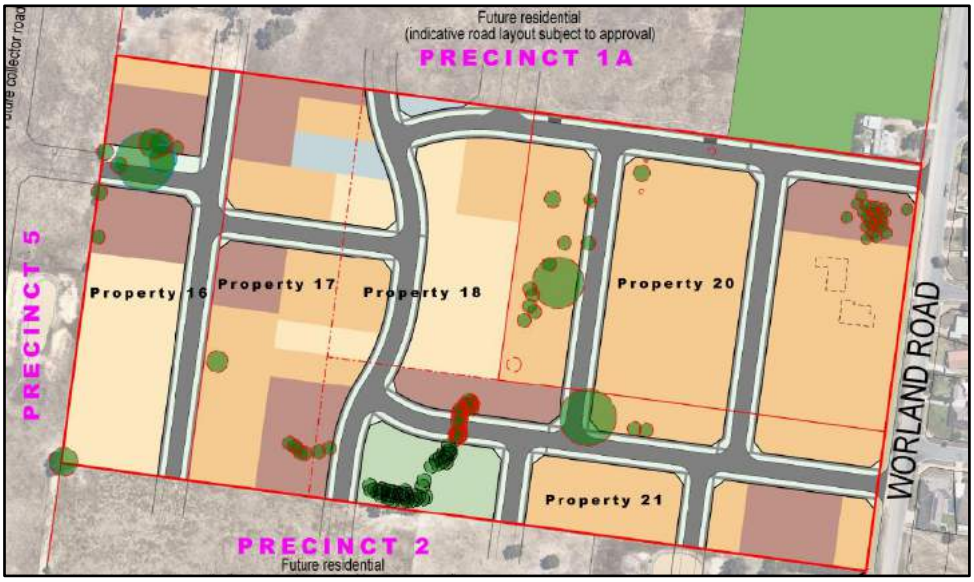
NORTH EAST SURVEY DESIGN

TOWN PLANNING REPORT

Wangaratta North West Growth Area
Precinct 1B Development Plan Proposal

Lots 1, 2, 3, 5 and 6 LP41832
Worland Road, Wangaratta



CONTENTS

1.0 Introduction 3

2.0 Precinct 1B Development Plan 3

3.0 Precinct 1B Site and Surrounds 9

4.0 Planning Assessment 14

5.0 Development Plan Overlay Assessment 18

6.0 Conclusion 35

LIST OF APPENDICES:

A. Precinct 1B Development Plan

B. Site Analysis Plan

C. Movement Network Plan

D. Stormwater Catchment Plan

E. Landscape Master Plan

F. Landscape Assessment Plan

G. Bushfire Hazard Management Plan

H. Flora and Fauna Assessment Report

I. Preliminary Soil Assessment

J. Arborist Report

K. Title details

1.0 Introduction

This report is prepared in support of a request to approve a Precinct Development Plan for Precinct 1B of the Wangaratta North West Residential Growth Area. Approval of the Precinct Development Plan is sought pursuant to Schedule 8 of Clause 43.04-3 of the Wangaratta Planning Scheme.

This report details how the proposed Precinct 1B Development Plan (PDP1B) meets the requirements of the Wangaratta Planning Scheme, specifically addressing:

- Purposes and provisions of the General Residential Zone;
- Purposes and provisions of the Development Contributions Plan Overlay;
- Objectives and requirements of Schedule 8- *Wangaratta North West Residential Growth Area* to Clause 43.03 Development Plan Overlay; and
- Objectives and strategic directions of the *Wangaratta North West Residential Growth Area Structure Plan, September 2018*.

2.0 Precinct 1B Development Plan

2.1 Development Plan Proposal

Approval of the submitted Precinct 1B Development Plan is sought from Rural City of Wangaratta Council under Clause 43.04-3 of the Development Plan Overlay for land described as Lots 5 and 6 and (part) Lots 1, 2 and 3 LP41832 (refer Figure 1 below).

The land is identified as Precinct 1B within the *Wangaratta North West Growth Area Structure Plan, September 2018* (refer to Figure 2 below). Full property details are discussed below at Section 3.0.

This report aims to provide the Rural City of Wangaratta Council (RCOW), relevant authorities, adjoining land owners and the wider community with an overview of the proposed future development of Precinct 1B to ensure the co-ordinated development of land in the context of the surrounding area and with respect to the aspirations of the *Wangaratta North West Growth Area Structure Plan, September 2018* (NWGASP).

The subject land is contained within five separate titles shared between three different owners. Refer to the cadastral boundaries shown in white in Figure 1. Once a Precinct Development Plan has been approved for Precinct 1B, separate applications will be made to RCOW to subdivide the land in accordance with the approved Development Plan. This will be in the form of planning permit applications for the staged subdivision of the Precinct, and may include additional permit triggers such as the removal of native vegetation.

Figure 1: Precinct 1B shown in red outline (Source: RCOW online mapping)

The submitted PDP1B proposes the subdivision of the subject land into general residential sized lots for the development of new dwellings. The Precinct will have an average lot size of between 600-700m². A new network of local roads is proposed, with connections back to Worland Road via two new intersections. The internal road network will also extend to the north (into Precinct 1A) and south (into Precinct 2). There are no collector roads proposed within the Precinct, in line with the Unfunded Roads Masterplan dated 20 May 2021.

Open space areas and drainage infrastructure are provided in accordance with the approved NWGASP. The submitted PDP1B addresses stormwater management as directed by RCOW's Technical Services Department. A separate Catchment Plan is provided which illustrates how stormwater will be collected and conveyed from the Precinct via pits and pipes to a new retention basin located on the corner of Lindner and Worland Roads. From there, water will be released at pre-development levels

into the stormwater pipe located on Lindner Road, and eventually drain to the Three Mile Creek to the east of the site.

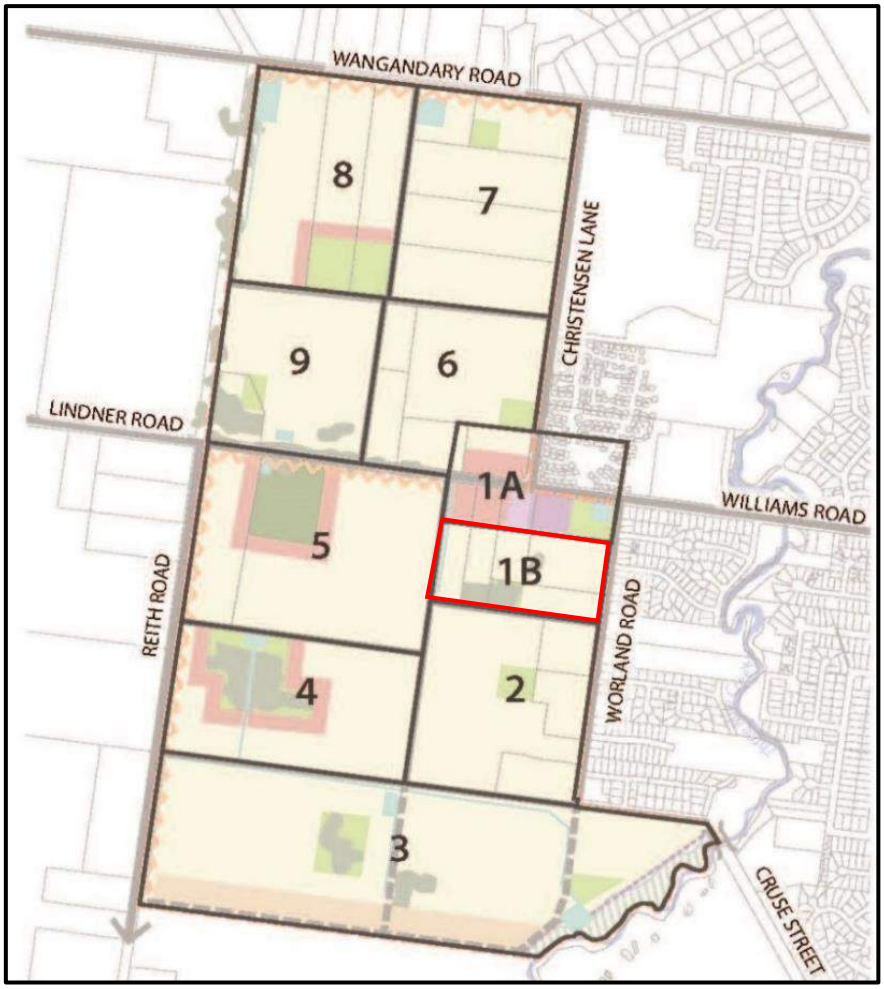


Figure 2: The Development Plan Precincts Plan (Source: Figure 18 of Wangaratta North West Growth Area Structure Plan Report, August 2017)

Key details of the Precinct 1B Development Plan are summarised below:

- Provision of approximately 95 new residential lots with an average lot size between 600-700m² and a range of lots sizes between 500m² - 830m².
- Creation of a new local access road network with two new intersections to Worland Road; four connections to Precinct 2 to the south; three connections to Precinct 1A to the north; and one connection west into Precinct 5.
- Creation of a new passive open space that will also serve to protect remnant native vegetation.
- Provision of stormwater drainage infrastructure including a network of pits and pipes to convey stormwater to the new retention basin within Precinct 1A to the north.

Refer to **Figure 3** below and the full Precinct 1B Development Plan provided at **Appendix A** for details.

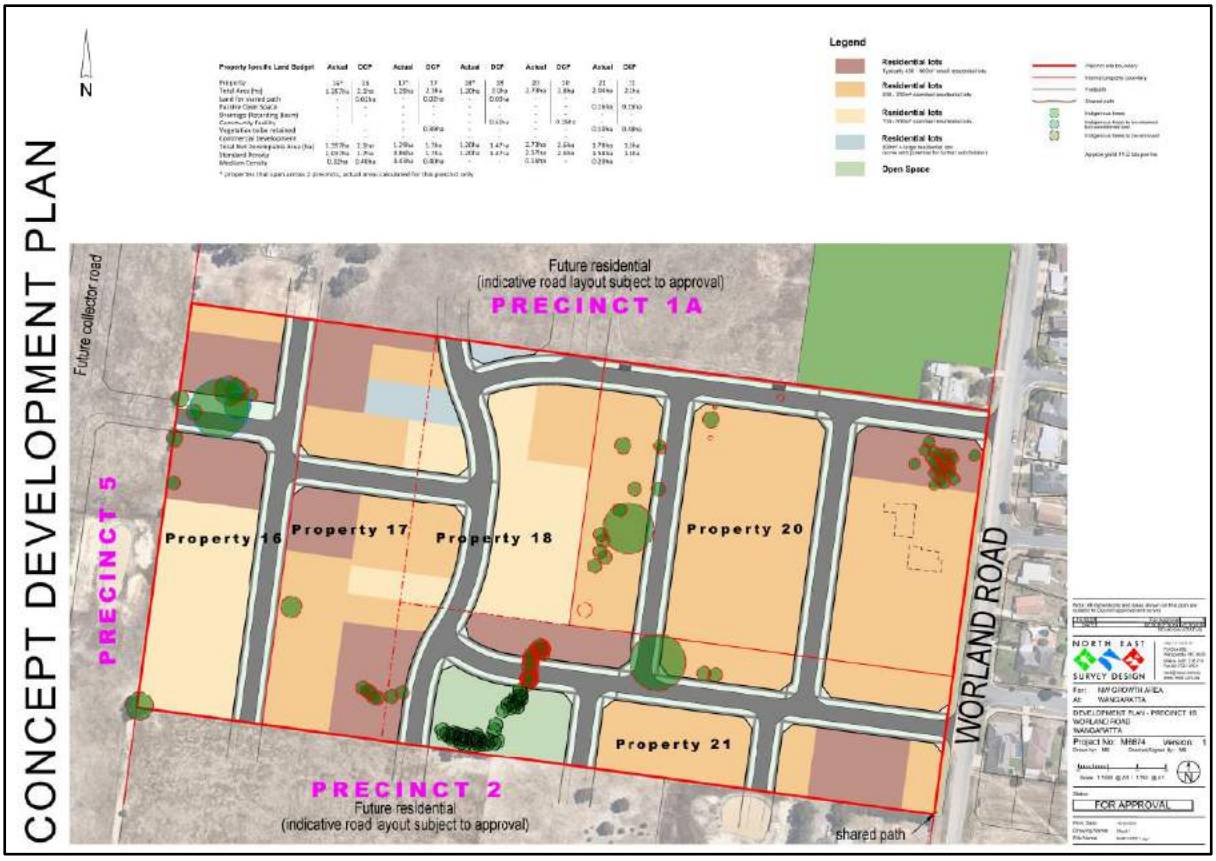


Figure 3: Precinct 1B Development Plan

2.2 Staging

The development of the Precinct will occur in stages, due to the land parcels being in three separate ownerships. It is not possible to know when all land owners will proceed with subdivision of separate parcels, but roll out will occur based on demand; availability of services and infrastructure and costs of development.

Property 20 is likely to proceed first, as it is the largest land parcel within Precinct 1B, with Properties 16, 17 and 18 only partially included in the Precinct. Whilst Property 21 is also contained wholly within Precinct 1B, it is in the same ownership as Properties 17 and 18, therefore may take longer to coordinate with Precinct 1A.

It should be noted that the layout of the Precinct 1B Development Plan has been carefully designed to enable the subdivision of each individual property in isolation from its neighbours, so as not to delay development applications. Property 16 will be dependent upon approval of a Development Plan for Precinct 1A before it can develop independently from its neighbours.

2.3 Constraints and Site Analysis

The detailed design of the proposed Precinct 1B Development Plan has been the result of careful consideration of all the site constraints. These include:

- Mitigating temporary and permanent bushfire risk, as identified in the NWGASP;
- Minimising the removal of remnant native vegetation, and maximising the retention of trees within the landscape;
- Responding to the Preliminary Soil Assessment for potential soil contamination;
- Designing stormwater infrastructure to accommodate the development as a stand-alone project; and
- Addressing the strategic objectives of the Development Plan Overlay - Schedule 8 for Precinct 1B.

Additional reports as required by Schedule 8 to the DPO have also been prepared and the findings and recommendations of each report have been used to inform the Site Analysis and final Design Response.

A Site Analysis Plan is attached at **Appendix B** and details the relevant findings from a series of site visits and the relevant background reports. Key issues include:

- Creation of an appropriate interface with Precinct 1A to the north, Precinct 2 to the south; and Precinct 5 to the west.
- Protection of existing dwellings within the Precinct.
- Protection of remnant native vegetation and planted vegetation (where relevant) within the Precinct.
- Appropriate response to bushfire risk during and post-construction.
- Appropriate response to the natural drainage of the site including existing dams; and
- Provision of all relevant infrastructure as required by the NWGASP.

It is noted that the site is relatively unencumbered, apart from scattered remnant native vegetation, and presents a relatively blank canvas for development. The site is not adjacent any waterways, is not identified as an area of cultural heritage significance; is relatively flat and is bordered on three sides by other precincts identified for residential development.

The background specialist reports that helped identify site constraints are attached in subsequent Appendices as follows:

- **Appendix H:** Flora and Fauna Assessment — Hamilton Environmental (June 2020)
- **Appendix I :** Preliminary Soil Assessment — RMCG (May 2020)
- **Appendix J:** Preliminary Site Tree Survey — Oldmeadow Aboriculture (April 2020)

2.4 Design Response

The final layout and design of the Precinct 1B Development Plan takes account of site constraints as well as the opportunities afforded the site through its position close to the new Neighbourhood Activity Centre to the north; views from the site; access to roads and infrastructure; and the relatively unconstrained nature of the site in terms of topography, native vegetation, flooding and bushfire risk.

The following plans are provided as part of the overall Design Response, as required by DPO - Schedule 8:

- Precinct 1B Development Plan **Appendix A**
- Movement Network Plan **Appendix C**
- Stormwater Catchment Plan **Appendix D**
- Landscape Master Plan **Appendix E**
- Landscape Assessment Plan **Appendix F**
- Bushfire Hazard Management Plan **Appendix G**

The design responds to the strategic directions of the NWGASP for Precinct 1B. This is discussed in detail at Section 5.0 of this report. The proposal put forward for Council's consideration and approval is considered to be a well-balanced and appropriate response to the challenges and opportunities of the Precinct and its broader context.

3.0 Precinct 1B Site and Surrounds

3.1 Subject site

Precinct 1B comprises either part or the whole of five parcels of land held in three different ownerships. Refer to **Figure 4** below that shows the breakup of land ownership across all precincts. Precinct 1B is highlighted in yellow outline.

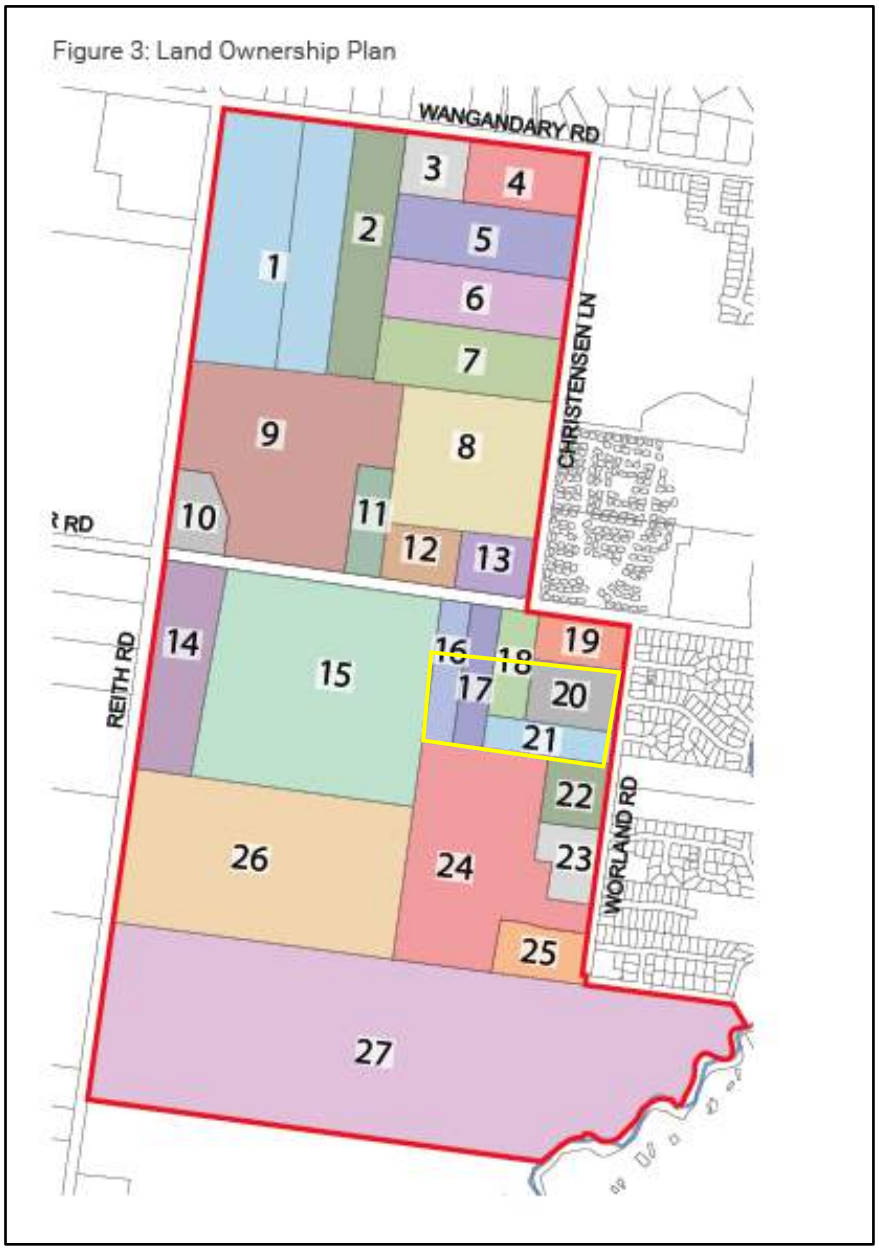


Figure 4: The Land Ownership Plan (Source: Figure 3 of Wangaratta North West Growth Area Structure Plan Report, August 2017)

Property details of the subject site are summarised in Table 1 below:

Table 1: Property details

Property #	Parcel description	Address	Ownership
16	(Part) Lot 1 LP41832	85 Lindner Rd Wangaratta	TRF Investments Pty Ltd
17	(Part) Lot 2 LP41832	Lindner Road Wangaratta	The Roman Catholic Trusts Corporation for the Diocese of Sandhurst
18	(Part) Lot 3 LP41832	Lindner Road Wangaratta	The Roman Catholic Trusts Corporation for the Diocese of Sandhurst
20	Lot 5 LP41832	10-26 Worland Rd Wangaratta	Worland Road Pty Ltd
21	Lot 6 LP41832	Lindner Road Wangaratta	The Roman Catholic Trusts Corporation for the Diocese of Sandhurst

Refer to the titles and plans at **Appendix K** for further parcel and ownership details.

3.2 Site description

Precinct 1B has a total area of approximately 8.65 hectares with frontage to Worland Road of 210 metres. The site is rectangular in shape with northern and southern boundaries of approximately 410 metres, and eastern and western boundaries of approximately 210 metres.

The land is comprised of five parcels as described above, in three different ownerships. The precinct is located on the western side of Worland Road, just south of Lindner Road, and immediately adjoining Precinct 1A to the north. The land is located centre-east within the broader North West Growth Area, with Worland Road making up the eastern most boundary of the precinct.

The site is currently bounded by farmland to the north, south and west. To the east, on the opposite side of Worland Road, is well established general residential development. Immediately to the east of the precinct are two new residential estates under construction that are utilising the last of the available vacant land in the area.

Still further east is the Three Mile Creek linear public open space reserve. To the north of Williams Road is St Johns Village, an aged care facility with independent living units, assisted living and high care facilities.

The subject land is primarily farmland that has been used for many years for grazing and crops. Properties 16 and 20 are used for rural living purposes, with each lot containing a dwelling, sheds and assorted domestic and rural infrastructure. Properties 17, 18 and 21 have no associated dwelling but have been used for farming purposes including the agistment of stock for many years. Property 16 contains a dwelling located close to Lindner Road. This portion of the site is located within Precinct 1A.

The Preliminary Soil Assessment found no areas of concern with regards current or previous rural uses across the precinct.

Figure 5: An aerial photograph of the Precinct 1B area and surrounds (Source: RCOW online mapping)

The land is relatively flat, with a fall to the north-east providing good opportunities for stormwater drainage in this direction.

Refer to **Appendix B** for the Site Analysis Plan that details the features of the site, including the topography, native vegetation, dams, dwelling and shedding and roads.

Vehicle access to the Precinct is currently from each lot, with a constructed crossover to each of the dwellings on Properties 16 and 20.

The Precinct contains a small amount of scattered native vegetation. The largest concentration of remnant trees is midway along the southern boundary of the Precinct on Property 18. There is a mix of exotic and planted native trees around the existing dwelling fronting Worland Road. The design of the Precinct 1B Development Plan has taken careful account of the vegetation, and its retention is discussed in more detail at Section 5.0 of this report.

Refer to **Appendices J and H** for full details of the Arborist Report and Flora and Fauna Assessment.

3.3 The surrounds

The subject site is located centrally within the Wangaratta North West Residential Growth Area. The land sits to the west of Wangaratta's current urban boundary as shown in **Figure 6** below.

The site is surrounded by land used and developed as follows:

- To the north the land borders farming land that is identified as Precinct 1A within the NWGASP. Precinct 1A is identified as a Neighbourhood Activity Centre, with land zoned Commercial 1 Zone for development of a range of small-scale commercial uses to support the local community.

- To the south the site borders land currently used for farming and rural residential uses. This land forms part of Precinct 2 and has recently been rezoned to General Residential Zone.

- To the east the subject site borders Worland Road and established general residential development. The majority of land on the eastern side of Worland Road has been developed, or is in the process of subdivision for residential purposes. Further to the east again is the Three Mile Creek, which provides access to a linear parkland reserve with shared paths providing connection back into Wangaratta CBD.

Figure 6: Site and surrounds (Source: RCOW online mapping)

3.4 Cultural heritage significance

Precinct 1B is not affected by any areas of identified cultural heritage sensitivity. Whilst the proposed subdivision of the land for residential development constitutes a high impact activity, the absence of any areas of cultural sensitivity means that the preparation of a Cultural Heritage Management Plan (CHMP) is not a statutory requirement. This position is supported by the requirements of Schedule 8 to the DPO, which require a mandatory CHMP to be prepared only in the presence of identified cultural heritage sensitivity. Otherwise, a CHMP is recommended, but not mandatory.

RCOW prepared a background due diligence report *North West Growth Area – Cultural Heritage Assessment (Biosis, 2014)* during preparation of the NWGASP. Based on a desktop analysis and ground survey, three areas of archaeological potential were marked as warranting further archaeological subsurface testing. These areas are located near the Three Mile Creek and are not present within Precinct 1B.

Further discussion of this issue is contained at Section 5.0 of this report.

4.0 Planning Assessment

It is proposed to subdivide Precinct 1B into approximately 95 general residential lots and construct an internal road network, public open space and services to support the subdivision of land. The subject site is affected by Schedule 8 to the Development Plan Overlay, contained at Clause 43.04 of the Wangaratta Planning Scheme. This means that prior to any subdivision of land under the provisions of the General Residential Zone, a Development Plan must be prepared for the site and approved by Rural City of Wangaratta Council (RCOW) in accordance with Clause 43.03 of the Scheme.

For the purpose of approving the proposed Precinct 1B Development Plan, Section 4.0 of this report assesses the PDP1B against the following provisions of the Wangaratta Planning Scheme:

Section	Clause	Provision
Zone	32.08	General Residential Zone
Overlay	45.06 – Schedule 1	Development Contributions Plan Overlay

Section 5.0 of this report makes a detailed assessment of the Precinct 1B Development Plan against the provisions of Schedule 8 to Clause 43.04 of the Scheme. Further detailed assessment against local planning policy, particular and general provisions of the Scheme will be made at the time of subdivision of each property.

4.1 Zone provisions

Clause 32.08 General Residential Zone

The subject site is located within the General Residential Zone – Schedule 1 (GRZ1) as shown at **Figure 7** below. Clause 32.08-3 requires a planning permit to subdivide land. There is no minimum lot size under the provisions of the zone.

The primary purposes of the GRZ1 are:

- *To encourage development that respects the neighbourhood character of the area.*
- *To encourage a diversity of housing types and housing growth particularly in locations offering good access to services and transport.*
- *To allow educational, recreational, religious, community and a limited range of other non-residential uses to serve local community needs in appropriate locations.*

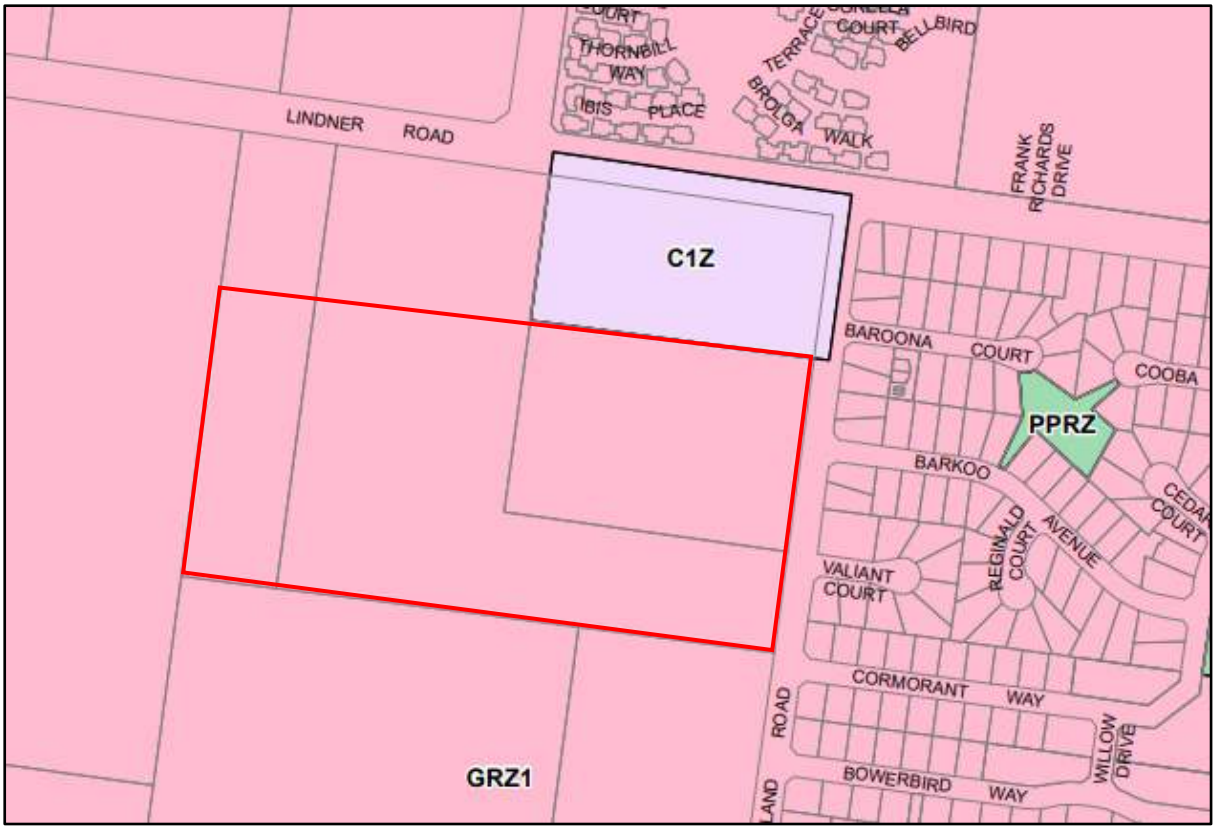


Figure 7: Land shown zoned General Residential Zone (Source: DELWP online mapping)

The proposed Development Plan for Precinct 1B is consistent with the purposes of the GRZ1. In particular, the Precinct 1B Development Plan will deliver a diversity of housing types, and facilitate housing growth in an establishing growth corridor of Wangaratta. Of the approximately 95 proposed lots, the average lot size is between 600-700m². The overall diversity of lots sizes, however, ranges from 500m² to over 800m². The table below sets out the estimated range of lots sizes and numbers of lots within each range.

Lot size	Number of lots
500m² - < 600m²	25
600m² - < 700m²	54
700m² - < 800m²	5
> 800m²	1

Table 2: Subdivision lot sizes

These figures are calculated on a more detailed lot design that is not included within this report. The PDP1B does include a range of colours that denote average lots sizes to be achieved within that colour range.

The Precinct 1B Development Plan delivers a new neighbourhood character that responds to the objectives of the North West Growth Area Structure Plan, as detailed in Section 5.0 of this report. The new Precinct 1B neighbourhood will be characterised by a diversity of lots sizes; good pedestrian and vehicle connectivity throughout the Precinct; excellent vehicle and public transport connections back into Wangaratta's CBD via Worland Road and Lindner Road/Williams Road; easy access to local parks and the broader shared path network; excellent access to the adjacent Neighbourhood Activity Centre to the north; and public access to the Three Mile Creek reserve along the shared path network on Williams Road and adjacent streets to the south such as Cormorant and Bowerbird Way.

The overall PDP1B subdivision layout provides good solar access to lots, with the majority of potential lots oriented east-west to maximise northern solar exposure. Smaller lots can be located along the road frontages to the open space reserves, to capitalise on views and access to public open space.

The proposed PDP1B responds to relevant decision guidelines of the GRZ1 for subdivision as the pattern of subdivision is broadly based on the directions of the NWGASP. The main departure from the approved NWGASP is the removal of a proposed east-west collector road along the southern boundary of the Precinct. Following discussions with Council, it was agreed that a collector road in this location was unnecessary, given the proximity of Lindner Road to the north; and to avoid directing significant amounts of traffic from not only Precinct 1B, but also Precinct 5 onto Worland Road. Worland Road is not earmarked for any major upgrade as part of the growth area rollout, and will struggle in its current form to accommodate large volumes of additional traffic.

The proposed layout of lots provides housing diversity, along with good solar orientation, and a permeable pedestrian network that promotes passive transport and connections to the broader shared path networks into Wangaratta.

4.2 Overlays

Clause 45.06 Development Contributions Plan Overlay

The subject site is entirely affected by the Development Contributions Plan Overlay (DCPO1). Refer to **Figure 8** below.

The purpose of the DCPO is to *'identify areas which require the preparation of a development contributions plan for the purpose of levying contributions for the provision of works, services and facilities before development can commence'.*

The DCPO1 gives effect to the *Wangaratta North West Growth Area Development Contributions Plan, October 2018 (DCP).*

Any permit granted must be consistent with this approved DCP; and include any conditions required to give effect to any contributions or levies imposed, conditions or requirements set out in the relevant schedule to the overlay. The DCPO1 requires the payment of a development infrastructure levy per net development hectare for each precinct.

Figure 8: Development Contributions Plan Overlay map (Source: DELWP online mapping)

Clause 3.0 of the DCPO1 sets a cost per developable hectare (to be indexed annually). The latest indexed figure for residential zoned land is set at $167,113/per developable hectare. The development infrastructure levy includes the 5% open space contribution normally required by Clause 52.01 *Public Open Space Contribution and Subdivision*.

A calculation of the net developable hectares for Precinct 1B is included in the land budget as shown on the Precinct Development Plan. On the basis that there are 8.37 developable hectares, it is estimated that total developer contributions (or in-kind works) will be in the order of $1.4 million. This contribution is payable prior to the issue of a Statement of Compliance for each stage of the development.

The extent of 'in-kind' works will need to be negotiated between Council and the proponent as part of the detailed assessment of subsequent planning permit applications for subdivision. At this stage, there is little opportunity for in-kind works, and a monetary contribution is likely to be the way the DCPO requirements are met.

5.0 Development Plan Overlay Assessment

The subject site is affected by the Development Plan Overlay – Schedule 8 (refer to **Figure 9** below). Pursuant to Clause 43.04-1 of the DPO, a permit must not be granted to use or subdivide land until a development plan has been prepared to the satisfaction of the responsible authority (RCOW).

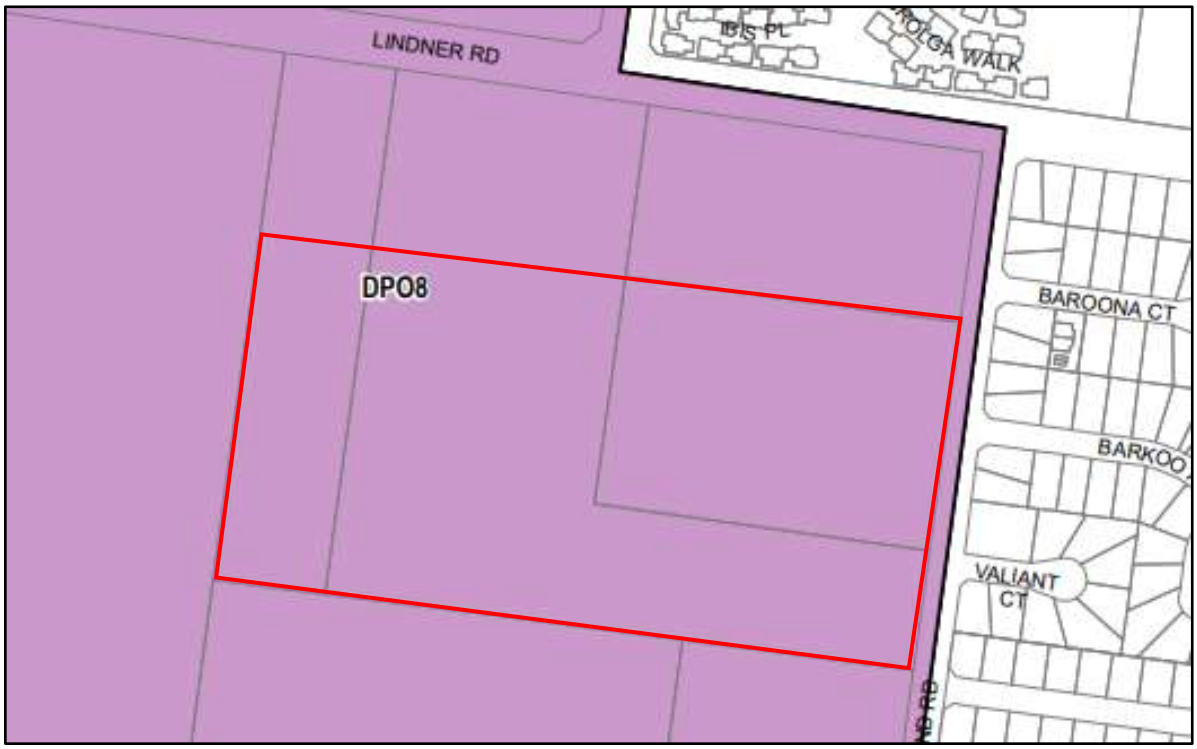


Figure 9: Development Plan Overlay map (Source: DELWP online mapping)

A development plan must be prepared for each precinct generally in accordance with the precincts identified at Chapter 6.1 of the *Wangaratta North West Growth Area Structure Plan*.

The Precinct Development Plan prepared and attached with this report is submitted to Council for approval under the provisions of Clause 43.04 of the Scheme. As advised at Clause 43.04-3, the '*development plan may consist of plans or other documents and may, with the agreement of the responsible authority, be prepared or implemented in stages'.*

The PDP1B submitted for approval consists of seven plans, being:

1. Precinct 1B Development Plan;
2. Site Analysis Plan;
3. Movement Network Plan;
4. Stormwater Catchment Plan;
5. Landscape Master Plan;
6. Landscape Assessment Plan; and
7. Bushfire Hazard Management Plan.

The subject land is identified as Precinct 1B for the purpose of assessment under Schedule 8 to the Development Plan Overlay. Clause 4.0 of Schedule 8 states the following: *'Any development plan must address the objectives and requirements described in this schedule and be generally in accordance with the* Wangaratta North West Growth Area Structure Plan.

In addition, '*any development plan must be prepared for each precinct, generally in accordance with the development plan precincts identified in the Development Plan Precincts Plan contained within Chapter 6.1 of the* Wangaratta North West Growth Area Structure Plan.

Refer to **Figure 2** within this report for details of the Development Precincts Plan.

The tables below set out each requirement of Clause 4.0 of the DPO and how the proposed PDP1B responds to those requirements.

5.1 Site Analysis

Any development plan must include a detailed site analysis that includes the following to the satisfaction of the Responsible Authority:

Table 3: Site Analysis requirements – DPO Schedule 8

DPO Schedule 8 Requirement	**Precinct 1B Development Plan Response**
Site Analysis	
An environmental assessment of flora, fauna and habitat significance of the land, which should: • Recommend actions for management, revegetation and restoration of any identified conservation and vegetation protection areas as relevant. • Identify and account for all vegetation that will be removed or lost as part of the development. • Demonstrate the principles of avoid, minimise and offset, as identified by the *Guidelines for the removal, destruction or lopping of native vegetation (Department of Environment, Land, Water and Planning, 2017).* • Make recommendations with regard to the management of noxious weeds as required by the *Catchment and Land Protection Act 1994*. • Be guided by the broader environmental assessment and recommendations under the *Wangaratta North West Growth Area Structure Plan*.	Refer to the Flora and Fauna Assessment Report at **Appendix H** for details. The Report has been prepared for both Precincts 1A and 1B The Report identifies that the majority of the Precinct has been cleared of woody vegetation and is used for pasture and rural living purposes. There are a number of grey box, silver wattles and red gums that have been retained or naturally recruited in the landscape. The remainder of the vegetation is either planted indigenous, or planted exotic species. Figures 4-1 to 4-6 within the Report document the location and types of trees, with the mature indigenous trees shown with Tree Protection Zones. The Report contains a quantification of the losses across both Precincts on the basis that all native vegetation on freehold parcels is going to be lost. This would equate to the loss of 11 Large Trees and 21 Small Trees that would be scattered tree loses; and nine Patches with a total of 0.41 hectares that contain four Large Trees.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Response
	Total losses for Precinct 1B will be less than described within the Report, due to the retention of trees within a proposed public open space area along the southern boundary of the Precinct. It is estimated that approximately twenty-two river red gums will be retained within this open space area. A large Grey Box identified on the western boundary of the Precinct is also identified for retention within a widened road reserve. An example Net Loss Report has not been generated at this time. It is noted that detailed net loss reporting will be undertaken for each separate planning permit application, as this is the appropriate time for offsets to be calculated in accordance with statutory requirements.
An aboriculture assessment of all existing trees that includes: • Exotic trees that add amenity value to the subdivision (but excluding small exotic planted trees, for example orchards, designated for removal) on the land, which details their condition, health and integrity of all trees. • Recommendations for the long term preservation of trees, having regard to proposed open space or development in the neighbourhood context. • A plan showing the location of all vegetation nominated for removal and retention and surveyed locations of the trunk, canopy and tree protection zones for all vegetation nominated for retention.	Refer to Arboriculture Assessment at **Appendix J** for details. The Report identifies 25 trees and 7 tree groups across the Precinct and makes an assessment of each with regards to health and structure. Of the 32 trees/groups assessed: • 20 are identified as remnant or indigenous to the area • 2 have an arboricultural rating of Moderate A; • 7 have an arboricultural rating of Low. There are some groups of regenerative river red gums. Many of these groups are crowded with the majority of trees having poor form. The Report recommends avoiding construction impact on as many trees as possible, particularly the trees identified as Moderate A. The large tree rated Moderate 1 (#103) is retained in a widened road reserve.
In areas of cultural sensitivity, where a development is a high impact activity an archaeological survey and heritage assessment must be prepared which: • Includes recommendations for the protection, restoration and interpretation of significant sites, and where appropriate, design measures to sensitively integrate sites.	Precinct 1B is not affected by any area of cultural sensitivity, therefore a Cultural Heritage Management Plan is not a mandatory requirement. A Due Diligence Assessment prepared by Biosis in 2014 for RCOW across the north-west growth area does not identify any areas within Precinct 1B that warrant further archaeological investigation, nor are there elements in the landscape that indicate

DPO Schedule 8 Requirement	Precinct 1B Development Plan Response
• Identifies areas where a Cultural Heritage Management Plan is required under the *Aboriginal Heritage Act 2006*. • Be guided by the broader archaeological and heritage assessment and recommendations completed as part of the *Wangaratta North West Growth Area Structure Plan.* In all other areas an archaeological survey and heritage assessment is recommended.	an increased potential for the presence of artefacts. On this basis, a CHMP Is not prepared as part of the background analysis for Precinct 1B. This is consistent with preparation of subdivisions in other areas zoned for development and without identified areas of heritage significance. All future construction work will need to comply with the provisions of the *Aboriginal Heritage Act* 2006, particularly with regards to the protection and reporting of any artefacts.
A preliminary soil assessment/site history report identifying any substantial hazards or contamination on the land and proposed treatments. Should the preliminary assessment find any substantial contamination, the need for an audit may follow.	Refer to the Preliminary Soil Assessment at **Appendix I** for details. The Assessment provides a combined assessment of Precincts 1A, 1B and 6 and makes the following findings: • There are no land uses (current or historic) identified that indicate high or medium potential for contamination. • Most sites are used for grazing (mostly horses) and rural residential purposes. • There are a few sheds used to support commercial activities such as engineering; truck parking and storage for a building contractor. • There is no evidence of bulk fuel or chemical storage. The Assessment concludes that there is low potential for contamination and therefore there is no need for further investigations or audit of the site.
A landscape assessment that identifies any important landscape views or vistas and any landscape features.	Refer to the Landscape Assessment Plan at **Appendix L** for details. Due to the flat topography, there are limited views within and from the Precinct. There are current views towards the Warby Ranges to the west, however these are likely to be obscured by future residential development. There are also internal views towards existing remnant vegetation – these can be preserved within the Precinct by maximising perimeter roads around any public open spaces that retain trees.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Response
A consolidated site analysis plan in digital and hard copy format that depicts all relevant site analysis information.	Refer to the Site Analysis Plan at **Appendix B** for details. The Site Analysis Plan incorporates information from the Flora and Fauna Study and Arborist Report; along with the Landscape Assessment Plan. Along with the discussion at Section 2.3 of this report, the key points from the site analysis process are: • Whilst there are currently good views from the site towards the south and west it is likely many of these views will become obscured at the local level once development occurs. • The site is well connected to the local and collector road network. • The Precinct has a significant interface with the proposed neighbourhood activity centre to the north. • Temporary bushfire mitigation measures will need to be considered whilst the Precinct is under transition from farming land. • There are significant patches and scattered trees that need to be retained and protected within the detailed design of the Precinct. • The site is relatively flat and otherwise unconstrained for the purposes of development.

5.2 Design Response

In accordance with Clause 4.0 of the DPO8, the development plan must comprise:

- A design response that is based on the results of the site analysis process, and is generally consistent with the objectives and requirements of the *Wangaratta North West Growth Area Structure Plan, September 2018*.

- A written report and plans addressing the vision and objectives described in this schedule, and responds to the Direction for Development Plans contained within the *Wangaratta North West Growth Area Structure Plan Report, September 2018*.

Refer to Table 4 below for a response to each item (where relevant):

Table 4: Design Response requirements – DPO Schedule 8

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
Design Response	
The development plan must comprise: • A design response that is based on the results of the site analysis process, and is generally consistent with the objectives and requirements of the *Wangaratta North West Growth Area Structure Plan* • A written report and plans addressing the requirements and objectives in this schedule, and responds to the Direction for Development Plans contained within the *Wangaratta North West Growth Area Structure Plan*	The submitted Precinct 1B Development Plan is the culmination of the site analysis and design response process. Refer to the complete suite of submitted plans, along with the written components of this report which address the requirements of both Schedule 8 to the DPO and the *Wangaratta North West Growth Area Structure Plan*.
Movement Network Requirements	
Street layout plan that details all aspects of the movement network, including streets, intersection treatments, traffic management devices, public transport routes and pedestrian/cycle paths.	Refer to the Movement Network Plan attached at **Appendix C** for details of street layout and cross-sections; intersection treatments; pedestrian and shared paths and potential public transport routes.
Typical cross-section for all streets.	Refer above.
A road hierarchy plan.	Refer above.
A road traffic safety plan that assigns a traffic volume range to each road and identifies measures to ensure roads do not exceed the traffic volume ranges commensurate with their position in a road hierarchy.	Refer above.
Any response to the movement network requirements must address the following:	
▪ *Utilise and upgrade the existing connector road network comprising Wangandary Road, Christensen Lane, Worland Road, Lindner Road and Reith Road to connect externally, and to define and connect internal neighbourhoods*	Precinct 1B has limited frontage to the local collector road network, with access along the eastern boundary to Worland Road only. Worland Road is an existing collector road that is not identified for any future upgrades as part of the development of the north west growth area. As a consequence of the current condition of Worland Road, it has been determined, in conjunction with Wangaratta Council, that the east-west collector road proposed for the southern boundary of Precinct 1B will be removed. The main purpose is to minimise the amount of traffic that will move eastwards onto Worland Road from within Precincts 1B and 2; and also

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
	further west from Precincts 4 and 5. Instead, traffic from within Precinct 1B can move to Worland Road from two smaller local roads; and traffic from Precincts 4 and 5 will be directed to travel either north to Lindner Road or south to Cruse Street along a new north-south collector road to be located within Precinct 5. There are two new east-west local roads that will intersect with Worland Road to support local Precinct 1B traffic. There are three local internal roads that will intersect with Precinct 1A to the north; and four roads connecting to Precinct 2 to the south. This local road network is considered to be appropriate to support the expected development within Precinct 1B, with good permeability for vehicles, pedestrians and cyclists. The layout of the local road network also enables land owners to develop their own individual properties independently from each other. This will minimise delays in development, particularly if land owners have different priorities with regards subdivision of their own land.
▪ *Provide an additional east-west connection across Three Mile Creek through the extension of Cruse Street/Bella Way via a bridge (and culverts) to connect the Wangaratta North West Structure Plan to the existing urban areas to the east.*	Not applicable to this precinct.
▪ *Provide a collector road network that is able to cater for bus routes that are within a five minute walk (400m) for all residents.*	Refer to the Movement Network Plan at **Appendix C** for comments regarding the collector road network. There will be no additional collector roads constructed for Precinct 1B. The Precinct does, however, front Worland Road, and the local access road network does cater for bus routes as required.
▪ *Provide a connected on and off road pedestrian/cycle network that utilises Three Mile Creek and local open space links.*	A shared path is proposed along the southern side of Lindner Road that will turn south and eventually run the full length of Worland Road. Additionally, pedestrian footpaths will be provided throughout the PDP1B in accordance the Structure Plan and provisions of the IDM for road design. Refer to the Landscape Plan for details.
▪ *Provide an active edge to all open space areas via edge roads.*	The one proposed open space area has been provided with an active frontage via edge roads. This allows public access to the park, and an active frontage to the space that promotes passive surveillance from adjacent houses. Where the northern boundary of the PDP abuts the reserve in Precinct 1A, a road is proposed along this frontage for the same reasons.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
▪ *Provide direct property access to all roads.*	Each of the proposed lots in the PDP1B will have direct access to public roads.
▪ *Provide a sustainable transport network comprising a permeable grid-based layout that encourages multi-modal transport (i.e. integrated walking, cycling, bus (public transport).*	The road layout is highly permeable, with a grid pattern and no cul-de-sacs or no-through roads. Including Worland Road, there are five north-south roads and two main east-west roads that provide good permeability through the Precinct. Block lengths are relatively short, promoting use of passive transport for residents to move to the neighbourhood activity centre and onto the local road network.
Open Space and Vegetation Requirements	
An open space plan, identifying encumbered open space, passive open space, land suitable for active open space and any additional open space required to perform a streetscape function or to link open space areas such as ecological links.	Refer to the Landscape Master Plan attached at **Appendix E**.
A landscape masterplan that identifies:	
▪ *A preferred character/theme for each open space area and a street tree theme for streets and boulevards, including nomination of suitable species.*	Refer above
▪ *Land affected by flooding (Flood Overlay or Land Subject to Inundation Overlay) suitable for active, passive and conservation functions with a distinct landscape design for each.*	There is no land affected by flooding within the Precinct.
▪ *Vegetation to be preserved on site, vegetation to be removed and any revegetation works identified in accordance with the recommendations of the flora and fauna assessment.*	Refer to both the Precinct 1B Site Analysis Plan and the Landscape Plan for details of vegetation to be retained; and vegetation to be removed or retained but considered lost. Detailed net loss reporting will occur at the time of subdivision applications across the Precinct. This will incorporate detailed design for each land parcel and analysis of what vegetation will be removed and will need to be offset.
▪ *Details of fencing treatments proposed for land abutting open space, including abutting the floodplain.*	Refer to the Landscape Master Plan for details of fencing abutting open space areas.
Any response to the open space and vegetation requirements must address the following:	

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
▪ *Identify, protect and enhance areas of significant environmental value through the open space network.*	The main pocket of remnant vegetation on the site is located close to the southern boundary on Property 21. This pocket has been incorporated into an open space reserve to ensure its retention on public land. The area is smaller than that shown on the approved Structure Plan – a more detailed assessment at the precinct level has shown the large patch previously identified and shown in the Structure Plan to be not quite so large. The road reserve leading west into Precinct 5 has also been widened to retain a significant tree within public land.
▪ *Locate passive open space to coincide with native vegetation to protect and enhance these features and provide each space with its own distinct character.*	Remnant scattered trees across the site are retained and protected where possible within public open space reserves. The location of open space reserves is generally consistent with the Structure Plan.
▪ *Visually and physically link open space to neighbourhoods through the use of edge road treatments and connected by an off road pedestrian/cycle network.*	The proposed open space located on the southern boundary of the Precinct is well connected to the local road network and is surrounded on three sides by edge roads. The local road network will include footpaths for pedestrians and room on-road for cyclists. There are no off-road shared paths proposed within the Precinct.
▪ *Incorporate small urban 'green' spaces within the detailed design of subdivisions, including small pocket parks, widened nature strips, central medians to provide a point of difference within neighbourhoods than can be utilised as a context for increased housing density (medium density).*	The PDP1B layout builds on the limited natural advantages of the site which include the pocket of native vegetation on the southern boundary and the relatively unconstrained nature of the land. Whilst higher density lots (500-600m²) are scattered throughout the Precinct, they are concentrated fronting the open space on the southern boundary and the large park in Precinct 1A fronting Lindner Road.
▪ *To ensure that the location, design and construction of development incorporates and implements bushfire protection measures as required.*	Refer to the Bushfire Hazard Management Plan attached at **Appendix G**. The greatest risk to development will be from uncontrolled grass fires from adjacent farmland in the north and west. During the construction of each stage of development, measures will be employed to minimise risk from grass fires, such as ensuring a mineral earth break at the interface with farming or undeveloped land. The creation of defendable space is shown to the west within Precinct 5 as an interim measure until such time as Precinct 5 is developed. There will be a need for property owners to negotiate agreements to maintain these managed strips of defendable space. It is not practical to require defendable space to be provided within residential lot boundaries in an ongoing capacity. In the longer term, the Precinct will be well protected from grass fires through construction of perimeter roads to the west

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
	and south, and half of the northern boundary; the provision of fire hydrants throughout the new road network; existing collector roads and urban development to the east; and the construction of roads and urban development to the west within Precinct 5.
▪ *To identify areas where the bushfire hazard requires specified bushfire management measures for subdivision and buildings and works to be implemented.*	Refer to comments above.
▪ *Future subdivision to set aside passive open space within 400 metre walkable catchment of 95% of all homes.*	Areas of open space have been provided in accordance with the Structure Plan for the precinct. The majority of lots within the Precinct will be located within a 400m walkable catchment of open space areas.
Activity Centre and Community Facilities Requirements and Objectives	
An activity centre plan (for the relevant development Plan Precinct) indicatively identifying the design of the centre, the location and scale of uses, location of bus stops and parking areas and the relationship between the activity centre, open space, and any community facilities required by the Responsible Authority.	Not relevant to Precinct 1, although the design of streets within Precinct 1B influences the overall layout of Precinct 1A and vice versa.
Neighbourhood and Density Requirements and Objectives	
An indicative lot layout plan that facilitates housing diversity through the provision of a variety of lot sizes across the development site and identifies areas appropriate for increased housing density (medium density).	Refer to Precinct 1B Development Plan at **Appendix A** and discussion of the lot sizes and locations at Section 4.0 of the Report. The different coloured lots delineate different lot sizes across the site – with smaller lots located adjacent to public open spaces, and in proximity to the Neighbourhood Activity Centre and Community Centre; with larger lots scattered throughout the Precinct to add variety and respond to site specific constraints such as existing dwellings and scattered native vegetation.
An assessment of how the lot layouts meet sound Environmentally Sustainable Design principles including, solar orientation of street networks and individual lots, and building envelopes demonstrating siting to reduce energy consumption etc.	The lot layout meets sound ESD principles through: • A largely east-west and north-south road network • Majority of lots with long axis meeting requirements of Standard C9 *Solar orientation of lots* objective at Clause 56

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
	• Connectivity throughout the subdivision promoting passive forms of transport such as walking and cycling • Streets are designed to a local access road standard that allows for bus routes. This, in turn, will promote use of public transport as an alternative to private vehicle usage. • Road sections will support street tree planting to increase shade and shelter in the public realm • Majority of lots are of a size and dimensions to protect solar access, taking account of likely dwelling size
Reference to fire assessment in terms of interface with ongoing rural activity.	Refer to the Bushfire Hazard Assessment Plan at **Appendix G.** Temporary measures will be employed to reduce risk as the construction of subdivisions proceeds in stages across the Precinct. These measures will consist primarily of temporary mineral earth breaks of 30 metres around the extent of each new stage; and around the perimeter of the Precinct until such time as the adjacent precincts are developed. On a more permanent basis, Precinct 1B will have a perimeter road to the east; and an interface with three residential precincts to the north, south and west that will help reduce fire risk once surrounding precincts are under construction.
Interface with arterial road network.	In this context, the arterial road network is taken to mean the surrounding collector road network including Lindner Road and Worland Road. Worland Road: There are two new road intersections proposed along this frontage, their locations chosen to allow adequate separation from existing intersections on the eastern side of Worland Road. No service road is proposed; with new lots to gain direct road access to Worland Road. There will be approximately eight new lots with frontage to Worland Road – with three of these potentially orienting to the adjacent side street. Lindner Road: Precinct 1B does not have a direct interface with Lindner Road. The two main north-south roads do, however, intersect with Lindner Road to the north after passing through Precinct 1A. It is important, therefore, that adequate intersection treatments are designed and constructed to ensure these connections to the collector road network are safe and efficient. It is noted that the collector roads proposed along the southern and western boundaries of Precinct 1B have been either downgraded to a local road status; or moved further west in accordance with the Unfunded Roads Masterplan.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
Neighbourhood design must avoid development within 30 metres of Three Mile Creek to protect water quality.	Precinct 1B is not in close proximity to the Three Mile Creek and satisfies this requirement.
Any response to neighbourhoods and density requirements must address the following:	
▪ *Create distinct neighbourhoods defined by a neighbourhood 'core' (passive open space, and a local activity centre).*	Precinct 1B is relatively compact in size and shape. PDP1B is characterised by a range of lot sizes scattered throughout the Precinct. There is a focus on medium density lots fronting parkland where possible; a road network that promotes safe traffic movement with many traffic calming devices; a generous pocket park located on the southern boundary with Precinct 2 in order to retain a number of river red gums; and close proximity to the Neighbourhood Activity Centre (NAC) to the north.
▪ *Provide a high level of amenity to each neighbourhood through the use of diverse streetscape cross-sections and distinct open spaces that can be used as a context for diverse and increased (medium) density housing outcomes.*	Refer to the Movement Network Plan for details of the 'access street' cross section used throughout PDP1B. In order to promote connectivity within a relatively small precinct, it is proposed to have all streets designed as access streets. This allows room for bus routes; car parking; footpaths on both sides of the road; and a range of interesting traffic calming devices to add interest to the streetscape.
▪ *Identify appropriate locations for smaller lots and multi-unit development sites.*	Smaller lots and multi-unit development sites have been identified in areas fronting open space reserves and other key locations such as corner lots and those close to the NAC to the north. The areas marked in dark brown on the PDP1B indicate locations for smaller lots, typically between 500-600m² in area.
▪ *Respect interfaces with adjoining land, including high value agricultural land to the south and west, an existing low density estate to the north and residential development to the east.*	Precinct 1B is located centrally within the broader north-west growth area. As such, in the long term, its main interfaces will be with adjoining residential precincts to the south and west, and the Neighbourhood Activity Centre to the north. Existing residential development lies to the east across Worland Road. Care has been taken with the location of local access roads into Precinct 1B from Worland Road so as not to conflict with existing intersection to the east.
▪ *Incorporate best practice passive design principles into new subdivision and housing development through road and housing orientation, solar access to each lot, shading, natural ventilation, thermal mass and insulation.*	The proposed PDP1B is designed around a north-south and east-west grid of streets which provides for the vast majority of lots to have excellent solar access. The layout of lots, and hence the future orientation of houses, is the most direct way of influencing passive design principles. The detailed design of houses within lots cannot be influenced any further by the planning process, as single houses within the General Residential Zone do not require planning approval unless they are also affected by overlays.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
Utilities and Drainage Requirements and Objectives	
A development sequencing plan that identifies the staging and provision of infrastructure (including works proposed to be delivered as works in lieu of payment of Development Contributions in accordance with the *Wangaratta North West Growth Area Development Contributions Plan)*, drainage (including lower order drainage, roads and other key facilities as shown in Chapter 5, Structure Plan elements, of the *Wangaratta North West Growth Area Structure Plan Report*).	Refer to the Stormwater Catchment Plan at **Appendix D** for details. The Plan details how stormwater will be collected and conveyed through pits and pipes in the local road network to a retention basin proposed in the north-east corner of Precinct 1A. Once collected, stormwater will be detained and then released at pre-development levels to the existing stormwater system on Lindner Road. Given there is no upgrade to adjacent collector roads proposed for Precinct 1B, there are no 'in-kind' works proposed in lieu of development contributions. The payment of the indexed developer contributions will be made at the subdivision stage for each property, based on the approved land budget for the NWGASP.
Evidence that reticulated water supply and sewerage services can be provided to the land in a timely and efficient manner.	A number of meetings and forums have been held over the past 12-18 months with North East Water Corporation (NEW) to discuss the provision of reticulated water and sewer to the NWGA, and more broadly across the urban area of Wangaratta. NEW has advised that it can service the first stages of Precinct 1B using existing infrastructure; beyond that, NEW must provide significant upgrades to the network. NEW is in the process of planning the infrastructure required to service each precinct in the NWGA. It is incumbent on NEW to provide this infrastructure in a timely manner to support the development of this urban area of Wangaratta. NESD has been lobbying NEW to ensure adequate resources are provided to support Wangaratta's urban land development.
An overall land budget that calculates the area for each category of land use shown on the plan. The land budget must specify land that will be set aside for infrastructure and open space in accordance with the *Wangaratta North West Growth Area development Contributions Plan*.	Refer to the Precinct 1B Development Plan at **Appendix A** for details of the actual areas of land set aside for each category of land use; and a comparison with areas nominated under the Development Contributions Plan. The actual land budget areas are relatively consistent with the DCP areas, with some apparent variations. The most significant variations arise from the fact that Properties 16, 17 and 18 are spread across both Precincts 1A and 1B. The land budget shown on the PDP1B includes the Total Net Developable Area for that part of each property within Precinct 1B, and then the total area of the land across both precincts. With regards the shared path area for Properties 16, 17 and 18, this element is included in the Precinct 1A land budget. The 0.5ha area for Community Facility for Property 18 is also include in Precinct 1A.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
	The native vegetation to be retained on Property 17 as shown in the DCP as 0.39ha. There is no native vegetation shown retained within the Precinct 1B plan, however vegetation is being retained in the northern portion of Property 17 where a detailed native vegetation assessment has shown the value of trees to be higher. The 0.5ha of community facility to be shown on Property 18 is included in Precinct 1A in accordance with the approved NWGA Structure Plan. In order to provide a range of standard and medium density residential opportunities across each property, there is a slight increase in areas allocated for medium density housing across the entire precinct compared with the DCP.
Any response to utilities and drainage requirements must address the following:	
▪ *Identify key infrastructure that will serve the broader Wangaratta North West community and with funding of this infrastructure shared equitably.*	The NWGA Structure Plan identifies the stormwater drainage and transport infrastructure required to service each precinct. A Stormwater Catchment Plan has been prepared for Precinct 1B that details the provision of one large retention basin within Precinct 1A with supporting drainage infrastructure that is consistent with the Structure Plan requirements. The proposed basin will fully service Precincts 1A and 1B independently from other precincts. The retention basin has been co-located within the central park reserve, as this is an appropriate low point on the site, and combining basins within landscaped areas can have beneficial outcomes for amenity and retention of vegetation. This reserve is designed to convey stormwater to the Three Mile Creek further to the east along the new stormwater pipes along Lindner Road. There are no upgrades to the collector road network identified as part of the Precinct 1B development. Worland Road is not currently identified for any upgrades as part of the growth area roll out. The Unfunded Collector Roads Masterplan has identified that collector roads along the southern and western boundaries of Precinct 1B are unnecessary and will encourage traffic through Precinct 1B onto Worland Road, when the preference is to encourage traffic north to Lindner Road and south to Cruse Street. The cost of other infrastructure to support Precinct 1B will be shared through the payment of development contributions at the time of subdivision.
▪ *Identify sequencing that responds to the provision of drainage infrastructure.*	Refer to the Stormwater Catchment Plan at **Appendix D** for sequencing of services.
▪ *Implement Water Sensitive Urban Design principles into stormwater*	Precinct 1B forms part of a larger catchment that includes Precinct 1A to the north. To service this catchment, a large

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
management that meets the drainage requirements of the development and protects the water quality of the Three Mile Creek. This approach provides for three catchments that will drain to a series of retarding and bio-retention basins that will manage stormwater flows and quality, supported by main drainage infrastructure to be incorporated within the local street network.	retention basin will be provided in a reserve at a natural low point close to the north-eastern corner of Precinct 1A A series of pits and pipes will convey stormwater from the local road network to the bio-retention basin prior to its regulated release to the Three Mile Creek. The bio-retention basin will help implement principles of WSUD.
Bushfire Management Requirements and Objectives	
A bushfire management plan that achieves development that is bushfire resilient for both the completed development and during any staging of the development by addressing the following requirements:	Refer to the Bushfire Hazard Management Plan at **Appendix G**. The interface between the subject land and surrounding farming land has been identified as a potential bushfire risk, with grass fires from the west posing the most likely scenario. There is one current perimeter road to the Precinct, being Worland Road to the east. In the longer term, there will be a perimeter collector road close to the western boundary within Precinct 5. The construction of a road along most of the northern boundary with Precinct 1 A will also serve as a partial perimeter road. Future development of Precinct 5 to the west and Precinct 1A to the north will also help mitigate bushfire threat from the high-risk westerly direction. In the short term, the BHMP shows that the perimeter lots to the south, west and north will need to provide defendable space of 19m from adjacent grassland in order to achieve a BAL 12.5 rating. It is proposed to provide a managed defendable space buffer of 30m (as required by Schedule 8 to the DPO) within neighbouring properties along the western boundary with Precinct 5; the northern boundary with Precinct 1A and the southern boundary with Precinct 2. The bushfire hazards identified adjacent these precinct boundaries are considered to be temporary, and defendable space requirements should only apply until such time as each adjoining precinct is developed for general residential development. Construction of temporary managed fire breaks during the declared fire season will also help mitigate risks posed by new development abutting undeveloped farm land during each stage of development.
For Permanent Bushfire Hazards:	

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
• A perimeter road on all interfaces with a permanent bushfire hazard.	No permanent bushfire hazard is identified adjacent Precinct 1B. As mentioned above, in the long term, there will be standard density residential development to the north, west and south of the precinct. Worland Road, as a collector road, will continue to form the eastern boundary of the site. Existing bushfire hazard along the northern, southern and western boundaries will reduce as Precincts 1A, 2 and 5 are eventually developed with general residential density development.
• A building exclusion zone adjoining all permanent bushfire hazard equivalent to Column A in Table 2 to Clause 52.47.	Due to the type of vegetation (grassland or low threat) and its location, there are no building exclusion zones identified for Precinct 1B. The red hatched areas on the submitted BHMP show defendable space requirements on adjoining land, which do not prevent the construction of buildings.
• A subdivision design and approach to lot layout that: o Provides for lots to the front of the interface of a permanent hazard. o Provides building envelopes on any lot within the building exclusion zone showing that a dwelling will not be constructed within the building exclusion zone. o Defendable space management requirements to all lots (including lots, road reserves and other public open space) for a distance of 50 metres from the edge of all permanent hazards.	As discussed above, there are no permanent bushfire hazards identified abutting Precinct 1B. Land to the east is already developed at a general residential urban density, and vegetation is classified here as low threat/excludable.
For Interim Bushfire Hazards:	
• The management of the bushfire hazard within the distance specified in Column A in Table 2 to Clause 52.47 or 30 metres, whichever is the greater to ensure that at no times will a dwelling be exposed to more than Column A/BAL 12.5.	Refer to the Bushfire Hazard Management Plan for details. Each stage of the subdivision will be managed so that the interface with interim bushfire hazards (ie. the adjacent grassland) will be maintained in accordance with defendable space requirements. A 30 metre mowed buffer can be provided during the declared fire season to help reduce the risk of grass fires for each stage of the development. Specific requirements can be placed as conditions on each planning permit for subdivision across the Precinct.

DPO Schedule 8 Requirement	Precinct 1B Development Plan Design Response
• The mechanism to be used (for example, a Section 173 Agreement) is to ensure implementation and compliance at all times during the fire danger period.	A condition on any subdivision permit issued would be an appropriate mechanism to enforce this requirement. A condition could require the maintenance of a 30 metre buffer around each stage, for the life of the subdivision. Once the subdivision permit is spent, it would be expected that all interim hazards have been eliminated through the construction of roads and lots. The application of a condition on permit would also allow some flexibility with meeting the requirements, particularly if requirements change over time. A Section 173 agreement is not appropriate here as there is no clear title for it to be applied to (a balance lot would require the application and removal of a S173 agreement multiple times over a staged subdivision). Multiple amendments to a S173 agreement would be costly and time consuming.
• Ensure that the location, design and construction of development incorporates and implements bushfire protection measures as required.	Refer to above.
• Identify areas where the bushfire hazard requires specific bushfire management measures for subdivision and building works to be implemented.	Refer to above.
• Provide more bushfire resilient development for the completed development and during the staging of the development.	Refer to above.

6.0 Conclusion

This report details the merits of a proposal to develop Precinct 1B of the Wangaratta North West Growth Area with a multi-lot general residential estate containing a new local road network; parkland and appropriate services and infrastructure.

This report details how the submitted Precinct 1B Development Plan meets the requirements of the Wangaratta Planning Scheme. In particular, the final Precinct 1B Development Plan has addressed the purposes and provisions of the General Residential Zone; the Development Plan Overlay – Schedule 8 and the key directions and recommendations of the *Wangaratta North West Residential Growth Area Structure Plan, September 2018*.

The site has few constraints, and the proposed road and lot layout demonstrates that the land is fundamentally suitable for the proposed development. The proposal capitalises on the new General Residential zoning; access to the local road network; proximity to the proposed Neighbourhood Activity Centre and Community Centre; direct shared path connections to the Three Mile Creek; land stability and limited native vegetation cover.

This report leads to the following conclusions:

- The proposal meets the purposes and provisions of the General Residential Zone – Schedule 1 for the development of a multi-lot general residential estate.
- The proposal has addressed and satisfies the requirements of the Development Plan Overlay – Schedule 8; and the Development Contributions Plan Overlay – Schedule 1.
- The proposed Precinct 1B Development Plan will allow for a new general residential development to establish in stages on a site zoned for this purpose with excellent road exposure and access to services.

It is requested, therefore, that approval is granted under Clause 43.04-3 of the Development Plan Overlay for the Precinct 1B Development Plan as submitted for the development of a multi-lot general residential subdivision with associated road network; public open spaces and supporting infrastructure.

Appendix A

Precinct 1B Development Plan

(Refer to separate plan)

Appendix B

Site Analysis Plan

(Refer to separate plan)

Appendix C

Movement Network Plan

(Refer to separate plan)

Appendix D

Stormwater Catchment Plan

(Refer to separate plan)

Appendix E

Landscape Master Plan

(Refer to separate plan)

Appendix F

Landscape Assessment Plan

(Refer to separate plan)

Appendix G

Bushfire Hazard Management Plan

(Refer to separate plan)

Appendix H

Flora and Fauna Assessment

(Refer to separate document)

Appendix I

Preliminary Soil Assessment

(Refer to separate document)

Appendix J

Arborist Report

(Refer to separate document)

Appendix K

Title details

(Refer to separate documents)

CONCEPT DEVELOPMENT PLAN

N

Property Specific Land Budget	Actual	DCP	Actual	DCP	Actual	DCP	Actual	DCP	Actual	DCP
Property	16*	16	17*	17	18*	18	20	20	21	21
Total Area (ha)	1.357ha	2.1ha	1.29ha	2.1ha	1.20ha	2.0ha	2.73ha	2.8ha	2.04ha	2.1ha
Land for shared path	-	0.02ha	-	0.02ha	-	0.03ha	-	-	-	-
Passive Open Space	-	-	-	-	-	-	-	-	0.16ha	0.15ha
Drainage (Retarding Basin)	-	-	-	-	-	-	-	-	-	-
Community Facility	-	-	-	-	-	0.50ha	-	0.15ha	-	-
Vegetation to be retained	-	-	-	0.39ha	-	-	-	-	0.10ha	0.48ha
Commercial Development	-	-	-	-	-	-	-	-	-	-
Total Net Developable Area (ha)	1.357ha	2.1ha	1.29ha	1.7ha	1.20ha	1.47ha	2.73ha	2.6ha	1.78ha	1.5ha
Standard Density	1.037ha	1.7ha	0.86ha	1.7ha	1.20ha	1.47ha	2.57ha	2.6ha	1.58ha	1.5ha
Medium Density	0.32ha	0.40ha	0.43ha	0.40ha	-	-	0.16ha	-	0.20ha	-

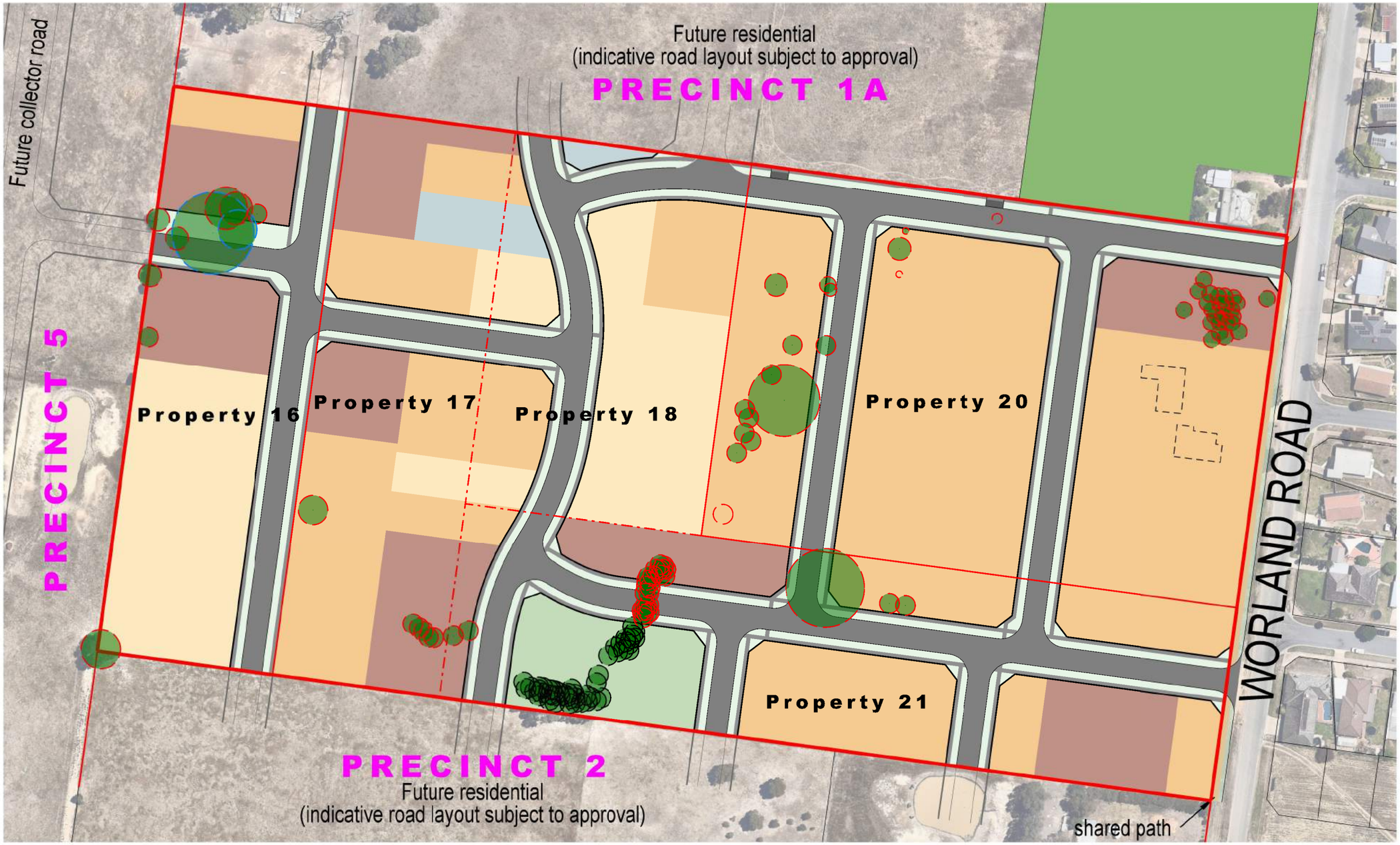
* properties that span across 2 precincts, actual areas calculated for this precinct only

Legend

- **Residential lots** — Typically 450 - 600m² small residential lots
- **Residential lots** — 600 - 700m² standard residential lots
- **Residential lots** — 700 - 800m² standard residential lots
- **Residential lots** — 800m² + large residential lots (some with potential for further subdivision)
- **Open Space**

- Precinct site boundary
- Internal property boundary
- Footpath
- Shared path
- Indigenous trees
- Indigenous trees to be retained but considered lost
- Indigenous trees to be removed

Approx yield 10.9 lots per ha



Note: All dimensions and areas shown on this plan are subject to Council approval and survey

DATE	DESCRIPTION	VERSION	REVISION STATUS
14-12-21	For Approval	1	

NORTH EAST SURVEY DESIGN
ABN 51 177 4 45 157
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: NW GROWTH AREA
At: WANGARATTA

DEVELOPMENT PLAN - PRECINCT 1B
WORLAND ROAD
WANGARATTA

Project No: M6874 Version: 1
Drawn by: MB Checked/Signed By: MB

Scale: 1:1500 @ A3 / 1:750 @ A1

Status: FOR APPROVAL

Print Date: 15/12/2021
Drawing Name: Sheet 1
File Name: M6874 PDP 1.dgn

LEGEND

- Indigenous Tree
- Exotic or Planted Tree
- Retention Value - High
- Retention Value - Mod A
- Retention Value - Mod B
- Retention Value - Mod C
- Retention Value - Low
  * Retention Value as per Arborist Report Mar 2020
- Precinct site boundary
- View lines
- Shared path
- Buildings
- Drainage lines

DATE	DESCRIPTION	VERSION
15-12-21	For Comment	1

REVISION STATUS

NORTH EAST SURVEY DESIGN
ABN 83 137 499 157
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: NW GROWTH AREA
At: WANGARATTA

DEVELOPMENT PLAN - PRECINCT 1B
WORLAND ROAD
SITE ANALYSIS PLAN

Project No: M6874 Version: 1
Drawn by: MB Checked/Signed By: KW

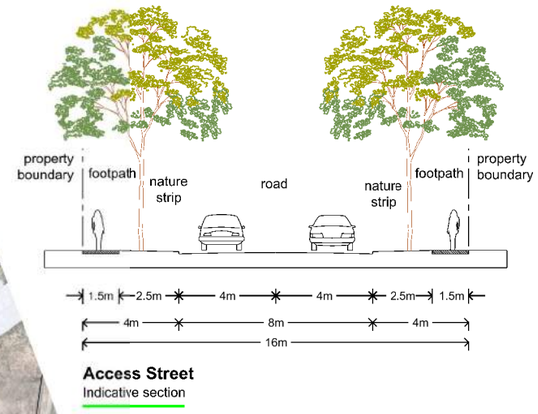
Scale: 1:2000 @ A3 / 1:1000 @ A1

Status: FOR INFORMATION

Drawing Date: July 2020
File Name: M6874 SAP 1.dgn

SITE ANALYSIS PLAN

MOVEMENT NETWORK PLAN



Access Street
Indicative section

Legend

- Precinct site boundary
- Shared path
- Footpath
- 50 v. /day — Vehicle movements per day
- Traffic calming device

1. PERIMETER (THRESHOLD) TREATMENT (or similar)
   May include raised pavement.
   Refer Figure 3.1 of AS1742.13-2009
2. WATTS PROFILE ROAD HUMP
   Install if required subject to detailed engineering design.
   Refer Figure 3.2 of AS1742.13-2009
3. FLAT-TOP ROAD HUMP
   Refer Figure 3.3 of AS1742.13-2009
4. LOCAL STREET ROUNDABOUT
   Refer Figure 3.4 of AS1742.13-2009
5. SMALL DIAMETER ROUNDABOUT
   Provides for possible future connection to land to the south.
   Refer Figure 3.5 of AS1742.13-2009
6. SINGLE-LANE SLOW POINT
   Refer Figure 3.6 of AS1742.13-2009
7. DRIVEWAY LINK
   Refer Figure 3.7 of AS1742.13-2009. Signage to be provided at each end of street nominating "local access only".
8. SINGLE-LANE ANGLED SLOW POINT
   Refer Figure 3.8 of AS1742.13-2009
10. MODIFIED T-INTERSECTION
    Refer Figure 3.10 of AS1742.13-2009
11. SPLITTER ISLAND/ DIVIDED ROAD
    Install to prevent corner cutting on curved roads

Note: All dimensions and areas shown on this plan are subject to Council approval and survey

DATE	DESCRIPTION	VERSION
15-12-21	For Approval	1
	REVISION STATUS	

NORTH EAST SURVEY DESIGN
ABN 53 137 4 45 167
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: NW GROWTH AREA
At: WANGARATTA

DEVELOPMENT PLAN - PRECINCT 1B
WORLAND ROAD
WANGARATTA

Project No: M6874 Version: 1
Drawn by: MB Checked/Signed By: MB

Scale: 1:1500 @ A3 / 1:750 @ A1

Status: FOR APPROVAL

Print Date: 15/12/2021
Drawing Name: Sheet 1
File Name: M6874 MNP 1.dgn

Table of Contents

1. OBJECTIVE 3
2. INTRODUCTION 3
3. STORMWATER CATCHMENT 3
4. PROPOSED STORMWATER MANAGEMENT STRATEGY 5
5. STORMWATER RUNOFF ANALYSIS 5
   - 5.1 Rational Method Equation 6
   - 5.2 Annual Exceedance Probability (AEP) 6
   - 5.3 Definition of Catchment Area 6
   - 5.4 Calculation of Time of Concentration 6
   - 5.5 Average Rainfall Intensity 6
   - 5.6 Predeveloped Site Runoff Coefficient 6
   - 5.7 Permissible Site Discharge (PSD) 8
   - 5.8 Developed Site Runoff Coefficient 9
   - 5.9 Retardation Storage Requirements 10
6. STORMWATER QUALITY MODELLING 11
   - 6.1 MUSIC Model Layout 11
   - 6.2 MUSIC Model Inputs 12
     - 6.2.1 Meteorological Data 12
     - 6.2.2 Stormwater Catchment Modelling (Source Nodes) 12
     - 6.2.3 Stormwater Treatment Modelling (Treatment Nodes) 13
     - 6.2.4 MUSIC Model Output 14
7. MATERIALS SPECIFICATIONS – BIORETENTION AREA 14
   - 7.1 Filter Material *(350mm Depth)* 14
   - 7.2 Transition Layer *(100mm Depth)* 15
   - 7.3 Drainage Layer *(150mm Depth)* 15
8. VEGETATION SPECIFICATIONS – BIORETENTION AREA 16
9. DESIGN PARAMETERS (ASSUMPTIONS AND EXCLUSIONS) 16
   - 9.1 Source Nodes 16
     - 9.1.1 Roof Areas 16
   - 9.2 Meteorological Template 16
   - 9.3 Exfiltration Rate 16
   - 9.4 Drainage Pipe Sizes 16
10. CONCLUSION 17

List of Figures

Figure 3-1– Aerial Image – Catchment 4N 3

Figure 3-2– Schematic Layout – Catchment North East 4N – taken from "Expert Witness Report" .. 4

Figure 4-1– Stormwater Management Plan – SMC at 2 – 8 Worland Road – Sheet 1 of 1 5

Figure 6-1– MUSIC Model Layout 11

Figure 6-2 – Meteorological Data Template – Wangaratta 1961 – 1966 12

List of Tables

Table 4-1 – Best Practice Environmental Management Guidelines 11

Table 6-2 – MUSIC Source Node Percent Impervious Summary 13

Table 6-3 – Sub-Catchment Summary 13

Table 6-4 – WSUD Input Summary – Bioretention Area 13

Table 6-5 – Treatment Train Effectiveness Summary (% Reduction) 14

Table 8-1 – Plant Species for Bioretention Areas 16

1. OBJECTIVE

The objective of this report is to provide Rural City of Wangaratta (Council) with suitable stormwater management strategy that provides both the retardation and treatment of the stormwater runoff generated from the proposed development site to the existing Council drainage system. This strategy is to be in keeping with the Worland Road – Lindner Road area that fits in with Amendment C071 to the Wangaratta Planning Scheme for the Urban Growth areas in Wangaratta.

2. INTRODUCTION

This report follows on from the previous investigations prepared by Rural City of Wangaratta for the Urban Growth areas in Wangaratta, Amendment C071 to the Wangaratta Planning Scheme. These reports are:

- "Strategic Drainage Review – Growth Areas" by Dr John Webster dated 1 April 2015
- "Expert Witness Report Provided to Planning Panels Victoria – Drainage & Infrastructure" by Ben Thomas from Rural City of Wangaratta dated 23 April 2018.

Council has engaged North East Survey Design (NESD) to provide the design for a Retardation Basin and WSUD strategy for the North East 4N Catchment and the Stormwater Management Centre (SMC) located at 2 – 8 Worland Road. The design must be in accordance with the current requirements of Council's Infrastructure Design Manual (IDM) and achieve the performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG).

3. STORMWATER CATCHMENT

Refer to Figure 3.1 below for an aerial view of the 4N Catchment and the SMC at 2 – 8 Worland Road.

Figure 3-1– Aerial Image – Catchment 4N

The focus here will be on the North East 4N catchment (Pink) area which is a sub-catchment of the larger 4N catchment (Red) bounded by Reith Rd – Lindner Rd – Worland Rd and Cruse St. These catchments were identified in the previous reports referred to above," Strategic Drainage Review – Growth Areas" and the "Expert Witness Report Provided to Planning Panels Victoria – Drainage & Infrastructure".

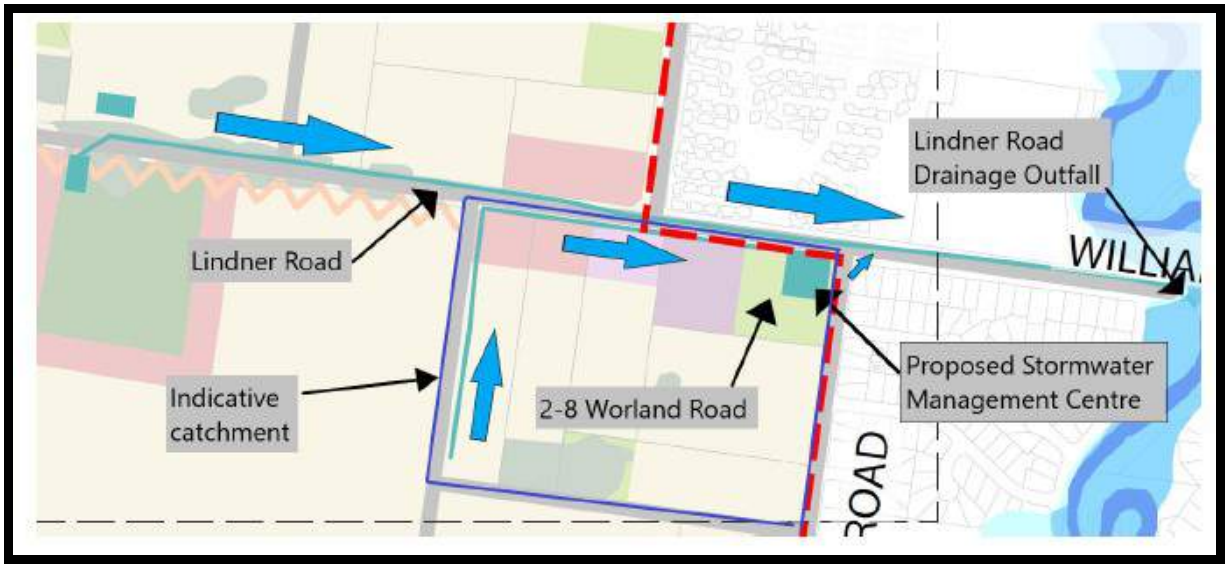


Figure 3-2– Schematic Layout – Catchment North East 4N – taken from "Expert Witness Report"

4. PROPOSED STORMWATER MANAGEMENT STRATEGY

The current Urban Runoff Management Objectives of CI56-07-04 aim to improve stormwater quality and assist in achieving the objectives of the SEPP – Waters of Victoria and the performance objectives set out in the Urban Stormwater BPEMG. The proposed strategy uses elements of WSUD, rainwater tanks and retardation storage, to achieve these objectives.

Through review of the analysis already undertaken in the previous reports and in conjunction with BPEMG the following stormwater management strategy was derived. The strategy involves directing the roof runoff from each dwelling into a rainwater tank. Overflow from the rainwater tanks and overland flow from the garden, grassed and paved areas from lots will be directed to the roadway kerb and channel. Flows from the kerb and channel will be directed via a traditional 'pits and pipes' underground drainage system to the retardation basin area.

An estimation of the stormwater catchment area has been made based on LIDAR data for this area. Figure 3.1 below shows the Stormwater Catchment adopted for the site and the location of the SMC at 2 – 8 Worland Road.

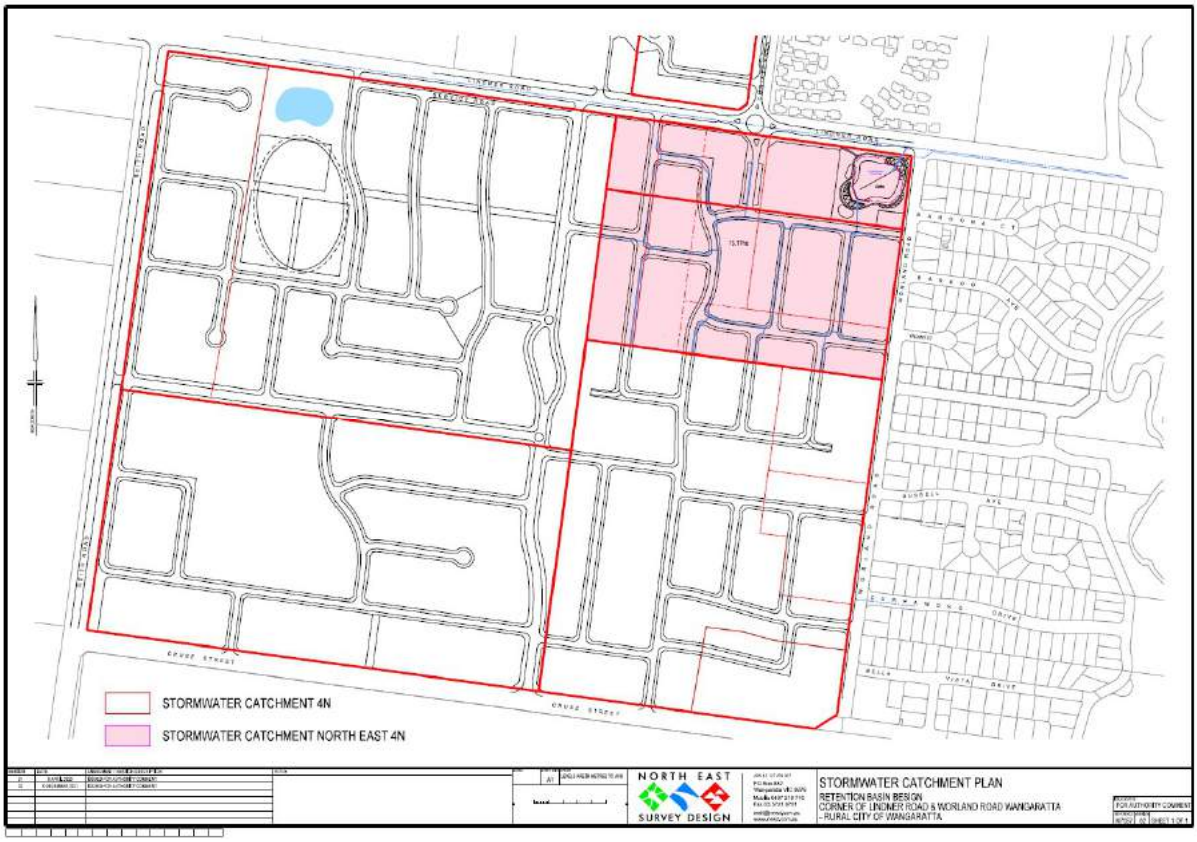


Figure 4-1– Stormwater Management Plan – SMC at 2 – 8 Worland Road – Sheet 1 of 1

5. STORMWATER RUNOFF ANALYSIS

Stormwater runoff analysis using the Rational Method was carried to determine the Permissible Site Discharge (PSD) from the predeveloped catchment for the 20% AEP. This predeveloped catchment discharge was used to determine the Detention Storage requirements for the developed catchment using rainfall events up to and including the 1% AEP.

5.1 Rational Method Equation

The predeveloped catchment PSD for the 20% AEP calculated using the Rational Method formula:

$$Q_y = \frac{C_y \times I_{tc,y} \times A}{360}$$

Where:

Q_y = Estimated maximum discharge from the selected design AEP (m^3/s)
C_y = Urban Runoff Coefficient for the design 'Y' year AEP *(see Section 4.6 below)*
I_y = The average intensity of rainfall (mm/h) for the 'Y' year AEP and time of concentration 'T_c' *(see Section 4.4 and 4.5 below)*
A = Catchment area (Ha) *(see Section 4.3 below)*

5.2 Annual Exceedance Probability (AEP)

From Section 18.4.4 of the IDM the Annual Exceedance Probability (AEP) for Retardation Basin low flow pipes is the 20% AEP.

5.3 Definition of Catchment Area

From the Catchment Plan, Figure 3.1 above, the following areas have been adopted:

Predeveloped Catchment Area: A = 13.17 Ha

5.4 Calculation of Time of Concentration

For rural catchments the Time of Concentration is calculated from:

$$t_k = \text{Initial Time} + \frac{\text{Flow Path Length}}{\text{Flow Velocity}}$$

Initial Time: 6 minutes (IDM Section 16.6)
Flow Path Length: 550m
Flow Velocity: 0.55m/s

t_k = 22.7 minutes (*Adopt 22 minutes)*

5.5 Average Rainfall Intensity

Rainfall Intensity – Frequency – Duration (IFD) data was sourced from the Bureau of Meteorology (BoM), refer to Figure 5.1 below for details. Based on the Time of Concentration of 22 minutes and an 20% AEP the design rainfall Intensity I = 50.1 mm/h.

5.6 Predeveloped Site Runoff Coefficient

Urban Runoff Coefficients were taken directly from Section 16.7 Table 10 of the IDM:

C = 0.20

Location

Label: Wangaratta

Latitude: 36.3683 [Nearest grid cell: 36.3625 (S)]

Longitude: 146.3172 [Nearest grid cell: 146.3125 (E)]

IFD Design Rainfall Intensity (mm/h)

Issued: 08 April 2020

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

Table | Chart

Unit: mm/h

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	98.2	112	155	183	212	249	278
2 min	83.3	94.5	130	153	176	205	225
3 min	75.4	85.6	117	139	160	186	205
4 min	69.4	78.9	108	128	148	173	191
5 min	64.5	73.4	101	120	138	161	179
6 min	60.4	68.7	94.8	112	130	152	169
7 min	56.8	64.7	89.3	106	122	144	160
8 min	53.7	61.2	84.5	100	116	136	152
9 min	50.9	58.1	80.3	95.4	110	130	145
10 min	48.5	55.3	76.5	90.9	105	124	138
15 min	39.5	45.0	62.4	74.1	85.7	101	113
20 min	33.6	38.3	53.0	63.1	72.9	86.1	96.2
25 min	29.4	33.5	46.4	55.1	63.7	75.2	84.0
30 min	26.3	29.9	41.3	49.1	56.8	66.9	74.7
45 min	20.2	23.0	31.6	37.5	43.4	51.0	56.8
1 hour	16.7	18.9	26.0	30.8	35.5	41.6	46.3
1.5 hour	12.7	14.3	19.5	23.1	26.6	31.1	34.6
2 hour	10.4	11.7	15.9	18.8	21.6	25.2	28.0
3 hour	7.88	8.85	11.9	14.0	16.1	18.8	20.9

Figure 5-2– Rainfall Intensity – Frequency – Duration (IFD) Table for Wangaratta

5.7 Permissible Site Discharge (PSD)

Utilising the Rational Method to determine the stormwater runoff generated from the proposed development site:

$$Q_y = \frac{C_y \times I_{tc,y} \times A}{360}$$
$$= \frac{0.20 \times 50.1 \times 13.17}{360}$$
$$= 0.367\ m^3/s\ (367\ L/s)$$

It is noted that the pipe connection from the Retardation area to the existing Council underground drainage system is a 450 mm Dia. This restriction acts as an orifice.

NORTH EAST SURVEY DESIGN

Project: Stormwater Management Centre
Location: 2-8 Worland Road
Client: Rural City of Wangaratta
Our Ref.: M7057
Date: 30 June 2020

Orifice Sizing

Orifice Equation: $A_o = \frac{Q}{Cd \times \sqrt{2 \times g \times h}}$

Where:
A_o = Cross sectional area of orifice (m^2)
Q = Flowrate through orifice (m^3/s)
Cd = Coefficient of discharge
g = acceleration due to gravity
h = Head at centreline (m)

Variable Flowrate

Inputs:	Flowrate (Q)	367	L/s
	Coefficient (Cd)	0.62	
	Gravity (g)	9.81	m/s/s
	Head (h)	0.71	m
Solution:	Area (A_o):	0.1592	m^2
	Diameter (D):	450	mm

Variable Orifice Diameter

Inputs:	Diameter (D)	450	mm
	Coefficient (Cd)	0.62	
	Gravity (g)	9.81	m/s/s
	Head (h)	0.71	m
Solution:	Velocity (V):	2.3059	m/s
	Area (A_o):	0.1590	m^2
	Flowrate (Q):	0.3667	m^3/s
	Flowrate (Q):	367	L/s

Orifice Sizing
M7057 - NESD Drainage Calculator
NORTH EAST SURVEY DESIGN
(NESD)
Page 1 of 1

Figure 5-3– Existing 450mm Dia RCP Capacity

5.8 Developed Site Runoff Coefficient

Urban Runoff Coefficients were taken directly from Section 16.7 Table 10 of the IDM:

Residential Areas – 600m^2 to 1,000m^2: C = 0.70
Residential Areas – 450m^2 to 600m^2: C = 0.75
Residential Road Reserves: C = 0.75

Adopt C = 0.75

NORTH EAST SURVEY DESIGN

Project: Stormwater Management Centre
Location: 2-8 Worland Road
Client: Rural City of Wangaratta
Our Ref.: M7057
Date: 30 June 2020

Peak Flow Rate - Rational Method

Rational Method Equation: $Q = \frac{C \times I \times A}{360}$

Where:
Q = Peak Flowrate for given ARI (m^3/s)
C = Runoff Coefficient for given ARI
I = Rainfall Intensity at given ARI and t_c (mm/hr)
A = Catchment Area (Ha)
t_c = Time of concentration

4N Catchment at the SMC at 2 – 8 Worland Road

Average Recurrance Interval	5	Years
Coefficient of Runoff	0.75	Weighted
Rainfall Intensity	49.9	mm/hr
Area	13.17	Ha
Time of Concentration	22	mins

Capacity Q:	1.3691	m^3/s
Capacity Q:	1369	L/s

Rational - Developed
M7057 - NESD Drainage Calculator
NORTH EAST SURVEY DESIGN
(NESD)
Page 1 of 1

Figure 5-4– Developed Runoff Rational Method

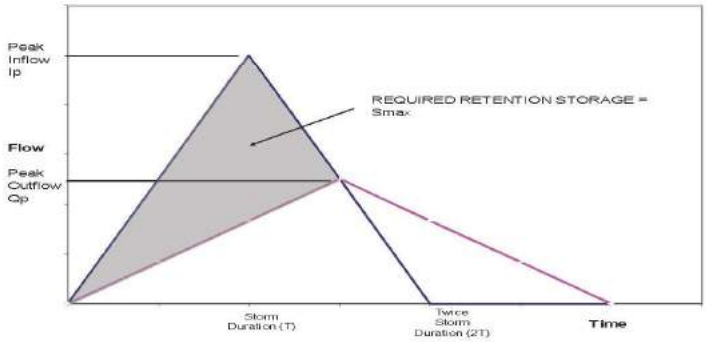
5.9 Retardation Storage Requirements

Using Boyd's Method, the amount of retardation storage was determined to be 3,252m^3, refer to Figure 5.4 below.

NORTH EAST SURVEY DESIGN

Project: Stormwater Management Centre
Location: 2-8 Worland Road
Client: Rural City of Wangaratta
Our Ref.: M7057
Date: 30 June 2020

Retardation Storage - Boyd's Formula



Boyd's Equation: $S_{max} = V_1\left(1 - \frac{Q_p}{I_p}\right)$

Where:
S_{max} = Maximum Volume of Temporary Storage (m^3)
V_1 = Volume of Inflow Flood (m^3)
I_p = Peak discharge of inflow hydrograph (m^3/s)
Q_p = Peak discharge of outflow hydrograph (m^3/s)

Catchment Area (A) =	13.17	Ha
Developed CatchmentRunoff Coefficient (1% AEP) =	0.75	
1% AEP Effective Catchment Area = ∑CA =	9.88	ha
Restricted outflow requirement (PSD) =	0.367	m^3/s

Storage requirement is highest value of S_{max} calculated in the table below
Critical storm duration is the storm duration when S_{max} occurs

Storm Duration (min)	1% AEP Intensity (mm/hr)	I_p (m^3/s)	Q_o (m^3/s)	V_1 (m^3)	S_{max} (m^3)
5	179	4.91	0.37	1473	1363
6	169	4.64	0.37	1669	1537
10	138	3.79	0.37	2272	2052
20	96.2	2.64	0.37	3167	2727
30	74.7	2.05	0.37	3689	3029
60	46.3	1.27	0.37	4573	3252
120	28.0	0.77	0.37	5531	2889
180	20.9	0.57	0.37	6193	2230
360	12.9	0.35	0.37	7645	-282
540	9.83	0.27	0.37	8739	-3152
720	8.14	0.22	0.37	9648	-6206
1080	6.26	0.17	0.37	11130	-12652
1440	5.19	0.14	0.37	12303	-19405

Boyd Method (450d)
M7057 - NESD Drainage Calculator
NORTH EAST SURVEY DESIGN (NESD)
PAGE 1 OF 1

Figure 5.5– Retardation Storage Requirements

6. STORMWATER QUALITY MODELLING

In order to address the current Urban Runoff Management Objectives of Clause 56.07-04 for newly created lots only, stormwater quality modelling and design for the proposed development area was carried out in accordance with the current water quality performance objectives set out in the Urban Stormwater BPEMG. The objectives for environmental management of stormwater are presented in Table 4.1 below.

Table 6-1 – Best Practice Environmental Management Guidelines

Pollutant	Current 'Best Practice' Objective
Suspended Solids (SS)	80% reduction of typical urban annual suspended solids load
Total Phosphorus (TP)	45% reduction of typical urban annual total phosphorus load
Total nitrogen (TN)	45% reduction of typical urban annual total nitrogen load
Litter	70% reduction of typical urban annual litter load

In order to determine the reductions in these pollutants are in line with the 'Best Practice' objectives, the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) analysis of the stormwater quality was carried out for the proposed development site.

6.1 MUSIC Model Layout

The following figure, Figure 5.1, below shows the MUSIC model layout used to model the proposed development site.

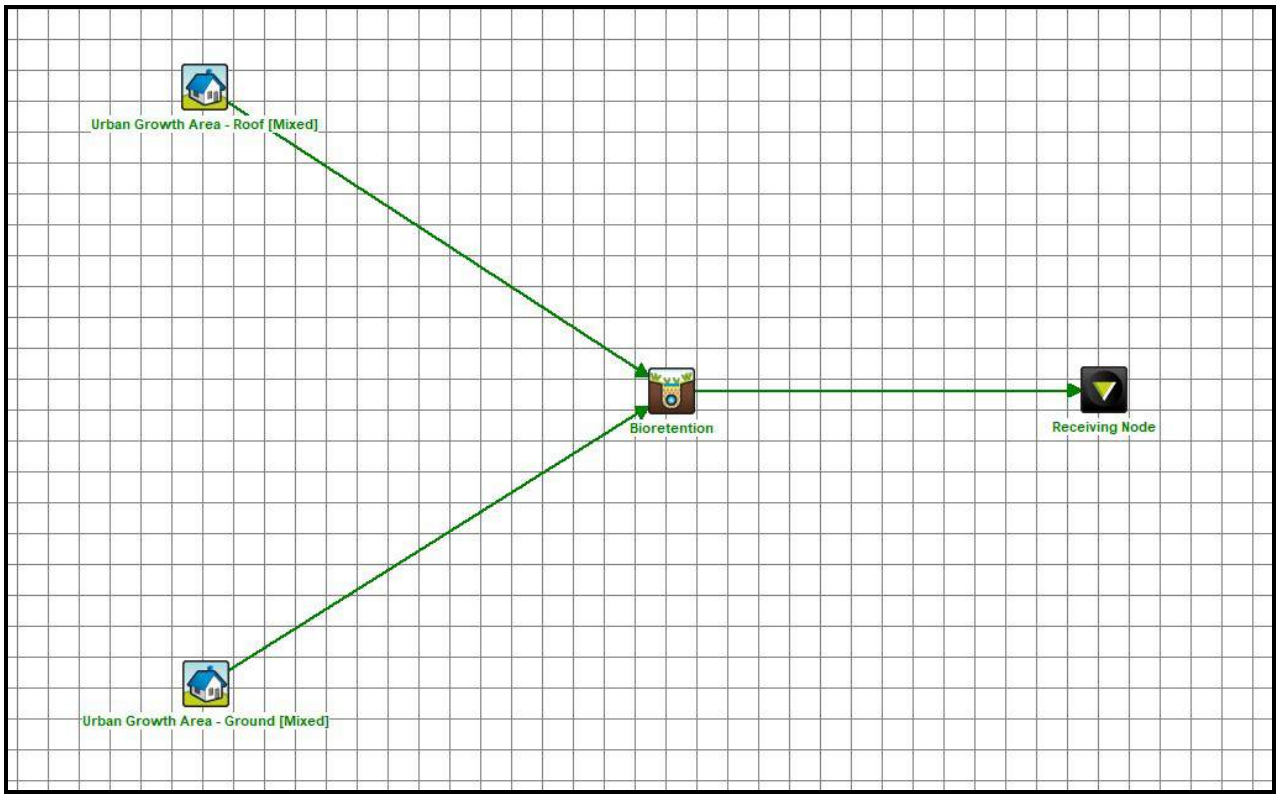


Figure 6-1– MUSIC Model Layout

6.2 MUSIC Model Inputs

6.2.1 Meteorological Data

The Meteorological Template used for the analysis was generated by using the Pluviograph rainfall data from Ovens River (Wangaratta) for the period from 1 January 1961 to 1 January 1966 inclusive using a six (6) minute time step and the Potential Evapo-transpiration (PET) data provided with MUSIC for the Hume Reservoir. The rainfall data for Ovens River (Wangaratta) was obtained from the Bureau of Meteorology (BoM) through the MUSIC BoM Rainfall Data Tool.

Ovens River (Wangaratta) rainfall data was used as it is the geographically closest recording station to Wangaratta that has a similar mean annual rainfall. The surrounding Pluviograph rainfall data site at Wangaratta Aerodrome was considered however the Ovens River (Wangaratta) had the closest correlation to Wangaratta. The mean annual rainfall for Wangaratta is 635.7mm, based on 108 years of data.

In terms of the MUSIC Meteorological Template generated and used for the analysis, the mean annual rainfall for the selected period of 1961 to 1967 is 608mm. This is below the Wangaratta mean annual rainfall of 635.7mm but within the suggested +-5% variation range. A graphical representation of the meteorological data used is presented in Figure 5.2 below.

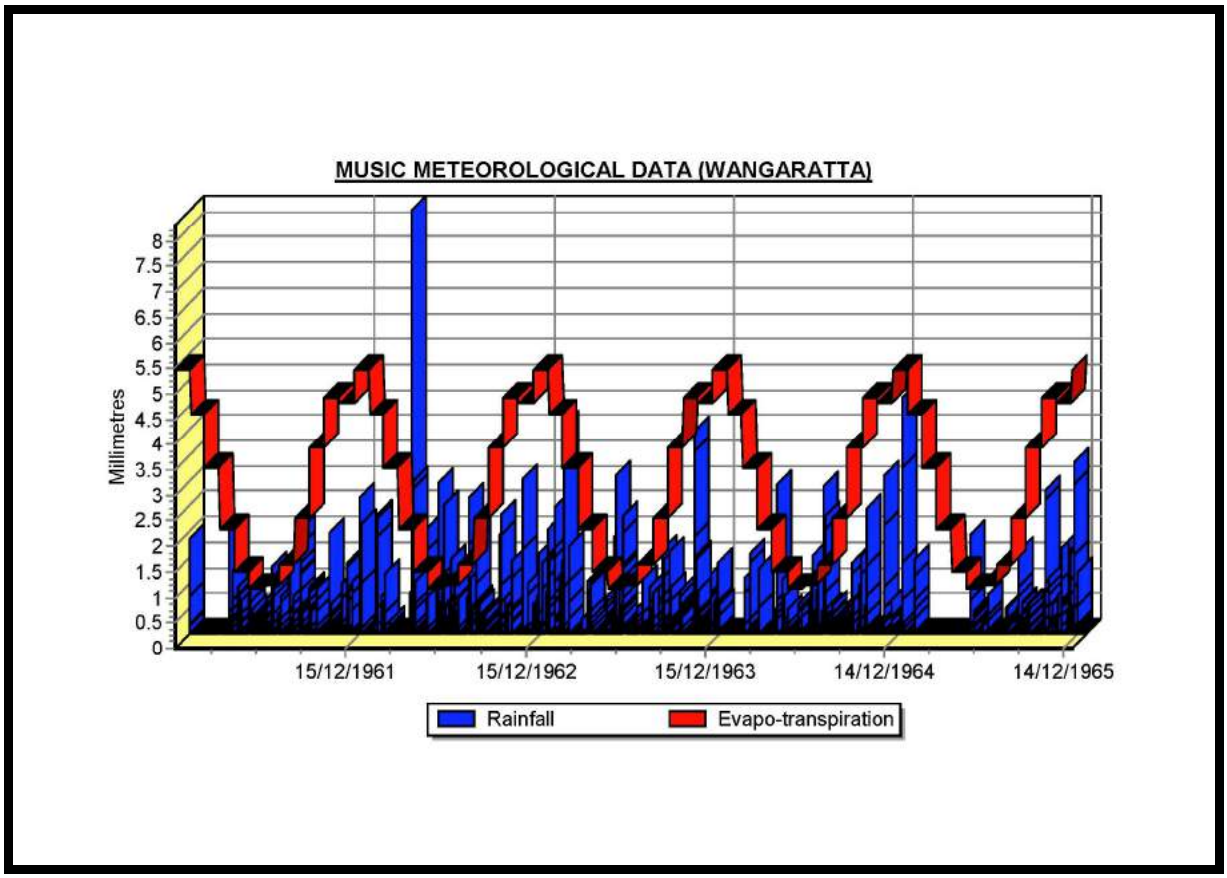


Figure 6-2 – Meteorological Data Template – Wangaratta 1961 – 1966

6.2.2 Stormwater Catchment Modelling (Source Nodes)

As part of the modelling of the stormwater quality discharged from the proposed development site a Catchment Plan was prepared. Figure 3.1 above shows the Catchments used in the MUSIC analysis.

As can be seen from the Catchment Plan above the site has been broken down into sub-catchments. These sub-catchments were further broken down into areas applicable to MUSIC, Source Nodes. The percent impervious for each of the MUSIC Source Nodes was based on coefficients of runoff based on values used by other Council's in this region.

Table 6.2 below summarises the percent impervious used for each of the MUSIC Source Nodes and Table 6.3 summarises the sub-catchment areas for each of the MUSIC Source Nodes used in the MUSIC modelling.

Table 6-2 – MUSIC Source Node Percent Impervious Summary

Source Node	Impervious (%)
Urban Growth Area - Roof	90
Urban Growth Area – Ground (road, reserve & lots)	60

Table 6-3 – Sub-Catchment Summary

Source Node	Area (Ha)
Urban Growth Area - Roof	4.80
Urban Growth Area – Ground (road, reserve & lots)	8.37

6.2.3 Stormwater Treatment Modelling (Treatment Nodes)

From the Stormwater Management Strategy developed and outlined above in Section 3, the following WSUD treatment node has been utilised in the modelling:

- Bioretention Basin

Table 6.4 below summarises the WSUD elements utilised in the MUSIC modelling.

Table 6-4 – WSUD Input Summary – Bioretention Area

	Bioretention
Low Flow Bypass (m^3/s)	0.000
High Flow Bypass (m^3/s)	100.000
Extended Detention Depth (m)	1.20
Surface Area (m^2)	2,795
Filter Area (m^2)	4.0
Unlined Filter Media Perimeter (m)	8
Sat. Hydraulic Conductivity (mm/hr)	180.00
Filter Depth (m)	0.60
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	50.0
Exfiltration Rate (mm/hr)	0.00
Is Base Lined	No
Vegetated with Effective Nutrient Removal Plants	Yes
Overflow Weir Width (m)	2.00
Underdrain Present ?	Yes

Submerged Zone With Carbon Present ?	No
Submerged Zone Depth (m)	0.00

6.2.4 MUSIC Model Output

Using the above MUSIC model and inputs the pollutant reductions presented in Table 6.5 were obtained at the Outlet Node.

Table 6-5 – Treatment Train Effectiveness Summary (% Reduction)

	Receiving Node
Flow (ML/yr)	1
Total Suspended Solids (kg/yr)	91.9
Total Phosphorus (kg/yr)	69.8
Total Nitrogen (kg/yr)	56.5
Gross Pollutants (kg/yr)	100.0

Based on the figures above, the stormwater water quality performance objectives for environmental management of stormwater as defined in Urban Stormwater BPEMG can be achieved for the development site.

7. MATERIALS SPECIFICATIONS – BIORETENTION AREA

Reference is to be made to the Facility for Advancing Water Biofiltration (FAWB) Guidelines for Filter Media in Biofiltration Systems at the time of construction to ensure the materials specified here re relevant.

It is the intent that the stormwater from the development site will infiltrate through the various media layers and into the slotted pipe located at the bottom of the profile. The slotted pipe will discharge the treated stormwater into the underground piped drainage system.

Materials are to be placed and lightly compacted so as to avoid future subsidence and shall be in general accordance with the following geotechnical requirements:

7.1 Filter Material *(350mm Depth)*

Filter Material is to have a saturated hydraulic conductivity of approximately 180mm/hr and is to be free of rubbish and deleterious material.

A filter material consisting of the following composition is likely to provide the required saturated hydraulic conductivity:

- Silt & Clay: < 3% — Particle Size: <0.05mm
- Very Fine Sand: 5 – 30% — Particle Size: 0.05 – 0.15mm
- Fine Sand: 10 – 30% — Particle Size: 0.15 – 0.25mm
- Medium to Coarse Sand: 40 – 60% — Particle Size: 0.25 – 1.0mm
- Coarse Sand: 7 – 10% — Particle Size: 1.0 – 2.0mm
- Fine Gravel: < 3% — Particle Size: 2.0 – 3.4mm

The filter media should be well graded i.e., it should have all particle size ranges present from the 0.075mm to the 4.75mm sieve (as defined by AS1289.3.6.1 – 1995).

The filter media must be tested for the following:

- Total Nitrogen (TN) Content: < 1000mg/kg (Target – 800mg/kg)
- Organic Matter Content: > 3% (w/w) (Target – < 5%)
- Orthophosphate Content: < 80mg/kg (Target – < 55mg/kg)
- pH: as specified for 'natural soils and soil blends' 5.5 – 7.5.
- Electrical Conductivity (EC): as specified for 'natural soils and soil blends' 1.2dS/m.

Filter materials are to be tested to ensure that the above properties are present and assessed by a horticulturist to ensure that they are capable of supporting a healthy vegetation community.

Source: FAWB Guidelines for Filter Media in Biofiltration Systems June 2009.

7.2 Transition Layer *(100mm Depth)*

Transition Layer is to be a sand / coarse sand material with a typical particle size distribution of percent passing through various sieve sizes of:

- 1.4mm 100% passing.
- 1.0mm 80% passing.
- 0.7mm 44% passing.
- 0.5mm 8.4% passing.

7.3 Drainage Layer *(150mm Depth)*

Drainage Layer is to be coarse sand or fine gravel material with a typical particle size distribution of 2 – 5mm. Material is to be washed and clean.

8. VEGETATION SPECIFICATIONS – BIORETENTION AREA

It is preferred to leave the landscaping to experts, Landscape Architects, to recommend specific species and planting arrangements to ensure the correct and most appropriate species are nominated and in keeping with the overall aesthetics of the development. As a preliminary recommendation the typical suitable species is presented in Table 6.1 below.

Table 8-1 – Plant Species for Bioretention Areas

Scientific Name	Common Name	Height	Planting Density (plants / m^2)
Epacris impessa	Common Heath	0.5 – 1.5	2 – 4
Carex appressa	Tall Sedge	0.5 – 1.2	4 – 8
Fionia nodosa	Knobby Club-rush	0.5 – 1.5	6 – 8
Juncus amabilis	-	0.2 – 1.2	8 – 10
Juncus flavidus	Yellow Rush	0.4 – 1.2	8 – 10
Lepidosperma laterale	Variable Sword-sedge	0.5 – 1.0	6

9. DESIGN PARAMETERS (ASSUMPTIONS AND EXCLUSIONS)

As part of the stormwater quantity and quality analysis the following assumptions and exclusions were made:

9.1 Source Nodes

9.1.1 Roof Areas

A roofed area of 350m^2 has been assumed for each lot. It's assumed that there are 10 Lots per Ha, thus 137 roofed areas.

9.2 Meteorological Template

The Meteorological Template used for the analysis was generated by using the Pluviograph rainfall data from Ovens River (Wangaratta) for the period from 1 January 1961 to 1 January 1966 inclusive using a six (6) minute time step and the Potential Evapo-transpiration (PET) data provided with MUSIC for the Hume Reservoir. The rainfall data for Ovens River (Wangaratta) was obtained from the Bureau of Meteorology (BoM) through the MUSIC BoM Rainfall Data Tool.

9.3 Exfiltration Rate

An Exfiltration Rate of 0.00mm/hr has been adopted as per Section 5 of the Melbourne Water Guidelines for the Use of MUSIC. Increasing the exfiltration rate would improve the treatment train effectiveness thereby increasing those percentage reductions presented in Table 4.6 above.

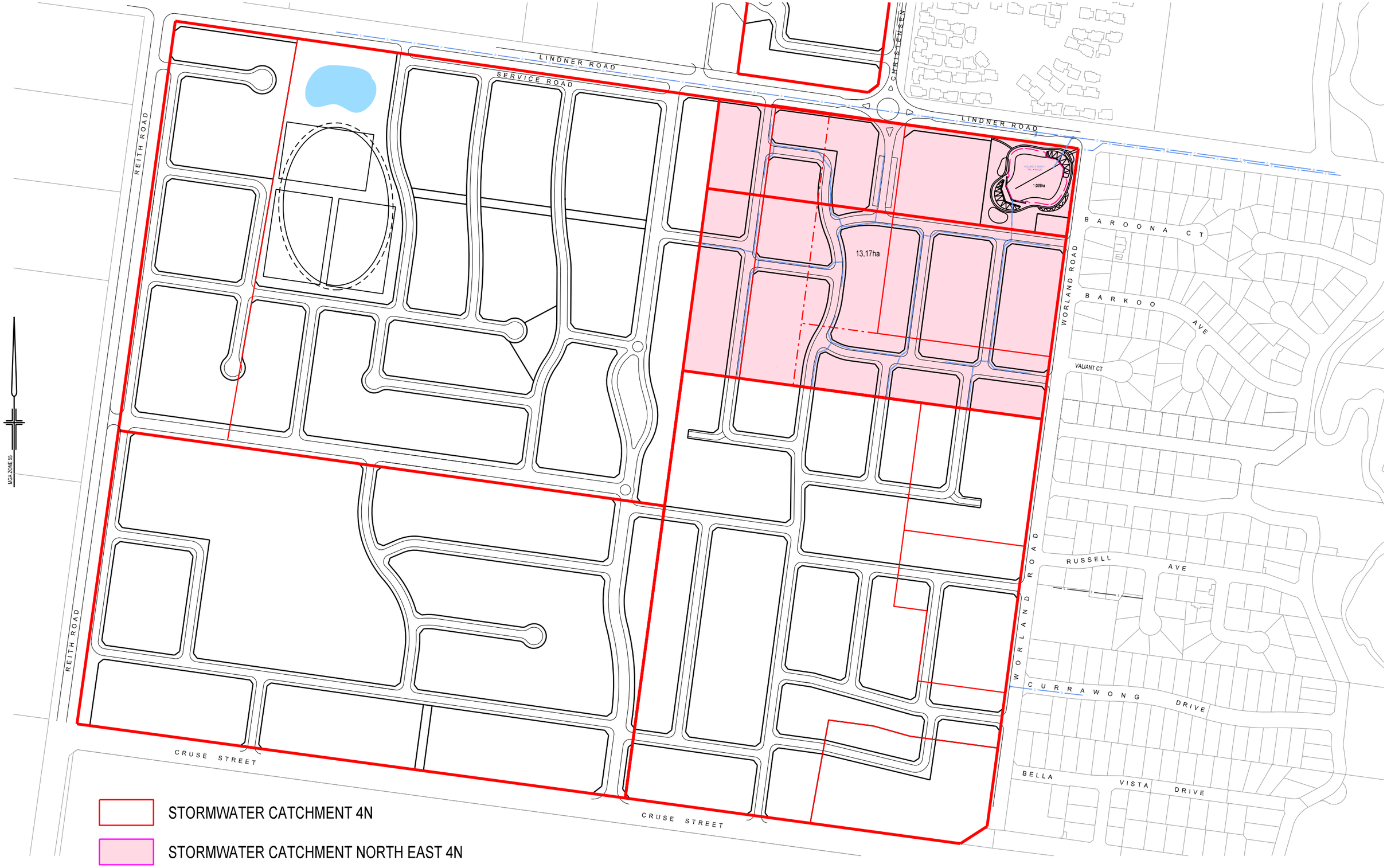
9.4 Drainage Pipe Sizes

Detailed analysis for the capacity of the piped systems will need to be carried out by a suitably qualified person as part of the detailed design and plan preparation stage for each stage of the development. These systems should be sized to cater for the 20% AEP with allowance for an overland flood path for the 1 in 100 year ARI event, or as otherwise prescribed by the responsible Authority.

10.CONCLUSION

This report has identified an effective Stormwater Management Strategy for the proposed development. Through the use of swale drains which incorporate WSUD the stormwater generated from the proposed development site can be conveyed to the nominated point of discharge. Onsite detention of stormwater generated from the developed site in excess of that which currently leaves this site can be retained onsite, maintaining the current site discharge level.

In achieving the stormwater water runoff requirements, the Planning Permit Conditions related to stormwater drainage can be satisfied.



VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	8 APRIL 2020	ISSUED FOR AUTHORITY COMMENT
02	9 DECEMBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:

SCALE

SHEET SIZE: A1

DATUM: LEVELS ARE IN METRES TO AHD

NORTH EAST SURVEY DESIGN

ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

STORMWATER CATCHMENT PLAN

RETENTION BASIN BESIGN
CORNER OF LINDNER ROAD & WORLAND ROAD WANGARATTA
- RURAL CITY OF WANGARATTA

ISSUE STATUS: FOR AUTHORITY COMMENT

REFERENCE: M7057 | VERSION: 02 | SHEET 1 OF 1

Public Open Space	Total site area Precinct 1A		6.28ha
Name/type	**Enc.**	**Unenc.**	**Total (ha)**
Reserve 1	0.34	0.59	0.93
TOTAL	**0.34** (5.4%)	**0.59** (9.4%)	**0.93** (14.8%)

Public Open Space	Total site area Precinct 1B		8.62ha
Name/type	**Enc.**	**Unenc.**	**Total (ha)**
Reserve 2	-	0.26	0.26
TOTAL	**0** (0.0%)	**0.26** (3.0%)	**0.26** (3.0%)

Public Open Space	Total area Precinct 1A & 1B		14.90ha
Name/type	**Enc.**	**Unenc.**	**Total (ha)**
Reserve 1	0.34	0.59	0.93
Reserve 2	-	0.26	0.26
TOTAL	**0.34** (2.3%)	**0.85** (5.7%)	**1.19** (8.0%)

LANDSCAPE MASTER PLAN

legend

- Proposed residential lots
- Proposed shared path - 2.5m wide
- Proposed footpath - 1.5m wide
- Proposed street tree planting - refer to plans for suggested species
- Proposed park planting
- Grassed areas - naturestrips
- Grassed areas - reserve
- Garden bed areas - Shrubs, grasses & groundcovers at typically 4/m2
- Fencing type 1 - Solid fencing 1.8m high.
- Fencing type 3 - Open style fencing or bollards
- Native vegetation to be retained
- Native vegetation to be removed
- Land encumbered by drainage function

DATE	DESCRIPTION	REVISION
12.11.21	For Approval	-

REVISION STATUS

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: -

At: Precinct 1A & 1B NW Growth Area

Title: NWGA PRECINCT 1A & 1B LANDSCAPE MASTER PLAN

Drawing No: M6997_LMP

Project No: M6997

Revision: -

Drawn by: KW

Checked/Signed By: MS

0 10 20 30 40 50m

Scale: 1:1000 @ A1 / 1:2000 @ A3

Status: FOR COUNCIL ENDORSEMENT

Drawing Creation Date: 30.09.2021

Plot / Issue Date: 12.11.2021

File Location: N:\NESD Job Directory\M6997-Precinct 1A - 11 Christensen Ln, Solmo\Planning\Drawings\LMP\M6997_LMP_ACTIVE.dwg

Image 1: South west across rear of property 16

Image 2: South across rear of property 17

Image 3: East across property 20

Image 4: North along rear of property 20

Image 5: West across property 17 & 18

Image 6: South West across property 17, 18 & 21

Image 7: East across property 21

Image 8: East along southern boundary of property 21

Image 9: West along southern boundary or 21 & 17

Image 10: Land south of property 17 & 18

Image 11: Land south of property 21

Image 12: Looking north across property 20

Image 13: South along Worland Road

Image 14: North along Worland Road

LEGEND

- Indigenous Tree
- Exotic or Planted Tree
- Retention Value - High
- Retention Value - Mod A
- Retention Value - Mod B
- Retention Value - Mod C
- Retention Value - Low

* Retention Value as per Arborist Report Mar 2020

- Precinct site boundary
- View lines
- Shared path
- Buildings

DATE	DESCRIPTION	VERSION
15-12-21	For Comment	1
	REVISION STATUS	

NORTH EAST SURVEY DESIGN
ABN 83 137 496 157
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: NW GROWTH AREA
At: WANGARATTA

DEVELOPMENT PLAN - PRECINCT 1B
WORLAND ROAD
LANDSCAPE ASSESSMENT PLAN

Project No: M6874 Version: 1
Drawn by: MB Checked/Signed By: KW

Scale: 1:4000 @ A3 / 1:2000 @ A1

Status:
FOR INFORMATION

Drawing Date: July 2020
File Name: M6874 LAP 1.dgn

LANDSCAPE ASSESSMENT PLAN

BUSHFIRE HAZARD MANAGEMENT PLAN

Defendable space requirements

A defendable space area around future buildings to property boundaries as identified on this plan must be provided, and vegetation (and other flammable materials) must be modified and managed in accordance with the following requirements in perpetuity;

- Grass must be short cropped and maintained during the declared fire danger period
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period
- Within 10m of a building, flammable objects must not be located close to the vulnerable parts of the building
- Plants greater than 10cm in height must not be placed within 3m of a window or glass feature of the building
- Shrubs must not be located under the canopy trees
- Individual clumps of shrubs must not exceed 5m² in area and must be separated by at least 5m
- Trees must not overhang or touch any elements of the building
- The canopy trees must be separated by at least 5m
- There must be a clearance of at least 2m between the lowest tree branches and ground level

Temorary defendable space

A 30m area of management will be maintained to required defendable space standards for each stage of the subdivision.

Construction Standards

Buildings must be designed and constructed to a minimum Bushfire Attack Level of BAL 12.5

LEGEND

- Precinct site boundary
- Existing lot boundary
- Shared path
- Proposed Road
- Reserve
- Basin
- Assessment Area

DATE	DESCRIPTION	VERSION
15-12-21	For Comment	1
	REVISION STATUS	

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

For: NW GROWTH AREA
At: WANGARATTA

DEVELOPMENT PLAN - PRECINCT 1B
WORLAND ROAD
PRECINCT DEVELOPMENT PLAN

Project No: M6874 Version: 1
Drawn by: MB Checked/Signed By: KW

Scale: 1:3000 @ A3 / 1:1500 @ A1

Status: FOR APPROVAL

Drawing Date: July 2020
File Name: M6874 BHMP 1.dgn

Hamilton Environmental Services
ABN: 89 108 410 911

FLORA AND FAUNA ASSESSMENT

– PRECINCTS 1A AND 1B, NORTH WEST GROWTH AREA, WANGARATTA

NORTH EAST SURVEY DESIGN

Flora and Fauna Assessment – Precincts 1A and 1B, North West Growth Area, Wangaratta

Submitted to: Karen Watson
North East Survey Design
PO Box 882, Wangaratta VIC 3676

Phone: 0417 823 530
Fax: 03 5721 6701
Email: karen@nesd.com.au

Submitted by: Hamilton Environmental Services
2345 Benalla-Tatong Rd.
TATONG VIC 3673

Phone: 03 5767 2358
Mobile: 0409 356 331
Email: steve.hamilton@hamiltonenvironmental.com.au
ABN: 89 108 410 911

Version 1, 10th June 2020

Cover Photo: The Worland Road frontage of Precinct 1B.

TABLE OF CONTENTS

1. Introduction 1

2. Background 1

2.1 Site Location, Description and Zones 1

2.2 Bioregion and Ecological Vegetation Class 2

2.3 Land Tenure and Planning Scheme 4

3. Method 4

3.1 Desktop Review 4

3.2 Field Assessment 4

3.3 Taxonomy 5

3.3.1 Flora 5

3.3.2 Fauna 5

4. Flora and Fauna Assessment 5

4.1 Vegetation 5

4.2 Fauna 9

4.3 Significant Trees 10

4.4 Patches 11

5. Net Gain and Loss Reporting 19

5.1 Avoid and Minimise 19

5.2 Quantification of losses 19

5.3 Offset requirements 19

6. Meeting the Offset Requirement 19

7. References 20

7.1 Personal Communication 21

Appendix A Flora Inventory of Precincts 1A and 1B 22

Appendix B EVC Benchmark Description 26

Appendix C Observed or Inferred Fauna of Precincts 1A and 1B 29

Appendix D Significant Tree Locations 31

Appendix E EPBC and Victorian Threatened Species and Likelihood of Occurrence 43

Appendix F Scenario-Test Native vegetation Removal Report (DELWP) 9th June 2020 59

1. INTRODUCTION

The Rural City of Wangaratta (RCoW) has developed Growth Area Structure Plans for two areas on the edge of the town – in the South and North West. These planning documents focus on greenfield residential development in these two areas on the outskirts of Wangaratta's urban area, as a land use and planning solution to population growth. The Structure Plans are required to enable urban development, and the transition of land from a farming use to a residential use, and to furthermore provide direction around the different land use opportunities and constraints and the infrastructure required for the development (RCoW 2020).

The necessary approvals and landholder consent have been obtained for the preparation of background reports and development plans for Precincts 1A and 1B of the North West Growth Area (Karen Watson pers. comm. 2020).

In March 2020, Hamilton Environmental Services (HES) was engaged through North East Survey Design, on behalf of the landholder, to undertake a Flora and Fauna assessment of Precincts 1A and 1B, and to prepare a Flora and Fauna Assessment Report accordingly to support the proposed development.

Dr. Steve Hamilton undertook a field evaluation of the Precincts on the 16th April 2020, and subsequent desktop assessments, and this report has been developed on the basis of this information.

2. BACKGROUND

2.1 Site Location, Description and Zones

Precincts 1A and 1B (the assessed areas) are approximately 7.81 and 8.95 ha in area, respectively, and are found some 3.4 km east of the CBD of Wangaratta (Fig. 2-1; VicRoads 664 A5).

Precinct 1A is an irregular shape, with maximum dimensions of 260 m north-south, and 430 m east-west, and has frontages on both Christensen Lane and Worland Road on its eastern boundary; the Precinct is bisected by Lindner Road with Lot 2 PS333975 on the corner of Christensen Lane and Lindner Road and the eastern section of Lot 1 PS333975 found north of Lindner Road (Fig. 2-2).

Precinct 1B is broadly rectangular, with maximum dimensions of 210 m north-south, and 430 m east-west, and has a frontage on Worland Road on its eastern boundary and freehold land on all other boundaries (see Fig. 2-2).

The majority of both Precincts have been cleared of woody vegetation and are used for pasture or for provision of dwellings, gardens and associated sheds; the various parcels have clearly has been utilised for stock grazing, and have been divided into a series of smaller paddocks. These cleared 'paddock' areas have a ground layer dominated by opportunistic perennial and annual introduced species. These cleared paddocks do maintain some indigenous trees – a mixture of mostly Grey Box (*Eucalyptus microcarpa*) and River Red Gum (*E. camaldulensis*) - as scattered individuals or small patches, and there are some scattered individuals of planted exotic and non-indigenous native tree and shrub species on some parcels.

There are four dwellings and associated garden areas within the Precincts (at 2-8 Worland Road, 10-26 Worland Road, 86 Lindner Road and 11 Christensen Lane), and all of these maintain areas of mown lawn, and the garden areas generally have been planted with a range of ornamental exotic and non-indigenous native trees and shrubs (see Fig. 2-2).

The western Christensen Lane reserve maintains a predominantly introduced ground layer with one mature Grey Box, while the Lindner Road Reserves do have some small patches of Grey Box, Silver

Wattle (*Acacia dealbata*) and River Red Gum, and a ground layer that is dominated by introduced species, but still maintains a significant cover of indigenous ground layer species.

The pertinent section of the eastern Worland Road Reserve maintains some planted exotic and non-indigenous trees, but no indigenous trees, and is wholly introduced species at ground level.

Figure 2-1 Aerial image of the assessed Precincts within the district; the assessed area is outlined with a solid red border (Image from Google Earth 2020).

2.2 Bioregion and Ecological Vegetation Class

Both Precincts are within the Victorian Riverina Bioregion (Department of Environment, Land Water and Planning [DELWP] 2020a).

In Victoria, DELWP have developed an on-line mapping layer that categorises pre-1750 and 2005 natural vegetation communities into Ecological Vegetation Classes (EVCs), and have developed EVC Benchmark Statements for each of these EVCs that represent the best known example of this EVC.

Pre-1750 EVC mapping also suggests that prior to European settlement, the vegetation of the both Precincts was Plains Woodland EVC (EVC 803; Bioregional Conservation Status [BCS] Endangered)(DELWP 2020a and 2020b).

Ground-truthing was not able to confirm the former presence of this former EVC based on the remaining native vegetation, so it has been assumed that these categorisations are accurate.

The relevant EVC Benchmark Statement referred to above can be seen in Appendix C.

Figure 2-2 **Aerial image of the Precincts showing parcel boundaries and identifiers in white (Image from Department of Sustainability and Environment [DSE] 2006, with an insert from Google Earth dated 14/2/2019).**

2.3 Land Tenure and Planning Scheme

The Precincts comprise seven whole parcels (Lots 1 to 6 LP41832 and Lot 2 PS\333975), and the eastern section of Lot 1 PS\333975, all within the RCoW area (see Fig. 2-2).

Lot 4\LP41832 is *Commercial 1 Zone* and *Schedule to the Commercial 1 Zone*, and all others parcels within the Precincts (including the western section of Lindner Road adjacent to Lots 1 to 3 LP41832, and the southern section of Worland Road adjacent to Lots 5 and 6 LP41832) are *General Residential Zone* and subject to *General Residential Zone – Schedule 1*. All parcels are subject to a *Development Contributions Plan Overlay* and a *Development Contributions Plan Overlay – Schedule 1*, and a *Development Plan Overlay* and *Development Plan Overlay- Schedule 8* (DELWP 2020d).

The eastern section of Lot 4\LP41832 is subject to a *Public Acquisition Overlay* and *Public Acquisition Overlay Schedule 4* (DELWP 2020d).

The Lindner Road reserve from the Christensen Lane intersection is subject to a *Vegetation Protection Overlay* and *Vegetation Protection Overlay- Schedule 2* (DELWP 2020d).

The Precincts are also considered a *Designated Bushfire Prone Area* (from DELWP 2020d).

3. METHOD

3.1 Desktop Review

The following desktop information was gathered on the various land parcels assessed before field evaluation:

- Aerial imagery;
- Planning information;
- Both pre-1750 and current EVC mapping;
- Relevant EVC benchmark documents;
- Threatened species sightings within a 10 km radius of the site using the Victorian Biodiversity Atlas (DELWP 2020c), NatureKit (DELWP 2020b), and the Matters of National Environmental Significance search tool (Department of Agriculture, Water and the Environment [DAWE] 2020).

Following assessments, derived flora and fauna lists were checked against reference lists of rare and threatened species in Victoria (DSE 2009 and 2013, and Department of Environment and Primary Industries [DEPI] 2014).

3.2 Field Assessment

On the 16th April 2020, Dr. Steve Hamilton visited the site to undertake the assessment. On the days of observation, air temperatures were between 15 and 19°C, skies were overcast, and there was a slight wind (Bureau of Meteorology 2020).

Approval from all landholders and tenants was obtained before entry on to any parcel.

The parcels of the Precinct and the adjacent road reserves of Lindner Road and Christensen Lane were traversed by foot, with continuous active searching for flora and fauna conducted over a total period of 2 hours, with the following assessments undertaken:

- Compilation of a detailed flora species list, by zone (native vegetation *Patch*), including the attribution of cover/abundance to each species in each zone;
- Casual sightings of fauna noted;

- A *Patch* of native vegetation is either: an area of vegetation where at least 25 % 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 DELWP systems and tools and these areas were mapped (DELWP 2017);
- A Vegetation Quality Assessment was completed if any *Patches* were defined in order to determine the potential Net Loss under the *2017 Native Vegetation Removal Guidelines*;
- Individual recording of all significant indigenous trees (i.e. > 3 m in height) and most exotic and non-indigenous trees and shrubs across all parcels, road reserves and on the boundaries of adjacent freehold land, including their geo-location by handheld GPS. Additionally for indigenous trees > 3 m in height, their health, presence of hollows, and measurement of their diameter at breast height (1.3 m);
- A *Scattered Tree* is a native canopy tree that does not form part of a *Patch* (DELWP 2017);
- Recording and location of any specific instances related to land management, such as noxious weed or pest animal infestations, etc.;
- Digital images across the sites taken from geo-located points.

One hundred and seventy seven (177) images were taken during the assessment.

3.3 Taxonomy

3.3.1 Flora

Specimens were identified using the *Flora of Victoria* (Walsh and Entwisle 1994, 1996 and 1999), and *Flora of Victoria On-line* (Royal Botanic Gardens Victoria 2020).

3.3.2 Fauna

A list of fauna present across the sites was compiled, with the nomenclature based variously on the compilations of Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998), and utilising Triggs (1996) for identification using indirect methods, such as the presence of scats or tracks.

4. FLORA AND FAUNA ASSESSMENT

4.1 Vegetation

The inventory of species noted across the area of evaluation, by parcel or zone, is recorded in Appendix A.

A total of 53 vascular plant species were recorded across the assessed parcels and zones; 43 of these species were introduced, of which 9 were represented only by planted individuals, and 10 indigenous species (Table 4-1).

Table 4-1 The number of indigenous and introduced species across the designated parcels and zones of the Precincts.

Parcel/Zone	Introduced species	Indigenous species	Total species
2\PS333975	23	5	28
4\LP41832	17	3	20

Parcel/Zone	Introduced species	Indigenous species	Total species
Lots 2-5 LP41832	14	5	19
1\LP41832	11	4	15
Lindner Road reserve	12	8	20
1\PS333975	18	5	23
Christensen Lane reserve	14	2	16
Total	**43**	**10**	**53**

Victorian Biodiversity Atlas, NatureKit and Matters of National Environmental Significance searches revealed that there were records of twenty nine (29) threatened flora recorded or likely to occur within a 10 km radius; however, likelihood analysis based on known recent records, site disturbance and available habitat of the assessed site indicates that none of these species are likely to be found on the Precinct sites (Appendix E; DELWP 2020c and DAWE 2020).

Matters of National Environmental Significance searching the nationally critically endangered *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* community and the nationally endangered *Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* and the *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* communities occur within a 10 km radius of the site (DAWE 2020). No Buloke, Yellow Box or Blakely's Red Gum individuals were found across the assessed areas. It is likely that property would have been a mixed Grey Box, White Box and River Red Gum woodland before pre-European settlement; given that the native vegetation is now only represented by individuals and small patches of canopy species, these communities are no longer represented on the Precincts, as a consequence of the substantial clearing and significant modification.

As indicated previously, the majority of both Precincts have been cleared of woody vegetation and are used for pasture or for provision of dwellings, gardens and associated sheds; the various parcels have clearly has been utilised for stock grazing, and have been divided into a series of smaller paddocks. These cleared paddocks do maintain some indigenous trees – a mixture of mostly Grey Box, River Red Gum and Silver Wattle - as scattered individuals or small patches, and there are some scattered individuals of planted exotic and non-indigenous native tree and shrub species such as Desert Ash on some parcels. These cleared 'paddock' areas have a ground layer dominated by opportunistic perennial and annual introduced species, such as Capeweed, Wild Oat, Water Couch, Sheep Sorrel, Paterson's Curse, Yorkshire Fog-grass, Paspalum, Phalaris, Plantain, Great Brome, Barley Grass, Wild Oat, Onion-grass, Wimmera Ryegrass, Subterranean Clover, Rat's-tail Fescue and Winter-grass (80-100 % projective foliage cover across the various parcels), with some indigenous species present in low abundance, such as Brown-backed Wallaby-grass, Weeping Grass, Windmill Grass, Blown Grass, Pale Rush and Curly Windmill Grass (< 1 to 5 % projective foliage cover across the various parcels; Appendix A).

There are four dwellings and associated garden areas within the Precincts (at 2-8 Worland Road, 10-26 Worland Road, 86 Lindner Road and 11 Christensen Lane), and all of these maintain areas of mown lawn dominated by Kikuyu Grass and Water Couch, and the garden areas generally have been planted with a range of ornamental exotic and non-indigenous native trees and shrubs such as Cypress, Desert Ash, Crepe Myrtle, English Beech Paperbarks, Bottlebrush, White Cedar, Prunus, Red Ironbark or Sugar Gum (Appendix A).

The western Christensen Lane reserve maintains a predominantly introduced ground layer (90 % projective foliage cover counting cured annual plant material) with one mature Grey Box and a low abundance indigenous ground layer (< 1 % projective foliage cover), while the Lindner Road Reserves

Plate 4-1 **General views of Precinct 1A: the existing dwelling and garden at 11 Christensen Lane (top left), the western garden area at 11 Christensen Lane and Tree 1 (top right), Trees 2 and 3 at 11 Christensen Lane (middle left), Tree 17 on the Christensen Lane reserve (middle right), the Lindner Road reserve adjacent to 11 Christensen Lane (bottom left), and looking north from Lindner Road into the eastern section of Lot 1 PS339975 (bottom right).**

do have some small patches of Grey Box and River Red Gum, and a ground layer that is dominated by introduced species (80 % projective foliage cover counting cured annual plant material), but still

maintains a significant cover of indigenous ground layer species (20 % projective foliage cover; Appendix A).

The pertinent section of the eastern Worland Road Reserve maintains some planted exotic and non-indigenous trees, but no indigenous trees, and maintains only introduced species at ground level.

Plate 4-2 **General views of the southern section of Precinct 1A: looking south towards the dwelling at 2-8 Worland Road (top left), looking north-west to the north-east corner of 2-8 Worland Road (top right), the existing dwelling at 86 Lindner Road from Lindner Road (middle left), Trees 58 to 64 on the eastern boundary of 2-8 Worland Road (middle right), the southern end of the 86 Lindner Road property (Precinct 1B; bottom left), and the road reserve in front of 86 Lindner Road (bottom right).**

Plate 4-3 **General views of Precinct 1B: the northern section of 10-26 Worland Road (top left), the dwelling and garden at 10-26 Worland Road (top right), looking north along the Worland Road frontage of 10-26 Worland Road (middle left), the southern section of 10-26 Worland Road (middle right), looking into Lots 2 and 3 LP41832 (bottom left), and looking south towards Lots 5 and 6 LP41832 (bottom right).**

4.2 Fauna

There were 9 species of fauna observed or inferred during the assessment, including two species that are introduced (See Appendix C).

The species that were noted are typically those observed in paddock and semi-rural environments, such as the indigenous Australian Magpie, Australian Raven, Crested Pigeon, Crimson Rosella,

Sulphur-crested Cockatoo and Galah, and also includes the widely distributed introduced species Indian Myna and Common Blackbird; the likely presence of foxes will severely limit the range of indigenous ground fauna that can potentially occupy the site.

There were no rare or threatened species observed at the site (DSE 2009 and 2013).

The lack of observed species diversity is not surprising, given that:

- notwithstanding the various exotic and non-indigenous native tree and shrub plantings and the indigenous trees that are found scattered or in small patches, most of the Precincts have been cleared and grazed, or compacted for a vehicle track, and therefore the site has experienced significant surface soil disturbance in the past, and hence, away from the indigenous trees and planted areas, there is little vegetation structure and little understorey diversity, and woody vegetation regeneration is minimal;
- while there are some scattered remnant large trees with significant hollows present in the freehold parcels, most of the remnant indigenous trees are smaller and not hollowed (< 35 cm dbh), there was no fallen wood left on ground across the Precincts, and few standing dead trees;
- while the western road reserve of Christensen Lane north of Precinct 1A contains a discontinuous cover of mature trees, the western section of the Lindner Road reserve does contain a continuous tree canopy that connects to the Lindner Road corridor which connects to the eastern boundary of the Warby-Ovens National Park. However, other than the parts of the Precincts that are in close proximity to these road reserves, the remainder of the areas are poorly connected in the landscape;
- the likely presence of both a fox and feral cat population.

On this basis, for most of the site, there are few opportunities for fauna occupation of the site, in terms of a relatively simplified vegetation structure (i.e. little shrub or emerging tree layer, meaning fewer opportunities for food collection and shelter/protection), and a relative lack of food sources (e.g. lack of nectar producing plants and those producing fleshy fruits).

Victorian Biodiversity Atlas, NatureKit and Matters of National Environmental Significance searches revealed that there were records of fifty two (52) threatened fauna (excluding aquatic dependent fauna) within a 20 km radius. The likelihood of the presence of these species and their likelihood of utilisation of the proposed development areas was considered, and rated based on the prevailing habitat and habitat quality of the site, the lack of landscape connectivity and known records for species, and the composition, abundance and structure of the extant indigenous vegetation found particular along the Lindner Road reserves and the Christensen Lane road reserve immediately north of Precinct 1A, and this indicated that fifteen (15) of these species have some likelihood of being found across or near the assessed sites seasonally or infrequently: Azure Kingfisher, Barking Owl, Black-eared Cuckoo, Brown Treecreeper, Diamond Firetail, Fork-tailed Swift, Hooded Robin, Lace Monitor, Painted Honeyeater, Rainbow Bee-eater, Speckled Warbler, Swift Parrot, and Turquoise Parrot (DELWP 2020c, DAWE 2020; Appendix E). It is highly unlikely that any of the other thirty seven (37) threatened species would be found or would utilise the site because it is either: (a), an unsuitable habitat, or (b), the current land use and levels of disturbance (Appendix E; DELWP 2020c and DAWE 2020).

4.3 Significant Trees

There were 255 trees and shrubs separately assessed across the Precincts; the details of all of these trees can be seen in Appendix C.

The location of all assessed trees can be seen in Figures 4-1 to 4-6.

Of the 255 assessed trees:

- 191 were indigenous remnant Grey Box (67), River Red Gum (110) or Silver Wattles (14) individuals, of which all were mature individuals (> 3 m height);
    - Trees 151 to 158 are planted Grey Box (8 trees);
    - Five of these trees were standing dead trees (Trees 55, 57, 58, 250, 251);
    - Eighteen of these trees – Trees 1, 2, 3, 17, 57, 159, 166, 178, 240, 241, 243, 245, 247, 248, 250, 251, 252 and 253 - are Large Trees according to the EVC benchmark for Plains Woodland EVC (70 cm dbh; Appendix B);
    - Of these Large Trees, Tree 17 is on the western Christensen Lane reserve, and Trees 240 and 241 are found on the southern Lindner Road reserve;
- The remaining 64 individuals were planted or naturalised exotic or non-indigenous native trees and shrubs.

In the event of native vegetation being cleared within the Precincts, there would be numerous *Scattered Tree* losses, and the net loss associated with the clearance of all *Scattered Trees* on the freehold parcels has been determined.

The planted indigenous, non-indigenous native and exotic vegetation found across the garden and plantations in other areas of the property can be cleared without a Planning Permit as an exemption under Clause 52.17 of the Local Planning Provisions (see below):

Planted vegetation	Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding. This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding.

Construction projects that involve earthworks or soil disturbance can cause indirect losses of native vegetation that are retained during construction due to root damage and soil modification within the zone where roots occur. Of particular concern is the longer-term impact of soil compaction and excavation (e.g. trenching for pipelines) close to trees and the effects of this on immediate and longer-term tree health. The DSE (now DELWP) has provided guidance and clarity on this issue, and has defined an acceptable distance for tree retention in order to prevent indirect losses of native vegetation during and after construction activities as a guiding principle for the *Native Vegetation Framework* (DNRE 2002). These designated *Tree Protection Zones* (TPZs) should be implemented for the duration of construction activities (DSE 2011) as part of the development conditions. A TPZ is a specific area above and below the ground, with a radius 12 times the Diameter at Breast Height (dbh; 1.3 m) of any individual tree; the TPZ of trees should be no less than 2 m or greater than 15 m, and it is recommended that physical barriers be erected to delineate the TPZ during construction activities (DSE 2011). Should a development impinge on the TPZ area for > 10 % of its area, the tree shall be considered a loss, and will have to be offset (DSE 2011).

The TPZs of all Large Trees assessed can be seen in Figures 4-2 to 4-6.

4.4 Patches

A *Patch* of native vegetation is either: an area of vegetation where at least 25 % 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 DELWP systems and tools and these areas were mapped (DELWP 2017).

A *Scattered Tree* is a native canopy tree that does not form part of a *Patch* (DELWP 2017).

In the event of native vegetation being cleared within the freehold land of the Precincts, there would be numerous *Scattered Tree* and native vegetation Patch losses:

- Lots 1 and 2 PS\333975 have three Large Trees and 2 Small Trees that would be *Scattered Tree* losses;
- There is no native vegetation on Lot 4 LP41832;
- There is one Large Tree and 12 Small Trees that would be *Scattered Tree* losses on Lot 5 LP41832, and four patches all of Small Trees;
- There are two Large Trees and 4 Small Trees that would be *Scattered Tree* losses over Lot 2 and 6 LP41832, and three patches, all of Small Trees;
- There are five Large Trees and 3 Small Trees that would be *Scattered Tree* losses on Lot 1 LP41832, and two patches, both containing Large Trees;
- In summary, a total of eleven Large Trees and 21 Small Trees that would be *Scattered Tree* losses, and nine native vegetation *Patches* of a total of 0.4072 ha, of which contain 4 Large Trees.

In regards to the road reserves:

- the road reserves on Lindner Road adjacent to the Precincts are variously either a tree or understorey *Patch* for their whole length, and so any crossing of these road reserve would result in native vegetation Patch losses;
- there is one scattered Large Tree on the western Christensen Lane reserve;
- there is no native vegetation on the western Worland Road reserve.

Patches were assessed using the Vegetation Quality Assessment method (Habitat Hectares)(DSE 2004) by Steve Hamilton (HH128).

The net loss associated with the clearance of all native vegetation *Patches* on the freehold parcels has been determined.

Figure 4-1 **Aerial image showing the location of assessed trees across the assessed Precincts. Assessed trees and shrubs are shown as dots. Image from DSE (2006), with an insert from Google Earth dated 14/2/2019.**

Figure 4-2 **Aerial image showing the location of assessed trees and shrubs across the northern section of Precinct 1A. Assessed trees are shown as symbols and numbered; numbers refer to the table of tree characteristics in Appendix D. Large Trees (indigenous trees) also have a Tree Protection Zone drawn around them. Image from Google Earth dated 14/2/2019.**

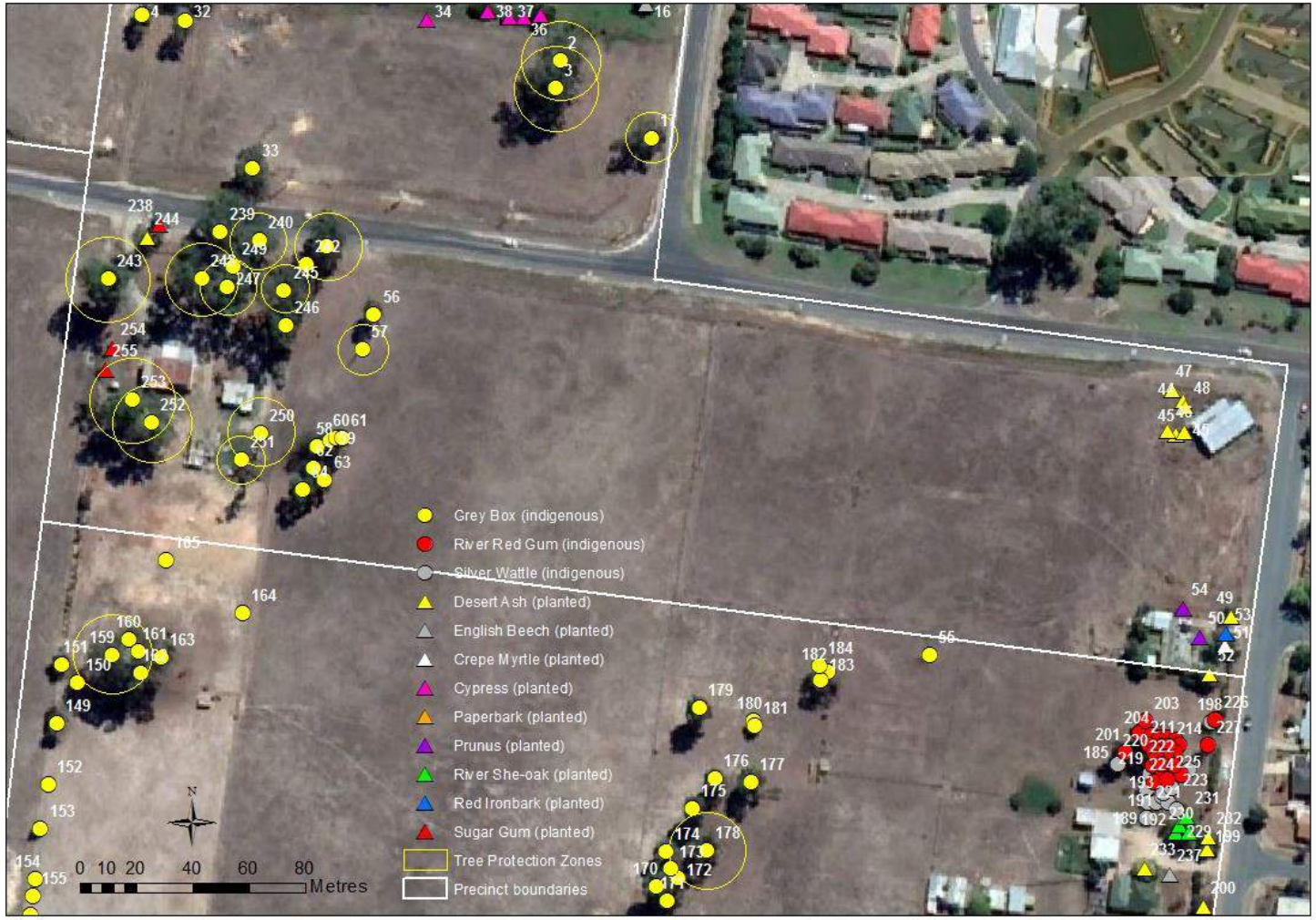


Figure 4-3 **Aerial image showing the location of assessed trees and shrubs across the southern section of Precinct 1A. Assessed trees are shown as symbols and numbered; numbers refer to the table of tree characteristics in Appendix D. Large Trees (indigenous trees) also have a Tree Protection Zone drawn around them. Image from Google Earth dated 14/2/2019.**

Figure 4-4 **Aerial image showing the location of assessed trees and shrubs across Precinct 1B. Assessed trees are shown as symbols and numbered; numbers refer to the table of tree characteristics in Appendix D. Large Trees (indigenous trees) also have a Tree Protection Zone drawn around them. Image from Google Earth dated 14/2/2019.**

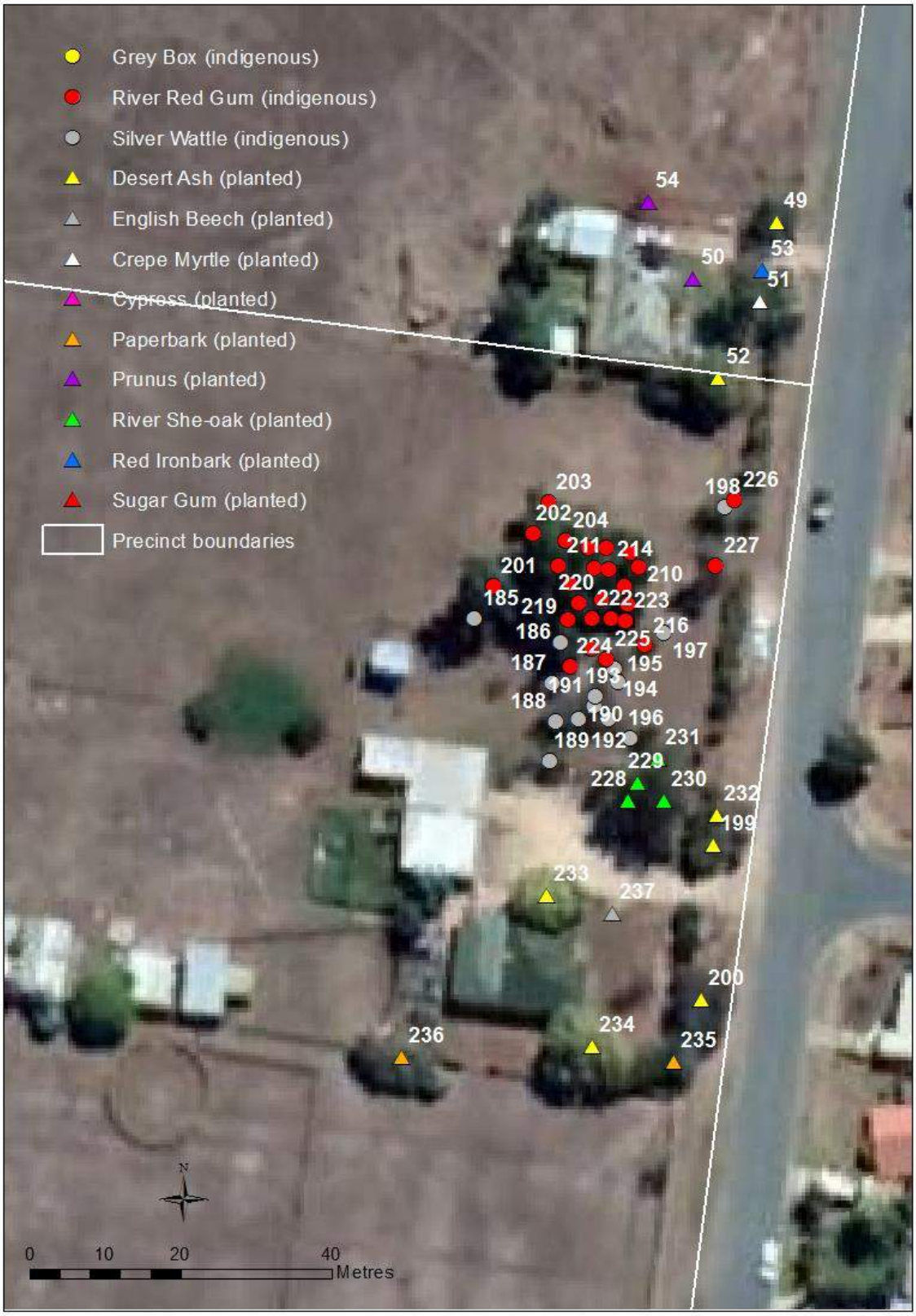


Figure 4-5 **Aerial image showing the location of assessed trees and shrubs across the eastern Worland Road frontage section of the Precincts. Assessed trees are shown as symbols and numbered; numbers refer to the table of tree characteristics in Appendix D. Image from Google Earth dated 14/2/2019.**

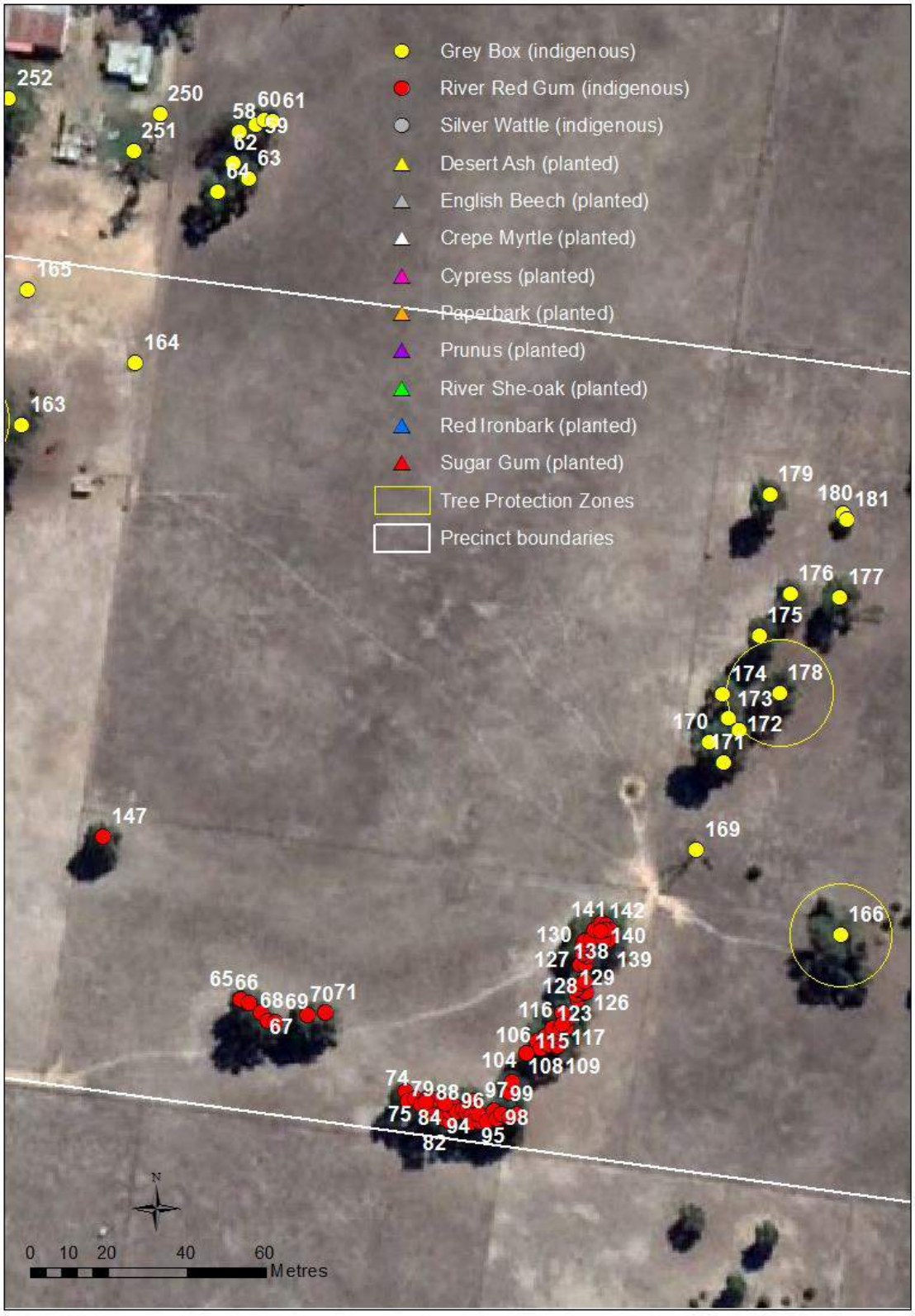


Figure 4-6 **Aerial image showing the location of assessed trees and shrubs across the central section of Precinct 1B. Assessed trees are shown as symbols and numbered; numbers refer to the table of tree characteristics in Appendix D. Large Trees (indigenous trees) also have a Tree Protection Zone drawn around them. Image from Google Earth dated 14/2/2019.**

5. NET GAIN AND LOSS REPORTING

5.1 Avoid and Minimise

At this stage of development, there has been no proposed layout formulated, and so for the purpose of modelling the possible native vegetation loss:

- All native vegetation on the freehold land has been assumed as a loss;
- Losses of native vegetation on adjacent freehold land has been avoided;
- Losses of native vegetation on Worland Road, Christensens Lane and Lindner Road have been avoided.

This results in a likely 'worst case scenario' loss profile, with avoidance and minimisation of losses in the planning iterations will be able to reduce the proposed losses for development.

5.2 Quantification of losses

The modelled development on the site, where all native vegetation of the freehold parcels is lost, would result in the loss of a total of eleven Large Trees and 21 Small Trees that would be *Scattered Tree* losses, and nine native vegetation *Patches* of a total of 0.4072 ha, of which contain 4 Large Trees.

5.3 Offset requirements

Mapping files outlining the habitat scoring and precise location of *Scattered Trees* and *Patches* modelled for clearance across the Precincts in the outlined format was scenario-tested to clarify the requirements for offset to develop the application. The Scenario-test Native Vegetation Removal Report for the modelled native vegetation clearance for the Precincts (Appendix F; DELWP 2020e) was produced on the 9th June 2020, and provided the following assessment:

- The outlined modelled clearance was assessed as being an Detailed Assessment Pathway;
- The *Location Category* for the losses are mapped as *Location 2*;
- The total extent of the clearance is 1.581 ha, comprising 32 *Scattered Trees*, and nine native vegetation *Patches,* of a total extent of 0.4072 ha. Eleven *Scattered Trees* and four trees within *Patches* are Large Trees;
- A General Offset of 0.401 General Habitat Units (GHUs) is required for the proposed clearance based on a 1.5x multiplier, with 15 Large Trees;
- There are no Species Offsets required;
- The Offset Site must be within the North Central Management Authority catchment (or Local Government Area – Rural City of Wangaratta);
- The Offset must have a minimum overall Strategic Biodiversity Value of 0.509.

6. MEETING THE OFFSET REQUIREMENT

A formal third party offset quote has not been sought for the determined offset requirements; however, interrogation of the Native Vegetation Credit Register credit trading database suggests that these offset requirements are available from only three credits sites currently, and that the likely cost of a third party offset for the modelled General Offset requirements and the 15 Large Trees will be in the vicinity of $250,00 to $300,000.

7. REFERENCES

Bureau of Meteorology (2020). Wangaratta climate data for 16th April 2020. Retrieved 8th June 2020 from: http://www.bom.gov.au/climate/dwo/202004/html/IDCJDW3081.202004.shtml

Cogger, H.G. (1996). *Reptiles and Amphibians of Australia*, 5th edition. Read Press, Sydney.

Department of Environment and Primary Industries (DEPI)(2014). *Advisory List of Rare or Threatened Plants in Victoria – 2014*. Victorian Department of Environment and Primary Industries, East Melbourne.

Department of Environment, Land, Water and Planning (DELWP)(2017). *Guidelines for the removal, destruction or lopping of native vegetation.* December 2017. Department of Environment, Land, Water and Planning, East Melbourne.

DELWP (2020a). EVC bioregional conservation status and benchmark data. Retrieved 23rd March 2020 from: http://www.dse.vic.gov.au/DSE/nrence.nsf/LinkView/6FB4886C86D894CACA256F1F00224A8C8062D358172E420C4A256DEA0012F71C

DELWP (2020b). DELWP NatureKit, Department of Environment, Land, Water and Planning. Retrieved 23rd March 2020 from: http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit

DELWP (2020c). Results from specific 10 km radius searches of the Victorian Biodiversity Atlas from the centre of the property. Retrieved 23rd March 2020 from: https://vba.dse.vic.gov.au/vba/login.jsp#/

DELWP (2020d). Various property planning reports. Retrieved 23rd March 2020 from: http://services.land.vic.gov.au/maps/pmo.jsp

DELWP (2020e). Lindner_Road_Wangaratta_GDA94_P1A&B_nvr_clearing_01. EnSym NVR Tool Support, Department of Environment, Land, Water and Planning, East Melbourne.

Department of Agriculture, Water and the Environment (DAWE) (2020). Species Profile and Threats Database. Retrieved 23rd March 2020 from: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Department of Primary Industries (2008). *Declared Noxious Weeds – Listed by Common Name*. Landcare Note March 2008. Department of Primary Industries, East Melbourne.

Department of Sustainability and Environment (DSE)(2004). *Vegetation Quality Assessment Manual – Guidelines for Applying the Habitat Hectares Scoring Method*. Version 1.3. Department of Sustainability and Environment, East Melbourne.

DSE (2009). *Advisory List of Threatened Invertebrate Fauna in Victoria – 2009*. Victorian Department of Sustainability and Environment, East Melbourne.

DSE (2011). *Native vegetation – Technical Information Sheet. Defining an acceptable distance for tree retention during construction works.* Department of Sustainability and Environment, East Melbourne.

DSE (2013). *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013*. Victorian Department of Sustainability and Environment, East Melbourne.

Hero, J., Littlejohn, M. and Marantelli, G. (1991). *Frogwatch Field Guide to Victorian Frogs*. Department of Natural Resources and Environment, Melbourne.

Hnatiuk, R.J. (1990). *Census of Australian Vascular Plants. Australian Flora and Fauna Series Number 11.* Bureau of Flora and Fauna, Canberra.

Menkhorst, P. (ed.)(1995). *Mammals of Victoria. Distribution, Ecology and Conservation*. Oxford University Press, Melbourne.

Royal Botanic Gardens Victoria (2020). *Flora of Victoria On-line*. Accessed from: https://vicflora.rbg.vic.gov.au/

Rural City of Wangaratta (2020). *Strategic Projects. Wangaratta North West and South Area Structure Plans*. Accessed from: https://www.wangaratta.vic.gov.au/planning-development/strategic-planning/strategic-projects#867148-wangaratta-north-west-and-south-growth-area-structure-plans

Simpson, K. and Day, N. (1998). *The Claremont Field Guide to the Birds of Australia*, 5th edition. Penguin Books, Sydney.

Triggs, B. (1996). *Tracks, Scats and Other Traces: a Field Guide to Australian Mammals*. Oxford University Press, Melbourne.

Walsh, N.G. and Entwisle, T.J. (eds)(1994). *Flora of Victoria. Volume 2. Ferns, Conifers, and Monocotyledons*. Inkata Press.

Walsh, N.G. and Entwisle, T.J. (eds)(1996). *Flora of Victoria. Volume 3. Dicotyledons. Winteraceae to Myrtaceae*. Inkata Press.

Walsh, N.G. and Entwisle, T.J. (eds)(1999). *Flora of Victoria. Volume 4. Dicotyledons. Comaceae to Asteraceae*. Inkata Press.

7.1 Personal Communication

Watson, Karen (2020). North East Survey Design, Wangaratta.

APPENDIX A FLORA INVENTORY OF PRECINCTS 1A AND 1B

Vascular flora have been recorded for presence across the land parcels and zones assessed, using a cover-abundance scale that is shown in the Table immediately below. An asterisk denotes an introduced species.

Each plant species present were assessed for cover-abundance using the scale outlined below. Nomenclature and taxonomy of plants based variously on Royal Botanic Gardens Victoria (2020), Hnatiuk (1990), and Walsh and Entwisle (1994, 1996 and 1999).

Visual assessment of cover/abundance	
Symbol	*Description*
+	rare, cover < 5%
1	Uncommon, cover < 5 %
2	Very common, cover < 5 % or cover 5-25 % with any number of individuals
3	Cover 25-50 % with any number of individuals
4	Cover 50-75 % with any number of individuals
5	Cover 75-100 % with any number of individuals

Common name	**Scientific name**	**Lifeform[#]**	**2\PS333975**	**4\LP41832**	**Lots 2-5 LP41832**	**1\LP41832**	**Lindner Road reserve**	**1\PS333975**	**Christensen Lane reserve**
			11 Christensen Lane	**3-8 Worland Road**	**Various**	**85 Lindner Road**		**Lindner Road**	
Silver Wattle	*Acacia dealbata*	T			2		1		
Sheep Sorrel	*Acetosella vulgaris**	MH			2				
Capeweed	*Arctotheca calendula**	MH	2	2	2	2	1	2	1
Brown-backed Wallaby-grass	*Austrodanthonia duttoniana*	MTG	1	1	1	1	2		1
Rough Spear-grass	*Austrostipa scabra*	MTG					1		
Wild Oat	*Avena fatua**	LTG		1			2	2	2
Great Brome	*Bromus diandrus**	LTG	2	2	2	2	2	2	2
A Bottlebrush (planted)	*Callistemon* sp.*	MS			1				
River Sheoak (planted)	*Casaurina cunninghamii**	T			2				
Windmill Grass	*Chloris truncata*	MTG					2	1	
Cypress (planted)	*Cupressus* spp.*	MS	2						
Cocksfoot	*Dactylis glomerata**	LTG						2	
Paterson's Curse	*Echium plantigineum**	LH		1	2	+		2	

Common name	Scientific name	Lifeform[#]	2\PS333975	4\LP41832	Lots 2-5 LP41832	1\LP41832	Lindner Road reserve	1\PS333975	Christensen Lane reserve
			11 Christensen Lane	3-8 Worland Road	Various	85 Lindner Road		Lindner Road	
Curly Windmill Grass	*Enteropogon acicularis*	MTG	2	2	+	1	2	1	
Common Storksbill	*Erodium cicutarium**	MH	1						
River Red Gum	*Eucalyptus camaldulensis*	T			2	+	2		
Sugar Gum (planted)	*Eucalyptus cladocalyx**	T				2			
Grey Box	*Eucalyptus microcarpa*	T	2		2	2	2	2	2
Red Ironbark (planted)	*Eucalyptus sideroxylon**	T		+					
English Beech (planted)	*Fagus sylvatica**	T	+						
Desert Ash (planted)	*Fraxinus* sp.*	T	2	1	1				
Cleavers	*Galium aparine**	MH							+
Treasure Flower	*Gazania rigens**	MH	1						
Yorkshire Fog-grass	*Holcus lanatus**	MTG	2	2	2	2		2	
Barley Grass	*Hordeum leporinum**	MTG							2
Cat's Ear	*Hypochaeris radicata**	MH	2	1	1				
Pale Rush	*Juncus pallidus*	LTG					+		
Blown Grass	*Lachnagrostis avenacea*	MTG	+	1				+	
Crepe Myrtle (planted)	*Lagerstroemia indica**	MS		+					
Wimmera Ryegrass	*Lolium rigidum**	MTG	2	2	2	2	2	1	2
Small-flowered Mallow	*Malva parviflora**	SS	2					2	
Paperbarks (planted)	*Melaleuca* spp.*	MS	2		1				
White Cedar (planted)	*Melia azedarach**	T		1					
Red-flowered Mallow	*Modiola caroliniana**	MH	1						
Wood Sorrel	*Oxalis perennans*	SH	+						
Paspalum	*Paspalum dilitatum**	MNG		2			2	1	1
Water Couch	*Paspalum distichum**	MNG					2	2	
Kikuyu Grass	*Pennisetum clandestinum**	MNG	2			2		2	

Common name	Scientific name	Lifeform[#]	2\PS333975 11 Christensen Lane	4\LP41832 3-8 Worland Road	Lots 2-5 LP41832 Various	1\LP41832 85 Lindner Road	Lindner Road reserve	1\PS333975 Lindner Road	Christensen Lane reserve
Toowoomba Canary Grass	*Phalaris aquatica**	LTG	2	2	2	2	2	3	1
Plantain	*Plantago lanceolata**	MH	2	2			1		1
Winter-grass	*Poa annua**	STG	1				2	1	1
Wireweed	*Polygonum aviculare**	MH	2						
Prunus (planted)	*Prunus* sp.*	MS	1	1					
Onion-grass	*Romulea rosea**	STG	2	2	2	2	2		2
Curled Dock	*Rumex crispus**	SS						2	
Swamp Dock	*Rumex brownii*	MH	+			1			
Blackberry Nightshade	*Solanum nigrum**	SS							+
Milk Thistle	*Sonchus oleraceus**	LH	1				1	1	1
White Clover	*Trifolium repens**	MH						1	
Subterranean Clover	*Trifolium subterraneum**	SH	1	2	2	1			
Rat's Tail Fescue	*Vulpia myuros**	MTG					1	2	1
Indigenous species ground layer projective foliage cover (%)			5	5	< 1	< 1	20	< 1	< 1
Introduced species ground layer projective foliage cover (%)			70	75	90	90	40	90	40
Leaf litter cover (%)			10	10	10	10	40	5	50
Bare earth/gravel cover (%)			15	10	0	0	0	5	10

[#] abbreviations for lifeform for indigenous species are T = tree, MS = medium shrub, SS = small shrub, LH = large herb, MH = medium herb, SH = small herb, LTG = large tufted graminoid, MTG = medium tufted graminoid, STG = small tufted graminoid, MNG = medium non-tufted graminoid, SC = scrambler/climber, GF = ground fern, P = parasite.

APPENDIX B EVC BENCHMARK DESCRIPTION

EVC 803: Plains Woodland (*syn. Riverina* Plains Grassy Woodland)

Description:
An open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies fertile clays and clay loam soils on flat or gently undulating plains at low elevations in areas with <600 mm annual rainfall. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer and chenopods are often present.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	70 cm	15 / ha
Eucalyptus largiflorens	50 cm	
Allocasuarina spp.	40 cm	

Tree Canopy Cover:

%cover	Character Species	Common Name
15%	*Eucalyptus microcarpa*	Grey Box
	Eucalyptus melliodora	Yellow Box
	Eucalyptus camaldulensis	River Red Gum
	Eucalyptus largiflorens	Black Box
	Eucalyptus leucoxylon	Yellow Gum
	Allocasuarina luehmannii	Buloke

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	2	1%	MS
Small Shrub	1	1%	SS
Large Herb	1	5%	LH
Medium Herb	11	25%	MH
Small or Prostrate Herb	2	5%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	15	45%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Acacia montana*	Mallee Wattle
MS	*Acacia acinacea* s.l.	Gold-dust Wattle
MS	*Acacia pycnantha*	Golden Wattle
MS	*Pittosporum angustifolium*	Weeping Pittosporum
SS	*Pimelea curviflora* s.l.	Curved Rice-flower
SS	*Eutaxia microphylla var. microphylla*	Common Eutaxia
SS	*Enchylaena tomentosa* var. *tomentosa*	Ruby Saltbush
SS	*Sclerolaena diacantha*	Grey Copperburr
LH	*Ajuga australis*	Austral Bugle
LH	*Senecio quadridentatus*	Cotton Fireweed
MH	*Calocephalus citreus*	Lemon Beauty-heads
MH	*Maireana enchylaenoides*	Wingless Bluebush
MH	*Einadia hastata*	Saloop
MH	*Einadia nutans* ssp. *nutans*	Nodding Saltbush
SH	*Crassula sieberiana*	Sieber Crassula
SH	*Actinobole uliginosum*	Flannel Cudweed
SH	*Oxalis perennans*	Grassland Wood-sorrel
SH	*Calotis hispidula*	Hairy Burr-daisy
LTG	*Austrostipa aristiglumis*	Plump Spear-grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Dianella revoluta* s.l.	Black-anther Flax-lily
MTG	*Austrostipa scabra*	Rough Spear-grass
MTG	*Enteropogon acicularis*	Spider Grass

Ecological Vegetation Class bioregion benchmark

Victoria
The Place to Be

EVC 803: Plains Woodland (*syn. Riverina* Plains Grassy Woodland) - Victorian Riverina bioregion

Recruitment:
Continuous

Organic Litter:
10 % cover

Logs:
10 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Lycium ferocissimum*	Boxthorn	low	high
LH	*Brassica tournefortii*	Mediterranean Turnip	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Opuntia* spp	Prickly Pear	low	high
MH	*Gazania linearis*	Gazania	high	high
MH	*Spergularia rubra* s.l.	Red Sand-spurrey	high	low
MH	*Silene apetala* var. *apetala*	Sand Catchfly	high	low
MH	*Silene longicaulis*	Portuguese Catchfly	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Trifolium angustifolium* var. *angustifolium*	Narrow-leaf Clover	high	low
MH	*Arctotheca calendula*	Cape Weed	high	low
MH	*Trifolium campestre* var. *campestre*	Hop Clover	high	low
MH	*Trifolium arvense* var. *arvense*	Hare's-foot Clover	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Hypochoeris glabra*	Smooth Cat's-ear	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
SH	*Trifolium glomeratum*	Cluster Clover	low	low
SH	*Medicago minima*	Little Medic	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
MTG	*Lolium rigidum*	Wimmera Rye-grass	low	low
MTG	*Schismus barbatus*	Arabian Grass	high	low
MTG	*Poa bulbosa*	Bulbous Meadow-grass	high	high
MTG	*Pentaschistis airoides* subsp. *airoides*	False Hair-grass	high	high
MTG	*Romulea rosea*	Onion Grass	high	high
MNG	*Bromus rubens*	Red Brome	high	high
MNG	*Vulpia myuros*	Rat's-tail Fescue	high	low
MNG	*Romulea rosea*	Onion Grass	high	low
MNG	*Briza minor*	Lesser Quaking-grass	high	low
MNG	*Briza maxima*	Large Quaking-grass	high	low
MNG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MNG	*Aira elegantissima*	Delicate Hair-grass	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low
SC	*Asparagus asparagoides*	Bridal Creeper	high	high

Published by the Victorian Government Department of Sustainability and Environment May 2004

www.dse.vic.gov.au

APPENDIX C OBSERVED OR INFERRED FAUNA OF PRECINCTS 1A AND 1B

Observed or inferred fauna at the site
between 8.00 and 10.30 am on the 16th April 2020.

An asterisk indicates an introduced species.

Common name	Scientific name	Mode of observation[1]
Birds		
Australian Magpie	*Gymnorhina tibicen*	A,V
Australian Raven	*Corvus coronoides*	A,V
Common Blackbird	*Turdus merula**	A,V
Crested Pigeon	*Ocyphaps lophotes*	V
Crimson Rosella	*Platycercus elegans*	A,V
Galah	*Eolophus roseicapilla*	A,V
Indian Myna	*Acridotheres tristis**	V
Sulphur-crested Cockatoo	*Cacatua galerita*	A,V
Mammals		
European Rabbit	*Oryctolagus cuniculus**	V

1. Method observed: V is visual observation; C is call heard; N indicates a nest observed; S is scat found.

APPENDIX D SIGNIFICANT TREE LOCATIONS

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
1	Grey Box	*Eucalyptus microcarpa*	120	435802	5977691
2	Grey Box	*Eucalyptus microcarpa*	130	435927	5977652
3	Grey Box	*Eucalyptus microcarpa*	140	435925	5977642
4	Grey Box	*Eucalyptus microcarpa*	25	435779	5977668
5	Desert Ash (planted)	*Fraxinus angustifolium**		435820	5977684
6	Desert Ash (planted)	*Fraxinus angustifolium**		435830	5977683
7	Desert Ash (planted)	*Fraxinus angustifolium**		435835	5977680
8	Desert Ash (planted)	*Fraxinus angustifolium**		435846	5977679
9	Desert Ash (planted)	*Fraxinus angustifolium**		435858	5977678
10	Desert Ash (planted)	*Fraxinus angustifolium**		435884	5977699
11	Cypress (planted)	*Cupressus* sp.*		435954	5977723
12	Cypress (planted)	*Cupressus* sp.*		435949	5977723
13	Cypress (planted)	*Cupressus* sp.*		435945	5977724
14	Cypress (planted)	*Cupressus* sp.*		435942	5977724
15	English Beech (planted)	*Fagus sylvatica**		435959	5977683
16	English Beech (planted)	*Fagus sylvatica**		435957	5977672
17	Grey Box	*Eucalyptus microcarpa*	70	435959	5977624
18	Cypress (planted)	*Cupressus* sp.*		435937	5977725
19	Cypress (planted)	*Cupressus* sp.*		435934	5977725
20	Cypress (planted)	*Cupressus* sp.*		435929	5977726
21	English Beech (planted)	*Fagus sylvatica**		435916	5977723
22	English Beech (planted)	*Fagus sylvatica**		435916	5977718
23	English Beech (planted)	*Fagus sylvatica**		435915	5977713
24	Prunus (planted)	*Prunus* sp.*		435818	5977720
25	Paperbark (planted)	*Melaleuca* spp.*		435809	5977742

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
26	Paperbark (planted)	*Melaleuca* spp.*		435808	5977736
27	Paperbark (planted)	*Melaleuca* spp.*		435808	5977730
28	Paperbark (planted)	*Melaleuca* spp.*		435806	5977724
29	Paperbark (planted)	*Melaleuca* spp.*		435805	5977718
30	Paperbark (planted)	*Melaleuca* spp.*		435804	5977715
31	Paperbark (planted)	*Melaleuca* spp.*		435804	5977710
32	Grey Box	*Eucalyptus microcarpa*	25	435794	5977666
33	Grey Box	*Eucalyptus microcarpa*	30	435818	5977613
34	Cypress (planted)	*Cupressus* sp.*		435880	5977666
35	Cypress (planted)	*Cupressus* sp.*		435920	5977668
36	Cypress (planted)	*Cupressus* sp.*		435914	5977667
37	Cypress (planted)	*Cupressus* sp.*		435909	5977667
38	Cypress (planted)	*Cupressus* sp.*		435901	5977669
39	Desert Ash (planted)	*Fraxinus angustifolium**		435889	5977676
40	Desert Ash (planted)	*Fraxinus angustifolium**		435888	5977679
41	Desert Ash (planted)	*Fraxinus angustifolium**		435882	5977678
42	Desert Ash (planted)	*Fraxinus angustifolium**		435876	5977681
43	Desert Ash (planted)	*Fraxinus angustifolium**		435867	5977679
44	Desert Ash (planted)	*Fraxinus angustifolium**		436148	5977531
45	Desert Ash (planted)	*Fraxinus angustifolium**		436145	5977519
45	Desert Ash (planted)	*Fraxinus angustifolium**		436148	5977520
46	Desert Ash (planted)	*Fraxinus angustifolium**		436142	5977521
47	Desert Ash (planted)	*Fraxinus angustifolium**		436144	5977535
48	Desert Ash (planted)	*Fraxinus angustifolium**		436148	5977529
49	Desert Ash (planted)	*Fraxinus angustifolium**		436164	5977455

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
50	Prunus (planted)	*Prunus* sp.*		436153	5977448
51	Crepe Myrtle (planted)	*Lagerstroemia indica**		436162	5977445
52	Desert Ash (planted)	*Fraxinus angustifolium**		436157	5977434
53	Red Ironbark (planted)	*Eucalyptus sideroxylon**		436163	5977449
54	Prunus (planted)	*Prunus* sp.*		436147	5977458
55	Grey Box	*Eucalyptus microcarpa*	25 (dead)	436058	5977441
56	Grey Box	*Eucalyptus microcarpa*	20	435861	5977562
57	Grey Box	*Eucalyptus microcarpa*	75 (dead)	435857	5977549
58	Grey Box	*Eucalyptus microcarpa*	15 (dead)	435841	5977515
59	Grey Box	*Eucalyptus microcarpa*	20	435845	5977517
60	Grey Box	*Eucalyptus microcarpa*	30	435848	5977518
61	Grey Box	*Eucalyptus microcarpa*	45	435850	5977518
62	Grey Box	*Eucalyptus microcarpa*	10	435840	5977507
63	Grey Box	*Eucalyptus microcarpa*	25	435844	5977503
64	Grey Box	*Eucalyptus microcarpa*	25	435836	5977500
65	River Red Gum	*Eucalyptus camaldulensis*	< 30	435842	5977294
66	River Red Gum	*Eucalyptus camaldulensis*	< 30	435843	5977293
67	River Red Gum	*Eucalyptus camaldulensis*	< 30	435847	5977290
68	River Red Gum	*Eucalyptus camaldulensis*	< 30	435848	5977288
69	River Red Gum	*Eucalyptus camaldulensis*	< 30	435850	5977288
70	River Red Gum	*Eucalyptus camaldulensis*	< 30	435858	5977290
71	River Red Gum	*Eucalyptus camaldulensis*	< 30	435863	5977291
72	River Red Gum	*Eucalyptus camaldulensis*	< 30	435883	5977270
73	River Red Gum	*Eucalyptus camaldulensis*	< 30	435884	5977268
74	River Red Gum	*Eucalyptus camaldulensis*	< 30	435886	5977268

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
75	River Red Gum	*Eucalyptus camaldulensis*	< 30	435887	5977267
76	River Red Gum	*Eucalyptus camaldulensis*	< 30	435889	5977265
77	River Red Gum	*Eucalyptus camaldulensis*	< 30	435890	5977266
78	River Red Gum	*Eucalyptus camaldulensis*	< 30	435893	5977268
79	River Red Gum	*Eucalyptus camaldulensis*	< 30	435892	5977266
80	River Red Gum	*Eucalyptus camaldulensis*	< 30	435893	5977266
81	River Red Gum	*Eucalyptus camaldulensis*	< 30	435893	5977264
82	River Red Gum	*Eucalyptus camaldulensis*	< 30	435895	5977263
83	River Red Gum	*Eucalyptus camaldulensis*	< 30	435895	5977265
84	River Red Gum	*Eucalyptus camaldulensis*	< 30	435895	5977267
85	River Red Gum	*Eucalyptus camaldulensis*	< 30	435896	5977267
86	River Red Gum	*Eucalyptus camaldulensis*	< 30	435897	5977265
87	River Red Gum	*Eucalyptus camaldulensis*	< 30	435898	5977266
88	River Red Gum	*Eucalyptus camaldulensis*	< 30	435899	5977265
89	River Red Gum	*Eucalyptus camaldulensis*	< 30	435900	5977266
90	River Red Gum	*Eucalyptus camaldulensis*	< 30	435901	5977268
91	River Red Gum	*Eucalyptus camaldulensis*	< 30	435902	5977266
92	River Red Gum	*Eucalyptus camaldulensis*	< 30	435900	5977264
93	River Red Gum	*Eucalyptus camaldulensis*	< 30	435900	5977262
94	River Red Gum	*Eucalyptus camaldulensis*	< 30	435902	5977263
95	River Red Gum	*Eucalyptus camaldulensis*	< 30	435902	5977265
96	River Red Gum	*Eucalyptus camaldulensis*	< 30	435904	5977263
97	River Red Gum	*Eucalyptus camaldulensis*	< 30	435906	5977266
98	River Red Gum	*Eucalyptus camaldulensis*	< 30	435907	5977263
99	River Red Gum	*Eucalyptus camaldulensis*	< 30	435908	5977265

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
100	River Red Gum	*Eucalyptus camaldulensis*	< 30	435910	5977264
101	River Red Gum	*Eucalyptus camaldulensis*	< 30	435912	5977265
102	River Red Gum	*Eucalyptus camaldulensis*	< 30	435910	5977270
103	River Red Gum	*Eucalyptus camaldulensis*	< 30	435911	5977273
104	River Red Gum	*Eucalyptus camaldulensis*	< 30	435915	5977280
105	River Red Gum	*Eucalyptus camaldulensis*	< 30	435917	5977283
106	River Red Gum	*Eucalyptus camaldulensis*	< 30	435918	5977281
107	River Red Gum	*Eucalyptus camaldulensis*	< 30	435919	5977285
108	River Red Gum	*Eucalyptus camaldulensis*	< 30	435920	5977282
109	River Red Gum	*Eucalyptus camaldulensis*	< 30	435922	5977282
110	River Red Gum	*Eucalyptus camaldulensis*	< 30	435922	5977284
111	River Red Gum	*Eucalyptus camaldulensis*	< 30	435921	5977285
112	River Red Gum	*Eucalyptus camaldulensis*	< 30	435921	5977286
113	River Red Gum	*Eucalyptus camaldulensis*	< 30	435923	5977286
114	River Red Gum	*Eucalyptus camaldulensis*	< 30	435924	5977286
115	River Red Gum	*Eucalyptus camaldulensis*	< 30	435924	5977289
116	River Red Gum	*Eucalyptus camaldulensis*	< 30	435924	5977291
117	River Red Gum	*Eucalyptus camaldulensis*	< 30	435924	5977287
118	River Red Gum	*Eucalyptus camaldulensis*	< 30	435928	5977294
119	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977295
120	River Red Gum	*Eucalyptus camaldulensis*	< 30	435927	5977295
121	River Red Gum	*Eucalyptus camaldulensis*	< 30	435928	5977296
122	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977298
123	River Red Gum	*Eucalyptus camaldulensis*	< 30	435930	5977296
124	River Red Gum	*Eucalyptus camaldulensis*	< 30	435927	5977297

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
125	River Red Gum	*Eucalyptus camaldulensis*	< 30	435928	5977298
126	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977298
127	River Red Gum	*Eucalyptus camaldulensis*	< 30	435928	5977303
128	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977303
129	River Red Gum	*Eucalyptus camaldulensis*	< 30	435930	5977305
130	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977305
131	River Red Gum	*Eucalyptus camaldulensis*	< 30	435930	5977307
132	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977308
133	River Red Gum	*Eucalyptus camaldulensis*	< 30	435929	5977309
134	River Red Gum	*Eucalyptus camaldulensis*	< 30	435931	5977309
135	River Red Gum	*Eucalyptus camaldulensis*	< 30	435932	5977312
136	River Red Gum	*Eucalyptus camaldulensis*	< 30	435934	5977313
137	River Red Gum	*Eucalyptus camaldulensis*	< 30	435935	5977313
138	River Red Gum	*Eucalyptus camaldulensis*	< 30	435936	5977312
139	River Red Gum	*Eucalyptus camaldulensis*	< 30	435935	5977309
140	River Red Gum	*Eucalyptus camaldulensis*	< 30	435934	5977309
141	River Red Gum	*Eucalyptus camaldulensis*	< 30	435935	5977312
142	River Red Gum	*Eucalyptus camaldulensis*	< 30	435933	5977311
143	River Red Gum	*Eucalyptus camaldulensis*	< 30	435891	5977268
144	River Red Gum	*Eucalyptus camaldulensis*	< 30	435889	5977269
145	River Red Gum	*Eucalyptus camaldulensis*	< 30	435889	5977268
146	River Red Gum	*Eucalyptus camaldulensis*	< 30	435894	5977267
147	River Red Gum	*Eucalyptus camaldulensis*	45	435806	5977335
148	River Red Gum	*Eucalyptus camaldulensis*	60	435729	5977286
149	Grey Box	*Eucalyptus microcarpa*	35	435749	5977417

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
150	Grey Box	*Eucalyptus microcarpa*	35	435756	5977432
151	Grey Box (planted)	*Eucalyptus microcarpa*	35	435751	5977438
152	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435746	5977395
153	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435743	5977380
154	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435741	5977362
155	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435740	5977356
156	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435739	5977349
157	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435738	5977343
158	Grey Box (planted)	*Eucalyptus microcarpa*	< 30	435738	5977337
159	Grey Box	*Eucalyptus microcarpa*	130	435768	5977441
160	Grey Box	*Eucalyptus microcarpa*	65	435774	5977447
161	Grey Box	*Eucalyptus microcarpa*	50	435778	5977443
162	Grey Box	*Eucalyptus microcarpa*	60	435778	5977435
163	Grey Box	*Eucalyptus microcarpa*	30	435786	5977440
164	Grey Box	*Eucalyptus microcarpa*	35	435815	5977456
165	Grey Box	*Eucalyptus microcarpa*	30	435787	5977475
166	Grey Box	*Eucalyptus microcarpa*	120	435995	5977310
167	Grey Box	*Eucalyptus microcarpa*	< 30	436018	5977299
168	Grey Box	*Eucalyptus microcarpa*	< 30	436022	5977299
169	Grey Box	*Eucalyptus microcarpa*	< 30	435958	5977332
170	Grey Box	*Eucalyptus microcarpa*	< 30	435961	5977359
171	Grey Box	*Eucalyptus microcarpa*	< 30	435965	5977354
172	Grey Box	*Eucalyptus microcarpa*	< 30	435969	5977362
173	Grey Box	*Eucalyptus microcarpa*	< 30	435966	5977366
174	Grey Box	*Eucalyptus microcarpa*	< 30	435965	5977372

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
175	Grey Box	*Eucalyptus microcarpa*	< 30	435974	5977387
176	Grey Box	*Eucalyptus microcarpa*	< 30	435982	5977397
177	Grey Box	*Eucalyptus microcarpa*	< 30	435994	5977396
178	Grey Box	*Eucalyptus microcarpa*	110	435979	5977372
179	Grey Box	*Eucalyptus microcarpa*	35	435977	5977423
180	Grey Box	*Eucalyptus microcarpa*	25	435995	5977418
181	Grey Box	*Eucalyptus microcarpa*	20	435996	5977416
182	Grey Box	*Eucalyptus microcarpa*	35	436022	5977435
183	Grey Box	*Eucalyptus microcarpa*	10	436019	5977432
184	Grey Box	*Eucalyptus microcarpa*	10	436019	5977438
185	Silver Wattle	*Acacia dealbata*		436124	5977403
186	Silver Wattle	*Acacia dealbata*		436136	5977399
187	Silver Wattle	*Acacia dealbata*		436135	5977394
188	Silver Wattle	*Acacia dealbata*		436135	5977389
189	Silver Wattle	*Acacia dealbata*		436135	5977384
190	Silver Wattle	*Acacia dealbata*		436138	5977389
191	Silver Wattle	*Acacia dealbata*		436140	5977391
192	Silver Wattle	*Acacia dealbata*		436142	5977389
193	Silver Wattle	*Acacia dealbata*		436141	5977392
194	Silver Wattle	*Acacia dealbata*		436143	5977396
195	Silver Wattle	*Acacia dealbata*		436144	5977394
196	Silver Wattle	*Acacia dealbata*		436145	5977387
197	Silver Wattle	*Acacia dealbata*		436150	5977401
198	Silver Wattle	*Acacia dealbata*		436158	5977417
199	Desert Ash (planted)	*Fraxinus angustifolium**		436156	5977372

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
200	Desert Ash (planted)	*Fraxinus angustifolium**		436154	5977352
201	River Red Gum	*Eucalyptus camaldulensis*	25	436127	5977407
202	River Red Gum	*Eucalyptus camaldulensis*	< 25	436132	5977414
203	River Red Gum	*Eucalyptus camaldulensis*	< 25	436134	5977418
204	River Red Gum	*Eucalyptus camaldulensis*	< 25	436136	5977413
205	River Red Gum	*Eucalyptus camaldulensis*	< 25	436139	5977412
206	River Red Gum	*Eucalyptus camaldulensis*	< 25	436142	5977412
207	River Red Gum	*Eucalyptus camaldulensis*	< 25	436140	5977409
208	River Red Gum	*Eucalyptus camaldulensis*	< 25	436145	5977411
210	River Red Gum	*Eucalyptus camaldulensis*	< 25	436146	5977409
211	River Red Gum	*Eucalyptus camaldulensis*	< 25	436135	5977409
212	River Red Gum	*Eucalyptus camaldulensis*	< 25	436145	5977404
213	River Red Gum	*Eucalyptus camaldulensis*	< 25	436144	5977407
214	River Red Gum	*Eucalyptus camaldulensis*	< 25	436142	5977409
215	River Red Gum	*Eucalyptus camaldulensis*	< 25	436143	5977402
216	River Red Gum	*Eucalyptus camaldulensis*	< 25	436147	5977399
217	River Red Gum	*Eucalyptus camaldulensis*	< 25	436141	5977405
218	River Red Gum	*Eucalyptus camaldulensis*	< 25	436137	5977407
219	River Red Gum	*Eucalyptus camaldulensis*	< 25	436137	5977402
220	River Red Gum	*Eucalyptus camaldulensis*	< 25	436138	5977405
221	River Red Gum	*Eucalyptus camaldulensis*	< 25	436140	5977399
222	River Red Gum	*Eucalyptus camaldulensis*	< 25	436140	5977402
223	River Red Gum	*Eucalyptus camaldulensis*	< 25	436144	5977402
224	River Red Gum	*Eucalyptus camaldulensis*	< 25	436137	5977396
225	River Red Gum	*Eucalyptus camaldulensis*	< 25	436142	5977397

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
226	River Red Gum	*Eucalyptus camaldulensis*	< 25	436159	5977418
227	River Red Gum	*Eucalyptus camaldulensis*	< 25	436156	5977409
228	River Sheoak (planted)	*Casaurina cunninghamii**		436145	5977378
229	River Sheoak (planted)	*Casaurina cunninghamii**		436146	5977381
230	River Sheoak (planted)	*Casaurina cunninghamii**		436149	5977378
231	River Sheoak (planted)	*Casaurina cunninghamii**		436149	5977384
232	Desert Ash (planted)	*Fraxinus angustifolium**		436156	5977377
233	Desert Ash (planted)	*Fraxinus angustifolium**		436134	5977366
234	Desert Ash (planted)	*Fraxinus angustifolium**		436140	5977346
235	Paperbark (planted)	*Melaleuca* spp.*		436151	5977344
236	Paperbark (planted)	*Melaleuca* spp.*		436115	5977344
237	English Beech (planted)	*Fagus sylvatica**		436143	5977363
238	River Sheoak (planted)	*Casaurina cunninghamii**	28	435785	5977594
239	Grey Box	*Eucalyptus microcarpa*	30	435807	5977591
240	Grey Box	*Eucalyptus microcarpa*	80	435820	5977588
241	Grey Box	*Eucalyptus microcarpa*	100	435844	5977586
242	Grey Box	*Eucalyptus microcarpa*	20	435837	5977579
243	Grey Box	*Eucalyptus microcarpa*	240	435767	5977574
244	Desert Ash (planted)	*Fraxinus angustifolium**		435781	5977589
245	Grey Box	*Eucalyptus microcarpa*	75	435829	5977570
246	Grey Box	*Eucalyptus microcarpa*	60	435830	5977558
247	Grey Box	*Eucalyptus microcarpa*	80	435809	5977571
248	Grey Box	*Eucalyptus microcarpa*	120	435800	5977574
249	Grey Box	*Eucalyptus microcarpa*	60	435811	5977579
250	Grey Box	*Eucalyptus microcarpa*	100 (dead)	435821	5977520

Tree number	Common name	Scientific name	Diameter[1]	Tree locations[2]	
				Easting	*Northing*
251	Grey Box	*Eucalyptus microcarpa*	70 (dead)	435814	5977510
252	Grey Box	*Eucalyptus microcarpa*	120	435782	5977524
253	Grey Box	*Eucalyptus microcarpa*	130	435776	5977531
254	Sugar Gum (planted)	*Eucalyptus cladocalyx**		435768	5977550
255	Sugar Gum (planted)	*Eucalyptus cladocalyx**		435766	5977542

1. DBH is diameter at breast height over bark in centimetres (dbhob; 1.30 m);
2. Location data are northings and eastings of MGAz55 coordinates.

APPENDIX E EPBC AND VICTORIAN THREATENED SPECIES AND LIKELIHOOD OF OCCURRENCE

List of threatened flora species recorded by the Victorian Biodiversity Atlas and NatureKit in a 10 km radius around the property, and by Matters of National Environmental Significance search of the district, their status, and their likelihood of occurrence on the subject land (DELWP 2020b and 2020c; DAWE 2020).

Scientific name	Common Name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Acacia deanei ssp. *paucijuga*	Deane's Wattle	r		A shrub or small tree found on the western slopes in North Central and NE Victoria, usually in dry forest, often on stony slopes and rocky outcrops. Areas assessed do not contain suitable habitat; the species has been sighted within 10 km of site twice, on the eastern side of the Warby Range at Glenrowan and Waldara. **Likelihood: Highly unlikely to be present**
Acacia doratoxylon	Currawang	r		This species grows on well-drained rocky ridges and hillsides in the Suggan Buggan and Beechworth area. Areas assessed are not suitable habitat. Multiple sightings of the species within 10 km are all NE of Wangaratta near Byawatha/Eldorado. **Likelihood: Unlikely to be present**
Acacia triptera	Spur-winged Wattle	r		This species is known to grow in rocky outcrops in woodlands and shrub lands in NE Victoria, including the Warby Ranges. The areas assessed are not suitable habitat. Multiple sightings within 10 km, all in the Warby Ranges. **Likelihood: Highly unlikely to be present**
Amphibromus fluitans	River Swamp Wallaby-grass		V	Wetland/riparian plant. No such habitat is found on site; nearly all assessed areas have been significantly disturbed, and the species is unlikely to be present. Only once sighting within 10 km east of Laceby in 1985. **Likelihood: Highly unlikely to be present**
Bolboschoenus fluviatilis	Tall Club-sedge	k		The Tall Club-sedge is found in shallow water on the edges of lakes and billabongs and open swamps. While there are suitable areas along creek lines to the east of the assessed area, these habitats have been highly disturbed. Only once sighting near Oxley in 1997. **Likelihood: Highly unlikely to be present**
Brachyscome gracilis	Dookie Daisy	v,L		A Grassy Woodland species of north east Victoria typically found on elevated habitats immediately above the floodplain. No such habitats are found in the assessed areas. Two sightings of the species within 10 km from near Killawarra in the mid-1980s. **Likelihood: Unlikely to be present**
Brachyscome muelleroides	Mueller Daisy	e,L	V	A small annual herb restricted to the mid-Murray/Murrumbidgee Rivers region in NSW and Victoria. It occurs in seasonally wet depressions, and relies on seasonal inundation. The species is now restricted to only 10 known populations, of which Naringaringalook Grassland is the closest. The creek floodplain to the east would have been suitable habitat for the species; however, grazing and soil disturbance will preclude re-establishment. **Likelihood: Highly unlikely to be present**

Scientific name	Common Name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Caesia parviflora var. *vittata*	Pale Grass-lily	k		A species found in lowland grassland and grassy woodland habitats, which is uncommon in northern Victoria; there is no certainty that this sub-species is found in Victoria. While the areas assessed do contain suitable habitat, there has significant disturbance across all of these areas. Three sightings within 10 km of the areas, all south-west and south of Wangaratta before 1995. **Likelihood: Unlikely to be present**
Carex chlorantha	Green-top Sedge	k		*Carex chlorantha* is an uncommon native herb of damp ground. While the areas assessed may contain suitable habitats, there has significant disturbance across all of these areas. One sighting within 10 km of the areas, adjacent to the King River bank within Wangaratta in 2011. **Likelihood: Unlikely to be present**
Convolvulus angustissimus ssp. *omnigracilis*	Slender Bindweed	k		A poorly known species with a distribution found on the heavy basalt soils around Melbourne and the Western District in grassland and grassy woodland habitats. The areas assessed contain no such habitat. Two sightings of the species within 10 km, both at Boralma in 2003. **Likelihood: Highly unlikely to be present**
Dianella tarda	Late-flower Flax-lily	v		This graminoid species is usually found on clayey or loam soils, mostly on old floodplains, often in River Red Gum dominated woodlands and forests. While there are suitable areas within the assessed areas, these habitats have been highly disturbed. Only once sighting within 10 km, at Jubilee Golf Club in 2011. **Likelihood: Unlikely to be present**
Diuris punctata var. *punctata*	Purple Diuris	v,L		Purple Diuris occurs principally in lowland native grasslands, grassy woodlands, heathy woodlands and open heathlands, usually on fertile, loamy soils and including periodically inundated areas. Some sections of the areas assessed would once have been suitable habitat; however, disturbance would preclude its continued existence on the site. The multiple records for the species within 10 km are all 2-4 km NNE of Glenrowan. **Likelihood: Highly unlikely to be present**
Dodonaea boroniifolia	Hairy Hop-bush	r		This species is known to grow on granite or sandstone outcrops in woodlands and shrub lands in NE and North Central Victoria. The areas assessed are not suitable habitat. The three sightings of the species within 10 km are all around Taminick before 1991. **Likelihood: Highly unlikely to be present**
Eragrostis trachycarpa	Rough-grain Love-grass	r		A floodplain grass species only known to occur around the lower Gippsland Lakes area in Gippsland. One sighting within 10 km in 2011 within the Warby-Ovens National Park; probably a misidentification. **Likelihood: Highly unlikely to be present**

Scientific name	Common Name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Eucalyptus cadens	Warby Range Swamp Gum	v,L	V	The species is endemic to north east Victoria, and is known to occur frequently on the lower slopes of the Warby Range, usually on swampy, irrigated or flooded areas, depressions on sand, loam, clay and cracking clays. Such habitat is found across parts of the assessed areas; however, the species was not observed with detailed tree survey. The numerous sightings of the species within 10 km are along the eastern lower slopes of the Warby Range from Taminick to Killawarra. **Likelihood: Unlikely to be present**
Glycine latrobeana	Clover Glycine	v,L	V	A twining Grassy Woodland species typically found on elevated habitats above the floodplain. No such habitat occurs on the site. **Likelihood: Highly unlikely to be present**
Goodenia macbarronii	Narrow Goodenia	v,L	V	Occurs predominantly on the inland slopes of the Great Dividing Range in forests and woodlands. It is generally associated with drainage lines, creeks, soaks, swamps, small lagoons, alluvial fans and moist areas, most frequently on sandy soils. Some sections of the areas assessed would once have been suitable habitat; however, disturbance would preclude its continued existence on the site. The numerous sightings of the species within 10 km are along the eastern lower slopes of the Warby Range from Taminick to Killawarra. **Likelihood: Unlikely to be present**
Gratiola pumilo	Dwarf Brooklime	r		*Gratiola pumilio* is an uncommon native herb of damp ground. A poorly known species that has an uncertain distribution. Some sections of the areas assessed would once have been suitable habitat; however, disturbance would preclude its existence on the site. One sighting within 10 km, near Laceby in 1985. **Likelihood: Unlikely to be present**
Isolepis congrua	Slender Club-rush	v,L		An apparently rare species in Victoria found on grey cracking clay soils that are seasonally wet, mostly west of Wangaratta. The areas assessed do contain some suitable habitat; however, the extent of disturbance is likely to preclude its presence. Three sightings of the species within 10 km are all NE of Wangaratta near Byawatha/Eldorado. **Likelihood: Unlikely to be present**
Lespedeza juncea ssp. *sericea*	Chinese Lespedeza	r		Wetland/riparian plant. While there are suitable areas along creek lines to the east of the assessed area, these habitats have been highly disturbed. Only twice sighted near Oxley/Laceby; once in 1853 and in 2005. **Likelihood: Highly unlikely to be present**
Pterostylis hamata	Scaly Greenhood	r		This species is known to grow in rocky outcrops in woodlands and shrublands in NE Victoria. The areas assessed are not suitable habitat. The two sightings of the species within 10 km are both north of Taminick in 1986. **Likelihood: Highly unlikely to be present**

Scientific name	Common Name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Pultenaea foliosa	Small-leaf Bush-pea	r		A shrub found on the western slopes in southern NSW and North-east Victoria, commonly in Box-Ironbark woodlands. Areas assessed do not contain suitable habitat; the species has been sighted within 10 km of site in multiple locations, all on the slopes of the Warby Range. **Likelihood: Highly unlikely to be present**
Pultenaea platyphylla	Flat-leaf Bush-pea	r		A shrub found in woodlands on granite hills within the Warby Range and around Beechworth in North-east Victoria. Areas assessed do not contain suitable habitat; the species has been sighted within 10 km of site in multiple locations, all on the slopes of the Warby Range. **Likelihood: Highly unlikely to be present**
Rytidosperma monticola	Small-flowered Wallaby-grass	r		A densely tufted species of dry woodlands that is known from the Grampians, around Melbourne and the Mornington Peninsula, Maryborough and Beechworth. The areas assessed do contain some suitable habitat; however the extent of disturbance is likely to preclude its presence. One sighting of the species within 10 km is from Waldara in 1995 – north-west of the assessed areas. **Likelihood: Unlikely to be present**
Santalum lanceolatum	Northern Sandalwood	e,L		An endangered species in Victoria known only from 4 locations Springhurst, Warby Ranges, Boundary Bend and Torrumbarry. Population within the Warby Ranges are at Brien's Gorge. Some sections of the areas assessed would once have been suitable habitat; however, disturbance would preclude its continued existence on the site. **Likelihood: Highly unlikely to be present**
Swainsona recta	Small Purple-pea	e,L	E	An extremely rare grassland and grassy woodland plant in sites prone to seasonal inundation. Sections of the areas assessed are suitable habitat for the species; however, disturbance will preclude its continued presence and re-establishment. Multiple sightings of the species were from 1 km NNE of Wangaratta in 1891. **Likelihood: Highly unlikely to be present**
Tripogon lolliformis	Rye Beetle-grass	r		A slender, tufted perennial grass most commonly found in rocky sites on sandy and duplex soils; west of Melbourne, the Strathbogie Ranges, Suggan Buggan and the Killawarra Forest. Site is not suitable habitat. Two sightings within 10 km - both in the Warby Ranges. **Likelihood: Highly unlikely to be present**
Utricularia uniflora	Single Bladderwort	k		Wetland/riparian plant that grows on bogs and along rocky stream banks, and is considered to probably be confined to Gippsland. Site is not suitable habitat. Two sightings within 10 km; both on the eastern side of the Warby Ranges in 1986. **Likelihood: Highly unlikely to be present.**

Scientific name	Common Name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Xanthorrhoea glauca ssp. *angustifolia*	Grey Grass-tree	e,L		This species is known to grow in rocky outcrops in woodlands and shrub lands in NE Victoria, including the Warby Ranges. The areas assessed are not suitable habitat. Multiple sightings within 10 km, all on the eastern side of the Warby Ranges. **Likelihood: Highly unlikely to be present**

1. ce = critically endangered in Victoria; e = endangered in Victoria; v = vulnerable in Victoria; r = rare in Victoria; nt = near threatened in Victoria; dd = data deficient ; L = listed under the FFG Act in Victoria (from DSE 2009 and 2013, and DEPI 2013).
2. E = endangered nationally; V = vulnerable nationally (DAWE 2020);
3. Habitat descriptions for species obtained from the *Flora of Victoria* (Walsh and Entwisle 1994, 1996 and 1999), DoE (2014), *Flora of Victoria Online* (Royal Botanic Gardens Victoria 2020), DAWE (2020), Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998).

List of threatened fauna species recorded by the Victorian Biodiversity Atlas and NatureKit in a 10 km radius around the property, and by Matters of National Environmental Significance search of the district, their status, and their likelihood of occurrence on the subject land (DELWP 2020b and 2020c; DAWE 2020).

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Australasian Bittern	*Botaurus poiciloptilus*	e,L	E	Australasian Bitterns specialise in living in dense beds of reeds and rushes, where they are surprisingly difficult to see, as they are particularly well camouflaged among reeds. Added to this, when alarmed, they stand still with neck stretched upwards and bill pointing skywards. No suitable habitat occurs across the assessed areas. One sighting within 10 km; in Wangaratta South in 1982. **Likelihood: Highly unlikely to be present**
Australasian Shoveler	*Anas rhynchotis*	v		Often associating with other species of ducks, the Australasian Shoveler is often seen in flocks with Pink-eared Ducks. They inhabit a wide variety of wetlands, ranging from terrestrial swamps and lakes to estuaries and even sheltered inshore waters. They prefer wetlands with areas of open water fringed by abundant aquatic vegetation, where they feed in small groups by dabbling in the mud or at the water's surface. Assessed areas do not contain suitable habitat. Numerous sightings within 10 km of the assessed area; all of these are at the Sewerage Ponds, Oxley Flats, Baileys Vineyard, or in the Killawarra. **Likelihood: Highly unlikely to be present**
Australian Painted Snipe	*Rostratula australis*	ce,L	E	The Australian Painted Snipe inhabits many different types of shallow, brackish or freshwater terrestrial wetlands, especially temporary ones which have muddy margins and small, low-lying islands. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and canegrass. No suitable habitat occurs across the assessed sites. L**ikelihood: Highly unlikely to be present**
Australian Pratincole	*Stiltia isabella*	nt		The Australian Pratincole is most commonly found close to water, in open inland plains, sparsely wooded plains and tussock grasslands, usually in arid and semi-arid rainfall zones, and mainly in the lowlands. It is also found in areas of gibber (stony plains) and stony ground, and areas with sparse vegetation including clay pans, stock-tanks, stock routes and airfields. No suitable habitat occurs on site. One sighting within 10 km; Baileys Vineyard in 1979. **Likelihood: Highly unlikely to be present**
Azure Kingfisher	*Alcedo azurea*	nt		Occurs in intact woodlands, and adjacent agricultural land. Some sections of the assessed area is suitable habitat, with limited connectivity to known locations. Numerous sightings within 10 km of the assessed areas; all of these are in proximity to the Ovens and King Rivers, Baileys Vineyard, or in the Killawarra. **Likelihood: May be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Bandy Bandy	*Vermicella annulata*	v,L		Occurs in intact high quality grassy woodlands and grasslands, and survives mostly underground feeding on blind snakes. Assessed areas are disturbed and no such habitat exists. One sighting within 10 km, at Milawa in 1999. **Likelihood: Highly unlikely to be present**
Barking Owl	*Ninox connivens connivens*	e,L		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats due to the higher density of prey on these fertile soils. Some sections of the assessed area is suitable habitat, with good connectivity to known locations. Numerous sightings within 10 km of the assessed areas; all of these are in proximity to the Ovens and King Rivers, Baileys Vineyard, or in the Byawatha-Eldorado area. **Likelihood: May be present**
Bearded Dragon	*Pogona barbata*	v		Occurs in woodlands, and adjacent agricultural land. Assessed area may contain some suitable habitat; however there is limited connectivity to known locations. Two records within 10 km are on the eastern slopes of the Warby Ranges. **Likelihood: Unlikely to be present**
Black Falcon	*Falco subniger*	v,L		The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees. The species is usually associated with streams or wetlands, visiting them in search of prey and often using standing dead trees as lookout posts. The adjacent creek area to the east may contain some suitable habitat, and there is some connectivity to known locations. Two records within 10 km are NE of Wangaratta. **Likelihood: May be present**
Black-eared Cuckoo	*Chrysococcyx osculans*	nt		Occurs in extensive forests and woodlands, and adjacent agricultural land. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; all of these are in proximity to Baileys Vineyard or in the Killawarra. **Likelihood: May be present**
Blue-billed Duck	*Oxyura australis*	e,L		The Blue-billed Duck inhabits fresh to saline, deep permanent open wetlands and deep, densely vegetated lakes. No suitable habitat occurs on site. Numerous sightings within 10 km of the assessed areas; all of these are at Killawarra, Baileys Vineyard, or Sewerage Lagoons. **Likelihood: Highly unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Brown Toadlet	*Pseudophryne bibronii*	e,L		A once widespread species now known only around Melbourne and SW Victoria; it occurs mainly to the west, north and north east of Melbourne. It is found in forested areas, where it hides under fallen timber, rocks, etc. While sections of the site is suitable habitat, the level of disturbance and lack of available habitat would preclude presence; the five sightings are either at sites 1.6 km E of Wangaratta or at Taminick Gap prior to 1971. **Likelihood: Highly unlikely to be present**
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	nt		Occurs in intact woodlands, and adjacent agricultural land. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Many sightings within 10 km of the assessed areas; these are mostly from across the Warby Ranges or in the Killawarra, along the Great Alpine Road east of Wangaratta, along waterways to the south and east of Wangaratta, and the Eight Mile Swamp Bushland Reserve. **Likelihood: May be present**
Bush Stone-curlew	*Burhinus grallarius*	e,L		Range in south-eastern Australia is now largely confined to grassy woodlands and farmland. Likes to roost and nest in grassy woodlands of buloke, gum or box with low, sparse grassy or herb understorey. Branches on the ground are essential for the bird's camouflage, and it is unlikely to attempt nesting without it. There are no sections of the assessed areas where either appropriate understorey or fallen timber is present. Numerous sightings within 10 km of the assessed areas; these are at Waldara (north-west of the assessed site), Killawarra, Baileys Vineyard, or in the Bowser area. **Likelihood: Unlikely to be present**
Carpet Python	*Morelia spilota metcalfei*	e,L		Inland Carpet Pythons are semi-arboreal, living in tree hollows and rock crevices. They are often associated with River Red Gum and Black Box forests. But with expanding human development, they are now often found around human dwellings, such as in roofs or sheds, where they feed on rats and mice. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, or in the Killawarra. **Likelihood: May be present**
Cattle Egret	*Ardea ibis*		Migratory Wetland Species	The Cattle Egret is found in grasslands, woodlands and wetlands, and is not common in arid areas. It also uses pastures and croplands, especially where drainage is poor. Will also forage at garbage dumps, and is often seen with cattle and other stock. There is no suitable habitat across the assessed areas. No recorded sightings within 10 km. **Likelihood: Unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Diamond Firetail	*Stagonopleura guttata*	nt,L		Occurs in woodlands, and adjacent agricultural land. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, at Boralma, or in the Killawarra. **Likelihood: May be present**
Fork-tailed Swift	*Apus pacificus*		Migratory Marine Species	This non-breeding migrant visitor to Australia mostly occurs over inland plains, but sometimes above foothills or in coastal areas. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. No recorded sightings within 10 km. **Likelihood: May be present**
Freckled Duck	*Stictonetta naevosa*	e,L		Wetland/riparian species**.** No suitable habitat occurs on site. Three sightings within 10 km of the assessed areas; all of these are at the Sewerage Lagoons prior to 1995. **Likelihood: Highly unlikely to be present**
Glossy Ibis	*Plegadis falcinellus*	nt		Wetland/riparian species**.** No suitable habitat occurs on site. Two sightings within 10 km of the assessed areas; these are at Oxley Flats in 1999. **Likelihood: Highly unlikely to be present**
Great Egret	*Ardea alba*	v,L	Migratory Wetland Species	Widespread in Australia occurring in all states/territories of mainland Australia and in Tasmania. In Australia, the largest breeding colonies, and greatest concentrations of breeding colonies, are located in near-coastal regions of the Northern Territory. The Channel Country of south-western Queensland and north-eastern South Australia have at least 12 breeding colonies, and colonies are also known in the Darling Riverine Plains region of NSW and the Riverina region of NSW and Victoria. Has been reported in a wide range of wetland habitats. No suitable habitat occurs on site, and no sightings within 10 km. **Likelihood: Unlikely to be present**
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	e,L		Prefers extensive intact woodlands with significant shrub and litter layers. Assessed area does not contain some suitable habitat, and there is limited connectivity to the known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, near Eldorado or Carragamungee, or in the Killawarra. **Likelihood: Unlikely to be present**
Ground Cuckoo-shrike	*Coracina maxima*	v,L		Found in small population densities throughout the inland parts of Australia. The species inhabits savannah and scrublands of the interior, mulga lands of Western Australia and along the inland rivers of New South Wales, and generally only frequents well structure intact areas which support a diversity of insect fauna, which are its major food source. No such habitat exists on the site, and a lack of connectivity to known habitats. **Likelihood: Unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Growling Grass Frog	*Litoria raniformis*	e, L	V	A once widespread species now known only around Melbourne and SW Victoria. While the some of the adjacent areas may be suitable habitat, it is unlikely the species is now found regionally; last sighted within 10 km in 1964. **Likelihood: Highly unlikely to be present**
Hardhead	*Aythya australis*	v		Found in freshwater swamps and wetlands and occasionally in sheltered estuaries. They are rarely seen on land and tend to roost on low branches and stumps near the water. They prefer deep, fresh open water and densely vegetated wetlands for breeding. No suitable habitat occurs on site. Numerous sightings within 10 km of the assessed areas; these are at the Sewerage Lagoons, Baileys Vineyard and in the Killawarra. **Likelihood: Highly unlikely to be present**
Hooded Robin	*Melanodryas cucullata cucullata*	nt,L		Occurs in intact woodlands, and adjacent agricultural land. They occupy a wide range of Eucalypt woodlands, Acacia shrublands and open forests. In temperate woodlands, the species favours open areas adjoining large woodland blocks, with areas of dead timber and sparse shrub cover. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, near Eldorado, or in the Killawarra. **Likelihood: May be present**
Intermediate Egret	*Ardea intermedia*	e,L		Wetland/riparian species**.** No suitable habitat occurs on site. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, Oxley Flats, or in the Killawarra. **Likelihood: Unlikely to be present**
Lace Monitor	*Varanus varius*	e		A fast-moving species with a large home range utilises open woodlands and forests, and will often forage in adjacent agricultural and even residential land. They eat a wide variety of foods, including carrion. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, near Eldorado, or in the Killawarra. **Likelihood: May be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Latham's Snipe	*Gallinago hardwickii*		Migratory Wetland Species	A non-breeding migrant to the south east of Australia including Tasmania, passing through the north and New Guinea on passage. Are seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture. No suitable habitat occurs on site. Numerous sightings within 10 km of the assessed areas; all of these are at Baileys Vineyard and near Eldorado. **Likelihood: Highly unlikely to be present**
Little Button-quail	*Turnix velox*	nt		The species lives in drier regions, in semi-arid woodlands, mulga and mallee, Spinifex and almost treeless country, in many cases, far from water, where it shelters in grass tussocks. No suitable habitat occurs on-site, and a lack of connectivity to known locations. Three sightings within 10 km prior to 1983; Baileys Vineyard and at Wangaratta South. **Likelihood: Highly unlikely to be present**
Little Egret	*Egretta garzetta nigripes*	e,L		Wetland/riparian species**.** Assessed areas do not contain suitable habitat. **N**umerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, Oxley Flats, or in the Killawarra. **Likelihood: Unlikely to be present**
Painted Honeyeater	*Grantiella picta*	v,L		The Painted Honeyeater is found in dry open forests and woodlands, and is strongly associated with mistletoe. It may also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, or in the Killawarra. **Likelihood: May be present**
Pink-tailed Worm-lizard	*Aprasia parapulchella*	v	V	Occurs in intact high quality and undisturbed grassy woodlands and grasslands. No such habitat occurs on or near the subject site. No records for the species within 10 km of the assessed areas. **Likelihood: Not present**
Powerful Owl	*Ninox strenua*	v, L		Occurs in extensive and contiguous forests and woodlands. No such habitat occurs on the site. Multiple records prior to 1998 of the species within 10 km of site; all within the Warby Ranges, except for one sighting at the golf course in 1995. **Likelihood: Unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Rainbow Bee-eater	*Merops ornatus*		Migratory Terrestrial Species	The Rainbow Bee-eater is found throughout mainland Australia, as well as eastern Indonesia, New Guinea and, rarely, the Solomon Islands. The species is most often found in open forests, woodlands and shrub lands, and cleared areas, usually near water. It will be found on farmland with remnant vegetation and in orchards and vineyards. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. No records within 10 km of the assessed areas, but the species is observed regionally. **Likelihood: May be present**
Red-backed Kingfisher	*Todiramphus pyrropygia pyrropygia*	nt		The species lives in drier regions, in semi-arid woodlands, mulga and mallee, Spinifex and almost treeless country, in many cases, far from water. It is found over most of semi-arid and arid Australia. It hunts from open perches; drops to the ground to take small reptiles or occasional small (mouse-size) mammals or large insects. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Six sightings within 10 km of the assessed areas; nearly all of these are at Baileys Vineyard, or in the Killawarra. **Likelihood: May be present**
Regent Honeyeater	*Anthochaera phrygia*	e	E	Occurs in woodlands, and adjacent agricultural land. Site is suitable habitat, however, a lack of connectivity with current known locations. Numerous sightings within 10 km are all associated with the Warby Ranges and the Killawarra. **Likelihood: Unlikely to be present**
Royal Spoonbill	*Platalea regia*	v		Wetland/riparian species. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Sewerage Ponds and Baileys Vineyard, or at Oxley Flat. **Likelihood: Highly unlikely to be present**
Rufous Fantail	*Rhipidura rufifrons*		Migratory Terrestrial Species	The Rufous Fantail is found in rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground. During migration, it may be found in more open habitats or urban areas. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. No records within 10 km of the assessed areas, but the species is observed regionally. **Likelihood: May be present**
Satin Flycatcher	*Myiagra cyanolecua*		Migratory Terrestrial Species	The Satin Flycatcher is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. It is not a commonly seen species, especially in the far south of its range, where it is a summer breeding migrant. The species is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. Site is not suitable habitat. No records within 10 km of the assessed areas. **Likelihood: Unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Speckled Warbler	*Chthonicola sagittatus*	v, L		Patchy distribution on and inland of the Great Dividing Range, from level with Mackay in Queensland, to the Grampians National Park in Victoria. Lives in dry sclerophyll forests and woodlands dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km are mostly associated with the Warby Ranges and the Killawarra. **Likelihood: May be present**
Spotted Harrier	*Circus assimilis*	nt		Found in mainland Australia and Indonesia. It is widespread but sparsely distributed. Found in open wooded country in tropical and temperate Australia, particularly in arid and semi-arid areas. Assessed areas are not suitable habitat. Five sightings within 10 km are associated with Baileys Vineyard and the Killawarra. **Likelihood: Unlikely to be present**
Spotted Quail-thrush	*Cinclosoma punctatum*	nt		The species lives in permanent territories in the open forest and woodland, and forage entirely on the ground amongst the grass tussocks, logs and rocks. Lightly forested areas on rocky slopes and hillsides are ideal places to find them but they do inhabit a variety of forests with a fairly open understorey. No suitable habitat occurs on the site. The one sighting of the species within 10 km is at Baileys Vineyard over 30 years ago. **Likelihood: Highly unlikely to be present**
Spotted-tail Quoll	*Dasyurus maculatus maculatus*	e, L	E	The Spotted-tail Quoll has a preference for mature wet forest habitat, especially in areas with rainfall 600 mm/year. Unlogged forest or forest that has been less disturbed by timber harvesting is also preferable. In Victoria, the Spotted-tailed Quoll is mainly confined to public land. Locations include the SW, the Macedon Ranges, north and east of Melbourne in the eastern highlands, East Gippsland, and South Gippsland. No suitable habitat occurs on site. The only record of the species within 10 km was in 1959 in the Warby Ranges. **Likelihood: Highly unlikely to be present**
Squirrel Glider	*Petaurus norfolcensis*	e,L		Prefers extensive intact woodlands with significant shrub and litter layers in blocks or along roadsides. No such habitat occurs on or near the site. Three records of the species within 10 km, all around Kaluna Park. **Likelihood: Highly unlikely to be present**
Striped Legless Lizard	*Delma impar*	e,L	V	Occurs in intact high quality grassy woodlands and grasslands. No such habitat occurs on or near the site. No record of the species within 10 km of the site or at district level. **Likelihood: Highly unlikely to be present**

Common Name	Scientific name	Conservation Status (Vic)[1]	Conservation Status (Comm)[2]	Likelihood of Occurrence[3]
Superb Parrot	*Polytelis swainsonii*	e,L	V	Occurs in riparian woodlands and forest, and adjacent woodlands and agricultural land. Observed only once within 10 km - at One Mile Creek in 2000. **Likelihood: Unlikely to be present**
Swift Parrot	*Lathamus discolor*	e, L	E	Occurs in extensive riparian forests and woodlands, and adjacent agricultural land. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, One Mile Creek, or in the Killawarra. **Likelihood: May be present**
Turquoise Parrot	*Neophema pulchella*	nt,L		Occurs in extensive riparian forests and woodlands, and adjacent agricultural land. The adjacent creek area may contain some suitable habitat, and there is some connectivity to known locations. Numerous sightings within 10 km of the assessed areas; nearly all of these are associated with the Warby Ranges, Baileys Vineyard, or in the Killawarra. **Likelihood: May be present**
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	v,L	Migratory Terrestrial Species	Occurs in extensive quality wetlands and riparian woodlands, and adjacent agricultural land. The assessed area is not suitable habitat,. Numerous sightings within 10 km of the assessed areas; these are at the Sewerage Lagoons, Baileys Vineyard and at Bowser. **Likelihood: Unlikely to be present**
White-throated Needletail	*Hirundapus caudacutus*	v,L	Migratory Terrestrial Species	Often occur in large numbers over eastern and northern Australia. Aerial birds and for a time it was commonly believed that they did not land while in Australia. Feeds on flying insects, such as termites, ants, beetles and flies, often over water. The assessed area is not suitable habitat. Numerous sightings within 10 km of the assessed areas; these are in the Warby Ranges and the Killawarra, Baileys and Brown Brothers Vineyards and in the vicinity of the Ovens and King Rivers. **Likelihood: Unlikely to be present**
Woodland Blind Snake	*Ramphotyphlops proximus*	nt		This species is nocturnal and they usually burrow through the soil, although they may be seen moving on the surface on warm humid nights. They are found in loamy soils, under rocks, in or under rotting logs or in ant or termite nests, in intact high quality and undisturbed grassy woodlands and grasslands. No such habitat occurs on or near the subject site. The five records within 10 km of the site are all within the Warby Ranges. **Likelihood: Not present**

1. ce = critically endangered in Victoria; e = endangered in Victoria; v = vulnerable in Victoria; r = rare in Victoria; e = endangered in Victoria; n = near threatened in Victoria; L = listed under the FFG Act in Victoria (from DSE 2009 and 2013).
2. E = endangered nationally; V = vulnerable nationally (DAWE 2020);
3. Habitat descriptions for species obtained from DAWE (2020), Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998).

APPENDIX F SCENARIO-TEST NATIVE VEGETATION REMOVAL REPORT (DELWP) 9TH JUNE 2020

Scenario test – native vegetation removal

This report provides offset requirements for internal testing of different proposals to remove native vegetation. **This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: **09/06/2020**
Time of issue: **11:10 pm**

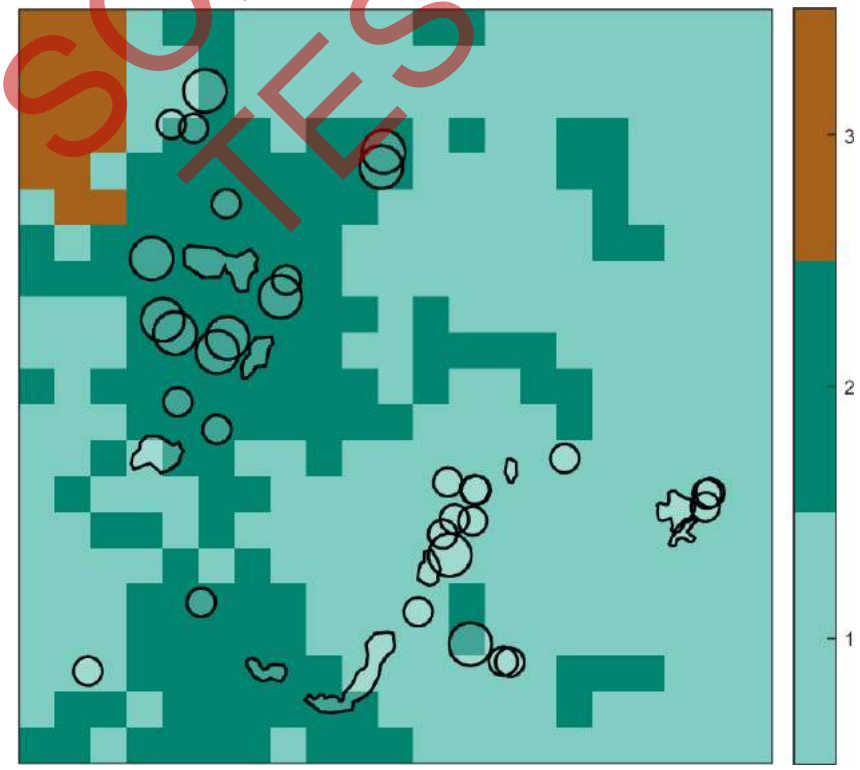
Report ID: Scenario Testing

Project ID	Lindner_Road_Wangaratta_GDA94_P1A&B

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	1.581 ha
Extent of past removal	0.000 ha
Extent of proposed removal	1.581 ha
No. Large trees proposed to be removed	15
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



Scenario test – native vegetation removal

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]	0.401 general habitat units
Vicinity	North East Catchment Management Authority (CMA) or Wangaratta Rural City Council
Minimum strategic biodiversity value score[2]	0.509
Large trees	15 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

Scenario test – native vegetation removal

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.

If you wish to remove the mapped native vegetation you must submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to ensymnvrtool.support@delwp.vic.gov.au. DELWP will provide a *Native vegetation removal report* that is required to meet the permit application requirements in accordance with *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines).

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (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**
1-B	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.070	0.710		0.018	General
2-B	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.051	0.710		0.013	General
3-B	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.051	0.710		0.013	General
4-B	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.030	0.710		0.008	General
32-B	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.030	0.710		0.008	General
43-D	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.070	0.710		0.018	General
56-B	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.013	0.710		0.003	General
57-B	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.070	0.710		0.018	General

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
53-D	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.054	0.710		0.014	General
52-D	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.054	0.710		0.014	General
50-D	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.053	0.710		0.014	General
51-D	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.053	0.710		0.014	General
65-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.710		0.008	General
33-B	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.710		0.008	General
64-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.716		0.008	General
47-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.790		0.008	General
48-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.740		0.008	General
69-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.790		0.008	General
66-C	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.070	0.340		0.014	General
78-C	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.070	0.063	0.530		0.014	General
75-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.015	0.748		0.004	General
76-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.024	0.458		0.005	General
77-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.027	0.340		0.006	General

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
79-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.595		0.007	General
80-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.017	0.340		0.003	General
81-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.017	0.340		0.003	General
67-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.020	0.340		0.004	General
68-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.020	0.340		0.004	General
55-B	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.340		0.006	General
27-D	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.023	0.340		0.005	General
98-C	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.012	0.340		0.002	General
29-D	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.017	0.340		0.003	General
1-A	Patch	vriv0803	Endangered	3	no	0.270	0.094	0.094	0.710		0.032	General
2-A	Patch	vriv0803	Endangered	0	no	0.200	0.035	0.035	0.710		0.009	General
3-A	Patch	vriv0803	Endangered	1	no	0.250	0.061	0.061	0.785		0.021	General
4-A	Patch	vriv0803	Endangered	0	no	0.200	0.027	0.027	0.790		0.007	General
5-A	Patch	vriv0803	Endangered	0	no	0.200	0.099	0.099	0.790		0.027	General
6-A	Patch	vriv0803	Endangered	0	no	0.200	0.026	0.026	0.790		0.007	General
7-A	Patch	vriv0803	Endangered	0	no	0.200	0.010	0.010	0.340		0.002	General
8-A	Patch	vriv0803	Endangered	0	no	0.200	0.041	0.041	0.340		0.008	General
9-A	Patch	vriv0803	Endangered	0	no	0.200	0.014	0.014	0.340		0.003	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Mueller Daisy	*Brachyscome muelleroides*	500465	Endangered	Dispersed	Habitat importance map	0.0003
Yarran Wattle	*Acacia omalophylla*	500069	Endangered	Dispersed	Habitat importance map	0.0001
Western Silver Wattle	*Acacia decora*	500027	Vulnerable	Dispersed	Habitat importance map	0.0001
Superb Parrot	*Polytelis swainsonii*	10277	Endangered	Dispersed	Habitat importance map	0.0001
Narrow Goodenia	*Goodenia macbarronii*	501513	Vulnerable	Dispersed	Habitat importance map	0.0001
Northern Sandalwood	*Santalum lanceolatum*	503005	Endangered	Dispersed	Habitat importance map	0.0001
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0001
Squirrel Glider	*Petaurus norfolcensis*	11137	Endangered	Dispersed	Habitat importance map	0.0001
Deane's Wattle	*Acacia deanei subsp. paucijuga*	504201	Rare	Dispersed	Habitat importance map	0.0001
Dookie Daisy	*Brachyscome gracilis*	505494	Vulnerable	Dispersed	Habitat importance map	0.0001
Grey Falcon	*Falco hypoleucos*	10236	Endangered	Dispersed	Habitat importance map	0.0000
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0000
Umbrella Grass	*Digitaria divaricatissima var. divaricatissima*	501045	Vulnerable	Dispersed	Habitat importance map	0.0000
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0000
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0000
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0000
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0000
Dense Mint-bush	*Prostanthera decussata*	502739	Rare	Dispersed	Habitat importance map	0.0000

Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0000
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0000
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0000
Rough-grain Love-grass	*Eragrostis trachycarpa*	501197	Rare	Dispersed	Habitat importance map	0.0000
Buloke Mistletoe	*Amyema linophylla subsp. orientalis*	500217	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0000
Veiled Fringe-sedge	*Fimbristylis velata*	501369	Rare	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	507229	Endangered	Dispersed	Habitat importance map	0.0000
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

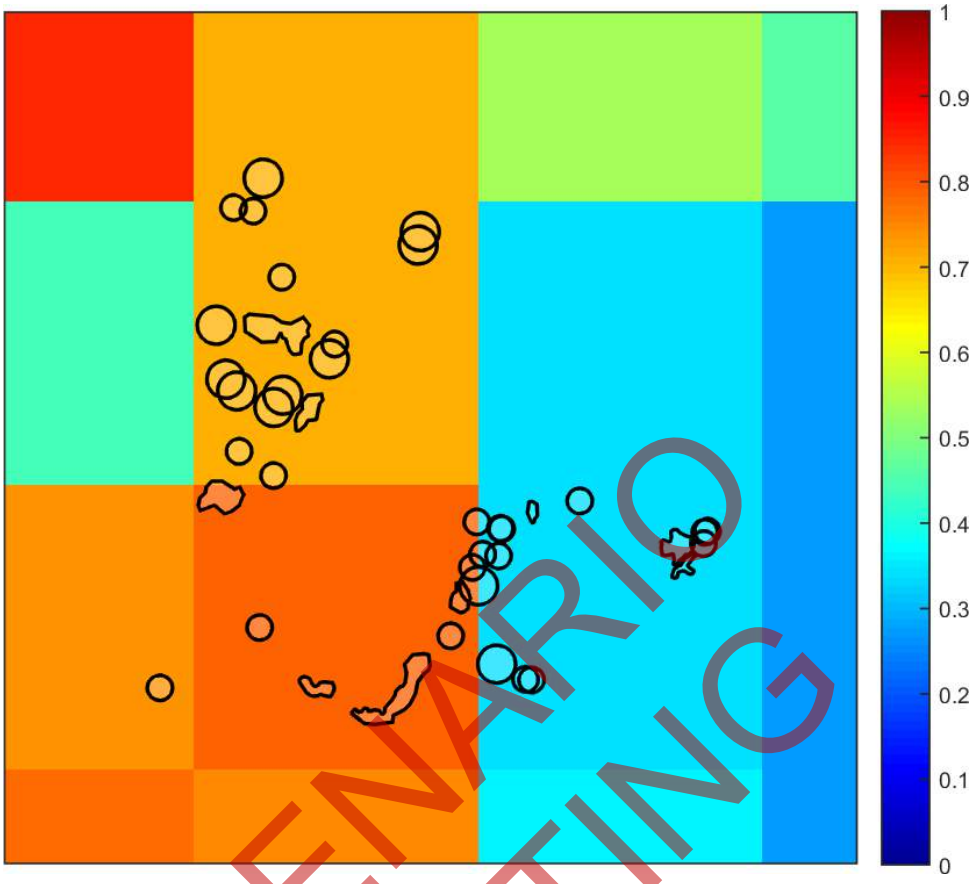
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



SCENARIO TESTING

RMCG

MAY 2020

Preliminary Soil Contamination Assessment

Wangaratta North West Growth Area

Precincts 1A, 1B and 6

Final Report

North East Survey Design

135 Mollison Street, Bendigo Victoria 3550
rmcg.com.au — ABN 73 613 135 247 — RM Consulting Group Pty Ltd
Victoria — Tasmania — ACT — NSW

Table of Contents

1 Introduction **1**

1.1 BACKGROUND 1

1.2 PURPOSE AND OBJECTIVES 2

1.3 APPROACH 2

1.4 ADHERENCE TO GUIDELINES 3

2 Location and Setting **4**

3 Land Use and Infrastructure **5**

3.1 AERIAL PHOTOGRAPHY 5

3.2 DATABASE SEARCHES 5

3.3 SITE INSPECTION 5

3.4 LANDHOLDER/TENANT DISCUSSIONS 7

4 Physical Characteristics **8**

4.1 SOIL DESCRIPTION 8

4.2 TOPOGRAPHY AND DRAINAGE 8

4.3 GROUNDWATER 9

5 Conclusions and Recommendations **10**

5.1 LIMITED ASSESSMENT ONLY 10

5.2 POTENTIAL FOR CONTAMINATION 10

5.3 PHYSICAL CHARACTERISTICS 10

Appendix 1: Site visit points of interest **11**

Appendix 2: Lotsearch results **12**

1 Introduction

1.1 BACKGROUND

The Rural City of Wangaratta has rezoned farmland on the outskirts of Wangaratta to provide for residential development.

Landowners are required to get a Development Plan approved to enable subdivision. The Development Plan Overlay includes the requirement for:

> *A preliminary soil assessment/site history report identifying any substantial hazards or contamination on the land and proposed treatments. Should the preliminary assessment find any substantial contamination, the need for an audit may follow.*

The specific area of interest is shown in Figure 1-1 below. This includes identification of precincts, as Development Plans must be prepared for a group of landholdings as represented by these precincts.

This report is specific to Precincts 1A, 1B and 6.

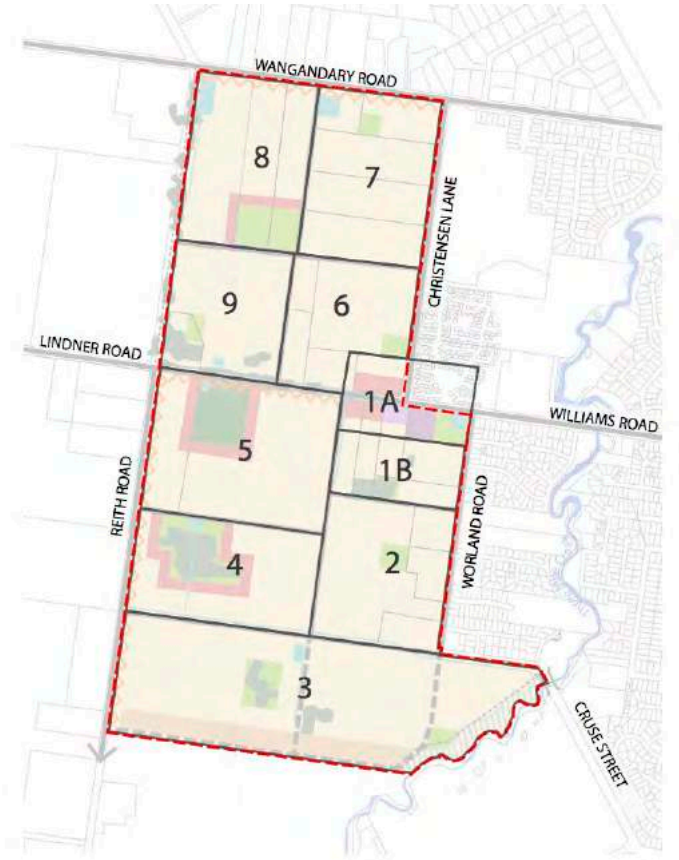


Figure 1-1: Development Plan Precincts

1.2 PURPOSE AND OBJECTIVES

This report outlines the findings from a preliminary site investigation. The purpose is to determine if there is potential for land contamination.

As outlined in Australian Standard 4482:2005, a preliminary site investigation is:

> *The collection and assessment of information derived from records of its previous use and a site inspection. The purpose is to:*
>
> 1. *produce evidence through an investigation to indicate whether a site is potentially contaminated; and*
> 2. *determine whether a detailed site investigation should be conducted.*
>
> *The objectives of the preliminary study should be to determine:*
>
> - *whether there has been potentially contaminating land use;*
> - *the nature of probable contaminants; and*
> - *the possible locations of contamination.*

1.3 APPROACH

1.3.1 DESKTOP ANALYSIS

Historical land use information was obtained to determine if potentially contaminating activities may have occurred. Physical site features were also assessed to consider likely fate of contaminants (if any).

Information was obtained through purchase of a Lotsearch report. This provides search outcomes from multiple databases and is provided for reference as Appendix 2. It includes the following information:

- Historical aerial photographs
- Topographical information
- Findings from EPA searches
  - EPA Priority Sites and Pollution Notices
  - PFAS Investigation Sites
  - EPA Audit Reports and GQRUZ
  - EPA Licensed Activities and Works Approvals
  - Waste Management Facilities and Landfills
  - Former Gasworks
- Historical business activities, heritage, historical mining activities
- Geology and hydrogeological information
- Planning zones.

RMCG also obtained publicly available information on soils, surface water and groundwater.

1.3.2 SITE INVESTIGATION

A site inspection was undertaken by RMCG on 9 April 2020. Telephone discussions also occurred with a selection of landholders and tenants, to understand history of land use.

The key aim of the site investigation was to identify potential contamination sources or visible evidence of contamination, particularly focusing on:

- Identifying exposed soil and noting, where present, visual evidence of potential contamination (e.g. odour, staining, discolouration)
- Identifying evidence of current or former sources of potential contamination including:
  - Facilities for waste disposal or contamination
  - Infrastructure involving the use of chemicals or fuels
  - Chemical and fuel storage facilities
  - Potentially contaminating production processes.
- Identifying evidence of site cutting, filling or subsidence and the associated potential for importation of fill material
- Identifying evidence of chemical or fuel spills, accidents, fire events, surface staining, surface scarring or stressed vegetation
- Identifying evidence of groundwater and surface water occurrence, groundwater seepage and water movement (drainage ditches)
- Identifying evidence of quarrying, mining, land filling or other bulk earthmoving activities.

1.4 ADHERENCE TO GUIDELINES

The preliminary investigation was undertaken in line with relevant guidelines, including:

- Department of Sustainability and Environment (2005) *Potentially Contaminated Land General Practice Note*
- Australian Standard 4482:2005, *Guide to sampling and investigation of potentially contaminated soil*. Part 1 – Non-volatile and semi-volatile compounds.
- Schedule B1 of the National Environment Protection (Assessment of Site Contamination) Measure 1999, *Guideline on Investigation Levels for Soil and Groundwater*, as amended May 2013

2 Location and Setting

The site comprises Precincts 1A, 1B and 6 within the Wangaratta North West Growth Area. The site incorporates a number of parcels as identified on the map below.

Lindner Rd runs through the site. Christensen Lane and Worland Rd make up the eastern boundary. The northern, western and southern boundaries adjoin private property within other precincts of the Growth Area.

Figure 2-1 displays the site boundary, and internal parcel boundaries, overlaid on an aerial photo.

Figure 2-1: Aerial image and parcels (from Lotsearch report)

3 Land Use and Infrastructure

3.1 AERIAL PHOTOGRAPHY

Based on an analysis of aerial photography from 1949 to 2019 (refer to Appendix 2) the following key changes have taken place at the site:

- Land use was originally open farmland, presumably for grazing. No houses or sheds were identified in the 1949 image. The dam in the north-west (in Lot A/PS347547) was present in 1949 and remains today.
- By 1971, use of the land for residential purposes had begun. At least four houses can be identified, along with some sheds. The large dam on the eastern boundary of Lot 3/PS333975 had been constructed. The shed on the corner of Lindner Rd and Worland Rd (Lot 4/LP41832) is also present. Additional houses do not appear until the 2003 image.
- Within Lot 4/LP41832, a small shed (possibly horse shelter) is present in images from 2003 and 2011, but has since been removed. The site inspection identified some bare ground with iron protruding at approximately this location.
- A shed is also present in the 1991 image to the north of the dam in Lot A/PS347547. The site inspection identified shed ruins in this area. This may have been for feed storage or possibly a pump shed.
- Some of the aerial images, provide indication of low-lying areas. In the north west the dam in Lot A/PS347547 is on the edge of a relatively large depression that appears to cover most of the neighbouring Precinct 9. The south-west of the site (parts of Lots 1/LP41832, 2/LP41832 and 6/LP41832) also appears to be a depression.

3.2 DATABASE SEARCHES

EPA database searches have been completed for the site (refer to Appendix 2). The site has not been identified in any of the database searches to be associated with activities that are likely to cause contamination.

[While not relevant to the specific site being investigated, note that an EPA Pollution Notice was identified for Lot 2/PS544632B, which is in the south-east corner of Precinct 2. Notice NO5859 was issued in 2006 in relation to Industrial Waste having been dumped. The response required was assessment and/or clean up.]

An Historical Business Directory search revealed a 1991 record of a Motor Garage and Service Station in Christensen Lane. The precise address was not available. This was considered further during the site inspection and landholder/tenant discussions (refer below) – no evidence of this type of land use was identified.

3.3 SITE INSPECTION

The site inspection revealed the following details. A map with key points of interest is attached as Appendix 1.

- A number of the parcels appear to be used for horse grazing, with sheds in place for stabling and associated storage.
- Groundcover varied according to grazing pressure, with a mix of rye grass and cape weed. In some paddocks the cover was relatively sparse and appeared over-grazed – given recent dry climatic conditions, this is not surprising.
- A few small bare patches of earth were identified. These appear to be the result of bonfire activity, vehicular traffic, or prior shed sites.
- Bricks and rubble have been used to build up a gateway area at the south-east corner of Lot 3/LP41832 (Figure 3-1). Corrugated iron, steel pickets, old tyres and building rubble were identified in Lot 4/LP41832

(Figure 3-2), and the remains of a shed – timber, corrugated iron and steel pickets – were identified to the north of the dam in Lot A/PS347547.

- A low-lying swampy area is present in the south-west as shown in Figure 3-3 and Figure 3-4. At the time of the site visit water was present in this area. Approximately 40mm of rainfall occurred in the week preceding the site visit and there was 80mm of rain in the first week of March[1]. The low-lying area extends across parts of Lots 1/LP41832, 2/LP41832 and 6/LP41832. It appears to be a natural depression and is obvious in early aerial imagery.
- Slight depressions traverse Lot 3/PS333975 feeding the dam on its eastern boundary. It is presumed that these were constructed to enhance natural drainage.
- All dams appear to have been constructed from in-situ material – i.e. soil excavated on-site and used to form dam banks.
- A steel pipe was identified along the ground surface in Lot 4/LP41832 and a concrete stock drinking trough was identified in Lot 5/LP41832. There are no significant dams nearby, so this may indicate presence of a bore water supply, or they could be connected to town supply.
- A windmill is in place in Lot A/PS347547, to the east of the dam. It appears there is a well beneath. This is shown in Figure 3-5.
- The shed on the corner of Lindner Rd and Worland Rd appears to be in use by a building contractor based on signage.
- The sheds in the centre of Lot 3/PS333975 appear to be in use for engineering type activities. There are metal stockpiles as shown in Figure 3-6. There does not appear to be any bulk storage of fuel or chemicals. A Google search identified GNS Engineering at this address and their website indicates they supply SprayerMate products and associated trailers.
- The sheds within Lot 2/PS333975 may be used for truck parking. The property owners run Solimo Towing and may store vehicles on site. There is no evidence of bulk fuel storage.
- There is a small orchard in place behind the shed in Lot 1/PS333975. This is overgrown and appears unused.
- There is a large pile of rubbish to the north of Lindner Rd (within Lot 2/PS333975). It appears that this is planned for burning. It is mostly tree branches, with some timber and cardboard.

Figure 3-1: Bricks used to build up gateway area

Figure 3-2: Building rubble

[1] Based on Bureau of Meteorology daily weather observations for Wangaratta. http://www.bom.gov.au/climate/dwo/IDCJDW3081.latest.shtml

Figure 3-3: Low-lying area in south-west – image 1

Figure 3-4: Low-lying area in south-west – image 2

Figure 3-5: Windmill

Figure 3-6: Metal stockpiled in 3/PS333975

3.4 LANDHOLDER/TENANT DISCUSSIONS

Telephone discussions occurred with landholders and tenants prior to the site visit. These did not reveal any information indicating potential for contamination.

Follow up conversations occurred in relation to Lot 2/PS333975 and Lot 3/PS333975. Notes from these are as follows:

- The large shed on Lot 2/PS333975 is used for vehicular parking and storage. The owner/occupier confirmed that there is no bulk storage of fuel or chemicals on the site.
- Both the landlord and the tenant confirmed that there is no bulk storage of fuel or chemicals on Lot 3/PS333975. The tenant runs GNS Engineering and undertakes engineering, welding type activities on the site.

4 Physical Characteristics

4.1 SOIL DESCRIPTION

Soil mapping is available for the site at a scale of 1:100,000. This is from the *Land Resource Assessment for the North East Catchment Management Authority Region*[2].

The following table provides a summary of the land unit and soil types identified in this regional mapping.

Table 4-1: Soil descriptions

LAND UNIT	SOIL TYPES	DETAILS
ALP2: [Older] Alluvial plain associated with the Ovens River	Brown Sodosol Black Vertosols	Land element: Plain, Drainage depression or swamp Slope: <1% Rock Outcrop: Nil Soil description: ▪ ALP2_1: Brown texture contrast soils, some (minor occurrences) with bleached A2 horizons. Moderately acidic, sodic and dispersive. Shallow topsoils over medium heavy clays. ▪ ALP2_2: Black or grey cracking clay soils. Moderately acidic. Light clay shallow topsoil over medium clay. Grey clay loam at depth (>1m). Shrink and swell during wetting and drying cycles. Site drainage: Poorly or Very poorly drained

The site assessment confirmed the presence of the brown sodosols, which are expected to be the dominant soil type. The black vertosols are expected to occur only in the low lying swampy areas.

The poor soil drainage was evident in the site visit – rain had occurred approximately a week prior and pooled water remained in many places.

The soils indicate two things in relation to potential for land contamination:

- Soil type is not conducive to intensive agricultural uses, such as market gardening that has a medium potential for contamination
- The clay subsoils would limit downward movement of many contaminants.

4.2 TOPOGRAPHY AND DRAINAGE

The site is relatively flat. Surface elevation ranges from approximately 146 to 150 mAHD. The average slope across the site is approximately 1%.

The land slopes generally towards the north and east, towards Three Mile Creek and eventually the Ovens River. The Three Mile Creek is a regional priority waterway and is in moderate condition[3].

[2] North East Catchment Authority Region, November 2002, Land resource Assessment for the North East Catchment Management Authority Region, CLPR Research Report No. 17.

[3] Index of Stream Condition: The Third Benchmark of Victorian River Condition, https://www.water.vic.gov.au/water-reporting/third-index-of-stream-condition-report

There are three local stock and domestic dams within the site, all to the north of Lindner Road. There is also a low-lying swampy area in the south-west of the site (as discussed previously – refer to Figure 3-3).

Given the wet conditions noted during the site visit, nearly a week after rainfall had occurred, movement of surface runoff is expected to be relatively slow. Any contaminants picked up in runoff are most likely to end up in the local dams or depressions.

4.3 GROUNDWATER

The site is located within the Lower Ovens Groundwater Management Area. A Permissible Consumptive Volume (PCV) of 25,200 ML/yr applies to groundwater at any depth within this management area[4]. Licensed volume totalled 19,875 ML in 2018/19[5].

Depth to the watertable is mapped within the range 10 – 20 m, and is characterised by a salinity of <500 mg/L TDS[6]. Given the high quality of the groundwater, all potential beneficial uses need to be protected – including use for drinking water.

The watertable aquifer is part of the Shepparton Formation and is typically composed of silt and clays with minor zones of gravel and sand that form localised aquifers – including the Laceby Gravel sub-unit which is associated with the alluvial floodplain of the Lower Ovens River and is the source of most groundwater use in the area.

The following groundwater bores were identified at the site:

- One registered groundwater bore (Bore 99461) is located within parcel 1/LP41832. Registered use is domestic. There are no further details (e.g. depth) available.
- A windmill was identified in A/PS347547, to the east of the dam. It appears there is a well beneath.

Depth to the watertable, combined with the clay subsoils, limits potential for any contaminants to reach groundwater.

4 August 2012, Goulburn-Murray Water, Lower Ovens GMA Local Management Plan
5 Lower Ovens GMA Annual Newsletter 2019
6 Groundwater Resource Report from www.water.vic.gov.au/groundwater/groundwater-resource-reports

5 Conclusions and Recommendations

5.1 LIMITED ASSESSMENT ONLY

This report has been prepared based on the outcomes of a preliminary assessment of the site. The report is representative of the site at the time of the site visit (April 2020) and based on the information obtained via desktop assessment and the site inspection.

5.2 POTENTIAL FOR CONTAMINATION

There are no land uses (current or historic) identified that indicate high or medium potential for contamination (based on the list in the *Potentially Contaminated Land General Practice Note*, DSE 2005).

Desktop analysis and the site inspection revealed that most sites are used for grazing of animals, particularly horses, and for rural residential purposes. There are a few sheds used to support commercial activities, including:

- Engineering activities within Lot 3/PS333975
- Vehicle (including truck) parking within Lot 2/PS333975
- Storage for a building contractor on Lot 4/LP41832

There is no evidence of bulk fuel or chemical storage.

Our conclusion is that there is low potential for contamination and therefore there is no need for further investigations or audit of the site.

Note in addition:

- There is hard waste in various locations across the site, that will require removal and appropriate disposal/recycling.
- The well in Lot A/PS347547 (identified by the windmill) should be capped prior to site development.

5.3 PHYSICAL CHARACTERISTICS

The clay subsoils, combined with relatively flat topography, mean that there would be slow movement of contaminants (if any) – they would most likely remain within the topsoils, or in the local dams or drainage depressions.

Appendix 1: Site visit points of interest

SITE MAP

Precincts 1A, 1B & 6, Wangaratta North West Growth Area

Prepared by: KR
Checked by: AK
Date: 5/05/2020
Version No.: 2
Job Number: #781

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55
Imagery: Vicmap Basemap Aerial

RMCG

Legend

- Site Boundary
- Internal Parcel Boundary

Appendix 2: Lotsearch results

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Address: Lindner Road, Wangandary, VIC 3678

Date: 02 Apr 2020 17:49:15

Reference: LS011860 EP

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features in Buffer
Topographic and Cadastre data	State Government Victoria - Department of Environment, Land, Water & Planning	20/03/2020	20/03/2020	Monthly	-	-	-	-
Current EPA Priority Sites	Environment Protection Authority (Vic)	18/03/2020	18/03/2020	Monthly	1000	0	0	0
Former EPA Priority Sites & other Remedial Notices	Environment Protection Authority (Vic)	04/11/2019	04/11/2019	Monthly	1000	0	0	1
EPA PFAS Site Investigations	Environment Protection Authority (Vic)	20/03/2020	10/10/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	12/02/2020	12/02/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	12/02/2020	12/02/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	20/03/2020	20/03/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	04/03/2020	04/03/2020	Monthly	2000	0	0	0
EPA Environmental Audit Reports	Environment Protection Authority (Vic)	03/03/2020	03/03/2020	Monthly	1000	0	0	0
EPA Groundwater Zones with Restricted Uses	Environment Protection Authority (Vic)	03/03/2020	03/03/2020	Monthly	1000	0	0	0
Current EPA Licensed Activities	Environment Protection Authority (Vic)	18/03/2020	18/03/2020	Monthly	1000	0	0	0
Former EPA Licensed Activities	Environment Protection Authority (Vic)	18/03/2020	18/03/2020	Monthly	1000	0	0	0
EPA Works Approvals	Environment Protection Authority (Vic)	20/03/2020	20/03/2020	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/02/2020	07/03/2017	Quarterly	1000	0	0	0
Statewide Waste and Resource Recovery Infrastructure Plan Facilities	State Government Victoria - Department of Sustainability	27/11/2014	31/12/2012	None planned	1000	0	0	0
EPA Prescribed Industrial Waste	Environment Protection Authority (Vic)	31/07/2019	31/07/2019	Quarterly	1000	0	0	0
EPA Victorian Landfill Register	Environment Protection Authority (Vic)	07/01/2020	06/01/2020	Quarterly	1000	0	0	0
Former Gasworks	Various historical sources collated by Lotsearch	15/08/2017	15/08/2017	Not required	1000	0	0	0
National Liquid Fuels	Geoscience Australia	05/02/2020	15/03/2012	Quarterly	1000	0	0	0
Historical Business Directories (Premise & Intersection Matches)	Hardie Grant; Sands & McDougall, State Library Victoria			Not required	150	0	1	2
Historical Business Directories (Road & Area Matches)	Hardie Grant; Sands & McDougall, State Library Victoria			Not required	150	-	13	13
Historical Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant; Sands & McDougall, State Library Victoria			Not required	500	0	0	0
Historical Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant; Sands & McDougall, State Library Victoria			Not required	500	-	0	0
Features of Interest	State Government Victoria - Department of Environment, Land, Water & Planning	05/02/2020	05/02/2020	Quarterly	1000	0	3	31
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	2	2	2
Groundwater Salinity	State Government Victoria - Department of Environment, Land, Water & Planning	14/08/2015	29/08/2012	Unknown	0	1	-	-
Depth to Watertable	State Government Victoria - Department of Environment, Land, Water & Planning	14/08/2015	29/08/2012	Unknown	0	1	-	-

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features in Buffer
Surface Elevation	State Government Victoria - Department of Environment, Land, Water & Planning	14/08/2015	23/09/2013	Unknown	0	1	-	-
Basement Elevation	State Government Victoria - Department of Environment, Land, Water & Planning	14/08/2015	23/09/2013	Unknown	0	1	-	-
Groundwater Boreholes WMIS	State Government Victoria - Department of Environment, Land, Water & Planning	20/03/2020	20/03/2020	Quarterly	2000	1	2	292
Groundwater Boreholes Earth Resources Database	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	27/07/2018	17/02/2010	As required	2000	0	0	132
Groundwater Boreholes Fed Uni	Federation University Australia	21/12/2017	07/01/2014	As required	2000	0	0	0
Historical Mining Activity - Shafts	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	18/10/2018	20/07/2018	As required	1000	0	0	0
Geological Units 1:250,000	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	13/01/2015	24/06/2014	Unknown	1000	1	-	1
Geological Structures 1:250,000	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	13/01/2015	24/06/2014	Unknown	1000	0	-	0
Shear zones 250k	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	13/01/2015	24/06/2014	Unknown	1000	0	-	0
Atlas of Australian Soils	ABARES	19/05/2017	17/02/2011	As required	1000	1	1	1
Victorian Soil Type Mapping	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	24/08/2017	21/03/2016	Unknown	1000	1	2	2
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
Coastal Acid Sulfate Soils	State Government Victoria - Department of Economic Development, Jobs, Transport and Resources	28/03/2017	30/03/2011	None planned	1000	0	0	0
Planning Scheme Zones	State Government Victoria - Department of Environment, Land, Water & Planning	17/03/2020	11/03/2020	Monthly	1000	2	2	18
Planning Scheme Overlay	State Government Victoria - Department of Environment, Land, Water & Planning	17/03/2020	11/03/2020	Monthly	1000	4	5	26
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	04/02/2020	31/07/2018	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	04/02/2020	20/11/2019	Quarterly	1000	0	0	0
Victorian Heritage Register	State Government Victoria - Department of Environment, Land, Water & Planning	04/02/2020	04/02/2020	Quarterly	1000	0	0	0
Cultural Heritage Sensitivity	State Government Victoria - Department of Premier and Cabinet	12/02/2020	12/02/2020	Quarterly	1000	0	1	13
Bushfire Prone Area	State Government Victoria - Department of Transport, Planning and Local Infrastructure	07/01/2020	10/09/2019	Quarterly	1000	1	1	1
Fire History	State Government Victoria - Department of Environment, Land, Water & Planning	05/02/2020	31/08/2019	Quarterly	1000	0	0	0
Flood - 1 in 100 Year Modelled Flood Extent	State Government Victoria - Department of Environment, Land, Water & Planning	05/02/2020	31/12/2014	Quarterly	1000	0	0	1
Victorian Coastal Inundation Sea Level Rise	State Government Victoria - Department of Environment, Land, Water & Planning	10/04/2018	24/10/2017	Unknown	1000	0	0	0
Native Vegetation (Modelled 2005 Ecological Vegetation Classes)	State Government Victoria - Department of Environment, Land, Water & Planning	13/01/2015	31/12/2005	None planned	1000	1	1	2
Ramsar Wetland Areas in Victoria	State Government Victoria - Department of Environment, Land, Water & Planning	28/03/2017	24/06/2013	None planned	1000	0	0	0
Groundwater Dependent Ecosystems Atlas	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	2	2	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	4	5	6

Site Diagram

Lindner Road, Wangandary, VIC 3678

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 313814m²

Total Perimeter: 2841m

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

Where there are multiple lots of the same plan and parcel, a single label will be shown with an asterisk in front. Please use Lassi to verify which specific lots are associated with this parcel.

Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Scale: 0 25 50 100 150 200 Meters

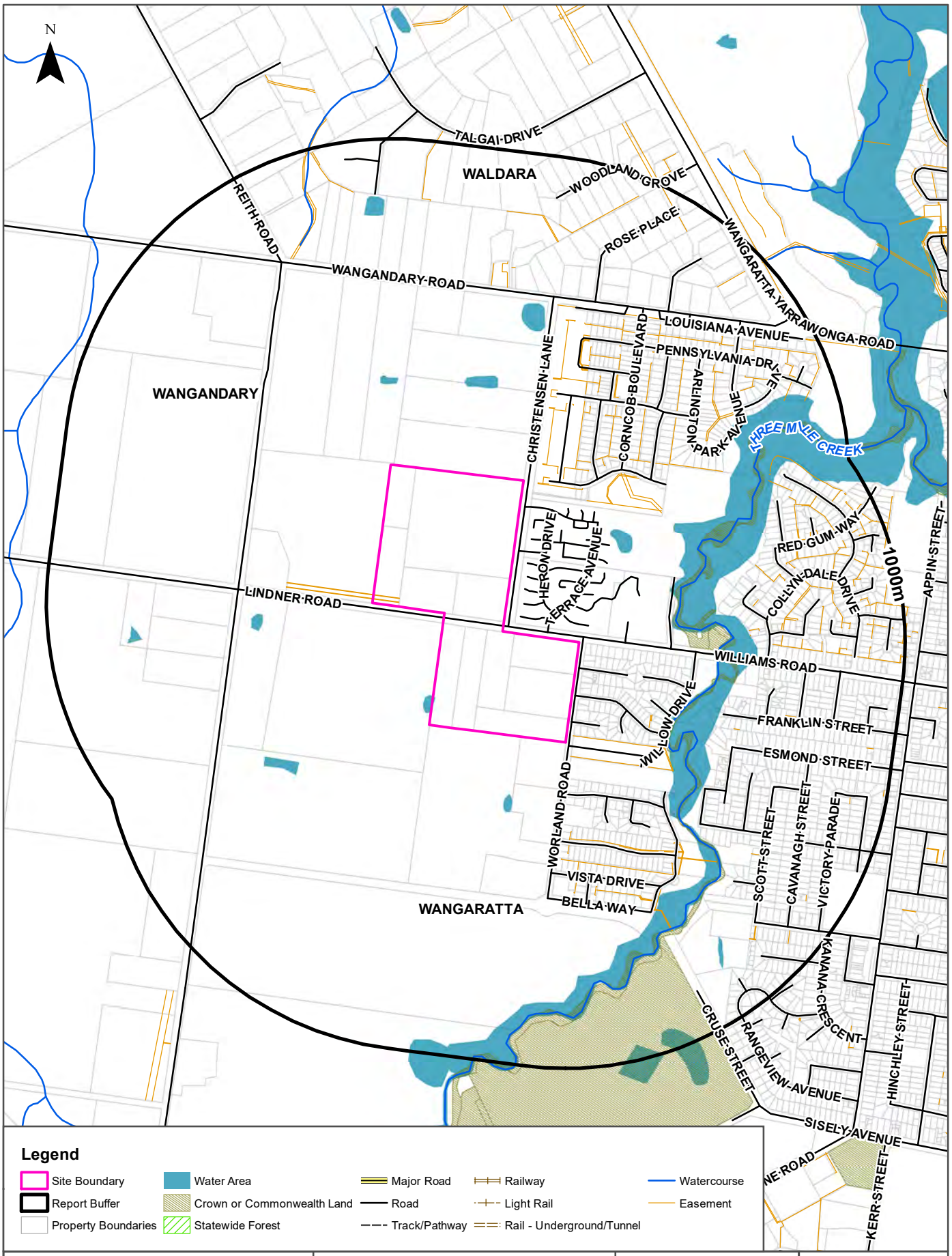
Data Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS UserCommunity

Coordinate System: GDA 1994 MGA Zone 55

Date: 02 April 2020

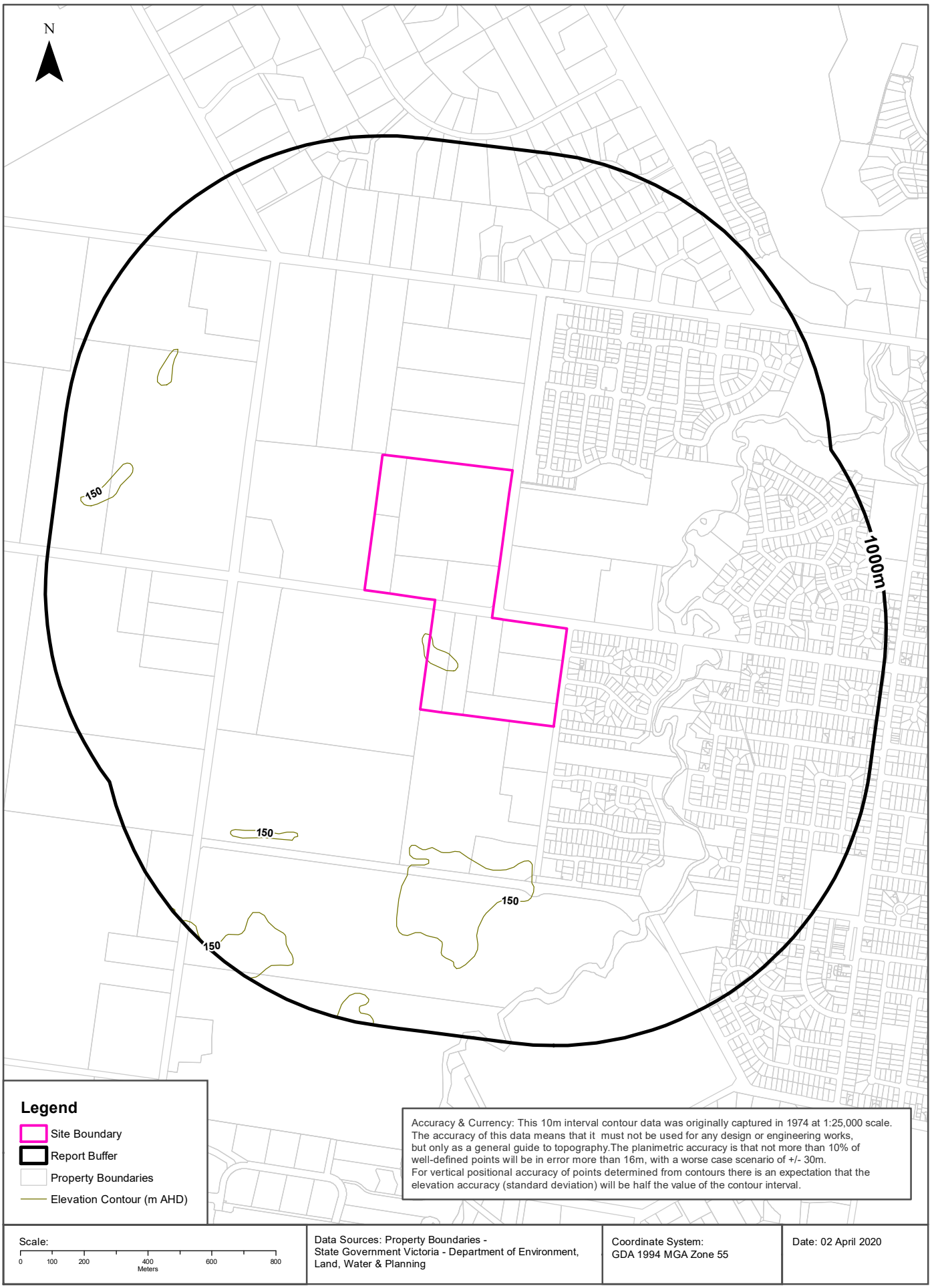
Topographic Data

Lindner Road, Wangandary, VIC 3678



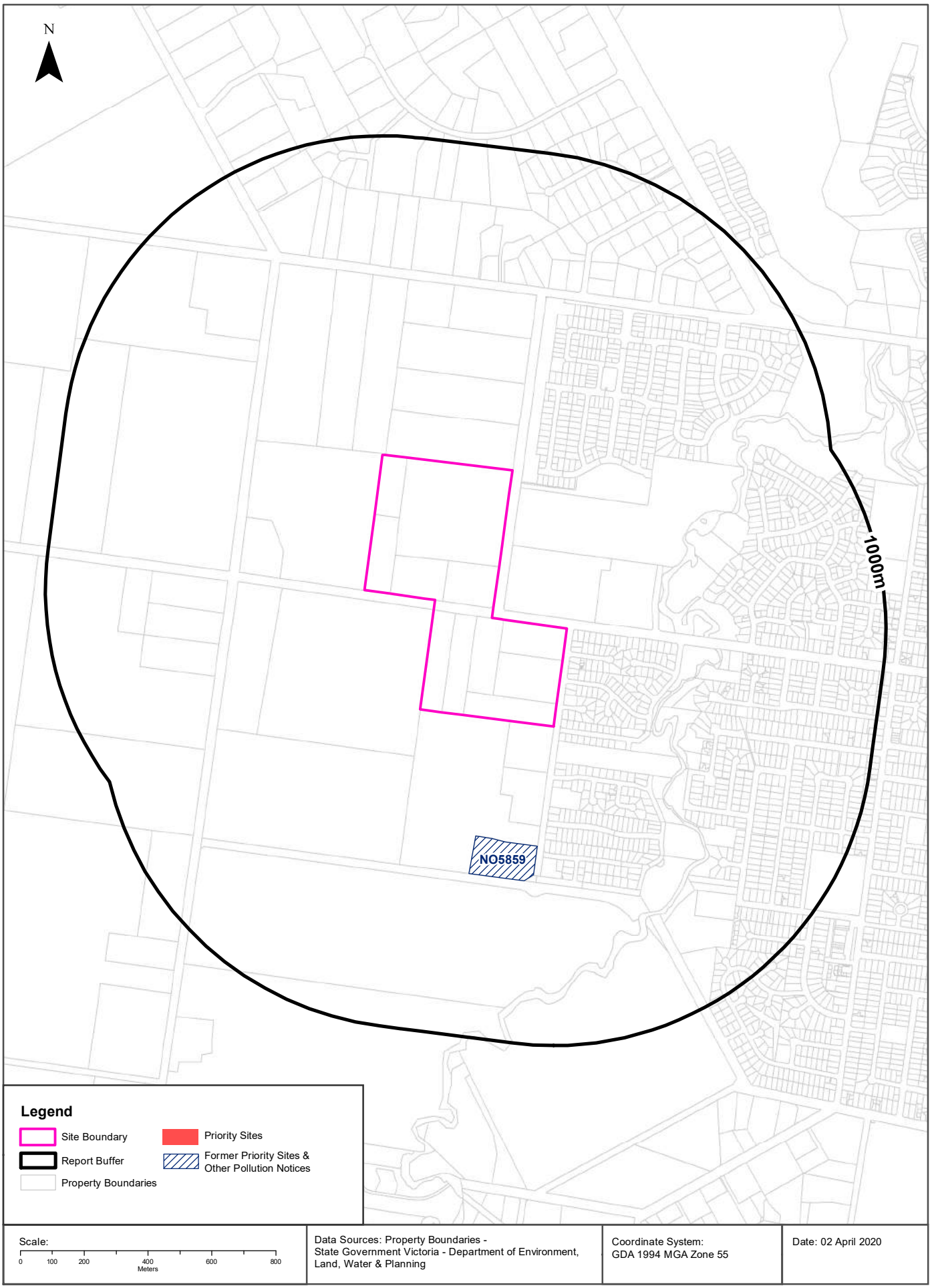
Elevation Contours (m AHD) 10m Interval at 1:25,000

Lindner Road, Wangandary, VIC 3678



EPA Records - Priority Sites & Pollution Notices

Lindner Road, Wangandary, VIC 3678



EPA Priority Sites & Pollution Notices

Lindner Road, Wangandary, VIC 3678

Current EPA Priority Sites Register

Sites on the current EPA priority sites register that exist within the dataset buffer:

Notice No	Address	Suburb	Issue	Loc Conf	Dist (m)	Direction
N/A	No records in buffer					

Priority Sites Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

Former EPA Priority Sites & Other Pollution Notices

Sites within the dataset buffer that have been issued a Pollution Notice:
Note. Due to pollution notices being revoked and removed from published lists this is not an exhaustive list of all past pollution notices.

Notice No	Notice Type	Company	Address	Suburb	Status	Issue	Date Issued	Loc Conf	Dist	Dir
NO5859	62A(1)	PERNA, MARK ANTHONY	LOT 2 PS544632B	WANGARATTA	Legacy EPA Database Pollution Notice	Industrial Waste has been dumped at the site, Requires assessment and/or clean up.	03/11/2006	Premise Match	372m	South

Pollution Notice Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

PFAS Investigation & Management Programs

Lindner Road, Wangandary, VIC 3678

EPA PFAS Site Investigations

Sites being investigated by the EPA for PFAS contamination within the dataset buffer:

Map ID	Site Name	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

EPA PFAS Site Investigations Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

Defence PFAS Investigation & Management Program Investigation Sites

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

Defence PFAS Investigation & Management Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Investigation & Management Program Management Sites

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

Defence PFAS Investigation & Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Location Confidence	Distance	Direction
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Lindner Road, Wangandary, VIC 3678

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Records

Lindner Road, Wangandary, VIC 3678

EPA Environmental Audits

EPA environmental audit records that exist within the dataset buffer:
Note. Please click on CARMS No. to activate a hyperlink to online documentation. If link does not work, documentation may still be accessible via the EPA Interaction Portal.

CARMS No	Transaction No	Site	Address	Suburb	Date Complete	Audit Category	Loc Conf	Distance	Direction
N/A	No records in buffer								

Environmental Audit Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

EPA Records

Lindner Road, Wangandary, VIC 3678

EPA Groundwater Zones with Restricted Uses

EPA GQRUZ records that exist within the dataset buffer:
Note. Please click on CARMS No. to activate a hyperlink to online documentation.

CARMS No	EPA Id	Site History	Site Address	Restricted Uses	Status	Loc Conf	Distance	Direction
N/A	No records in buffer							

Environmental GQRUZ Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

EPA Activities

Lindner Road, Wangandary, VIC 3678

EPA Licensed Activities

EPA licensed activities that exist within the dataset buffer:

Trans No	Licence No	Licence Type	Organisation	Premise Ref	Premise Address 1	Premise Address 2	Activities	Loc Conf	Dist (m)	Direction
N/A	No records in buffer									

Licensed Activity Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

Former EPA Licensed Activities

Former EPA licensed activities that exist within the dataset buffer:

Licence No	Organisation	Premise Address	Suburb	Activities	Loc Conf	Dist (m)	Direction
N/A	No records in buffer						

Former Licensed Activity Data Custodian: State Government Victoria - Environmental Protection Authority (EPA)

EPA Works Approvals

EPA works approvals that exist within the dataset buffer:

Transaction No	Status	Approval No	Organisation	Premise Address	Suburb	Scheduled Categories	Loc Conf	Dist (m)	Direction
N/A	No records in buffer								

Works Approvals Data Custodian: State Government Victoria - Environment Protection Authority (EPA)

Waste Management Facilities & Landfills

Lindner Road, Wangandary, VIC 3678

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Australian Government Geoscience Australia

Statewide Waste and Resource Recovery Infrastructure Plan Facilities

Statewide Waste and Resource Recovery Infrastructure Plan Facilities within the dataset buffer:

Map Id	Owner	Site Name	Address	Suburb	Category	Sub Category	Loc Conf	Distance	Direction
N/A	No records in buffer								

SWRRIPF Data Source: State Government Victoria - Department of Sustainability

EPA Prescribed Industrial Waste

EPA Prescribed Industrial Waste treaters, disposers and permitted transporters within the dataset buffer:

Map Id	Company Name	Address	Suburb	Treatment /Disposal	Transport	Accredited Agent	EPA List Status	Loc Conf	Dist' (m)	Direct
N/A	No records in buffer									

Prescribed Industrial Waste Data Source: State Government Victoria - Environment Protection Authority (EPA)

EPA Victorian Landfill Register

EPA Victorian Landfill Register sites within the dataset buffer:

Landfill Register No.	Site	Address	Operating Status	Est. Year Of Closure	Waste type	Loc Conf	Dist' (m)	Direction
No records in buffer								

EPA Victorian Landfill Register Data Source: State Government Victoria - Environment Protection Authority (EPA)

Former Gasworks and Liquid Fuel Facilities

Lindner Road, Wangandary, VIC 3678

Former Gasworks

Former Gasworks identified from various historical sources within the dataset buffer:
Note - As this is a dataset collated from various historical sources, it is not an exhaustive list of all former Gasworks

Map Id	Site Name	Date Opened	Year Closed	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Collated from various historical sources

National Liquid Fuel Facilities

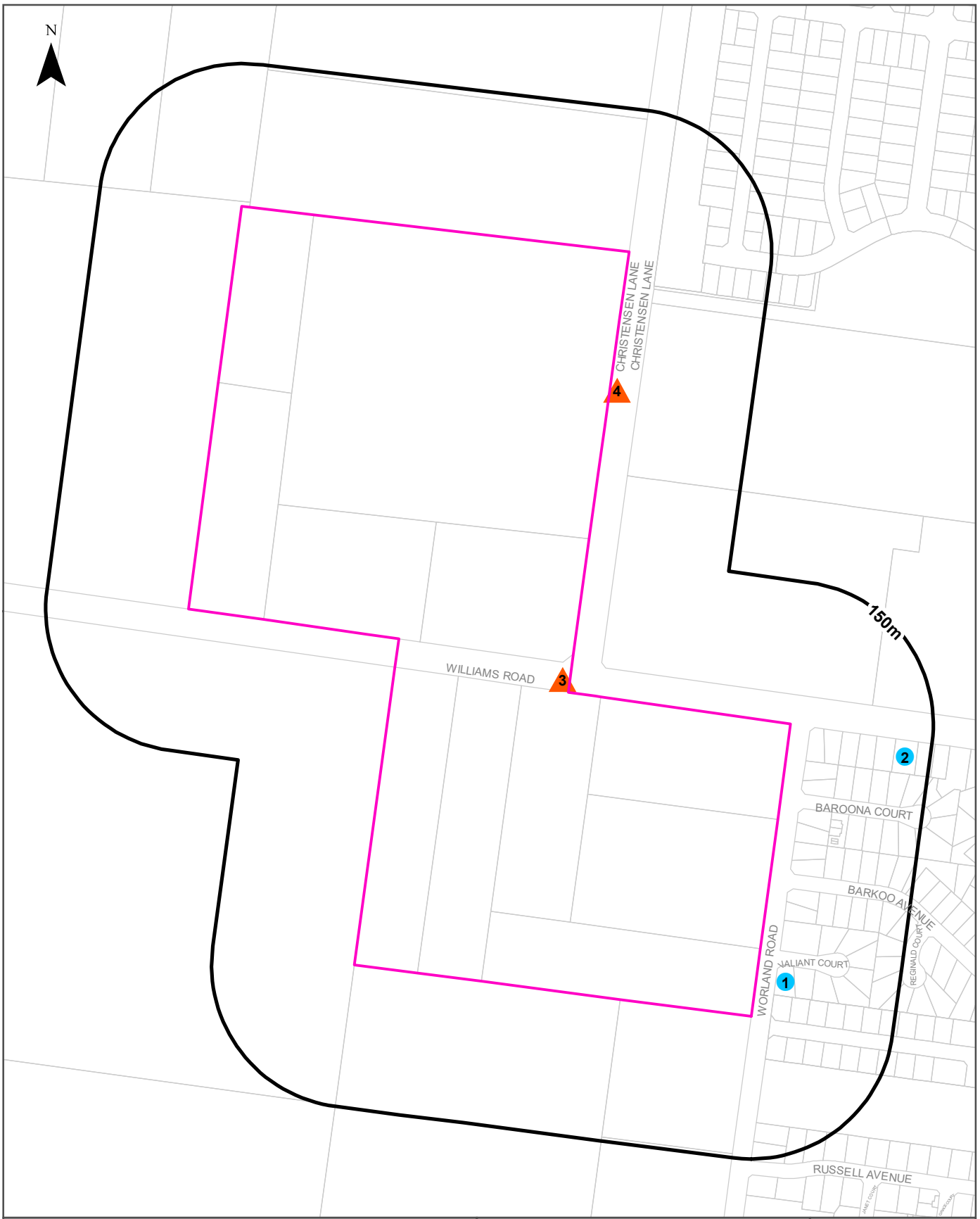
National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia

Historical Business Directories

Lindner Road, Wangandary, VIC 3678



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 75 150 225 300 Meters

Coordinate System: GDA 1994 MGA Zone 55

Date: 02 April 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Sands & McDougall's Directory - Digitised by State Library Victoria
Property Boundaries © State Government Victoria - Dept. of Environment, Land, Water & Planning 2020

Historical Business Directories

Lindner Road, Wangandary, VIC 3678

Business Directory Records 1905-1991
Premise or Road Intersection Matches

Universal Business Directory and Sands & McDougall Directory records, from years 1991, 1980, 1970, 1960, 1950, 1945, 1925 & 1905, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Electrical Contractors.	Anderson. A., 2 Valiant Crt., Wangaratta 3677	86384	1991	Premise Match	21m	South East
2	Builders &/Or Building Contractors.	Carson. K.G. Constructions Pty. Ltd., 127 Williams Rd., Wangaratta 3677	157075	1980	Premise Match	112m	East

Business Directory Records 1905-1991
Road or Area Matches

Universal Business Directory and Sands & McDougall Directory records, from years 1991, 1980, 1970, 1960, 1950, 1945, 1925 & 1905, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
3	Builders &/Or Building Contractors.	Chick, W. D. & W. E., Williams Rd., Wangaratta 3677	85159	1991	Road Match	0m
	Carriers &/Or Cartage Contractors.	Holmes. P. W., Williams Rd., Wangaratta 3677	85281	1991	Road Match	0m
	Honey Merchants.	Jacket. G. & Sons. Williams Rd., Wangaratta 3677	87594	1991	Road Match	0m
	Local Bodies	St. Bernard'S School - Williams Rd., Wangaratta. 3677.	84961	1991	Road Match	0m
	Schools &/Or Colleges - Private &/Or Public.	St. Bernard'S School Wangaratta, Williams Rd., Wangaratta 3677	89149	1991	Road Match	0m
	Builders &/Or Building Contractors.	Chick, W.D. & W.E., Williams Rd., Wangaratta 3677	157076	1980	Road Match	0m
	Livestock Transports.	Hickmott, J., Williams Rd., Wangaratta 3677	157280	1980	Road Match	0m
	Schools &/Or Colleges.	St. Bernard'S School, Williams Rd., Wangaratta 3677	157431	1980	Road Match	0m
	SCHOOLS	St. Bernard's School., William'; Rd. Wangaratta	63051	1970	Road Match	0m
	LIVESTOCK TRANSPORTS	Hindle Bros., Williams Rd., Wangaratta	126289	1960	Road Match	0m
	APIARISTS	Jackal, Kevin, Williams Rd., Wangaratta	125790	1960	Road Match	0m
	BUILDERS & BUILDING CONTRACTORS	Egan. J, J., Williams Rd. Wangaratta	131619	1950	Road Match	0m
4	Motor Garages & Service Stations.	Davenport. W. A. Christensons La., Wangaratta 3677	88782	1991	Road Match	0m

Historical Business Directories

Lindner Road, Wangandary, VIC 3678

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from Sands & McDougall's Directories and UBD Business Directories, mapped to a premise or road intersection within the dataset buffer.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer						

Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories and Sands & McDougall's Directories, mapped to a road or an area within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
	No records in buffer					

Aerial Imagery 2019

Lindner Road, Wangandary, VIC 3678

Scale:
0 60 120 180 240
Meters

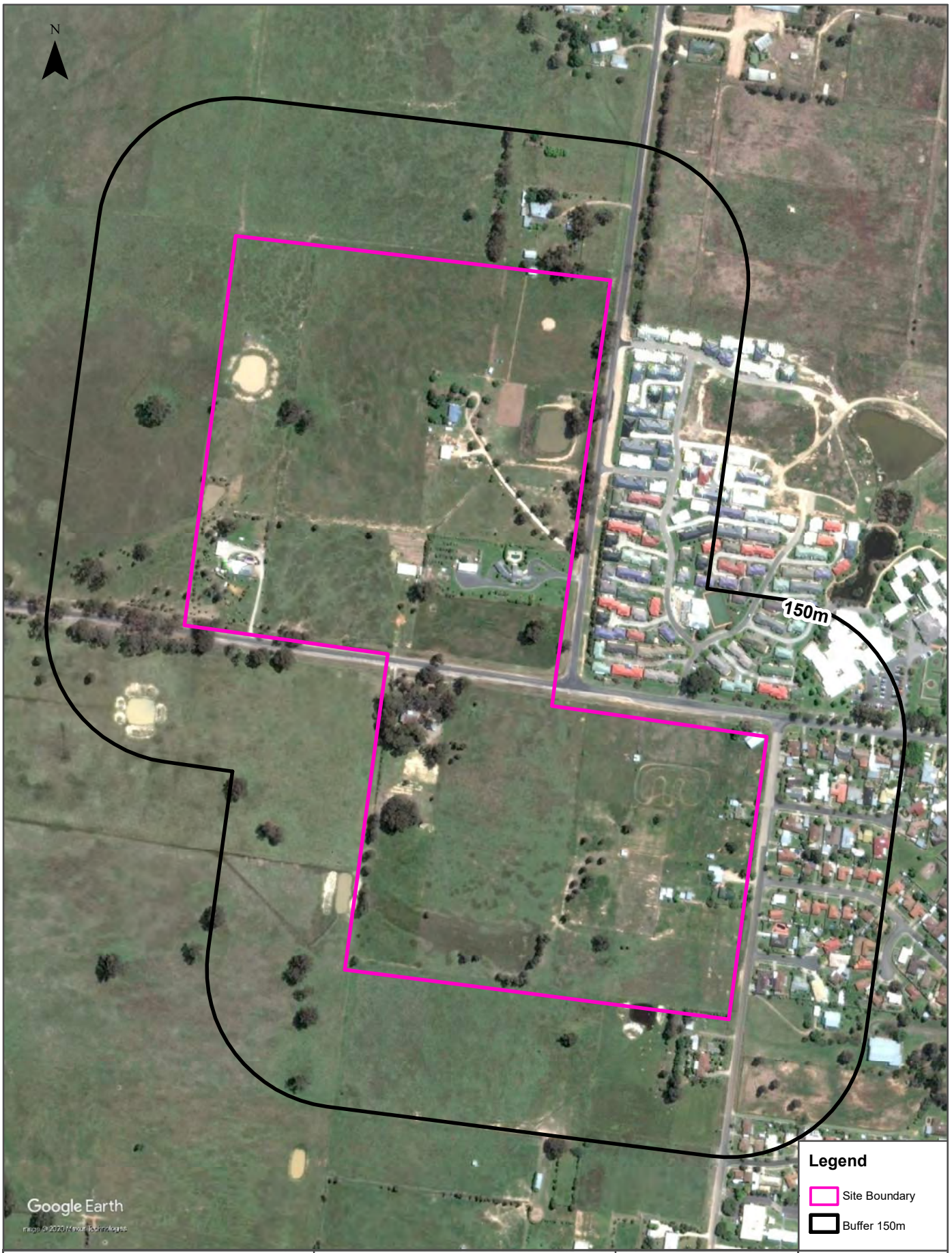
Data Source Aerial Imagery: © 2020 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 55

Date: 02 April 2020

Aerial Imagery 2011

Lindner Road, Wangandary, VIC 3678



Scale:
0 60 120 180 240
Meters

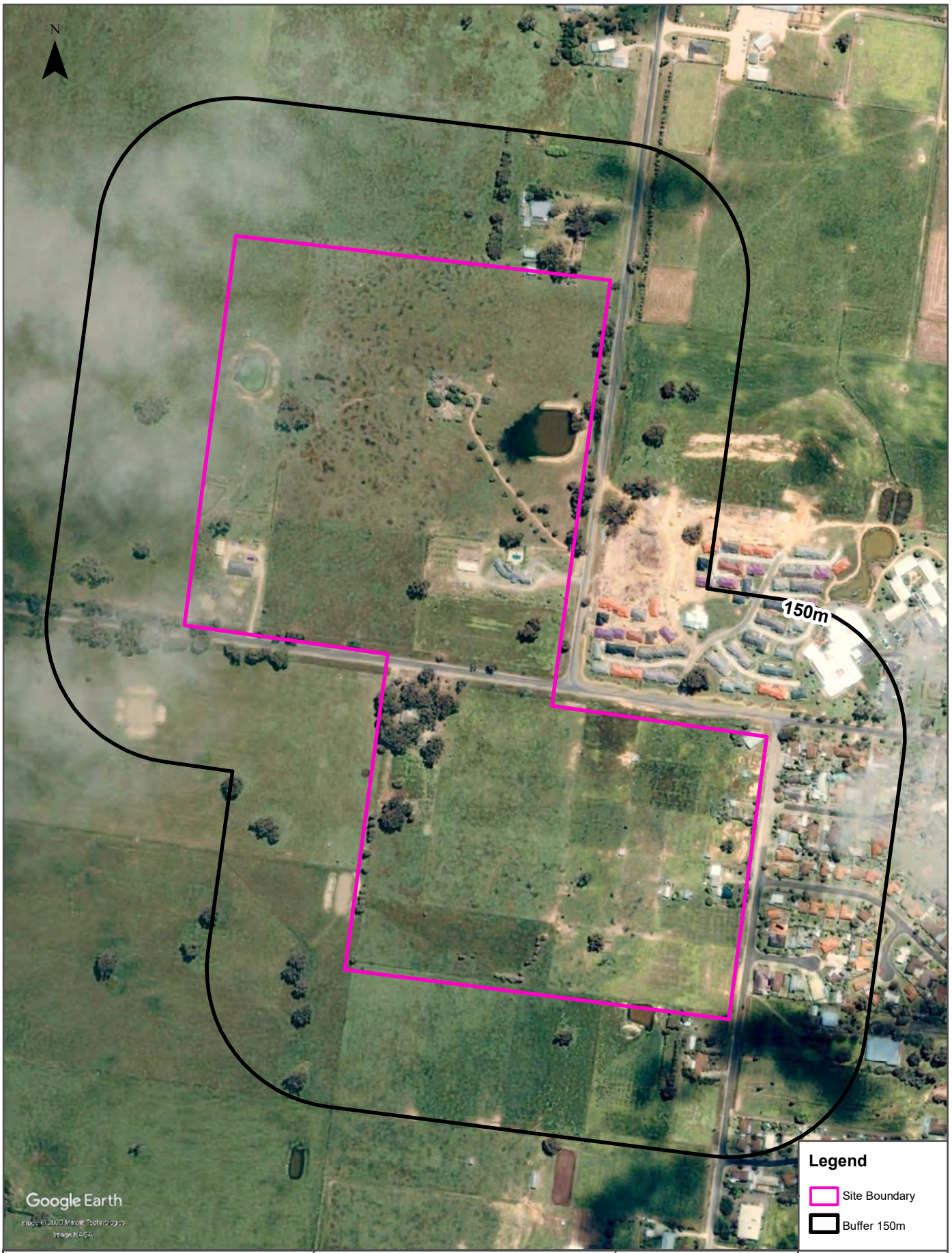
Data Source Aerial Imagery: © 2020 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 55

Date: 02 April 2020

Aerial Imagery 2003

Lindner Road, Wangandary, VIC 3678



Scale:
0 60 120 180 240
Meters

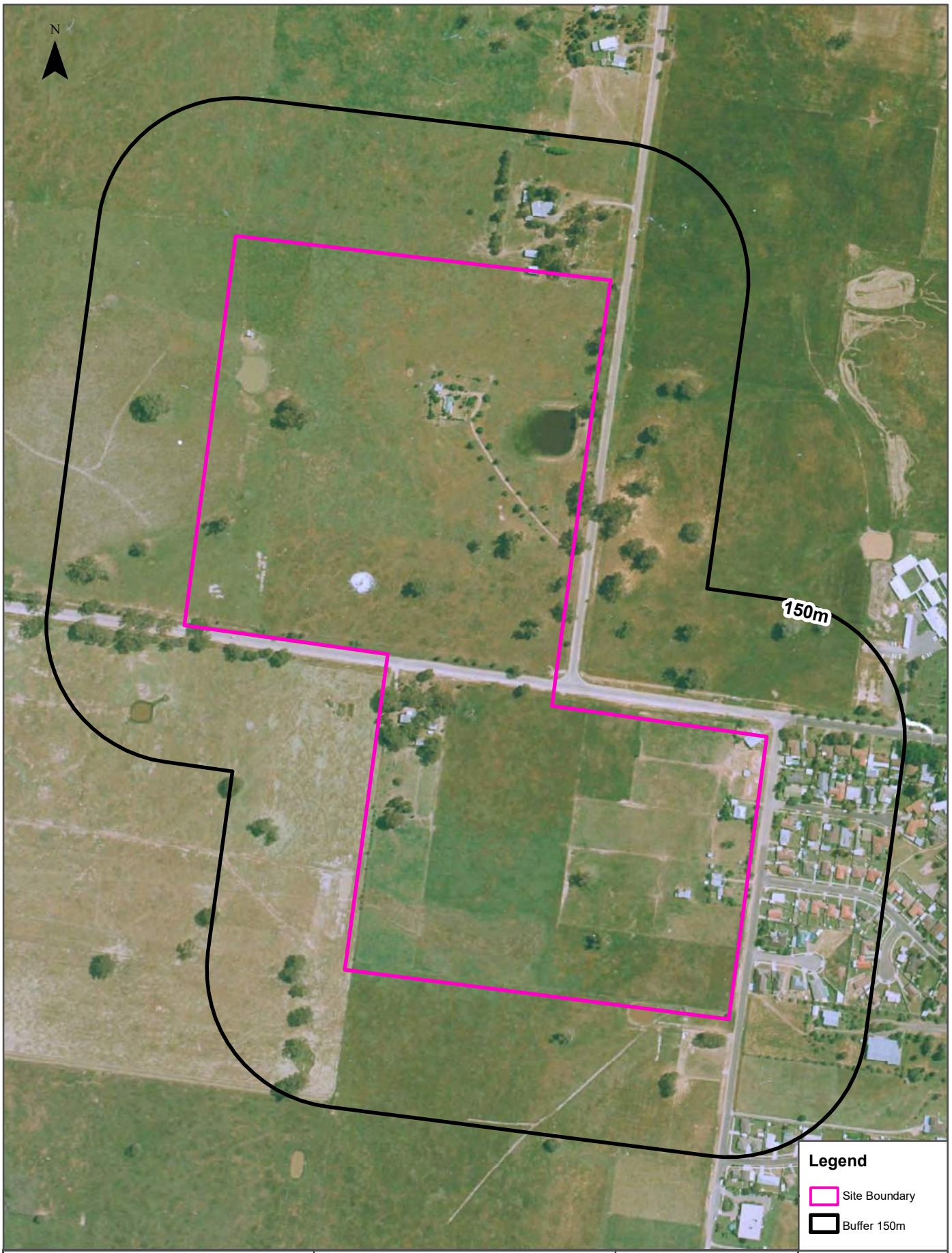
Data Source Aerial Imagery: © 2020 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 55

Date: 02 April 2020

Aerial Imagery 1991

Lindner Road, Wangandary, VIC 3678



Aerial Imagery 1987

Lindner Road, Wangandary, VIC 3678

Aerial Imagery 1979

Lindner Road, Wangandary, VIC 3678

Aerial Imagery 1971

Lindner Road, Wangandary, VIC 3678

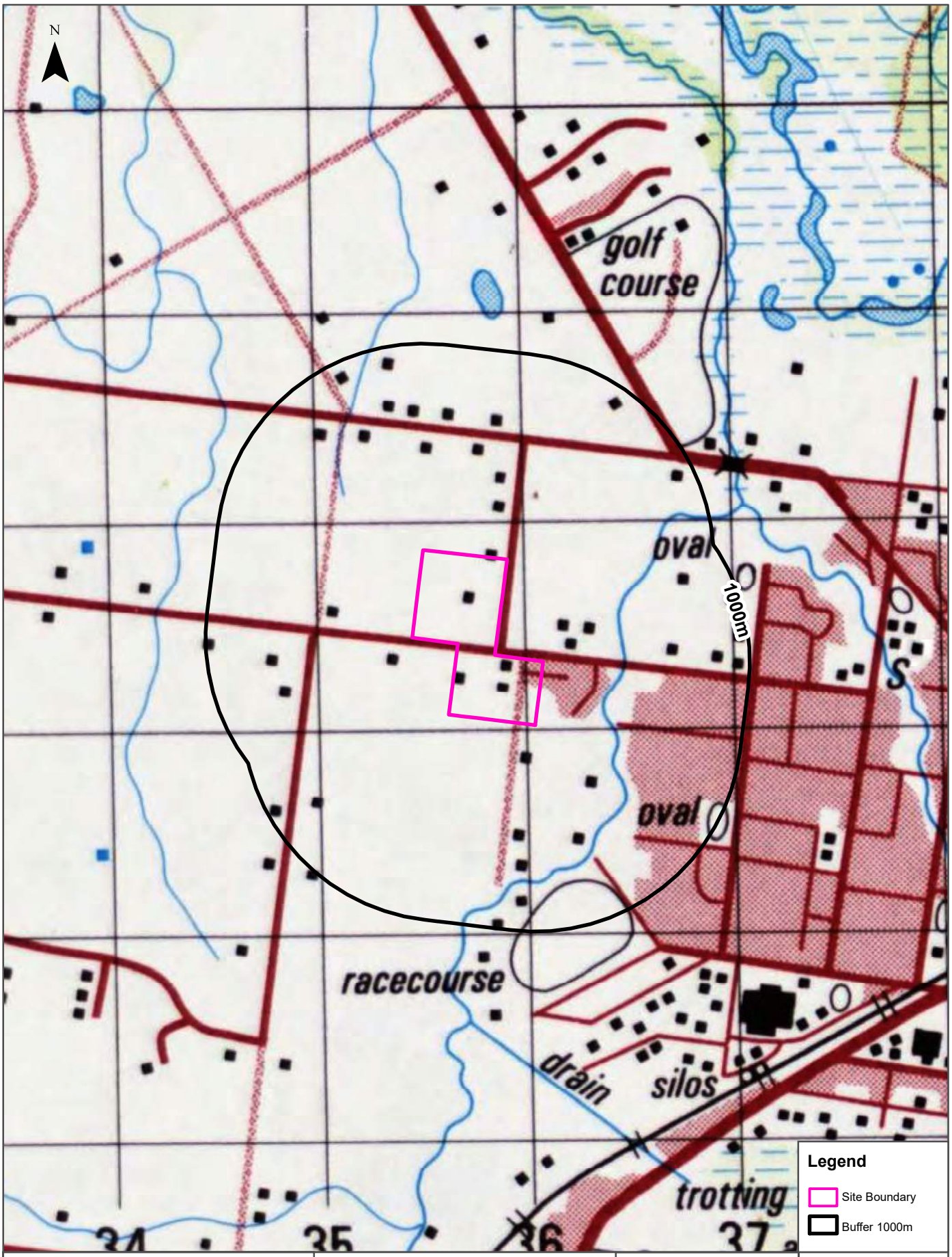
Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 02 April 2020
0 60 120 180 240 Meters	© Department of Environment, Land, Water and Planning (Vicmap Topographic Mapping Program)	GDA 1994 MGA Zone 55	

Aerial Imagery 1949

Lindner Road, Wangandary, VIC 3678

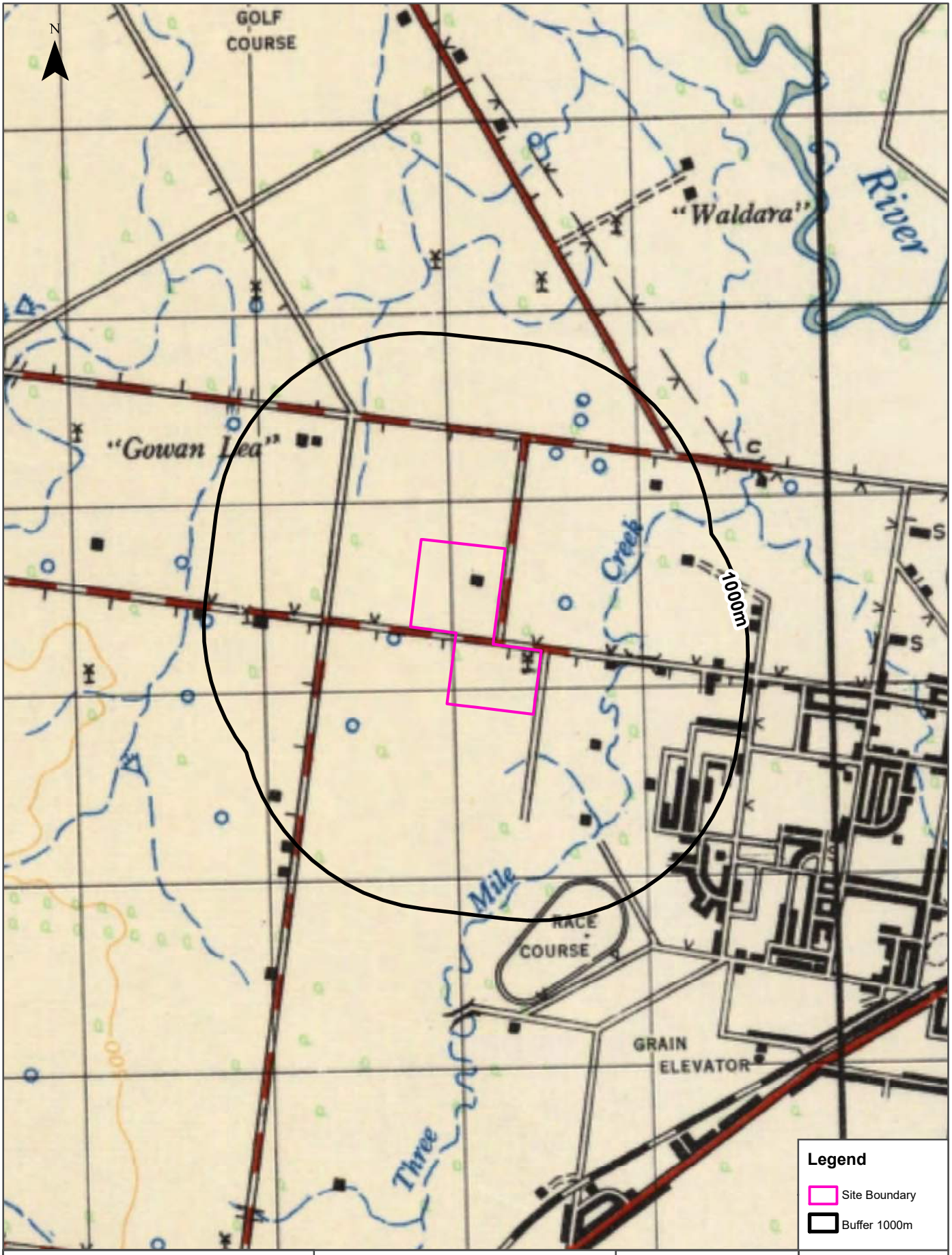
Historical Map 1985

Lindner Road, Wangandary, VIC 3678



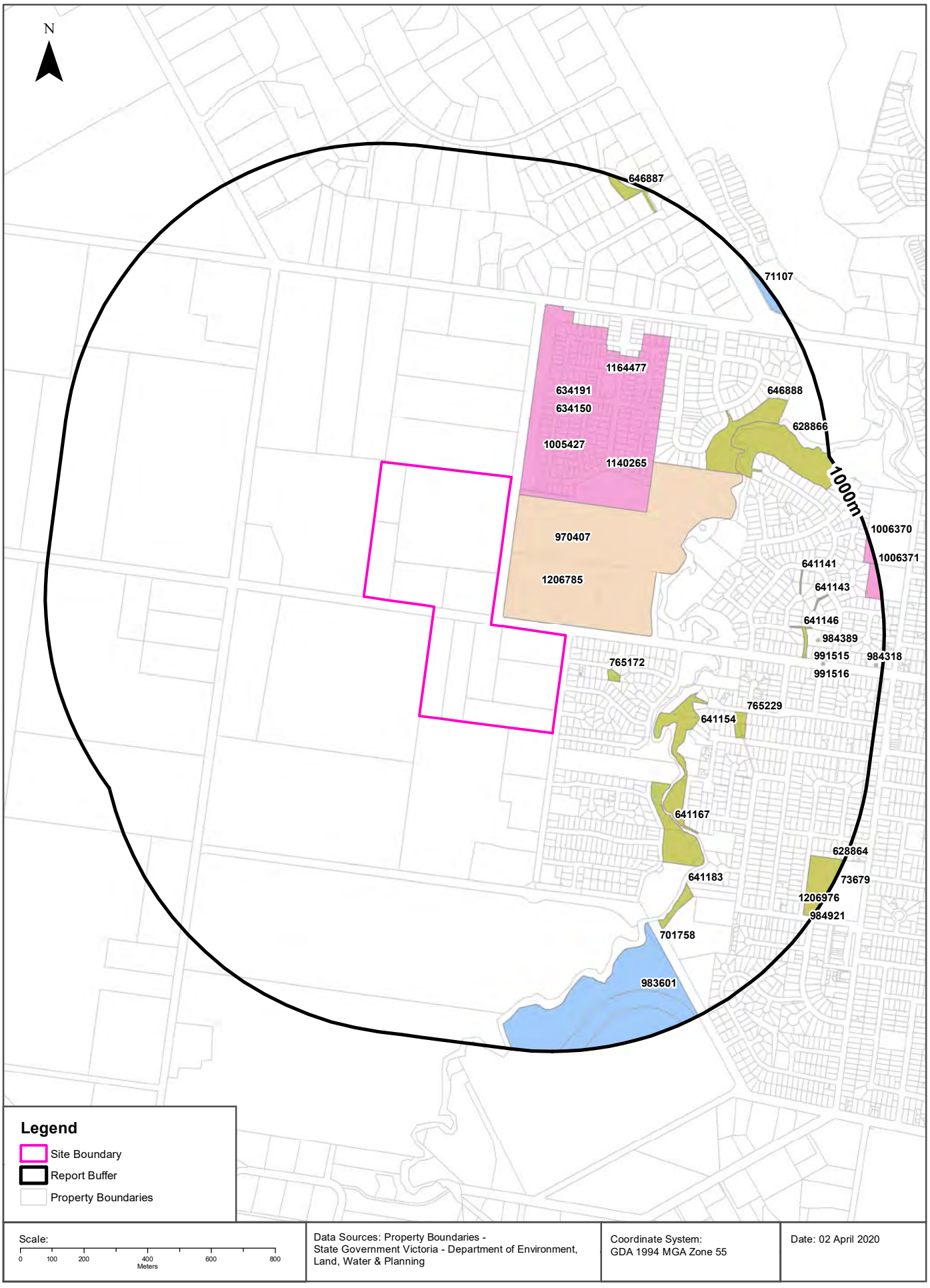
Historical Map c.1957

Lindner Road, Wangandary, VIC 3678



Features of Interest

Lindner Road, Wangandary, VIC 3678



Features of Interest

Lindner Road, Wangandary, VIC 3678

Features of Interest

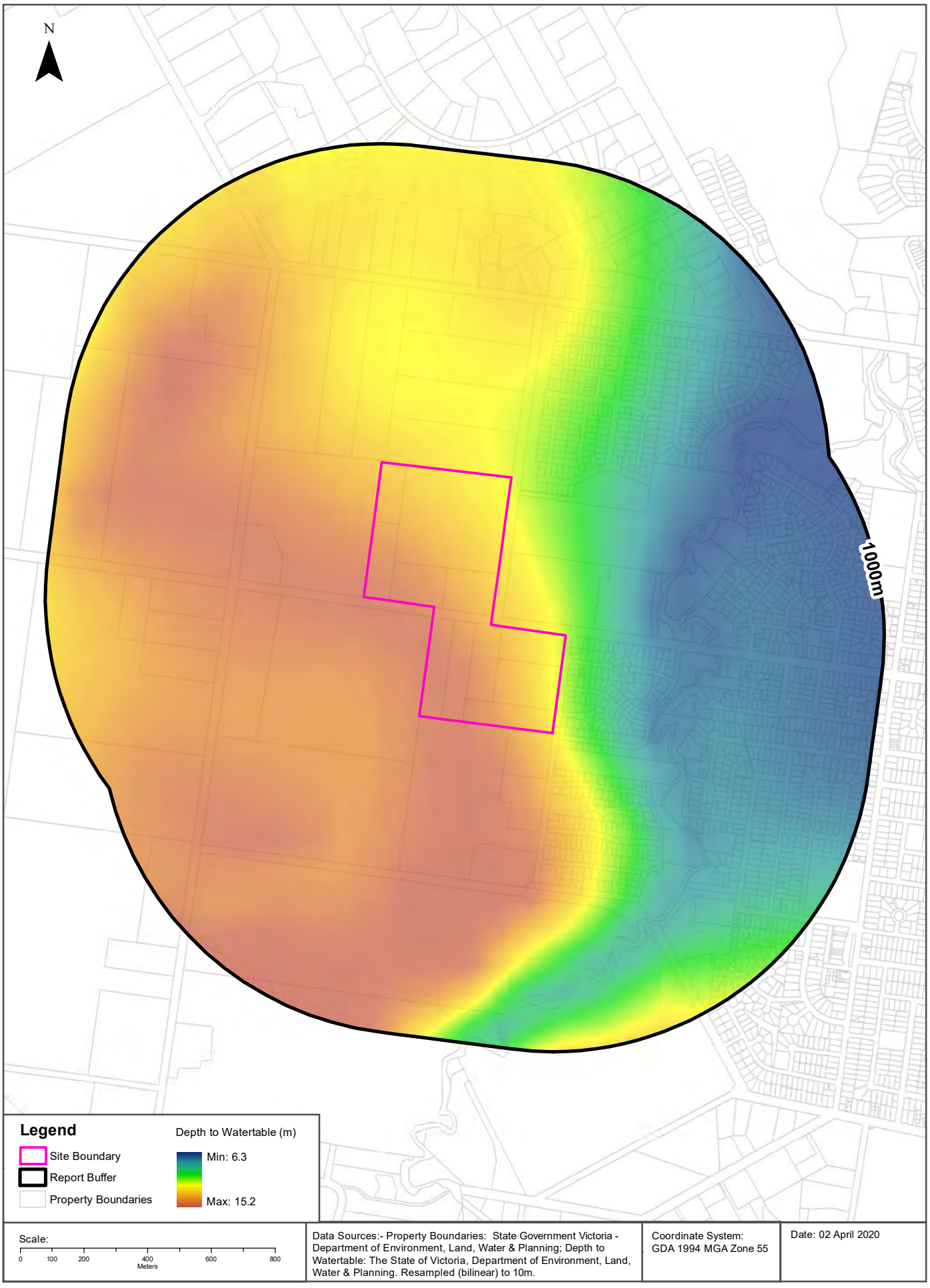
Features of Interest within the dataset buffer:

Feature Id	Feature Type	Feature Sub Type	Name	Distance	Direction
970407	residential building	retirement village	St Johns Village	30m	East
1005427	education centre	education complex		30m	North East
1140265	reserve	park		30m	North East
1206785	sport facility	sports ground		103m	East
765172	reserve	park	Barkoo Avenue Reserve	144m	South East
634150	education centre	tertiary institution	Goulburn Ovens Institute Of Tafe	292m	West
634191	education centre	tertiary institution	Goulburn Ovens Institute Of Tafe - Wangaratta Christensen Lane Campus	292m	North East
641154	reserve	park		313m	South East
641167	reserve	park		348m	South East
1164477	reserve	park		376m	North East
765229	reserve	park	Jaycees Park	558m	South East
646888	reserve	park		611m	North East
641183	reserve	park		631m	South East
701758	sport facility	racecourse	Wangaratta Racecourse	665m	South
628866	reserve	park	Chick Reserve	696m	East
641146	reserve	park		701m	East
641141	reserve	park		744m	East
641143	reserve	park		780m	East
984389	care facility	child care	Nurtureone Wangaratta Children?S Centre	786m	East
991515	care facility	aged care	St Johns Retirement Village Hostel	807m	East
991516	care facility	aged care	St Johns Retirement Village Nursing Home	807m	East
983601	sport facility	horse racetrack		846m	South
628864	reserve	park	Bill Eaton Athletics Complex	896m	South East
73679	sport facility	sports ground		929m	South East
646887	reserve	park		939m	North
1006371	education centre	education complex		946m	East
1006370	education centre	education complex		960m	East
984921	care facility	child care	Wangaratta West Kindergarten	968m	South East
1206976	recreational resource	club house		970m	South East
71107	sport facility	golf course	Wangaratta Golf Club	970m	North East

Feature Id	Feature Type	Feature Sub Type	Name	Distance	Direction
984318	care facility	child care	Goodstart Early Learning Wangaratta - Williams Road	972m	East

Depth to Watertable

Lindner Road, Wangandary, VIC 3678



Data Sources:- Property Boundaries: State Government Victoria - Department of Environment, Land, Water & Planning; Depth to Watertable: The State of Victoria, Department of Environment, Land, Water & Planning. Resampled (bilinear) to 10m.

Coordinate System: GDA 1994 MGA Zone 55

Date: 02 April 2020

Hydrogeology & Groundwater

Lindner Road, Wangandary, VIC 3678

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive aquifers of low to moderate productivity	0m	Onsite
Porous, extensive highly productive aquifers	0m	Onsite

Hydrogeology Map of Australia: Commonwealth of Australia (Geoscience Australia)

Groundwater Salinity

On-site Groundwater Salinity:

Groundwater Salinity	Percent Of Site Area
Less than 500 mg/l	100

Depth to Watertable

On-site Depth to Watertable:

Depth to Watertable	Percent Of Site Area
10 to 20 metres	100

Surface Elevation

Approximate on-site Surface Elevation:

Surface Elevation
146 AHDm to 150 AHDm

Basement Elevation

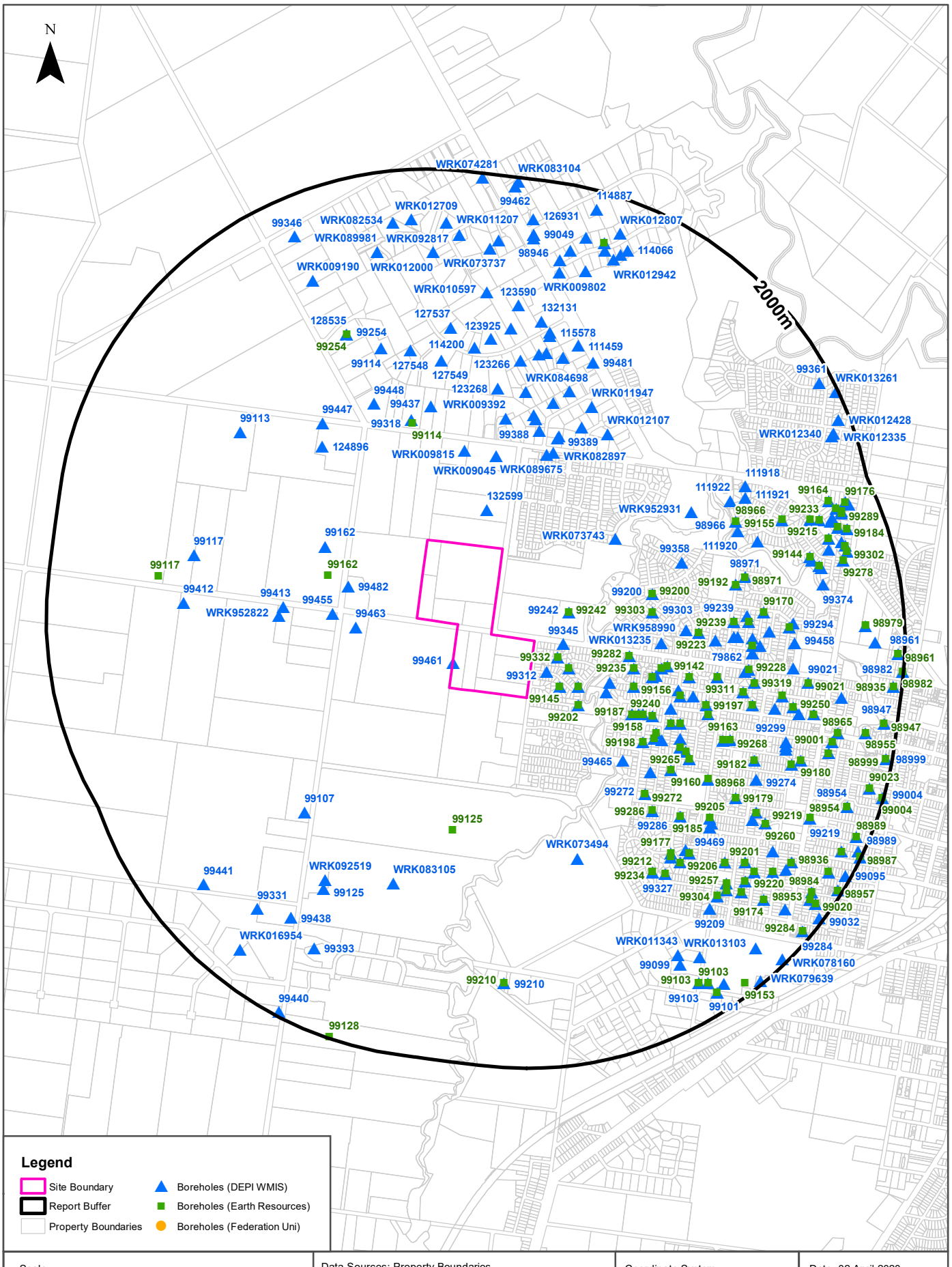
Approximate on-site Basement Elevation:

Basement Elevation - Basement Rocks comprise Lower Palaeozoic basement rocks that form the highlands and the crystalline basement; and Mesozoic rocks of the Otway and Gippsland basins both outcropping and subsurface
-146 AHDm to -123 AHDm

Groundwater Data Custodian: State Government Victoria - Dept of Environment, Land, Water & Planning

Groundwater Boreholes

Lindner Road, Wangandary, VIC 3678



Groundwater Boreholes

Lindner Road, Wangandary, VIC 3678

Boreholes (DEPI WMIS)

Boreholes from the Department of Environment and Primary Industries' Water Measurement Information System, within the dataset buffer:

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99461	Domestic					1988-01-01	0	Onsite
99312	Domestic					1983-12-31	88	South East
99332	Domestic					1983-12-31	136	South East
99345	Domestic	0.00m-7.00m CLAY 7.00m-8.70m SAND	0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-8.00m INNER LINING - SCREEN = Pvc 8.00m-8.70m INNER LINING - CASING = Pvc		7.00m-8.00m Sandstone	1987-11-27	157	East
99145	Domestic		0.00m-9.00m INNER LINING - CASING = Pvc 9.00m-10.00m INNER LINING - SCREEN = Pvc		9.00m-10.00m Sand	1983-03-20	168	South East
132599	Domestic, Stock	0.00m-0.20m TOP SOIL 0.20m-10.50m BROWN CLAY 10.50m-22.00m CLAY BOUND GRAVEL 22.00m-24.00m FINE SAND 24.00m-26.00m GRAVEL 26.00m-27.20m GREY CLAY	-0.30m-24.00m INNER LINING - CASING = Steel 24.00m-26.30m INNER LINING - SCREEN = Steel		24.00m-26.30m Gravel	1997-06-22	197	North
99335	Domestic		0.00m-5.70m INNER LINING - CASING = Pvc 5.70m-6.70m INNER LINING - SCREEN = Pvc		5.70m-6.70m Sand	1983-12-31	204	South East
99242	Domestic		0.00m-33.00m INNER LINING - CASING = Pvc 33.00m-36.00m INNER LINING - SCREEN = Pvc		33.00m-36.00m Clay	1984-09-19	240	East
99326	Domestic					1983-12-31	267	South East
99202	Domestic		0.00m-7.50m INNER LINING - CASING = Not Known 7.50m-8.50m INNER LINING - SCREEN = Not Known 8.50m-9.50m INNER LINING - CASING = Not Known		7.50m-8.50m Sand	1984-07-18	280	South East
99463	Domestic & Stock	0.00m-0.15m TOP SOIL 0.15m-2.00m GREY CLAY 2.00m-8.00m BROWN CLAY 8.00m-11.15m BROWN SILTY CLAY 11.50m-14.00m GRAVEL 14.00m-15.20m DARK GREY CLAY 15.20m-17.00m GRAVEL 17.00m-21.30m GREY SILTY CLAY 21.30m-25.30m GREY CLAY 25.30m-29.00m GRAVEL	-0.50m-25.70m INNER LINING - CASING = Galvanised Iron 25.70m-29.00m INNER LINING - SCREEN = Galvanised Iron		25.70m-29.00m Gravel	1991-01-25	333	West
99482	Domestic	0.00m-6.00m GREY LOAM 6.00m-12.19m GREY CLAY 12.19m-18.28m YELLOW CLAY 18.28m-19.28m SANDY CLAY CARRYING WATER 19.28m-21.94m CLAY RIVER GRAVELS CARRYING WATER	-0.30m-19.20m INNER LINING - CASING = Mild Steel 19.20m-21.94m INNER LINING - SCREEN = Mild Steel		19.20m-21.94m Gravel	1991-07-24	388	West
99321	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-9.00m INNER LINING - SCREEN = Pvc		8.00m-9.00m Clay	1983-12-31	419	South East
99353	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1984-12-31	433	South East
99455	Domestic, Stock					1988-01-01	456	West

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
WRK009045	Domestic & Stock	0.00m-0.20m TOP SOIL 0.20m-8.00m CLAY BROWN 8.00m-14.00m SANDY CLAY 14.00m-21.00m DIRTY CLAY 21.00m-25.00m GREY CLAY 25.00m-28.50m GRAVEL 28.50m-30.00m GREY CLAY	0.30m-25.00m INNER LINING - CASING = Pvc 25.00m-28.50m INNER LINING - SLOT = Pvc 28.50m-30.00m INNER LINING - CASING = Pvc		25.00m-28.50m Granite	2003-02-04	491	North
WRK009815	Domestic & Stock	0.00m-0.20m TOPSOIL 0.20m-9.00m BROWN CLAY 9.00m-12.00m SILT CLAY 12.00m-30.00m DIRTY GRAVEL 30.00m-38.00m GREY CLAY 38.00m-41.00m GRAVEL 41.00m-42.00m GREY CLAY	0.30m-38.00m INNER LINING - CASING = Pvc 38.00m-41.00m INNER LINING - SLOT = Pvc 41.00m-42.00m INNER LINING - CASING = Pvc		38.00m-41.00m Gravel	2003-12-02	502	North
99282	Not Known		0.00m-6.00m INNER LINING - CASING = Not Known 6.00m-12.50m INNER LINING - SCREEN = Not Known			1983-02-12	517	East
99162	Domestic, Stock		0.00m-6.00m INNER LINING - CASING = Not Known 6.00m-7.00m INNER LINING - SCREEN = Not Known			1983-06-05	542	North West
99235	Domestic		0.00m-6.10m INNER LINING - CASING = Pvc 6.10m-7.90m INNER LINING - SCREEN = Pvc		6.10m-7.90m Sand	1982-05-26	551	East
WRK089675	Domestic & Stock	0.00m-1.00m Top soil 1.00m-6.00m CLAYbrown 6.00m-12.00m RIVER GRAVLES 12.00m-24.00m CLAYBROWN 24.00m-36.00m SAND 36.00m-36.50m CLAYBLACK SILT 36.50m-43.00m SANDWISHED WASHED 43.00m-48.00m BROWN CLAYT	0.00m-36.00m INNER LINING - CASING = Pvc 36.00m-42.00m INNER LINING - SLOT = Pvc 0.00m-35.00m OUTER LINING - GRAVEL = Cement 35.00m-48.00m OUTER LINING - GRAVEL = Gravel			2015-11-03	561	North East
99156	Domestic		0.00m-6.40m INNER LINING - CASING = Pvc 3.80m-5.00m INNER LINING - SCREEN = Pvc			1983-03-27	564	South East
99187	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 4.00m-7.00m INNER LINING - SCREEN = Pvc			1983-05-20	574	South East
WRK082897	Domestic & Stock		0.00m-0.00m OUTER LINING - GRAVEL = Not Known			2015-02-28	585	North East
WRK073743	Domestic & Stock	0.00m-2.00m CLAY 2.00m-25.00m GRAVEL/SAND 25.00m-28.00m CLAY 28.00m-35.00m SAND COARSE	0.00m-29.00m INNER LINING - CASING = Pvc 29.00m-35.00m INNER LINING - SCREEN = Pvc 0.00m-6.00m OUTER LINING - GRAVEL = Cement 20.00m-25.00m OUTER LINING - GRAVEL = Bentonite 25.00m-35.00m OUTER LINING - GRAVEL = Seal		29.00m-35.00m Sand	2014-03-31	608	North East
99240	Domestic, Stock					1983-04-20	609	South East
99465	Domestic, Stock	0.00m-0.20m TOP SOIL 0.20m-3.50m BROWN CLAY 3.50m-6.00m SILTY CLAY 6.00m-6.70m GRAVEL 6.70m-8.00m BROWN CLAY 8.00m-14.00m GREY CLAY 14.00m-16.70m GRAVEL BROWN 16.70m-17.00m CLAY & GRAVEL 17.00m-21.30m WHITE GREY GRAVEL 21.30m-21.60m GREY CLAY WITH STONES	0.30m-17.50m INNER LINING - CASING = Galvanised Iron 17.50m-21.30m INNER LINING - SCREEN = Galvanised Iron 21.30m-21.60m INNER LINING - CASING = Galvanised Iron		17.50m-21.30m Gravel	1991-02-27	619	South East
99158	Domestic		0.00m-3.50m INNER LINING - CASING = Pvc 3.50m-4.50m INNER LINING - SCREEN = Pvc		3.50m-4.50m Sand	1983-03-20	634	South East
99318	Domestic					1983-12-31	653	North
99303	Domestic					1984-12-31	654	East
99146	Domestic, Stock		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.00m INNER LINING - SCREEN = Pvc		6.00m-7.00m Sand	1983-05-20	656	East
99388	Domestic	0.00m-6.00m BROWN GREY CLAY 6.00m-9.00m YELLOW SAND & CLAY 9.00m-11.00m BROWN CLAY 11.00m-16.00m YELLOW GRAVEL 16.00m-23.00m GREY GRAVEL 23.00m-25.00m CLAY & GRAVEL 25.00m-28.00m CLEAN GRAVEL	0.00m-26.00m INNER LINING - CASING = Pvc 26.00m-28.00m INNER LINING - SCREEN = Pvc		26.00m-28.00m Gravel	1990-06-06	665	North

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99389	Domestic	0.00m-6.00m BROWN CLAY 6.00m-9.00m BROWN SAND 9.00m-12.00m BROWN CLAY 12.00m-19.00m BROWN GRAVEL 19.00m-22.00m GREY CLAY 22.00m-31.00m GREY SAND & GRAVEL	0.00m-29.00m INNER LINING - CASING = Pvc 29.00m-31.00m INNER LINING - SCREEN = Pvc		29.00m-31.00m Sand	1990-06-05	665	North East
99198	Domestic					1983-06-08	672	South East
99088	Domestic					1988-01-01	675	East
WRK012823	Domestic & Stock	0.00m-0.10m TOPSOIL 0.10m-2.00m GREY CLAY 2.00m-10.50m YELLOW CLAY 10.50m-19.50m GRAVEL 19.50m-25.00m GREY CLAY 25.00m-33.00m GRAY SITTY CLAY 33.00m-39.00m SITT & FINE SAND 39.00m-42.50m FINE SAND 42.50m-43.50m SAND MED & COURSE 43.50m-48.00m CLAY YELLOW	0.40m-42.00m INNER LINING - CASING = Pvc Class 9 42.00m-44.00m INNER LINING - SLOT = Pvc Class 9 44.00m-48.00m INNER LINING - CASING = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement 0.50m-41.00m OUTER LINING - GRAVEL = Seal 41.00m-48.00m OUTER LINING - GRAVEL = Gravel		42.00m-44.00m Sand	2007-02-24	678	North East
WRK013235	Domestic & Stock	0.00m-1.00m topsoil 1.00m-4.00m brown clay 4.00m-6.00m brown grey clay 6.00m-8.00m fine brown sand 8.00m-10.00m brown grey sand & gravel	0.50m-10.00m INNER LINING - CASING = Pvc 0.00m-10.00m OUTER LINING - GRAVEL = Gravel			2007-03-23	684	East
99200	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.00m INNER LINING - SCREEN = Pvc		6.00m-7.00m Sand	1984-12-20	684	East
99324	Domestic					1983-12-31	685	South East
WRK009392	Domestic & Stock						699	North
99189	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.00m INNER LINING - SCREEN = Pvc		6.00m-7.00m Sand	1983-03-29	699	East
99437	Domestic, Stock					1988-01-01	719	North
WRK010541	Domestic & Stock					2008-12-05	720	North
99306	Domestic					1984-12-31	722	South East
99288	Domestic		0.00m-6.80m INNER LINING - CASING = Pvc 5.40m-6.80m INNER LINING - SCREEN = Pvc			1983-12-31	723	South East
99413	Stock					1988-01-01	724	West
99263	Domestic					1983-12-31	728	East
121036	Domestic	0.00m-0.50m LAOM 0.50m-18.00m SANDY CLAY 18.00m-21.60m RIVER GRAVEL	-0.30m-21.60m INNER LINING - CASING = Steel 0.00m-21.60m INNER LINING - CASESCRN = Not Known 18.90m-21.60m INNER LINING - SCREEN = Not Known 21.00m-21.60m OUTER LINING - GRAVEL = Cement			1994-03-11	740	North
WRK952822	Domestic & Stock	0.00m-12.00m CLAY 12.00m-30.00m RIVER GRAVELS 30.00m-36.00m CLAY 36.00m-104.00m TIGHT CLAY 104.00m-323.00m HARD BEDROCK (RED IN COLOUR)	0.50m-102.00m INNER LINING - CASING = Steel 0.00m-0.50m OUTER LINING - GRAVEL = Cement		102.00m-323.00m Ironstone	2004-07-22	743	West
124896	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-15.00m BROWN CLAY 15.00m-28.00m CLAYBOUND GRAVEL 28.00m-29.00m GREY CLAY 29.00m-31.00m GRAVEL 31.00m-31.70m GREY CLAY	-0.40m-28.50m INNER LINING - CASING = Steel 31.00m-31.70m INNER LINING - CASING = Steel			1995-04-07	758	North West
99373	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1985-10-04	763	South East
99203	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.30m INNER LINING - SCREEN = Pvc		6.00m-7.30m Sand	1984-08-15	778	South East
99309	Domestic					1983-12-31	778	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99385	Domestic	0.00m-3.04m CLAY SURFACE TO GREY CLAY 3.04m-9.14m YELLOW CLAY 9.14m-24.38m GREY CLAY 24.38m-42.59m YELLOW CLAY 42.59m-45.72m SANDY CLAY CARRYING LITTLE WATER 45.72m-46.32m GREY CLAY 46.32m-48.76m WATER TO SILTY GRAVEL	0.00m-45.72m INNER LINING - CASING = Mild Steel 45.72m-48.76m INNER LINING - SCREEN = Mild Steel		45.72m-48.76m Clay	1990-02-07	782	North East
99448	Domestic, Stock					1988-01-01	787	North West
99204	Domestic		0.00m-6.10m INNER LINING - CASING = Pvc 6.10m-12.10m INNER LINING - SCREEN = Pvc		6.10m-12.10m Sand	1984-08-16	790	South East
99468	Domestic					1988-01-01	805	East
99148	Domestic		0.00m-4.00m INNER LINING - CASING = Pvc 4.00m-7.00m INNER LINING - SCREEN = Pvc		4.00m-7.00m Sand	1983-03-12	818	East
WRK958990	Domestic & Stock	0.00m-1.00m GREY TOP SOIL 1.00m-5.00m GREY BROWN CLAY 5.00m-7.00m BROWN SILTY CLAY 7.00m-10.50m BROWN SAND & RIVER GRAVEL	0.00m-7.50m INNER LINING - CASING = Pvc 7.50m-10.00m INNER LINING - SLOT = Pvc		7.50m-10.00m Gravel	2007-12-06	819	East
99272	Domestic		0.00m-8.50m INNER LINING - CASING = Pvc 6.00m-8.50m INNER LINING - SCREEN = Pvc			1983-12-31	822	South East
124873	Domestic	0.00m-2.40m YELLOW CLAY 2.40m-3.90m GREY YELLOW CLAY 3.90m-5.40m SANDY CLAY 5.40m-6.50m BROWN CLAY 6.50m-9.60m SANDY BROWN CLAY 9.60m-11.20m FINE RED SAND 11.20m-11.30m SANDSTONE 11.30m-12.70m SMALL RIVER GRAVEL	-0.30m-12.70m INNER LINING - CASING = Pvc Class 9 10.00m-12.70m OUTER LINING - GRAVEL = Gravel			1995-05-11	833	North
WRK012107	Domestic & Stock	0.00m-6.00m CLAY BROWN / YELLOW 6.00m-8.00m SILTY CLAY BROWN 8.00m-9.00m GRAVEL 9.00m-13.00m CLAY YELLOW 13.00m-30.00m DIRTY COARSE SAND 30.00m-38.00m YELLOW AND GREY CLAY 38.00m-40.00m SILT BROWN 40.00m-41.50m FINE SAND 41.50m-47.00m GREY / YELLOW CLAY 47.00m-48.00m SAND 48.00m-52.00m GREY & BROWN CLAY	0.50m-39.50m INNER LINING - CASING = Pvc Class 9 39.50m-43.50m INNER LINING - SLOT = Pvc Class 9 43.50m-51.50m INNER LINING - CASING = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement 36.00m-51.50m OUTER LINING - GRAVEL = Gravel		39.50m-43.50m Sand	2007-01-05	837	North East
99188	Domestic		0.00m-9.00m INNER LINING - CASING = Pvc 6.00m-9.00m INNER LINING - SCREEN = Pvc			1983-02-28	839	South East
99447	Stock					1988-01-01	844	North West
WRK084698	Domestic & Stock	0.00m-12.50m yellow clay 12.50m-20.00m GRAVELyellow 20.00m-27.00m GRAVELgrey 27.00m-36.00m CLAYgrey 36.00m-42.00m CLAYbrown 42.00m-43.00m FIne sand 43.00m-44.50m SANDmed 44.50m-45.50m CLAYgrey	4.50m-42.00m INNER LINING - CASING = Pvc 45.00m-45.50m INNER LINING - CASING = Pvc 0.00m-0.50m OUTER LINING - GRAVEL = Cement 41.00m-45.00m OUTER LINING - GRAVEL = Seal			2015-04-28	854	North
123268	Domestic		0.40m-26.80m INNER LINING - CASING = Steel 26.00m-26.80m INNER LINING - CASING = Steel			1994-07-18	854	North
99142	Domestic		0.00m-7.00m INNER LINING - CASING = Not Known 7.00m-9.00m INNER LINING - SCREEN = Not Known		7.00m-9.00m Sand	1983-03-12	855	East
99391	Domestic	0.00m-0.30m TOP SOIL 0.30m-1.83m RED LOAM 1.83m-2.13m YELLOW SANDSTONE 2.13m-9.10m SANDY YELLOW CLAY 9.10m-10.52m SANDY GRAVEL	0.00m-6.91m INNER LINING - CASING = Pvc 6.91m-10.52m INNER LINING - SCREEN = Pvc		6.91m-10.52m Clay	1988-01-01	856	South East
99265	Domestic					1983-12-31	870	South East
99160	Domestic		0.00m-9.70m INNER LINING - CASING = Pvc 5.00m-9.70m INNER LINING - SCREEN = Pvc			1983-04-08	870	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99223	Domestic		8.00m-8.00m INNER LINING - CASING = Pvc 8.00m-10.00m INNER LINING - SCREEN = Slotted Pvc		8.00m-10.00m Sand	1984-08-21	887	East
98992	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-6.00m INNER LINING - SCREEN = Pvc		5.00m-6.00m Sand	1986-08-12	888	East
99358	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1986-12-31	901	East
WRK011947	Domestic & Stock	0.00m-6.00m RED CLAY 6.00m-30.00m SAND AND COARSE GRAVEL 30.00m-64.00m RED/YELLOW CLAY 64.00m-71.00m SAND 2mm	0.50m-62.00m INNER LINING - CASING = Pvc 62.00m-71.00m INNER LINING - SLOT = Pvc 0.00m-1.00m OUTER LINING - GRAVEL = Cement		62.00m-71.00m Sand	2006-12-12	903	North East
99305	Domestic, Stock		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-9.00m INNER LINING - SCREEN = Pvc 9.00m-9.10m INNER LINING - CASING = Pvc		8.00m-9.00m Sand	1984-12-31	905	South East
WRK073494	Irrigation	0.00m-19.00m CLAY 19.00m-35.00m GRAVEL 35.00m-80.00m CLAY 80.00m-88.00m SAND 88.00m-93.00m SAND	0.00m-70.00m INNER LINING - CASING = Pvc 70.00m-80.00m INNER LINING - CASING = Pvc 84.00m-88.00m INNER LINING - CASING = Pvc 88.00m-92.00m INNER LINING - CASING = Pvc 92.00m-93.00m INNER LINING - CASING = Pvc 0.00m-68.00m OUTER LINING - GRAVEL = Packer 68.00m-70.00m OUTER LINING - GRAVEL = Cement			2013-02-26	908	South East
99286	Domestic					1983-12-31	911	South East
WRK010479	Domestic & Stock					2008-12-03	921	North East
99253	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-10.00m INNER LINING - SCREEN = Pvc		8.00m-10.00m Sand	1983-03-12	937	South East
99197	Domestic		0.00m-7.90m INNER LINING - CASING = Pvc 7.90m-9.70m INNER LINING - SCREEN = Pvc		7.90m-9.70m Sand	1984-05-30	964	East
127549	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-13.50m BROWN CLAY 13.50m-16.00m CLAY GRAVEL 16.00m-18.50m GREY CLAY 18.50m-21.00m GRAVEL 21.00m-22.00m GREY CLAY 22.00m-24.00m DIRTY GRAVEL 24.00m-25.30m GRAVEL 25.30m-26.50m DARK GREY CLAY 26.50m-28.30m FINE GRAVEL 28.30m-29.50m GRAVEL 29.50m-31.70m CLAY	-0.30m-28.00m INNER LINING - CASING = Steel 28.00m-31.00m INNER LINING - SCREEN = Steel 31.00m-31.70m INNER LINING - CASING = Steel			1995-11-30	971	North
98983	Domestic					1983-01-31	976	East
99163	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-9.00m INNER LINING - SCREEN = Pvc		7.00m-9.00m Sand	1983-02-06	980	East
99161	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-8.00m INNER LINING - SCREEN = Pvc		6.00m-8.00m Sand	1983-06-01	1003	East
123266	Domestic, Stock	0.00m-0.20m TOP SOIL 0.20m-13.00m BROWN CLAY 13.00m-16.50m CLAY BOUND GRAVEL 16.50m-17.50m BROWN CLAY 17.50m-20.00m CLAY BOUND GRAVEL 20.00m-27.70m GREY CLAY 27.70m-30.50m GRAVEL 31.00m-0.00m GREY CLAY	0.40m-27.70m INNER LINING - CASING = Steel			1994-07-30	1019	North
127548	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-8.00m BROWN CLAY 8.00m-21.00m DIRTY GRAVEL 21.00m-22.00m CLAY 22.00m-25.00m DIRTY GRAVEL 25.00m-28.00m GRAVEL 28.00m-35.00m CLAY 35.00m-37.00m FINE SAND 37.00m-39.00m CLEAN GRAVEL 39.00m-41.00m DIRTY GRAVEL	-0.40m-37.00m INNER LINING - CASING = Steel 37.00m-40.00m INNER LINING - SCREEN = Steel 40.00m-41.00m INNER LINING - CASING = Steel			1996-02-23	1025	North

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99107	Domestic, Stock					1970-12-31	1030	South West
WRK952931	Domestic & Stock					2008-12-03	1035	North East
99185	Domestic		0.00m-10.60m INNER LINING - CASING = Not Known 0.01m-7.00m INNER LINING - SCREEN = Not Known			1983-10-11	1046	South East
114200	Domestic	0.00m-6.00m YELLOW CLAY 6.00m-9.00m SAND & GRAVEL 9.00m-11.00m GREY CLAY 11.00m-16.00m RED GRAVEL 16.00m-23.00m BLACK CLAY & GRAVEL 23.00m-27.50m GREY GRAVEL	-0.50m-21.00m INNER LINING - CASING = Pvc Class 9 16.00m-27.00m INNER LINING - SCREEN = Pvc Class 9 15.00m-17.00m OUTER LINING - GRAVEL = Bentonite 17.00m-27.50m OUTER LINING - GRAVEL = Gravel			1992-11-03	1061	North
99114	Domestic, Stock		0.00m-9.75m INNER LINING - CASING = Not Known 9.75m-15.54m INNER LINING - SCREEN = Not Known			1974-01-16	1063	North
99446	Stock					1988-01-01	1065	North
98968	Domestic		0.00m-10.00m INNER LINING - CASING = Not Known 10.00m-11.00m INNER LINING - SCREEN = Not Known		10.00m-11.00m Sand	1984-08-16	1072	South East
99285	Domestic		0.00m-6.30m INNER LINING - CASING = Pvc 6.30m-7.30m INNER LINING - SCREEN = Pvc		6.30m-7.30m Sand	1984-12-31	1076	East
WRK009023	Domestic & Stock	0.00m-0.20m BROWN CLAY 0.20m-12.00m BROWN CLAY 12.00m-21.00m DIRTY GRAVEL 21.00m-26.00m GREY CLAY 26.00m-28.00m DIRTY GRAVEL 28.00m-34.50m GRAVEL 34.50m-36.00m DIRTY GRAVEL	0.30m-28.00m INNER LINING - CASING = Pvc 28.00m-34.50m INNER LINING - SLOT = Pvc 34.50m-36.00m INNER LINING - CASING = Pvc		28.00m-34.50m Granite	2003-02-12	1080	North
99239	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-8.00m INNER LINING - SCREEN = Pvc		6.00m-8.00m Gravel	1983-03-01	1081	East
WRK950713							1082	North
99270	Domestic					1984-12-31	1082	South East
WRK013297	Domestic & Stock	0.00m-2.00m BROWN GREY CLAY 2.00m-10.00m FINE GRAIN SAND 10.00m-14.00m FINE RIVER GRAVELS 14.00m-30.00m COARSE RIVER GRAVELS 30.00m-36.00m COARSE GRAIN SAND	0.00m-30.00m INNER LINING - CASING = Pvc Class 9 30.00m-36.00m INNER LINING - SLOT = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement		30.00m-36.00m Sand	2004-03-25	1082	North
WRK083105	Domestic & Stock		0.00m-0.00m OUTER LINING - GRAVEL = Not Known			2015-01-01	1096	South
99350	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-12-31	1096	East
99481	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-4.30m BROWN CLAY 4.30m-6.50m BROWN SILTY CLAY 6.50m-10.85m BROWN CLAY 10.85m-13.70m GRAVEL 13.70m-15.85m CLAY BOUND GRAVEL 15.85m-18.30m GRAVEL 18.30m-21.30m GREY CLAY BOUND GRAVEL 21.30m-22.80m GRAVEL WITH FINE SAND 22.80m-27.70m GREY SILTY CLAY 27.70m-30.30m GRAVEL WITH WATER 30.30m-31.10m CLAY BOUND GRAVEL	-0.30m-27.50m INNER LINING - CASING = Galvanised Iron 27.50m-30.80m INNER LINING - SCREEN = Galvanised Iron 30.80m-31.10m INNER LINING - CASING = Galvanised Iron		27.50m-30.80m Gravel	1991-06-14	1117	North East
WRK093315	Domestic & Stock	0.00m-3.00m CLAY BROWN/GREY 3.00m-4.50m GREY CLAY 4.50m-7.00m SAND FINE/MED 7.00m-11.00m GREY/BROWN CLAY 11.00m-28.00m COARSE SAND / RIVER GRAVEL 28.00m-38.00m GREY CLAY 38.00m-41.00m SAND- CLEAN MED/COARSE 41.00m-43.00m CLAY- BROWN/GREY	0.00m-35.00m INNER LINING - CASING = Pvc 35.00m-41.00m INNER LINING - SCREEN = Pvc 0.00m-6.50m OUTER LINING - GRAVEL = Cement 6.50m-9.00m OUTER LINING - GRAVEL = Bentonite 9.00m-33.00m OUTER LINING - GRAVEL = Seal		35.00m-41.00m Sand	2016-05-04	1118	North
99268	Domestic					1983-12-31	1121	South East
99192	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-9.00m INNER LINING - SCREEN = Pvc		7.00m-9.00m Gravel	1983-03-12	1127	East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99177	Domestic		0.00m-8.00m INNER LINING - CASING = Not Known 8.00m-11.00m INNER LINING - SCREEN = Not Known		8.00m-11.00m Gravel	1983-10-24	1144	South East
99296	Domestic					1983-12-31	1148	East
127537	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-10.50m BROWN CLAY 10.50m-21.30m CLAY BOUND GRAVEL 21.30m-22.00m DARK GREY CLAY 22.00m-23.00m GRAVEL 23.00m-26.00m GREY CLAY 26.00m-29.00m GRAVEL 29.00m-35.33m BROWN CLAY 35.33m-36.50m SILTY CLAY 36.50m-40.73m FINE SAND 40.73m-41.80m GRAVEL 41.80m-42.70m BROWN CLAY	-0.30m-39.00m INNER LINING - CASING = Steel 39.00m-41.70m INNER LINING - SCREEN = Steel 41.70m-42.70m INNER LINING - CASING = Steel			1995-12-02	1150	North
99311	Domestic					1983-03-31	1153	East
99317	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.00m INNER LINING - SCREEN = Pvc		6.00m-7.00m Sand	1983-12-31	1153	East
99212	Domestic		0.00m-12.19m INNER LINING - CASING = Not Known 9.75m-12.19m INNER LINING - SCREEN = Not Known			1983-05-21	1158	South East
99234	Domestic					1983-06-01	1158	South East
99320	Domestic					1983-12-31	1159	South East
98958	Domestic		0.00m-6.10m INNER LINING - CASING = Pvc 6.10m-8.50m INNER LINING - SCREEN = Pvc		6.10m-8.50m Gravel	1984-04-09	1160	East
99113	Domestic, Stock		0.00m-9.14m INNER LINING - CASING = Not Known 9.14m-15.24m INNER LINING - SCREEN = Not Known			1974-01-24	1163	North West
99228	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-10.00m INNER LINING - SCREEN = Pvc		8.00m-10.00m Clay	1984-10-07	1166	East
111459	Domestic	0.00m-0.20m TOP SOIL 0.20m-5.00m BROWN CLAY 5.00m-10.50m BROWN SILTY CLAY 10.50m-13.60m GRAVEL 13.60m-16.00m GREY CLAY 16.00m-17.00m GREY GRAVEL 17.00m-21.00m GREY CLAY BOUND 21.00m-26.00m GRAVEL 26.00m-28.65m CLAY BOUND GRAVEL 28.65m-30.50m GRAVEL GOOD WATER	0.00m-26.00m INNER LINING - CASING = Steel 26.00m-30.50m INNER LINING - SCREEN = Steel			1991-10-31	1168	North
99256	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-8.20m INNER LINING - SCREEN = Pvc		7.00m-8.20m Sand	1983-12-31	1176	East
99290	Domestic, Stock					1983-12-31	1176	East
115578	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-4.00m BROWN CLAY 4.00m-9.50m SILTY CLAY 9.50m-10.00m FINE GRAVEL 10.00m-12.40m ORANGE SILTY CLAY	-0.30m-9.00m INNER LINING - CASING = Pvc 9.00m-10.50m INNER LINING - SCREEN = Pvc 8.00m-10.50m OUTER LINING - GRAVEL = Gravel			1992-11-07	1177	North
99483	Not Known					1988-01-01	1178	East
79862	Domestic					1988-01-01	1178	East
99205	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-9.40m INNER LINING - SCREEN = Pvc		7.00m-9.40m Clay	1984-08-15	1182	South East
98971	Domestic		0.00m-4.20m INNER LINING - CASING = Not Known 4.20m-4.80m INNER LINING - SCREEN = Not Known		4.20m-4.80m Sand	1984-08-15	1186	East
99196	Not Known		0.00m-9.00m INNER LINING - CASING = Not Known 9.00m-10.60m INNER LINING - SCREEN = Not Known		9.00m-10.60m Sand	1984-05-30	1186	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
123925	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-8.00m CLAY BROWN 8.00m-12.00m SANDY CLAY 12.00m-24.60m CLAY & GRAVEL 24.60m-28.00m CLAEAN GRAVEL 28.00m-28.50m DIRTY GRAVEL	0.30m-25.00m INNER LINING - CASING = Steel 25.00m-28.00m INNER LINING - SCREEN = Steel 28.00m-28.50m INNER LINING - CASING = Steel			1995-01-09	1186	North
128535	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-12.00m BROWN CLAY 12.00m-21.30m GRAVEL 21.30m-27.00m GREY CLAY 27.00m-29.00m CLEAN GRAVEL 29.00m-30.30m GREY CLAY	-0.30m-27.00m INNER LINING - CASING = Steel 27.00m-30.00m INNER LINING - SCREEN = Steel 30.00m-30.30m INNER LINING - CASING = Steel			1996-04-22	1190	North West
99254	Domestic, Stock		0.00m-28.00m INNER LINING - CASING = Not Known 28.00m-31.00m INNER LINING - SCREEN = Not Known		28.00m-31.00m Gravel	1985-03-28	1190	North West
123920	Domestic	0.00m-0.20m TOP SOIL 0.20m-11.00m BROWN CLAY 11.00m-20.00m CLAY BOUND GRAVEL 20.00m-26.00m GREY CLAY 26.00m-28.50m GREEN GRAVEL 28.50m-29.00m CLAY BOUND GRAVEL	0.40m-26.00m INNER LINING - CASING = Steel 28.50m-29.00m INNER LINING - CASING = Steel			1995-01-04	1192	North
99319	Domestic					1983-12-31	1206	East
99368	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-02-28	1207	South East
99327	Domestic		0.00m-14.00m INNER LINING - CASING = Pvc 14.00m-15.00m INNER LINING - SCREEN = Pvc		14.00m-15.00m Sand	1983-04-21	1208	South East
99469	Domestic					1988-01-01	1210	South East
99283	Domestic					1983-12-31	1212	East
99194	Domestic		0.00m-11.50m INNER LINING - CASING = Not Known 11.50m-14.00m INNER LINING - SCREEN = Not Known		11.50m-14.00m Sand	1984-05-30	1214	South East
99206	Domestic		0.00m-9.00m INNER LINING - CASING = Not Known 9.00m-9.40m INNER LINING - SCREEN = Not Known		9.00m-9.40m Sand	1983-04-17	1215	South East
99362	Domestic	0.00m-8.20m NO DETAILS AVAILABLE				1984-05-02	1216	East
WRK092519	Domestic & Stock	0.00m-6.00m CLAYBROWN 6.00m-15.00m SANDY CLAY BROWN 15.00m-19.00m CLAYDARK GREY 19.00m-25.50m CLAYBROWN STIFF 25.50m-27.00m GRAVEL & SAND MED 27.00m-30.50m COURSE SAND & GRAVEL 30.50m-31.00m SANDY CLAY GREY	0.00m-0.00m OUTER LINING - GRAVEL = Not Known			2016-03-07	1234	South West
99117	Domestic, Stock		0.00m-10.66m INNER LINING - CASING = Not Known 10.66m-14.32m INNER LINING - SCREEN = Not Known			1974-12-19	1237	West
132131	Domestic	0.00m-0.15m TOP SOIL 0.15m-8.00m BROWN CLAY 8.00m-24.00m DIRTY GRAVEL 24.00m-25.00m CLAY 25.00m-28.00m DIRTY GRAVEL 28.00m-35.00m CLAY 35.00m-38.00m FINE SAND 38.00m-40.00m GRAVEL	-0.30m-38.00m INNER LINING - CASING = Steel 38.00m-40.00m INNER LINING - SCREEN = Steel		38.00m-40.00m Sand	1997-08-17	1244	North
99170	Domestic		0.00m-6.40m INNER LINING - CASING = Pvc 6.40m-8.20m INNER LINING - SCREEN = Pvc 8.20m-8.38m INNER LINING - CASING = Pvc		6.40m-8.20m Gravel	1983-05-04	1245	East
111920	Domestic	0.00m-2.00m RED CLAY 2.00m-2.50m GRAVEL 2.50m-6.00m FINE WHITE SANDS	-0.20m-2.00m INNER LINING - CASING = Pvc 2.00m-6.00m INNER LINING - SCREEN = Pvc			1989-01-01	1246	East
99179	Domestic, Stock	0.00m-3.00m CLAY 3.00m-4.00m RIVER GRAVEL 4.00m-8.00m SANDY LOAM 8.00m-10.00m BRICKY SAND 10.00m-12.00m RIVER GRAVEL	0.00m-12.00m INNER LINING - CASING = Pvc 0.00m-12.00m INNER LINING - SCREEN = Not Known 3.00m-12.00m OUTER LINING - GRAVEL = Gravel			1983-02-20	1250	South East
111922	Domestic	0.00m-4.50m BROWN/YELLOW CLAY 4.50m-5.50m FINE GREY SANDS	-0.10m-4.50m INNER LINING - CASING = Pvc 4.50m-5.50m INNER LINING - SCREEN = Pvc			1989-01-01	1252	North East
99412	Domestic, Stock					1988-01-01	1261	West

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
98966	Domestic					1983-03-30	1262	East
99261	Domestic					1983-12-31	1267	East
99182	Domestic		0.00m-11.00m INNER LINING - CASING = Not Known 10.85m-11.00m INNER LINING - SCREEN = Not Known			1984-02-01	1273	South East
99125	Stock		0.00m-15.24m INNER LINING - CASING = Not Known 15.24m-18.28m INNER LINING - SCREEN = Not Known			1976-04-10	1278	South West
99274	Domestic		0.00m-7.70m INNER LINING - CASING = Pvc 7.70m-9.10m INNER LINING - SCREEN = Pvc		7.70m-9.10m Sand	1983-12-31	1313	South East
123590	Domestic	0.00m-0.15m TOP SOIL 0.15m-11.00m BROWN CLAY 11.00m-25.50m CLAY & DIRTY GRAVEL 25.50m-26.60m BROWN CLAY 26.60m-29.00m CLEAN GRAVEL	0.00m-26.50m INNER LINING - CASING = Steel			1994-12-24	1313	North
120167	Domestic		0.00m-4.00m INNER LINING - CASING = Pvc 3.60m-4.00m INNER LINING - SCREEN = Pvc			1991-05-01	1317	East
99338	Domestic		0.00m-5.70m INNER LINING - CASING = Pvc 5.70m-6.70m INNER LINING - SCREEN = Pvc		5.70m-6.70m Sand	1986-11-27	1333	East
111921	Domestic	0.00m-2.44m BROWN/YELLOW CLAY 2.44m-6.00m FINE GREY SAND	-0.20m-3.00m INNER LINING - CASING = Pvc Class 9 3.00m-6.00m INNER LINING - SCREEN = Pvc Class 9			1989-01-01	1335	North East
111918	Domestic	0.00m-3.61m GREY CLAY 3.61m-6.00m FINE GREY SANDS	-0.10m-3.50m INNER LINING - CASING = Pvc 3.50m-6.00m INNER LINING - SCREEN = Pvc			1989-01-01	1348	North East
99195	Domestic					1983-02-20	1364	East
WRK010597	Domestic & Stock						1364	North
98964	Domestic		0.00m-3.60m INNER LINING - CASING = Not Known 3.60m-4.60m INNER LINING - SCREEN = Not Known		3.60m-4.60m Sand	1984-08-17	1378	East
99316	Domestic					1983-12-31	1384	South East
99475	Domestic					1988-01-01	1385	South East
99266	Domestic					1983-12-31	1389	South East
99294	Domestic					1983-12-31	1399	East
99458	Domestic					1988-01-01	1403	East
99355	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-12-31	1404	East
99299	Domestic		0.00m-8.10m INNER LINING - CASING = Pvc 8.10m-9.10m INNER LINING - SCREEN = Pvc		8.10m-9.10m Sand	1983-12-31	1418	East
99367	Domestic	0.00m-8.50m CLAY 8.50m-9.40m SAND	0.00m-8.40m INNER LINING - CASING = Pvc 8.40m-9.40m INNER LINING - SCREEN = Pvc		8.40m-9.40m Sand	1983-02-28	1421	East
99467	Domestic					1988-01-01	1425	South East
99250	Domestic, Stock		0.00m-8.00m INNER LINING - CASING = Pvc 7.50m-8.00m INNER LINING - SCREEN = Pvc			1983-04-11	1431	East
99260	Domestic		0.00m-10.80m INNER LINING - CASING = Pvc 10.80m-11.80m INNER LINING - SCREEN = Pvc		10.80m-11.80m Sand	1983-12-31	1456	South East
99310	Domestic					1986-12-31	1466	East
99257	Domestic					1983-12-31	1470	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
99237	Domestic		0.00m-7.00m INNER LINING - CASING = Pvc 7.00m-9.00m INNER LINING - SCREEN = Pvc		7.00m-9.00m Clay	1984-10-06	1472	South East
99201	Domestic		0.00m-9.40m INNER LINING - CASING = Pvc 9.40m-9.60m INNER LINING - SCREEN = Pvc		9.40m-9.60m Sand	1984-06-12	1476	South East
99304	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-9.70m INNER LINING - SCREEN = Pvc		8.00m-9.70m Sand	1984-12-31	1483	South East
99155	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-7.00m INNER LINING - SCREEN = Pvc		5.00m-7.00m Gravel	1983-04-25	1487	East
99021	Domestic					1983-12-31	1493	East
99193	Domestic		0.00m-9.40m INNER LINING - CASING = Not Known 9.40m-9.70m INNER LINING - SCREEN = Not Known		9.40m-9.70m Sand	1984-05-31	1497	South East
99438	Domestic, Stock					1988-01-01	1505	South West
99209	Domestic		0.00m-9.50m INNER LINING - CASING = Not Known 9.50m-10.60m INNER LINING - SCREEN = Not Known		9.50m-10.60m Sand	1984-08-18	1508	South East
99180	Domestic		0.00m-7.92m INNER LINING - CASING = Pvc 7.92m-9.40m INNER LINING - SCREEN = Pvc		7.92m-9.40m Sand	1983-04-10	1516	South East
WRK009802	Domestic & Stock	0.00m-0.20m TOP SOIL 0.20m-9.00m BROWN CLAY 9.00m-13.00m DIRTY GRAVEL 13.00m-15.50m SANDY CLAY 15.50m-20.00m GRAVEL 20.00m-23.00m DIRTY GRAVEL 23.00m-27.00m GRAVEL 27.00m-30.00m DIRTY GRAVEL 30.00m-33.00m GREY CLAY 33.00m-37.00m SILTY CLAY 37.00m-39.50m GOOD GRAVEL 39.50m-41.00m BROWN CLAY	0.00m-37.00m INNER LINING - CASING = Pvc 37.00m-40.00m INNER LINING - SCREEN = Pvc 40.00m-41.00m INNER LINING - CASING = Pvc		37.00m-40.00m Gravel	2003-11-29	1523	North
WRK009190	Domestic & Stock	0.00m-0.20m topsoil 0.20m-14.00m brown clay 14.00m-20.00m dirty gravel 20.00m-27.00m grey clay 27.00m-31.00m gravel 31.00m-40.00m brown clay 40.00m-43.00m gravel 43.00m-44.00m clay	0.30m-39.50m INNER LINING - CASING = Pvc 39.50m-43.00m INNER LINING - SLOT = Pvc 43.00m-44.00m INNER LINING - CASING = Pvc		39.50m-43.00m Gravel	2003-02-26	1527	North West
99300	Domestic					1983-12-31	1538	South East
99210	Domestic		0.00m-10.00m INNER LINING - CASING = Not Known 9.00m-10.00m INNER LINING - SCREEN = Not Known			1984-05-22	1544	South
99328	Domestic, Stock		0.00m-6.50m INNER LINING - CASING = Pvc 6.50m-8.50m INNER LINING - SCREEN = Pvc		6.50m-8.50m Sand	1983-12-31	1545	East
99220	Domestic		0.00m-9.50m INNER LINING - CASING = Pvc 9.50m-11.00m INNER LINING - SCREEN = Pvc		9.50m-11.00m Sand	1984-08-18	1546	South East
WRK012000	Domestic & Stock	0.00m-0.20m TOPSOIL 0.20m-7.00m CLAY YELLOW 7.00m-17.00m FINE SILTY SAND 17.00m-19.00m COARSE SAND AND GRAVELS 19.00m-22.00m GREY CLAYED SAND 22.00m-28.00m GREY CLAY 28.00m-37.50m YELLOW CLAY 37.50m-41.50m FINE SAND 41.50m-43.50m GREY GREEN CLAY	0.50m-37.50m INNER LINING - CASING = Pvc Class 9 37.50m-41.50m INNER LINING - SLOT = Pvc Class 9 41.50m-43.50m INNER LINING - CASING = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement 0.50m-3.00m OUTER LINING - GRAVEL = Seal 3.00m-6.00m OUTER LINING - GRAVEL = Cement 35.00m-43.50m OUTER LINING - GRAVEL = Gravel		37.50m-41.50m Sand	2006-12-31	1552	North
99144	Domestic		0.00m-4.57m INNER LINING - CASING = Pvc 4.57m-6.40m INNER LINING - SCREEN = Pvc 6.40m-6.71m INNER LINING - CASING = Pvc		4.57m-6.40m Sand	1983-03-29	1553	East
99369	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-03-31	1557	East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
111939	Domestic & Stock	0.00m-0.15m TOP SOIL 0.15m-8.00m BROWN CLAY 8.00m-11.50m CLAY BOUND GRAVEL 11.50m-16.00m GREY CLAY 16.00m-20.00m GREY GRAVEL 20.00m-21.00m BLACK CLAY 21.00m-24.60m CLAY BOUND GRAVEL 24.60m-27.50m CLEAN GRAVEL 27.50m-28.30m CLAY WITH GRAVEL	-0.30m-24.30m INNER LINING - CASING = Steel 24.30m-28.00m INNER LINING - SCREEN = Steel			1991-12-23	1560	North
99264	Domestic					1983-12-31	1562	South East
99308	Domestic					1984-12-31	1565	South East
WRK089981	Domestic & Stock	0.00m-9.80m CLAY 9.80m-31.00m SAND 31.00m-39.50m CLAY 39.50m-46.00m SAND	0.50m-43.00m INNER LINING - CASING = Pvc 43.00m-46.00m INNER LINING - SCREEN = Pvc 0.00m-24.00m OUTER LINING - GRAVEL = Cement			2015-11-13	1577	North
99331	Domestic, Stock		0.00m-6.70m INNER LINING - CASING = Pvc 6.70m-8.00m INNER LINING - SCREEN = Pvc		6.70m-8.00m Sand	1983-09-20	1579	South West
99393	Stock					1988-01-01	1581	South West
112398	Domestic & Stock	0.00m-6.50m BROWN CLAY 6.50m-10.00m SANDY CLAY 10.00m-11.50m CLAY BOUND GRAVEL 11.50m-13.50m BROWN CLAY 13.50m-14.00m GRAVEL 14.00m-18.00m GREY CLAY BOUND GRAVEL 18.00m-22.30m FINE SILTY SAND 22.30m-23.50m GRAVEL 23.50m-27.30m FINE SILTY SAND 27.30m-29.80m GOOD GRAVEL 29.80m-30.15m GREY CLAY	-0.20m-27.00m INNER LINING - CASING = Steel 27.00m-29.75m INNER LINING - SCREEN = Steel			1991-11-13	1585	North
99374	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1984-06-02	1585	East
99221	Domestic		0.00m-4.50m INNER LINING - CASING = Pvc 3.00m-4.50m INNER LINING - SCREEN = Pvc			1984-08-18	1588	East
99255	Domestic					1983-12-31	1595	East
WRK073737	Domestic & Stock	0.00m-10.50m CLAY 10.50m-17.00m GRAVEL 17.00m-24.00m GRAVEL 24.00m-34.00m CLAY 34.00m-36.00m SILT 36.00m-38.00m SAND 38.00m-40.00m SAND 40.00m-40.50m CLAY	0.00m-37.00m INNER LINING - CASING = Pvc Class 9 40.00m-40.50m INNER LINING - CASING = Pvc Class 9 0.00m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-33.00m OUTER LINING - GRAVEL = Seal 33.00m-34.50m OUTER LINING - GRAVEL = Cement 34.50m-40.50m OUTER LINING - GRAVEL = Gravel		37.00m-40.00m Sand	2013-03-15	1601	North
WRK011343	Communal Domestic, Commercial	0.00m-4.00m RED CLAY 4.00m-5.00m GREY CLAY & SAND 5.00m-10.00m GREY CLAY 10.00m-37.00m BIG GRAVEL 37.00m-56.00m BLUE SANDY CLAY 56.00m-65.00m SAND MEDIUM 65.00m-79.00m GREY BROWN CLAY 79.00m-85.00m SAND COARSE 85.00m-117.00m GREY BROWN CLAY 117.00m-120.00m SAND COARSE	0.50m-56.50m INNER LINING - CASING = Stainless Steel 56.50m-64.50m INNER LINING - SCREEN = Stainless Steel 64.50m-79.00m INNER LINING - CASING = Stainless Steel 79.00m-84.50m INNER LINING - SCREEN = Stainless Steel 84.50m-90.50m INNER LINING - CASING = Stainless Steel 20.00m-39.00m OUTER LINING - GRAVEL = Cement		56.50m-64.50m Sand 79.00m-84.50m Sand	2003-05-16	1610	South East
99215	Domestic		0.00m-4.00m INNER LINING - CASING = Not Known 4.00m-6.70m INNER LINING - SCREEN = Not Known		4.00m-6.70m Sand	1984-08-17	1623	East
99151	Domestic		0.00m-10.50m INNER LINING - CASING = Pvc 10.50m-12.00m INNER LINING - SCREEN = Pvc		10.50m-12.00m Sand	1983-04-16	1626	South East
WRK077962	Domestic & Stock	0.00m-1.00m TOP SOIL 1.00m-10.50m SILTY CLAY 10.50m-18.00m YELLOW CLAY 18.00m-19.50m GRAVELCLAY 19.50m-27.00m SANDCOURSE 27.00m-37.00m YELLOW CLAY 37.00m-38.00m SILTBROWN 38.00m-41.00m SANDMEDIUM	0.00m-38.20m INNER LINING - CASING = Pvc 40.40m-41.00m INNER LINING - CASING = Pvc 0.00m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-24.00m OUTER LINING - GRAVEL = Bentonite 24.00m-41.00m OUTER LINING - GRAVEL = Seal			2014-11-19	1650	North

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
127532	Domestic, Stock	0.00m-0.15m TOP SOIL 0.15m-9.00m CLAY 9.00m-21.00m DIRTY GRAVEL 21.00m-23.00m SILTY CLAY 23.00m-26.80m CLEAN GRAVEL	-0.40m-23.00m INNER LINING - CASING = Steel 23.00m-26.00m INNER LINING - SCREEN = Steel 26.00m-26.80m INNER LINING - CASING = Steel			1996-02-01	1651	North
WRK092817	Domestic & Stock	0.00m-2.00m CLAY BROWN 2.00m-5.00m CLAY ORANGE 5.00m-12.00m CLAY YELLOW/BROWN 12.00m-18.50m SANDY CLAY 18.50m-28.50m CLAY 28.50m-41.00m CLAY 41.00m-41.80m SILT 41.80m-44.00m SAND MED 44.00m-45.00m CLAY GREY	0.00m-42.00m INNER LINING - CASING = Pvc 0.00m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-41.80m OUTER LINING - GRAVEL = Seal			2016-04-19	1653	North
99251	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-6.00m INNER LINING - SCREEN = Pvc 6.00m-6.10m INNER LINING - CASING = Pvc		5.00m-6.00m Sand	1984-08-18	1655	East
99219	Domestic		0.00m-7.50m INNER LINING - CASING = Not Known 7.50m-8.50m INNER LINING - SCREEN = Not Known		7.50m-8.50m Clay	1983-03-20	1660	South East
99271	Domestic					1983-12-31	1660	East
99099	Urban					1983-01-01	1660	South East
99001	Domestic		0.00m-4.20m INNER LINING - CASING = Pvc 4.20m-6.00m INNER LINING - SCREEN = Pvc		4.20m-6.00m Sand	1983-12-31	1665	East
99233	Domestic		0.00m-9.75m INNER LINING - CASING = Pvc 5.49m-9.75m INNER LINING - SCREEN = Pvc			1984-12-14	1669	East
WRK012942	Domestic & Stock	0.00m-0.20m TOPSOIL 0.20m-10.00m YELLOW CLAY 10.00m-20.00m GRAVEL 20.00m-23.00m YELLOW CLAY 23.00m-33.00m GREY SAND 33.00m-36.00m CLAY GREY 36.00m-40.00m GRAVEL 40.00m-41.00m CLAYED GRAVEL 41.00m-45.00m MEDIUM TO COARSE SAND 45.00m-46.00m SAND BECOMING CLAYED	0.50m-42.00m INNER LINING - CASING = Pvc Class 9 42.00m-45.00m INNER LINING - SLOT = Pvc Class 9 45.00m-46.00m INNER LINING - CASING = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement 0.50m-41.00m OUTER LINING - GRAVEL = Seal 41.00m-46.00m OUTER LINING - GRAVEL = Gravel		42.00m-45.00m Sand	2007-02-22	1671	North
99334	Domestic					1984-12-31	1678	South East
99174	Domestic		1.00m-9.00m INNER LINING - CASING = Pvc 9.00m-10.00m INNER LINING - SCREEN = Pvc		9.00m-10.00m Sand	1983-09-01	1679	South East
99232	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 6.00m-8.00m INNER LINING - SCREEN = Pvc			1983-03-06	1679	East
98936	Domestic		0.00m-7.60m INNER LINING - CASING = Not Known 7.60m-10.65m INNER LINING - SCREEN = Not Known 2.00m-10.65m OUTER LINING - GRAVEL = Gravel		7.60m-10.65m Gravel	1983-03-28	1682	South East
99018	Domestic					1983-12-31	1682	East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
WRK013103	Groundwater Investigation	0.00m-7.00m CLAYS 7.00m-33.00m SANDY GRAVELS CLAYS 33.00m-56.00m CLAYS 56.00m-64.00m FINE SANDS 64.00m-121.00m CLAYS 121.00m-129.00m FINE SAND GRAVEL CLAYS 129.00m-132.00m CLAY	0.00m-56.25m INNER LINING - CASING = Pvc 56.25m-68.75m INNER LINING - SCREEN = Stainless Steel 68.75m-118.00m INNER LINING - CASING = Pvc 118.00m-122.25m INNER LINING - CASING = Stainless Steel 122.25m-124.75m INNER LINING - SCREEN = Stainless Steel 124.75m-126.75m INNER LINING - CASING = Stainless Steel 0.00m-3.00m OUTER LINING - GRAVEL = Cement 3.00m-39.00m OUTER LINING - GRAVEL = Gravel 39.00m-49.00m OUTER LINING - GRAVEL = Cement		56.25m-68.75m Sand 118.00m-122.25m Sand 122.25m-124.75m Sand 124.75m-126.75m Sand	2007-05-08	1682	South East
98946	Domestic		0.00m-13.00m INNER LINING - CASING = Pvc 13.00m-16.00m INNER LINING - SCREEN = Pvc		13.00m-16.00m Clay	1983-10-28	1683	North
98965	Domestic		0.00m-10.60m INNER LINING - CASING = Not Known 10.60m-11.90m INNER LINING - SCREEN = Not Known		10.60m-11.90m Gravel	1984-08-18	1688	East
99441	Stock					1988-01-01	1697	South West
WRK014577	Domestic & Stock	0.00m-0.20m Top Soil 0.20m-9.00m Yellow Clay 9.00m-11.00m Coarse Sand 11.00m-15.50m Gravel 15.50m-18.00m Sandy Yellow Clay 18.00m-21.00m Gravel 21.00m-25.00m Grey Sand 25.00m-30.50m Grey Clay & Gravel 30.50m-33.00m Sand Medium Dirty 33.00m-43.50m Grey Clay & Gravel 43.50m-48.00m Yellow Grey Sandy Clay	0.50m-43.50m INNER LINING - CASING = Pvc Class 9 43.50m-45.50m INNER LINING - SCREEN = Pvc Class 9 45.50m-48.00m INNER LINING - CASING = Pvc Class 9 0.00m-3.00m OUTER LINING - GRAVEL = Cement 3.00m-42.00m OUTER LINING - GRAVEL = Seal 42.00m-48.00m OUTER LINING - GRAVEL = Seal		43.50m-45.50m Sand	2008-09-05	1699	North
99049	Domestic	0.00m-11.00m LOAM SANDY CLAY 11.00m-27.00m CLAY 27.00m-39.00m SAND	0.00m-36.00m INNER LINING - CASING = Mild Steel 36.00m-39.00m INNER LINING - SCREEN = Mild Steel		36.00m-39.00m Sand	1984-11-10	1703	North
98963	Not Known	0.00m-5.00m SANDY LOAM AND SANDY CLAY 5.00m-9.00m FINE SILT, LITTLE WATER 9.00m-14.00m SAND CARRYING SALTY WATER 14.00m-16.00m CLAY 16.00m-18.00m CLAY-BOREABANDONED	0.00m-16.00m INNER LINING - CASING = Pvc 16.00m-18.00m INNER LINING - SCREEN = Pvc		16.00m-18.00m Sand	1984-03-14	1703	North
99050	Not Known	0.00m-18.00m NO DETAILS AVAILABLE - ABANDONED - OBSTACLE IN WAY				1984-11-05	1703	North
113607	Domestic & Stock	0.00m-0.15m TOP SOIL 0.15m-10.50m BROWN CLAY 10.50m-15.00m CLAY BOUND GRAVEL 15.00m-17.00m GREY CLAY 17.00m-22.00m GREY GRAVEL CLAY BOUND 22.00m-25.50m GREY CLAY 25.50m-28.75m GRAVEL CLAY BOUND 28.75m-31.00m BLACK CLAY 31.00m-33.50m GRAVEL 33.50m-33.70m CLAY GREY	-0.30m-31.00m INNER LINING - CASING = Steel 31.00m-33.70m INNER LINING - SCREEN = Steel			1992-04-24	1707	North
WRK011207	Domestic & Stock						1716	North
WRK082534	Domestic & Stock	0.00m-4.00m CLAYORANGE 4.00m-13.00m CLAYYELLOW 13.00m-19.00m GRAVELSMALL BROW 19.00m-23.00m COURSE SAND GREY 23.00m-37.50m CLAYYELLOW 37.50m-41.00m SANDFINE 41.00m-42.00m SANDHEARVY CLAY 42.00m-43.00m CLAYYELLOW SAND	0.00m-38.00m INNER LINING - CASING = Pvc 38.00m-41.00m INNER LINING - SCREEN = Pvc 0.00m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-24.00m OUTER LINING - GRAVEL = Seal 24.00m-36.00m OUTER LINING - GRAVEL = Cement 36.00m-43.00m OUTER LINING - GRAVEL = Seal			2014-12-01	1720	North
99372	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-03-31	1720	East
99278	Domestic, Stock					1984-12-31	1721	East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
WRK012709	Domestic & Stock	0.00m-0.10m TOP SOIL 0.10m-4.00m YELLOW CLAY 4.00m-9.00m MEDIUM SAND 9.00m-19.00m GRAVEL UP TO 20MM 19.00m-27.00m SANDED GREY CLAY 27.00m-35.50m GREY AND YELLOW CLAY 35.50m-41.50m COARSE SAND 41.50m-45.00m VERY STIFF YELLOW & GREY CLAY	0.50m-37.50m INNER LINING - CASING = Pvc Class 9 37.50m-41.00m INNER LINING - SLOT = Pvc Class 9 41.00m-44.00m INNER LINING - CASING = Pvc Class 9 0.00m-0.40m OUTER LINING - GRAVEL = Cement 0.40m-34.00m OUTER LINING - GRAVEL = Seal 34.00m-44.00m OUTER LINING - GRAVEL = Gravel		37.50m-41.00m Sand	2007-02-10	1730	North
WRK012332	Domestic & Stock	0.00m-0.10m TOP SOIL 0.10m-6.00m CLAY YELLOW 6.00m-8.00m SANDY CLAY 8.00m-20.00m GRAVEL 20.00m-32.50m SAND AND GRAVEL COURSE 32.50m-38.50m CLAY GREY 38.50m-44.50m SAND FINE	0.50m-41.00m INNER LINING - CASING = Pvc Class 9 41.00m-44.00m INNER LINING - SCREEN = Pvc Class 9 44.00m-44.50m INNER LINING - CASING = Pvc Class 9 0.00m-38.00m OUTER LINING - GRAVEL = Seal 38.00m-44.00m OUTER LINING - GRAVEL = Gravel		41.00m-44.00m Sand	2006-12-01	1736	North
99133	Not Known					1980-01-25	1737	North
99371	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-03-31	1737	East
99366	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1983-02-28	1739	East
114066	Domestic & Stock	0.00m-0.15m TOP SOIL 0.15m-11.00m BROWN CLAY 11.00m-21.00m ORANGE CLAY BOUND GRAVEL 21.00m-25.50m GREY SILTY CLAY 25.50m-31.00m GREY CLAY & GRAVEL 31.00m-33.00m GRAVEL 33.00m-34.50m GREY CLAY	-0.20m-31.00m INNER LINING - CASING = Steel 31.00m-34.50m INNER LINING - SCREEN = Steel			1992-05-23	1745	North East
99314	Domestic					1983-12-31	1747	East
99293	Domestic, Stock		0.00m-6.30m INNER LINING - CASING = Pvc 6.30m-7.30m INNER LINING - SCREEN = Pvc		6.30m-7.30m Sand	1983-12-31	1752	East
99302	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-7.00m INNER LINING - SCREEN = Pvc		6.00m-7.00m Sand	1983-12-31	1753	East
99164	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-6.40m INNER LINING - SCREEN = Pvc		5.00m-6.40m Sand	1983-03-17	1755	East
99301	Domestic					1983-12-31	1775	East
126931	Domestic, Stock	0.00m-0.20m TOP SOIL 0.20m-12.00m CLAY BROWN 12.00m-27.00m CLAY GRAVEL 27.00m-36.00m BROWN CLAY 36.00m-39.00m GRAVEL 39.00m-39.50m CLAY GREY	-0.40m-36.00m INNER LINING - CASING = Steel 36.00m-39.00m INNER LINING - SCREEN = Steel 39.00m-39.50m INNER LINING - CASING = Steel			1995-09-07	1786	North
99346	Domestic	0.00m-9.14m CLAY SURFACE GREY CLAY 9.14m-10.55m SAND 10.55m-32.00m RED CLAY	0.00m-29.26m INNER LINING - CASING = Not Known 29.26m-32.00m INNER LINING - SCREEN = Not Known		29.26m-32.00m Clay	1988-03-24	1787	North West
98979	Domestic		0.00m-6.80m INNER LINING - CASING = Pvc 6.80m-7.30m INNER LINING - SCREEN = Pvc		6.80m-7.30m Sand	1984-12-13	1788	East
99184	Domestic					1983-05-02	1790	East
99289	Domestic					1983-12-31	1793	East
99139	Domestic					1983-12-31	1797	East
99103	Not Known		0.00m-55.30m INNER LINING - CASING = Not Known 55.30m-58.20m INNER LINING - SCREEN = Not Known 77.10m-86.50m INNER LINING - SCREEN = Bronze Mesh		55.30m-58.20m Gravel 77.10m-86.50m Gravel	1983-03-04	1797	South East
114939	Domestic & Stock	0.00m-5.18m LOAM, CLAY SURFACE 5.18m-5.40m GREY CLAY 5.40m-8.53m SANDY CLAY CARRYING LITTLE WATER 8.53m-11.84m GREY CLAY SAND CARRYING LITTLE WATER	-0.40m-8.53m INNER LINING - CASING = Steel 8.53m-11.84m INNER LINING - SCREEN = Steel			1993-02-07	1801	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
WRK016954	Domestic & Stock	0.00m-6.00m Clay 6.00m-9.00m Sand/Clay 9.00m-22.00m River Gravel 22.00m-24.00m Clay 24.00m-31.00m Gravel	0.00m-25.00m INNER LINING - CASING = Pvc 25.00m-31.00m INNER LINING - SCREEN = Pvc		25.00m-31.00m Gravel	2009-06-05	1806	South West
WRK012807	Domestic & Stock	0.00m-0.10m TOPSOIL 0.10m-10.00m YELLOW CLAY 10.00m-14.50m GRAVEL 14.50m-19.50m YELLOW CLAY 19.50m-29.00m SANDY GREY CLAY 29.00m-32.00m SAND CLAYED IN SPOTS 32.00m-40.00m COARSE SAND & GRAVEL 40.00m-42.00m SANDY GREY CLAY 42.00m-45.00m FINE SAND 45.00m-46.00m YELLOW AND GREY VERY STIFF CLAY	0.50m-42.00m INNER LINING - CASING = Pvc Class 9 42.00m-45.00m INNER LINING - SLOT = Pvc Class 9 45.00m-46.00m INNER LINING - CASING = Pvc Class 9 0.00m-0.50m OUTER LINING - GRAVEL = Cement 0.50m-40.00m OUTER LINING - GRAVEL = Seal 40.00m-46.00m OUTER LINING - GRAVEL = Gravel		42.00m-45.00m Sand	2007-02-16	1813	North
98981	Domestic		0.00m-8.90m INNER LINING - CASING = Pvc 8.90m-9.80m INNER LINING - SCREEN = Pvc		8.90m-9.80m Gravel	1984-03-22	1823	South East
98954	Domestic					1983-03-30	1825	South East
WRK078162	Observation	0.00m-5.20m SILTY CLAY 5.20m-12.00m SANDY/CLAY/CLAYEY	0.00m-7.00m INNER LINING - CASING = UPVC class 6 7.00m-10.00m INNER LINING - SCREEN = Not Known 0.10m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-6.50m OUTER LINING - GRAVEL = Bentonite 6.50m-10.00m OUTER LINING - GRAVEL = Gravel		7.00m-10.00m Clay	2014-03-11	1829	South East
99176	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-6.40m INNER LINING - SCREEN = Pvc		5.00m-6.40m Sand	1983-10-16	1835	East
98955	Domestic		0.00m-6.40m INNER LINING - CASING = Pvc 6.40m-8.22m INNER LINING - SCREEN = Pvc 8.22m-9.54m INNER LINING - CASING = Pvc		6.40m-8.22m Sand	1983-05-22	1836	East
WRK104112	Irrigation	0.00m-117.00m CLAY	0.00m-79.00m OUTER LINING - GRAVEL = Cement 79.00m-80.00m OUTER LINING - GRAVEL = Bentonite 80.00m-117.00m OUTER LINING - GRAVEL = Gravel			2018-01-16	1838	East
120663	Domestic	0.00m-5.00m BROWN GREY CLAY 5.00m-11.00m BROWN SILTY CLAY 11.00m-14.50m BROWN GRAVEL 14.50m-25.00m GREY CLAY AND SAND 25.00m-29.00m GREY GRAVEL 29.00m-30.00m GREY CLAY	-0.50m-24.00m INNER LINING - CASING = Pvc 0.00m-30.00m INNER LINING - CASESCRN = Not Known 24.00m-30.00m INNER LINING - SCREEN = Not Known 0.60m-1.00m OUTER LINING - GRAVEL = Cement			1994-03-18	1848	East
98984	Domestic		0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-10.30m INNER LINING - SCREEN = Pvc		8.00m-10.30m Sand	1983-03-19	1861	South East
WRK011125	Industrial						1872	South East
WRK012340	Domestic & Stock	0.00m-1.00m topsoil 1.00m-4.00m clay 4.00m-10.00m medium grain sand	5.00m-10.00m INNER LINING - CASESCRN = Pvc 0.00m-1.00m OUTER LINING - GRAVEL = Cement		5.00m-10.00m Sand	2006-12-04	1875	North East
98953	Domestic		0.00m-9.50m INNER LINING - CASING = Pvc 0.01m-9.50m INNER LINING - SCREEN = Pvc			1983-04-03	1876	South East
99140	Domestic, Stock	0.00m-2.00m TOP SOIL 2.00m-8.00m SAND 8.00m-10.00m GRAVEL AND SAND	0.00m-8.00m INNER LINING - CASING = Pvc 8.00m-10.00m INNER LINING - SCREEN = Pvc		8.00m-10.00m Gravel	1983-03-04	1879	South East
WRK012335	Domestic & Stock	0.00m-1.00m topsoil 1.00m-4.00m clay (red) 4.00m-10.00m medium grain sand	0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-10.00m INNER LINING - SLOT = Pvc 0.00m-1.00m OUTER LINING - GRAVEL = Cement		5.00m-10.00m Sand	2006-12-04	1888	North East
99000	Domestic					1983-12-31	1889	South East
99101	Not Known					1959-03-31	1891	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
114887	Domestic	0.00m-0.20m TOP SOIL 0.20m-9.00m BROWN CLAY 9.00m-29.00m CLAY BOUND 29.00m-31.50m FINE SAND 31.50m-35.00m CLEAN GRAVEL 35.00m-36.00m CLAY BOUND	-0.30m-32.00m INNER LINING - CASING = Steel 32.00m-35.00m INNER LINING - SCREEN = Steel 35.00m-36.00m INNER LINING - CASING = Steel			1992-12-07	1899	North
99023	Domestic		0.00m-4.00m INNER LINING - CASING = Pvc 4.00m-5.60m INNER LINING - SCREEN = Pvc		4.00m-5.60m Sand	1983-12-31	1911	South East
99020	Domestic		0.00m-6.30m INNER LINING - CASING = Pvc 6.30m-7.30m INNER LINING - SCREEN = Pvc		6.30m-7.30m Sand	1983-12-31	1912	South East
99361	Domestic	0.00m-9999.99m NO DETAILS AVAILABLE				1984-05-17	1927	North East
98947	Domestic		0.00m-1.50m INNER LINING - CASING = Not Known 1.50m-7.00m INNER LINING - SCREEN = Not Known		1.50m-7.00m Sand	1983-06-16	1929	East
98989	Domestic		0.00m-6.00m INNER LINING - CASING = Pvc 6.00m-6.70m INNER LINING - SCREEN = Pvc		6.00m-6.70m Sand	1983-12-31	1929	South East
WRK012428	Domestic & Stock						1938	North East
99462	Domestic & Stock	0.00m-0.15m TOP SOIL 0.15m-2.00m BROWN CLAY 2.00m-6.50m BROWN SILTY CLAY 6.50m-11.00m GREY SILTY CLAY 11.00m-12.50m GRAVEL 12.50m-21.60m GREY SILTY CLAY 21.60m-26.50m GRAVEL 26.50m-27.00m GREY CLAY	0.00m-23.50m INNER LINING - CASING = Not Known 23.50m-26.70m INNER LINING - SCREEN = Not Known			23.50m-26.70m Gravel	1990-11-14	1949	North
99284	Domestic		0.00m-8.53m INNER LINING - CASING = Pvc 7.62m-8.53m INNER LINING - SCREEN = Pvc			1984-12-31	1949	South East
98935	Domestic, Stock		0.00m-17.00m INNER LINING - CASING = Not Known 17.00m-20.00m INNER LINING - SCREEN = Not Known		17.00m-20.00m Clay	1983-04-08	1951	East
98961	Domestic, Stock		0.00m-9.14m INNER LINING - CASING = Pvc 4.88m-7.32m INNER LINING - SCREEN = Pvc			1983-07-06	1962	East
98999	Domestic		0.00m-2.90m INNER LINING - CASING = Pvc 2.90m-3.90m INNER LINING - SCREEN = Pvc		2.90m-3.90m Sand	1983-12-31	1965	East
99095	Domestic					1988-01-01	1967	South East
99009	Domestic		0.00m-4.50m INNER LINING - CASING = Pvc 4.50m-5.40m INNER LINING - SCREEN = Pvc		4.50m-5.40m Sand	1983-12-31	1971	South East
WRK078160	Observation	0.00m-5.00m SILTY CLAY	0.00m-7.00m INNER LINING - CASING = UPVC class 6 0.20m-5.00m OUTER LINING - GRAVEL = Cement 5.00m-6.50m OUTER LINING - GRAVEL = Bentonite 6.50m-10.00m OUTER LINING - GRAVEL = Gravel		7.00m-10.00m Clay	2014-03-10	1972	South East
98957	Domestic		0.00m-10.60m INNER LINING - CASING = Pvc 10.60m-12.40m INNER LINING - SCREEN = Pvc		10.60m-12.40m Sand	1984-05-30	1973	South East
WRK074281	Domestic & Stock	0.00m-10.00m SOIL 10.00m-18.00m CLAY 18.00m-23.00m SAND 23.00m-30.00m GRAVEL 30.00m-35.00m SAND 35.00m-42.00m CLAY 42.00m-47.00m SAND 47.00m-55.00m SAND	0.00m-48.00m INNER LINING - CASING = Pvc 48.00m-54.00m INNER LINING - SCREEN = Pvc 44.00m-45.00m OUTER LINING - GRAVEL = Bentonite 45.00m-55.00m OUTER LINING - GRAVEL = Seal		48.00m-54.00m Sand	2013-11-13	1973	North
99440	Stock					1988-01-01	1975	South West
WRK083104	Domestic & Stock		0.00m-0.00m OUTER LINING - GRAVEL = Not Known			2015-01-01	1976	North
99032	Domestic					1983-12-31	1976	South East

Bore Id	Use Type	Drillers Log	Construction	Latest Water Levels	Geology	Completed Date	Dist (m)	Dir
WRK079639	Observation	0.00m-1.00m TOP SOIL 1.00m-2.00m SILTY CLAY 2.00m-5.50m CLAY 5.50m-8.50m SILTY SAND 8.50m-11.00m COARSE SAND	0.00m-7.80m INNER LINING - CASING = Pvc 7.80m-10.80m INNER LINING - SCREEN = Pvc 10.80m-11.30m INNER LINING - CASING = Pvc 0.00m-4.80m OUTER LINING - GRAVEL = Cement 4.80m-6.50m OUTER LINING - GRAVEL = Bentonite 6.50m-11.30m OUTER LINING - GRAVEL = Gravel		7.80m-10.80m Sand	2014-06-02	1981	South East
WRK013261	Domestic & Stock	0.00m-0.50m topsoil 0.50m-6.00m brown clay 6.00m-7.00m brown silt 7.00m-10.00m brown grey sand and gravel	0.50m-10.00m INNER LINING - CASING = Pvc 0.00m-0.50m OUTER LINING - GRAVEL = Cement 0.50m-10.00m OUTER LINING - GRAVEL = Gravel			2007-03-28	1984	North East
98987	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-6.70m INNER LINING - SCREEN = Pvc		5.00m-6.70m Sand	1983-12-31	1992	South East
99004	Domestic, Stock					1983-12-31	1992	South East
98982	Domestic		0.00m-5.00m INNER LINING - CASING = Pvc 5.00m-7.93m INNER LINING - SCREEN = Pvc		5.00m-7.93m Sand	1986-02-08	1993	East

Groundwater Boreholes

Lindner Road, Wangandary, VIC 3678

Boreholes (Earth Resources Database)

Boreholes from the Earth Resources dataset, within the dataset buffer:

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99332		Private Individual/Corporation	Domestic water supply	Rotary (diamond/drag bit)		31/12/1983			100	135	South East
99145		Private Individual/Corporation	Domestic water supply	Hand Auger		20/03/1983	10.00		100	166	South East
99335		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.70		100	203	South East
99242		Private Individual/Corporation	Domestic water supply	Percussion (cable)		19/09/1984	37.00		100	240	East
99326		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983	9.00		100	266	South East
99202		Private Individual/Corporation	Domestic water supply	Hand Auger		18/07/1984	9.50		100	279	South East
99162		Private Individual/Corporation	Domestic & Stock water supply	Shaft/Well		05/06/1983	7.00		100	507	West
99282		Private Individual/Corporation	Industrial/commercial water	Mechanical Auger		12/02/1983	12.50		100	516	East
99235		Private Individual/Corporation	Domestic water supply	Hand Auger		26/05/1982	7.90		100	550	East
99156		Private Individual/Corporation	Domestic water supply	Hand Auger		27/03/1983	6.40		100	563	South East
99187		Private Individual/Corporation	Domestic water supply	Hand Auger		20/05/1983	7.00		100	574	South East
99240		Private Individual/Corporation	Domestic water supply	Hand Auger		20/04/1983	7.01		100	608	South East
99158		Private Individual/Corporation	Domestic water supply	Hand Auger		20/03/1983	4.50		100	633	South East
99114		Private Individual/Corporation	Domestic & Stock water supply			17/01/1974	15.54		300	635	North
99303		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1984	5.40		100	653	East
99146		Private Individual/Corporation	Domestic water supply	Hand Auger		20/05/1983	7.00		100	656	East
99198		Private Individual/Corporation	Domestic water supply	Hand Auger		08/06/1983	13.00		100	670	South East
99324		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.00		100	683	South East
99200		Private Individual/Corporation	Domestic water supply	Hand Auger		20/12/1984	7.00		100	684	East

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99189		Private Individual/Corporation	Domestic water supply	Hand Auger		29/03/1983	7.00		100	698	East
99306		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1984	7.60		100	720	South East
99288		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.80		100	722	South East
99263		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	726	East
99125		Private Individual/Corporation	Stock/Poultry water supply			10/04/1976	18.20		300	757	South
99204		Private Individual/Corporation	Domestic water supply	Hand Auger		16/08/1984	12.10		100	789	South East
99148		Private Individual/Corporation	Domestic water supply	Hand Auger		12/03/1983	7.00		100	817	East
99272		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	821	South East
99188		Private Individual/Corporation	Domestic water supply	Hand Auger		28/02/1983	9.00		100	838	South East
99142		Private Individual/Corporation	Domestic water supply	Hand Auger		12/03/1983	9.00		100	854	East
99160		Private Individual/Corporation	Domestic water supply	Hand Auger		08/04/1983	9.70		100	868	South East
99265		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	869	South East
99223		Private Individual/Corporation	Domestic water supply	Hand Auger		21/08/1984	10.00		100	886	East
99305		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1984	9.10		100	904	South East
99286		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	910	South East
99253		Private Individual/Corporation	Domestic water supply	Hand Auger		12/03/1983	10.00		100	936	South East
99197		Private Individual/Corporation	Domestic water supply	Hand Auger		30/05/1984	9.70		100	963	East
99163		Private Individual/Corporation	Domestic water supply	Hand Auger		06/02/1983	9.00		100	980	East
99161		Private Individual/Corporation	Domestic water supply	Hand Auger		01/06/1983	7.92		100	1002	East
99185		Private Individual/Corporation	Domestic water supply	Hand Auger		11/10/1983	10.60		100	1044	South East
98968		Private Individual/Corporation	Domestic water supply	Hand Auger		16/08/1984	11.00		100	1071	South East
99239		Private Individual/Corporation	Domestic water supply	Hand Auger		01/03/1983	8.00		100	1080	East
99270		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1984			100	1081	South East
99268		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	1120	South East

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99192		Private Individual/Corporation	Domestic water supply	Hand Auger		12/03/1983	9.00		100	1126	East
99177		Private Individual/Corporation	Domestic water supply	Hand Auger		24/10/1983	11.00		100	1143	South East
99311		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/03/1983			100	1152	East
99320		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983	8.50		100	1157	South East
99234		Private Individual/Corporation	Domestic water supply	Hand Auger		01/06/1983	7.62		100	1157	South East
99212		Private Individual/Corporation	Domestic water supply	Hand Auger		21/05/1983	12.19		100	1157	South East
98958		Private Individual/Corporation	Domestic water supply	Mechanical Auger		09/04/1984	8.50		100	1160	East
99228		Private Individual/Corporation	Domestic water supply	Hand Auger		07/10/1984	10.00		100	1166	East
99290		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	1175	East
99205		Private Individual/Corporation	Domestic water supply	Hand Auger		15/08/1984	9.40		100	1180	South East
98971		Private Individual/Corporation	Domestic water supply	Mechanical Auger		15/08/1984	4.80		100	1185	East
99254		Private Individual/Corporation	Domestic & Stock water supply	Percussion (cable)		28/03/1985	31.00		100	1191	North West
99319		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983			100	1205	East
99327		Private Individual/Corporation	Domestic water supply	Mechanical Auger		21/04/1983	15.00		100	1207	South East
99283		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	1210	East
99194		Private Individual/Corporation	Domestic water supply	Hand Auger		30/05/1984	14.00		100	1213	South East
99206		Private Individual/Corporation	Domestic water supply	Mechanical Auger		17/04/1983	9.40		100	1214	South East
99170		Private Individual/Corporation	Domestic water supply	Mechanical Auger		04/05/1983	8.38		100	1244	East
99179		Private Individual/Corporation	Domestic water supply	Hand Auger		20/02/1983	12.00		100	1249	South East
98966		Private Individual/Corporation	Domestic water supply	Hand Auger		30/03/1983	7.00		100	1261	East
99182		Private Individual/Corporation	Domestic water supply	Hand Auger		10/02/1984	11.58		100	1272	South East
99195		Private Individual/Corporation	Domestic water supply	Hand Auger		20/02/1983	8.80		100	1363	East
98964		Private Individual/Corporation	Domestic water supply	Hand Auger		17/08/1984	4.60		100	1377	East
99316		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983			100	1383	South East

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99266		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	1388	South East
99117		Private Individual/Corporation	Domestic & Stock water supply			19/12/1974	14.33		300	1413	West
99250		Private Individual/Corporation	Stock/Poultry water supply	Hand Auger		11/04/1983	8.00		100	1430	East
99260		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	11.80		100	1454	South East
99257		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	1468	South East
99237		Private Individual/Corporation	Domestic water supply	Hand Auger		06/10/1984	9.00		100	1471	South East
99201		Private Individual/Corporation	Domestic water supply	Hand Auger		12/06/1984	9.60		100	1475	South East
99304		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1984	9.70		100	1482	South East
99155		Private Individual/Corporation	Domestic water supply	Hand Auger		25/04/1983	7.00		100	1487	East
99021		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983			100	1492	East
99193		Private Individual/Corporation	Domestic water supply	Hand Auger		31/05/1984	9.70		100	1495	South East
99180		Private Individual/Corporation	Domestic water supply	Hand Auger		10/04/1983	9.40		100	1515	South East
99300		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	1537	South East
99210		Private Individual/Corporation	Domestic water supply	Hand Auger		22/05/1984	10.00		100	1543	South
99220		Private Individual/Corporation	Domestic water supply	Hand Auger		18/08/1984	11.00		100	1544	South East
99328		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	8.50		100	1545	East
99144		Private Individual/Corporation	Domestic water supply	Hand Auger		29/03/1983	6.71		100	1552	East
99264		Private Individual/Corporation	Domestic water supply	Percussion (cable)		31/12/1983			100	1561	South East
99221		Private Individual/Corporation	Domestic water supply	Mechanical Auger		18/08/1984	4.50		100	1587	East
99215		Private Individual/Corporation	Domestic water supply	Hand Auger		17/08/1984	6.70		100	1622	East
99151		Private Individual/Corporation	Domestic water supply	Hand Auger		16/04/1983	12.00		100	1625	South East
99251		Private Individual/Corporation	Domestic water supply	Hand Auger		18/08/1984	6.10		100	1654	East
99219		Private Individual/Corporation	Domestic water supply	Hand Auger		20/03/1983	8.50		100	1659	South East
99001		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.00		100	1664	East

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99233		Private Individual/Corporation	Domestic water supply	Hand Auger		14/12/1984	32.00		100	1668	East
99174		Private Individual/Corporation	Domestic water supply	Hand Auger		01/09/1983	10.00		100	1678	South East
99232		Private Individual/Corporation	Domestic water supply	Hand Auger		06/03/1983	8.00		100	1679	East
98936		Private Individual/Corporation	Domestic water supply	Hand Auger		28/03/1983	10.65		100	1681	South East
98965		Private Individual/Corporation	Domestic water supply	Hand Auger		18/08/1984	11.90		100	1687	East
99278		Private Individual/Corporation	Domestic & Stock water supply	Hand Auger		31/12/1984			100	1721	East
99133		Private Individual/Corporation		Percussion (cable)	Abandoned	25/01/1980	50.00		300	1737	North
99314		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983			100	1747	East
99293		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	7.30		100	1751	East
99302		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	7.00		100	1752	East
99164		Private Individual/Corporation	Domestic water supply	Hand Auger		17/03/1983	6.70		100	1755	East
99301		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	1774	East
98979		Private Individual/Corporation	Domestic water supply	Hand Auger		13/12/1984	7.30		100	1787	East
99184		Private Individual/Corporation	Domestic water supply	Hand Auger		02/05/1983	6.70		100	1789	East
99289		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983			100	1793	East
99139		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	9.00		100	1796	East
99103		Department of Manufacturing & Industry Development	Drought	Rotary (diamond/drag bit)		04/03/1983	126.75	149.90	10	1796	South East
99103		Department of Manufacturing & Industry Development	Public/town water supply	Rotary (diamond/drag bit)		04/03/1983	126.75	149.90	10	1796	South East
98981		Private Individual/Corporation	Domestic water supply	Hand Auger		22/03/1984	9.80		100	1822	South East
98954		Private Individual/Corporation	Domestic water supply	Hand Auger		30/03/1983	9.75		100	1824	South East
99176		Private Individual/Corporation	Domestic water supply	Hand Auger		16/10/1983	6.70		100	1834	East
98955		Private Individual/Corporation	Domestic water supply	Mechanical Auger		22/05/1983	9.54		100	1835	East
98984		Private Individual/Corporation	Domestic water supply	Hand Auger		19/03/1983	10.30		100	1860	South East
98953		Private Individual/Corporation	Domestic water supply	Hand Auger		03/04/1983	9.50		100	1874	South East

Bore Id	Bore Type	Company	Usage	Method	Status	Drill Date	Depth	Elevation	Accuracy (m)	Dist (m)	Direct
99140		Private Individual/Corporation	Domestic water supply	Hand Auger		04/03/1983	10.00		100	1878	South East
99000		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	9.00		100	1888	South East
99101		Department of Manufacturing & Industry Development	Public/town water supply	Percussion (cable)		31/03/1959	217.93	149.70	10	1890	South East
99023		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	5.60		100	1910	South East
99020		Private Individual/Corporation	Domestic water supply	Mechanical Auger		31/12/1983	7.30		100	1911	South East
98989		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.70		100	1928	South East
98947		Private Individual/Corporation	Domestic water supply	Hand Auger		16/06/1983	7.00		100	1928	East
99153		Private Individual/Corporation	Industrial/commercial water	Rotary (diamond/drag bit)		08/04/1983	127.00		100	1937	South East
99284		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1984	8.53		100	1947	South East
98935		Private Individual/Corporation	Domestic & Stock water supply	Percussion (cable)		08/04/1983	21.00		100	1950	East
98961		Private Individual/Corporation	Domestic water supply	Hand Auger		06/07/1983	9.14		100	1961	East
98999		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	3.90		100	1964	East
98957		Private Individual/Corporation	Domestic water supply	Mechanical Auger		30/05/1984	12.40		100	1972	South East
99004		Private Individual/Corporation	Stock/Poultry water supply	Hand Auger		31/12/1983	7.00		100	1990	South East
99128		Private Individual/Corporation	Domestic & Stock water supply	Shaft/Well		25/05/1978	9.14		300	1990	South
98987		Private Individual/Corporation	Domestic water supply	Hand Auger		31/12/1983	6.70		100	1991	South East
98982		Private Individual/Corporation	Domestic water supply	Percussion (cable)		08/02/1986	7.93		100	1991	East

Boreholes (Federation University)

Boreholes from the Federation University Australia dataset, within the dataset buffer:

Bore Id	Authority	Type	Uses	Initial TD	Log	Dist (m)	Direct
N/A	No records within buffer						

Historical Mining Activity - Shafts

Lindner Road, Wangandary, VIC 3678

Historical Mining Activity - Shafts

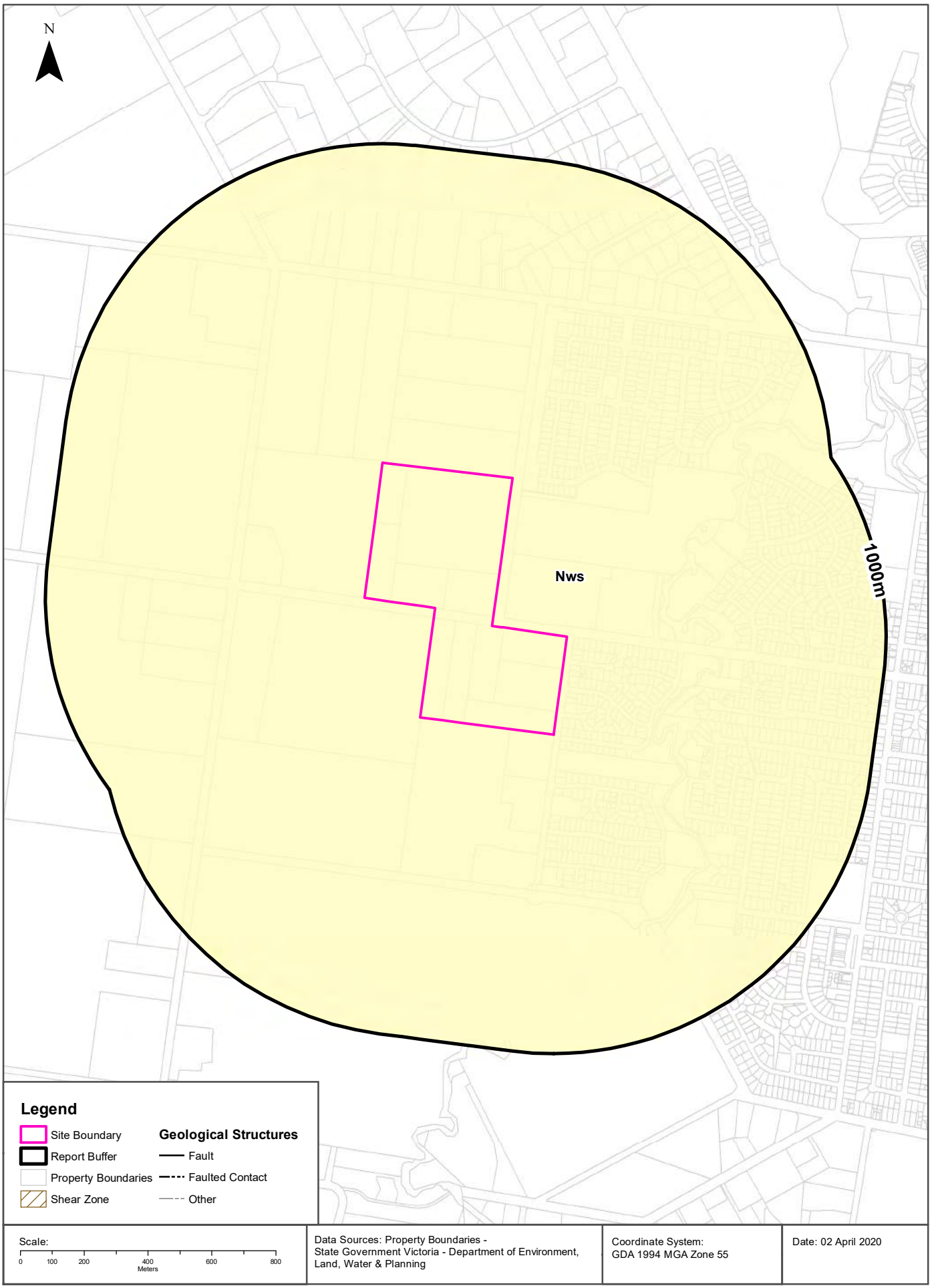
Mine Shaft Locations were collected by a variety of methods from 1869 in some areas of the state, mainly concentrating in Ballarat and Bendigo. In places a shaft may be recorded multiple times with a different source. In cases where several shaft locations are shown close together (generally with separations less than stated position errors) and they have different sources, it is possible that one shaft has been mapped several times. In cases where several shaft locations are shown close together but they have the same information source, it is possible that each shaft location represents a different shaft on the ground.

Historical Mine Shafts within the dataset buffer:

Map Id	Name	Source	Depth (m)	Collar (ft)	Fill/Cap Method	Location Desc	Location Accuracy	Distance	Direction
N/A	No records in buffer								

Geology 1:250,000

Lindner Road, Wangandary, VIC 3678



Geology

Lindner Road, Wangandary, VIC 3678

Geological Units

What are the Geological Units onsite?

Symbol	Name	Description	Geological Age	Lithology	Dataset
Nws	Shepparton Formation (Nws): generic	Clay, sand, silt, pooly-sorted lenticular gravel. Dissected flood plain alluvium: terraces 1-10 metres above present river channels; well developed soil 2-3 m thick.	Pliocene to Holocene	clay lithology (dominant); sand (significant); silt material (significant); gravel material (significant)	1:250,000

What are the Geological Units within the dataset buffer?

Symbol	Name	Description	Geological Age	Lithology	Dataset
Nws	Shepparton Formation (Nws): generic	Clay, sand, silt, pooly-sorted lenticular gravel. Dissected flood plain alluvium: terraces 1-10 metres above present river channels; well developed soil 2-3 m thick.	Pliocene to Holocene	clay lithology (dominant); sand (significant); silt material (significant); gravel material (significant)	1:250,000

Geology

Lindner Road, Wangandary, VIC 3678

Geological Structures

What are the Geological Faults or Faulted Contacts onsite?

Map Id	Type	Name	Contact	Positional Accuracy	Dataset
No features					1:250,000

What are the Dykes, Marker Beds and Veins onsite?

Map Id	Type	Name	Description	Positional Accuracy	Dataset
No Data Coverage					

What are the Shear Zones onsite (1:250,000 scale)?

Map Id	Type	Name	Description	Positional Accuracy	Dataset
No features					1:250,000

What are the Geological Faults or Faulted Contacts within the dataset buffer?

Map Id	Type	Name	Contact	Positional Accuracy	Dataset
No features					1:250,000

What are the Dykes, Marker Beds and Veins within the dataset buffer?

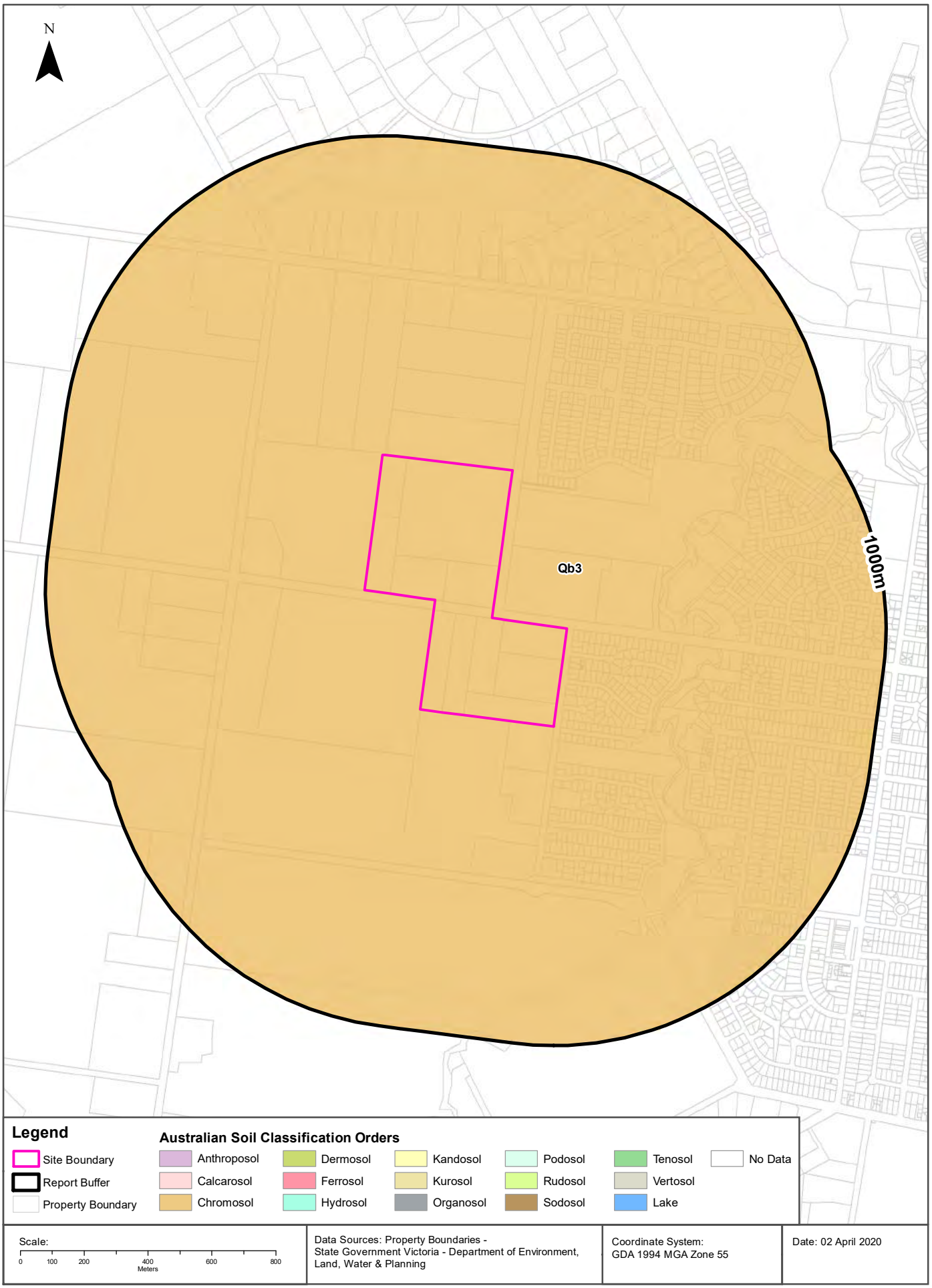
Map Id	Type	Name	Description	Positional Accuracy	Dataset
No Data Coverage					

What are the Shear Zones within the dataset buffer (1:250,000 scale)?

Map Id	Type	Name	Description	Positional Accuracy	Dataset
No features					1:250,000

Atlas of Australian Soils

Lindner Road, Wangandary, VIC 3678



Soil Landscapes

Lindner Road, Wangandary, VIC 3678

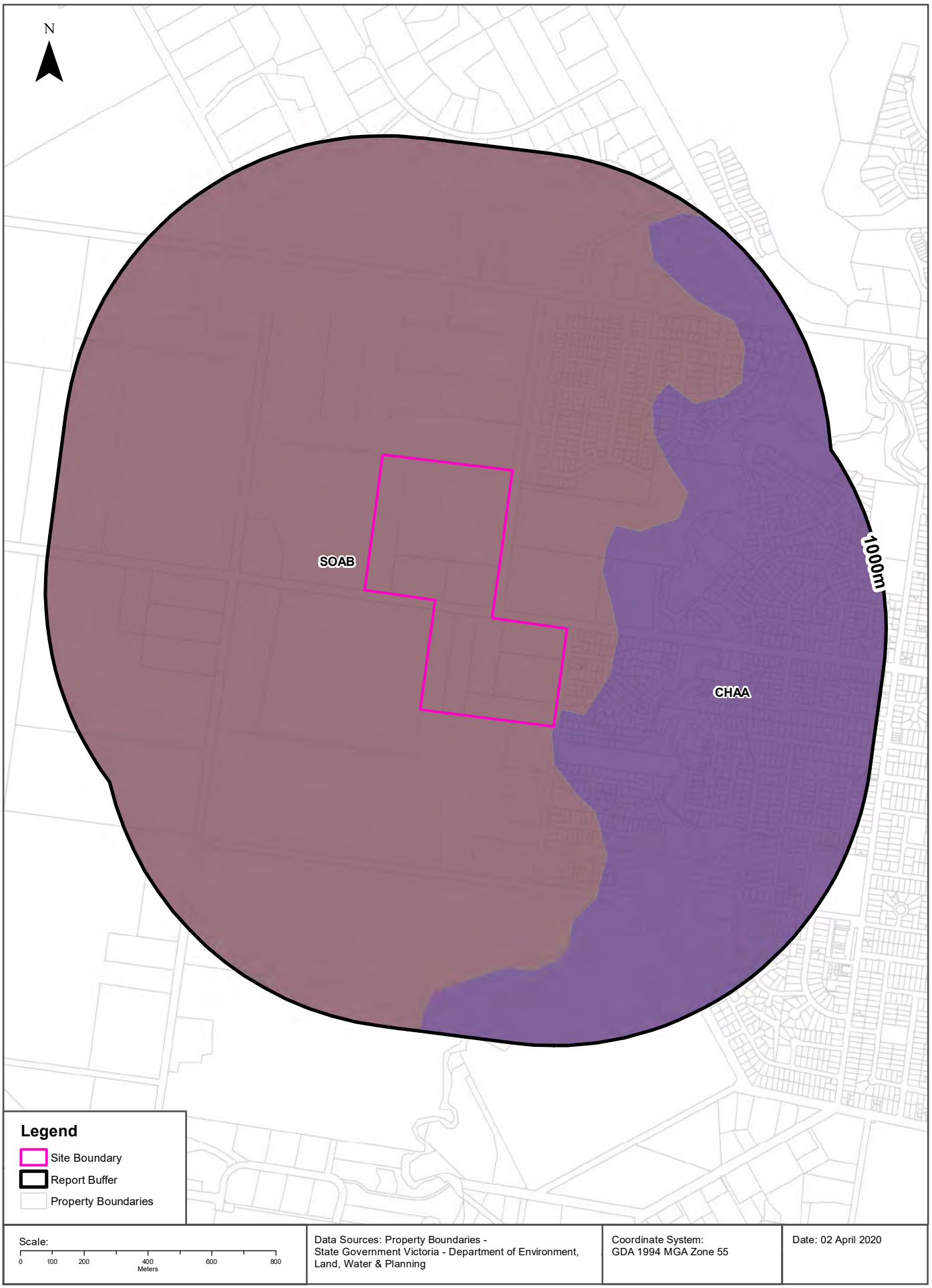
Atlas of Australian Soils

Australian soil types within the dataset buffer:

Symbol	Soil Order	Map Unit Description	Distance
Qb3	Chromosol	Plains: undulating plains of hard neutral red soils (Dr2.22) on very low broad rises in association with hard neutral yellow mottled soils (Dy3.42) on the flatter, less well-drained portions and with some gilgais of grey clays (Ug5.2) and hard alkaline yellow mottled soils (Dy3.43) in the lower-lying situa- tions Soil variations on the plain included (Dr3.23 and Dy3.22) in areas with intermediate drainage characteristics, and areas of (Dr2.41) on well-drained sites above some river valleys; plains are traversed by river valleys with flood-plains of various (Gn) soils. Prior stream activity and layering of soil materials seem important factors in soil variability.	0m

Victorian Soil Type Mapping

Lindner Road, Wangandary, VIC 3678



Soils Landscapes

Lindner Road, Wangandary, VIC 3678

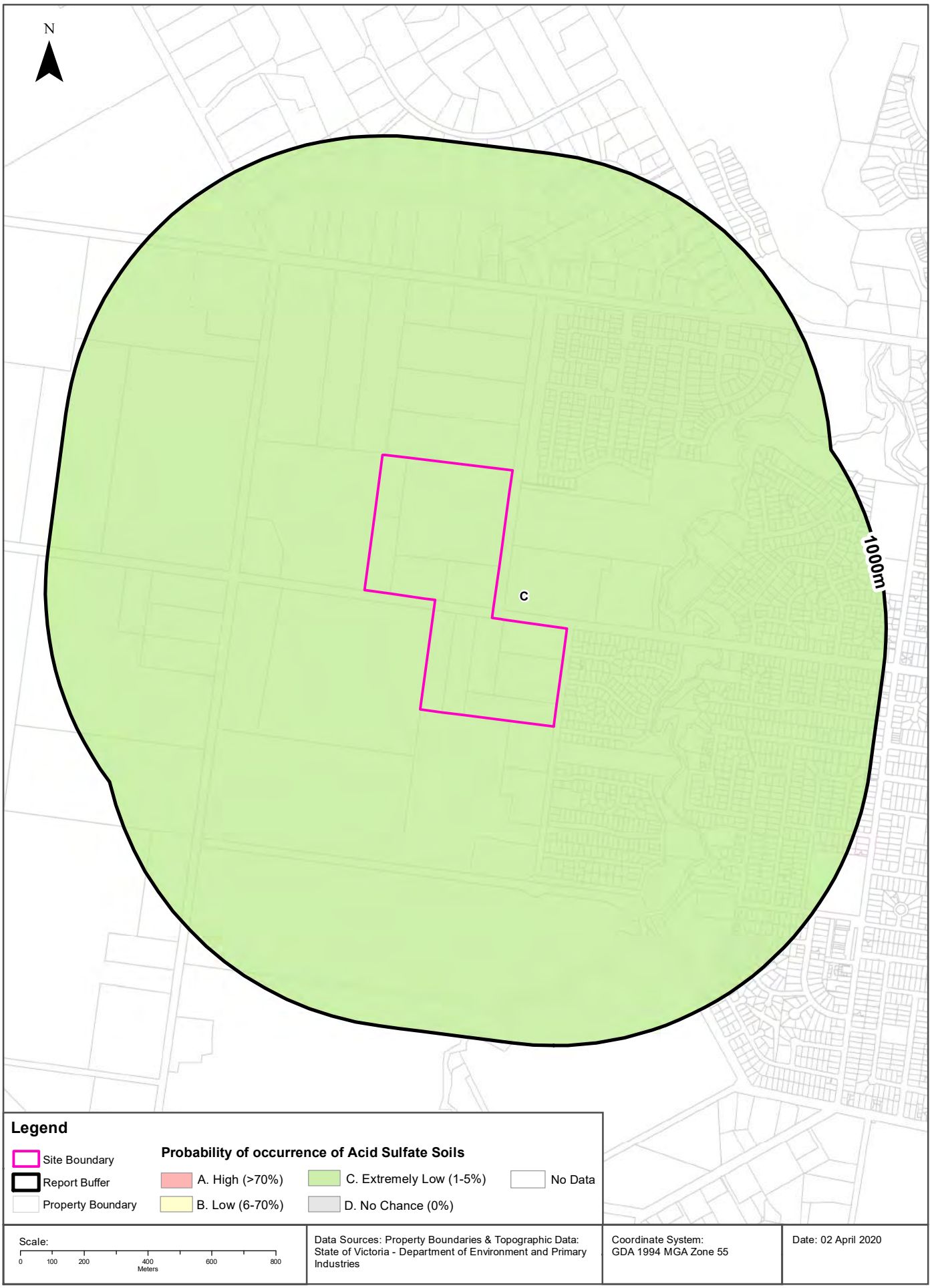
Victorian Soil Type Mapping

Victorian Soil Types within the dataset buffer:

Symbol	Description	Distance
SOAB	Brown Sodosols	0m
CHAA	Red Chromosols	1m

Atlas of Australian Acid Sulfate Soils

Lindner Road, Wangandary, VIC 3678



Acid Sulfate Soils

Lindner Road, Wangandary, VIC 3678

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

PROBCLASS	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m

Acid Sulfate Soils

Lindner Road, Wangandary, VIC 3678

Coastal Acid Sulfate Soils

What are the on-site Coastal Acid Sulfate Soil types?

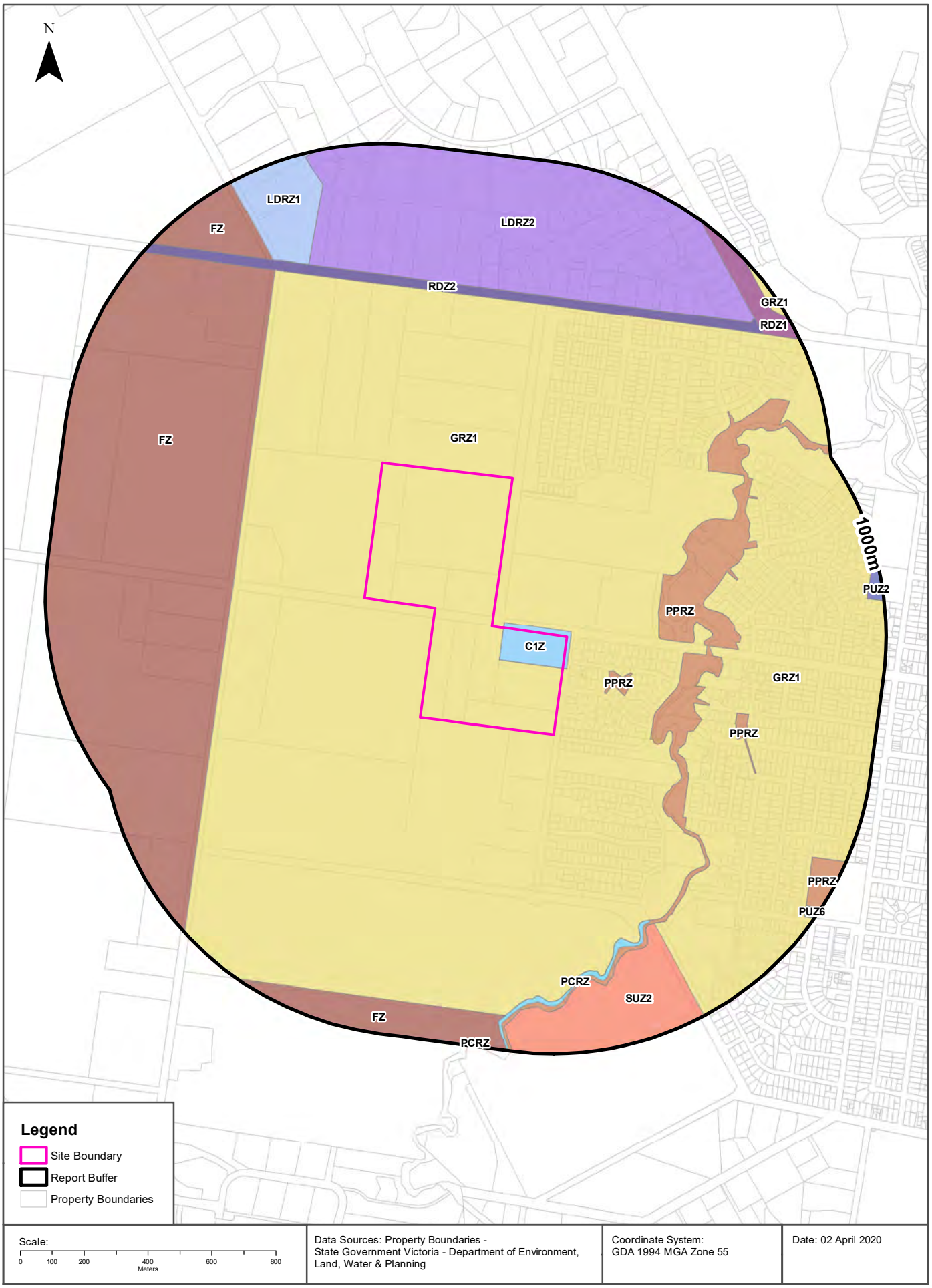
Coastal Acid Sulfate Soil Types
There are no Acid Sulfate areas onsite

What are the Coastal Acid Sulfate Soil types within the dataset buffer?

Coastal Acid Sulfate Soil Types	Distance	Direction
There are no Acid Sulfate areas within the report buffer		

Planning Zones

Lindner Road, Wangandary, VIC 3678



Planning

Lindner Road, Wangandary, VIC 3678

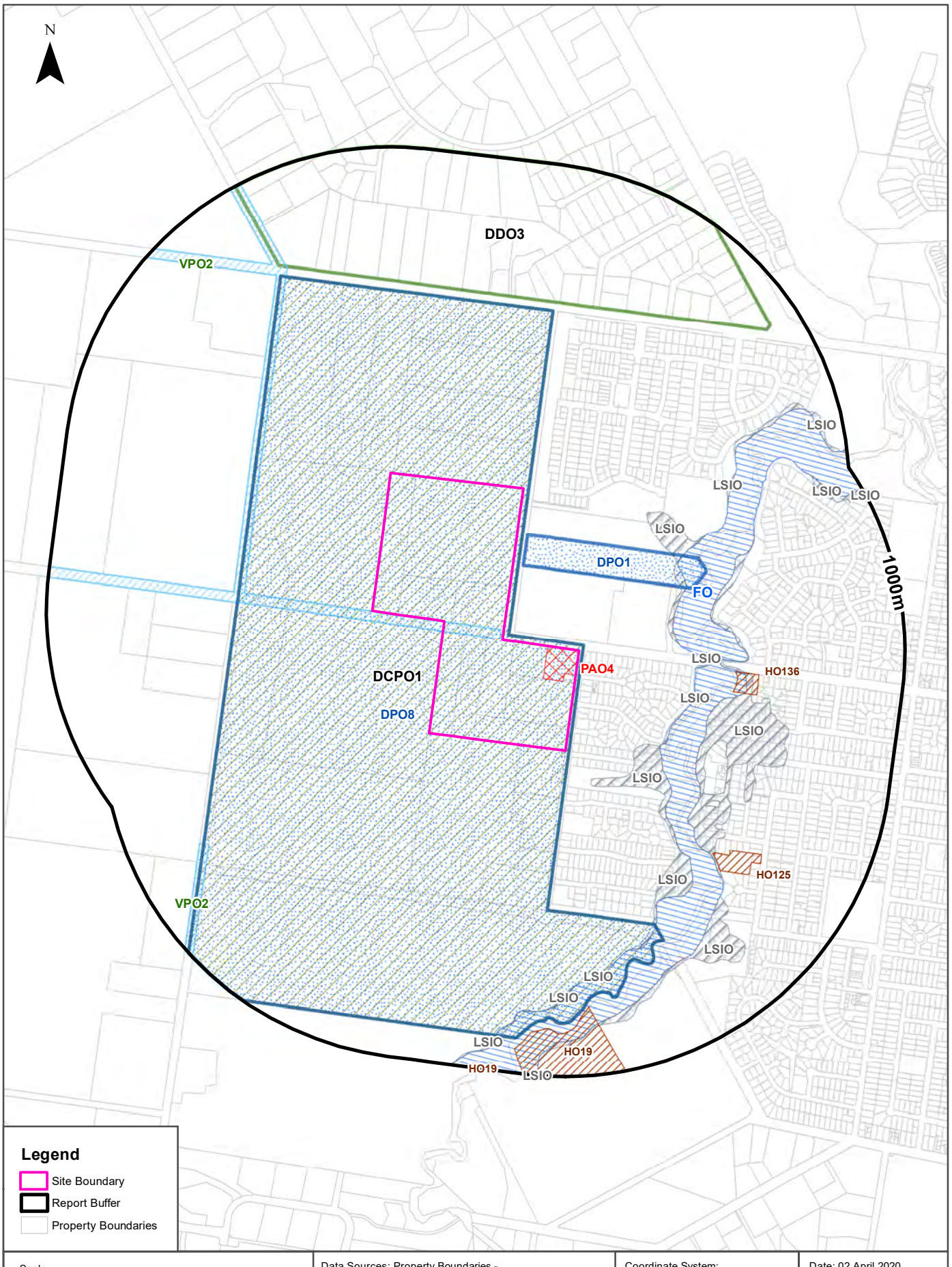
Planning Zones

Planning zones within the dataset buffer:

Zone Code	Description	Distance	Direction
GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 1	0m	Onsite
C1Z	COMMERCIAL 1 ZONE	0m	Onsite
PPRZ	PUBLIC PARK AND RECREATION ZONE	139m	South East
PPRZ	PUBLIC PARK AND RECREATION ZONE	288m	East
GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 1	392m	South East
FZ	FARMING ZONE	414m	South West
RDZ2	ROAD ZONE - CATEGORY 2	554m	North West
PPRZ	PUBLIC PARK AND RECREATION ZONE	558m	South East
LDRZ2	LOW DENSITY RESIDENTIAL ZONE - SCHEDULE 2	581m	North
PCRZ	PUBLIC CONSERVATION AND RESOURCE ZONE	648m	South
LDRZ1	LOW DENSITY RESIDENTIAL ZONE - SCHEDULE 1	664m	North West
SUZ2	SPECIAL USE ZONE - SCHEDULE 2	665m	South
FZ	FARMING ZONE	723m	North West
PPRZ	PUBLIC PARK AND RECREATION ZONE	896m	South East
RDZ1	ROAD ZONE - CATEGORY 1	905m	South East
PUZ2	PUBLIC USE ZONE - EDUCATION	946m	East
PUZ6	PUBLIC USE ZONE - LOCAL GOVERNMENT	954m	South East
GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 1	968m	North East

Planning Overlays

Lindner Road, Wangandary, VIC 3678



Planning

Lindner Road, Wangandary, VIC 3678

Planning Overlays

Planning overlays within the dataset buffer:

Zone Code	Description	Distance	Direction
DCPO1	DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY - SCHEDULE 1	0m	Onsite
DPO8	DEVELOPMENT PLAN OVERLAY - SCHEDULE 8	0m	Onsite
PAO4	PUBLIC ACQUISITION OVERLAY 4	0m	Onsite
VPO2	VEGETATION PROTECTION OVERLAY - SCHEDULE 2	0m	Onsite
DPO1	DEVELOPMENT PLAN OVERLAY - SCHEDULE 1	31m	East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	120m	South East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	282m	East
FO	FLOODWAY OVERLAY	287m	North
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	362m	East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	367m	East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	402m	South East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	472m	South East
HO136	HERITAGE OVERLAY (HO136)	484m	East
HO125	HERITAGE OVERLAY (HO125)	552m	South East
DDO3	DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 3	581m	North
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	624m	North East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	651m	South East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	657m	South
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	657m	North East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	724m	South
VPO2	VEGETATION PROTECTION OVERLAY - SCHEDULE 2	758m	South
HO19	HERITAGE OVERLAY (HO19)	791m	South
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	805m	South
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	876m	East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	964m	East
LSIO	LAND SUBJECT TO INUNDATION OVERLAY	991m	South

Heritage

Lindner Road, Wangandary, VIC 3678

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

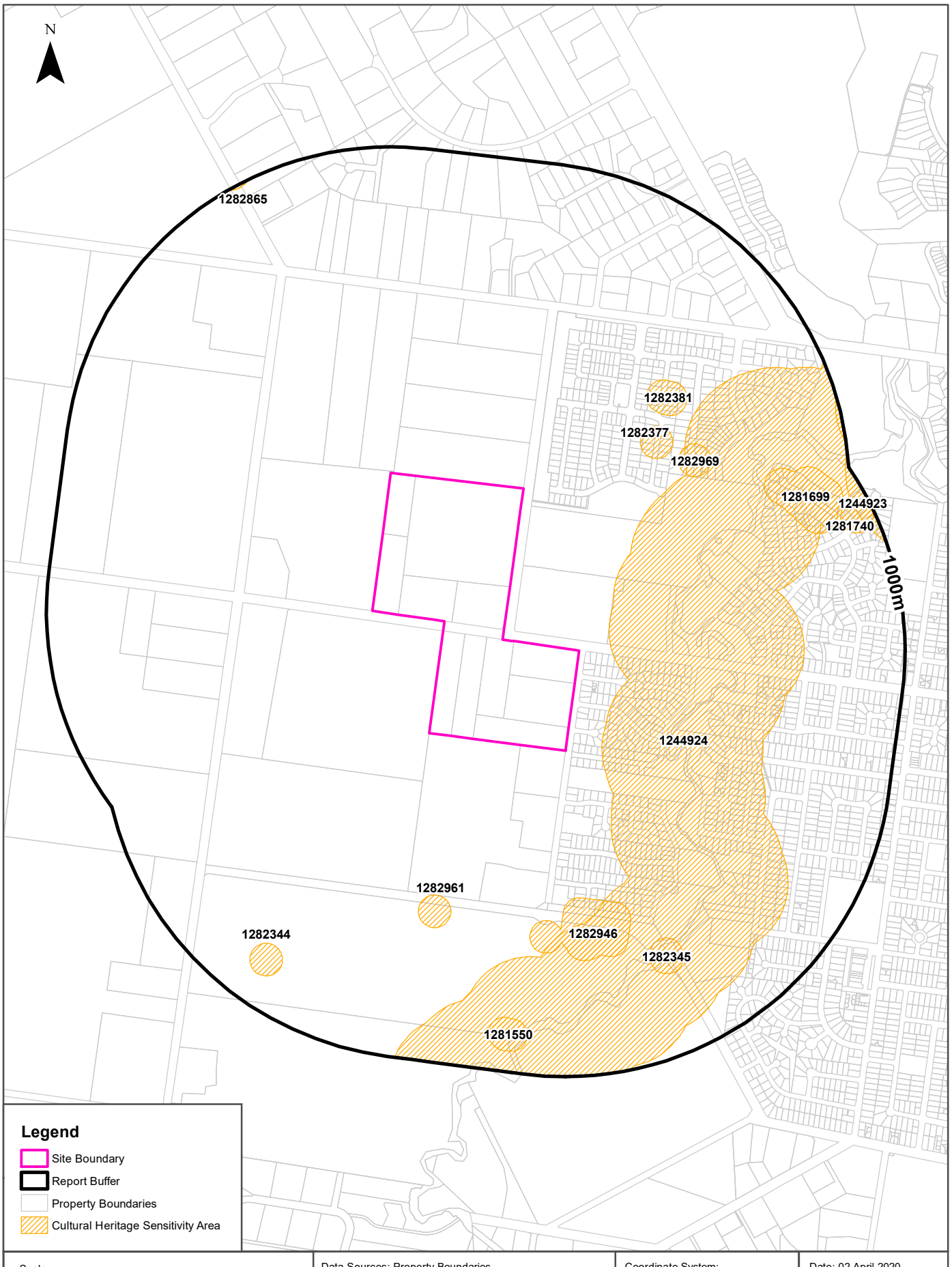
Victorian Heritage Register

What are the Victorian Heritage Register items located within the dataset buffer?:

VHR Number	Description	Distance	Direction
N/A	No records within buffer		

Cultural Heritage Sensitivity

Lindner Road, Wangandary, VIC 3678



Heritage

Lindner Road, Wangandary, VIC 3678

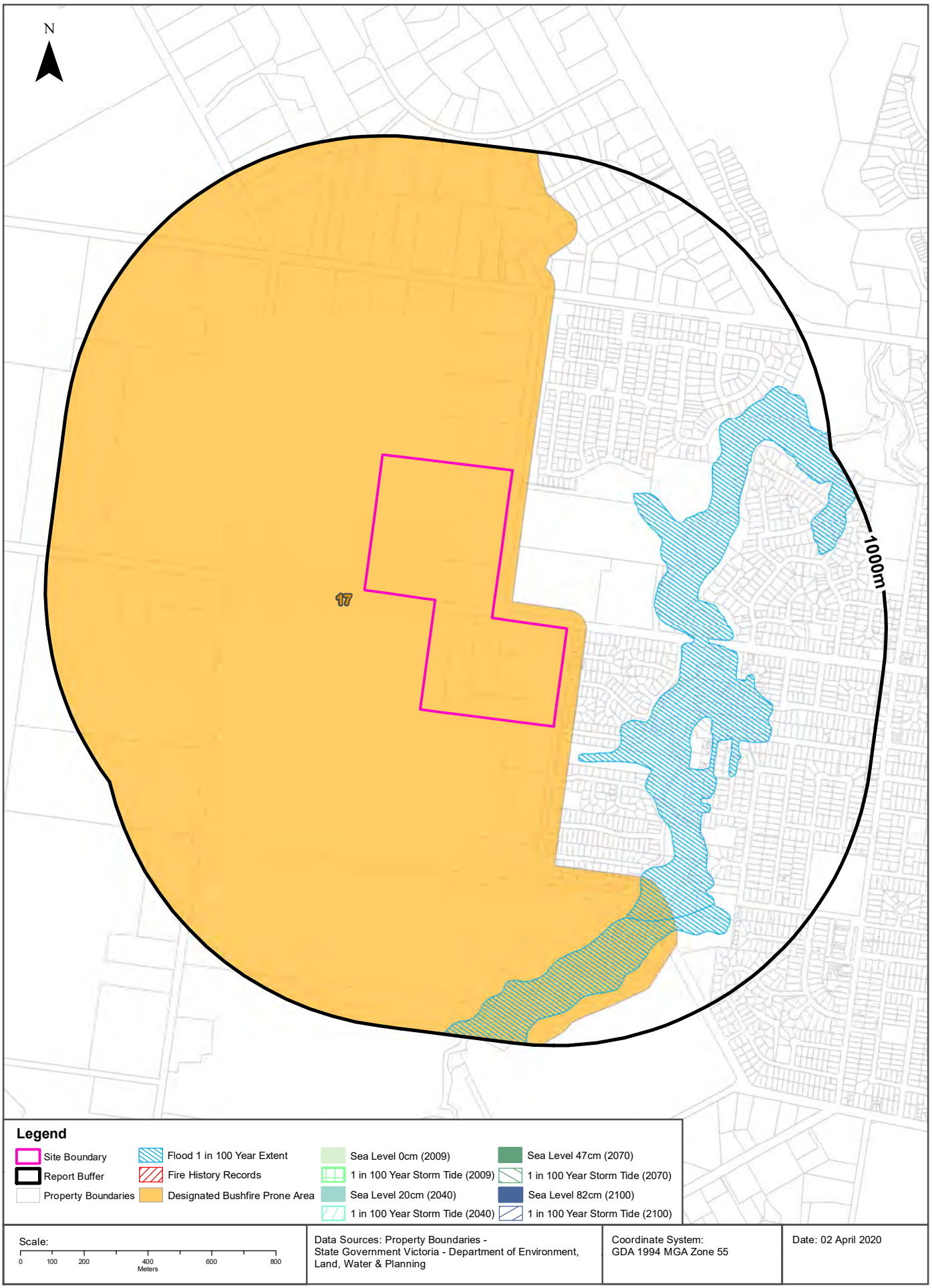
Cultural Heritage Sensitivity

Areas of Cultural Heritage Sensitivity as specified in Division 3 of Part 2 in the Victorian Aboriginal Heritage Regulations 2018, within the dataset buffer:

Map Id	Distance	Direction
1244924	98m	South
1282377	382m	North East
1282946	453m	South
1282381	463m	North East
1282969	482m	North East
1282961	490m	South
1282345	647m	South East
1281699	738m	East
1282344	806m	South West
1281550	835m	South
1281740	896m	East
1244923	952m	South
1282865	990m	North West

Natural Hazards

Lindner Road, Wangandary, VIC 3678



Natural Hazards

Lindner Road, Wangandary, VIC 3678

Bushfire Prone Areas

What are the designated bushfire prone areas within the dataset buffer?

Map ID	Feature	Plan No	LGA	Gazetted Date	Distance	Direction
17	Designated Bushfire Prone Area	LEGL./19-154	WANGARATTA	04/04/2019	0m	Onsite

Fire History

What are the fire history records of fires primarily on public land, within the dataset buffer?

Map Id	Fire Type	Fire Key	Season	Fire No	Fire Name	Treatment	Fire Cover	Start Date	Dist (m)	Direction
N/A	No records within buffer									

Flood - 1 in 100 year modelled flood extent

What 1 in 100 year flood extent features exist within the dataset buffer?

Feature	Source	Method	Scale	Modified Date	Distance	Direction
100 Year Flood Outline	DNRE	No contour info and detailed flood info	25000	01/01/2000	119m	East

Natural Hazards

Lindner Road, Wangandary, VIC 3678

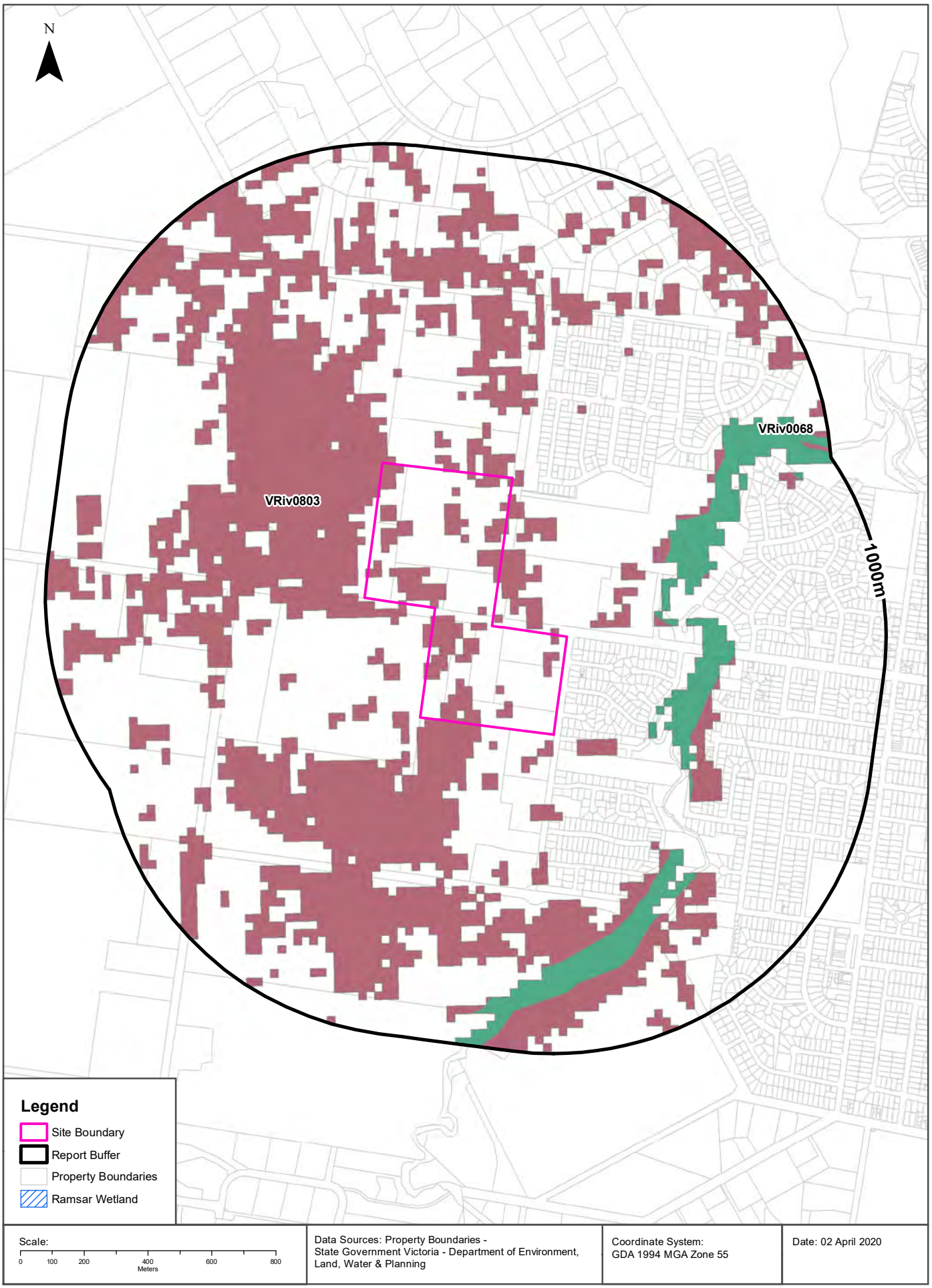
Victorian Coastal Inundation Sea Level Rise

What coastal inundation sea level rise features exist within the dataset buffer?

Description	Distance	Direction
No records within buffer		

Ecological Constraints - Native Vegetation 2005 & Ramsar Wetlands

Lindner Road, Wangandary, VIC 3678



Ecological Constraints

Lindner Road, Wangandary, VIC 3678

Native Vegetation (Modelled 2005 Ecological Vegetation Classes)

What native vegetation exists within the dataset buffer?

Veg Code	EVC Name	EVCCode	Group	Subgroup	Bioregion	Conservation Status	Geographic Occurance	Distance
VRiv0803	Plains Woodland	0803	Plains Woodlands or Forests	Poorly-draining	Victorian Riverina	Endangered	Common	0m
VRiv0068	Creekline Grassy Woodland	0068	Riverine Grassy Woodlands or Forests	Creekline and/or swampy	Victorian Riverina	Endangered	Common	281m

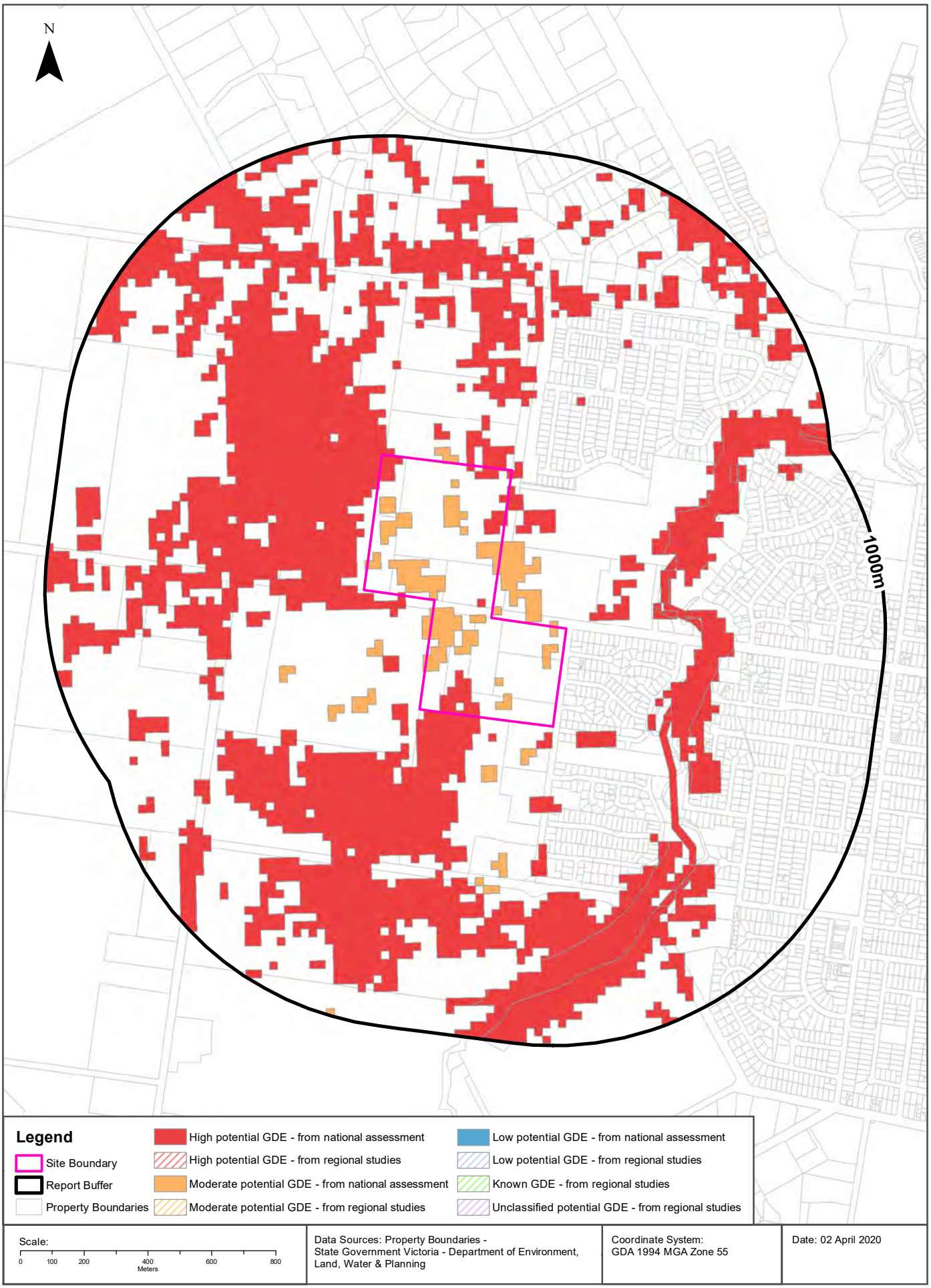
Ramsar Wetlands

What Ramsar wetland areas exist within the dataset buffer?

Map ID	Site Name	Lake Name	Distance	Direction
N/A	No records within buffer			

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Lindner Road, Wangandary, VIC 3678



Ecological Constraints

Lindner Road, Wangandary, VIC 3678

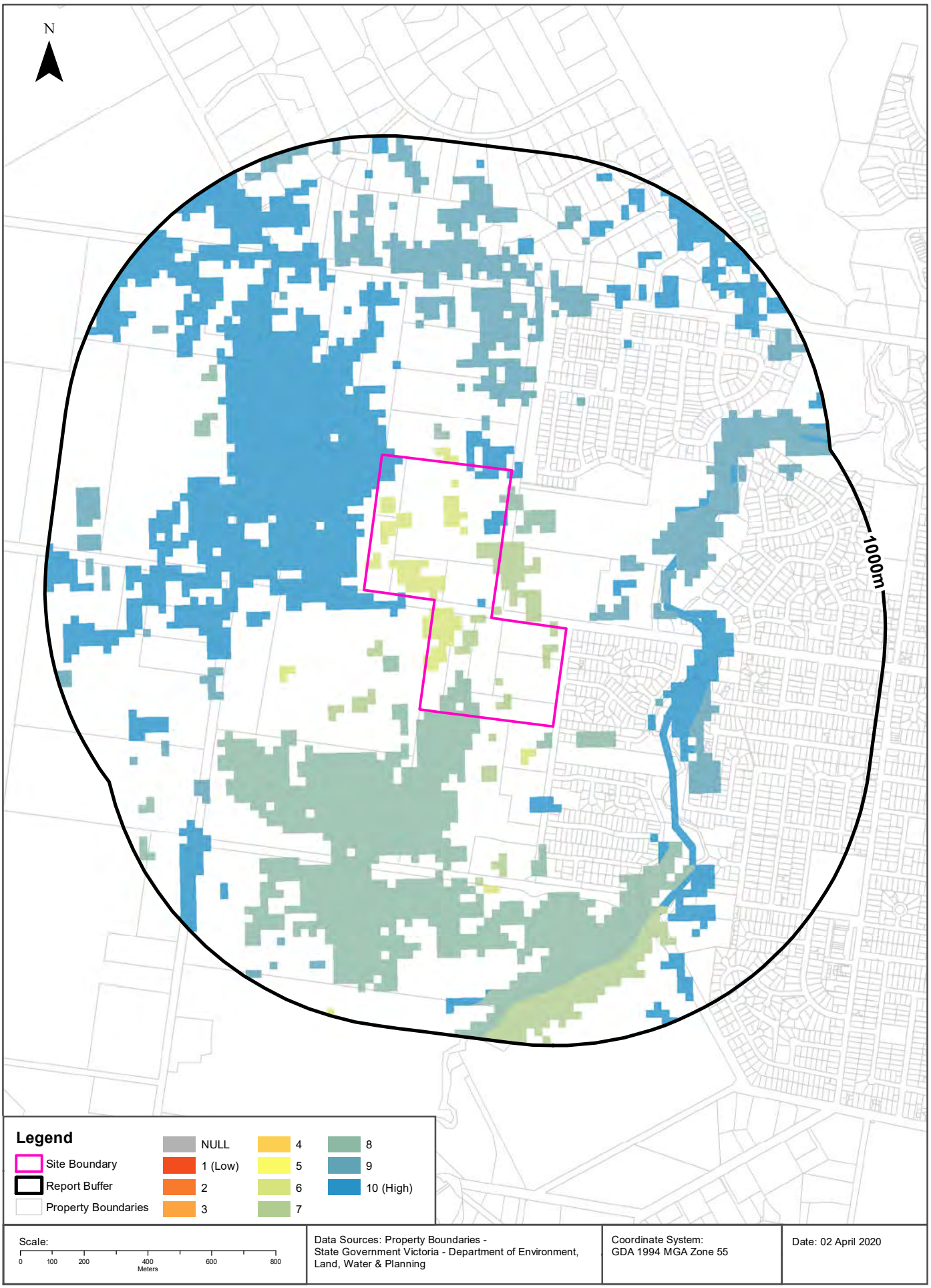
Groundwater Dependent Ecosystems Atlas

What GDEs exist within the dataset buffer?

GDE Type	Name	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial		High potential GDE - from national assessment	Alluvial plain.	Vegetation		0m
Terrestrial		Moderate potential GDE - from national assessment	Alluvial plain.	Vegetation		0m
Aquatic	FIFTEEN MILE CREEK	High potential GDE - from national assessment	Alluvial plain.	River		311m

Inflow Dependent Ecosystems Likelihood

Lindner Road, Wangandary, VIC 3678



Ecological Constraints

Lindner Road, Wangandary, VIC 3678

Inflow Dependent Ecosystems Likelihood

What IDEs exist within the dataset buffer?

GDE Type	Name	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial		6	Alluvial plain.	Vegetation		0m
Terrestrial		7	Alluvial plain.	Vegetation		0m
Terrestrial		8	Alluvial plain.	Vegetation		0m
Terrestrial		10	Alluvial plain.	Vegetation		0m
Terrestrial		9	Alluvial plain.	Vegetation		77m
Aquatic	FIFTEEN MILE CREEK	10	Alluvial plain.	River		311m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

USE OF REPORT - APPLICABLE TERMS

The following terms apply to any person (End User) who is given the Report by the person who purchased the Report from Lotsearch Pty Ltd (ABN: 89 600 168 018) (Lotsearch) or who otherwise has access to the Report (Terms). The contract terms that apply between Lotsearch and the purchaser of the Report are specified in the order form pursuant to which the Report was ordered and the terms set out below are of no effect as between Lotsearch and the purchaser of the Report.

1. End User acknowledges and agrees that:
   (a) the Report is compiled from or using content (**Third Party Content**) which is comprised of:
      (i) content provided to Lotsearch by third party content suppliers with whom Lotsearch has contractual arrangements or content which is freely available or methodologies licensed to Lotsearch by third parties with whom Lotsearch has contractual arrangements (**Third Party Content Suppliers**); and
      (ii) content which is derived from content described in paragraph (i);
   (b) Neither Lotsearch nor Third Party Content Suppliers takes any responsibility for or give any warranty in relation to the accuracy or completeness of any Third Party Content included in the Report including any contaminated land assessment or other assessment included as part of a Report;
   (c) the Third Party Content Suppliers do not constitute an exhaustive set of all repositories or sources of information available in relation to the property which is the subject of the Report (**Property**) and accordingly neither Lotsearch nor Third Party Content Suppliers gives any warranty in relation to the accuracy or completeness of the Third Party Content incorporated into the report including any contaminated land assessment or other assessment included as part of a Report;
   (d) Reports are generated at a point in time (as specified by the date/time stamp appearing on the Report) and accordingly the Report is based on the information available at that point in time and Lotsearch is not obliged to undertake any additional reporting to take into consideration any information that may become available between the point in time specified by the date/time stamp and the date on which the Report was provided by Lotsearch to the purchaser of the Report;
   (e) Reports must be used or reproduced in their entirety and End User must not reproduce or make available to other persons only parts of the Report;
   (f) Lotsearch has not undertaken any physical inspection of the property;
   (g) neither Lotsearch nor Third Party Content Suppliers warrants that all land uses or features whether past or current are identified in the Report;
   (h) the Report does not include any information relating to the actual state or condition of the Property;
   (i) the Report should not be used or taken to indicate or exclude actual fitness or unfitness of Land or Property for any particular purpose
   (j) the Report should not be relied upon for determining saleability or value or making any other decisions in relation to the Property and in particular should not be taken to be a rating or assessment of the desirability or market value of the property or its features; and
   (k) the End User should undertake its own inspections of the Land or Property to satisfy itself that there are no defects or failures
2. The End User may not make the Report or any copies or extracts of the report or any part of it available to any other person. If End User wishes to provide the Report to any other person or make extracts or copies of the Report, it must contact the purchaser of the Report before doing so to ensure the proposed use is consistent with the contract terms between Lotsearch and the purchaser.
3. Neither Lotsearch (nor any of its officers, employees or agents) nor any of its Third Party Content Suppliers will have any liability to End User or any person to whom End User provides the Report and End User must not represent that Lotsearch or any of its Third Party Content Suppliers accepts liability to any such person or make any other representation to any such person on behalf of Lotsearch or any Third Party Content Supplier.
4. The End User hereby to the maximum extent permitted by law:
   (a) acknowledges that the Lotsearch (nor any of its officers, employees or agents), nor any of its Third Party Content Supplier have any liability to it under or in connection with the

Report or these Terms;

(b) waives any right it may have to claim against Third Party Content Supplier in connection with the Report, or the negotiation of, entry into, performance of, or termination of these Terms; and

(c) releases each Third Party Content Supplier from any claim it may have otherwise had in connection with the Report, or the negotiation of, entry into, performance of, or termination of these Terms.

5. The End User acknowledges that any Third Party Supplier shall be entitled to plead the benefits conferred on it under clause 4, despite not being a party to these terms.
6. End User must not remove any copyright notices, trade marks, digital rights management information, other embedded information, disclaimers or limitations from the Report or authorise any person to do so.
7. End User acknowledges and agrees that Lotsearch and Third Party Content Suppliers retain ownership of all copyright, patent, design right (registered or unregistered), trade marks (registered or unregistered), database right or other data right, moral right or know how or any other intellectual property right in any Report or any other item, information or data included in or provided as part of a Report.
8. To the extent permitted by law and subject to paragraph 9, all implied terms, representations and warranties whether statutory or otherwise relating to the subject matter of these Terms other than as expressly set out in these Terms are excluded.
9. Subject to paragraph 6, Lotsearch excludes liability to End User for loss or damage of any kind, however caused, due to Lotsearch's negligence, breach of contract, breach of any law, in equity, under indemnities or otherwise, arising out of all acts, omissions and events whenever occurring.
10. Lotsearch acknowledges that if, under applicable State, Territory or Commonwealth law, End User is a consumer certain rights may be conferred on End User which cannot be excluded, restricted or modified. If so, and if that law applies to Lotsearch, then, Lotsearch's liability is limited to the greater of an amount equal to the cost of resupplying the Report and the maximum extent permitted under applicable laws.
11. Subject to paragraph 9, neither Lotsearch nor the End User is liable to the other for:

    (a) any indirect, incidental, consequential, special or exemplary damages arising out of or in relation to the Report or these Terms; or

    (b) any loss of profit, loss of revenue, loss of interest, loss of data, loss of goodwill or loss of business opportunities, business interruption arising directly or indirectly out of or in relation to the Report or these Terms,

    irrespective of how that liability arises including in contract or tort, liability under indemnity or for any other common law, equitable or statutory cause of action or otherwise.
12. These Terms are subject to New South Wales law.

This report has been prepared by:

RM Consulting Group Pty Ltd trading as RMCG

135 Mollison Street, Bendigo Victoria 3550

(03) 5441 4821 — rmcg.com.au — ABN 73 613 135 247

Offices in Victoria, Tasmania, ACT and NSW

Key Project Contact

Anna Kelliher

0427 859129 — annak@rmcg.com.au

Document review and authorisation

Job Number: #781

Doc Version	Final/Draft	Date	Author	Project Director review	BST QA review	Release approved by	Issued to
1.0	Draft	27/4/20	A. Kelliher	A. Kelliher	M. McIntosh	A. Kelliher	V. Mallinder NESD
1.1	Final	4/5/20	A. Kelliher			A. Kelliher	V. Mallinder, NESD

OLDMEADOW
ARBORICULTURE
TREE CARE SPECIALISTS

Preliminary site tree survey

Precinct 1B of the Wangaratta north west growth area structure plan.

Prepared for:

North East Survey Design Pty Ltd

C/O
Karen Watson
karen@nesd.com.au
0417 823 530

Prepared by:

Rhys Oldmeadow
Diploma of Arboriculture
rhys@oldarb.com.au
0412 199 628

Site assessment:

6 April 2020

Report date:

7 April 2020

OLDMEADOW ARBORICULTURE
TREE CARE SPECIALISTS

Table of Contents

Table of Contents 2
1. Introduction 3
1.1 Purpose 3
1.2 Scope 3
1.3 Method 3
1.4 Limitations 3
1.5 Document control 3
1.6 Background 3
2 Observations 4
2.1 Assessment area summary 4
2.2 Data 5
2.2.1 Trees (25) 5
2.2.2 Tree groups (7) 7
2.3 Site maps 8
2. Discussion 10
3.1 Preliminary design 10
3. Conclusion 10
4. Recommendations 10
5. References 12
6. Appendix 1: Arboricultural descriptors 13
7. Appendix 2. Protection of retained trees 18
8. Arboricultural consultancy: Assumptions 23

1. Introduction

1.1 Purpose

Oldmeadow Arboriculture has been engaged to undertake a preliminary site survey of any trees within, or adjacent to, Precinct 1B of the Wangaratta north west growth area structure plan. The purpose of this report is to help inform the design of the precinct structure plan by providing tree details including species and amenity value (arboricultural rating).

1.2 Scope

- Visually assess any trees (the subject trees) that are located within, or adjacent to, Precinct 1B and collect the following data:
  - Tree number
  - Tree species
  - Tree geographic location (GPS Lat/Long, sub 5 metre accuracy)
  - Approximate height and canopy spread (widest point)
  - Condition (health/structure)
  - Age/maturity
  - DBH (at 1.4m above ground)
  - Amenity value (arboricultural rating)
  - Significant tree defects
- Comment on measure likely to be required to enable the protection of subject trees proposed to be retained.

1.3 Method

- A site visit was undertaken by Rhys Oldmeadow on 6 April 2020
- All observations were taken at ground level, using stage 1 of the Visual Tree Assessment (VTA) method (Mattheck and Breloer 1994).

1.4 Limitations

- The assessment was undertaken from ground and did not involve excavation; root condition was not investigated unless above ground signs were observed such as surface roots or cracking/heaving of the soil
- Weeds, shrubs, dead trees and juvenile exotic trees or trees of low amenity/retention value were not assessed individually
- No instruments were used to record internal tree structure
- No aerial examination (climbing) was undertaken of the upper canopy

1.5 Document control

Current	Title	Type	Date	Version	Author
	18014 lindner_oldarb	Preliminary site tree survey	20/03/2020	A	Rhys Oldmeadow
	18014 lindner_1a_oldarb	Preliminary site tree survey	07/04/2020	A	Rhys Oldmeadow
>	18014 lindner_1b_oldarb	Preliminary site tree survey	07/04/2020	A	Rhys Oldmeadow

1.6 Background

The area of assessment is covered by the Wangaratta Planning Scheme and is zoned General Residential Zone (GRZ). A Development Contributions Plan Overlay (DCPO) and a Development Plan Overlay (DPO) apply to the area of assessment. The assessment area is additional noted as a Bushfire Prone Area.

2 Observations

Plate 1 Assessment area for Precinct 1B

2.1 Assessment area summary

Precinct 1B of the Wangaratta North West growth area structure plan encompasses land from 5 different property titles with frontage on either Lindner Road or Worland Road, Wangaratta. The land is flat and is currently primarily used as grazing land.

A single homestead is included within this precinct and is surrounded by an established garden of mixed native and exotic tree species.

2.2 Data

2.2.1 Trees (25)

Id	Species	Common Name	Age	Origin	DBH (cm)	Height (m)	Width (m)	Health	Structure	Arb Rating	ULE (yrs)	Comments	TPZ (rad_m)
103	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	160,95	23	25	Fair	Fair	Mod.A	40+	Non-active split;Co-dominant stems;Past limb failure.	15
104	*Eucalyptus camaldulensis*	River Red Gum	Early-mature	Remnant	55	12	10	Good	Good	Mod.A	40+		6.6
105	*Eucalyptus camaldulensis*	River Red Gum	Early-mature	Remnant	60	13	11	Good	Fair	Mod.B	40+		7.2
106	*Eucalyptus microcarpa*	Grey Box	Over-mature	Victorian native	120	18	20	Fair	Fair to Poor	Mod.C	15 - 40 y	Bee hive;Deadwood >50mm;Dieback;Trunk cavity.	14.4
107	*Eucalyptus microcarpa*	Grey Box	Semi-mature	Remnant	35	8	8	Fair	Fair	Mod.C	40+		4.2
108	*Eucalyptus microcarpa*	Grey Box	Semi-mature	Remnant	23,23	10	8	Fair	Fair	Mod.C	40+		3.9
115	*Fraxinus angustifolia subsp. angustifolia*	Desert Ash	Maturing	Exotic deciduous	30	6	8	Fair	Fair to Poor	Mod.C	15 - 40 y	Past powerline clearance;Growing in road reserve.	3.6
116	*Fraxinus angustifolia subsp. angustifolia*	Desert Ash	Maturing	Exotic deciduous	30,18	6	9	Good	Fair	Mod.C	15 - 40 y	Past powerline clearance;Growing in road reserve.	4.2
117	*Fraxinus excelsior 'Aurea'*	European Golden Ash	Maturing	Exotic deciduous	30,16	8	12	Fair	Fair	Mod.B	15 - 40 y		4.1
118	*Melaleuca armillaris*	Bracelet Honey-myrtle	Maturing	Victorian native	35	5	11	Fair to Poor	Fair to Poor	Low	5-15 y	Declining;Multi-stemmed.	4.2
119	*Fraxinus excelsior 'Aurea'*	European Golden Ash	Maturing	Exotic deciduous	28,16	8	12	Fair	Fair	Mod.B	15 - 40 y		3.9
120	*Eucalyptus saligna?*	Sydney Blue Gum	Early-mature	Australian native	25,20	15	11	Fair	Fair to Poor	Mod.C	15 - 40 y	Co-dominant stems.	3.8

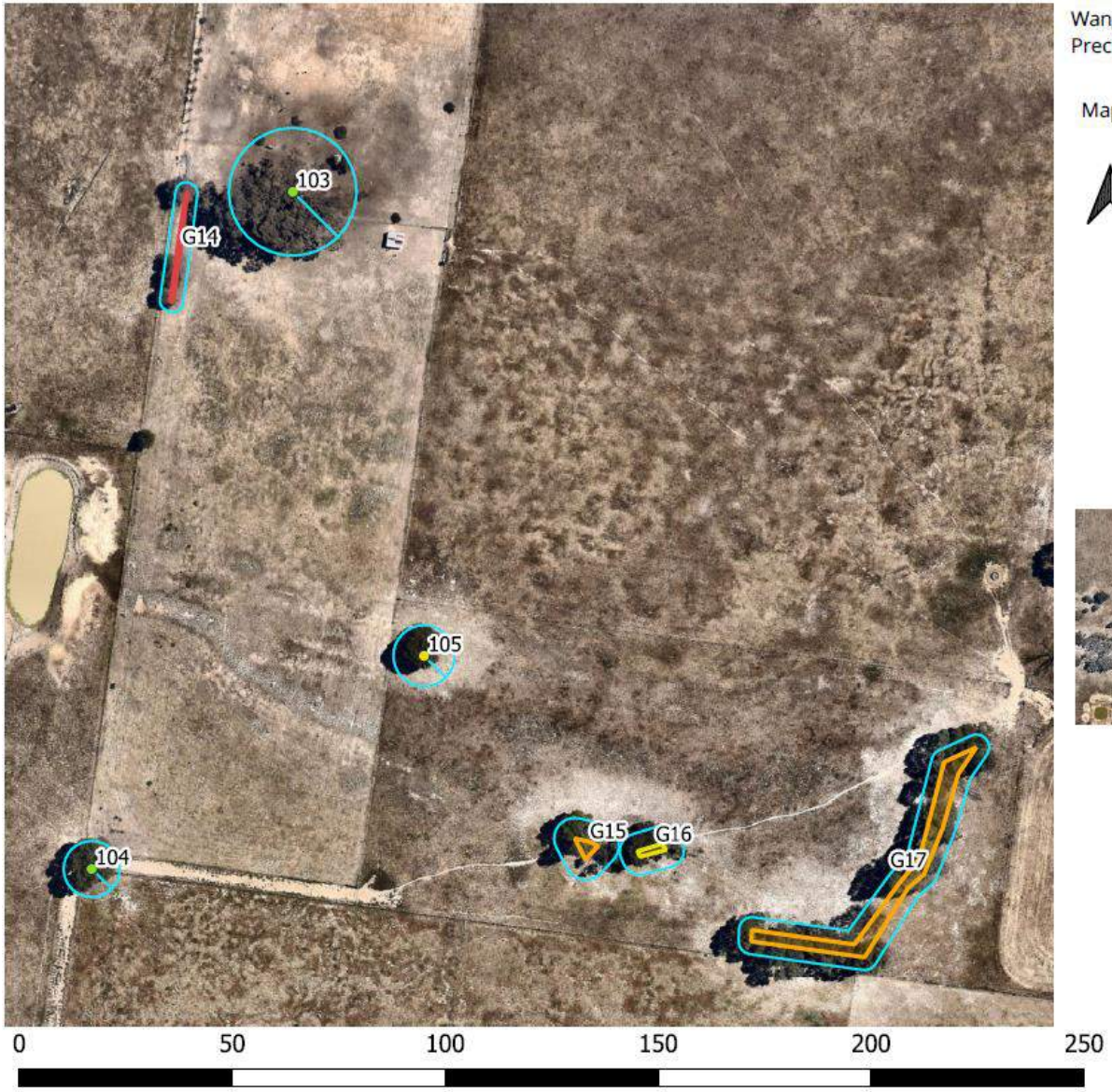
Id	Species	Common Name	Age	Origin	DBH (cm)	Height (m)	Width (m)	Health	Structure	Arb Rating	ULE (yrs)	Comments	TPZ (rad_m)
121	*Eucalyptus botryoides*	Southern Mahogany	Maturing	Victorian native	100	13	15	Fair	Poor	Mod.C	5-15 y	Past limb failure;Past stem failure.	12
122	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	35,28, 28,23	12	14	Fair	Fair	Mod.B	15 - 40 y	Co-dominant stems;Dieback;Foliage loss.	6.9
123	*Eucalyptus microcarpa*	Grey Box	Semi-mature	Remnant	22,12, 16	8	6	Fair to Poor	Fair to Poor	Low	15 - 40 y	Stump re-sprout.	3.6
124	*Eucalyptus microcarpa*	Grey Box	Early-mature	Victorian native	34,29, 28,22	15	9	Fair	Fair to Poor	Mod.C	40+	Acute forks;Stump re-sprout.	6.9
125	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	40,30, 25	13	13	Fair	Fair to Poor	Mod.C	5-15 y	Co-dominant stems;Included bark forks;Past stem failure.	6.7
126	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	45	15	13	Fair	Fair to Poor	Mod.C	15 - 40 y	Multi-stemmed.	5.4
127	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	34,26, 24	15	13	Fair	Fair to Poor	Mod.C	15 - 40 y	Acute forks;Included bark forks.	5.9
128	*Eucalyptus microcarpa*	Grey Box	Over-mature	Remnant	85	19	15	Fair to Poor	Fair to Poor	Low	5-15 y	Declining;Dieback;Epicormic crown.	10.2
129	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	30,22, 20,20	11	12	Fair	Fair to Poor	Mod.C	15 - 40 y	Acute forks;Included bark forks;Past limb failure;Past stem failure.	5.6
130	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	40,25, 21	15	10	Fair	Fair	Mod.B	15 - 40 y	Co-dominant forks.	6.2
131	*Eucalyptus microcarpa*	Grey Box	Maturing	Remnant	55	16	12	Fair	Fair to Poor	Mod.C	15 - 40 y	Co-dominant stems;Past stem failure.	6.6
132	*Acer negundo*	Box Elder	Maturing	Exotic deciduous	27	8	11	Fair	Fair	Mod.B	15 - 40 y		3.2
133	*Melaleuca armillaris*	Bracelet Honey-myrtle	Maturing	Victorian native	45	6	12	Fair to Poor	Fair to Poor	Low	5-15 y	Lopped;Has a tree house.	5.4

2.2.2 Tree groups (7)

ID	Species	Common name	Age	Origin	# of Stems	DBH (cm_avg)	Height (m_avg)	Width (m_avg)	Health	Structure	Arb rating	ULE (yrs)	Comments	TPZ (rad_m)
G14	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	Victorian native	5	20	8	5	Fair	Fair to Poor	Low	15-40 y	Multi-stemmed.	2.4
G15	*Eucalyptus camaldulensis*	River Red Gum	Early-mature	Remnant	3	40	15	9	Fair	Fair	Mod.C	40+	Acute forks;Co-dominant stems;Past limb failure.	4.8
G16	*Eucalyptus camaldulensis*	River Red Gum	Early-mature	Remnant	3	35	15	9	Fair	Fair	Mod.B	40+	Acute forks.	4.2
G17	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	Remnant	~75	25	16	9	Fair	Fair to Poor	Mod.C	15-40 y	Young to early-mature regrowth.	3
G18	*Callistemon salignus;Prunus dulcis*	Willow Bottlebrush ;Almond	Early-mature	Australian native;Exotic deciduous	15	15	4	3	Fair	Fair to Poor	Low	5 - 15 y		2
G19	*Casuarina glauca*	Swamp She-oak	Early-mature	Australian native	10	35	12	8	Fair	Fair	Mod.C	40+	Details from 2 larger trees situated amongst suckers.	4.2
G20	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	Remnant	12	15	12	4	Fair	Fair	Low	40+	Regenerating red gum regrowth.	2

- DBH: Diameter at Breast Height
- ULE: Useful Life Expectancy
- TPZ: Tree Protection Zone in m radius

2.3 Site maps



Wangaratta north west growth area structure plan.
Precinct 1B

Map 1

Tree arboricultural rating [25]
- Mod-A [2]
- Mod-B [6]
- Mod-C [13]
- Low [4]

Tree group arboricultural rating [7]
- Mod-B [1]
- Mod-C [3]
- Low [3]

TPZ
- TPZ

Wangaratta north west growth area structure plan.
Precinct 1B

Map 2

Tree arboricultural rating [25]
- Mod-A [2]
- Mod-B [6]
- Mod-C [13]
- Low [4]

Tree group arboricultural rating [7]
- Mod-B [1]
- Mod-C [3]
- Low [3]

TPZ
- TPZ

2. Discussion

3.1 Preliminary design

The most significant trees at risk from this development are large remnant trees with less dynamic tissue that are less able to adjust to and tolerate disturbance. Additionally, trees located outside of the property boundaries (e.g., within road reserves) are often overlooked during the planning / construction process.

Modifying or manipulating the design to minimise the loss of significant trees (primarily Moderate A trees but also Moderate B trees that have the capacity to increase their arboricultural rating) will not only benefit the long-term amenity value of the site but has the potential to streamline the planning permit process (particularly for indigenous vegetation).

Works activities are considered as (but are not limited to):

- Demolition works
- Site cut and fill
- Parking and movement of construction vehicles
- Storage of construction materials
- Installation of driveways and pathways
- Trenching for underground services.

Careful consideration of all activities will help minimise impacts to the trees and may save time and money throughout the development process.

3. Conclusion

The site assessment identified a total of 25 trees and 7 tree groups within, or adjacent to Precinct 1B of the Wangaratta north west growth area structure plan. Trees 115 and 116 are located within the road reserve of Worland Road.

Of the 32 trees / tree groups assessed;

- 20 were identified as remnant or indigenous to the area
- 2 had an arboricultural rating of Mod.A
- 7 had an arboricultural rating of Low.

Tree groups 15, 16 and 17 (large group) are groups of regenerative river red gums. These trees are crowded and the majority have poor form – upright with low crown / stem ratios with several poor, included bark unions. There are multiple failures throughout the groups.

4. Recommendations

- Ensure all works avoid impacting the TPZ of as many trees as is practicable; particularly moderate B or higher arboricultural value trees, or trees within adjoining land (adjoining properties or road reserves).
- If practicable, include scaled Tree Protection Zones (TPZ) on proposed plans for all assessed trees (see tree data).
- If encroachments within TPZs are unavoidable, ensure less than 10% of the total area is impacted. The area lost should be compensated for elsewhere and contiguous with the TPZ.
- All works should be shown on plans; site cut and fill, location of buildings, driveways and pathways, all underground services, including storm water and sewerage.

- Design of any underground services and landscaping should be cognisant of root protection. Do not excavate within the nominated Tree Protection Zones of retained trees including those trees on neighbouring properties unless permitted by the responsible authority.

General

Trees to be retained should be protected according to Australian Standard AS 4970-2009 Protection of trees on development sites. Appendix 2. Protection of retained trees, provides guidance on activities restricted in Tree Protection Zones.

5. References

Australian Standard AS 4970-2009: Protection of Trees on Development Sites.

Australian Standard AS 4373-2007: Pruning of Amenity Trees

Brooker, M.I.H & Kleinig, D.A (2006) Field Guild to Eucalypts Volume 1 South-Eastern Australia Third Edition. Bloomings Books Pty Ltd. Australia.

C. Mattheck. The Body Language of Trees- Encyclopaedia of Visual Tree Assessment. 2015. KS Druck GmbH. Kronau.

6. Appendix 1: Arboricultural descriptors

Tree Condition

The assessment of tree condition evaluates factors of health and structure. The descriptors of health and structure attributed to a tree evaluate the individual specimen to what could be considered typical for that species growing in its location. For example, some species can display inherently poor branching architecture, such as multiple acute branch attachments with included bark. Whilst these structural defects may technically be considered arboriculturally poor, they are typical for the species and may not constitute an increased risk of failure. These trees may be assigned a structural rating of fair-poor (rather than poor) at the discretion of the author.

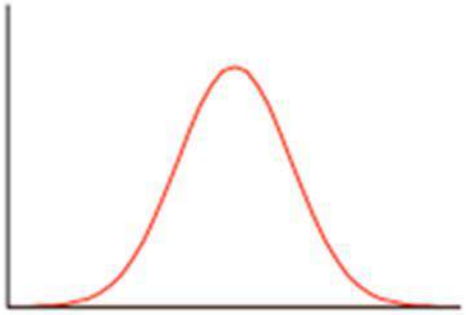


Figure 1 Tree condition\ (Health & Structure)
Indicative normal distribution curve for tree condition

Diagram 1, provides an indicative distribution curve for tree condition to illustrate that within a normal tree population the majority of specimens are centrally located within the condition range (normal distribution curve). Furthermore, that those individual trees with an assessed condition approaching the outer ends of the spectrum occur less often.

Tree Name

Provides botanical name, (genus, species, variety and cultivar) according to accepted international code of taxonomic classification, and common name.

Tree Type

Describes the general geographic origin of the species and its type e.g. deciduous or evergreen.

Category	Description
Indigenous	Occurs naturally in the area or region of the subject site
Victorian native	Occurs naturally within some part of the State of Victoria (not exclusively) but is not indigenous
Australian native	Occurs naturally within Australia but is not a Victorian native or indigenous
Exotic deciduous	Occurs outside of Australia and typically sheds its leaves during winter
Exotic evergreen	Occurs outside of Australia and typically holds its leaves all year round
Exotic conifer	Occurs outside of Australia and is classified as a gymnosperm
Native conifer	Occurs naturally within Australia and is classified as a gymnosperm
Native Palm	Occurs naturally within Australia. Woody monocotyledon
Exotic Palm	Occurs outside of Australia. Woody monocotyledon

Height and Width

Indicates height and width of the individual tree; dimensions are expressed in metres. Crown heights are measured with a laser height meter where possible. Due to the topography of some sites and/or the density of vegetation it may not be possible to do this for every tree. Tree heights may be estimated in line with previous height meter readings in conjunction with author's experience. Crown widths are generally paced (estimated) at the widest axis or can be measured on two axes and averaged. In some instances the crown width can be measured on the four cardinal direction points (North, South, East and West).

Diameter at Breast Height (DBH)
Indicates the trunk diameter (expressed in centimetres) of an individual tree measured at 1.4m above the existing ground level or where otherwise indicated, multiple leaders are measured individually. Plants with multiple leader habit may be measured at the base. The range of methods to suit particular trunk shapes, configurations and site conditions can be seen in Appendix A of Australian Standard *AS 4970-2009 Protection of trees on development site*s. Measurements undertaken with foresters ø tape or builders tape.

Health
Assesses various attributes to describe the overall health and vigour of the tree.

Category	Vigour/Extension growth	Decline symptoms/Deadwood	Foliage density, colour, size, intactness	Pests and or disease
Good	Above typical	None or minimal	Better than typical	None or minimal
Fair	Typical	Typical or expected	Typical	Typical, within damage thresholds
Fair to Poor	Below typical	More than typical	Exhibiting deficiencies	Exceeds damage thresholds
Poor	Minimal	Excessive and large amount/size	Exhibiting severe deficiencies	Extreme and contributing to decline
Dead	N/A	N/A	N/A	N/A

Structure
Assesses principal components of tree structure (Diagram 2).

Descriptor	Zone 1 - Root plate & lower stem	Zone 2 - Trunk	Zone 3 - Primary branch support	Zone 4 - Outer crown and roots
Good	No damage, disease or decay; obvious basal flare / stable in ground	No damage, disease or decay; well tapered	Well formed, attached, spaced and tapered	No damage, disease, decay or structural defect
Fair	Minor damage or decay. Basal flare present.	Minor damage or decay	Typically formed, attached, spaced and tapered	Minor damage, disease or decay; minor branch end-weight or over-extension
Fair to Poor	Moderate damage or decay; minimal basal flare	Moderate damage or decay; approaching recognised thresholds	Weak, decayed or with acute branch attachments; previous branch failure evidence	Moderate damage, disease or decay; moderate branch end-weight or over-extension
Poor	Major damage, disease or decay; fungal fruiting bodies present. Excessive lean	Major damage, disease or decay; exceeds recognised thresholds; fungal fruiting bodies	Decayed, cavities or has acute branch attachments with included bark; excessive	Major damage, disease or decay; fungal fruiting bodies present; major branch end-weight or over-extension

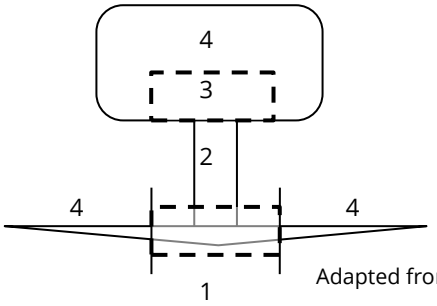
Descriptor	Zone 1 - Root plate & lower stem	Zone 2 - Trunk	Zone 3 - Primary branch support	Zone 4 - Outer crown and roots
	placing pressure on root plate	present. Acute lean. Stump resprout	compression flaring; failure likely	
Very Poor	Excessive damage, disease or decay; unstable / loose in ground; altered exposure; failure probable	Excessive damage, disease or decay; cavities. Excessive lean. Stump resprout	Decayed, cavities or branch attachments with active split; failure imminent	Excessive damage, disease or decay; excessive branch end-weight or over-extension

Structure ratings will also take into account general tree architecture which considers aspects of stem taper, live crown ratio, branch distribution or bias and crown position such as tree being suppressed amongst more dominant trees.

The lowest or worst descriptor assigned to the tree in any column could generally be the overall rating assigned to the tree. The assessment for structure is limited to observations of external and above ground tree parts. It does not include any exploratory assessment of underground or internal tree parts unless this is requested as part of the investigation. Trees are assessed and the given a rating for a point in time.

Diagram 2: Tree structure zones

1. Root plate & lower stem
2. Trunk
3. Primary branch support
4. Outer crown & roots



Adapted from Coder (1996)

Generally, trees with a poor or very poor structure are beyond the benefit of practical arboricultural treatments.

The management of trees in the urban environment requires appropriate arboricultural input and consideration of risk. Risk potential will take into account the combination of likelihood of failure and impact, including the perceived importance of the target(s).

Life stage

Relates to the physiological stage of the tree's life cycle.

Category	Description
Juvenile	A young tree, given normal environmental conditions for that tree it will not yet flower or fruit.
Semi-mature	Able to reproduce yet still to achieve expected size in situation
Maturing	Specimen approaching expected size in situation, with reduced incremental growth
Over-mature	Tree is senescent and in decline

Useful Life Expectancy

The sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area, less its estimated current age. The life expectancy of the tree is further modified where necessary in consideration of its current health and vigour, condition and suitability to the site.

Arboricultural Rating

Arboricultural rating relates to a combination of tree condition factors, including health and structure (arboricultural merit), and also conveys an amenity value. Amenity relates to the trees biological, functional and aesthetic characteristics (Hitchmough 1994) within an urban landscape context. The presence of any serious disease or tree-related hazards that would impact risk potential are taken into account.

Category	Description
High	Tree of high quality in good to fair condition. Generally a prominent arboricultural/landscape feature. These trees have the potential to be a medium – to long-term component of the landscape if managed appropriately. Retention of these trees is highly desirable.
Moderate	Tree of moderate quality, in fair or better condition. Tree may have a condition, and or structural problem that will respond with arboricultural treatment. Often the majority of a mature tree population will fit into this category. It is therefore often further divided into classes A, B and C with A being the more desirable for retention. These trees have the potential to be a medium – to long-term component of the landscape if managed appropriately. Retention of these trees is generally desirable.
Low	Unremarkable tree of low quality or little amenity value. Tree in either poor health or with poor structure or a combination. Tree is not significant because of either its size or age, such as young trees with a stem diameter below 15cm. These trees are easily replaceable. Tree (species) is functionally inappropriate to specific location and would be expected to be problematic if retained. Retention of such trees may be considered if not requiring a disproportionate expenditure of resources for a tree in its condition and location.
None	Trees of low quality with an estimated remaining life expectancy of less that 5 years. Tree has either a sever structural defect or health problem or combination that cannot be sustained with practical arboricultural techniques and the loss of the tree would be expected in the short term. Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Tree infected with pathogens of significance to either the health or safety of the tree or other adjacent trees. Trees whose retention would no be viable after the removal of adjacent trees (including trees that have developed in close spaced groups and would not be expected to acclimatise to severe alterations to surrounding environment – removal of adjacent shelter trees). Tree has a detrimental effect on the environment, for example, the tree is recognised environmental woody weed with potential to spread into waterways or natural areas. Unremarkable tree of no material landscape, conservation or other cultural value.

Trees have many values, not all of which are considered when an arboricultural assessment is undertaken. However, individual trees or tree group features may be considered important community resources because of unique or noteworthy characteristics or values other than their age, dimensions, health or structural condition. Recognition of one or more of the following criteria is designed to highlight other considerations that may influence the future management of such trees.

Significant	Description
Horticultural Value/Rarity	Outstanding horticultural or genetic value; could be an important for propagating stock, including specimens that are particularly resistance to disease or exposure. Any tree of a species or variety that is rare.
Historic, Aboriginal Cultural or Heritage Value.	Tree could have value as a remnant of a particular important historical period or a remnant of a site or activity no longer in action. Tree has a recognised association with historic aboriginal activities, including scar trees. Tree commemorates a particular occasion, including plantings by notable people, or having association with an important event in local history.
Ecological Value	Tree could have value as habitat for indigenous wildlife, including providing breeding, foraging or roosting habitat, or is a component of a wildlife reserve. Remnant indigenous vegetation that contributes to biological diversity.

7. Appendix 2. Protection of retained trees

Pruning standards / Lopping

An Australian standard exists to give guidance on pruning of trees.

It is important that all remedial works are carried out by a competent contractor in accordance with the Australian Standard. (AS. 4373 2007 - Pruning of Amenity Trees).

Lopping; as defined within the Standard, is detrimental to trees, often resulting in decay and poorly attached epicormic shoots. Natural Target Pruning methods should be used wherever possible when removing sections from trees.

Establishment of Tree Protection Zones

The tree protection zone (TPZ) is the principal means of protecting trees on development sites. Usually fencing will be used to delineate the Tree Protection Zones (TPZ) as defined by AS 4970-2009 Protection of trees on development sites.

Fencing is installed following permitted vegetation removal and pruning but prior to construction site establishment. Fencing should be retained until completion of all construction related activity.

Some works and activities within the TPZ may be authorised by the Responsible Authority. These works should be supervised by the project arborist. Any additional encroachment that becomes necessary as the site works progress should be reviewed by the project arborist and be acceptable to the Responsible Authority before being carried out (AS 4970--2009).

Activities restricted within the TPZ

A TPZ area may surround a single tree or group or a patch of vegetation, activities that must NOT be carried out within a TPZ include, but are not limited to, the following:

(a) machine excavation including trenching;
(b) excavation for silt fencing;
(c) cultivation;
(d) storage;
(e) preparation of chemicals, including preparation of cement products;
(f) parking of vehicles and plant;
(g) refuelling;
(h) dumping of waste;
(i) wash down and cleaning of equipment;
(j) placement of fill;
(k) lighting of fires;
(l) soil level changes;
(m) vehicle movement – access ways;
(n) changes of grade;
(o) temporary or permanent installation of utilities and signs, and
(p) damage to the tree.

Maintaining Tree Protection Zones (TPZ)

If at any time the TPZ must be infringed upon for works such as excavation for the installation of pipes or drainage or the movement of equipment or any other interference that may cause a change in the availability of water or oxygen to the tree, a suitably qualified arborist should be consulted to supervise the works and permission from the responsible authority may be required.

It may be possible to work or construct within a TPZ without significantly impacting a tree however the size and number of roots in the area would need to be determined and the specifics of the tree and its

resilience to impacts would need to be reviewed prior to commencement. Design and construction methods may need alteration to minimise adverse tree impact.

AS 4970-2009 (extract)

Variations to the TPZ

General

It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching.

Minor encroachment

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.

Variations must be made by the project arborist considering relevant factors listed in (see standard) …

Major encroachment

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would 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 listed in (see standard)

Physical / mechanical damage to trees

Physical damage to tree parts, particularly the trunk, provides entry points for pests and diseases such as fungal infections. This may cause long-term decay and can lead to partial or complete tree failure and death.

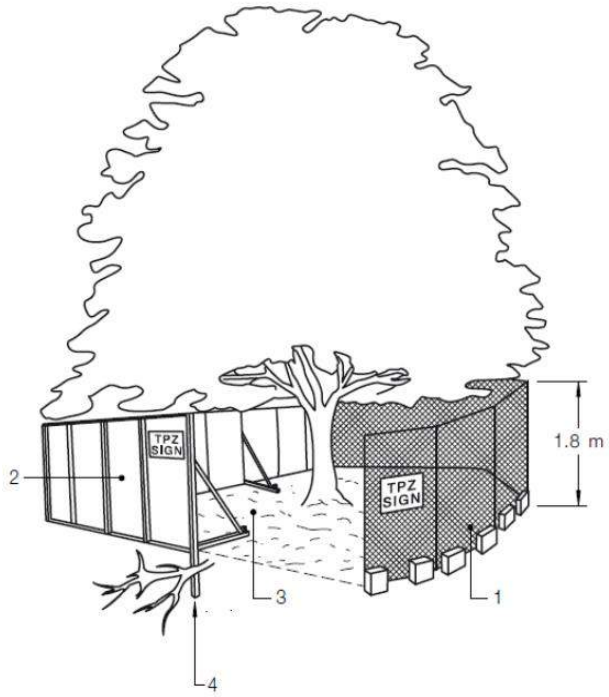
Alteration of soil levels

Alteration of soil levels around trees will affect the root zone and stability of a tree as well as tree metabolism. This may result in reduced tree health, excessive deadwood, thinning foliage and poor vigour; it can take some years for the impact to become evident at which time it is normally irreversible.

Tree protection zone fencing

Protective fencing is used to delineate the TPZ. The fence must provide high visibility and act as a physical barrier to construction vehicles. No construction activity is to be undertaken within the fenced TPZ. The fence should be adequately signed, be sturdy and prevent the entry of heavy equipment, vehicles, workers and the public.

Once erected, protective fencing must not be removed or altered without approval by the project arborist or responsible authority. The TPZ should be secured to restrict access. Tree protection fencing will consist of chain wire mesh panels held in place with concrete feet. The tree protection zone shall be clearly signed "Tree Protection Zone – No Access".



TREE PROTECTION ZONE SIGN EXAMPLE

(Informative)

'PZ sign provides clear and readily accessible information to indicate that a TI n established. Figure C1 provides an example of a suitable sign.

Source – AS 4970-2009 Protection of trees on development sites

(Tree Protection)

Temporary access to the TPZ

When tree protection fencing cannot be installed or requires temporary removal, other tree protection measures should be used.

Where necessary, physical protection for the trunk and branches of trees should be installed. The materials and positioning of protection will be specified by the project arborist. A minimum height of 2m is recommended.

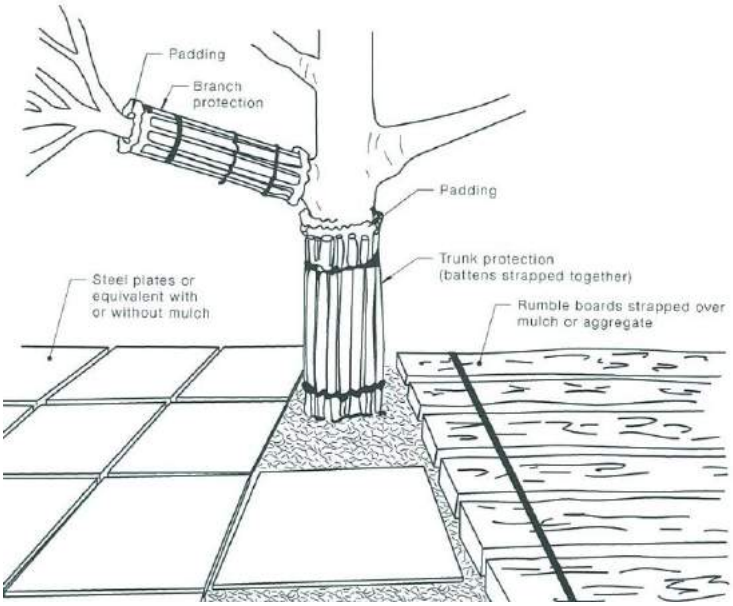
If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. These measures may also be applied to root zones beyond the TPZ (see image).

Root protection during works within the TPZ

Works that have been approved by the Responsible Authority to occur within the TPZ, such as re-grading, installation of piers or landscaping have the potential to damage roots.

If the grade is to be raised the material should be coarser or more porous than the underlying material.

Depth changes and compaction should be minimized. Manual excavation should be carried out under the supervision of the project arborist to identify roots critical to tree stability and health. Relocation or redesign of works may be required.



Source – AS 4970-2009 Protection of trees on development sites

(Ground Protection)

Where the project arborist identifies roots to be pruned within or at the outer edge of the TPZ, they should be pruned with a final cut to undamaged wood. Pruning cuts should be made with sharp tools such as secateurs, pruners, handsaws or chainsaws. Pruning wounds should not be treated with dressings or paints.

It is not acceptable for roots within the TPZ to be 'pruned' with machinery such as backhoes or excavators.

Where roots within the TPZ are exposed by excavation, temporary root protection should be installed to prevent them drying out. This may include jute mesh or hessian sheeting as multiple layers over exposed roots and excavated soil profile, extending to the full depth of the root zone. Root protection sheeting should be pegged in place and kept moist during the period that roots are exposed.

Other excavation works in proximity to trees, including landscape works such as paving, irrigation and planting can adversely affect root systems, seek advice from the project arborist.

If temporary access is required within a Tree Protection Zone this may be carried out using sheets of heavy plywood or like protection but should not be considered for long term requirements.

Installing underground services within TPZ

All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually excavated trenches using non-destructive methods such as Air or hydro excavation.

The directional drilling bore should be at least 600 mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees.

Driveways and paving within TPZ's

Works should not encroach into a TPZ. If encroachment is unavoidable any hard surfaces such as paving or driveways should:

1. not require any scraping or excavation – most roots, particularly small absorbing roots, are shallow; within the upper 100mm of soil.

2. be constructed of a permeable material and laid on a base and subbase specifically designed to allow the movement of water through and into the soil below.

If construction is permitted within a TPZ it should be suspended on piers leaving the ground undisturbed other than the careful placement of pier holes. The bottom of supporting beams should be above existing ground level or, if this is not possible beams should run radially away from the tree trunk. There should be NO excavation of any description, including piers, within a Structural Root Zone (SRZ)

8. Arboricultural consultancy: Assumptions

- Any legal description provided to Oldmeadow Arboriculture is assumed to be correct. Any titles and ownerships to any property are assumed to be correct. No responsibility is assumed for matters outside the consultant's control.
- Oldmeadow Arboriculture assumes that any property or project is not in violation of any applicable codes, ordinances, statutes or other local, state or federal government regulations.
- Oldmeadow Arboriculture has taken care to obtain all information from reliable sources. All data has been verified insofar as possible; however Oldmeadow Arboriculture can neither guarantee nor be responsible for the accuracy of the information provided by others not directly under Oldmeadow Arboriculture's control.
- No Oldmeadow Arboriculture employee shall be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.
- Loss of this report or alteration of any part of this report not undertaken by Oldmeadow Arboriculture invalidates the entire report.
- Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone but the client or their directed representatives, without the prior consent of Oldmeadow Arboriculture.
- This report and any values expressed herein represent the opinion of Oldmeadow Arboriculture's consultant and Oldmeadow Arboriculture's fee is in no way conditional upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural drawings, reports or surveys.
- Unless expressed otherwise: i) Information contained in this report covers only those items that were covered in the project brief or that were examined during the assessment and reflect the condition of those items at the time of inspection; and ii) The inspection is limited to visual examination of accessible components without dissection, excavation or probing unless otherwise stipulated.
- There is no warranty or guarantee, expressed or implied by Oldmeadow Arboriculture., that the problems or deficiencies of the plants or site in question may not arise in the future.
- All instructions (verbal or written) that define the scope of the report have been included in the report and all documents and other materials that the Oldmeadow Arboriculture consultant has been instructed to consider or to take into account in preparing this report have been included or listed within the report.
- To the writer's knowledge all facts, matter and all assumptions upon which the report proceeds have been stated within the body of the report and all opinion contained within the report have been fully researched and referenced and any such opinion not duly researched is based upon the writers experience and observations.

Precedent disclaimer

Disclaimer: Although Oldmeadow Arboriculture uses all due care and skill in providing you the information made available in this report, to the extent permitted by law Oldmeadow Arboriculture otherwise excludes all warranties of any kind, either expressed or implied.

To the extent permitted by law, you agree the Oldmeadow Arboriculture is not liable to you or any other person or entity for any loss or damage caused or alleged to have been caused (including loss or damage resulting from negligence), either directly or indirectly, by your use of the information (including by way of example, arboricultural advice) made available to you in this report. Without limiting this disclaimer, in no event will Oldmeadow Arboriculture be liable to you for any lost revenue or profits, or for special, indirect, consequential or incidental damage (however caused and regardless of the theory of liability) arising out of or related to your use of that information, even if Oldmeadow Arboriculture has been advised of the possibility of such loss or damage.

This disclaimer is governed by the law in force in the State of Victoria, Australia.

The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

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

VOLUME 08228 FOLIO 409 Security no : 124093028612W
Produced 12/10/2021 01:45 PM

LAND DESCRIPTION

Lot 1 on Plan of Subdivision 041832.
PARENT TITLES :
Volume 06687 Folio 329 Volume 08061 Folio 160
Created by instrument A758848 18/06/1959

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
TRF INVESTMENTS PTY LTD of UNIT 1 7 SLEIGH PLACE HUME VIC 2620
AQ972773G 01/05/2018

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AQ972774E 01/05/2018
NATIONAL AUSTRALIA BANK 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 or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP041832 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: 85 LINDNER ROAD WANGARATTA VIC 3677

ADMINISTRATIVE NOTICES

NIL

eCT Control 16089P NATIONAL AUSTRALIA BANK LTD
Effective from 01/05/2018

DOCUMENT END

The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

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

VOLUME 08228 FOLIO 410 Security no : 124093028537D
Produced 12/10/2021 01:43 PM

LAND DESCRIPTION

Lots 2,3 and 6 on Plan of Subdivision 041832.
PARENT TITLES :
Volume 06687 Folio 329 Volume 08061 Folio 160
Created by instrument A758849 18/06/1959

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE ROMAN CATHOLIC TRUSTS CORPORATION FOR THE DIOCESE OF SANDHURST
F387176 18/07/1974

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 or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP041832 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

DOCUMENT END

The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

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

VOLUME 08168 FOLIO 432 Security no : 124093028868T
Produced 12/10/2021 01:52 PM

LAND DESCRIPTION

Lot 5 on Plan of Subdivision 041832.
PARENT TITLES :
Volume 06687 Folio 329 Volume 08061 Folio 160
Created by instrument A356591 24/06/1957

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
WORLAND ROAD PTY LTD of 8 AIRDRIE COURT TEMPLESTOWE LOWER VIC 3107
AJ401570W 03/01/2012

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 or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP041832 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: 10-26 WORLAND ROAD WANGARATTA VIC 3677

DOCUMENT END

PLAN OF SUBDIVISION OF

CROWN ALLOTMENT 7 & PART OF CROWN ALLOTMENT 8 SECTION B.

PARISH OF WANGARATTA SOUTH.

COUNTY OF MOIRA.

VOL.6687 FOL.329
VOL.8061 FOL.160

LP41832

EDITION 1

PLAN MAY BE LODGED
24/12/1957.

COLOUR CODE
E-1 = BLUE

Measurements are in Links
Conversion Factor
LINKS x 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

APPROPRIATIONS

THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE