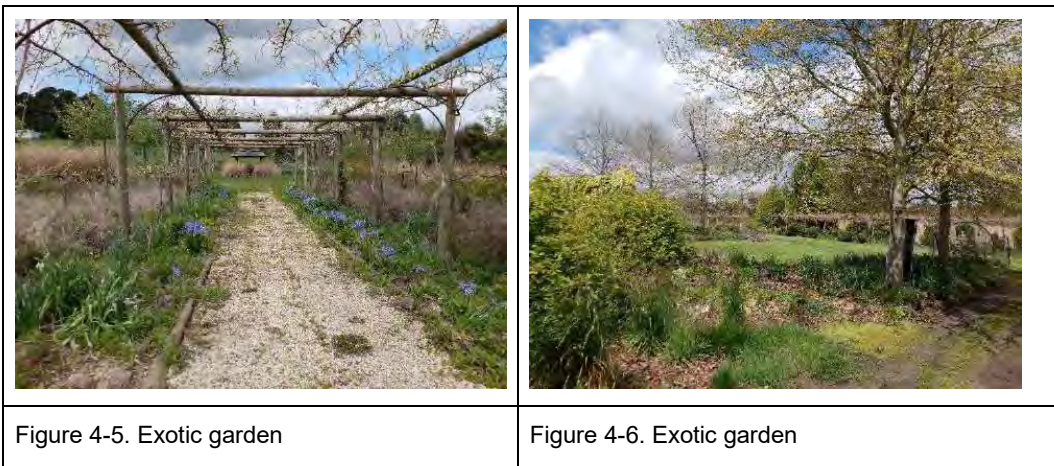
Habitat Components	Score	Habitat Zone 1A
Site Condition Score		
EVC		821
Large Trees	10	0
Tree Canopy Cover	5	0
Understorey	25	10
Lack of Weeds	15	9

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Recruitment	10	6
Organic Litter	5	0
Logs	5	0
Standardiser	1	1.36
Site Condition Score Total		34
Landscape Context Score		
Patch Size	10	1
Neighbourhood	10	0
Distance to Core Area	5	1
Final Habitat Score		36
Percentile Score		0.36
Area (hectares)		0.019

4.1.4 Exotic vegetation

The open areas are considered exotic with a garden and planted exotic and some native trees. These areas do not trigger a planning permit or offset for removal.



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<p>Figure 4-7. Exotic garden</p>	<p>Figure 4-8. Exotic garden</p>

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Figure 4-9 Vegetation in the Study Area

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4.2 FFG Threatened communities

There are no FFG listed vegetation communities present on site.

4.2.1 Threatened flora

From the Victorian Biodiversity Atlas results recorded nine flora species within 5kms of the Study Area. No threatened flora were recorded on site and as the site is highly modified, it is unlikely threatened flora persist at the site.

See Appendix C for details of the threatened flora assessment.

4.2.2 Threatened fauna

No threatened fauna were observed during the site assessment. The Victorian Biodiversity Atlas (VBA) search results listed 21 threatened fauna records within 5km of the Study Area. These species included:

- 13 birds including migratory birds
- 2 mammals
- 2 reptiles
- 1 amphibian
- 3 invertebrates

Based on the onsite habitat assessment, all 21 species were considered to have a low likelihood of occurring on site.

No targeted surveys are required.

See Appendix E.2E.2 Appendix C for details of the threatened flora assessment.

4.2.3 Declared pest animals

There was no evidence of European Rabbit (*Oryctolagus cuniculus*) or the Red Fox (*Vulpes vulpes*) on site, however it is considered likely these two species are present in the locality.

5. Matters of National Environmental Significance

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), actions that have, or are likely to have, a significant impact on a Matter of National Environmental Significance require approval from the Australian Government Minister for the Environment (the Minister). The Minister will decide whether assessment and approval is required under the EPBC Act.

The nine matters of national environmental significance protected under the EPBC Act are:

- a) world heritage properties
- b) national heritage places
- c) wetlands of international importance (listed under the Ramsar Convention)
- d) listed threatened species and ecological communities
- e) migratory species protected under international agreements
- f) Commonwealth marine areas
- g) the Great Barrier Reef Marine Park
- h) nuclear actions (including uranium mines)
- i) a water resource, in relation to coal seam gas development and large coal mining development

The matter relevant to the site is (d) listed threatened species and ecological communities. These matters are discussed below.

5.1.1 Threatened communities

There were four threatened ecological communities identified in the Matters of National Significance search. These communities are listed in Table 5-1 below.

Table 5-1 MNES search results for Threatened Communities

Vegetation Community	EPBC Status	Likelihood of Occurrence	Reasoning
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Absent	Site in Central Victorian Uplands Bioregion not the Victorian Volcanic Plain Bioregion.
Grey Box (<i>Eucalyptus macrocarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia	Endangered	Absent	No Grey Box on site
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Absent	Site in Central Victorian Uplands Bioregion not the Victorian Volcanic Plain Bioregion.

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Vegetation Community	EPBC Status	Likelihood of Occurrence	Reasoning
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Absent	Occurs further north of the study area.

5.1.2 RAMSAR wetlands

The nearest RAMSAR wetlands are Gunbower Forest and NSW Central Murray State Forests which are 100-150 kms downstream.

5.1.3 Threatened flora and fauna

There were 47 results from the MNES search results. A summary of the nationally threatened flora and fauna are:

- Flora - 15
- Reptiles - 1
- Invertebrates – 1
- Birds (including migratory) – 20
- Fish – 5
- Amphibians – 1
- Mammals – 4

From the threatened species assessment (see Appendix C), all 47 species were considered low likelihood of occurring on site due to limited habitat and the highly modified condition of the site.

All 47 species are unlikely to be impacted or by the proposed subdivision.

6. Weed Management Plan

6.1 High Threat Weeds identified on site

The high threat weeds recorded on site are listed under the *Catchment and Land Protection Act, 1994*. Noxious weeds are classified by Catchment and the site is located in the North Central Catchment. The weeds present on site and their Catchment classification is listed in Table 6-1.

Table 6-1 Declared noxious weeds.

Scientific Name	Common Name	CaLP weed listing status
<i>Allium triquetrum</i>	Angled Onion	Restricted
<i>Rosa rubiginosa</i>	Sweet Briar	Regionally Controlled
<i>Salix fragilis</i>	Cracked Willow	Restricted
<i>Foeniculum vulgare</i>	Fennel	Restricted
<i>Cirsium vulgare</i>	Spear Thistle	Regionally Controlled
<i>Crataegus monogyna</i>	Hawthorn	Regionally Controlled

6.2 Weed Management

Weed management includes method of treatment, timing, frequency and prevention of spread as outlined in Table 6-2. The creek area is considered an environmentally sensitive area. All weed control works should be carried out by a qualified contractor with an appropriate Chemical Users Permit (ACUP).

The weed control methods include:

- **Chemical Treatment** – this weed management technique involves different chemical techniques with the appropriate herbicide application. All herbicide application should follow the label specification and appropriate application in environmentally sensitive areas. This includes the banks of Post Office Creek and the creek reserve area.
- **Mechanical Removal** – this technique is also known as grubbing where the plant is physically removed. The entire plant including bulbs or part of the root may be required for mechanical removal (e.g., Angled Onion) Appropriate disposal should be considered for this method. These weeds cannot be added to compost or green waste.
- **Mowing/Slashing** – mowing and slashing prior to seed set will prevent new seedlings establishing and spreading the following growing season. Mowing or slashing should be undertaken while a plant is flowering or prior to flowering to prevent seed development t or spreading the seed when it is mature i.e., slashing or mowing too late in the growing season can contribute to seed spread.
- **Prevention** – preventing weeds from spreading can include
 - implementing weed hygiene practices during construction
 - Undertake weed control prior to construction
 - limiting movement of soil, rubbish, weed seeds or propagules (parts of the plant capable of growing

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Table 6-2. Weed Management

Weed species	Lifeform	Flowering	Method of Control	Specification	Timing	Frequency
Angled Onion	Bulb	Spring	Chemical Treatment	Foliar spray	Prior to flowering	Annually
			Mowing/Slashing	N/A	Spring – flowering to prevent seeds setting	Annually
			Mechanical Removal	Remove entire bulb or at least flowerheads	Spring – summer when easy to identify	Anytime during the period
			Prevention	Do not move/use soil where Angled Onion occurs	All year	Ongoing
Sweet Briar	Shrub	Late spring	Chemical Treatment	Foliar Spray	When plant is actively growing	Late spring to early autumn
			Environmentally sensitive approach	Basal Bark (<5 cms Diameter at Breast Height DBH)	When plant is actively growing and dry	Late spring to early autumn
			Environmentally sensitive approach	Cut Stump (>5 cms Diameter at Breast Height DBH)	All year but apply herbicide within 30 seconds of cutting stem	One time – monitor for new stems. New stems can be foliar sprayed.
			Mechanical Removal		Spring – summer when easy to identify	Anytime during the year

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Weed species	Lifeform	Flowering	Method of Control	Specification	Timing	Frequency
Cracked Willow	Tree	Spring	Mechanical Removal	Hand pulling young seedlings (<0.5 m tall).	All year	Ongoing for new seedlings.
			Chemical	Stem injection (drill and fill)	All year	Suited to larger trees. Inject once and leave tree in-situ for 12 months.
				Cut stump - for smaller trees. Remove all material to prevent small branches pieces from falling on soil and re-establishing	Apply Picloram 44.7 g/kg + Aminopyralid 4.47 g/L or Triclopyr 240 g/L + Picloram 120 g/L immediately after cutting stump.	One application should be adequate, however further follow up monitoring and herbicide application may be necessary.
				Foliar Spray – plants <2 metres high). No spray drift on to native plants or waterway	Prior to autumn leaf fall.	One application with follow up monitoring
Fennel	Perennial Herb	Spring	Mechanical Removal	Dig up entire plant (including taproot) Slashing	All year – prior to flowering	Ongoing
				Removal of seed heads	September - March	Annually
			Chemical	Spot Spray	September - March	Annually
Spear Thistle	Herb		Mechanical Removal	Chipping/Grubbing	Spring-summer	Annually

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Weed species	Lifeform	Flowering	Method of Control	Specification	Timing	Frequency
				Remove flowerheads prior to going to seed	Late spring-early summer	
			Chemical Treatment	Foliar spray	Spring – when actively growing	Annually
Hawthorn	Shrub	October to December	Mechanical Removal	Remove by hand – small seedlings	September to January	Annually
			Chemical Treatment	Cut and Paint	September to January	Annually
				Drill and Fill	September to January	Annually

6.3 Weed Hygiene

Weed seeds and parts of a plant that are capable of regenerating (such as a piece of a branch from a cracked willow) can be spread via vectors such as soil, animals, machinery, equipment, clothing, wind and water. Weed Hygiene practices can assist in reducing the risk of weeds being spread via these vectors. Hygiene measures can be applied for preventing the spread of pathogens.

Weed hygiene includes the following principles in development of a Construction Environmental Management Plan (CEMP):

- Undertake weed control for high threat or declared weed at the appropriate time or season to ensure no weed seeds or plant pathogens will spread in soil.
- Ensure the noxious weeds present on site are included in the site inductions and tool box meetings
- Ensure weed hygiene practices are included in the development of CEMP and implemented during the construction phase of the development.
- Ensure vehicles, equipment and machinery are clean prior to entry to the site and cleaned/washed down prior to leaving the site.
- Set up a designated wash down area near an entry-exit point on the construction site
- Plan earthmoving and soil excavation in clean areas first then proceed to working in contaminated areas
- Limit the import of soil to the site or source from reliable supplier
- Set up a weed management plan for stock pile areas in the construction site. Implement the weed management plan as weeds germinate.
- No storing of soil or debris or weeds in the Post Office Creek reserve area.

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Figure 6-1 High Threat Weeds at 88A-90 Wedge St, Kyneton

7. Vegetation Impact Assessment

7.1 Native Vegetation

The native vegetation on Post Office Creek, the eastern boundary and throughout the garden is considered planted vegetation. The native vegetation includes:

- Eucalypts, Acacias and native grasses species indigenous to the Bioregion and Macedon Ranges
- There are some native herbs and aquatic plants that have re-colonised this area or persisted after disturbance as climatic conditions are favourable.

The planted vegetation on Post Office Creek will be retained. As part of the proposed subdivision the planted native vegetation that will be impacted includes 30 eucalypts (manna gum, river red gum and snow gum).

7.1.1 Consideration of Clause 52.17 – Native vegetation exemptions

After further consideration of Clause 52.17 – Native Vegetation exemptions (DELWP 2017c), the exemption can be applied:

- *Native vegetation that is to be removed, destroyed or lopped that was either planted, or grown as a result of direct seeding.*

From Section 2.22 – Planted vegetation of the native vegetation exemptions states:

The purpose of this exemption is to not require a permit for the removal of native vegetation which has either been planted (e.g., planting a seedling or an established plant) or grown from direct seeding (e.g., placing a seed in the ground in any manner).

Conclusion:

There is no planning permit requirement to remove 30 eucalypts within the proposed development footprint for the 18 lot subdivision under Clause 52.17 – Native Vegetation. By applying this exemption there is no native vegetation offset requirement.

The planted native vegetation on Post Office Creek is proposed to be retained. Retention of this vegetation contributes biodiversity and the overall health for the Campaspe Catchment. This area is also subject to inundation during high rainfall events. Ongoing weed management is proposed in this section of the creek.

7.1.2 Consideration of Environmental Significance Overlay (ESO4)

Under Clause 42.01-2 a permit is required to:

Remove, destroy or lop any vegetation, including dead vegetation. This does not apply:

- If a schedule to this overlay specifically states that a permit is not required.
- If the table to Clause 42.01-3 specifically states that a permit is not required.
- To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16.

In the table to Clause 42.01-3 – the exemption for planted vegetation states:

Vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding for Crop raising or Grazing animal production.

Conclusion

The native and non-native vegetation in the garden area was not planted for the purposes of crop raising or grazing animal production, therefore a planning permit is required.

7.2 Non-native vegetation

The development footprint for the 18 lot subdivision covers 1.95 hectares. This includes exotic trees, shrubs and the garden beds with a mix of shrubs, herbs and grasses.

The areas impacted by the proposed subdivision, require a planning permit required under Clause 42.01-2, but there is no offset.

A comprehensive list of the trees was provided in the Preliminary Arborist Report completed by Axiom Tree Management Pty Ltd, 2021.

7.3 Proposed native vegetation removal

7.3.1 Proposed native vegetation assessment pathway

The native vegetation impact assessment determines the offset requirements for the vegetation loss that cannot be avoided or minimised due to the proposed development. Table 7-1 outlines the assessment pathway for the native vegetation impacts to meet the requirements of Clause 52.17 for a planning permit application.

Table 7-1 Planning permit requirements for native vegetation removal

Criteria	Assessment Pathway		Scattered trees or large trees in a patch	Report Section
	Basic/ Intermediate Pathway	Detailed Pathway		
Has the assessment pathway and reason for the assessment pathway been determined? Has the location category of the native vegetation proposed to be removed been identified?	Location is 2 and <0.5ha is to be removed.	No	N/A	This section
A description of the native vegetation to be removed	Yes	N/A	N/A	Section 7
Maps showing the native vegetation	Yes	N/A	N/A	Section 4
The offset requirement determined in accordance with section 5 of the Guidelines.	Yes	N/A	N/A	Section 7.3.4
Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Yes	N/A	N/A	Figure 1-1
Recent, dated photographs of the native vegetation.	Yes	N/A	N/A	Section 4.1.2
Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on	No recent planning permit	No recent planning permit	No recent planning permit	NA

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Criteria	Assessment Pathway		Scattered trees or large trees in a patch	Report Section
	Basic/ Intermediate Pathway	Detailed Pathway		
contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.	application to remove of native vegetation	application to remove of native vegetation	application to remove of native vegetation	
An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Yes	N/A	N/A	Section 7.3.2
A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the <i>Conservation, Forests and Lands Act 1987</i> that applies to the native vegetation to be removed	N/A	N/A	N/A	N/A
Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defensible space is in conjunction with an application under the Bushfire Management Overlay.	N/A	N/A	N/A	N/A
If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 6.	N/A	N/A	N/A	N/A
An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured.	Yes	N/A	N/A	Section 7.3.4
A site assessment report of the native vegetation to be removed, completed by an accredited native vegetation assessor.	Yes	N/A	N/A	This report
Information about impacts on rare or threatened species habitat.	Yes	N/A	N/A	Section 4 and 5

7.3.2 Avoid and minimise statement

Steps to avoid and minimise unnecessary impacts on native vegetation within the study area include:

- The impact area is confined to the development footprint.
- The plantings on Post Office Creek will be retained.
- ‘Extent of Works’ fencing during construction or erect signage to say ‘no-go zones’ tree protection areas.
- Mitigation measures to minimise the biodiversity loss includes:

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- Take steps necessary to avoid harm or injury to wildlife.
- Fauna salvage prior to tree removal.
- A suitably qualified ecologist or wildlife handler on site during tree removal.

7.3.3 Native vegetation removal report

The impacted native vegetation includes 0.019 hectares for the proposed 18 lot subdivision.

A native vegetation removal report was completed on 17/06/2022. As this is an intermediate assessment, the native vegetation removal report must be submitted to DELWP using scenario testing software called EnSym. DELWP release the Native Vegetation Removal Report which provided the following assessment pathway information in Table 7-2 and the offset requirements in Table 7-3.

The information provided in Table 7-3 outlines the offset requirements for the offset strategy. The offset strategy is discussed in the next section.

Figure 7-1 shows the native vegetation proposed to be removed.

Table 7-2 Assessment pathway

Assessment Pathway	Basic Assessment Pathway
Extent of native vegetation removal	0.019 (hectares)
Extent of past removal	0 (hectares)
Extent of proposed removal	0.019 (hectares)
Number of large trees	0
Location category	Location 2

Table 7-3 Offset Requirements

Offset Items	Offset Requirements
General offset amount	0.006 General Habitat Units
Vicinity	North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council
Minimum strategic biodiversity value score	0.192

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Large trees

| 0

7.3.4 Offset strategy

As part of the planning permit application, evidence must be shown to the responsible authority that steps have been undertaken to ensure an offset is secured. Offsets for native vegetation removal in Victoria can be secured in two ways - first party offset or a third-party offset. No first party offset will be undertaken for this proposal.

Third party offsets are purchased through a broker and this is outlined in Section 7.3.5.

7.3.5 Third party offsets

A third party offset can be purchased through a credited broker (in the form of a third offset quote) and provided to the responsible authority as part of a planning permit application.

As identified in Table 7-3 the offset requirements for 0.006 General Habitat Units must be located in the North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council and have a minimum strategic biodiversity value score of 0.192.

A third party offset quote was obtained from Vegetation Link and this is included in Appendix D.

If approval is granted for the native vegetation removal, the third party offset quote must be secured and the credit extract provided to the responsible authority i.e., the credit extract is provided to the applicant once the quote has been purchased.

Further information about accredited credit brokers can be found here:

<https://www.environment.vic.gov.au/native-vegetation/native-vegetation/offsets-for-the-removal-of-native-vegetation/i-need-to-secure-an-offset>

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Figure 7-1 Proposed Vegetation Removal

8. Mitigation measures

The following mitigation measures are recommended as part of the development of a Construction Environmental Management Plan (CEMP) to reduce impacts to biodiversity.

The mitigation measures include:

- Fence off all native vegetation on Post Office Creek for the duration of construction.
- Erect signage to say 'no-go zones' tree protection areas.
- Take steps to avoid unnecessary harm or injury to wildlife.
- Engage a suitably qualified wildlife handler during tree removal works.
- Sediment control measures should prevent surface water runoff carrying sediment into Edgars Creek for the duration of construction.
- Sediment control can include sediment fencing using geotextile fabric which should remain in-situ until vegetation has re-established post construction.

Weed hygiene includes the following principles in development of a Construction Environmental Management Plan (CEMP):

- Undertake weed control for high threat or declared weed at the appropriate time or season to ensure no weed seeds or plant pathogens will spread in soil.
- Ensure the noxious weeds present on site are included in the site inductions and tool box meetings
- Ensure weed hygiene practices are included in the development of CEMP and implemented during the construction phase of the development.
- Ensure vehicles, equipment and machinery are clean prior to entry to the site and cleaned/washed down prior to leaving the site.
- Set up a designated wash down area near an entry-exit point on the construction site
- Plan earthmoving and soil excavation in clean areas first then proceed to working in contaminated areas
- Limit the import of soil to the site or source from reliable supplier
- Set up a weed management plan for stock pile areas in the construction site. Implement the weed management plan as weeds germinate.
- No storing of soil or debris or weeds in the Post Office Creek reserve area.

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9. Conclusion

From the ecology assessment undertaken the following results were determined:

- The Ecological Vegetation Classes in the Study Area includes EVC 821 Tall Marsh for the small dam.
- No offset are required the vegetation on Post Office Creek. This planted vegetation will be retained.
- No FFG or EPBC listed vegetation communities occur on site
- No threatened flora or fauna were observed

The proposed native vegetation removal requiring offsets includes 0.019 hectares of EVC 821 Tall Marsh for the small dam. The following offset requirements needed in the offset strategy:

- General offset amount – 0.006 General Habitat Units
- Vicinity – North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council
- Minimum strategic biodiversity value score – 0.192
- Large trees -0

If a planning permit is granted, the next step involves securing third party offsets and contacting Vegetation Link to enter into a purchase agreement.

In consideration of the native vegetation removal mitigation measures should be considered during construction.

No EPBC Referral is required.

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Appendix A Flora List

E – Exotic; N- Native;

CaLP weed listing R – Restricted; C – Regionally Controlled;

Scientific Name	Common Name	Status	CaLP weed listing status
<i>Acacia dealbata</i>	Silver Wattle	P	
<i>Acacia melanoxylon</i>	Blackwood	P	
<i>Eucalyptus ovata</i>	Swamp Gum	P	
<i>Eucalyptus sideroxylon</i>	Red Ironbark	P	
<i>Acacia pravissima</i>	Ovens Wattle	P	
<i>Acacia sp.</i>	Wattle	P	
<i>Allium triquetrum</i>	Angled Onion	E	R
<i>Allocasuarina sp.</i>	Sheoak	P	
<i>Banksia marginata</i>	Silver Banksia	P	
<i>Briza maxima</i>	Large Quaking Grass	E	
<i>Callistemon sieberi</i>	River Bottlebrush	P	
<i>Carex appressa</i>	Tall Sedge	N	
<i>Cirsium vulgare</i>	Spear Thistle	E	C
<i>Crataegus monogyna</i>	Hawthorn	E	C
<i>Dactylis glomerata</i>	Cocksfoot	E	
<i>Ehrharta longifolia</i>	Annual Veldt-grass	E	
<i>Epilobium hirtigerum</i>	Hairy Willow-herb	N	
<i>Eucalyptus camaldulensis</i>	River Red-gum	P	
<i>Eucalyptus leucoxylon</i>	Yellow Gum	P	
<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	P	
<i>Eucalyptus pauciflora</i>	Snow Gum	P	
<i>Eucalyptus viminalis</i>	Manna Gum	P	
<i>Festuca sp.</i>	Fescue	E	
<i>Foeniculum vulgare</i>	Fennel	E	R
<i>Fumaria bastardii</i>	Bastard's Fumitory	E	
<i>Gallium aparine</i>	Sticky weed	E	
<i>Geranium sp.</i>	Native Geranium	N	
<i>Holcus lanatus</i>	Yorkshire Fog	E	
<i>Hypochaeris radicata</i>	Cat's-ear	E	

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Scientific Name	Common Name	Status	CaLP weed listing status
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	N	
<i>Malva parviflora</i>	Small-flowered Mallow	E	
<i>Oxalis perennans</i>	Grassland Wood-sorrel	N	
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	E	
<i>Phragmites australis</i>	Common Reed	N	
<i>Plantago lanceolata</i>	Ribwort	E	
<i>Poa labillardierei</i>	Common Tussock Grass	N	
<i>Portulaca oleracea</i>	Common Purslane	N	
<i>Rosa rubiginosa</i>	Sweet Briar	E	C
<i>Rumex sp.</i>	Dock	E	
<i>Salix fragilis</i>	Cracked Willow	E	R
<i>Senecio quadridentatus</i>	Cottony Fireweed	N	
<i>Sonchus asper</i>	Spiny sow-thistle	E	
<i>Sonchus oleraceus</i>	Sow Thistle	E	
<i>Trifolium repens var. repens</i>	White Clover	E	
<i>Typha sp.</i>	Cumbungi	N	
<i>Typha sp.</i>	Cumbungi	N	
<i>Vicia sativa</i>	Common Vetch	E	

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Appendix B Tree List

Number	Date-Time	Common Name	Scientific Name	DBH	Easting	Northing	Notes
1	2021-10-11T15:34:37.894	Manna Gum	<i>Eucalyptus viminalis</i>	24	273786	5875560	Native Planted Tree
2	2021-10-11T15:35:21.400	Manna Gum	<i>Eucalyptus viminalis</i>	25	273782.7	5875556	Native Planted Tree
3	2021-10-11T15:51:15.067	Manna Gum	<i>Eucalyptus viminalis</i>	27	273777.6	5875507	Native Planted Tree
4	2021-10-11T15:52:15.708	Manna Gum	<i>Eucalyptus viminalis</i>	18	273776.4	5875501	Native Planted Tree
5	2021-10-11T15:52:42.383	Manna Gum	<i>Eucalyptus viminalis</i>	27	273774.7	5875504	Native Planted Tree
6	2021-10-11T15:53:01.560	Manna Gum	<i>Eucalyptus viminalis</i>	27	273774.8	5875509	Native Planted Tree
7	2021-10-11T15:53:40.533	Manna Gum	<i>Eucalyptus viminalis</i>	34	273773.8	5875515	Native Planted Tree
8	2021-10-11T15:54:37.952	Manna Gum	<i>Eucalyptus viminalis</i>	24	273773.7	5875522	Native Planted Tree
9	2021-10-11T15:43:41.134	Manna Gum	<i>Eucalyptus viminalis</i>	24	273778.2	5875528	Native Planted Tree
10	2021-10-11T15:44:21.700	Manna Gum	<i>Eucalyptus viminalis</i>	28	273775.7	5875526	Native Planted Tree
11	2021-10-11T15:45:06.844	Manna Gum	<i>Eucalyptus viminalis</i>	25	273778	5875524	Native Planted Tree
12	2021-10-11T15:46:36.049	Manna Gum	<i>Eucalyptus viminalis</i>	24	273774.4	5875515	Native Planted Tree

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Number	Date-Time	Common Name	Scientific Name	DBH	Easting	Northing	Notes
13	2021-10-11T15:47:42.725	River Red Gum	<i>Eucalyptus camaldulensis</i>	22	273776.9	5875518	Native Planted Tree
14	2021-10-11T15:48:56.521	River Red Gum	<i>Eucalyptus camaldulensis</i>	16	273783.3	5875517	Native Planted Tree
15	2021-10-11T15:50:04.921	River Red Gum	<i>Eucalyptus camaldulensis</i>	14	273781.8	5875511	Native Planted Tree
16	2021-10-11T15:50:35.903	River Red Gum	<i>Eucalyptus camaldulensis</i>	15	273780.8	5875506	Native Planted Tree
17	2021-10-11T15:36:21.420	Eucalypt sp.	<i>Gum</i>	15	273778.9	5875555	Native Planted Tree
18	2021-10-11T15:37:17.998	Manna Gum	<i>Eucalyptus viminalis</i>	29	273782.2	5875552	Native Planted Tree
19	2021-10-11T15:38:15.169	Manna Gum	<i>Eucalyptus viminalis</i>	27	273780.6	5875542	Native Planted Tree
20	2021-10-11T15:39:28.560	Manna Gum	<i>Eucalyptus viminalis</i>	25	273783.4	5875540	Native Planted Tree
21	2021-10-11T15:40:03.673	River Red Gum	<i>Eucalyptus camaldulensis</i>	21	273784.5	5875536	Native Planted Tree
22	2021-10-11T15:41:12.314	Manna Gum	<i>Eucalyptus viminalis</i>	25	273777.1	5875535	Native Planted Tree
23	2021-10-11T15:42:16.186	Manna Gum	<i>Eucalyptus viminalis</i>	25	273779.8	5875534	Native Planted Tree
24	2021-10-11T15:42:54.906	Manna Gum	<i>Eucalyptus viminalis</i>	22	273777.1	5875530	Native Planted Tree

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Number	Date-Time	Common Name	Scientific Name	DBH	Easting	Northing	Notes
25	2021-10-11T13:29:47.840	Eucalypt sp.	<i>Gum</i>	34	273713.9	5875612	Native Planted Tree
26	2021-10-11T15:21:09.991	Snow gum	<i>Eucalyptus pauciflora</i>	5	273729.9	5875575	Native Planted Tree
27	2021-10-11T15:21:45.248	Eucalypt sp.	<i>Gum</i>	1	273725.6	5875568	Native Planted Tree
28	2021-10-11T15:22:36.948	Eucalypt sp.	<i>Gum</i>	1	273731.2	5875563	Native Planted Tree
29	2021-10-11T15:32:37.344	Manna Gum	<i>Eucalyptus viminalis</i>	31	273788.4	5875573	Native Planted Tree
30	2021-10-11T15:33:43.681	River Red Gum	<i>Eucalyptus camaldulensis</i>	27	273785.8	5875565	Native Planted Tree

Appendix C Native Vegetation Removal Report



This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report is not an assessment by DELWP of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 17/06/2022
Time of issue: 2:43 pm

Report ID: NGH_2022_005

Project ID	21-325_NVR_88a-90_WedgeSt_Kyneton_14062022
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Assessment pathway

Assessment pathway	Intermediate Assessment Pathway
Extent including past and proposed	0.019 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.019 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



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Native Vegetation removal report

Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount ¹	0.000 general habitat units
Vicinity	North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council
Minimum strategic biodiversity value score ²	0.102
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

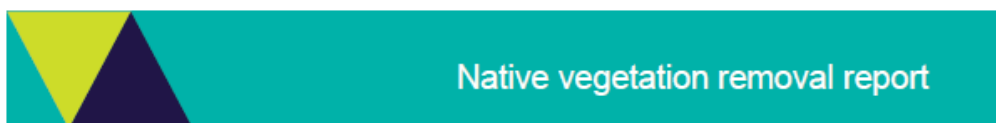
Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

¹ The general offset amount required is the sum of all general habitat units in Appendix 1.

² Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

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Native vegetation removal report

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Intermediate Assessment Pathway and it will be assessed under the Intermediate Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) for a full list of application requirements. This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defensible space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- An offset statement that explains that an offset has been identified and how it will be secured.

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

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This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

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Appendix 1: Description of native vegetation to be removed

All zones require a general offset, the general habitat units each zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
2-a	Patch	vriv0821	Depleted	0	no	0.360	0.019	0.019	0.240		0.006	General

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Appendix 2: Information about impacts to rare or threatened species' habitats on site

This is not applicable in the Intermediate Assessment Pathway.

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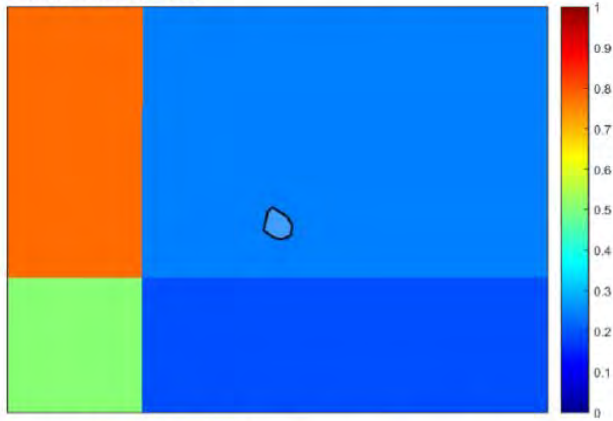
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Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



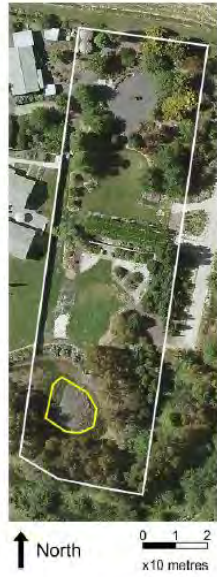
3. Aerial photograph showing mapped native vegetation



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4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

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Appendix D Offset Quote



Our reference: VLQ-8156

Your reference: TBA

16 June 2022

Michelle Patrick
 NGH Consulting
 michelle.p@nghconsulting.com.au

Dear Michelle

RE: Quotation for the supply of native vegetation credits

Vegetation Link is an accredited offset provider with the Department of Environment, Land, Water & Planning (DELWP). We offer a specialised brokerage service to enable permit holders and developers to identify suitable native vegetation credits to meet their planning permit offset requirements.

Based on the information you have provided, I understand you require the following native vegetation offset:

Offset type	Vicinity	General habitat units (GHU)	Min. strategic biodiversity value (SBV)	Large trees
General	North Central CMA	0.006	0.192	0

To meet your offset requirements, you can purchase native vegetation credits from a third party as per the option quoted below¹. This quotation is valid for 14 days, subject to credit availability and landholder pricing.

Fixed price trade pathway – offset site located in the Pyrenees Shire area (approx. 3-4 week turnaround from acceptance of quote)	
Cost of native vegetation credits – invoiced by DELWP	\$466.80
Transaction fees – invoiced by Vegetation Link	\$870.00
Total (ex. GST)	\$1,336.80
Total (inc. GST)	\$1,470.48

If you would like to purchase credits, let us know that you accept the quote and return the attached **purchaser details form** by email. Upon receipt of the form, we will begin the trade process. Further details of the process for credit allocation is in the FAQ below.

Should you have any queries, please do not hesitate to contact us on 1300 VEG LINK (1300 834 546) or email offsets@vegetationlink.com.au.

Sincerely,

Tesha Mahoney
 Biodiversity Offset Broker

¹ Note that the transaction fee includes DELWP NVOR transfer and allocation fees and a Vegetation Link fee

Vegetation Link Pty Ltd
 ABN: 92 169 702 032
www.vegetationlink.com.au

1300 VEG LINK (1300 834 546) | offsets@vegetationlink.com.au | PO Box 10 Castlemaine VIC 3450



FAQs

What is a third party offset?

A third party offset is an offset site owned by another landowner who manages and protects native vegetation on their land. Landowners who establish these offset sites are required to:

- Enter into a Landowner Agreement for the specified offset site. A landowner agreement is in perpetuity and is binding upon the current and future landowners of the site. It permanently restricts use of the site for many purposes.
- Implement a detailed 10-year Management Plan endorsed by the DELWP Native Vegetation Offset Register to manage and improve the biodiversity values of the site.

How is the price of native vegetation offset credit (GHUs, GBEUs etc.) determined?

Landowners who own offset sites set their own price for native vegetation credits. They determine the price based on numerous factors. This includes but not limited to site establishment, the cost to manage the site in perpetuity (e.g., maintain fencing, control pest species), foregone use cost, and administrative costs. Depending on how the site is registered, the credit fee may be paid to either DELWP or directly to the landowner.

Further information about the work some of our landowners are doing can be found on the [Vegetation Link website](#).

What is the process after I accept the quote?

After you accept the quote and return the purchaser table, the following steps will be undertaken:

1. We will set up a contract between the parties involved and send the contract out for signing by all parties.
2. Once the contract is signed by all parties, invoices will be issued for the fees listed in the quotation. We will send you two invoices, one for our transaction fee invoiced by Vegetation Link and one for the credit fee, usually to be paid to DELWP or the landowner. We recommend providing remittances for your payments.
3. Once payments are received, Vegetation Link will send you an allocated credit extract from the Native Vegetation Offset Register and your executed contract as evidence that you have purchased the offset.

How long will the process take? When will I get my credits?

Generally, the process from quote acceptance to having evidence of allocated credits takes between 2-6 weeks. This is dependent on a range of factors including the type of

vegetationlink

landholder agreement, contract types and organisational workflows. We work as quickly as possible to get your credits to you within this time period.

We note that you **cannot** remove vegetation until you have been given permission by the Responsible Authority (usually the council that has issued your permit).

What happens if I don't have a permit yet?

When people are buying credits before a permit is issued, the following three options are most common:

- You can pay for the offsets before the planning permit is available, and then the offsets are allocated to the permit when it is available. This will incur an additional \$50 fee from DELWP. When considering this option, it is important to realise that your estimated offset requirements may be different than the actual permit requirements.
- You can wait for the planning permit to be approved first and then request a quote to meet the requirements in your permit. Should credits be available, you can then start the offset purchase process. We then use the planning permit number for allocating the credits. Allocating credits to the permit is evidence that you have purchased your offset.
- You can request a quote to confirm availability and to get an idea of the cost of offsetting before you apply for a permit. Once you receive the planning permit you can request an updated quote. It is at this point that you can then go through the offset purchase process.

We cannot guarantee credit availability until a) contracts are executed, or b) credits have been held via a pending trade lodged with DELWP Native Vegetation Offset Register.

We cannot guarantee price until a) a quote has been accepted within 14 days, and b) a Credit Trading Agreement is signed within 21 days, and c) the invoice for the credits is paid within 28 days of the date the invoice is issued.

If I sign the contract, does that mean I MUST pay for the credits?

Yes, you have entered into a contract agreeing to pay for the offset credits therein and are required to pay for those credits. The credits must be paid for within 28 days of the date of the invoice.

Can you hold the credits for me, as I want to pay later?

We are unable to hold credits for later payment. Please also see 'What happens if I don't have a permit yet?' above.

For further information, see [our website](#) or the [DELWP website](#).

Ecology Assessment
88a-90 Wedge St, Kyneton

Appendix E Threatened Species Impact Assessment

E.1 Threatened flora Assessment

EPBC Status – E: Endangered; V: Vulnerable, CE: Critically Endangered.

FFG Status – Listed (Listed under the FFG Act and the Victorian Advisory List includes the threatened status for each species. The Victorian Advisory List is: E: Endangered; V: Vulnerable, R: Rare, NT: Near Threatened, Pr Ex – presumed extinct.

(NT = did not meet the criteria to be officially listed under the FFG Act, but they could possibly qualify or are close to qualifying in the near future

Th = threatened on the FFG Threatened List but no status provided

Scientific Name	Common Name	Habitat	EPBC Status	FFG Status	Victorian Advisory List	VBA/ MNES	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning	Potential Impact
<i>Eucalyptus aggregata</i>	Black Gum	The only known natural occurrence of Black Gum in Victoria within 4 kms of Woodend. Its natural habitat typically comprises riparian woodland which it may dominate or co-dominate with Swamp Gum <i>Eucalyptus ovata</i>	V			MNES			Absent	Outside of geographical location	Low
<i>Dodonaea procumbens</i>	Trailing Hop-bush	Largely confined in Victoria to the south-west (Penola-Dergholm area, Grampians, Lake Fyans) with outlying occurrences near Castlemaine, Avoca, Skipton, Camperdown and extraordinary disjunctions near Sale where very rare and in perhaps also in the upper Murray River area (represented by a single, 1883 specimen of uncertain provenance). Grows in low-lying, often winter-wet areas in woodland, low open-forest and grasslands on sands and clays.	V			MNES			Low	Closest record is in Castlemaine, approximately 35 km away	Low

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Scientific Name	Common Name	Habitat	EPBC Status	FFG Status	Victorian Advisory List	VBA/MNES	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning	Potential Impact
<i>Grevillea repens</i>	Creeping Grevillea	Disjunct occurrences in mountains north-east and north-west of Melbourne: i.e. between Mt Disappointment and Healesville (Mt Slide form), and near Daylesford. Grows in moist to well-drained situations in shallow clayey soils in dry sclerophyll forest.		E	R	VBA	1	01/04/1887	Low	Lack of suitable habitat. Old record.	Low
<i>Diuris X palachila</i>	Broad-lip Diuris	Occurs singly or in small groups in fertile grassland or open forest generally with its putative parents <i>D. maculata</i> and <i>D. lanceolata</i> .		E	R	VBA	1	01/01/1770	Low	Area disturbed. Old record.	Low
<i>Glycine latrobeana</i>	Clover Glycine	Clover Glycine is found across south-eastern Australia in native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer.	V	V	V	VBA/MNES	50	23/11/2015	Low	Area disturbed.	Low
<i>Euphrasia collina subsp. speciosa</i>	Purple Eyebright	Previously considered to be extinct in Victoria, represented at MEL by a few old specimens from between Ballarat and Heathcote.			PrEx	VBA	1	15/10/1892	Low	Area disturbed. Old record	Low
<i>Rumex crystallinus s.s.</i>	Glistening Dock	Rare in Victoria, occurring only in the far north-west of the state on the Murray River floodplain, recorded only from the margins and drying beds of Lakes Wallawalla, Hattah and Lalbert.		E	V	VBA		25/06/2018	Low	Outside of known range.	Low
<i>Dianella amoena</i>	Matted	Largely confined to drier grassy woodland and grassland communities south of the	E			VBA/MNES	31	27/01/2018	Low	Within range.	Low

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Scientific Name	Common Name	Habitat	EPBC Status	FFG Status	Victorian Advisory List	VBA/MNES	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning	Potential Impact
	Flax-lily	Dividing Range and now much depleted through its range.								Recent record.	
<i>Geranium sp. 3</i>	Pale-flower Crane's-bill	Found in open, grassy areas of dry woodland to forest.		E	R	VBA		8/11/2011	Low	Recent record. Suitable habitat according to EVC mapping.	Low
<i>Pterostylis agrestis</i>	Sutton Grange Greenhood	Endemic to Victoria where confined to basalt plains grasslands in the vicinity of Bacchus Marsh, Maldon, Sutton Grange, Taradale and possibly Woorndoo.		C	CE	VBA		8/11/2011	Low	Area disturbed. Outside known range.	Low
<i>Caladenia ornata</i>	Ornate Pink fingers	In Victoria known only from the south-west in heathy forest on seasonally moist sandy loam.	V			MNES			low	Area disturbed. Lack of suitable habitat according to EVC mapping.	Low
<i>Lepidum hyssopifolium</i>	Basalt Pepper-cress	Establish on open, bare ground with limited competition from other plants	E			MNES			Low -	Area disturbed	Low
<i>Leucochrysum albicans subsp. tricolor</i>	Hoary Sunray	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. Bare ground is required for germination.	E			MNES			Absent	Outside of bioregion.	Low

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Scientific Name	Common Name	Habitat	EPBC Status	FFG Status	Victorian Advisory List	VBA/ MNES	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning	Potential Impact
<i>Prasophyllum validum</i>	Sturdy Leek-orchid	Tends to grow in drier woodland habitats, generally with a low sparse understorey. In Victoria, it occurs in box and box-ironbark woodland	V			MNES			Low	Area disturbed	Low
<i>Rutidosis leptorhynchoides</i>	Button Wrinklewort	Restricted to open stands of plains grassland and grassy woodlands, on fertile clays to clay loams, usually in areas where the grass cover is more open	E			MNES			Low	Confined to basalt grasslands between Rokewood and Melbourne	Low
<i>Senecio macrocarpus</i>	Large-fruit Fireweed	In Victoria largely confined to remnant Themeda grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell. Formerly recorded from near Horsham and Casterton, but apparently long extinct from these areas.	V			MNES			Low	Within known range. Grassy EVC with Themeda sp present according to EVC mapping.	Low
<i>Senecio psilocarpus</i>	Swamp Fireweed	Restricted in Victoria to a few herb-rich winter-wet swamps throughout the south of the state, west from Sale, growing on volcanic clays or peaty soils.	V			MNES			Low	Swamp EVC mapped adjacent to the study area.	Low
<i>Thelymitra matthewsii</i>	Spiral Sun-orchid	Widely distributed but rare, in coastal sandy flats or slightly elevated sites (to 400 m) in well-drained soils (sandy loams to gravelly limestone soils) in open forest. Plants colonise disturbed sites and slowly	V			MNES			Low	Outside known/predicted range.	Low

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Scientific Name	Common Name	Habitat	EPBC Status	FFG Status	Victorian Advisory List	VBA/MNES	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning	Potential Impact
		disappear as these sites stabilise.									
<i>Xerochrysum palustre</i>	Swamp Everlasting	Occurs in lowland swamps, usually on black cracking clay soils, scattered from near the South Australian border north-west of Portland to Bairnsdale district, but rare due to habitat depletion.	V			MNES			Low	Swamp EVC mapped adjacent to the study area.	Low
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	Grows mostly in permanent swamps. It needs wetlands which are at least moderately fertile and which have some bare ground.	V			MNES			Low	Swamp EVC mapped adjacent to the study area.	Low
<i>Caladenia versicolor</i>	Candy Spider-orchid	Restricted to the western part of the Midlands region in the vicinity of Stawell, in woodland on winter-wet sandy loam.	V			MNES			Low	Outside of known range. Area disturbed.	Low

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E.2 Threatened Fauna Assessment

Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
Birds										
<i>Anthochaera phrygia</i>	Regent Honeyeater	Most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation such as sheoak (<i>Casuarina</i> spp) where it feeds on needle-leaved mistletoe and sometimes breeds. Also uses remnant patches in farmland and urban areas and roadside reserves.	CE					Low	Lack of suitable habitat	Low
<i>Biziura lobata</i>	Musk Duck	Usually seen in small numbers on the deep waters of well-vegetated fresh to saline lakes, swamps and occasionally shallow inlets and bays.		V	VBA	28/02/1978	1	Low	Post Office Creek adjacent to proposed works.	Low
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Part nocturnal and forages over water in dense cover. Habitat is usually tall reedbeds, sedges, rushes, cumbungi or lignum. Also occurs on rice fields, drains in tussocky paddocks and occasionally on saltmarshes and brackish wetlands. Mostly recorded in the southern coastal areas and in the Murray River region of central northern Victoria.	EN		MNES			Low	Outside area mostly recorded. Area disturbed.	Low
<i>Falco hypoleucos</i>	Grey Falcon	Inhabits grasslands, lightly wooded plains and scrublands of interior Australia. Birds occur sporadically on the periphery of their range, such as NW. Vic. More common in Vic during or after droughts.	VU		MNES			Low	No records on ALA or VBA within 5km. Tree-lined watercourse present	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Falco subniger</i>	Black Falcon	Has a stronghold in inland Australia. Most Victorian records come from the lowlands and only occasionally from the foothills. It occurs mainly over croplands, grasslands and wooded farmlands.		CE	VBA	31/12/1998	2	Low	Lack of suitable habitat.	Low
<i>Grantiella picta</i>	Painted Honeyeater	Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> . It is more common in wider blocks of remnant woodland than in narrower, although it breeds in quite narrow roadside strips if ample mistletoe fruit is available.	V	V	MNES/VBA	No date supplied	1	Low	Lack of preferred habitat.	Low
<i>Accipiter novaehollandiae</i>	Grey Goshawk	Inhabits a variety of wet forest types in Australia. Generally favours tall, wet forests, particularly in gullies, for roosting and hunting. It depends on mature forests for breeding, rarely using forest regrowth less than 30 years old. They are also seen in woodlands, dry forests, wooded farmlands and suburban parks below altitudes of 500 m.		E	VBA	No date supplied	1	Low	Area disturbed (trees unlikely to be old).	Low
<i>Ninox strenua</i>	Powerful Owl	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well.		V	VBA	12/05/2018	5	Low	Lack of preferred habitat.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.		E	VBA	No date supplied	1	Low	Some habitat may be present	Low
<i>Hieraetus morphnoides</i>	Little Eagle	Seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest. Populations may benefit from clearing, which may open new feeding grounds, but they do not respond well to urbanisation.		V	VBA	24/11/1979	2	Low	Lack of suitable habitat.	Low
<i>Rostratula australis</i>	Australian Painted Snipe	Generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber	E		MNES			Low	Post Office Creek present adjacent study area.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Lathamus discolor</i>	Swift Parrot	<p>On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.</p> <p>Favoured feed trees include winter flowering species such as Swamp Mahogany Eucalyptus robusta, Spotted Gum Corymbia maculata, Red Bloodwood C. gummifera, Forest Red Gum E. tereticornis, Mugga Ironbark E. sideroxylon, and White Box E. albens.</p> <p>Commonly used lerp infested trees include Inland Grey Box E. microcarpa, Grey Box E. moluccana, Blackbutt E. pilularis, and Yellow Box E. melliodora.</p>	CE		MNES			Low	No records in VBA or ALA within 5km of study area. Species exhibits high site fidelity.	Low
<i>Numenius madagascariensis</i>	Eastern Curlew	<p>It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.</p> <p>Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets</p> <p>It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.</p> <p>It roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves</p>	CE /M		MNES			Low	Lack of preferred habitat.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Pedionomus torquatus</i>	Plains-wanderer	Main distribution is within the Riverina of NSW, patchy elsewhere, and only occurring in small numbers in northern Victoria. Inhabits open grasslands with preference towards Danthonia and Stipa species. However, vegetation structure is more important than floristic composition.	CE		MNES			Low	No suitable habitat on site	Low
<i>Spatula rhynchotis</i>	Australasian Shoveler	Occurs mainly on large, well-vegetated wetlands and lakes, occasionally including areas with saline waters. Populations are found in higher numbers on permanent, well-vegetated freshwater swamps with areas of open water.		V	VBA	No date supplied	1	Low	Post Office Creek present adjacent to study area.	
Migratory Bird										
<i>Calidris ferruginea</i>	Curlew Sandpiper	Summer migrants to Victoria from Arctic breeding grounds (Aug-April). Found in a range of wetland habitats: tidal mudflats, saltmarsh, saltfields, fresh to saline wetlands, both coastal (most) and inland.	CR/M		MNES			Low	Lack of suitable vegetation	Low
<i>Hirundapus caudacutus</i>	White-throated Needletail	Almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	V/M		MNES			Low	Species almost exclusively aerial.	Low
<i>Rhipidura rufifrons</i>	Rufous Fantail	Mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallowwood (<i>Eucalyptus microcorys</i>), Mountain Grey Gum (<i>E. cypellocarpa</i>), Narrow-leaved Peppermint (<i>E. radiata</i>), Mountain Ash (<i>E. regnans</i>), Alpine Ash (<i>E. delegatensis</i>), Blackbutt (<i>E. pilularis</i>) or Red Mahogany (<i>E. resinifera</i>);	M		MNES			Low	Lack of preferred vegetation. May pass through the area.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
		usually with a dense shrubby understorey often including ferns. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (<i>Eucalyptus maculata</i>), Yellow Box (<i>E. melliodora</i>), ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage.								
<i>Motacilla flava</i>	Yellow Wagtail	This insectivorous bird inhabits open country near water, such as wet meadows. It nests in tussocks.	M		MNES			Low	Lack of suitable vegetation	Low
<i>Apus pacificus</i>	Fork-tailed Swift	A mainly aerial species. In Australia it is found in arid areas as well as in towns and on the coast. Flocks of thousands may appear when there are hot strong winds. Pacific swifts often travel and feed with white-throated needle-tails.	M		MNES			Low	Lack of suitable vegetation	Low
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests	M		MNES			Low	Lack of suitable vegetation	Low
Amphibians										
<i>Litoria raniformis</i>	Growling Grass Frog	The species often inhabits water bodies with a diverse assemblage of aquatic vegetation, including emergent species such as sedges (<i>Gahnia</i> spp.), submergent species such as curly pondweed (<i>Potamogeton</i> spp.), floating species such as water ribbon (<i>Triglochin</i> spp.) and filamentous algae.	V		MNES			Low	No recent records in this location. No suitable habitat	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Pseudophryne bibronii</i>	Brown Toadlet	Found in a variety of habitats not necessarily associated with permanent water. Utilise a wide variety of habitats, including dry forests, woodland, shrubland, grassland, coastal swamps, heathland, and sub-alpine areas (Anon 2006). They live in areas that are likely to be inundated after rain (Robinson 2002). They shelter in damp areas under leaf litter, logs, or other forms of cover.		E	VBA	18/05/2018	21	Low	Recent record. Suitable habitat.	Low
<i>Fish</i>										
<i>Maccullochella peelii</i>	Murray Cod	Lives in a wide variety of habitats from silty slow moving rivers to clear rivers with pools and riffles. Prefers instream habitat of rocks & logs with overhanging vegetation.	V		MNES			Low	Lack of suitable habitat	Low
<i>Galaxias rostratus</i>	Flathead Galaxias	Has been recorded before 1980 in the Campaspe River. Collected from a variety of habitats including billabongs, lakes, swamps and rivers.	CE		MNES			Low	Post Office Creek connects with Campaspe River approximately 1.5km north west of the study site.	Low
<i>Macquaria australasica</i>	Macquarie Perch	Found in the Murray River and its tributaries and is also found in parts of the Yarra River. It is most often found as a solitary individual, however can form schools during breeding season.	E		MNES			Low	Lack of suitable habitat	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Maccullochella macquariensis</i>	Trout Cod		E		MNES			Low	Lack of suitable habitat	Low
<i>Nannoperca australis</i> Murray-Darling Basin lineage	Southern Pygmy Perch		V		MNES			Low	Lack of suitable habitat	Low
<i>Aythya australis</i>	Hardhead	Inhabit deep to shallow wetlands with open water and fringing emergent vegetation. These birds are most common in the wetland systems of inland Australia		V	VBA		1	Low	Lack of suitable habitat	Low
<i>Reptiles</i>										
<i>Delma impar</i>	Striped Legless Lizard	The Striped Legless Lizard is a grassland specialist. Potential habitat for the Striped Legless Lizard includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands) across the historical range of the species, provided that area retains suitable tussock structure, the soil is of appropriate type and structure, and the site has not had major disturbance such as ploughing.	V		MNES			Low	Potential suitable habitat	Low
<i>Pseudemoia pagenstecheri</i>	Tussock Skink	Found from the Grampians in the west through the basalt plains west of Melbourne to north-east Victoria.		E	VBA	No date supplied	1	Low	Outside of known Victorian geographical area	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Mammal</i>										
<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll	Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves (NPWS 1999at). Individuals also require an abundance of food, such as birds and small mammals, and large areas of relatively intact vegetation through which to forage (NSW NPWS 1999at). This subspecies is moderately arboreal and approximately 11% of travelling is done in trees.	E		MNES			Low	Area disturbed and urban.	Low
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	In Victoria the Long-nosed Potoroo (SE Mainland) occurs in six discrete regions (Seebeck 1981), including the South-western region, Grampians, Otways, Western Port, Wilsons Promontory and east Gippsland.	V		MNES			Low	Outside known range.	Low
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	The Brush-tailed Phascogale inhabits open dry foothill forest with little ground cover, typically associated with box, ironbark and stringybark eucalyptus. The Brush-tailed Phascogale is a shy, cryptic species.		V	VBA	26/07/2019	14	Low	Area urban.	Low
<i>Petauroides volans</i>	Southern Greater Glider	Largely restricted to eucalypt forests and woodlands. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. Favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species	V	V	MNES/VBA	No date supplied	1	Low	Lack of preferred habitat.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
<i>Pteropus poliocephalus</i>	Grey-Headed Flying-fox	Eastern coastal Australia from Gladstone in Qld to South Gippsland and Melbourne in Vic, with rare influxes further west and south. Rarely more than 200km inland. In warmer months gathers in very large camps, usually in dense forest in gullies.	V		MNES			Low	Potential foraging in the area	Low
<i>Invertebrate</i>										
<i>Austrolestes aridus</i>	Inland Ringtail Damselfly	Widespread across inland Australia, where it inhabits streams, pools, and ponds.		nt	VBA	No date supplied	1	Low	Not mapped in the VBA or ALA. However suitable habitat.	Low
<i>Leptoceris sounta</i>	Caddisfly	Caddisflies (Trichoptera): Adults are predominately found near water bodies, as their young are aquatic. Although there is one species in Australia that has terrestrial larvae. The adults are nocturnal and can sometimes be found resting on tree trunks by streams and lakes during the day. The larvae live in almost all types of freshwater habitats and a few species even inhabit saline waters and marine environments.		V	VBA	No date supplied	1	Low	Post Office Creek adjacent study area. 20 species collected at Campaspe River which is approximately 1.5km north west of the study site.	Low
<i>Synemon plana</i>	Golden Sun Moth	Habitat includes native temperate grassland and open grassy woodlands dominated by wallaby grass. While previous studies suggested that the species prefers grasslands which have a greater	CE	V	MNES/VBA	4/12/2020	1	Low	Area disturbed.	Low

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Scientific name	Common name	Habitat	EPBC	FFG	VBA/MNES	Last record	No. sites	Likelihood of occurrence	Reasoning	Potential Impact
		than 40% coverage of wallaby grass over a given area, more recent studies show a broader tolerance for other species compositions, including degraded grasslands dominated by exotic Chilean Needlegrass								

Ecology Assessment
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Appendix F MNES Search Results



Australian Government
**Department of Agriculture,
Water and the Environment**

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 24/09/21 14:57:19

[Summary](#)

[Details](#)

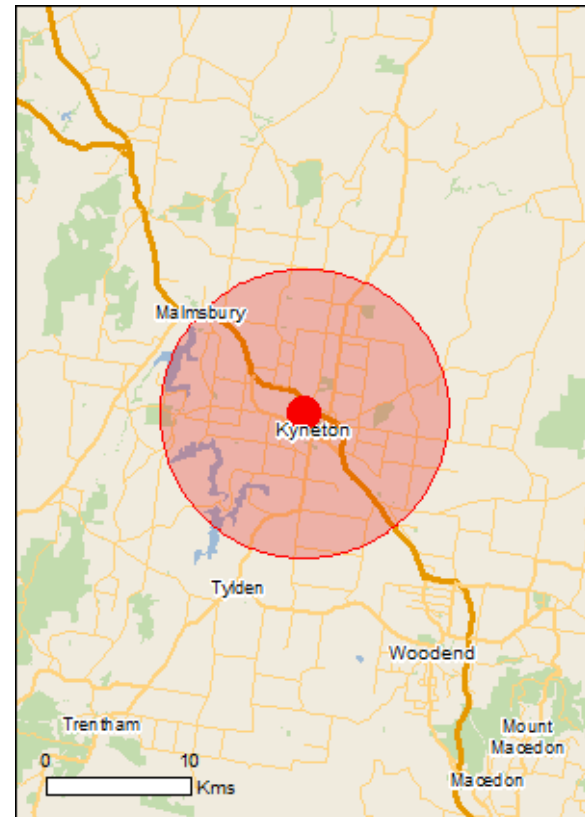
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

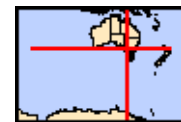
[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	37
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	1
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	1
Invasive Species:	37
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	400 - 500km upstream
Gunbower forest	100 - 150km upstream
Hattah-kulkyne lakes	300 - 400km upstream
Nsw central murray state forests	100 - 150km upstream
Riverland	400 - 500km upstream
The coorong, and lakes alexandrina and albert wetland	400 - 500km upstream

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.	

Name	Status	Type of Presence
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]	
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Translocated population known to occur within area
Nannoperca australis Murray-Darling Basin lineage Southern Pygmy Perch (Murray-Darling Basin lineage) [91711]	Vulnerable	Species or species habitat known to occur within area
Frogs		
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
Caladenia ornata Ornate Pink Fingers [76213]	Vulnerable	Species or species habitat may occur within area
Caladenia versicolor Candy Spider-orchid [24392]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat may occur within area
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat likely to occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area
Prasophyllum validum Sturdy Leek-orchid, Mount Remarkable Leek-orchid [10268]	Vulnerable	Species or species habitat may occur within area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Vulnerable	Species or species habitat may occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - KYNETON TRAINING DEPOT (Drill Hall)

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Historic		
Kyneton Post Office	VIC	Listed place

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	habitat may occur within area Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Burke I93 B.R.	VIC
Carlsruhe B.R.	VIC
Carlsruhe SS.R.	VIC
Edgecombe SS.R.	VIC
Green Hill SS.R.	VIC
Kyneton SS.R.	VIC
Langley I12 B.R	VIC
Lauriston B.R	VIC
Milkingyard Creek SS.R.	VIC
Woodend I95 B.R	VIC

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
West Victoria RFA	Victoria

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur

Name	Status	Type of Presence
Turdus merula Common Blackbird, Eurasian Blackbird [596]		within area Species or species habitat likely to occur within area
Turdus philomelos Song Thrush [597]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax		Species or species

Name	Status	Type of Presence
Broom [2800]		habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-37.23899 144.44862

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Office of Environment and Heritage, New South Wales](#)
- [Department of Environment and Primary Industries, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government – Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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APPENDIX 16 – PRELIMINARY SERVICING REPORT



Preliminary Development Servicing Report

**18 Lot Subdivision
88A-90 Wedge Street, Kyneton**

Prepared on behalf of Jasper Family Trust

May 2022

Ref: 13263

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REF: 13263

Document History and Status

Rev.	Status	Date	Project Manager	Project Reviewer
A	Draft	Jan-22	Jack Maher	Alex Reid
B	Revised lot layout	May-22	Brody Brown	Matthew Elliot

January 2022

Page 2 of 17



Our Ref: 13263

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APPENDICES

- APPENDIX A PROPOSED SITE SERVICING PLAN
- APPENDIX B SITE WATER AND SEWER
- APPENDIX C SITE GAS SUPPLY
- APPENDIX D SITE POWER SUPPLY
- APPENDIX E SITE TELSTRA CABLE PLAN



Our Ref: 13263

1 Introduction

The Jasper Family Trust has engaged Tomkinson on their behalf, to conduct a servicing report for the site located at 88A-90 Wedge Street, Kyneton. The subject site is located between Wedge Street, Powlett Street, and a current unmade Government Road. The site is approximately 2.65 hectares in area.

A desktop study and site inspection have been undertaken to determine the services located in and near the site as provided by the 'Dial before you dig' service and observed from aerial photos. The plans received are included in the Appendices.

The availability of these services will be discussed to determine the development's ability to provide the necessary physical and social infrastructures such as roads, footpaths, and drainage assets to the future residents of the development.



Our Ref: 13263

2 Site and Surrounds

The Subject Site is located on the southern side of the Calder Freeway and to the west of Mollison Street as shown in Figure 1 below. The subject site comprises of several parcels approximately 2.65 hectares in area and is proposed to be subdivided into 18 lots with a reserve area for stormwater detention and treatment. A services Functional Layout Plan has been prepared to demonstrate the proposed locations of services and infrastructure within the development and surrounds and is located in Appendix A.

The site is typically grassed and contains various tree and vegetation clusters. The topography of the subject site generally falls from north to south towards Post Office Creek.



Figure 1: Locality Plan



Our Ref: 13263

3 Road & Pedestrian Access

The developer will be responsible for the construction of new roads within the development. These roads are to conform to the Infrastructure Design Manual for the Macedon Ranges Shire Council.

The site will have immediate road access from Wedge Street which is currently a rural profile road consisting of a typical 4.7m seal, 0.5m shoulder and table drains (See Figure 2). Similar to IDM standards, this rural profile has been determined to be a suitable road profile for access to the development and maintain the local rural nature and amenity. Any lots fronting Wedge Street to have sealed driveways for access. A footpath will also be constructed fronting all these lots to provide physical and social pedestrian access to the development.



Figure 2: Wedge Street Google Street View looking North from Post Office Creek



Our Ref: 13263

Both the existing unmade government roads (See Figure 3) and Powlett Street road reserves will be upgraded to provide access from Wedge Street into the subdivision. This upgrade will include a modified rural profile adopting similar style to existing local road reserves with an addition of a footpath on one side with table drains and underground drainage as required.



Figure 3: Government Road Reserve Google Street View looking East from Wedge Street

The internal subdivision's court bowl will match the standard IDM urban profile with a sealed road with kerb and channel and underground drainage.

Refer to Appendix A for a typical section of each proposed road.

To aid in physical and social infrastructure needs it is proposed for the development to provide driveways fronting each lot and footpaths from Wedge Street through the Government Road reserve and connecting to Powlett Street.

The closest footpath is currently located 550m to the southeast towards the Kyneton CBD. Therefore, it is deemed it would be too onerous on the development to fund footpath linkage to other footpath networks beyond the site frontages. These linking footpaths would have a greater shared benefit to the wide community and consequently, it is envisioned that footpath schemes over time will create this linked network.



Our Ref: 13263

4 Drainage & Flooding

The site currently has no internal underground drainage present other than a piped system in Wedge Street that discharges to the creek. Flows are currently conveying overland to the south and discharging into Post Office Creek. Wedge Street comprises existing table drains with an underground network and culvert crossings to all property accesses. An existing table drain in the Government road reserve conveys flows from the Powlett Street road reserve to the Wedge Street system.

A preliminary flood investigation into Post Office Creek with NCCMA's 'Floodeye' portal shows the site is partially subject to inundation/flooding from Post Office Creek during a 1% AEP event. (See Figure 4 below). This inundation/flooding area is proposed to be made into a council reserve. All lots are proposed to be clear of the 1% AEP flooding footprint. Lots and infrastructure will average a 30m setback from the creek primary top of bank.

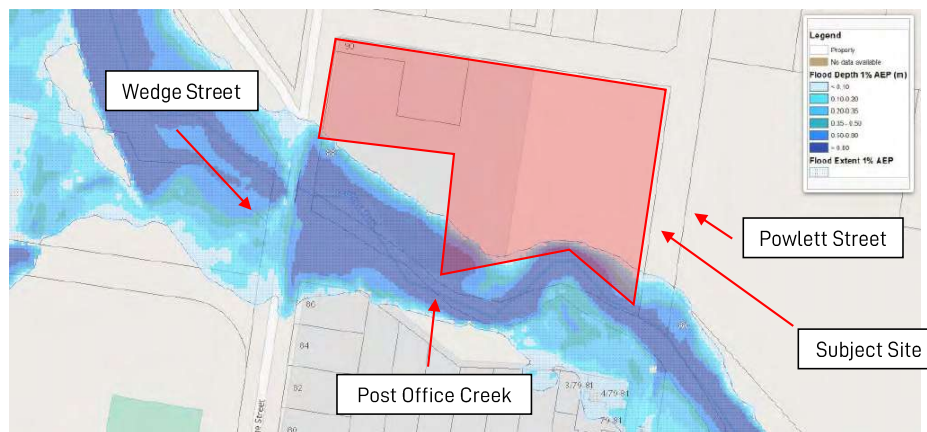


Figure 4: NCCMA 'Floodeye' Map



Our Ref: 13263

5 Water Reticulation

5.1 Potable Drinking Water Reticulation

There are currently two Coliban Water reticulation mains that reside on the eastern side of Wedge Street. The first is a 100mm diameter AC (Asbestos Cement) main which extends through Wedge Street. The second is a 125mm diameter PE100 (Polyethylene) main which offtakes from the 100mm AC main near the northern boundary of 88 Wedge Street and extends south to the middle of 88 Wedge Street. (See Appendix B). These mains have been determined to be suitable to service the proposed site. It is proposed to extend these watermains in accordance with Coliban water requirements within the new proposed road alignments to supply potable water to each lot.

5.2 Non-Potable Recycled Water Reticulation

There is currently no Recycled Non-Potable Water Reticulation located near the subject site nor the need to provide the service.

6 Sewer

225mm VC (Vitreous Clay) sewer currently runs down the eastern side of Wedge Street to approximately the intersection with Brocklebank Drive. It then crosses Wedge Street and runs on the western side until it intersects with the 300mm VC main.

There is also currently a 150mm dia Unplasticised Polyvinyl Chloride (UPVC) sewer that runs through a neighbouring site from the 225mm VC sewer and terminates within the subject site. (See Appendix B). These two mains have been deemed suitable to service the site and control the site with reticulated gravity sewer.

It is proposed to extend the sewer reticulation in accordance with Coliban water requirements to provide reticulated sewer to each proposed lot.

7 Gas

There is a 50mm Plastic Polyethylene (PE) gas service that extends down the east of Wedge Street. This service stops approximately 5m south of the northern boundary of 88 Wedge Street.

Ausnet has also proposed for a 63mm PE808 Metric to be installed in the government road reserve at the north of the site. The service is proposed to align to the eastern boundary of 90 Wedge Street. (See Appendix C). These gas services have been deemed appropriate to be extended and service the site.

8 Power

High Voltage Overhead power lines currently run on the western side of Wedge Street with a substation located on the power pole adjacent to 90 Wedge Street. Underground Low Voltage power then connects into this substation and runs to the front of Lot 90. Subject to Powercor approval and reasonable costs to complete, it is proposed to relocate the overhead power to an underground system, subject to Powercor advice.



Our Ref: 13263

Powlett Street also contains a High Voltage overhead powerline which sits on the western side until the northern boundary of the subject site. The powerline then crosses to the eastern side and continues south towards Post Office Creek (See Appendix D). This power infrastructure is appropriate to service the site with underground power reticulation through the Road reserve to service each proposed lot.



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Telecommunications

Existing Telstra services are currently running along the centre of Wedge Street adjacent to the subdivision and connect into the north-western corner of the subject site. They then align closer to the eastern side of Wedge Street and continue to run north as shown per Telstra's 'Dial Before You Dig' (DBYD) plan (Appendix E).

Powlett Street Road reserve also hosts existing Telstra cables that lay on the western side of the reserve. These are indicated as main cable ducts on Telstra's DBYD plan. (See Appendix E)

NBN is nominated as the Infrastructure Provider of Last Resort for the development. It is proposed to install NBN Pit and Pipe for NBN fibre installation to each proposed lot.

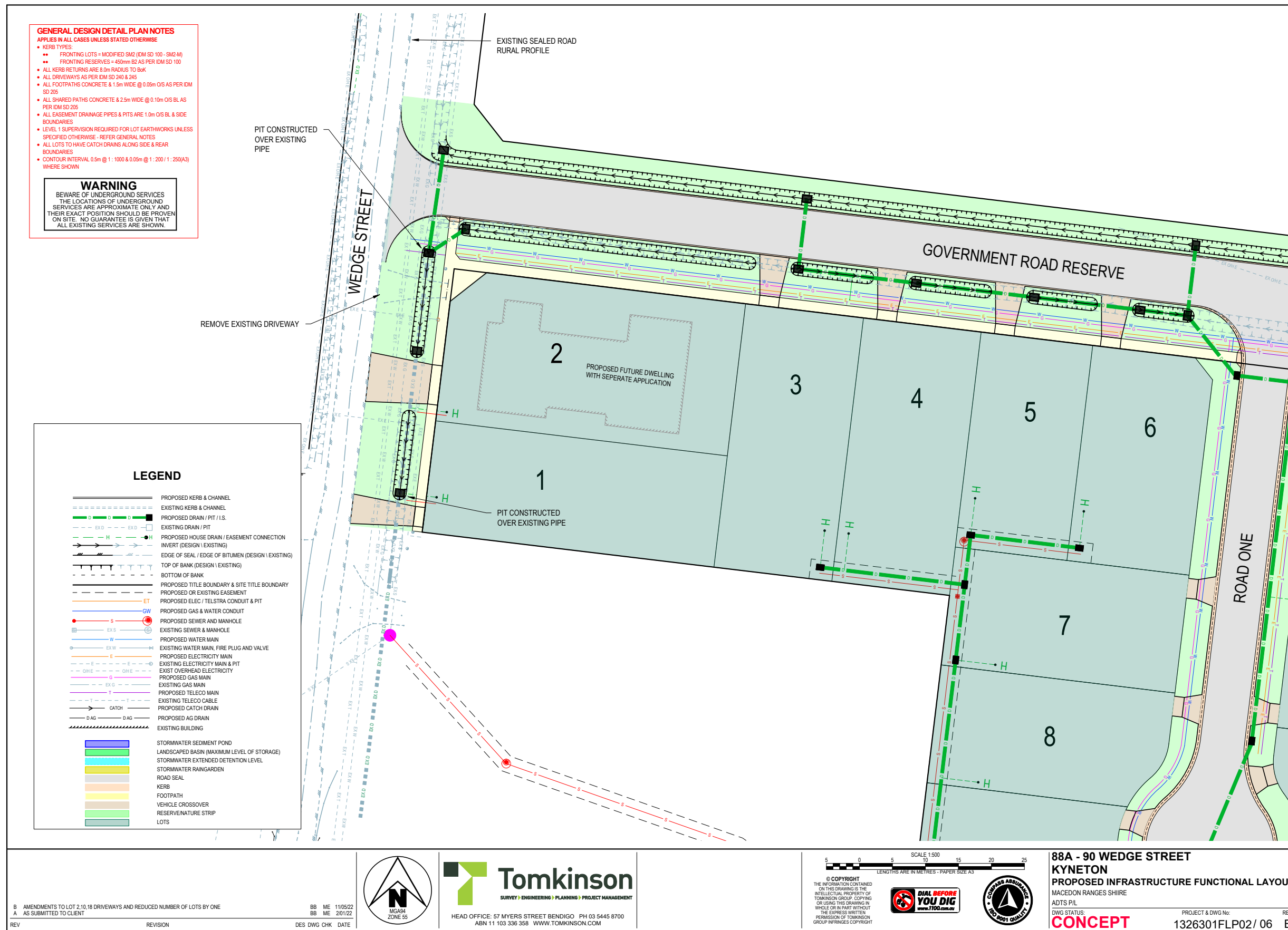
9 Conclusion

A preliminary services investigation has been undertaken which has identified that all services can be provided to the proposed residential development on the subject site. These services have been deemed to be the necessary physical and social infrastructure provided to the residents of the development. This preliminary investigation has been undertaken exclusively for the Jasper Family Trust and consists of 9 pages together with its associated appendices.

Our Ref: 13263



APPENDIX A PROPOSED SITE SERVICING PLAN





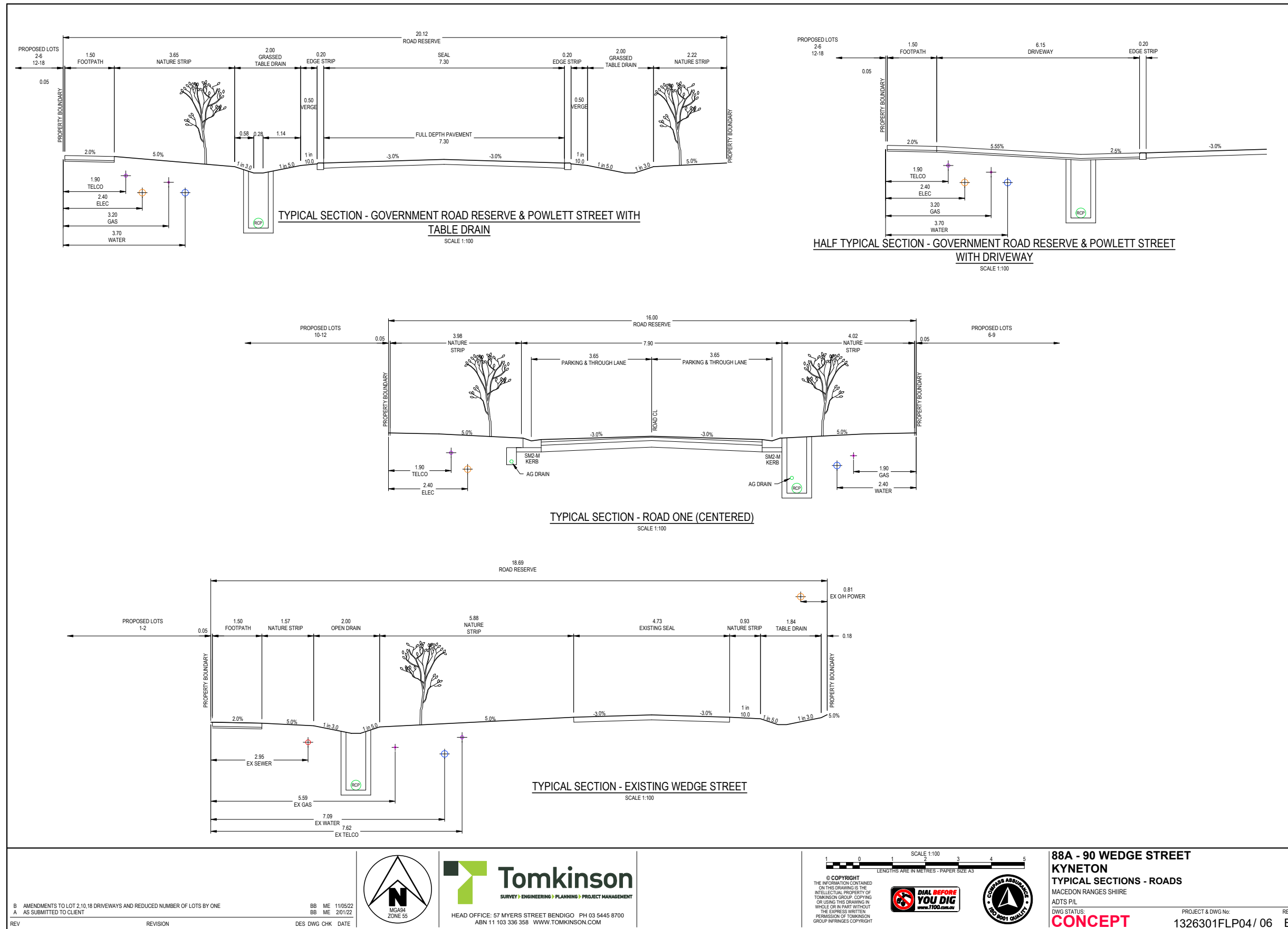
GENERAL DESIGN DETAIL PLAN NOTES
 APPLIES IN ALL CASES UNLESS STATED OTHERWISE

- KERB TYPES:
 - FRONTING LOTS = MODIFIED SM2 (DM SD 100 - SM2-M)
 - FRONTING RESERVES = 450mm BS AS PER DM SD 100
 - ALL KERB RETURNS ARE 8.0m RADIUS TO B&K
 - ALL DRIVEWAYS AS PER DM SD 240 & 245
 - ALL FOOTPATHS CONCRETE & 1.5m WIDE @ 0.05m O/S AS PER DM SD 205
 - ALL SHARED PATHS CONCRETE & 2.5m WIDE @ 0.10m O/S BL AS PER DM SD 205
 - ALL EASEMENT DRAINAGE PIPES & PITS ARE 1.0m O/S BL & SIDE BOUNDARIES
- LEVEL 1 SUPERVISION REQUIRED FOR LOT EARTHWORKS UNLESS SPECIFIED OTHERWISE - REFER GENERAL NOTES
- ALL LOTS TO HAVE CATCH DRAINS ALONG SIDE & REAR BOUNDARIES
- CONTOUR INTERVAL 0.5m @ 1:1000 & 0.05m @ 1:200 / 1:250(A3) WHERE SHOWN

WARNING
 BEWARE OF UNDERGROUND SERVICES
 THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

<p>B AMENDMENTS TO LOT 2,10,18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE A AS SUBMITTED TO CLIENT</p> <p>REV REVISION</p> <p>DES DWG CHK DATE</p> <p>BB ME 11/05/22 BB ME 20/1/22</p>		<p>Tomkinson SURVEY • ENGINEERING • PLANNING • PROJECT MANAGEMENT</p> <p>HEAD OFFICE: 57 MYERS STREET BENDIGO PH 03 5445 8700 ABN 11 103 336 358 WWW.TOMKINSON.COM</p>	<p>SCALE 1:500 LENGTHS ARE IN METRES - PAPER SIZE A3</p> <p>© COPYRIGHT THE INFORMATION CONTAINED ON THIS DRAWING IS THE INTELLECTUAL PROPERTY OF TOMKINSON GROUP. COPYING OR USING THIS DRAWING IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF TOMKINSON GROUP INFRINGES COPYRIGHT</p>	<p>88A - 90 WEDGE STREET KYNETON PROPOSED INFRASTRUCTURE FUNCTIONAL LAYOUT MACEDON RANGES SHIRE</p> <p>ADTS P/L DWG STATUS: CONCEPT</p> <p>PROJECT & DWG No: 1326301FLP03/ 06 REV: B</p>
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 PLOT DATE: 11/05/2022 FILE: C:\D\1326301\88A-90 WEDGE STREET\1326301_FLP_03_06.DWG



NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPDATED. IT IS THE RESPONSIBILITY OF THE USER TO CONSIDER THAT THIS IS A CURRENT COPY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS.
 PLOT DATE: 11/06/2022 FILE: C:\TD\DRAWING\880-1205\11-06-2022-ADTS.PLS TRUSTEE FOR THE JASPER FAMILY TRUST - KINNETON_TRENDS\00\CAD\CURRENT\1326301.FLP REV: B.DWG

B	AMENDMENTS TO LOT 2,10,18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE	BB	ME	11/05/22	
A	AS SUBMITTED TO CLIENT	BB	ME	20/1/22	
REV	REVISION	DES	DWG	CHK	DATE



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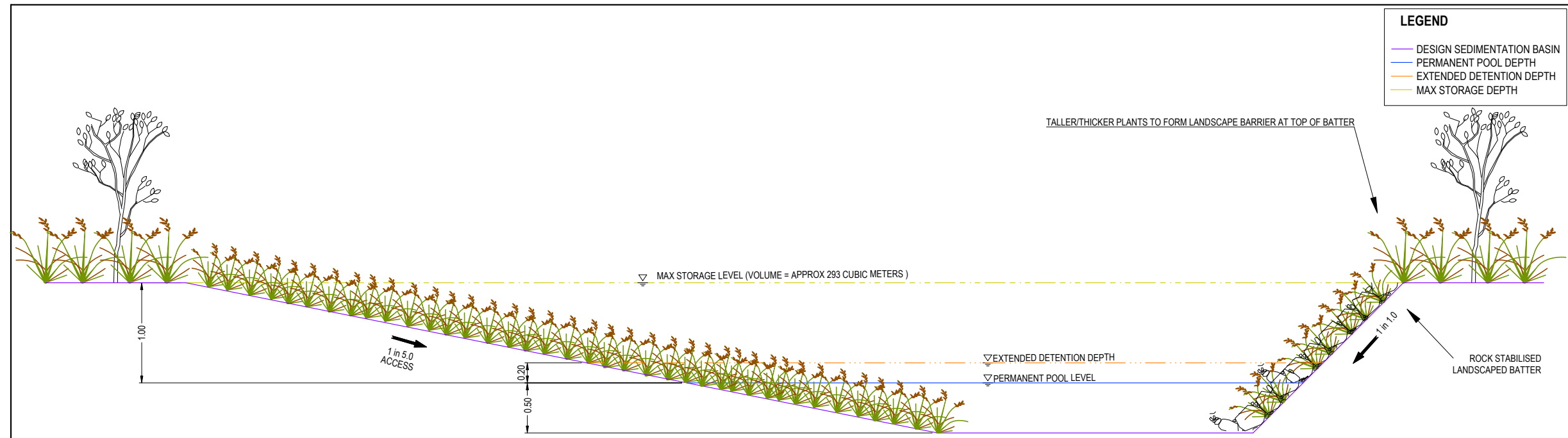
SCALE 1:100
 LENGTHS ARE IN METRES - PAPER SIZE A3

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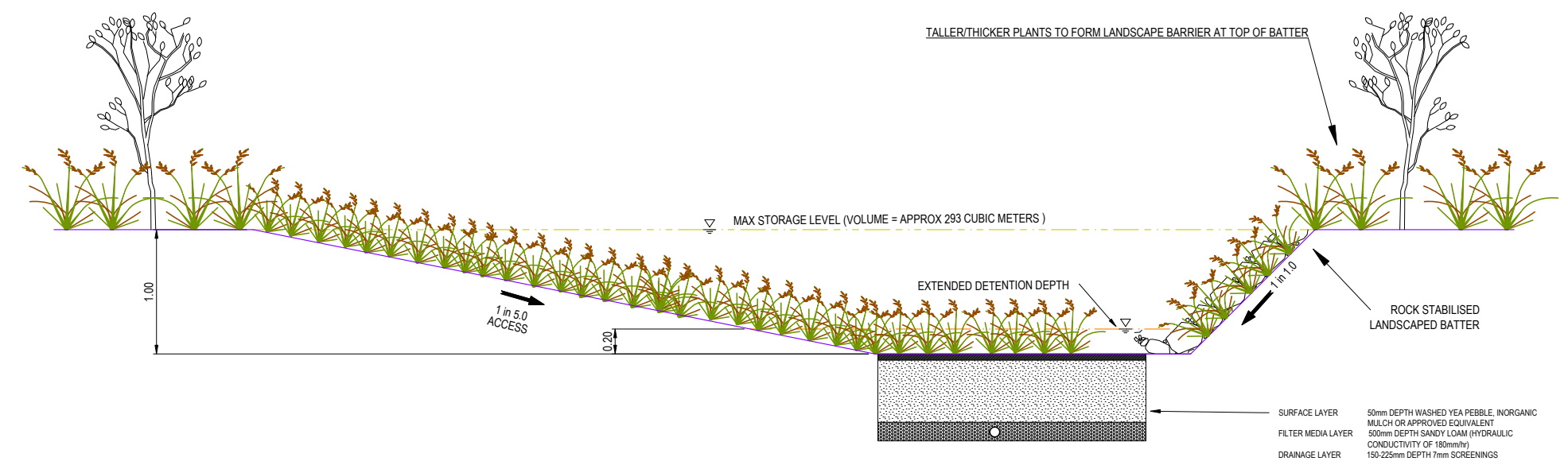
DIAL BEFORE YOU DIG
www.TDCL.com.au

COMPASS ASSURANCE
ISO 9001 QUALITY

88A - 90 WEDGE STREET
KYNETON
 TYPICAL SECTIONS - ROADS
 MACEDON RANGES SHIRE
 ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301FLP04/ 06
 REV: B



TYPICAL SECTION - SEDIMENT BASIN (A-A)



TYPICAL SECTION - RAINGARDEN (B-B)

LEGEND

- DESIGN SEDIMENTATION BASIN
- PERMANENT POOL DEPTH
- EXTENDED DETENTION DEPTH
- MAX STORAGE DEPTH

B	AMENDMENTS TO LOT 2, 10, 18 DRIVEWAYS AND REDUCED NUMBER OF LOTS BY ONE	BB	ME	11/05/22	
A	AS SUBMITTED TO CLIENT	BB	ME	20/1/22	
REV	REVISION	DES	DWG	CHK	DATE



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SCALE 1:40
 LENGTHS ARE IN METRES - PAPER SIZE A3

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88A - 90 WEDGE STREET
KYNETON
 TYPICAL SECTIONS - BASINS
 MACEDON RANGES SHIRE
 ADTS P/L
 DWG STATUS: **CONCEPT**
 PROJECT & DWG No: 1326301FLP05/ 06

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 PLOT DATE: 11/05/2022 FILE: C:\EDD\DATA\10\10\18\88A-90\1326301\1326301_FLP_05_06.DWG



Our Ref: 13263

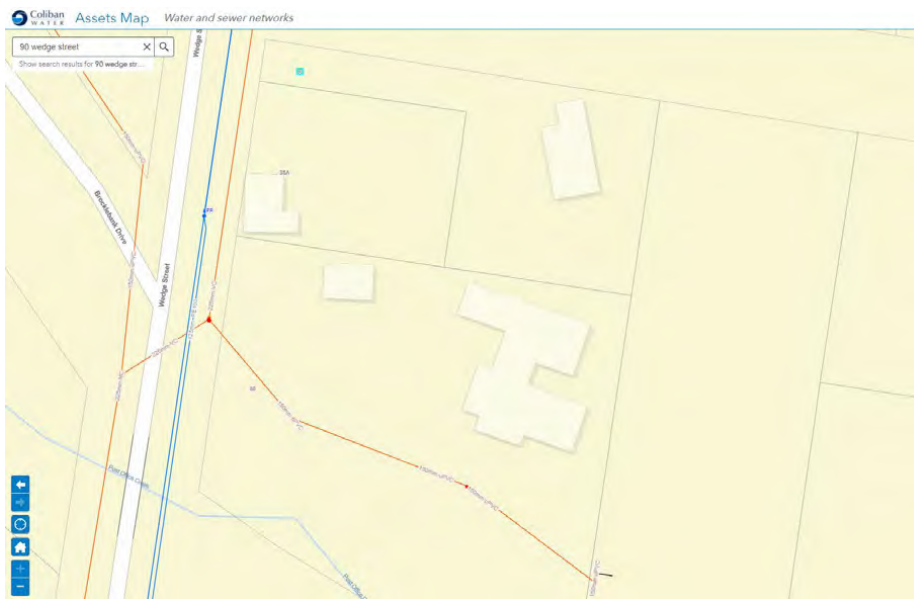
APPENDIX B SITE WATER AND SEWER

BLUE LINE = WATER

PURPLE LINE = CLASS B WATER

RED LINE = SEWER

Our Ref: 13263



January 2022

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APPENDIX C SITE GAS SUPPLY

January 2022

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Our Ref: 13263



APPENDIX D SITE POWER SUPPLY



CitiPower Pty
ABN 76 064 651 056
www.citipower.com.au

Head Office: 40 Market Street
Telephone: (03) 9683 4444 Facsimile: (03) 9683 4499 DX 433 Melbourne
Postal Address: Locked Bag 14090 Melbourne Victoria 8001 Australia



Powercor Australia
ABN 89 064 651 109
www.powercor.com.au

Jack Maher
Tomkinson
57 Myers Street
Bendigo

VIC

26/10/2021
Reference Number 204502375

3550



Dear Customer

Thankyou for your enquiry on 26/10/2021 regarding the work at:
88 Wedge Street Kyneton

A SEARCH OF OUR RECORDS SHOWS THAT THERE ARE UNDERGROUND ELECTRICITY ASSETS WITHIN THE AREA OF YOUR REQUEST

DO NOT PROCEED UNTIL YOU HAVE READ THIS NOTICE IN FULL

The following information is attached for your reference:

- Underground Electricity Asset location details
- Underground Electricity Hazard Awareness Instructions

To ensure that your proposed works do not impact on your safety or our assets please proceed as follows:

- Read all attached documents and observe the Exclusion Zones defined in the Underground Electricity Hazard Awareness Instructions
- Identify the locations of our Underground Electricity Assets from the attached documents

Are our Underground Electricity Assets located where you are planning to dig?

YES - contact us for further advice. Contact details are available on the first page of the attached Underground Electricity Hazard Awareness Instructions (including **Request for Site Visit**)

NO - proceed with caution

UNSURE - contact us for further advice. Contact details are available on the first page of the attached Underground Electricity Hazard Awareness Instructions (including **Request for Site Visit**)

Please note that **no work is to be undertaken in the vicinity of our Underground Electricity Assets that may breach the Exclusion Zones** (as defined by the Underground Electricity Hazard Awareness Instructions) until the completion of a further technical assessment of the area.

Upon receipt of your **Request for Site Visit** form you will be contacted by a responsible officer to assess your requirements. A site visit will be organised if required. During the site visit we will determine the location of our assets and any Permit to Work conditions applicable to your works. We will also be able to provide further details of any additional works which may be required to enable you to safely complete your proposed works.

Please note that the Permit to Work site visit timeframes are subject to enquiry volumes and specific site locations, therefore it may require up to 10 working days to contact you and arrange a site visit

Regards, CitiPower & Powercor Dial Before You Dig (DBYD) response team



Dial Before You Dig (DBYD) Electricity Asset Location Information

CitiPower/Powercor
 Locked Bag 14090, Melbourne VIC 8001
 General Enquiries Telephone: 132 206



To: ('Enquirer')
 Tomkinson - Jack Maher
 57 Myers Street
 Bendigo VIC 3550

Enquiry Details	
Utility ID	50021
Sequence Number	204502375
Enquiry Date	26/10/2021 10:35
Response	DANGER - Permit May Be Required
Address	88 Wedge Street Kyneton
Location in Road	Road,Nature Strip,Footpath
Activity	Planning and Design,Subdivision

Enquirer Details			
Customer ID	3079142		
Contact	Jack Maher		
Company	Tomkinson		
Email	jmaher@tomkinson.com		
Phone	+61354458700	Mobile	

Enquirer Responsibilities

This notification is valid for 28 days from the issue date. CitiPower/Powercor assets are critical infrastructure and great care must be taken to avoid asset damage and risk to public safety. The information supplied in the DBYD Response is intended to be indicative only. External parties should make their own enquiries to ensure the accuracy of the information, including but not limited to:

- Check that the location of the dig site indicated is correct, if not you must submit a new enquiry.
- Should your scope of works change or the plan validity dates expire, you must submit a new enquiry.
- If you do not understand the plans provided please contact CitiPower/Powercor prior to works commencing.
- Always perform an onsite inspection to establish the presence of assets.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.

Report any asset damage immediately on 132 206. Note: CitiPower/Powercor reserves the right to recover compensation for damages.

Date: 26/10/2021

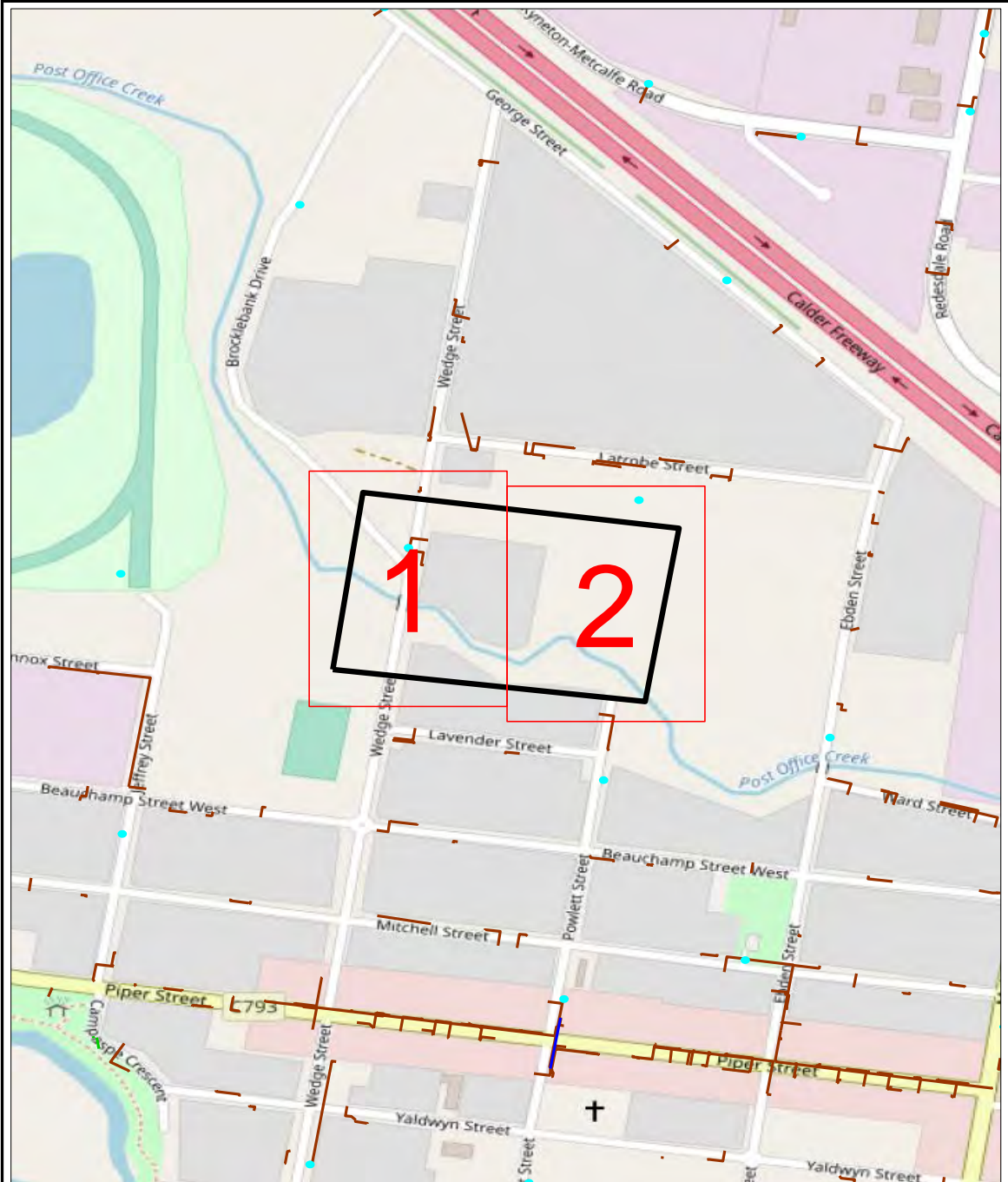


Locality Map

Sequence No: 204502375

88 Wedge Street Kyneton

MAP IS A GUIDE ONLY- REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

- DBYD Work Area
- SWER Substation
- High Voltage Cable
- Communication Cable
- Zone Substation
- Distribution Substation
- Low Voltage Cable
- Earth Cable

This map represents the location of the submitted DBYD Work Area and all CitiPower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

0 0.06km



Imagery sourced from Open StreetMaps



Date: 26/10/2021

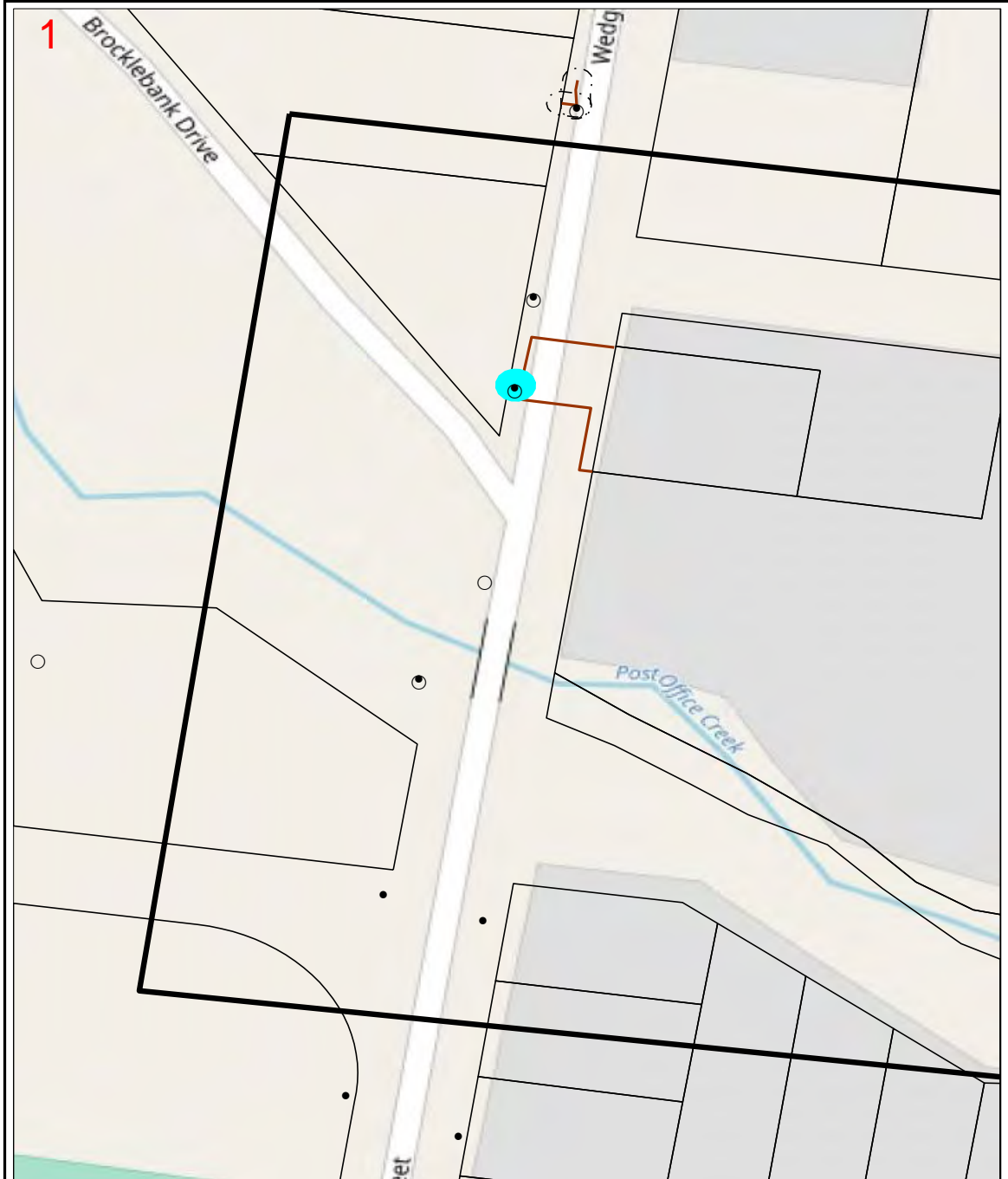


Map 1

Sequence No: 204502375

88 Wedge Street Kyneton

MAP IS A GUIDE ONLY- REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

- DBYD Work Area
- SWER Substation
- High Voltage Cable
- Communication Cable
- Pole (Subtransmission)
- Pole (LV)
- Zone Substation
- Distribution Substation
- Low Voltage Cable
- Earth Cable
- Pole (HV)
- Property Boundary

This map represents the location of the submitted DBYD Work Area and all CitiPower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

Imagery sourced from Open StreetMaps

0 0.01km



Date: 26/10/2021



Map 2

Sequence No: 204502375

88 Wedge Street Kyneton

MAP IS A GUIDE ONLY- REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

- DBYD Work Area
- SWER Substation
- High Voltage Cable
- Communication Cable
- Pole (Subtransmission)
- Pole (LV)
- Zone Substation
- Distribution Substation
- Low Voltage Cable
- Earth Cable
- Pole (HV)
- Property Boundary

This map represents the location of the submitted DBYD Work Area and all CitiPower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

Imagery sourced from Open StreetMaps

0 0.01km



UNDERGROUND ELECTRICITY HAZARD AWARENESS INSTRUCTIONS



For CitiPower & Powercor Dial Before You Dig customers

Always complete a **Dial Before You Dig** request before you proceed with any work plans



If there are **Underground Electricity** assets identified within your work area please ensure that you carefully evaluate all of the information provided

If any part of your proposed works impacts on the **EXCLUSION ZONES** shown on the next page then before proceeding you must contact CitiPower/Powercor to determine if a **PERMIT TO WORK** is required and to organise a **SITE VISIT**

Site Visit/Permit To Work applications may be lodged at:

<https://www.citipower.com.au/working-with-us/suppliers/online-permit-applications/site-visit/>

If you need assistance to determine if you need a Site Visit please call:

 **CitiPower on 1300 301 101**  **Powercor on 132 206**

Underground Electricity Asset Location Details Accuracy:

The Underground Electricity asset location details provided with this response are based on the best information available at the time

All reasonable care has been taken to ensure the accuracy of the information provided but complete accuracy cannot be guaranteed

Please be aware that the Underground Electricity Asset depths shown on the attached plans are accurate at the time of recording, however, due to works undertaken over the years by parties other than CitiPower/Powercor the Underground Electricity Asset depths may differ to those shown on the plans

Contact with Underground Electricity Cables can cause serious injury or death

If you observe any Underground Electricity Assets
that do not appear on the records provided

Stop Work Immediately

and contact CitiPower/Powercor on the above numbers

This DBYD response has been Automatically Generated

UNDERGROUND ELECTRICITY HAZARD AWARENESS INSTRUCTIONS

For CitiPower & Powercor Dial Before You Dig customers

EXCLUSION ZONES

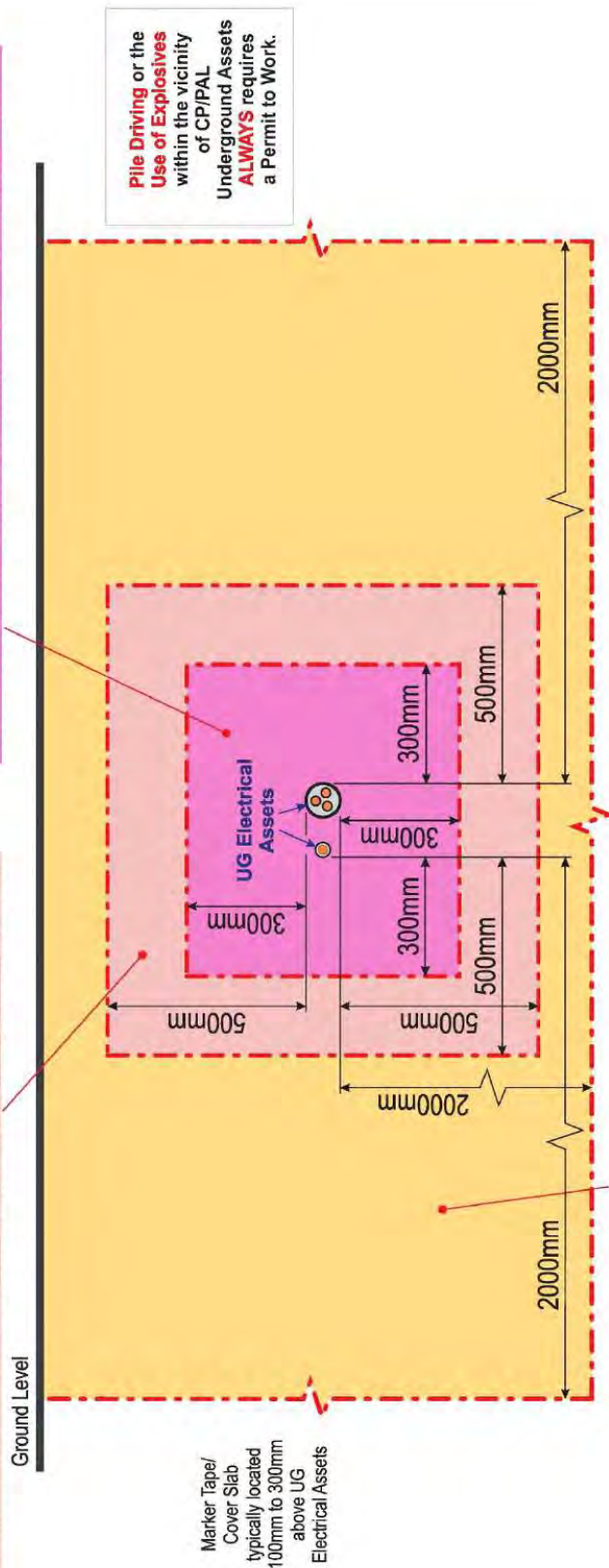


500mm Exclusion Zone Heavy Machinery & Mechanical Excavation

Heavy (Crawler Type) Machinery operation and Mechanical Excavation within a 500mm distance of Underground Electricity Assets requires a Permit to Work

300mm Exclusion Zone Hand Tools Only

All Excavation within a 300mm distance of Underground Electricity Assets requires a Permit to Work and must only be performed with Hand Tools



2000mm Exclusion Zone
Works within this area that require a Site Technical Assessment and may require a Permit to Work includes:
Pot Hole Boring Machine (Vertical Boring), Directional Boring Machine, Excavations Parallel to Underground Electricity Assets, Excavations Across Underground Electricity Assets

For Underground Electricity Asset location purposes:
Careful Excavation by hand may be performed under a Permit to Work above energised Underground Electricity Assets within the Exclusion Zone. Excavation must cease once either Marker Tape, Cover Slab or top of asset is located. All excavation must be performed BY HAND using only non-powered tools. No disturbance of the Marker Tape, the Protective Cover or the Asset is allowed. Any disturbance must be reported immediately to CitiPower/Powercor

Excavation Below Underground Electricity Assets:
All excavation BELOW Underground Electricity Assets outside of the Exclusion Zone must ensure that there is no disturbance to the asset and that the area is restored to full pre-excavation integrity upon reinstatement

Our Ref: 13263



APPENDIX E SITE TELSTRA CABLE PLAN

January 2022

Page 17 of 17



Telstra

For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com
 For urgent onsite contact only - ph 1800 653 935 (bus hrs)

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

Generated On 26/10/2021 10:44:34

Sequence Number: 204502868

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

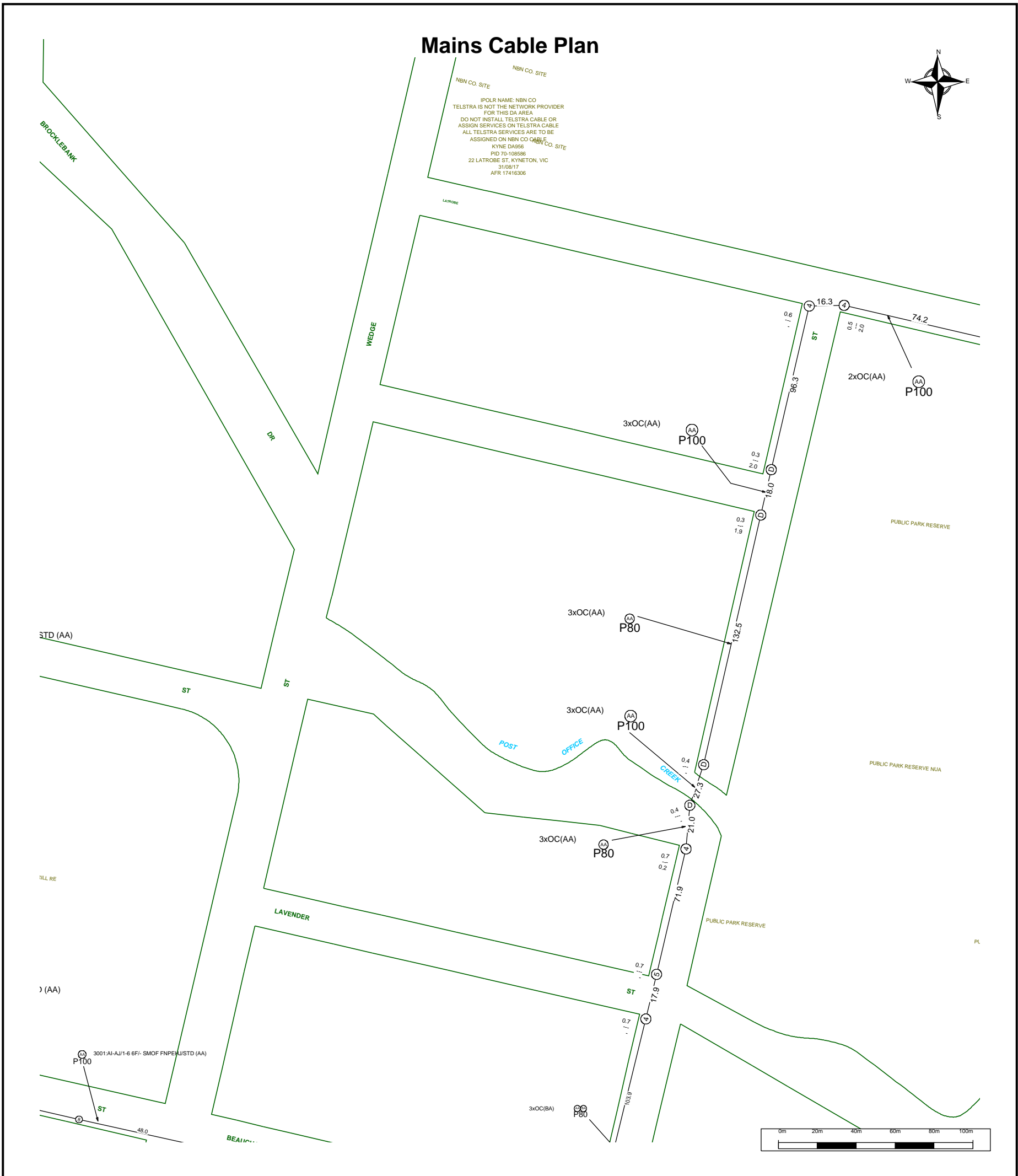
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page


WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.



 <p>For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)</p>	<p>Sequence Number: 204502868</p>
	<p>CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.</p>
<p>TELSTRA CORPORATION LIMITED A.C.N. 051 775 556</p>	
<p>Generated On 26/10/2021 10:44:36</p>	

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.