PSP 1082 Mt Atkinson & PSP 1085 Tarneit Plains

METROPOLITAN PLANNING AUTHORITY

Land Capability Assessment

VW07592.RPT.V7 | Final v7 Rev A

D/14/807

2 July 2015

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Contents

List of abbreviations

AEP	Annual exceedance probability
AOI	Area of interest
AS	Australian Standard
ASRIS	Australian Soil Resources Information System
BoM	Bureau of Meteorology
BPEM	Best Practice Environmental Management (EPA publication 788.1)
BTEX	Benzene, toluene, ethylbenzene and xylene
CUTEP	Clean-up to extent practical
dB	Decibels
DEPI	Department of Environment and Primary Industries
DQO	Data quality objectives
DSE	Department of Sustainability and Environment (now DEPI)
DTPLI	Department of Transport, Planning and Local Infrastructure
EAO	Environmental Audit Overlay
EC	Electrical conductivity
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
ESO	Environmental Significance Overlay
FZ	Farming Zone
GDE	Groundwater Dependent Ecosystems
GMA	Groundwater Management Area
GMP	Groundwater management/monitoring plan
GMS	Groundwater management system
GQRUZ	Groundwater Quality Restricted Use Zone
GW	Groundwater
GWZ	Green Wedge Zone
ha	Hectares
HO	Heritage Overlay
Hz	Hertz
MAR	Managed aquifer recharge
MPA	Metropolitan Planning Authority
NAPL	Non-aqueous phase liquid
NDPRM	Network Development Plan – Metropolitan Rail
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
PAH	Polycyclic aromatic hydrocarbons
PAO	Public Acquisition Overlay
PASS	Potential acid sulphate soils
PSP	Precinct Structure Plan
PSR	Priority Sites Register
PTV	Public Transport Victoria
PUZ	Public Use Zone
RCZ	Rural Conservation Zone
RDZ	Road Zone

SAQP	Sampling, Analysis and Quality Plan
SEPP	State Environmental Protection Policy
SLO	Significant Landscape Overlay
SOBN	State Observation Bore Network
SUZ	Special Use Zone
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbon
UFZ	Urban Floodway Zone
UGZ	Urban Growth Zone
UST	Underground storage tanks
VITM	Victorian Integrated Transport Model
VVG	Visualising Victoria's Groundwater
WF	Western Freeway

Executive Summary

Background and objectives

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by the Metropolitan Planning Authority (MPA) to undertake a Land Capability Assessment of the adjoining Mt Atkinson (1082) and Tarneit Plains (1085) Precinct Structure Plan (PSP) areas, hereafter referred to as “the sites” or “PSP areas”.

The Mt Atkinson and Tarneit Plains sites have been identified as future land supply for a range of residential, business and industrial uses. The aim of this assessment is to identify opportunities and constraints to the proposed land development. These may be caused by existing, past or future land uses. The assessment comprised two stages:

- Stage 1, which applied to land contamination, hydrogeology, hydrological and/or geotechnical and noise and vibration, being a review of the history of land use at the site and surrounding areas and a preliminary desktop review of information available
- Stage 2, which applied to land contamination, hydrogeology, hydrological and/or geotechnical, involving inspections of the properties within the PSP area identified as presenting a potential risk. Risk in this regard relates to potential contamination, hydrogeology, hydrological and/or geotechnical issues. This report includes the findings of both the Stage 1 and 2 assessment completed

For the purposes of this study, the two PSP areas have been considered together. The Mt Atkinson PSP occupies and area of 1,049 hectares (996 hectares being land parcels with the remaining 53 hectares being road reserve). The Tarneit Plains PSP occupies an area of 486 hectares (474 hectares being land parcels with the remaining 12 hectares being road reserve). The two PSPs combine to occupy an area of 1,535 hectares.

Scope of works

The following scope of work was undertaken at the site:

- The Stage 1 assessment comprised the gathering of relevant information (including the use of literature sources) for the purposes of identifying potential sources of contamination as well as hydrogeological, hydrological, acoustic, vibration and geotechnical issues
- The Stage 2 assessment included inspecting the site for potential sources of contamination, and areas of geotechnical, hydrological and hydrogeological significance identified during the Stage 1 assessment

The approach and findings of the assessment, together with supporting information, are documented within this report.

Conclusions

Site contamination assessment

Based on the information gathered during the Stage 1 & 2 assessments, the following conclusions can be made in relation to the Mt Atkinson and Tarneit Plains PSP area:

- The number of properties assigned to each risk category is as follows (see Section 9 for further details):

		Number of properties	
		Mt Atkinson	Tarneit Plains
Rating	H	2	
	M-H	1	
	M	1	1
	L-M	8	
	L	3	
	VL	37	18

- The site history assessment found that the site has a long history of agricultural land uses with much of the areas remaining under cultivation to the present day
- Based on the available information including a site walkover and site history assessment the following primary potential sources of contamination have been identified:
  - Two petrol filling stations located at the north-west and north-east of the PSP area (area of interest (AOI) 1 and 6). The presence of underground storage tanks (USTs) constitutes a high risk of contamination of underlying soils and groundwater.
  - The Nevas broiler chicken farm (property 16) is considered to present a moderate risk of contamination associated with waste and general site activities
  - The existing material recycling facility at 2-50 Meskos Road (property 5). This site presents a moderate to high potential for contamination associated with use of chemicals, fuels, equipment on site and general material stockpiling
  - Highly localised areas of potential contamination associated with frequently encountered land uses. These include potential contamination hotspots associated with uses such as stockyards and general farm premises. These hotspots are likely to be localised to areas such fuel tanks, chemical storage areas and similar
  - Highly localised areas of potential contamination associated with stockpiles and general dumped materials. In these locations contamination is likely to be localised to stockpiles themselves and in some instances shallow underlying soils
  - Diffuse but low level sources of contamination associated with the widespread application of agricultural chemicals on farmland as well as orchards and plant nurseries. These chemicals may include pesticides, herbicides, fungicides and fertilizers
- A number of off-site sources of contamination have been identified in the vicinity of the PSP site. Based on the nature of the site uses as well as the environmental setting of the site (hydrological, hydrogeological and geological conditions), the greatest risk to the Mt Atkinson and Tarneit Plains PSP is presented by the Boral Quarry to the south east. The remaining properties were deemed to present a very low potential for contamination of the PSP area. The Boral quarry and associated landfill operations are considered to present a low to moderate potential for contamination at the PSP.
- Buffers around the quarry, poultry farm, proposed recycling facility and the Boral quarrying and landfilling activities at the south eastern boundary are likely to apply, however limited encroachment is likely on proposed sensitive future land uses (based on the West Growth Corridor Plan prepared by MPA)

Geotechnical assessment

Based on the available geological information, it was identified that the PSP areas are underlain by highly reactive residual clay overlying basalt rock. An indicative site classification of Class “H2 to E” has been assigned in accordance with Table D1, Australian Standard 2870-1996. Based on this classification, key geotechnical considerations associated with development of the PSP areas include the depth and reactivity of the basaltic clay, as this drives the site classification and corresponding foundation selection, potential for differential settlement and general behaviour of excavations in these types of soils.

In addition to the soil classification, fill soil, if present, is expected to be uncontrolled and may not be suitable for development in its present state, as well as areas subject to poor drainage which may comprise soft material that provides low bearing capacity for foundations.

More site specific commentary could be provided once the layout and details of proposed infrastructure on the PSP areas is finalised.

Hydrology assessment

The PSP area is located in the headwaters of three small drainage lines/channels, with a fourth watercourse running along the western boundary. These consist of an unnamed watercourse draining eastward into the Billingham Rd Drain, Skeleton Creek and an unnamed tributary of Skeleton Creek draining to the south east, and Dry Creek which drains to the south. All of the PSP area is situated above the 1% annual exceedance probability flood level, indicating no major flood risk.

Hydrogeological assessment

Based on the regional hydrogeological information and bore data in the vicinity of the site, the unconfined aquifer is associated with the Basalt Volcanics.

Over the majority of the PSP areas there does not appear to be any significant hydrogeological constraints which would render the land unsuitable for development. However, along the Dry Creek and Skeleton Creek it is likely shallow groundwater tables will exists. The following issues would need to be considered however, in the planning and design of any development:

- The shallow water table may cause groundwater inflow to excavations
- The saline nature of the groundwater may require careful monitoring if dewatering or extraction was required
- Decreased local groundwater recharge in winter and early spring has the potential to reduce discharge to nearby surface water features, which could potentially have a negative impact on the ecological health of local waterways.

Opportunities for groundwater use include extraction for garden watering and irrigation of parks and ovals, depending on the salinity of the groundwater and potential to shandy with less saline sources.

Noise and vibration

Potential noise and vibration sources which are at risk of adversely impacting on the proposed residential development area have been identified and these sources include, but not limited to, road traffic, railway and industrial noise and vibration (a more detailed list is provided in Section 10.1.3).

Indicative setback distances from existing and future roads to the residential areas have been proposed to achieve a low risk of exceeding noise limits that would apply at these properties. Measures put in place to manage road traffic noise sources will reduce these setback distances.

The *Passenger Rail Infrastructure Noise Policy* provides *Investigation Thresholds* to guide transport bodies when assessing the impacts of rail noise on nearby communities - they are not a limit on allowable noise emissions. If they are exceeded then options for avoiding, minimising and mitigating rail noise should be

considered (as proposed in the policy). Cost-effective options should be selected, not only in an economic context, as social and environmental impacts should also be taken into account. Potential noise and/or vibration sources were also identified at nearby existing (and also future) industrial facilities. These facilities currently operate under Council approved work plans which detail hours of operation and locations for noise and vibration intensive activities including blasting. No work plans have been made available to Jacobs for assessment and therefore we cannot comment on the specific operation for each industrial facility. There is a risk that these conditions and permit will require revision and approvals when the future PSP areas are developed. It is the responsibility of the facility operator to comply with the State Environment Protection Policy (Control of Noise from Commerce Industry and Trade) No. N-1. This may require the owners of the industrial facilities to implement noise mitigation measures.

Odour

Potential odour issues potentially impacting upon future development have been assessed and predominantly relate to nearby broiler farms and landfilling activities at the Boral site.

Broiler farms such as the Nevas Chicken Farm located at the south west corner of the site will require the application of a buffer zone to minimise adverse impacts from emissions (particularly odour) on surrounding sensitive uses (*Victorian Code for Broiler Farms*, 2009).

Current landfilling activities at the Boral site require a 500m buffer from buildings and structures, taking into account potential gas migration safety and amenity (including odour) impacts (in accordance with EPA publication 788.1 *Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills*- herein referred to as the Landfill BPEM).

The Boral landfill is designated as a future site of state significance for waste and resource recovery and is considered likely to seek to extend its operation in the future. The buffer applicable to current landfilling activities at the site does not present any constraints to future sensitive uses proposed in the PSP area. However, the West Growth Corridor Plan prepared by MPA, formally known as the Growth Areas Authority, excludes sensitive uses from the eastern extent of the PSP upon which the existing buffers encroach. Proposed land uses in these areas include business (no residential) and industrial uses.

The green waste facility separation distance encroaches on the PSP area. It is understood that this facility is likely to be closing in 2015, but this will need to be monitored.

Recommendations

Jacobs understands that the proposed future use of the PSP areas is broad ranging urban development likely to include sensitive uses such as residential and community facilities in addition to open space, retail and a range of business uses such as offices, light industrial/commercial and manufacturing. Some proposed land uses include:

- The extension of the Metropolitan Ring Road to form the Outer Metropolitan Ring transport corridor, comprising road and rail transport provisions (responsible party is VicRoads).
- A concrete batching plant and material recycling facility is proposed by private operators along the northern boundary of the Mt. Atkinson PSP area.

While specific future land uses within the PSP areas are yet to be confirmed, a West Growth Corridor Plan has been developed by MPA. This assessment has been completed based on this West Growth Corridor Plan.

The following further works are recommended, including recommended timings:

1) It is recommended that an Environmental Audit Overlay (EAO) be applied to the two service station sites located to the north of the Mt Atkinson PSP area. The presence of USTs at these properties presents the potential for soil and groundwater contamination due to potential leakage of fuels and oils from this infrastructure. A Statutory Environmental Audit under Section 53, part IXD of the Environment Protection Act, 1970 would be required prior to redevelopment of these sites to a more sensitive land use and the application of an EAO is considered an appropriate mechanism for this. It is not expected that these land uses would change in the near future. *Timing: It is recommended the EAOs be applied to the nominated sites as part of the planning scheme amendment and be resolved as part of the PSP.*

2) It is recommended that in addition to the application of an EAO for the service station located at the north-west corner of the Mt Atkinson PSP areas, a more detailed desk based assessment should also be undertaken in the short term along with limited groundwater and soil sampling in the vicinity. This would clarify the extent (if any) to which contaminants of concern are migrating off-site and potentially impacting on adjacent properties. *Timing: It is recommended that this task be undertaken in the near future in order to clarify any potential constraints to future development and be resolved as part of the PSP .*

3) Further limited soil and groundwater assessment should be undertaken at the Nevas Chicken farm (property 16) prior to any redevelopment of this property to a more sensitive land use. Additionally, odours (if any) emanating from this property could potentially impact upon future development in the vicinity of the site. Buffers will apply to this property with separation distances likely to range from 250m to 686m (depending on the capacity of the farm). The current capacity of the farm (160,000 birds permitted) requires a 418m buffer from any sensitive use land. If this buffer distance encroaches on future residential use, the MPA can change residential land use to a less sensitive use or carry out an odour assessment. *Timing: It is recommended that further limited soil and groundwater investigations be undertaken at the time of transfer of the land to the Department of Environment and Primary Industries in accordance with the Biodiversity Conservation Strategy for Melbourne's Growth Corridors.*

4) Limited soil and groundwater assessment is recommended at the existing material recycling facility at 2-50 Meskos Road. The existing recycling facility is located in an area that is proposed for future industrial use (as specified in the West Growth Corridor Plan provided by MPA). While an application is currently pending to utilise this parcel of land for material recycling, concrete batching and for landscape gardening supplies, the area currently being used for material recycling does not fall within the proposed location of the above activities. Instead, the application states that the existing material recycling facility will be closed down and replaced with the new facility. Given the nature of the work currently taking place at the existing recycling facility, Jacobs recommends that a further limited soil and groundwater assessment be undertaken to identify whether a formal audit may be required in order to allow future development of this part of the site for industrial use. *Timing: It is recommended that this task be undertaken to coincide with the cessation or scaling down of current site operations or at time of any future development proposal (once Council have made a determination on the pending application)*

5) For properties classified as Low-Moderate where a property inspection and/or an interview has not been undertaken, Jacobs recommend that this be undertaken on a property-by-property basis prior to development, to determine the need for any further intrusive assessment works. Timing: It is recommended that these works be undertaken at the time of redevelopment of the site (if intended).

6) Further drilling and collection of soil samples for the purposes of assessing the geotechnical soil properties for building foundation and road design. *Timing: This task should be undertaken on a parcel-by-parcel basis during future development as part of the building permit application process*

7) Drilling and installation of groundwater monitoring wells to determine the depth to groundwater as well as aquifer hydraulics testing to determine aquifer properties. This will be applicable in terms of assessing the risk of groundwater inflow into future excavations for construction purposes. *Timing: It is recommended that this task be undertaken to coincide with the cessation or scaling down of current activities in the PSP areas and prior to the commencement of the proposed development and construction works*

8) Excavation and removal of USTs, soil remediation and tank pit validation if USTs are found on properties. *Timing: This task should be undertaken on a property-by-property basis during future site development*

9) Removal of other potentially contaminating infrastructure (e.g. septic tanks and above ground storage tanks) followed by soil validation sampling. *Timing: This task should be undertaken on a property-by-property basis during future site development*

10) Classification and appropriate removal (if required) of various stockpiles and dumped materials observed at numerous sites across the PSP areas. This would also include subsequent validation of the surface soils following removal. It is noted that sampling of some of these stockpiles may indicate that the material is suitable for re-use as part of future development. Therefore, removal may not be required in all instances. *Timing: This task should be undertaken on a property-by-property basis during future development.*

11) Council may wish to consider measurements of existing noise levels on the PSP areas. This may include measurement in the vicinity of the existing rail line, roads and industrial sites. Jacobs considers an assessment of the existing background noise levels to be best practice to gain an understanding of the local environment and possible impacts on planned land uses. *Timing: It is recommended that this is undertaken in the near future to identify the extent of impact of these sources*

12) Better understanding of the proposed nearby power transmission station followed by a detailed prediction of the noise impact of future noise and vibration sources. AusNet has advised of the inclusion of an internal buffer in the design and layout of the Truganina Terminal Station. No definite size of the buffer was provided, however AusNet's initial advice states that 'the site is of sufficient size to accommodate the buffer zone and will be allowed for' prior to any divestment of land. *Timing: It is recommended that this is undertaken in the near future to identify the extent of impact of these source*s.

13) The PSP should consider reasonable land use responses to future rail noise from future rail traffic on the rail line proposed between the proposed Outer Metropolitan Ring Road.

14) Assessment of potential soil contamination issues associated with materials along the rail alignment. Timing: It is recommended that this is undertaken in conjunction with any upgrades or expansions of the rail corridor. *No assessment is considered necessary at this stage due to continuation of use.*

Important note about your report

This Report has been prepared by Jacobs for the sole use of the Metropolitan Planning Authority ("the Client").

Undertaking an assessment or study of the on-site conditions may reduce the potential for exposure to the presence of contaminated or inadequate bearing ground and/or groundwater. All reports and conclusions that deal with sub-surface conditions are based on interpretation and judgement and as a result have uncertainty attached to them. It should be noted that this report contains interpretations and conclusions which are uncertain, due to the nature of the investigations. No study can completely eliminate risk, and even a rigorous assessment and/or sampling program may not detect all problem areas within a site. The following information sets out the limitations of the Report.

This Report should only be presented in full and should not be used to support any objective other than those detailed within the Agreement. In particular, the Report does not contain sufficient information to enable it to be used for any use other than the project specific requirements for which the Report was carried out, which are detailed in our Agreement. Jacobs accepts no liability to the Client for any loss and/or damage incurred as a result of changes to the usage, size, design, layout, location or any other material change to the intended purpose contemplated under this Agreement.

It is imperative to note that the Report only considers the site conditions current at the time of investigation, and to be aware that conditions may have changed due to natural forces and/or operations on or near the site. Any decisions based on the findings of the Report must take into account any subsequent changes in site conditions and/or developments in legislative and regulatory requirements. Jacobs accepts no liability to the Client for any loss and/or damage incurred as a result of a change in the site conditions and/or regulatory/legislative framework since the date of the Report.

The Report is based on an interpretation of factual information available and the professional opinion and judgement of Jacobs. Unless stated to the contrary, Jacobs has not verified the accuracy or completeness of any information received from the Client or a third party during the performance of the services under the Agreement, and Jacobs accepts no liability to the Client for any loss and/or damage incurred as a result of any inaccurate or incomplete information.

The Report is based on assumptions that the site conditions as revealed through selective sampling are indicative of conditions throughout the site. The findings are the result of standard assessment techniques used in accordance with normal practices and standards, and (to the best of our knowledge) they represent a reasonable interpretation of the current conditions on the site. However, these interpretations and assumptions cannot be substantiated until specifically tested and the Report should be regarded as preliminary advice only.

Any reliance on this Report by a third party shall be entirely at such party's own risk. Jacobs provides no warranty or guarantee to any third party, express or implied, as to the information and/or professional advice indicated in the Report, and accepts no liability for or in respect of any use or reliance upon the Report by a third party.

This Report makes no comment on the presence of hazardous materials, unless specifically requested.

1. Introduction

1.1 Background and objectives

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by the Metropolitan Planning Authority (MPA) to undertake a Land Capability Assessment for the Mt Atkinson (1082) and Tarneit Plains (1085) Precinct Structure Plan (PSP) areas, hereafter referred to as “the sites” or “PSP areas”.

The Mt Atkinson and Tarneit Plains sites have been identified as future land supply for a range of residential, business and industrial uses. The aim of this assessment is to identify opportunities and constraints to the proposed land development. These may be caused by existing, past or future land uses. The assessment comprised two stages:

- Stage 1 which applied to land contamination, hydrogeology, hydrological and/or geotechnical and noise and vibration being a review of the history of land use at the site and surrounding areas and a preliminary desktop review of information available.
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For the purposes of this study, the two PSP areas have been considered together.

1.2 Scope of work

The following scope of work was undertaken at the site:

- The Stage 1 assessment comprised the gathering of relevant information (including the use of literature sources) for the purposes of identifying potential sources of contamination as well as hydrogeological, hydrological, acoustic, vibration and geotechnical issues
- The Stage 2 assessment included inspecting the site for potential sources of contamination, and areas of geotechnical, hydrological and hydrogeological significance identified during the Stage 1 assessment

The approach and findings of the assessment, together with supporting information, are documented within this report.

2. Methodology

2.1 General assessment approach

2.1.1 Stage 1 assessment

A Stage 1 assessment is typically undertaken to establish site conditions, historical site uses and practices. As part of this Stage 1 assessment, the following sources of information were reviewed:

- Relevant reports
- EPA priority sites register
- EPA list of certificates and statements of environmental audit (current and completed audits)
- Topographical maps
- Groundwater management system (GMS) bore searches
- Geological maps
- Hydrogeological maps
- Potential acid sulfate soils (PASS) probability maps

The Stage 1 assessment aimed to identify if possible:

- Potential sources of on and off site contamination
- Pathways and receptors of contamination
- Areas of environmental concern (contamination, hydrogeological and geotechnical) which will form the basis of subsequent assessments at the site.

The stage 1 assessment was a desk top study and did not include any site work.

2.1.2 Stage 2 assessment

For this particular investigation, the site inspection works are referred to as a Stage 2 assessment. The site inspections undertaken included an inspection of areas that were identified during the Stage 1 as presenting a low, medium or high risk from a contamination, hydrological, hydrogeological or geotechnical perspective. Those properties identified during the Stage 1 assessment as presenting a very low risk were not inspected. Based on the findings of the site inspections, the need for further investigation (typically by sampling and analysis) has been identified. While the completion of these further investigations does not form part of this scope of work, Section 2.1.3, Section 2.1.4 and Section 2.1.5 below provides an overview of the typical objectives/outcomes of such assessments.

2.1.3 Stage 3 assessment

The Stage 3 intrusive site investigation may be undertaken to characterise the site with respect to contamination, hydrogeology and geotechnical conditions. With respect to each of the abovementioned disciplines, the following works may be undertaken as part of a Stage 3 assessment:

- ***A contamination assessment*** will typically seek to determine the level (if any) of contamination present on site, establish the lateral and vertical distribution of contamination and identify the source(s) of on-site and off-site contamination. Prior to undertaking any intrusive soil and/or groundwater investigation, a Sampling and Analysis Plan (SAQP) is generally prepared. The SAQP defines the intended sampling locations and the contaminants which will be tested for, based on the site characteristics as determined in a Phase 1 ESA.

- ***A geotechnical assessment*** will typically seek to obtain information on the sub-surface conditions at the site through a geotechnical site investigation comprising a series of boreholes and/or test pits and laboratory testing. Field and laboratory test data is used to develop a site model describing the soil and/or rock profile and the variability across the site. A geotechnical assessment would generally include advice on site classification and allowable bearing capacity for shallow foundation design and comments regarding excavations, foundation systems, pavement design and other items relevant to the proposed development.
- ***A hydrogeological assessment*** will typically include determination of the depth to the water table and the potentiometric surface of deeper confined aquifers through the installation of groundwater observation bores, assessment of groundwater and surface water interaction and assessment of aquifer suitability for water storage and/or supply options such as managed aquifer recharge (MAR).

2.1.4 Remediation

If significant contamination is identified at a site, to a level where the beneficial uses of land, surface water or groundwater are at risk or precluded (described in further detail in Section 2.2.1), remediation of the identified contamination may be required in order to allow for a particular land use to continue or commence in future.

2.1.5 Environmental auditing

The environmental audit system under the Environment Protection Act 1970 is administered by the Victorian Environment Protection Authority. A statutory Environmental Audit of a site involves the appointment of an EPA accredited environmental auditor to undertake an independent assessment of the environmental condition of a site and provide an opinion regarding the site's suitability for feasible or proposed end uses. A range of information including a site history assessment and results of relevant soil and groundwater testing undertaken are evaluated by the environmental auditor when forming such an opinion. At the conclusion of the audit a certificate or statement of environmental audit may be issued. A certificate indicates that the use of the land is unrestricted, whereas a statement indicates that particular beneficial uses of the land or groundwater are either precluded or suitable only under specified conditions.

2.2 Noise and vibration

2.2.1 Background

Noise and vibration has the potential to adversely impact on the community. In particular, the following land uses should be considered to be particularly sensitive to noise and vibration:

- Residential
- Places of worship
- Hospitals and nursing homes
- Schools and educational buildings

The potential noise and vibration impacts include:

- Loss of amenity
- Discomfort
- Adverse health
- Sleep arousal
- Hearing impairment (in extreme cases)
- Interference with vibration sensitive equipment

The sites are expected be affected by the following existing noise sources:

- Roads – Western Freeway, Hopkins Road and Middle Road
- Rail – Ballarat Rail Line

- Industrial – Boral Landfill and Quarry including quarrying operations.

There is also risk that there will be future sources that affect the sites. Identified future sources include:

- Rail – Duplication of the Melbourne / Ballarat Rail Line
- Industrial – Materials Recycling Facility and fixed infrastructure sites, such as railway stations, plant (eg. transformers, signalling), stabling locations and a terminal station.

There may also be other future sources that are yet to be identified.

2.2.2 Road traffic noise

Road traffic noise has the potential to cause disturbance including sleep disturbance and to adversely impact on amenity of noise sensitive areas. The impact will depend on the number of vehicles, speed of the vehicles, mix of vehicles (percentage of heavy vehicles), road surface finish and proximity to sensitive areas. Vibration is unlikely to be an issue with general traffic.

2.2.3 Rail noise and vibration

Railways have the potential to create noise and vibration adjacent to the rail corridor. The noise and vibration generated from railways can be perceptible at sensitive locations adjacent to the railway alignment as:

- Airborne noise - noise propagated through the air to the receiver
- Ground-borne vibration: vibration propagation through the ground and into building structures. It is generally perceptible at very low frequencies (i.e. 4 – 80 Hz), and sometimes causes rattling of building fixtures
- Regenerated noise: low frequency airborne noise that is reradiated from vibrating building structures, generally heard indoors as a *rumble.*

For at grade railway track, airborne noise impacts usually cause the highest impact. This is not the case for tunnelled railways, or railways in large cuttings, where the airborne noise is substantially reduced by shielding. Railway noise and vibration impacts at any location will depend on:

- The number of train movements
- The type and mix of trains using the railway (diesel freight and passenger services are typically louder than electrified rail vehicles)
- The physical relationship between the rail alignment and sensitive receiver (i.e. distance, shielding, gradients, curves)
- Noise associated with particular track types (e.g. switches, crossings and bridges can also result in higher levels of noise and vibration than standard continuously-welded straight track)
- Proximity of the sensitive receiver to the railway.

2.2.4 Industrial noise

Industrial noise sources have the potential to adversely impact upon the amenity of the site. This will be a particular risk if they operate 24 hours a day. In addition to this they will have the potential to be particularly disturbing if they include noise characteristics such as tonality or impacts.

2.2.5 Blasting

Blasting activities have the potential to adversely impact on the amenity of the site. It is expected that blasting activities will only be conducted during the day period. Impact will be dependant of the charge size and frequency. MPA have advised that a 200m blast zone extent (100m internal and 100m external) to any building or structure is required as per the Works Authority (for Boral quarrying).

3. Regulatory framework for assessment

3.1 Legislation and policy

3.1.1 Planning and Environment Act 1987

The *Planning and Environment Act 1987* sets out the requirements of planning authorities when preparing planning schemes or amendments to planning schemes. The Act requires planning authorities to "take into account any significant effects which it considers the scheme or amendment might have on the environment or which it considers the environment might have on any use or development envisaged in the scheme or amendment".

Under Section 12 (2) (a) of the *Planning and Environment Act 1987*, the *Ministerial Direction No. 1 – Potentially Contaminated Land* requires planning authorities to satisfy themselves that the environmental conditions of land proposed to be used for a sensitive use, agriculture or public open space are, or will be, suitable for that use. This is generally done through the completion of an environmental site assessment and audit process.

3.1.2 Environment Protection Act 1970

The *Environment Protection Act 1970* established the Victorian Environment Protection Authority (EPA) and made provisions with respect to the powers, duties, and functions of the EPA and the protection of the environment. The Act provides for environmental audits, which are used to provide an authoritative opinion on the suitability of potentially contaminated land for future use, and form an integral part of the land use planning and approval process. The Act also provides the basis for the various State Environment Protection Policies (outlined below) which provide the framework for the assessment and management of the environmental quality of land, surface waters and groundwater in Victoria.

3.1.3 Land State Environment Protection Policy 2002

The State Environment Protection Policy (Prevention and Management of Contamination of Land) (Land SEPP) sets out the regulatory framework for the prevention and management of contaminated land within the State of Victoria. The intent of this framework is to maintain and maximise, to the extent practicable, the quality of the land environment in Victoria, in order to protect its existing and potential beneficial uses. The Land SEPP was declared in June 2002 in accordance with Section 16 of the *Environment Protection Act 1970*, and the Victorian EPA is responsible for its implementation.

The Land SEPP identifies a range of land use categories and a range of protected beneficial uses for each of these categories. The EPA considers that land (soil) is *polluted* where current and/or future protected beneficial uses for the relevant land use categories are precluded. Beneficial uses of land are considered to be precluded when relevant soil quality objectives set out in the Land SEPP for those beneficial uses have been exceeded. Further information on the beneficial uses of land with respect to specific land use categories can be found in **Appendix A.**

3.1.4 Groundwater State Environment Protection Policy 1997

The quality of groundwater in Victoria is protected under the 1997 State Environment Protection Policy (SEPP) 'Groundwaters of Victoria' (groundwater SEPP), declared under the *Environment Protection Act 1970* and administered by the EPA. The groundwater SEPP defines a range of protected beneficial uses for defined segments of the groundwater environment, which are based on the total dissolved solids (TDS) content of the groundwater. The EPA considers that groundwater is *polluted* where protected beneficial uses for the relevant segment are precluded. Beneficial uses of groundwater are considered to be precluded when relevant groundwater quality objectives set out in the groundwater SEPP for those beneficial uses have been exceeded, or where non-aqueous phase liquid is present.

Where groundwater has been polluted, groundwater must be cleaned up such that the protection of beneficial uses is restored, or to be cleaned up the extent practicable. Further information on the beneficial uses of groundwater with respect to the various segments of groundwater can be found in **Appendix A**.

3.1.5 Surface Water State Environment Protection Policy 2003

The quality of Victoria's surface water environments are protected under the 2003 State Environment Protection Policy 'Waters of Victoria' (Surface Water SEPP) declared under the *Environment Protection Act 1970* and administered by the EPA. The Surface Water SEPP sets out the environmental values and beneficial uses of water which are to be protected for each segment of the surface water environment and includes schedules which cover some specific surface water catchments in Victoria. Beneficial uses of surface waters are considered to be precluded when relevant water quality objectives set out in the surface water SEPP for those beneficial uses have been exceeded.

In addition to assessment of surface water quality, the relevant water quality objectives stated in this SEPP are applied to groundwater at the point of groundwater discharge to a surface water system, to assess whether the maintenance of ecosystems beneficial use of groundwater is protected.

3.1.6 VicRoads Traffic Noise Reduction Policy

The policy that applies to Road Traffic Noise in Victoria is VicRoads *Traffic Noise Reduction Policy*[1]. VicRoads state in this policy that they will "encourage" compatible land use next to major roads by:

- Working with planning authorities to ensure wherever possible, permitted land use beside busy roads is relatively insensitive to noise
- Encouraging the development of building regulations which will take into account both the noise level outside and the type of activity proposed inside the building.

The policy applies only to arterial and roads and freeways. While this policy does not directly address new developments adjacent to existing roads, VicRoads as a referral authority usually requires, in planning permits, for developers to comply with the *Traffic Noise Reduction Policy*. The noise limits that they apply to residential developments adjacent to roads under their control are:

External noise levels do not exceed 63 dB(A) $L_{10\ (18hr)}$ 10 years from completion of the development.

The VicRoads noise limits apply between the hours between 6am and 12 midnight for:

- Residential dwellings
- Aged persons homes
- Hospitals
- Motels
- Caravan parks
- Other buildings of a residential nature.

The VicRoads noise limits apply between the hours between 6am and 6pm for:

- Schools
- Kindergartens
- Libraries
- Other noise sensitive community buildings.

[1] VicRoads Traffic Noise Reduction Policy, February 2005 (Currently under review)

3.1.7 Passenger Rail Infrastructure Noise Policy

The policy that applies to Rail Noise in Victoria is the *Passenger Rail Infrastructure Noise Policy*[2].The *Passenger Rail Infrastructure Noise Policy* provides *Investigation Thresholds* to guide transport bodies when assessing the impacts of rail noise on nearby communities - they are not a limit on allowable noise emissions. If they are exceeded then options for avoiding, minimising and mitigating rail noise should be considered (as proposed in the policy). Cost-effective options should be selected, not only in an economic context, as social and environmental impacts should also be taken into account.

This policy applies directly to change in land use near existing or planned passenger rail corridors.

The policy suggests that where change in land use near existing or planned passenger rail corridors is proposed then the following be considered:

- Non-sensitive uses be located along the existing or planned rail corridor*
- Developments be located or situated to protect sensitive receptors
- Options that reduce internal noise of buildings, particularly bedrooms

*Non-sensitive uses include buildings or land uses that are not dwellings, residential buildings, places of education, hospitals or places of worship.

It also proposes the thresholds in Table 3.1 for investigation of the impact of rail noise on nearby communities and exposure of people to rail noise for change in land use near an existing rail corridor.

Table 3.1 : Thresholds for investigation of the impact of rail noise on nearby communities

Time	Type of Receiver	Investigation Thresholds
Day (6am – 10pm) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks • Noise sensitive community buildings including schools, kindergartens, libraries	65 L_{Aeq} or 85 L_{Amax}
Night (10pm – 6am) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks	60 L_{Aeq} or 85 L_{Amax}

3.1.8 Noise State Environment Protection Policy

The policy that applies to Industrial Noise in Victoria is the State Environment Protection Policy (Control of Noise from Commerce Industry and Trade) No. N1-1 (SEPP N-1).

Noise emitted from all commercial, industrial and trade premises within Metropolitan Melbourne must comply with SEPP N-1 at Noise Sensitive Areas.

Noise Sensitive Areas are defined as:

(a) That part of the land within the apparent boundaries of any piece of land which is within a distance of 10 m outside the external walls of any of the following buildings:

- Dwelling
- Residential building.

[2] Passenger Rail Infrastructure Noise Policy, Victorian Government, April 2013

(b) That part of the land within the apparent boundaries of any piece of land on which is situated any of the following buildings which are within a distance of 10m outside the external walls of any dormitory, ward or bedroom of such buildings:

- Caretaker's house
- Hospital
- Hotel
- Institutional Home
- Motel
- Reformative Institution
- Tourist Establishment
- Work Release Hostel.

The purpose of SEPP N-1 is to protect people from commercial, industrial or trade noise that may affect Noise Sensitive Areas, with consideration to existing land use in the Metropolitan region.

The SEPP N-1 assessment includes the following:

- Determination of the *Effective Noise Level* based upon the noise level measured in the noise sensitive area with adjustments for noise character, duration and measurement position
- Determination of the *Noise Limit* based upon the background noise level measured and the land use zoning
- A comparison between the *Effective Noise Level* and the *Noise Limit*. For compliance the *Effective Noise Level* is not to exceed the *Noise Limit*.

SEPP N-1 defines the periods for the *Noise Limits* as follows:

Day Period: 07:00 to 18:00 hours

Evening Period: 18:00 to 22:00 hours

Night Period: 22:00 to 07:00 hours

(Note that 13:00 hours to 22:00 hours on Saturday and 07:00 hours to 22:00 hours on Sundays and public holidays are defined as the Evening Period)

The SEPP N-1 *Noise Limits* are determined following the methodology in Schedule B of SEPP N-1 described in Table 3.2 and is based upon the following:

- A noise zoning level - this is based upon surrounding land use e.g. a site primarily surrounded by industrial zone will typically have a higher zoning level than one surrounded by residential zone; and
- Measured background noise level.

Table 3.2 : SEPP N-1 Noise limit criteria

Background noise level	Period	Background Noise Level	Noise limit (dB)
Neutral	Day	6 to 12dB(A) below zoning level*	Zoning level
	Evening/ night	3 to 9dB(A) below the zoning level	Zoning level
High	Day	Background + 6 exceeds the zoning level	Background +6
	Evening/ night	Background + 3 exceeds the zoning level	Background +3
Low	Day	Zoning level ≥ background +13	½(zoning level +background level)+4.5
	Evening/ night	Zoning level ≥ background +10	½(zoning level +background level)+3

The combination of these factors will determine the *Noise Limit* unless they are lower than the *Base Noise Limits* in which case the *Base Noise Limits* will apply.

The Base Noise Limits (the lowest Noise Limits allowed) are:

Day Period: 45 dB(A)

Evening Period: 40 dB(A)

Night Period: 35 dB(A)

It should be noted that the Noise Limits are applicable to the combination of all noise associated with commerce industry and trade. Therefore noise from each industrial facility may need to be less than the given Noise Limit.

3.2 Guidelines and standards

3.2.1 National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM) 2013

The NEPM is the national guideline for assessing contaminated sites and was prepared by the National Environment Protection Council (NEPC). The NEPM is implemented in each Australian jurisdiction under the *National Environment Protection Measures (Implementation) Act 1998 (Commonwealth)*. The NEPM document ensures there is a nationally consistent approach to the assessment of contamination. The NEPM provides guidance on the methods of site contamination assessment, environmental and health based investigation levels for soil and groundwater contaminants, human and environmental health risk assessment and reporting requirements. The original NEPM published in 1999 has been recently superseded by a version published in April 2013.

3.2.2 Various EPA publications and guidelines

The following publications and guidelines from the Victorian and New South Wales Environment Protection Authorities are commonly applied and referenced for intrusive soil and groundwater site assessments:

- EPA Victoria, 2000. Groundwater Sampling Guidelines. Publication 669
- EPA Victoria, 2006. Hydrogeological assessment (groundwater quality) guidelines. Publication 668
- NSW EPA, 2014. Technical Note: Investigation of Service Station.

3.2.3 Potentially Contaminated Land General Practice Note 2005

This general practice note was produced by the former Department of Sustainability and Environment in conjunction with the Victorian EPA and provides guidance to the general public and planners on the identification of potentially contaminated land and the stages of assessment and audit required should a site be considered contaminated.

3.2.4 Australian Standard AS4482.1-2005: Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds

Australian Standard 4482.1 provides guidance on the collection of sufficient and reliable information when assessing potentially contaminated sites. In particular this standard focuses on the assessment of sites potentially contaminated with non-volatile and semi-volatile compounds. The standard covers key elements of preliminary site investigations (i.e. Stage 1 or Phase 1 ESAs), detailed site investigation methods (i.e. Phase 2 ESAs), data quality objectives (DQO), developing sampling strategies, the collection of samples and quality assurance procedures.

3.2.5 Australian Standard AS4482.2-1999: Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances

This standard refers to AS448.1 regarding the establishment of preliminary site information, and provides more specific guidance on field screening and sample collection techniques when assessing sites that are potentially contaminated with volatile compounds.

3.2.6 Australian Standard AS1726-1993: Geotechnical site investigations

Australian Standard AS1726 sets out minimum requirements for a geotechnical site investigation, as a component in the engineering design, construction, commissioning and operation of civil engineering and building works.

The standard specifies considerations affecting the design and construction of works which must be made in a geotechnical site investigation. Assessment of these factors enables the identification of field and laboratory work to obtain the geotechnical data required to facilitate the engineering design and construction of the works. The standard provides guidance on suitable field and laboratory examination and testing of geotechnical materials and outlines a system of material classification.

The applications of this standard include assessment of natural or filled ground, new construction, maintenance of existing facilities, the evaluation of post construction performance and the assessment of failure.

3.2.7 Australian Standard AS2187.2 : Explosives – storage and use

There are no specific regulations in Australia regarding blasting. The Australian Standard 2187.2, *Explosives—Storage and use Part 2: Use of explosives, Appendix J*, provides background information and guidelines for measurement and criteria for peak levels regarding vibration and blasting. This standard recognises that ground vibration and airblast produced by blasting falls into two categories and aims to reduce any potential impact resulting. These two categories consist of:

Causing human discomfort.

- Table 3.3 below presents the recommended airblast limits that are suitable for human comfort.
- Potential for causing damage to structures, architectural elements and services. **Table 3.4** below presents the recommended airblast limits for control to damage to structures.

NOTE: The recommendations from AS2187.2 are intended to be informative and do not override statutory requirements.

Table 3.3 : Recommended airblast limits for human comfort (Table J5.4(A) in AS2187.2)

Category	Type of blasting operations	Peak sound pressure level (dBL)
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	115 dBL for 95% blasts per year. 120 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Sensitive Site*	Operations lasting for less than 12 months or less than 20 blasts	120 dBL for 95% blasts. 125 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	125 dBL maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation

* A sensitive site includes houses and low rise residential buildings, theatres, schools, and other similar buildings occupied by people. AS2187.2 refers specifically to low rise residential buildings. It is acknowledged that high/medium residential buildings will also be classed as sensitive. More considerations will be needed for high/medium residential buildings in terms of airblast limits for human comfort.

Table 3.4 : Recommended airblast limits for control of damage to structures (Table J5.4(B) in AS2187.2)

Category	Type of blasting operations	Peak sound pressure level (dBL)
Structures that include masonry, plaster and plasterboard in their construction and also unoccupied structures of reinforced concrete or steel construction	All blasting	133 dBL maximum unless agreement is reached with the owner that a higher limit may apply
Service structures, such as pipelines, power lines and cables located above the ground	All blasting	Limits to be determined by structural design methodology

AS2187.2 recommends ground vibration limits for both reducing human discomfort and to control potential impact on structures.

Table 3.5 presents the recommended limits, according to the standard, for vibration levels that are suitable for human comfort. Table 3.6 presents the recommended limits for control to damage to structures.

NOTE: The recommendations are intended to be informative and do not override statutory requirements.

Table 3.5 : Recommended ground vibration limits for human comfort (Table J4.5(A) in AS2187.2)

Category	Type of blasting operations	Peak component particle velocity (mm/s)
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	5 mm/s for 95% blasts per year, 10 mm/s maximum unless agreement is reached with occupier that a higher limit may apply
Sensitive Site*	Operations lasting for less than 12 months or less than 20 blasts	10 mm/s maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	25 mm/s maximum unless agreement is reached with occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation

* A sensitive site includes houses and low rise residential buildings, theatres, schools, and other similar buildings occupied by people

Table 3.6: Recommended ground vibration limits for control of damage to structures (Table J4.5(A) in AS2187.2)

Category	Type of blasting operations	Peak component particle velocity (mm/s)
Other structures or architectural elements that include masonry, plaster and plasterboard in their construction	All blasting	Frequency- dependent damage limit criteria (See Table 3.7 presents the transient vibration guide values for cosmetic damage. Table 3.7 below)
Unoccupied structures of reinforced concrete or steel construction	All blasting	100 mm/s maximum unless agreement is reached with the owner that a higher limit may apply
Service structures, such as pipelines, power lines and cables	All blasting	Limit to be determined by structural design methodology

Table 3.5 and Table 3.6 do not cover high-rise building, buildings with long-span floors, specialist structures such as reservoirs, dams and hospitals, or buildings housing scientific equipment sensitive to vibration. Table 3.7 presents the transient vibration guide values for cosmetic damage.

Table 3.7 : Transient vibration guide values for cosmetic damage (AS 2187.2, J4.4.2.1)

Line	Type of building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structure. Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Notes:

1 Values referred to are at the base of the building.

2 For line 2, at frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

3.3 Regulatory framework in the context of this assessment

The acts, policies, guidelines and standards relevant for each stage of assessment are set out in Table 3.8.

Table 3.8 : Acts, policies, guidelines and standards relevant for site assessments

Stage of Assessment	Relevant Acts and Policies	Relevant Guidelines and Standards	How the Regulatory Framework Applies
Proposed Change to Land Use	*Planning and Environment Act 1987*	*Ministerial Direction No. 1 – Potentially Contaminated Land* *DSE Potentially Contaminated Land Practice Note 2005*	The Planning and Environment Act requires planning authorities to satisfy themselves that the environmental conditions of land proposed to be used for a sensitive use, agriculture or public open space are, or will be, suitable for that use. This is generally done through the completion of an environmental site assessment and audit process (see below).
Desktop Investigation (Phase 1 ESA)	*Environment Protection Act 1970* *Planning and Environment Act 1987* *National Environment Protection Measures (Implementation) Act 1998 (Commonwealth)*	NEPM 1999/2013 AS4482.1-2005 AS4482.2-1999	The Environment Protection Act and SEPPs provide the legislative basis and policy framework for the assessment and management of contaminated land and groundwater in Victoria. The guidelines and standards provide guidance on the collection of reliable information in order to assess the environmental condition of a site appropriately.
Intrusive Soil, Groundwater and Geotechnical Assessments (Phase 2 ESA)	*Environment Protection Act 1970* *Land SEPP 2002* *Groundwater SEPP 1997* *Waters of Victoria SEPP 2003*	NEPM 1999/2013 AS4482.1-2005 AS4482.2-1999 AS1726-1993	
Statutory Environmental Auditing	*Environment Protection Act 1970* *Planning and Environment Act 1987* *Land SEPP 2002* *Groundwater SEPP 1997* *Waters of Victoria SEPP 2003*	NEPM 1999/2013 Various Victorian EPA Guidelines and Publications	The environmental audit system is provided for in the Environment Protection Act 1970 and the audit process is administered by the Victorian EPA.

4. Site description

General information relating to the Mt. Atkinson and Tarneit Plains PSP areas is presented in Table 4.1 below. Refer to **Figure 1** for a site location map and **Figure 2** for a site plan, attached at the end of this report.

Table 4.1 : Details for Mt Atkinson and Tarneit Plains PSP areas

Item	Mt Atkinson and Tarneit Plains PSP Areas Description
Location / Address	The Mt Atkinson and Tarneit Plains PSP areas comprise two adjoining rectangular shaped areas of land to the immediate south of the Western Freeway. The Mt Atkinson PSP (which is the larger and more northerly of the two PSPs) is demarcated to the north east by the access ramp from Hopkins Road onto the Western Freeway and extends to the west to within 600 m of Rockbank. The Mt Atkinson PSP extends as far south as the adjacent intersection between Hopkins Road and Riding Boundary Road. Greigs Road bisects the PSP from east to west approximately 600 m south of the Western Freeway while the Melbourne to Ballarat rail line also bisects the PSP on an angle between Greigs Road and the Western Freeway (east to west). The Tarneit Plains PSP adjoins the southern boundary of the Mt Atkinson PSP and is bounded to the south by Middle Road and to the east by Hopkins Road. The site extends to the west to within 300 m of Troups Road.
Australian Map Grid Coordinates	Centre at 296,223 mE; 5,817,731 mN North-western extent at 295,329 mE; 5,820,823 mN South-western extent at 294,247 mE; 5,815,201 mN North-eastern extent at 297,850 mE; 5,819,738 mN South-eastern extent at 297,313 mE; 5,814,870 mN
Current Title Information	The Mt Atkinson PSP area is divided into 61 individual parcels of land and 7 road reserve parcels. The Tarneit Plains PSP is divided into 20 individual parcels of land and 7 road reserve parcels. Current title information for selected parcels of land are summarised in **Appendix B.**
Site Area (ha)	The Mt Atkinson PSP occupies and area of 1,049 hectares (996 hectares being land parcels with the remaining 53 hectares being road reserve). The Tarneit Plains PSP occupies an area of 486 hectares (474 hectares being land parcels with the remaining 12 hectares being road reserve). The two PSPs combine to occupy an area of 1,535 hectares.
Local Council	Melton City Council
Current Land Zoning	Under the Melton Planning Scheme, the majority of the PSP areas is zoned as Urban Growth Zone (UGZ) with the following notable exceptions: • Farming Zone (FZ): Farming zone has been declared for an area of land along the eastern boundary of Mt Atkinson PSP which extends around 570m across the PSP from Hopkins Road. Farming Zone designations also occupy the majority of the 11 parcels of land in the south east corner of Tarneit Plains PSP. • Special Use Zone 3 (SUZ3): A rectangular parcel of land towards the centre of Tarneit Plains PSP. This zone occupies approximately 87 ha. This area of land has been identified as the future location of an AusNet substation. • Rural Conservation Zone (RCZ): A rectangular area of land occupies the western half of the Tarneit Plains PSP. This zoning occupies an area of 210 ha. RCZ zoning also occupies an area towards the centre of the Mt Atkinson PSP as well as Skeleton Creek (towards the north east corner of Tarneit Plains PSP). • Urban Floodway Zone (UFZ): Skeleton Creek at the north east corner of Tarneit Plains PSP and extending into the south east corner of Mt Atkinson PSP is bounded by Urban Floor Zone. • Road Zone 1 (RDZ1): The Western Freeway is designated RDZ1. • Public Use Zone 4 (PUZ4): The rail alignment for the Melbourne to Ballarat railway is designated PUZ4.

Item	Mt Atkinson and Tarneit Plains PSP Areas Description
Zoning of Surrounding Land	Under the Melton Planning Scheme, the PSP area is bounded variously by the following zones: Special Use Zone 1 (SUZ1) Road Zone 1 (RDZ1) Urban Growth Zone (UGZ) Public Use Zone 4 (PUZ4) Green Wedge Zone (GWZ) **Figure 3** shows the land zoning relevant to the Mt Atkinson and Tarneit Plains PSP areas.
Easements	Power Line transmission easement with an Ausnet substation transecting the PSP area.
Overlay	There are no sites with an environmental audit overlay within the PSP area or within 200 m of the site, however the following overlays are relevant: • Environmental Significance overlays (ESO) are located at the south west corner of the Tarneit Plains PSP as well as along the unnamed creek at the south east corner of the PSP area. • Significant Landscape overlay (SLO) is present towards the centre of the Mt Atkinson PSP area • Heritage Overlay (HO) is present near the convergence of Greigs Road and the existing railway line towards the northern half of the Mt Atkinson PSP area. **Figure 4** shows the planning overlays relevant to the Mt Atkinson and Tarneit Plains PSP areas.
Site Layout	The site is relatively open and flat lying and bisected by a number of roads and access tracks. Mt Atkinson is located in the central section of the northern-half of the area. The area is bound by Hopkins Road on the east, Boundary Road on the south, Troups Road approximately 300 m to the west of the western border and the Western Freeway on the northern border. Greigs Road and a railway line bisect the site in an east-west direction just south of the Western Freeway boundary.
Current Land Uses	The area is primarily used for agricultural purposes (cropping, farming, orchards) with large areas of open farmland and associated infrastructure (farm buildings, local access roads etc.). However, the following additional land uses are notable: • Low density residential properties and commercial premises towards the northern extent of the PSP area between the railway line and Greigs Road as well as along major roads within and around the study area, predominantly Middle Road and properties off Troups Road. • A former plant nursery located on Meskos Road (between Greigs Road and the Western Freeway) is set to be developed into a material recycling facility (subject to Council approval). The site is currently used for crushing and screening rock. The site is intended to continue operating as a nursery for the foreseeable future. • A BP service station is also located on the Western Freeway in the north-west corner of the site. • A Mobil service station is located on the Western Freeway in the north-east corner of the site. • A major electricity transmission line crosses mid-way along Hopkins Road on a diagonal and then proceeds in an east-west alignment parallel to Middle Road after coming perpendicular to Mt Atkinson Road. • A broiler chicken farm located in the south-western corner of the site. • The Melbourne to Ballarat railway line intersects the northern part of the Mt Atkinson PSP area in an east-west orientation.

Item	Mt Atkinson and Tarneit Plains PSP Areas Description
Proposed Land Uses	The proposed future use of the site is as future land supply for various land uses including sensitive uses such as residential and community facilities in addition to open space, retail and a range of business uses such as office, light industrial and manufacturing. Some additional proposed land uses are as follows: • An AusNet electricity sub-station is proposed towards the northern extent of the Tarneit Plains PSP With the exception of the above, no specific land uses have been allocated to individual parcels of land. However, a West Growth Corridor Plan has been prepared. This broadly proposes: • Industrial land use between the Western Freeway and the Melbourne to Ballarat rail line • Industrial land use across the southern half of the Mt Atkinson PSP area as well as the eastern and north-western parts of the Tarneit Plains PSP area • Non-sensitive land use proposed within the 500 m quarry buffer. • Business and residential land uses across the northern half of the Mt Atkinson PSP area (but to the south of the existing and proposed rail corridors). **Figure 5** shows the West Growth Corridor Plan for the Mt Atkinson and Tarneit Plains PSP areas.
Surrounding Land Uses	To the north of the site beyond the Western Highway is agricultural land, similarly to the east, west and south of the site. There are however some residential properties, most likely farm residences. To the east of the PSP sites on the other side of Hopkins Road is the Boral Deer Park Quarry and associated Western Landfill site. Current quarrying operations are taking place around 500m to the east of Hopkins Road (off Riding Boundary Road) while landfilling is currently confined to the south-east corner of the site, approximately 1.5km from the PSPs. Boral has an extraction licence for the quarry for an area up to 100m from Hopkins Road which will likely be quarried in the future. At present, Boral only have a licence to landfill the area to the south-east corner of the site. The Boral quarry and landfill site as a whole is specified in the Draft Statewide Waste and Resource Recovery Infrastructure Plan 2013–2043 (Sustainability Victoria, 2013) as a waste management site of state importance, representing an opportunity to preserve land for future waste and resource recovery activities. The Draft SWRRIP indicates that urban encroachment is a future risk to the functionality of the landfill and that adequate buffer distances need to be preserved to ensure that activities on the landfill site are compatible and conducted in a manner that does not impact on the amenity of surrounding land users. The PSP sites are surrounded by residential and urban growth zone areas to the north and to the west which are currently going through a similar PSP process.

5. Information review

This section summarises the various sources of information, records and reports reviewed as part of the Stage 1 desktop assessment.

5.1 Current certificate of title information

Certificates of title were reviewed to ascertain information on the current and historical land uses of five properties at the site perceived to be higher risk in relation to land contamination. A summary of the title information is provided in **Appendix B** with locations illustrated in **Figure 6**. A review of the titles revealed the following information:

- Current BP Service Station site (Parcels 2\PS537630 and 1\TP82886): R.P Petroleum Pty Ltd listed as proprietors since 2007. Previous land use appears to be for farming purposes.
- Meskos Road Nursery and material recycling facility (Parcel 3\PS448579): Registered proprietors are Thomas and Elizabeth Meskos (since 1989). Prior to this, the site was property of Bullens African Lion Safari Pty Ltd, preceded by James Missen who was listed as a farmer.
- Current 7/11 Service Station Site (Parcel 4\PS448579) was previously property of Mobil Oil Australia (date 13/02/1980), preceded by Edward Hill (Café Proprietor).
- Olive orchard (Parcel 2\LP138528) has been the site of farming and grazing activities according to records that date back to 1908.
- Broiler farm (Parcel 5-6\PP3431) was property of Alexander Rollo (surgeon) prior to the current proprietor. The broiler farm appears in the 2009 aerial photographs obtained by Jacobs. The preceding uses according to the title search conducted and historical aerial photographs indicate pastoral and grazing activities.

All title searches were conducted by Feigl and Newell Title Searchers. Where possible, the three most recent titles were reviewed for each identified parcel at the site.

5.2 EPA Priority Sites Register

A search of the EPA's Priority Sites Register (PSR), which lists those sites for which EPA has requirements for active management of land and groundwater contamination, was conducted. Sites within the Mt Atkinson and Tarneit Plains PSP areas were not listed on the PSR, nor were there any registered priority sites within a 1km radius of the area. A copy of the reviewed PSR (dated 30th April 2014) is provided in **Appendix C**.

5.3 EPA List of sites issued with Statements and Certificates of Environmental Audit

5.3.1 General

Under Victoria's *Environment Protection Act 1970*, statutory environmental audits of potentially contaminated land result in the issue of a Certificate of Environmental Audit if the site is considered suitable for any beneficial use (and land uses). Sites are issued a Statement of Environmental Audit if they are not found to be suitable for all beneficial uses (or land uses), as defined under Section 4 of the Act. Issue of a Statement indicates that some contamination remains at the site. A statement precludes one or more beneficial uses and/or requires management for the site to be suitable for one or more land uses.

The Victorian EPA maintains a list of all sites for which a Certificate or Statement of Environmental Audit has been issued. At the time of reporting a single site was identified within a 3km radius of the Mt Atkinson and Tarneit Plains PSP areas as having been issued with either a Statement or Certificate of Environmental Audit, namely:

- Former Mobil Rockbank Service Station, 1997 Western Freeway, Rockbank, VIC 3335. The site is located approximately 1.3 km from the PSP boundary. The site was issued with a Statement of Environmental Audit. CARMS number 53288-1.

Although is it very unlikely that a certificate or statement of environmental audit would be issued if a site represented a significant risk of off-site contamination, a review of the above environmental audit report was undertaken to gain an appreciation of the site use history of surrounding properties and to determine if any residual soil and/or groundwater impact at the audit site has the potential to impact upon the PSP areas. In addition, information concerning the geology and hydrogeology of the area was also obtained. The location of the above site is illustrated in **Figure 7**.

5.3.2 Former Mobil Rockbank Service Station, 1997 Western Freeway, Rockbank – Audited by Peraco Environmental Services Pty Ltd (Peter Mirkov)

The audit site is around 0.46 ha in size and located adjacent to the Western Freeway in Rockbank, approximately 1.3 km north-west of the PSP areas. The audit was completed in 2010 by Mr Peter Mirkov of Peraco Environmental Services Pty Ltd (Peraco) with the assessment consultants being Handex Australia Pty Ltd (Handex) and URS Australia Pty Ltd (URS). The audit was requested by Mobil Oil Australia Ltd (Mobil) to support the sale of the site.

The site was formerly used as a service station between 1960 and 1998 when the site was decommissioned and infrastructure removed. Prior to this time the site was farmland. Infrastructure associated with the former service station included 6 underground storage tanks and associated fuel lines and a triple interceptor trap.

Various stages of investigations were undertaken at the site between 1998 and 2010 when the audit was completed. These investigations targeted contaminants of concern in groundwater, soil and vapour phases.

Following removal of the service station infrastructure in 1998, Handex validated relevant excavations confirming that contaminated soil associated with leaks from these structures had been removed from the site However; some residual contamination (TPH and BTEX) remained at the base of some excavations. Since this was immediately overlying bedrock further soil removal was not possible. Excavations were then backfilled with a combination of material recovered from elsewhere at the site and imported clean fill. Subsequent investigation by URS in 2010 confirmed that this residual contamination was no longer present.

Groundwater monitoring was undertaken at the site from 2004 onwards following removal of underground infrastructure. Contaminants of concern identified included TPH and BTEX which exceeded the adopted assessment criteria for the protection of beneficial uses both on-site and off-site. While no non-aqueous phase liquid (NAPL) was reported during the various assessments, dissolved phase was encountered beyond the north-eastern extent of the site boundary (down hydraulic gradient from the site, and away from the Mt Atkinson and Tarneit Plains PSP study area). Fate and transport modelling undertaken by URS predicted that the maximum lateral extent of the plume would be 150m down gradient of the site. The Auditor revised this estimate to 30m which was subsequently endorsed by the EPA upon review of the Auditor's CUTEP submission for the site.

Based on the assessment of the site the Auditor issued a Statement of Environmental Audit. However, the following conditions apply:

- *Groundwater at the site is polluted. Groundwater must not be extracted and used for any beneficial use without prior testing and review of results by an environmental auditor (appointed under Part IXD of the Environment Protection Act 1970) to confirm its suitability for that use. It may be extracted for the purpose of environmental monitoring or remediation;*
- *The site is suitable for the above uses provided any development is able to accommodate the monitoring requirements as contained in the Groundwater Monitoring and Management Plan (appended to the Statement of Environmental Audit (*ref. ENVIABTF07130AA-R02*); and*
- *The groundwater contamination beneath the site and offsite must be monitored and managed in accordance with the Groundwater Monitoring and Management Plan*

In addition to the ongoing requirement for the implementation of a GMP for the site, the EPA also declared that the site and areas off-site impacted by the groundwater contaminant plume be subject to a Groundwater Quality Restricted Use Zone (GQRUZ). Besides the site itself, this zone was nominated as including the then vacant adjacent property to the east as well as part of the Western Freeway. The GQRUZ does not fall within the Mt Atkinson and Tarneit Plains PSP study area.

Based on the assessment of the site it is unlikely that contaminants of concern reported at the audit site will impact upon the Mt Atkinson and Tarneit Plains PSP areas.

5.4 Historical aerial photography review

Aerial photographs from 1962 to 2013 were reviewed for land use changes. Observations are summarised in **Table 5.1** below. Refer to **Figure 8A** through **Figure 8F** for aerial photographs.

Table 5.1 : Aerial photograph and historical plan summary

Date	Photo / Plan	Description	Source
1962	Aerial Photo	The 1962 imagery of the study area indicates that the site was largely used for farming with only rare residences and other features evident. The railway line is evident in its current location. The Western Freeway appears to be present. A structure is present at the north east corner of the site (at the location of the existing petrol station)	DSE – LIC
1970	Aerial Photo	By 1970 little has changed within the study area. There are a limited number of buildings now constructed across the PSP area, but otherwise the area is sparsely populated. The Western Freeway also appears to have been upgraded.	DSE – LIC
1982	Aerial Photo	Mt Atkinson and Tarneit Plains has become increasingly populated by 1982 with additional structures across the area. Structures and ground disturbances are noted in between the Western Freeway and Greigs Road. The majority of the PSP remains undeveloped farmland.	DSE – LIC
1991	Aerial Photo	By 1991 further development is noted along the major roads – in particularly Greigs Road. The population of Mt Atkinson and Tarneit Plains itself has also expanded significantly during the preceding ten years.	DSE – LIC
2013	Aerial Photo	Quarrying activities can be noted at the north of the PSP area between the Western Freeway and Greigs road. To the south the broiler chicken farm has been built as has the BP service station.	MPA

5.5 Historical zoning records review

The Department of Planning and Community Development (DPCD) website was accessed for historical zoning information in relation to the site. Limited historical planning information was available for 1954, 1959, 1968 and 1985.

In 1954, 1959 and 1968 only partial historical planning information was available for the western section of the PSP areas (land to the west of Mt Atkinson Road) which shows the land zoned as ‘Rural’.

In 1985 the majority of the site south of Greigs Road was zoned as ‘Farming (F1)’, north of Greigs Road was ‘Corridor A (C1)’ with the exception of the railway corridor (zoned as existing railway, ‘RW’) and the Western Freeway (Main Road, ‘MR’), a small area just south of the Western Freeway was zoned as ‘Reserved Living, ‘R4’).

Beyond the PSP site boundary much of the land was zoned for general farming (‘F1’), further ‘Corridor A’ zoning as well as existing public purposes (‘PP1’) south of Boundary Road. Further south east land is zoned as Special Extractive (‘SE’) for the area occupied by the Boral quarry.

5.6 Data integrity assessment

It is recognised that the prior land use information above is not exhaustive and only a relatively general history of the sites has been established. However, the completeness and quality of the historical data is considered to be sufficient for the purposes of the assessment.

The table below represents the years for which site use history data collected during this investigation was available.

Table 5.2 : Information availability

	1880 - 1900	1900 - 1920	1920 - 1940	1940 - 1960	1960 – 1980	1980 - 2000	2000 -
Historical plans							
Aerial photographs							
Historical photos							

Note: Blank boxes indicate no information was obtained.

Shaded boxes indicate information was reviewed.

5.7 Planning applications

5.7.1 2-50 Meskos Road, Rockbank

Jacobs reviewed an application submitted to Melton City Council in June 2014 by Tract Consultants on behalf of Aurora Construction Materials Pty Ltd. The application seeks a permit for the following:

- Use of the site for concrete batching
- Use of the site for material recycling (crushing of rock, concrete, brick and other similar materials)
- Use of the site for the purposes of landscape gardening supplies
- Building and works associated with the above uses
- Reduction in car parking.

At the time of writing a decision on the application was pending. The application was supported by a number of specialist assessments, of which the following are of particular relevance to the assessment and have been considered:

- Traffic assessment
- Dust management plan
- Noise assessment.

The site is currently used for material recycling purposes that currently take place towards the south of the property. The application states that this existing operation will cease with the area of current impact to be remediated. The new facility would then occupy the northern portion of the site.

5.7.2 ERS Permit

A planning permit (ref. 2014/4503) was reviewed for the property at 121-179 Greigs Road, Truganina. The permit was issued by Melton City Council on 25 November 2014 for the establishment of an education centre.

5.8 Noise and vibration

The following information has been accessed for this assessment:

- Public Transport Victoria's (PTV) Network Development Plan - Metropolitan Rail (NDPMR)
- Watson Moss Growcott's Noise Emission Assessment - Material Recycling Facility and Concrete batching Plant Proposal at 2-50 Meskos Road Rockbank
- Melton Shire Council, Boral Resources PTY LTD, Department of Sustainability and Environment: Boral Quarry Management Plan
- Emails from PTV and Melton City Council
- Australian Standard 2187.2: Explosives - Storage
- VicRoads Traffic Noise Reduction Policy
- Passenger Rail Infrastructure Noise Policy
- State Environment Protection Policy (Control of Noise from Commerce Industry and Trade) No. N1-1 (SEPP N-1).

6. Hydrological assessment

For the purposes of this study, the hydrological assessment covered the distribution and movement of surface waters at the site with respect to potential implications for future site use.

6.1 Site setting

The PSP areas are located in the headwaters of three small drainage lines/channels, with a fourth watercourse running along the western boundary. There are no major watercourses located within or close to the PSPs. The PSPs are situated above the 1% annual exceedance probability (AEP) flood level, indicating no major flood risk to the area.

Tributaries of Skeleton Creek are present in the south-eastern corner of the PSPs, draining to the south east. Dry Creek runs along the western border of the PSP, within approximately 600m of the boundary, and crosses into the PSP in the south western corner. Dry Creek is a tributary of Skeleton Creek, which ultimately drains to Port Phillip Bay through the Cheetham Wetlands. An unnamed tributary in the north east corner of the PSP drains eastward into the Billingham Rd Drain, eventually joining Kororoit Creek.

There is also a wetland and unnamed tributary at the north-west corner of the PSPs. Imagery indicates that these are just outside of the PSPs and should not be affected.

There is a small wetland in the north of the PSPs of approximately 1.9 ha. There are also a number of wetlands to the north of the PSPs and along Kororoit Creek, including Deans Marsh.

6.2 Development opportunities and constraints

There are no significant hydrological features within the Mt Atkinson and Tarneit Plains PSP area which would constrain development of the site.

The location of the site at the headwaters of minor drainage lines results in low flood risk across most of the site, prior to PSP development. The entire PSP area is situated above the 1% AEP flood level.

Integrated water cycle management could potentially be utilised to harvest stormwater from the developed areas within the PSP.

7. Hydrogeological assessment

For the purposes of this study, the hydrogeological assessment covered the distribution and movement of groundwater at the site with respect to potential implications for future site use.

7.1 Site settings

7.1.1 Regional hydrogeology

The Mt Atkinson and Tarneit Plains PSP area is located at the northern edge of the Port Phillip Basin. North of the site the Basin is around 100 m thick while towards the south of the site the Basin increases in thickness to around 400 m.

The main aquifer of the site is the Newer Volcanics regional aquifer and is underlain by Tertiary aged Fluvial sands. Within this aquifer groundwater occupies joint openings and vesicles in the basalt and contact zones between various basalt flows. The water table resides within both the fractured rock of Newer Volcanic aquifer and within the regolith that has formed upon the volcanics. The fractured basalt aquifer will have highly variable permeability but generally low, providing low bore yields and sluggish groundwater flow.

Groundwater contours indicate regional groundwater movement towards the south-east (towards Port Phillip Bay) (Shugg, 1980), with local recharge and discharge likely throughout the study area. Visualising Victoria's Groundwater (http://www.vvg.org.au) was accessed to identify the presence of any nearby registered groundwater bores. A search of bores within a 5 km radius of the centre of the site was undertaken and this returned 160 bores registered for private groundwater use. Sixty-nine additional bores were identified for unknown use types, use for investigation or observation purposes or a non-groundwater bore.

Time series groundwater data indicates the water table follows medium term rainfall trends (5 to 10 years). Groundwater levels across the basalt aquifer will vary in the order of 2 to 4 metres (Figure 7.1). In wet periods (mid 1990s) water tables were shallowest and during dry periods, particularly 2007 to 2009, water tables fell by 2 to 3 m and have since risen in response to the recent wet period.

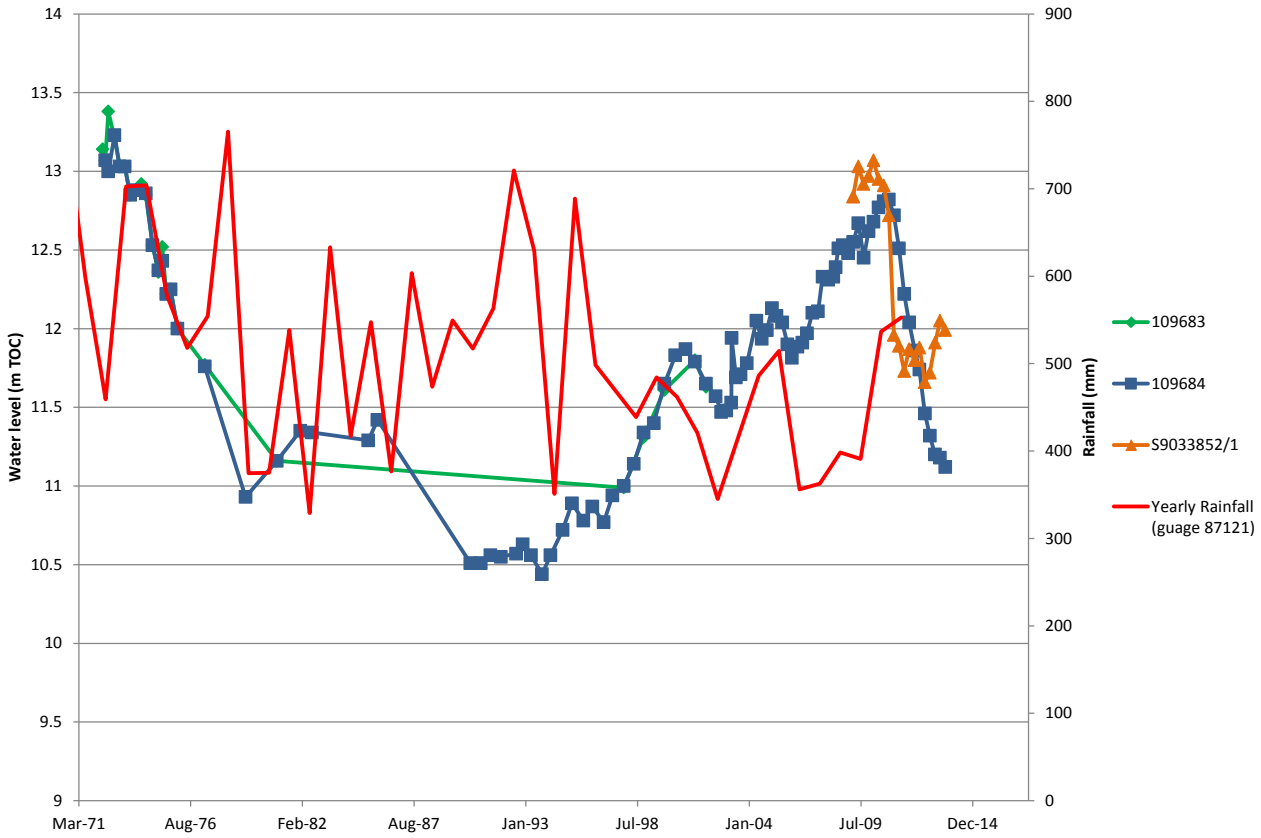

Figure 7.1 : Hydrographs for the site

The hydrographs above are for two monitoring bores within a 5km radius of the site (109683 and 109683) and one bore just outside the 5 km radius (S9033852/1). Note: S9033852/1 is located north west of the site. The other two bores are located on Boundary Road to the south of the site.

The water table is typically 10 - 20 mbgl across the majority of the western growth corridor within recharge zones with shallow groundwater levels and discharges into major wetlands and creeks. In topographically elevated areas, depth to water increases to greater than 20 m (it is greatest under the basalt cones such as Mt Cottrell), and in drainage areas such as waterways and wetlands, depth to water is greater than 2 m during wet periods. Groundwater discharge across the basalt plains is associated with major drainage lines, geological boundaries and topographic depressions (e.g. wetlands) (Bennetts et al 2003), a typical example of groundwater discharge is Dry Creek (west of site).

Within the study area historical water table monitoring data recorded levels as ranging between approximately 10.5 and 13.0 meters (top of casing) below natural surface elevation. The Atlas of Groundwater Dependent Ecosystems (BoM, 2012) identifies both Dry and Skeleton Creeks in the west and south east of the site respectively as having “high potential for groundwater interaction” (see **Figure 7.2** below), therefore it is likely that the depth to water table in these areas of low elevation would be less than 2 m and that a shallower water table along the creek lines is likely to occur.

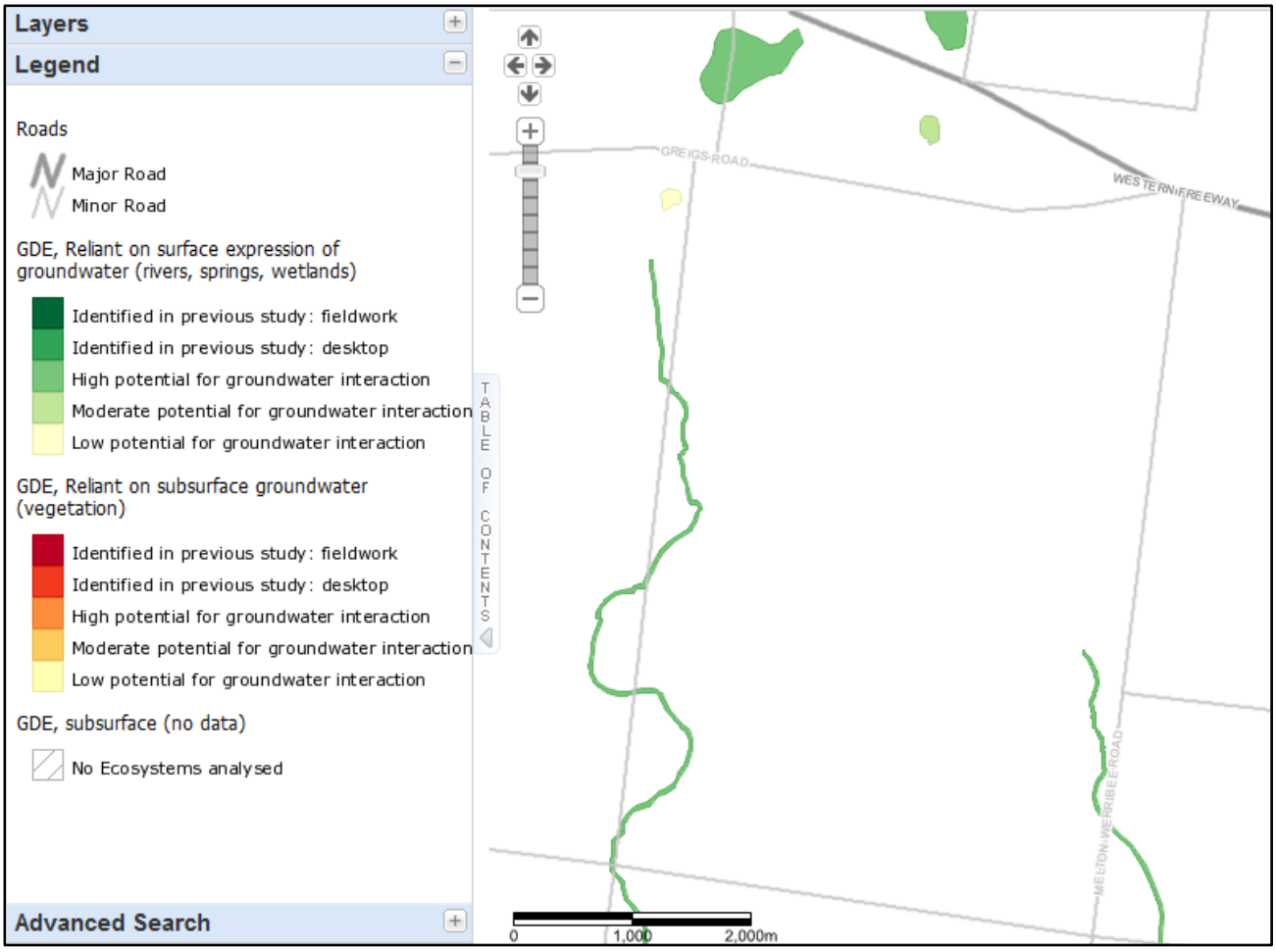

Figure 7.2 : Atlas of groundwater dependent ecosystem search (BoM, 2012)

The site does not currently reside within any Groundwater Management Area (GMA).

The locations of the groundwater bores are shown on **Figure 7a** and information on each of the registered groundwater bores is presented in **Appendix D**.

7.1.2 Regional groundwater quality

Of the 13 investigation and observation bores identified in the GMS within a 5 km radius from the centre of the study area, only one is currently being monitored (SOBN bore 109684) however no water quality parameters are being monitored at these sites, only water level measurements.

Limited chemistry information is available for groundwater bores the area, however historical laboratory analysis information is available for the bore currently monitored (109684) from 1992 and the results are summarised in **Table 7.1**.

TDS is approximately 2,000 – 2,500mg/L in the regional groundwater (although can range from 1,000 – 3,500mg/L). This is supported by salinity readings recorded for the three bores with historical data in the area, ranging between 700 to 2,700mg/L TDS.

The beneficial use of groundwater resources is defined in the State Environment Protection Policy (SEPP) - Groundwaters of Victoria (Victorian Government 1997) in terms of total groundwater salinity. Comparison of regional groundwater salinities (TDS) with beneficial use segments defined in the SEPP indicates that the beneficial uses of groundwater in the vicinity of the site fall within segment B and C. This indicates that the groundwater is suitable for all beneficial uses except for potable water use.

Table 7.1 : Summary of regional bore groundwater chemistry

Parameter	Reported concentration(s)
EC (TDS)	5636 mg/L
pH	7.9
Chloride (Cl)	2900 mg/L
Carbonate (CO_3)	N/A
Bicarbonate (HCO_3)	N/A
Total Alkalinity	N/A
Sulfate (SO_4)	480 mg/L
Nitrogen (N)	N/A
Calcium (Ca)	49 mg/L
Magnesium (Mg)	400 mg/L
Sodium (Na)	1400 mg/L
Potassium (K)	17 mg/L
Iron (Fe)	6.30 mg/L

Notes: EC – Electrical Conductivity

7.1.3 Groundwater use

The site is not currently represented by any GMAs which are generally declared in response to significant groundwater use and declining water levels in the area.

A search of Visualising Victoria's Groundwater revealed that there are 229 bores located within a 5km radius of the centre of the PSP. A summary of the groundwater bore uses as registered on Visualising Victoria's Groundwater is provided in **Table 7.2**.

Table 7.2 : Summary of registered groundwater bore uses

Groundwater bore use(s)	No. of registered groundwater bores
Domestic and Stock	154
Irrigation	3
Industrial	3
Groundwater Investigation	5
Observation	8
Non Groundwater	15
Unknown use	41
Total	**229**

7.2 Site Characterisation

Based on the regional hydrogeological information and bore data in the vicinity of the site, the conceptual hydrogeological model for the site is:

- The Mount Atkinson and Tarneit PSP area is located at the northern edge of the Port Phillip Basin, north of the site the Basin is around 100 m thick, south of the site the Basin increases in thickness to around 400 m
- The main aquifer of the site is the Newer Volcanics regional aquifer. The water table residues within both the fractured rock of Newer Volcanic aquifer and where shallow within the regolith that has formed upon the volcanic.

- Historical water table data from Visualising Victoria's Groundwater recorded groundwater level range between approximately 10.5 and 13.0 meters below natural surface elevation. The Atlas of Groundwater Dependent Ecosystems (BoM, 2012) identifies both Dry and Skeleton Creeks in the west and south east of the site respectively as having "high potential for groundwater interaction" (see **Figure 7.2**), therefore it is likely that the depth to water table in these areas of low elevation would be less than 2 m and that a shallower water table along the creek lines is likely to occur.
- The 160 registered bores range in depth for from 10.6 – 100 m. The depths of these bores indicate that groundwater extraction is occurring in the Newer Volcanics aquifer, however this fractured basalt aquifer is lightly to have a generally low permeability, providing low bore yields and sluggish groundwater flow.
- Groundwater discharge areas are associated with major drainage lines, geological boundaries and topographic depressions (e.g. creeks)
- All locations where groundwater is not discharging are potential recharge areas. The basalt aquifer is recharged naturally by direct infiltration of rainfall (through the soil) and downward leakage from surface streams and wetlands that collect surface water.
- Groundwater quality in the regional aquifer can range from 1,000 – 3,500mg/L TDS and is therefore saline. Based on the beneficial use segments defined in the SEPP, the groundwater is suitable for all purposes except potable water use.

7.3 Development opportunities and constraints

Over the majority of the site there does not appear to be any significant hydrogeological constraints which would render the land unsuitable for development. However, along the Dry Creek and Skeleton Creek it is likely shallow groundwater tables will exists. The following issues would need to be considered however, in the planning and design of any development:

- The shallow water table may cause groundwater inflow to excavations
- The saline nature of the groundwater may require careful monitoring if dewatering or extraction was required
- Decreased local groundwater recharge in winter and early spring has the potential to reduce discharge to nearby surface water features, which could potentially have a negative impact on the ecological health of local waterways.

Opportunities for groundwater use include extraction for garden watering and irrigation of parks and ovals, depending on the precise nature of the salinity of the groundwater and potential to shandy with less saline sources.

8. Geotechnical assessment

For the purposes of this study, the geotechnical assessment covered near-surface geological conditions, soil and rock types with respect to potential implications for infrastructure development.

8.1 Site setting

The Department of Primary Industries (DPI) Online Geological Map (accessed in June 2014) was reviewed to determine the geological conditions at the Mt Atkinson and Tarneit Plains PSP area.

The main geological unit to be encountered during future development of the site is likely to be basalt of the Newer Volcanics Formation (Qvn2 or Qno1). However, this may be overlain by associated weathered basaltic clays.

The surface geology for the site and the immediate surrounding area is presented in **Figure 7a** at the end of this report.

8.2 Site characterisation

The site is underlain by the Quaternary aged Newer Volcanics Formation. The upper portion of the basalt profile in this formation (usually up to several metres) is typically weathered to highly reactive residual clay. However, shallow rock can be encountered, and large near surface basalt boulders (known as “floaters” or “corestones”) are often encountered in a clay matrix.

An indicative site classification of Class “H2 to E” is applicable to these conditions in accordance with AS2870-2011 (Residential Slabs and Footings). This classification would depend on the depth, thickness and reactivity of the clay material in this area. The thickness of the residual soil profile in the Newer Volcanics is variable, and it is Jacobs’ experience in this area and with this geological unit that the depth to basalt can vary significantly over relatively short horizontal distances.

Given the previous use of the site, it is considered that areas of fill material may be present (although limited in extent). A site classification of Class “P” would apply for such areas where the history of the filling is unknown. A site classification of Class “P” requires that footings be designed on the basis of engineering principles as opposed to the adoption of the standard footing designs presented in AS2870. More property-specific commentary could be provided once the layout and details of proposed infrastructure on the PSP areas is finalised.

The above site classifications are based on regional geological information and are intended for preliminary consideration only. Site specific geotechnical site investigations which may include soil sampling and laboratory testing should be undertaken prior to the design and construction of any footing systems, pavements and associated civil infrastructure as art of any future building permit application.

8.3 Development opportunities and constraints

The following issues requiring consideration in the planning and design of any development and should be assessed through a geotechnical site investigation.

- The depth and reactivity of the Newer Volcanics residual clay which forms the surface geology across the site would determine the site classification for foundation design. It is expected that the site would be considered highly reactive (Class “H2 to E”).
- The variable thickness of the clay horizon over relatively short horizontal distances can lead to differential settlement of structures. As such, a geotechnical investigation is required to assess the depth to rock across the site.

- Excavations in the Newer Volcanics formation can transition abruptly from readily easily excavatable clays into high strength basalt, which may require rock breaking techniques or blasting. In the case of developments requiring excavations, delineation of the soil/rock interface should be assessed.
- Design of roads, drainage works and underground assets would require consideration of the highly reactive nature of the clays to ensure serviceable performance and minimise ongoing maintenance requirements
- Fill material, which may be present, is expected to be uncontrolled and may not be suitable as a founding material in its current state.

9. Contamination assessment

9.1 Site setting

There are currently no sites with an environmental audit overlay within the PSP area or within 200 m of the site. A review of the Australian Soil Resources Information System (ASRIS) online map in June 2014 describes the soil at the Mt Atkinson and Tarneit Plains PSP site as clay loam, sandy or silty clay loam (30 - 35%).

The ASRIS online map was also accessed for information regarding acid sulfate soils. The map indicates that soils within the Mt Atkinson and Tarneit Plains area can be classed as having an extremely low probability of acid sulfate soil occurrence (ASRIS, 2010).

9.2 Site characterisation

Based on the information presented in the previous sections, a number of potential sources of contamination were identified during the Stage 1 assessment of the Mt Atkinson and Tarneit Plains area. The potential sources of on-site contamination were assigned a qualitative level of risk based on the likelihood of the contamination representing a potential constraint to future development at the site. Where potential on-site sources of contamination were identified as having a moderate or higher risk of contamination during the Stage 1 assessment, a site inspection was carried out during the Stage 2 assessment.

Off-site potential sources of contamination were also inspected during the Stage 2 assessment (where possible). These too were assigned a qualitative risk level based on the likelihood of the contamination representing a potential constraint to future development of the Mt Atkinson and Tarneit Plains PSP area.

The site inspections were undertaken by visually assessing each identified site from publicly accessible areas (such as roads and footpaths). This assessment did not include a detailed walkover at each site. As such, some sites identified during the Stage 1 assessment as presenting a potential for contamination could not be assessed owing to limited visibility. This limitation has been considered in assigning the revised qualitative risk ranking.

While each identified property is slightly different with respect to the potential for contamination, there are some land uses or potential contamination sources which recur across the PSPs. The most common potential sources of contamination observed within the study area include farm residences and associated sheds, stockyards and imported fill (including tipped waste and miscellaneous stockpiles). While **Table 9.1** identifies potential contaminants of concern relevant to each property assessed, the presence of other contaminants of concern cannot be ruled out at this stage owing to the preliminary nature of the assessment of each individual property. These common land uses are discussed below as well as general comments relating to the PSP area and surrounding land use.

Farm residences and associated sheds

Farm residences and associated sheds are the most common potential source of contamination at each of the two PSP areas. These areas are typically used for storage of farm machinery (both operational and non-operational), materials, vehicles and many other miscellaneous items. These yards may also include fuel storage areas for refuelling farm machinery (typically in above-ground storage tanks) as well as storage areas for items such as agricultural chemicals (pesticides, herbicides etc.) and oils, lubricants and solvents for the maintenance of machinery.

Since farm residences can be fairly isolated, the use of septic tanks for sewerage purposes rather than reticulated mains sewerage is fairly common. However, since these are underground structures they can be difficult to identify.

Storage shed construction can vary depending on their age and can be variously formed of timber, corrugated iron, asbestos cement sheeting, blocks/bricks and concrete. Some sheds may also incorporate concrete floor slabs while others do not.

Plate 9.1 : Example of above ground storage tank

Plate 9.2 : Example of typical farm machinery shed

Based on the above, the most likely sources of contamination include spillages of fuels as well as impacts on soils by metals resulting from general machinery/equipment storage and maintenance of farm vehicles. However, spillages of other agricultural chemicals may also impact upon soils. Given that such chemicals are typically stored in small volumes (less than 20L) impacts are therefore likely to be extremely localised in extent. Additional contaminants of concern can also include biological contaminants and nutrients associated with leakages from septic tank systems.

Asbestos was also commonly used as a building material with a number of applications in Australia as early as the 1880s (although more frequently in the mid to late 1900s). While asbestos presents a limited risk while it remain in a bonded matrix (i.e. as bonded asbestos cement sheeting), mobilised free fibres can present a greater potential risk. Mobilisation can occur through a number of processes including (but not limited to) abrasion, sanding and cutting.

Stockyards

Stockyard structures were noted within the PSP study areas. These are used to hold livestock prior to loading on to trucks. They are typically timber enclosures, sometimes including a small covered shed for storage.

Stockyards can also be accompanied by adjacent sheep dips used which are used to dose/treat sheep. Typically forming a narrow pit/channel, they are filled with a liquid formulation of fungicide/insecticide through which the sheep are passed before being held in an enclosure to allow surplus formulation to drain.

No sheep dips were observed during the site inspections. However, a number of properties could not be visually assessed to confirm their absence. The absence of a dedicated in-situ sheep dip does not rule out such an activity taking place at a stockyard, currently or in the past. Metals troughs are also used a mobile alternative.

Contamination of soil and groundwater can result from the above activities as the liquid formulation either leaks from defects in the dipping infrastructure (be it a permanent sheep dip or mobile trough) or drains from sheep while they are retained in the holding enclosures after dipping is completed.

The potential for this contaminating land use has been incorporated into the qualitative risk ranking for individual properties.

Plate 9.3 : Example of a stockyard structure

Plate 9.4 : Example of typical sheep dip

Imported fill, tipped waste and stockpiled material

The presence of imported fill can be difficult to identify without undertaking intrusive investigations, particularly in areas which are heavily vegetated. Fill material is most likely to be found in locations where previous construction/development works have been undertaken. Stockpiles of soil and tipped waste material were also noted frequently across the study areas.

Potential contaminants of concern associated with fill material, tipped waste and stockpiled materials can vary significantly depending on their source and time at which they were deposited. Since such information is rarely available specific contaminants of concern often cannot be adequately identified without laboratory analysis (although visual and olfactory observations can provide limited information). However, the most commonly encountered contaminant groups include total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs) and metals. However, asbestos is also a contaminant of concern, particularly in building rubble.

Petrol fuelling stations

Two petrol service stations have been identified at the north-west and north-east corner of the PSP areas. The presence of contamination associated with fuel filling stations is likely due to leakage from underground storage tanks (USTs).

Hydrocarbon based fuels can be highly mobile and can result in degradation of groundwater bodies. Fuel vapours can also migrate and accumulate in poorly ventilated spaces which may present a potential risk to human health. Common potential contaminants of concern associated with fuel include TPH, BTEX and lead, as well as fuel additives.

Contaminants on site will largely depend on the history and the age service station operations. Both service stations appear to be relatively new.

There is also potential for spread of contamination to neighbouring properties within the PSP area.

Poultry farms

A broiler chicken farm has been identified at the south western corner of the PSP area. The main contaminants of concern are from animal wastes and by-products, which may carry pathogens. Leaking defects or deficiencies (tanks, pipes and slabs) may facilitate leakages. Surface water may be contaminated if it comes into contact with these spillages. Odours may also be an issue.

General agricultural land use

Much of the land forming the PSP areas have been used for agricultural purposes for an extended period of time. As such, there is likely to be a long history of general agricultural processes within the study area. The most notable of these is crop spraying. Potential contaminants of concern associated with this process typically include pesticides, herbicides and fungicides as well as potentially nutrients (from manure, slurry application and other fertilizers).

While this general use has not been explicitly identified in **Table 9.1,** owing to its site-wide relevance this historical use is considered to present a low risk of causing contamination.

9.2.1 Potential sources of contamination on site and findings of site inspection

The potential on-site sources of contamination as identified above were targeted during the site inspection of the Mt Atkinson and Tarneit Plains PSP area on 10 June 2014, where possible. Each of the potential sources of on-site contamination identified during the Stage 1 and 2 assessments are presented in **Table 9.1** along with the findings of the Stage 2 site inspection. The original risk rankings have been re-evaluated following the site inspection with the revised risk rankings also provided.

The numbers attributed to areas of interest referred to in **Table 9.1** have been allocated to a particular area by Jacobs for the purposes of this investigation. **Figure 9** and **Figure 10** show each of these areas of interest.

Petrol service stations were located at the north east corner and the north western corner of the Mt Atkinson PSP (properties 1 and 6) has been allocated a risk ranking of high due to the likely presence of multiple underground ground tanks.

The current material recycling facility (AOI 5) was allocated a moderate to high risk of contamination owing to material screening and stockpiling processes being undertaken and the presence of fuel storages on site to accommodate significant plant activity.

Nevas Chicken Farm (Property 16) located at the south western corner of the Tarneit Plain PSP has been allocated a moderate risk ranking, due to the presence of above ground tanks (contents unknown) and contamination related to the chicken waste.

Stockpiles of miscellaneous materials and general dumped items were the most frequently observed potential contamination sources within the PSP area. These varied from soil to building materials including timber, sheet metal, gravel and general abandoned items (car bodies, farm machinery etc). The highest risk rankings allocated at the site were low to moderate potential risk of contamination of which a number of areas of interest were identified. These areas (identified as AOI 2, 3, 9, 12, 14 and 15) were allocated this ranking on the basis of the extent and nature of dumped materials which appeared to be widespread across the sites.

Table 9.1 : Summary of potential on site sources of contamination

Area of Interest	Parcel(s) affected [1]	Approximate percentage area of parcel potentially affected	Site Use/Activity	Potentially Contaminated Medium	Potential Contaminants of Concern	Findings of Site Inspection	Potential Contamination Risk	Further Site Specific Assessment *
1	2\PS537630 1\TP82886	30 % 20 %	Service Station	Soil and groundwater	TPH, BTEX and metals	Service station and McDonalds restaurant. Multiple pumps present. Site appears to be relatively new with no notable housekeeping issues observed. Site is located up gradient of the PSP.	**H**	Apply EAO to relevant parcels. An Audit would be necessary prior to redevelopment to a more sensitive use. Further assessment of this site is also recommended in the short-term.
2	1\TP820900	25%	Disturbed soils and dumped material and stockpiles	Soil	TPH and metals most likely but various others associated with stockpiling	To the rear of the service station, water tanks on site. The grounds look disturbed with stockpiles of rubble, concrete and random tipping.	**L - M**	None
3	3\PS448579	25%	Disturbed ground	Soil	Various associated with stockpiling	Structure on site, with old sheds/ stables and tractors with stockpiles of rubble	**L - M**	None
4	3\PS448579	5%	Nursery	Soil and groundwater	Nutrients, herbicides and pesticides	Orchard/plant nursery within. Large stockpile of gravel in the car park. Large structures on site	**L - M**	None
5	3\PS448579	15%	Material recycling facility	Soil	Various associated with recycling and crushing activities.	Possible fuel storage on site, Excavation / filling activities noted.	**M - H**	Limited site investigation is recommended in order to determine the requirement for a formal audit. This would likely comprise limited soil and groundwater sampling.
6	4\PS448579	100%	Service Station	Soil and groundwater	TPH, BTEX and metals	No notable housekeeping issues observed.	**H**	Apply EAO to relevant parcels. No further investigations required at this stage although an Audit would be necessary prior to redevelopment to a more sensitive use.
7	2\TP612291	30%	Area immediately adjacent rail line - potential historical use of fill material and pesticides	Soil	Various associated with fill material	Railway alignment with no features of note present other than typical railway infrastructure.	**M**	No assessment is considered necessary at this stage due to continuation of use.
	3\TP612291	100%						
	2025\PP2516	25%						
	1\TP558439	100%						
	1\TP571382	100%						
	2024\PP2516	100%						
	1\TP946747	100%						
8	2\PS502576	50%	Farm residence with plantation area	Soil and groundwater	TPH and metals most likely with herbicides, pesticides and nutrients around the orchard	Well maintained plantations and structures on site.	**L**	None
9	1\TP170143	60%	Farm residence with area potentially used for stockpiling materials	Soil	Various	House appear well maintained. Some dumped material visible including building materials. View of the rear of the property was obstructed. Aerial imagery suggests further dumped material, although the nature of this is unknown.	**L - M**	None
10	1\TP177835	25%	Farm residence with area potentially used for stockpiling materials	Soil	Various	Well maintained house and garage. Market gardens at the front, a prickly pear orchard. Stockpile of soil is present various sheds and buildings to the rear.	**L**	None

Area of Interest	Parcel(s) affected [1]	Approximate percentage area of parcel potentially affected	Site Use/Activity	Potentially Contaminated Medium	Potential Contaminants of Concern	Findings of Site Inspection	Potential Contamination Risk	Further Site Specific Assessment *
11	1\LP140116 2\LP140116	100% 10%	Orchard / plantation	Soil and groundwater	Pesticides, herbicides and nutrients	Well maintained orchard and plantation with structures on site.	**L**	None
12	1\PS515937	15%	Waste material	Soil	Various associated with waste	Waste material noted across the site, including old vehicles and machinery	**L – M**	None
13	2\LP138528	45%	Orchard / plantation	Soil and groundwater	Pesticides, herbicides and nutrients	Well maintained plantation/orchard with large structures on site. Likely to be for industrial olive production. Stockpiles and waste material noted across the site.	**L – M**	None
14	3\LP138528	5%	Waste material	Soil	Various associated with waste	A large long shed located on site with smaller structures, stockpiles of material and waste strewn across the site.	**L - M**	None
15	5\LP138528	<5%	Area potentially used for stockpiling materials	Soil	Various	Large stockpiles of material across the site	**L - M**	None
16	5-6\PP3431	100%	Broiler farm	Soil and groundwater	TPH, metals, nutrients and biologicals	Nevas Chicken Farm present at the site. Very limited visibility but aerial imagery suggests the facility is relatively new. Miscellaneous tanks located at the front entrance as well as water storage.	**M**	Limited site investigation may be necessary if a change of land use was to take place.
Nil	1\PS518408 4\TP131713 1\TP442514 3\PS515937 9\TP828625 2\TP131713 1\PS512497 7\TP828625 1\TP747009 2\PS502576 5\PS512497 3\PS512497 4\TP747009 9\PS512497 2\PS517414 2\PS448581 2\PS515937 RES1\PS512497 2\TP828625 5\LP138528 8\TP828625 3\TP828625 1\TP82908 1\TP840607 3\TP747009 1\TP177835 6\TP828625 3~6\PP3431 1\TP108817 1\TP82885 2\TP442514 1\TP82900 6\PS512497	1\TP750365 4\PS512497 2\PS518408 1\TP843601 TP3215 1\TP131713 1\TP82886 4\TP442514 1\TP170143 3\TP442514 1\PS502576 1\LP138528 3\LP136728 1~6\PP3431 2~6\PP3431 2\TP747009 5\TP828625 4~6\PP3431 1\LP140116 3\LP138528 1\LP136728 1\TP828625 4\LP138528 7\PS512497 1\TP204914 8\PS512497 6~6\PP3431 1\TP567552 3\TP131713 2\PS512497 2032\PP2516 1\PS537630 2\PS537630	Nil	Please note, all these properties were assigned a ‘VL’ potential contamination risk			**VL**	None

Notes:

1- Please note: Parcel numbers listed with a corresponding percentage have an associated Area Of Interest (AOI) .

TPH – Total Petroleum Hydrocarbons

Nutrients – Ammonia, nitrate, nitrite, phosphate

9.2.2 Potential off-site sources of contamination

Sites located beyond the boundary of the PSP areas were also considered during the Stage 1 assessment in order to identify any potentially contaminating land uses that may impact upon the future uses of land within the PSP areas themselves. Off-site sources identified in the vicinity of the PSP areas are summarised in **Table 9.2** and illustrated in **Figure 9** and **Figure 10.** Areas of interest listed in this table were inspected from publicly accessible locations during the Stage 2 assessment.

Areas of interest located outside of the Mt Atkinson and Tarneit Plains PSP area generally reported a very low potential risk for contamination. However, the Boral quarry and associated landfill activities in their current form (identified in **Figure 9**, **Figure 10** and **Table 9.2** as AOI 17), are considered to present a low to moderate potential for contamination of the Mt Atkinson and Tarneit Plains PSP areas. This is based on the following rationale:

- Local groundwater is inferred to be tending in a south-east direction, away from the PSP areas
- The current landfill operations are confined to an area in excess of 1.5km from the PSP areas
- The current landfill operations will be subject to the implementation of various environmental controls aimed at minimising impacts of the relevant segments of the environment (as per EPA publication 788.1 *Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills (*Landfill BPEM)).
- Dust suppression will be a potential source of off-site contamination. The Landfill BPEM contains requirements for dust suppression which are applicable to the landfilling operations at the Boral site. The BPEM can also provide guidance for dust suppression of quarrying activities. Boral have an obligation to monitor and report dust generation as part of its operations licence according to the Landfill BPEM. Dust suppression measures that are recommended are:
    - Vegetating or mulching of exposed areas and formation of internal roads, including sealing roads that are used regularly
    - Use of water or other dust suppressants on roads or stockpiles that are not sealed or vegetated
    - Where leachate is to be used for dust suppression it may only be applied to areas that are within the active landfill cell to ensure the leachate does not contaminate stormwater run-off.

The Boral landfill site is recognised as a future site of state significance for waste and resource recovery (Sustainability Victoria, 2013). Jacobs recommends that MPA consult with the Department of Economic Development, Jobs, Transport and Resources as well as EPA regarding future landfill operations.

Table 9.2 : Summary of potential off site sources of contamination

AOI	Site Use/Activity	Potentially Contaminated Medium	Potential Contaminants of Concern	Findings of Site Inspection	Potential Contamination Risk	Further Site Specific Assessment *
17	Quarry and Landfill	Soil and groundwater	Various associated with quarrying and landfilling activities	Quarrying and landfilling activities at the south eastern boundary.	**L - M**	None
18	Disturbed soils and dumped material and stockpiles	Soil	TPH and metals most likely but various others associated with stockpiling	Not accessible at the time of the site inspection	**VL**	None
19	Disturbed soils and dumped material	Soil	Various associated with waste	Corrugated iron compound fence with old trucks, cars and equipment in yard.	**VL**	None
20	Nursery	Soil and groundwater	Nutrients, herbicides and pesticides	Polytunnels and stockpiling of materials on site. The site appears to be in operation at the time of the site inspection. The property was overgrown and was in a generally worn condition.	**VL**	None
21	Disturbed soils and dumped material and stockpiles	Soil	Various associated with stockpiling	Not accessible at the time of the site inspection	**VL**	None
22	Orchard and waste	Soil and groundwater	Nutrients, herbicides and pesticides, waste	Possible waste pit noted on site	**VL**	None
23	Farmyard with machinery	Soil	Various associated with farming including chemicals, fuel and oils	Stockyards with farm machinery, silos, sheds and tractors on site	**VL**	None
24	Disturbed soils and dumped material and possible Sheep Yard	Soil	Various associated with waste and possible sheep dips	General waste across the site include old whitegoods, cars and boat parts. Possibly a sheep yard.	**VL**	None
25	Disturbed soils and dumped material and stockpiles	Soil	Various associated with waste	General waste across the site including piles of wood, metal, tyres, old cars, and truck parts	**VL**	None

Notes:

TPH – Total Petroleum Hydrocarbons

Nutrients – Ammonia, nitrate, nitrite, phosphate

9.2.3 Potential receptors of contamination

Potential receptors of contamination (should any exist) that are relevant at or near the PSP areas include:

- General site workers
- Residents at the site
- Future construction workers at the site
- Visitors to the site
- Workers servicing underground utilities located on and around the site
- Surrounding residents and occupants and visitors (via windblown contamination during excavation works)
- Sensitive land based ecosystems on and near the site
- The nearest surface water bodies (including aquatic ecosystems), namely Dry Creek, an unnamed watercourse draining eastwards into Kororoit Creek and a further unnamed watercourse draining into Dry Creek.

9.2.4 Exposure pathways & mechanisms

These potential receptors may be impacted through ingestion, inhalation or dermal contact with potentially contaminated soil (on site) and groundwater (on and off site). Off-site receptors (including humans and aquatic and land based ecosystems) may be impacted through the transport of contamination via a number of pathways such as trenches/conduits containing underground services (from the site to off-site locations), storm water drainage networks, surface drainage via overland flow (runoff), groundwater flow and surface water transport (e.g. to and in the nearest surface water bodies to the site, namely Dry Creek, an unnamed watercourse draining eastwards into Kororoit Creek and a further unnamed watercourse draining into Dry Creek).

9.3 Development opportunities and constraints

9.3.1 General

Based on the information described in this report, there do not appear to be any significant constraints from a site contamination perspective which would render the land unsuitable for any feasible land use. However, there are particular areas which have been identified as having a potentially moderate to high risk of contamination (refer Table 9.1).

Jacobs recommends that an Environmental Audit Overlay (EAO) be applied to parcels of land associated with the two service station sites (AOI 1 and 6). Given that the service stations are relatively new it is unlikely that these existing land uses would change in the near future, however at such time as redevelopment does take place, an audit would be considered necessary. The inferred groundwater flow direction is towards the south east. As such, the service station site identified as AOI 6 is unlikely to present contamination issues that would constrain future use of the PSP areas. However, there is the potential for contaminated groundwater associated with the AOI 1 (if present) to migrate across the northern extent of the Mt Atkinson PSP area. Jacobs notes that this service station is less than 5 years old and as such is considered less likely to have significantly impacted surrounding land than an older facility. Nonetheless, further limited assessment of this site is recommended in the short term to identify whether contamination of underlying groundwater is a potential constraint to future nearby development at adjacent properties. In this first instance this would likely comprise a more detailed desk based assessment for this particular property. If this assessment does not provide sufficient evidence that off-site migration of contamination is not taking place, limited groundwater and soil sampling may be recommended.

The existing recycling facility (AOI 5) is located in an area that is proposed for future industrial use (as specified in the West Growth Corridor Plan provided by MPA). While an application is currently pending to utilise this parcel of land for material recycling, concrete batching and for landscape gardening supplies, the area currently being used for material recycling does not fall within the proposed location of the above activities. Instead, the application states that the existing material recycling facility will be closed down and replaced with the new facility. Given the nature of the work currently taking place at the existing recycling facility, Jacobs recommends that a further limited soil and groundwater assessment be undertaken to identify whether a formal audit may be required in order to allow future development of this part of the site for industrial use. Applications would be required to meet Clause 52.10 in the planning scheme.

Nevas Chicken Farm (AOI 16) located at the south western corner of the Tarneit Plain PSP has been allocated a moderate risk ranking. This facility appears to be relatively new and as such it is unlikely that this land use would change in the near future. However, if the land use was to change as part of any future development it is recommended that a limited soil and groundwater investigation be undertaken to identify any potential site specific constraints to the future development of the site. This further investigation is not considered necessary at this stage in order to progress the PSP.

The remaining identified areas of concern comprise discrete or localised areas of ground disturbance or minor stockpiling that can likely be cost-effectively managed during future development of the PSP under the general provisions of Section 12(2)(b) and Section 60(1)(a)(iii) of the Planning and Environment Act 1987.

While the adjacent Boral site comprises landfilling activities, these are confined to the south-east corner of the site which is a significant distance from the PSP areas. Landfilling activities will be subject to the implementation of various measures to minimise impact on the surrounding environment in accordance with EPA publication *Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills*. Routine monitoring will also be required of the site operator in order to verify the effectiveness of environmental protection measures to prevent contamination of groundwater and prevent off-site migration of landfill gas. With this in mind, the risk presented to future users of the PSP areas by current off-site landfill (and quarry) activities is considered to be low to moderate.

A green waste facility separation distance of 2,000 m associated with the composting facility on the Boral landfill encroaches on the PSP area. This is in place to minimise potential odour impacts on sensitive land uses. It is understood that the facility is likely to be closing in 2015, but this will need to be monitored.

10. Noise and vibration assessment

10.1 Noise and vibration characterisation

10.1.1 Road traffic noise

There are a number of significant roads in the vicinity of the PSP sites. Predicted traffic volumes, heavy vehicle percentages and design speed limits for these roads are presented in Table 10.1 for the year 2030. These have been obtained from the VITM traffic model and extrapolated between 2026 and 2046. 2030 has been used as this is expected to be 10 years following residential development.

Table 10.1 : Traffic data for roads in the vicinity of site

Road	Daily Traffic Volumes 2-Way	Heavy Vehicle %	Design Speed Limit
Western Freeway (WF)	22,338	11.3	90
Grieg's Road***	4,028	1.8	80
Hopkins Road***	8,196	8.3	80
Middle Road	2,742	4.5	80

*Construction on this project is not expected to start before 2020. This road bounds the site to the West and has four lanes of traffic in each direction.

**Runs parallel to Middle Road

***Listed as Arterial Roads from year 2026

Set back distances

Indicative set back distances can be determined based on where the predicted traffic noise levels comply with the noise limits defined in VicRoads *Traffic Noise Reduction Policy*. The setback distances for development will depend on the type of development and intervening shielding and traffic source noise level which is based upon traffic volume, traffic mix, traffic speed and road surface type.

The Outer Metropolitan Ring Road (OMR) has not been considered as there is no funding commitment to the project.

Typically the following minimum set back distances from each road are expected to apply to single storey dwellings based on no additional mitigation to achieve VicRoads' noise limits. While it is noted that VicRoads noise limits do not apply to Greig's Road, it provides a useful basis on which to determine an appropriate setback for the road with respect to traffic noise. The following set back distances have been derived from the data presented in Table 10.1:

- Western Freeway: 170 m
- Greigs Road: 25 m.

These set back distances could be significantly reduced with mitigation.

Mitigation

VicRoads will provide traffic mitigation via the Road Traffic Noise Policy for new arterial roads or freeways; however, there are a limited number of situations where expenditure of public monies on noise attenuation is not considered to be justified. Accordingly, VicRoads will not take action to protect existing or future development in the following circumstances:

- Where such land use is defined as a non-conforming use in the relevant planning scheme
- New buildings or subdivisions abutting any existing road under the control of VicRoads

- New buildings or subdivisions abutting any road zone shown on any planning scheme for a new road or a road widening
- Buildings or subdivisions abutting any proposed road zone where the planning approval for the subdivision, was obtained after the commencement of the exhibition period to set aside land for a future road in the relevant planning scheme.

The consequence of this is that VicRoads is unlikely to provide mitigation for noise from the Western Freeway. The planning approval for any subdivision on the PSPs is likely to be obtained at a date which would mean that the future residences are not entitled to noise mitigation. However, it has been observed that there are circumstances where properties that have been completed prior to the commencement of road design and construction have been provided with traffic noise mitigation.

With mitigation the setback distances provided above could be significantly reduced.

10.1.2 Rail noise and vibration

The Melbourne Ballarat Railway Line bisects the northern section of the 1082 Mt Atkinson site. Existing tracks are currently used by diesel passenger and freight.

It is understood that duplication (to 2 tracks) and electrification of the corridor within the next 15 years has been recommended. Upon duplication both tracks are proposed to be used by diesel passenger and freight and upon electrification they will accommodate electric trains and ongoing freight operations. Diesel trains through to Ballarat will continue to share these two tracks.

Future rail in the Outer Metropolitan Transport Corridor is proposed to be four railway tracks in the median for interstate freight and high-speed passenger trains between Werribee and Kalkallo. The rail line will join the existing Melbourne/Ballarat line in the North West corner of the PSP. Construction on this project is not expected to start before 2020.

The Victorian Government's *Passenger Rail Infrastructure Noise Policy* (2013) is the applicable policy to assess noise from passenger rail in Victoria. This applies to land near the Melton rail corridor, as the PSP will trigger a planning scheme amendment under the *Planning and Environment Act* 1987 relating to land near an existing or planned rail corridor. It would apply in future should the possible future rail line along the centre of the future Outer Metropolitan Ring road be passenger rail, but not if it were freight rail.

The policy provides investigation thresholds to guide transport bodies and planning authorities when assessing the impacts of rail noise on nearby communities. They are not a limit on allowable noise emissions.

Table 10.2 : Table 10.2 below lists investigation thresholds for new passenger rail infrastructure or change in land use near a planned rail corridor.

Table 10.2 : Investigation thresholds for new passenger rail corridors (Passenger Rail Infrastructure Noise Policy)

Time	Type of Receiver	Investigation Threshold(s)
Day (6am – 10pm) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks • Noise sensitive community buildings including schools, kindergartens, libraries	60 L_{Aeq} or 80 L_{Amax}
Night (10pm – 6am) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks	55 L_{Aeq} or 80 L_{Amax}

Table 10.3 below lists investigation thresholds for change in land use near an existing passenger rail corridor.

Table 10.3 : Investigation thresholds for existing passenger rail corridors (Passenger Rail Infrastructure Noise Policy)

Time	Type of Receiver	Investigation Threshold(s)
Day (6am – 10pm) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks • Noise sensitive community buildings including schools, kindergartens, libraries	65 L_{Aeq} or 85 L_{Amax}
Night (10pm – 6am) dB(A) External	• Residential dwellings and other buildings where people sleep including aged person homes, hospitals, motels and caravan parks	60 L_{Aeq} or 85 L_{Amax}

If the noise level produced at the receivers listed in Table 10.2 and Table 10.3 are exceeded for the periods specified in the above tables, then the Department of Transport, Planning and Local Infrastructure (DTPLI), Public Transport Victoria (PTV) and the MPA should consider options for avoiding, minimising and mitigating rail noise. This should be through consideration of appropriate land uses along the rail corridor; consideration of local constraints (topography, shielding by other buildings etc.) and cost-effective mitigation opportunities.

Future noise levels of possible passenger rail are not yet possible to predict, as it:

- Is not likely to be delivered in the short to medium term and no detailed design is available
- Rail track and rolling stock design may have progressed significantly by the time any possible passenger rail is delivered, making it difficult to assess future noise due to the rail
- PTV has not provided any information regarding future services, due to the long-term nature of the project.

Information on current and possible future noise levels due to the existing Melton rail corridor (and possible future upgrades) may become available within a shorter timeframe. If this occurs, an assessment can be made as outlined above.

10.1.3 Industrial noise

Industrial noise sources in the vicinity of the site include:

- The adjacent Boral Landfill and Quarry
- A power transmission station (this is expected to include transformers)
- Mechanical services noise associated with the Railway Station
- Material Recycling Facility (possible future)

The onus to meet the requirements of SEPP N-1 will be on the industrial facilities.

Boral Landfill and Quarry

The Boral Quarry is located adjacent to the Tarneit Plains Site. The site is located in the Special Use Zone – Schedule 1 (SUZ1), generally bound by Hopkins Road to the west, the Ballarat railway line to the north, Christies Road to the east and Middle Road to the south. Currently landfill activities are limited to the south east corner of the site, south of Riding Boundary Road, although in the future there is a possibility that this could be extended.

Current activities on the Boral site include:

- Masonry plant
- Concrete batching plant
- Crushing plant
- Asphalt plant

- Composting
- Quarry where blasting takes plant.

The site including the landfill operates 24 hours.

Boral would be responsible for any noise mitigation required to achieve the SEPP N-1 noise limits.

Power transmission station (proposed Truganina station)

The power transmission station has the potential to impact on the residential area. Residential locations are currently shown as potentially 1 km from this station. It is expected that there will be transformers at the station site which may exceed noise limits at this proximity to residential areas. The transformers may also be tonal and 'annoying' to nearby residents. It will be the responsibility of the operator to comply with the SEPP N-1 noise limits at any residential location.

The GHD utility servicing and infrastructure report (GHD, 2014) states the power transmission station is to be constructed to offload the Keilor terminal station. The station will provide a step-down for both 500kV to 220kV and 220kV to 66kV.

Mechanical services noise associated with the railway station - future

These will need to be designed to comply with the SEPP N-1 noise limits at any residential location.

Material recycling facility - future

An application has been submitted for a material recycling facility between the existing rail corridor and the Western Freeway to the north of the PSP site. The application proposes rock crushing and a batching plant. The application does not appear to have taken into consideration the potential for future residential areas on the Mt Atkinson site or the change in land use zoning. This could mean that the Material Recycling Facility may have to reduce working hours and/or include mitigation in the future to achieve the SEPP N-1 noise limits at future residential locations.

10.1.4 Blasting

It is not possible to determine the impact of blasting as details of Boral's blasting program are not publicly available. The impact of the blasting program will be dependent on blasting location and charge size.

Boral Quarry's management plan follows row 1 of Table J4.5(A) in AS2187.2. The management plan describes condition of blasting operations within 200m of Hopkins Road however the document and figures for these conditions are listed in the Work Plan. Jacobs does not have access to a copy of the Work Plan. This condition may need to be adjusted to take account of residential/commercial premises which may require planning reviews and approval.

10.2 Development opportunities and constraints

Based on the limitations due to unmitigated future road and rail noise, Jacobs recommends investigation of set-back distances from noise sources in areas currently proposed for residential development.

10.2.1 Road

There are opportunities to reduce the impact of road traffic noise on noise sensitive buildings. These include:

- Low noise pavements
- Noise attenuation barriers
- Locating sensitive buildings further from the road
- Specialised design and treatment of residences.

10.2.2 Rail

Opportunities to reduce noise from rail include:

- Planning and designing buildings in ways that reduce the railway noise and vibration impacts and ensuring, as far as practicable, that less sensitive rooms (e.g. bathroom, garage, laundry, kitchen and corridor) are oriented towards the railway in preference to living and sleeping areas
- Locating zones for uses with lower sensitivity to railway noise and vibration adjacent to the rail e.g. industrial and commercial developments, car parking or recreational uses
- Where sensitive uses are proposed then designing the layout and orientation of the buildings on the development site to reduce railway noise and vibration impacts
- Taking advantage of the natural topography, cuttings or existing buildings for shielding of airborne noise through careful siting and layout of the buildings
- Earth mounds and bunds offer the potential for landscaping, which can reduce the visual impacts compared with other physical barriers such as fences and walls. However earth bunds require significant land for their construction relative to fences and walls, which may not be available on constrained sites. Vegetation and trees do not provide any substantial noise reduction, but can be an affective visual screen.

10.2.3 Industrial

It is the operator's responsibility to provide mitigation to meet the requirements of SEPP N-1.

10.2.4 Key risks

The following risk may results in changes to the advice provided:

- Noise policies change
- Proposed Roads / Rail are different than currently proposed (different government priorities)
- There are other future noise sources that have not been identified
- Changes to the proposed PSP.

11. Conclusion and recommendations

11.1 Conclusions

11.1.1 Hydrology assessment

The PSP area is located in the headwaters of three small drainage lines/channels, with a fourth watercourse running along the western boundary. These consist of an unnamed watercourse draining eastward into the Billingham Rd Drain, Skeleton Creek and an unnamed tributary of Skeleton Creek draining to the south east, and Dry Creek which drains to the south. All of the PSP area is situated above the 1% annual exceedance probability (AEP) flood level, indicating no major flood risk.

11.1.2 Hydrogeological assessment

Based on the regional hydrogeological information and bore data in the vicinity of the site, the unconfined aquifer is associated with the Newer Volcanics basalt.

Over the majority of the site there does not appear to be any significant hydrogeological constraints which would render the land unsuitable for development. However, along the Dry Creek and Skeleton Creek it is likely shallow groundwater tables will exists. The following issues would need to be considered however, in the planning and design of any development:

- The shallow water table may cause groundwater inflow to excavations
- The saline nature of the groundwater may require careful monitoring if dewatering or extraction was required
- Decreased local groundwater recharge in winter and early spring has the potential to reduce discharge to nearby surface water features, which could potentially have a negative impact on the ecological health of local waterways.

Opportunities for groundwater use include extraction for garden watering and irrigation of parks and ovals, depending on the precise nature of the salinity of the groundwater and potential to shandy with less saline sources.

11.1.3 Geotechnical assessment

Based on the available geological information, it is anticipated that the site is underlain by highly reactive residual clay overlying basalt rock. An indicative site classification of Class “H2 to E” has been assessed in accordance with Table D1, AS2870-1996.

Key geotechnical issues associated with development of the site include the depth and reactivity of the basaltic clay in terms of its influence on site classification, foundation selection, differential settlement, subgrade performance and excavations. Fill material, if present, is expected to be uncontrolled and may not be suitable for development in its present state. Areas subject to poor drainage may comprise soft material which provides low bearing capacity for foundations.

11.1.4 Contamination assessment

Based on the information gathered during the Stage 1 & 2 assessments, the following conclusions can be made in relation to the Mt Atkinson and Tarneit Plains PSP area:

- The number of properties assigned to each risk category is as follows (see Section 9 for further details):

		Number of properties	
		Mt Atkinson	Tarneit Plains
Rating	H	2	
	M-H	1	
	M	1	1
	L-M	8	
	L	3	
	VL	37	18

- The site history assessment found that the site has a long history of agricultural land uses with much of the areas remaining under cultivation to the present day
- Based on the available information including a site walkover and site history assessment the following primary potential sources of contamination have been identified:
  - Two petrol filling stations located at the north-west and north-east of the PSP area (AOI 1 and 6). The presence of USTs constitutes a high risk of contamination of underlying soils and groundwater. While AOI 6 is located down hydraulic gradient form the site, the service station identified as AOI 1 is located up gradient of the northern extent of Mt Atkinson PSP. As such, any groundwater contamination associated with this site could potentially impact upon down-gradient sites within the PSP.
  - The Nevas broiler farm (property 16) is considered to present a moderate risk of contamination associated with waste and general site activities.
  - The existing material recycling facility at 2-50 Meskos Road (property 5). This site presents a moderate to high potential for contamination associated with use of chemicals, fuels, equipment on site and general material stockpiling.
  - Highly localised areas of potential contamination associated with frequently encountered land uses. These include potential contamination hotspots associated with uses such as stockyards and general farm premises. These hotspots are likely to be localised to areas such fuel tanks, chemical storage areas and similar.
  - Highly localised areas of potential contamination associated with stockpiles and general dumped materials. In these locations contamination is likely to be localised to stockpiles themselves and in some instances shallow underlying soils.
  - Diffuse but low level sources of contamination associated with the widespread application of agricultural chemicals on farmland as well as orchards and plant nurseries. These chemicals may include pesticides, herbicides, fungicides and fertilizers.
- A number of off-site sources of contamination have been identified in the vicinity of the PSP site. Based on the nature of the site uses as well as the environmental setting of the site (hydrological, hydrogeological and geological conditions), the greatest risk to the Mt Atkinson and Tarneit Plains PSP areas is presented by the Boral quarry to the east. The remaining properties were deemed to present a very low potential for contamination of the PSP area. The Boral quarry and associated landfill operations are considered to present a low to moderate potential for contamination at the PSP. The landfill site is designated as a future site of state significance for waste and resource recovery and any future expansion of the landfilling activities at the adjacent Boral site (as well as current activities) will be subject to the requirements of EPA publication 788.1 *Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills*. This publication presents a clear statement of environmental performance objectives for each segment of the environment.

11.1.5 Noise and vibration assessment

Proposed setback distances are recommended to ensure future residential development was not subject to inappropriate noise levels from nearby road and railways. Mitigation opportunities are provided which will allow setback distances could be significantly reduced, maximising the potential area where residential properties can be built.

Industrial noise sources in the vicinity of the site include:

- The adjacent Boral Landfill and Quarry
- A power transmission station (this is expected to include transformers)
- Mechanical services noise associated with the Railway Station
- Material Recycling Facility (possible future).

The onus to meet the requirements of SEPP N-1 will be on the industrial facilities. Further study of these sources would allow for a more comprehensive assessment.

Further amenity improvement could be achieved by targeting noise levels lower than those in the regulations & guidelines.

11.1.6 Buffer distances

In addition to the general constraints relating to each of the various disciplines considered in the previous sections, a number of on-site and off-site land uses require the application of buffer zones or separation distances between from sensitive uses. These are discussed below and with approximations of the relevant buffers presented in **Figure 11**.

Nevas Chicken Farm

Broiler farms such as the Nevas Chicken Farm located at the south west corner of the site will require the application of a buffer zone to minimise adverse impacts from emissions (particularly odour) on surrounding sensitive uses (*Victorian Code for Broiler Farms*, 2009). The buffer distance is measured from the edge of the nearest shed to the edge of the nearest edge of a sensitive receptor (such as residential dwelling). Buffers will apply to this property with separation distances likely to range from 250 m to 686 m (depending on the capacity of the farm). The current capacity of the farm (160,000 birds permitted) requires a 418m buffer from any sensitive use land. Given that the area surrounding the Nevas Chicken Farm is zoned for biodiversity (and therefore excluded from future development for sensitive uses) and the land use beyond is proposed for industrial (as per the West Growth Corridor Plan prepared by MPA), the requisite separation distance is not likely to constrain future development of the site.

Boral Quarry

Sensitive Use Buffer

The existing Boral Deer Park Quarry is subject to the requirements of EPA publication 1518 *Recommended Separation Distances for Industrial Residual Air Emissions* (March 2013). This document stipulates that quarrying with blasting activities requires a 500 m buffer from the edge of the extraction limit to the nearest sensitive receptor (this also takes into account potential dust issues). The current extraction limit for the Boral activities extends to 100 m from the property boundary (the additional 100 m representing the requisite amenity buffer). Assuming Hopkins Road is around 20 m wide, the buffer encroaches on the eastern edge of the PSP areas by around 380 m.

A green waste facility separation distance of 2,000 m associated with the composting facility on the Boral site encroaches on the PSP area. This is in place to minimise potential odour impacts on sensitive land uses.

Blasting Buffer

MPA advises that DEDJTR provided advice in relation to the Boral Quarry as part of a basic assessment to inform the corridor plans which recommends a 200 m buffer for commercial/industrial development. MPA proposes referral to Department of Economic Development, Jobs, Transport and Resources within the 200 m buffer.

Additionally, industrial uses such as food preparation, panel beating, paint workshops or other activities sensitive to dust may be not be suitable in the vicinity of the quarry– this may apply to uses such as such as food preparation, panel beating, paint workshops or similar.

Boral Landfill

Current landfilling activities at the Boral site also require a 500 m buffer from buildings and structures (in accordance with EPA publication 788.1 *Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills*- herein referred to as the Landfill BPEM). A buffer of 100 m from surface waters is also required. While the buffer applicable to current landfilling activities at the Boral site does not present any constraints to future sensitive uses at the PSP areas, any future application to extend landfilling activities to more closely mirror the quarry extent may result in the revised landfill buffer encroaching on the PSP. However, the West Growth Corridor Plan prepared by MPA excludes sensitive uses from the eastern extent of the PSP upon which the existing (and potential future) buffers encroach. Proposed land uses in these areas include business and industrial uses.

The Landfill BPEM (Section 5.1.5) discusses buffer distances in relation to landfills. Typically, for a landfill receiving municipal waste, the buffer distance is a minimum of 500 m from buildings or structures. For a landfill receiving solid inert waste the distance is 200 m from buildings or structures. Table 11.1 illustrates the buffer distances required in relation to the type of waste received at the landfill.

Table 11.1 : Buffer distances for landfill gas migration, safety and amenity impacts (Adapted from Landfill BPEM Section 5.1.5)

Type of landfill site	Buffer Distance
Municipal waste (putrescible)	500 metres from buildings and structures 100 metres from surface waters
Solid inert waste	200 metres from buildings and structures 100 metres from surface waters

As indicated above, the green waste facility separation distance of 2,000 m associated with the composting facility on the Boral site encroaches on the PSP area (*Designing, constructing and operating composting facilities* – EPA Victoria March 2015).

Other

The proposed concrete batching plant at 2-50 Meskos Road is still subject to Council approval. If approved, a buffer of 100m between the batching plant and the nearest sensitive land uses would be required. This is in accordance with EPA publication 1518 *Recommended Separation Distances for Industrial Residual Air Emissions* (March 2013). Based on the application submitted, the requisite 100m buffer would not encroach on the proposed residential land uses in the West Growth Corridor Plan provided by MPA. The site is also intended for general materials recovery and recycling. Buffer distances for such uses are assessed on a case-by-case basis.

In addition to the above buffer zones, a pipeline measurement length of 571m between the APA high pressure gas main and future sensitive land uses will also be required. Further land use implications are specified in AS 2885.1-2012 Pipelines - Gas and liquid petroleum-Design and construction specifies (Figure 11.1).

4.3 CLASSIFICATION OF LOCATIONS

4.3.1 General

The pipeline route shall be allocated location classes that reflect threats to pipeline integrity, and risks to people, property and the environment. The primary location class shall reflect the population density. Where appropriate, one or more secondary location classes reflecting special land uses shall be allocated to locations along the route.

For a new pipeline, the location class analysis shall be based on the land use permitted in gazetted land planning instruments. A detailed investigation shall also be undertaken to identify all reasonably anticipated changes in land use along the route. Where the limits of the anticipated land use change can reasonably be determined, the pipeline location classes shall be based on the anticipated land use.

Location class analysis of an existing pipeline shall take full account of current land use and authorized developments along the pipeline route, but need not take full account of land use which is planned, but not implemented.

NOTE: Consideration of population density includes both residents and others who spend prolonged periods in the vicinity of the pipeline as a result of their employment, recreation or any other reason.

4.3.2 Measurement length

The measurement length is the radius of the 4.7 kW/m^2 radiation contour for a full bore rupture, calculated in accordance with Clause 4.10.

NOTE: For a pipeline transporting hydrocarbon liquid or heavier than air gases, the measurement distance may be variable. For these fluids the 4.7 kW/m^2 radiation contour may follow topographic features such as streams or drains, as the spilled fluid flows away under the influence of gravity and the variable topography.

4.3.3 Location classification

It is the intent of this Standard that the location class is selected from an analysis of the predominant land use in the broad area traversed by the pipeline. The following requirements shall be followed in determining the location class:

(a) Where land within the measurement length on either side of the pipeline is consistent with a more demanding location class than the predominant land use, the more demanding location class shall be applied.

(b) Where a location class changes, the more severe location class shall extend into the less severe location class by at least the measurement length.

(c) For a new pipeline, the area assessed in determining the location classification shall consider the general land use beyond the measurement length for the potential for changes in land use.

(d) For an existing pipeline, the area assessed in determining the location classification as part of a periodic review of the pipeline may restrict the assessment to only land within the measurement length on each side of the pipeline.

NOTE: A GIS with quality aerial photography and themes showing the radiation contour for full bore rupture, cadastre, and land planning zones is a valuable tool in determining the location class.

4.3.4 Primary location class

The pipeline route shall be classified into one of the primary location classes R1, R2, T1 and T2 as defined below.

Land through which the pipeline passes shall be classified as follows:

(a) *Rural (R1)* Land that is unused, undeveloped or is used for rural activities such as grazing, agriculture and horticulture. Rural applies where the population is distributed in isolated dwellings. Rural includes areas of land with public infrastructure serving the rural use; roads, railways, canals, utility easements.

(b) *Rural Residential (R2)* Land that is occupied by single residence blocks typically in the range 1 ha to 5 ha or is defined in a local land planning instrument as rural residential or its equivalent. Land used for other purposes but with similar population density shall be assigned rural residential location class. Rural residential includes areas of land with public infrastructure serving the rural residential use; roads, railways, canals, utility easements.

NOTE: In rural residential societal risk (the risk of multiple fatalities associated with a loss of containment) is not a dominant design consideration.

(c) *Residential (T1)* Land that is developed for community living. Residential applies where multiple dwellings exist in proximity to each other and dwellings are served by common public utilities. Residential includes areas of land with public infrastructure serving the residential use; roads, railways, recreational areas, camping grounds/caravan parks, suburban parks, small strip shopping centres. Residential land use may include isolated higher density areas provided they are not more than 10% of the land use. Land used for other purposes but with similar population density shall be assigned Residential location class.

(d) *High Density (T2)* Land that is developed for high density community use. High Density applies where multi storey development predominates or where large numbers of people congregate in the normal use of the area. High density includes areas of public infrastructure serving the high density use; roads, railways, major sporting and cultural facilities and land use areas of major commercial developments; cities, town centres, shopping malls, hotels and motels.

NOTE: In residential and high density areas the societal risk associated with loss of containment is a dominant consideration.

In rural and rural residential areas, consideration shall be given to whether a higher location class may be necessary at any location where a large number of people may be present for a limited period.

NOTE: Examples include roads subject to heavy traffic congestion and sports fields.

4.3.5 Secondary location class

Location classes S, CIC, I, HI and W are subclasses that may occur in any primary location class. The affected length is generally less than the length of the primary location class.

Where the land use through which the pipeline route passes is identified as S, CIC, I, HI or W the requirements of the primary location class (R1, R2, T1, T2) shall be applied together with additional consideration and additional requirements established for the S, CIC, I or W location class, as follows:

(a) *Sensitive use (S)* The sensitive use location class identifies land where the consequences of a failure may be increased because it is developed for use by sectors of the community who may be unable to protect themselves from the consequences of a pipeline failure. Sensitive uses are defined in some jurisdictions, but include schools, hospitals, aged care facilities and prisons. Sensitive use location class shall be assigned to any portion of pipeline where there is a sensitive development within a measurement length. It shall also include locations of high environmental sensitivity to pipeline failure.

The design requirements for *high density* shall apply.

NOTE: In sensitive use areas, the societal risk associated with loss of containment is a dominant consideration.

(b) *Industrial (I)* The Industrial location class identifies land that poses a different range of threats because it is developed for manufacturing, processing, maintenance, storage or similar activities or is defined in a local land planning instrument as intended for light or general industrial use. Industrial applies where development for factories, warehouses, retail sales of vehicles and plant predominates. Industrial includes areas of land with public infrastructure serving the industrial use. Industrial location class shall be assigned to any portion of pipeline where the immediately adjoining land use is industrial. The design requirements for *residential* shall apply.

NOTE: In industrial use areas the dominant consideration may be the threats associated with the land use or the societal risk associated with the loss of containment.

Figure 11.1 : Excerpt from AS 2885.1-2012 Pipelines - Gas and liquid petroleum-Design and construction, Section 4.3

11.2 Recommendations

Jacobs understands that the proposed future use of the PSP areas is broad ranging urban development likely to include sensitive uses such as residential and community facilities in addition to open space, retail and a range of business uses such as offices, light industrial/commercial and manufacturing. Some proposed land uses include:

- The extension of the Metropolitan Ring Road to form the Outer Metropolitan Ring transport corridor, comprising road and rail transport provisions (responsible party is VicRoads)
- A concrete batching plant and material recycling facility is proposed by a private operator along the northern boundary of the Mt. Atkinson PSP area.

While specific future land uses within the PSP areas are yet to be confirmed, a West Growth Corridor Plan has been developed by MPA. This assessment has been completed based on this West Growth Corridor Plan.

The following further works are recommended, including recommended timings:

1) It is recommended that an Environmental Audit Overlay (EAO) be applied to the two service station sites located to the north of the Mt Atkinson PSP area. The presence of USTs at these properties present the potential for soil and groundwater contamination due to potential leakage of fuels and oils from this infrastructure. A Statutory Environmental Audit under Section 53, part IXD of the Environment Protection Act, 1970 would be required prior to redevelopment of these sites to a more sensitive land use and the application of an EAO is considered an appropriate mechanism for this. It is not expected that these land uses would change in the near future. *Timing: It is recommended the EAOs be applied to the nominated sites as part of the planning scheme amendment and be resolved as part of the PSP.*

2) It is recommended that in addition to the application of an EAO for the service station located at the north-west corner of the Mt Atkinson PSP areas, a more detailed desk based assessment should also be undertaken in the short term along with limited groundwater and soil sampling. This would clarify the extent (if any) to which contaminants of concern are migrating off-site and potentially impacting on adjacent properties. *Timing: It is recommended that this task be undertaken in the near future in order to clarify any potential constraints to future development and be resolved as part of the PSP .*

3) Further limited soil and groundwater assessment should be undertaken at the Nevas Chicken farm (property 16) prior to any redevelopment of this property. Additionally, odours (if any) emanating from this property could potentially impact upon future development in the vicinity of the site. Buffers will apply to this property with separation distances likely to range from 250m to 686m (depending on the capacity of the farm). The current capacity of the farm (160,000 birds permitted) requires a 418 m buffer from any sensitive use land. If this buffer distance encroaches on future residential use, the MPA can change residential land use to a less sensitive use or carry out an odour assessment. *Timing: It is recommended that further limited soil and groundwater investigations be undertaken at the time of transfer of the land to the Department of Environment and Primary Industries in accordance with the Biodiversity Conservation Strategy for Melbourne's Growth Corridors.*

4) Limited soil and groundwater assessment is recommended at the existing material recycling facility at 2-50 Meskos Road. The existing recycling facility is located in an area that is proposed for future industrial use (as specified in the West Growth Corridor Plan provided by MPA). While an application is currently pending to utilise this parcel of land for material recycling, concrete batching and for landscape gardening supplies, the area currently being used for material recycling does not fall within the proposed location of the above activities. Instead, the application states that the existing material recycling facility will be closed down and replaced with the new facility. Given the nature of the work currently taking place at the existing recycling facility, Jacobs recommends that a further limited soil and groundwater assessment be undertaken to identify whether a formal audit may be required in order to allow future development of this part of the site for industrial use. *Timing: It is recommended that this task be undertaken to coincide with the cessation or scaling down of current site operations or at time of any future development proposal*

5) For properties classified as Low-Moderate where a property inspection and/or an interview has not been undertaken, Jacobs recommend that this be undertaken on a property-by-property basis prior to development, to determine the need for any further intrusive assessment works. Timing: It is recommended that these works be undertaken at the time of redevelopment of the site (if intended).

6) Further drilling and collection of soil samples for the purposes of assessing the geotechnical soil properties for building foundation and road design. *Timing: This task should be undertaken on a parcel-by-parcel basis during future development as part of the building permit application process*

7) Drilling and installation of groundwater monitoring wells to determine the depth to groundwater as well as aquifer hydraulics testing to determine aquifer properties. This will be applicable in terms of assessing the risk of groundwater inflow into future excavations for construction purposes. There is no formal driver for this, it is recommended to understand this risk*. Timing: It is recommended that this task be undertaken to coincide with the cessation or scaling down of current activities in the PSP areas and prior to the commencement of the proposed development and construction works*

8) Excavation and removal of USTs, soil remediation and tank pit validation if USTs are found on properties. *Timing: This task should be undertaken on a property-by-property basis during future site development*

9) Removal of other potentially contaminating infrastructure (e.g. septic tanks and above ground storage tanks) followed by soil validation sampling. *Timing: This task should be undertaken on a property-by-property basis during future site development*

10) Classification and appropriate removal (if required) of various stockpiles and dumped materials observed at numerous sites across the PSP areas. This would also include subsequent validation of the surface soils following removal. It is noted that sampling of some of these stockpiles may indicate that the material is suitable for re-use as part of future development, therefore, removal may not be required in all instances. *Timing: This task should be undertaken on a property-by-property basis during future development.*

11) Council may wish to consider measurements of existing noise levels on the PSP areas. This may include measurement in the vicinity of the existing rail line, roads and industrial sites. Jacobs considers an assessment of the existing background noise levels to be best practice to gain an understanding of the local environment and possible impacts on planned land uses. *Timing: It is recommended that this is undertaken in the near future to identify the extent of impact of these sources*

12) Better understanding of the nearby power transmission station followed by a detailed prediction of the noise impact of future noise and vibration sources. AusNet has advised of the inclusion of an internal buffer in the design and layout of the Truganina Terminal Station. No definite size of the buffer was provided, however AusNet's initial advice states that 'the site is of sufficient size to accommodate the buffer zone and will be allowed for' prior to any divestment of land. *Timing: It is recommended that this is undertaken in the near future to identify the extent of impact of these sources*

13) The PSP should consider reasonable land use responses to future rail noise from future rail traffic on the rail line proposed between the proposed Outer Metropolitan Ring Road.

14) Assessment of potential soil contamination issues associated with materials along the rail alignment. Timing: *It is recommended that this is undertaken in conjunction with any upgrades or expansions of the rail corridor. No assessment is considered necessary at this stage due to continuation of use.*

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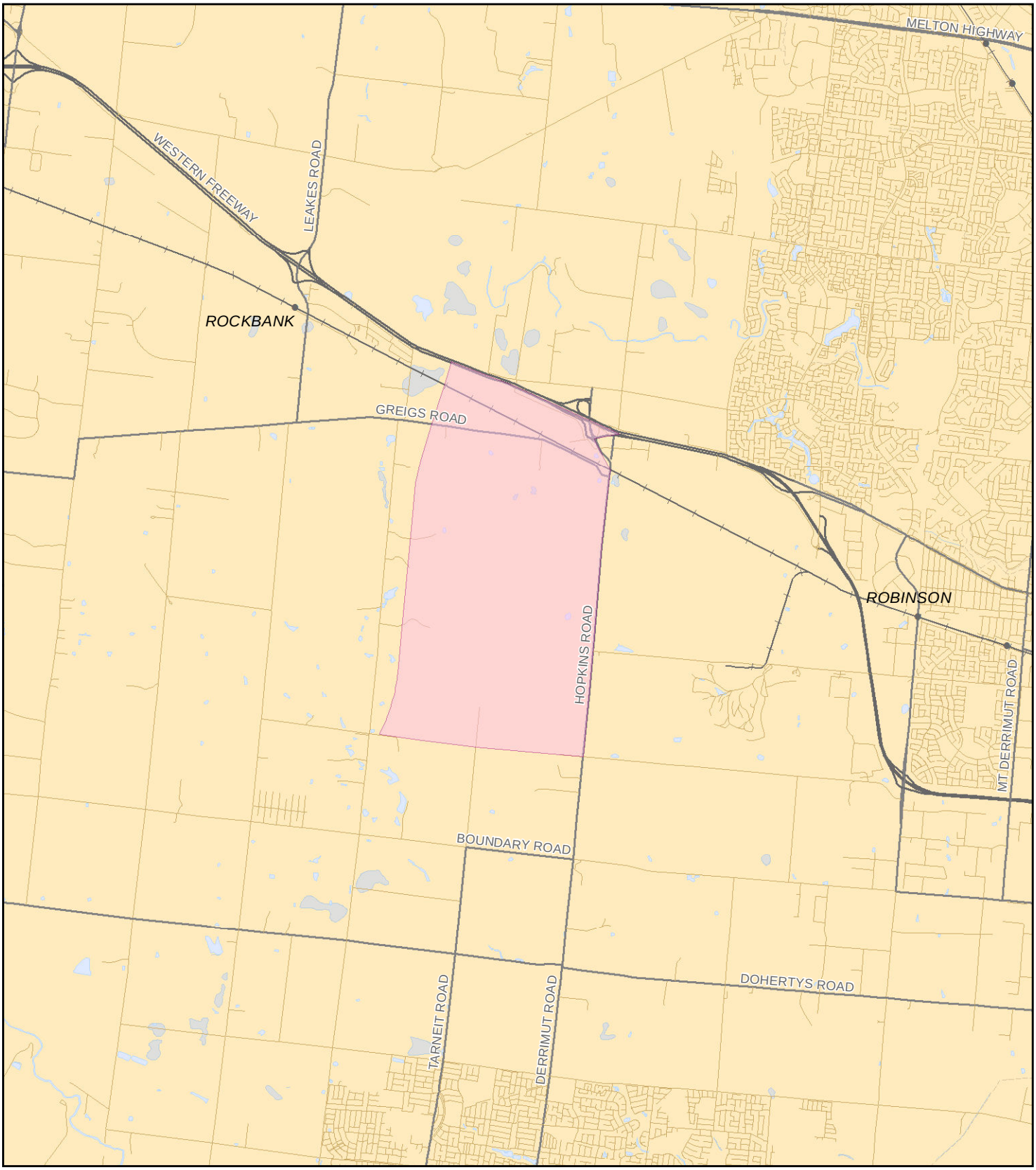
Figures

[Figure 1 - Site Location Plan]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Walking/Cycling Track
- Railway
- Railway Station

0 2,000
Meters

[GDA 94 | MGA Zone 55]

1:80,000

DATA SOURCES
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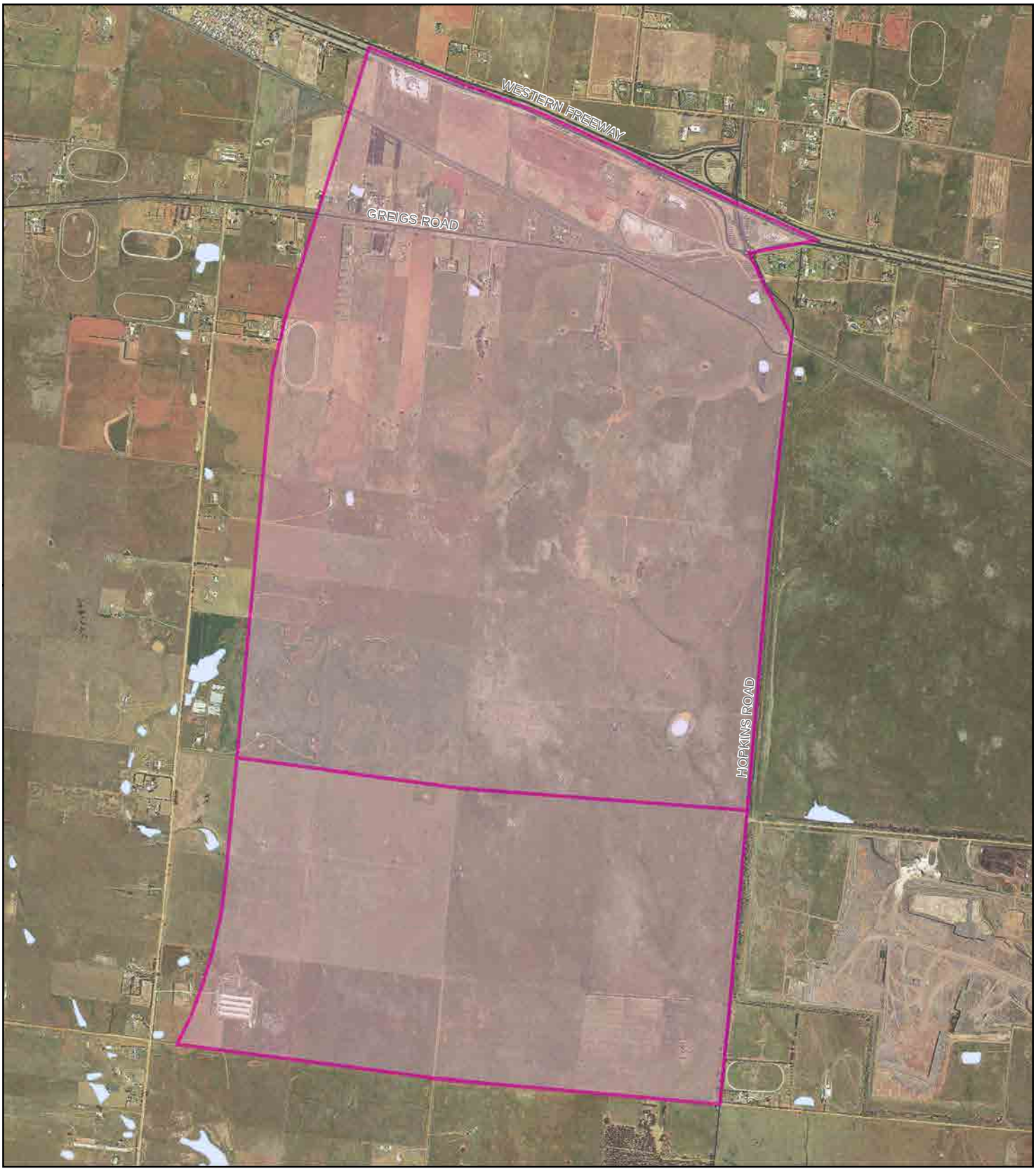
[Figure 2 - Site Layout Plan]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Walking/Cycling Track
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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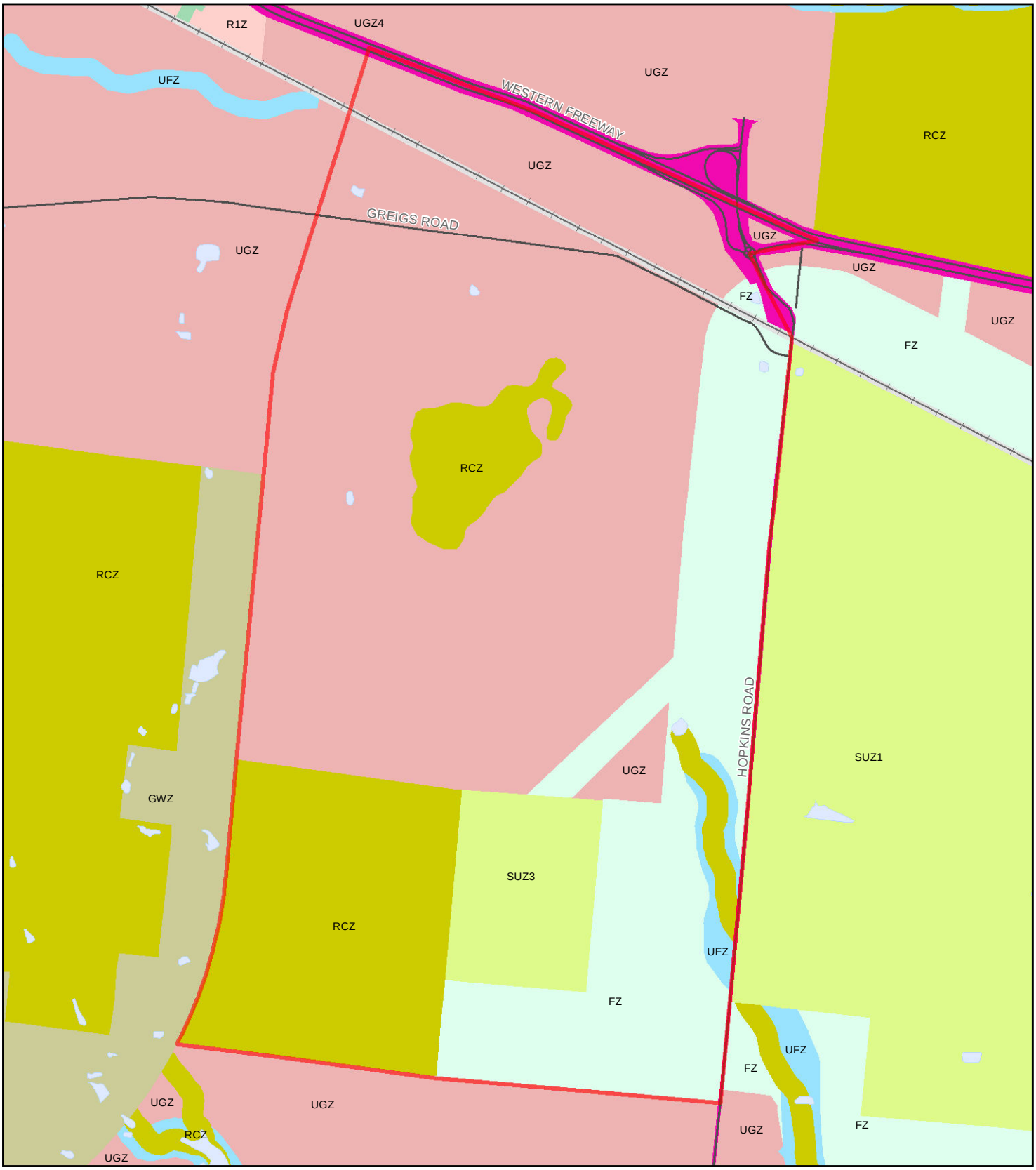
[Figure 3 - Planning Zones]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Planning Zones
- FZ - Farming
- GWZ - Green Wedge
- PPRZ - Public Park and Recreation Zone
- PUZ4 - Public Use Zone
- R1Z - Residential 1 Zone
- RCZ - Rural Conservation
- RDZ1 - Road Zone Category 1
- SUZ - Special Use
- UFZ - Urban Floodway
- UGZ - Urban Growth

Precinct Structure Plan Boundary

Hydrology
- Watercourse
- Waterbody

Infrastructure
- Freeway
- Major Roads
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

DATA SOURCES
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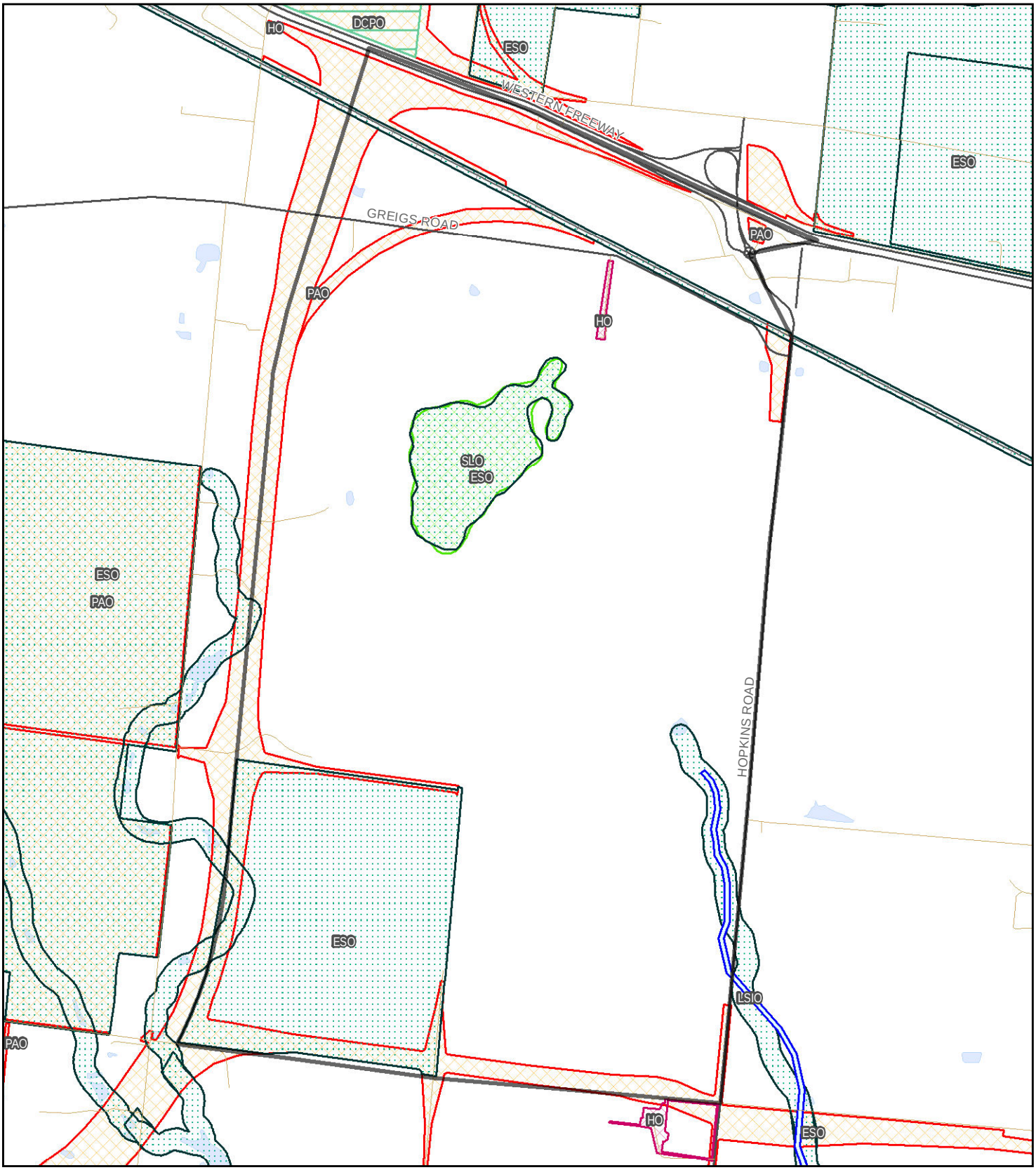
[Figure 4 - Planning Overlay]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Precinct Structure Plan Boundary

Planning Zone

- ESO - ENVIRONMENTAL SIGNIFICANCE
- HO - HERITAGE
- LSIO - LAND SUBJECT TO INUNDATION
- PAO - PUBLIC ACQUISITION
- SLO - SIGNIFICANT LANDSCAPE
- DCPO - DEVELOPMENT CONTRIBUTIONS PLAN

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Walking/Cycling Track
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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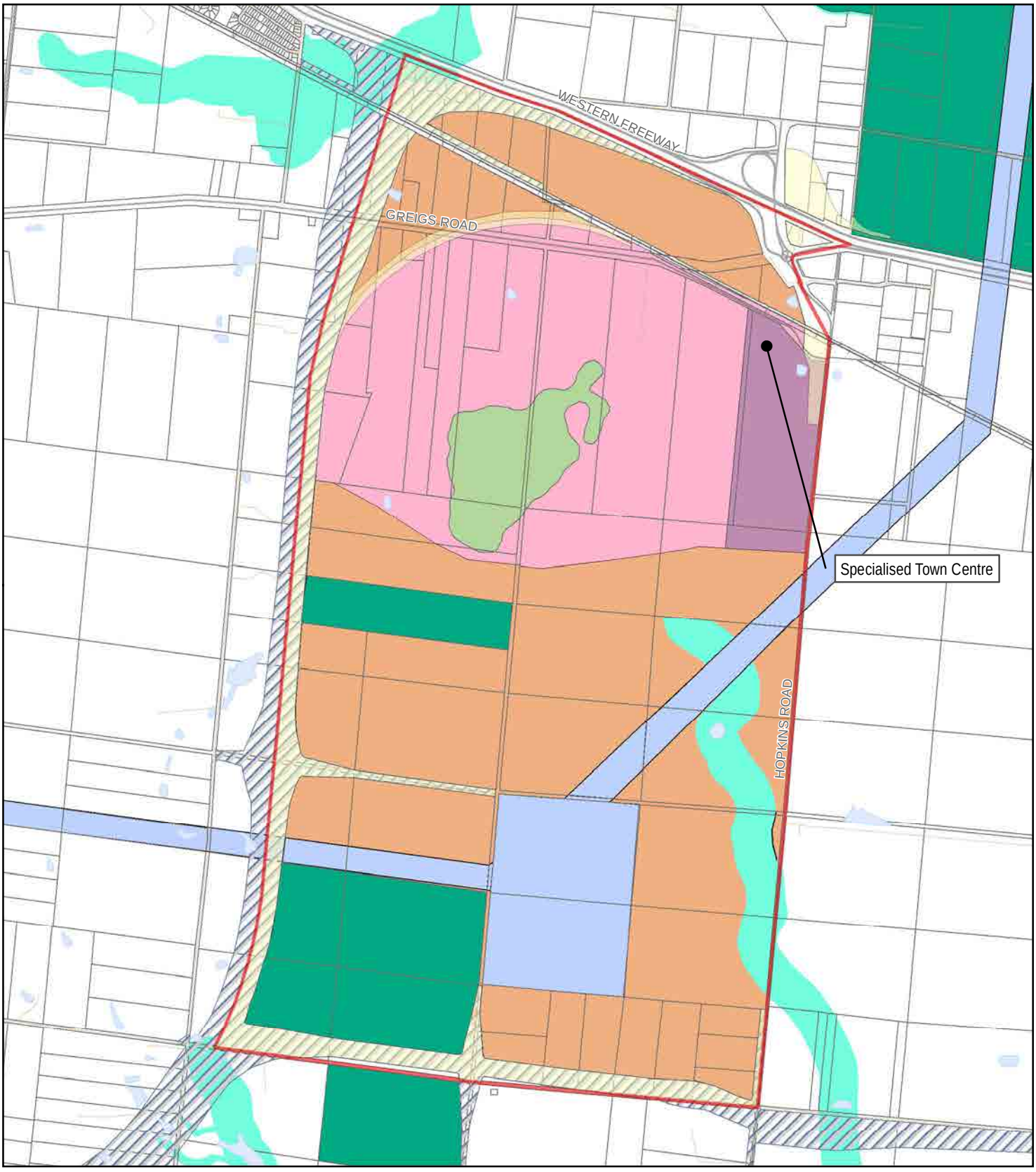
[Figure 5 - West Growth Corridor Plan]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary
- Cadastre
- Business
- Industrial
- Business with Residential
- PAO (MPA)
- OMR (MPA)
- Waterway
- Biodiversity
- Landscape Values
- Utilities

Hydrology
- Watercourse
- Waterbody

Infrastructure
- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

JACOBS

MPA

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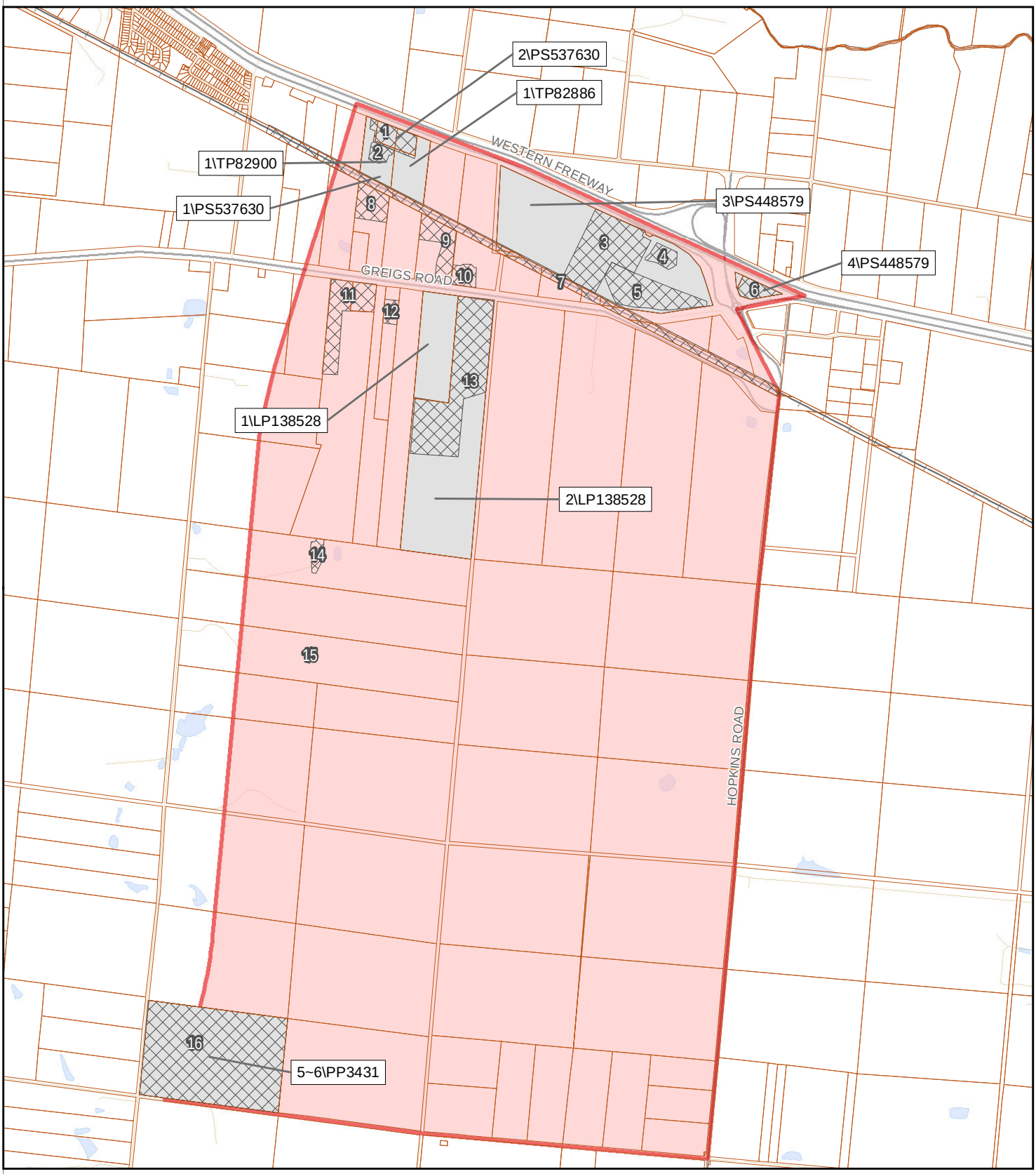
[Figure 6 - Property Boundaries]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Qualitative Risk Site
- Title Search Conducted
- Precinct Structure Plan Boundary
- Cadastre
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters
[GDA 94 | MGA Zone 55]
1:30,000

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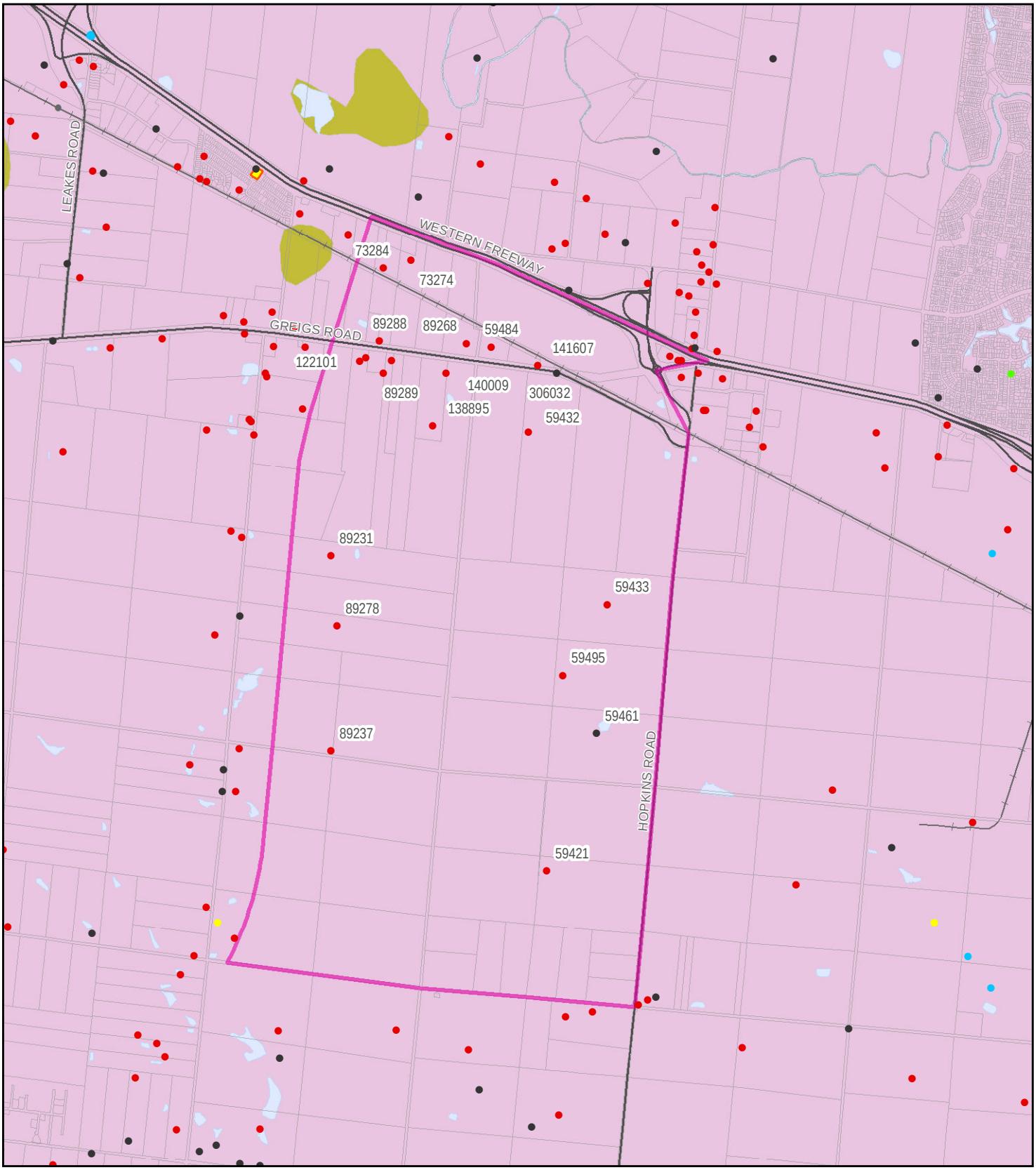
[Figure 7a - Site Environmental Setting - Geology, Groundwater Bores and Audit Sites]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary
- Environmental Audit Site
- Cadastre

Geology

- Newer Volcanic Group - basalt flows
- Swamp and lake deposits (Qm1)

Bore (VVG)

- Unknown
- Domestic and Stock
- Industrial
- Irrigation
- Observation

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Railway
- Railway Station

0 500
Meters

GDA 94
MGA Zone 55

1:40,000

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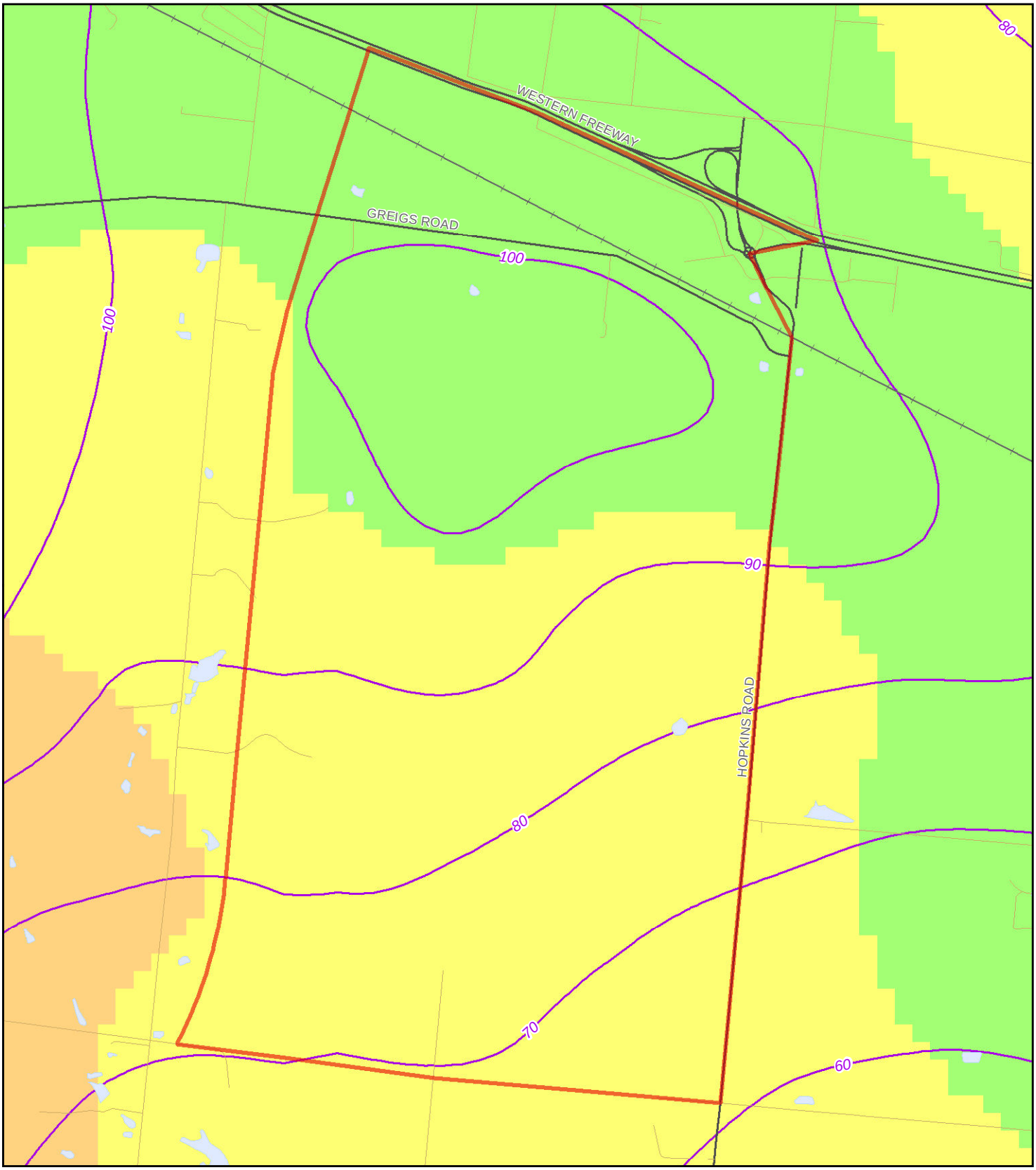
[Figure 7b - Environmental Setting - Salinity]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary
- Elevation (mAHD)

Salinity (TDS mg/L)

- < 1,000
- 1,000 - 3,500
- 3,500 - 7,000
- 7,000 - 13,000
- 13,000 - 35,000

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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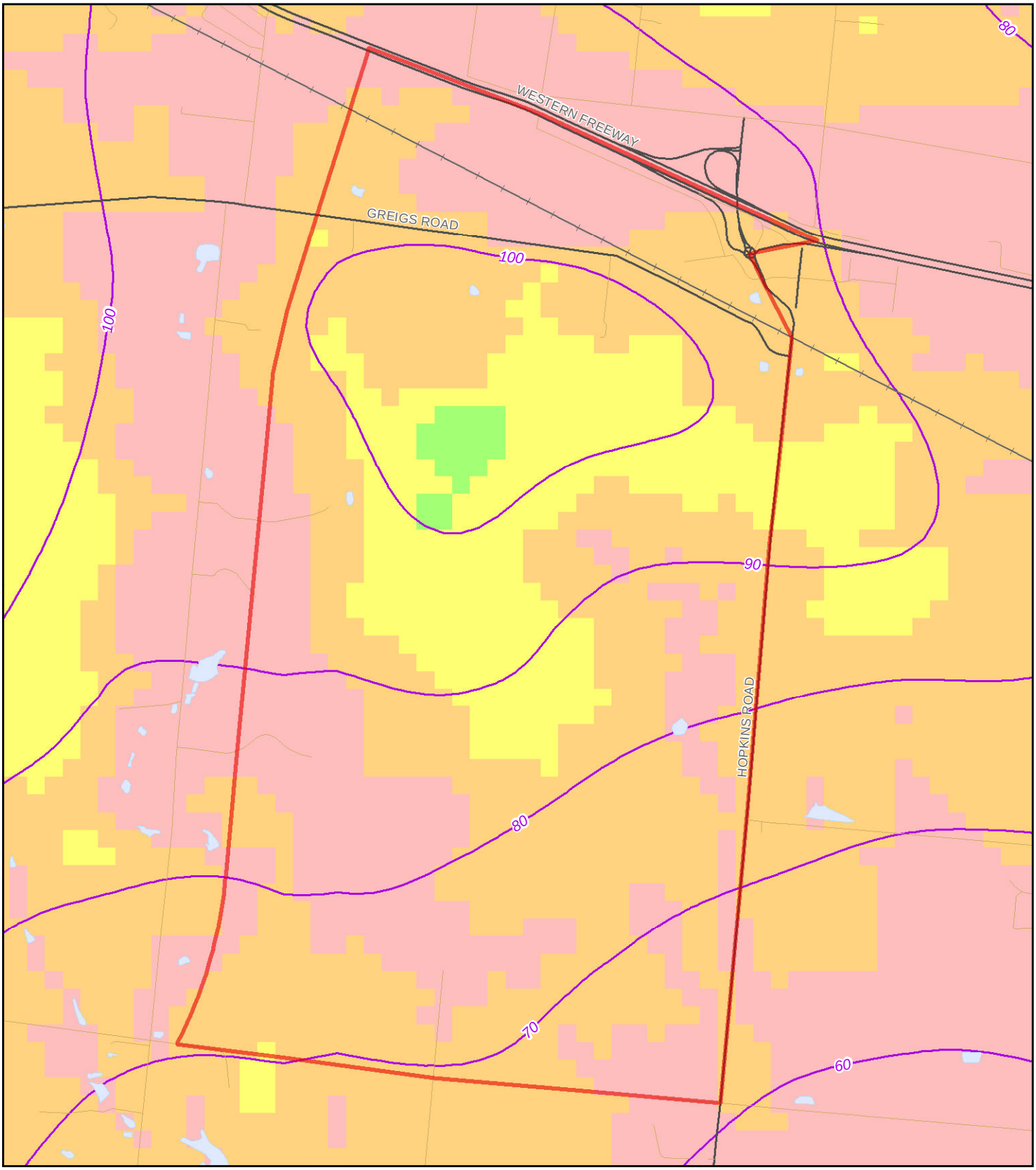
[Figure 7c - Depth to Watertable]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary
- Elevation (mAHD)

Depth to Watertable (m)

- < 5
- 5 - 10
- 10 - 20
- 20 - 50
- 50 - 100

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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[Figure 8A - 1962 Aerial Photography]

[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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[Figure 8B - 1970 Aerial Photography]

[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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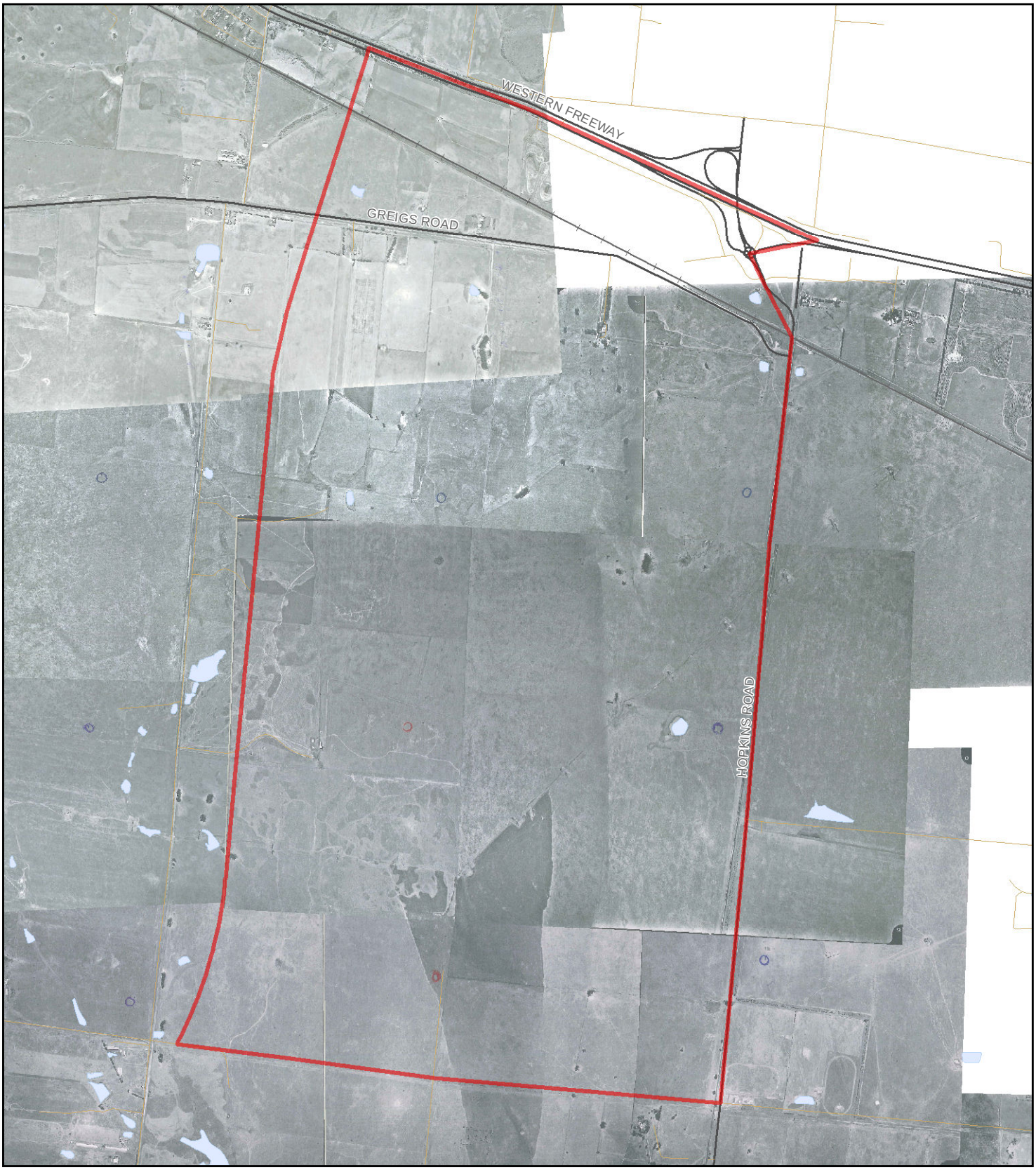
[Figure 8C - 1970 Aerial Photography]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Precinct Structure Plan Boundary

Hydrology

Watercourse

Waterbody

Infrastructure

Freeway

Major Roads

Local Road

Railway

Railway Station

0 500

Meters

[GDA 94 | MGA Zone 55]

1:30,000

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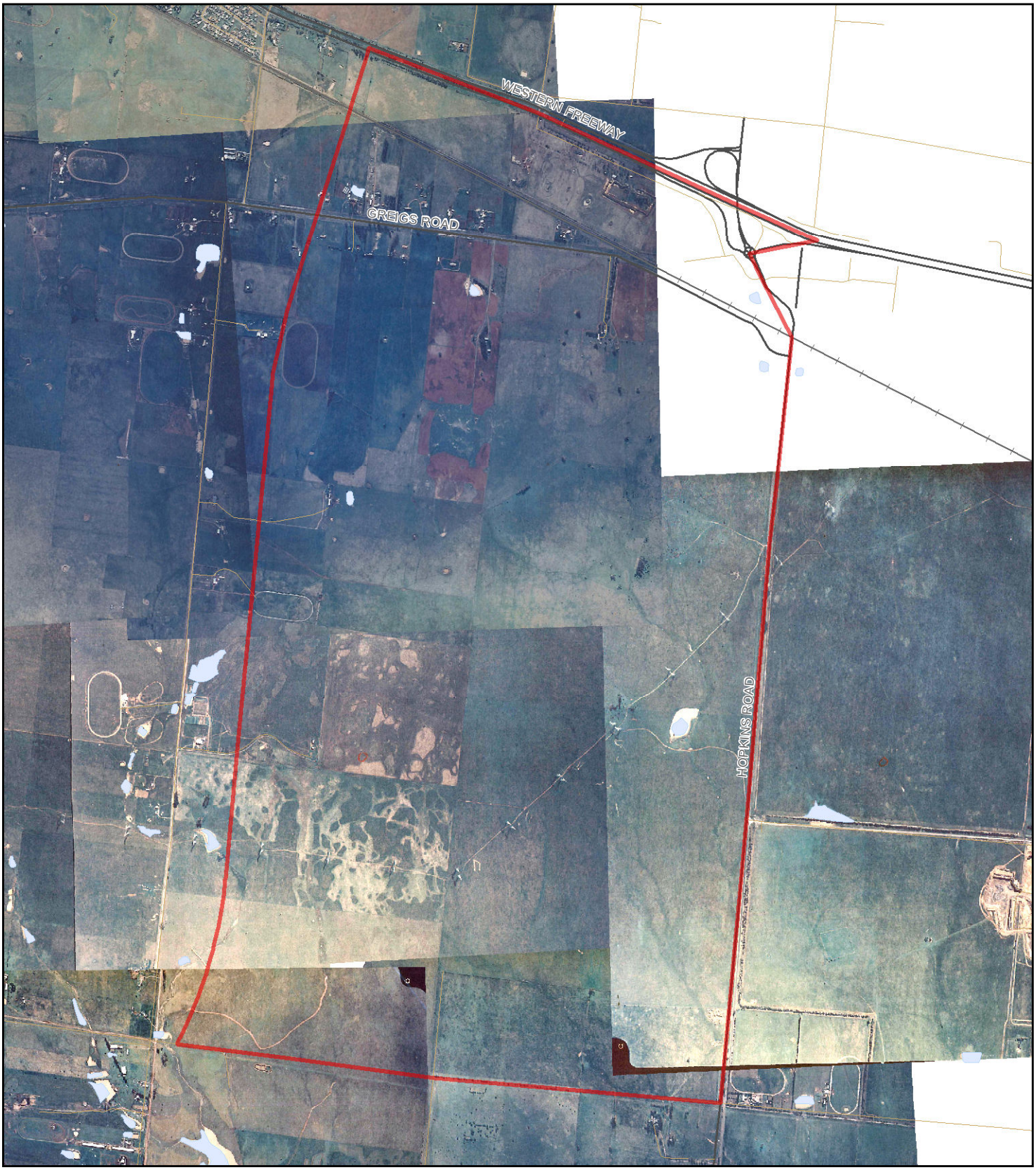
[Figure 8D - 1991 Aerial Photography]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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[Figure 8E - 2009 Aerial Photography]

[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Precinct Structure Plan Boundary

Hydrology

Watercourse

Waterbody

Infrastructure

Freeway

Major Roads

Local Road

Railway

Railway Station

0 500

Meters

[GDA 94 | MGA Zone 55]

1:30,000

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[Figure 8F - 2013 Aerial Photography]

[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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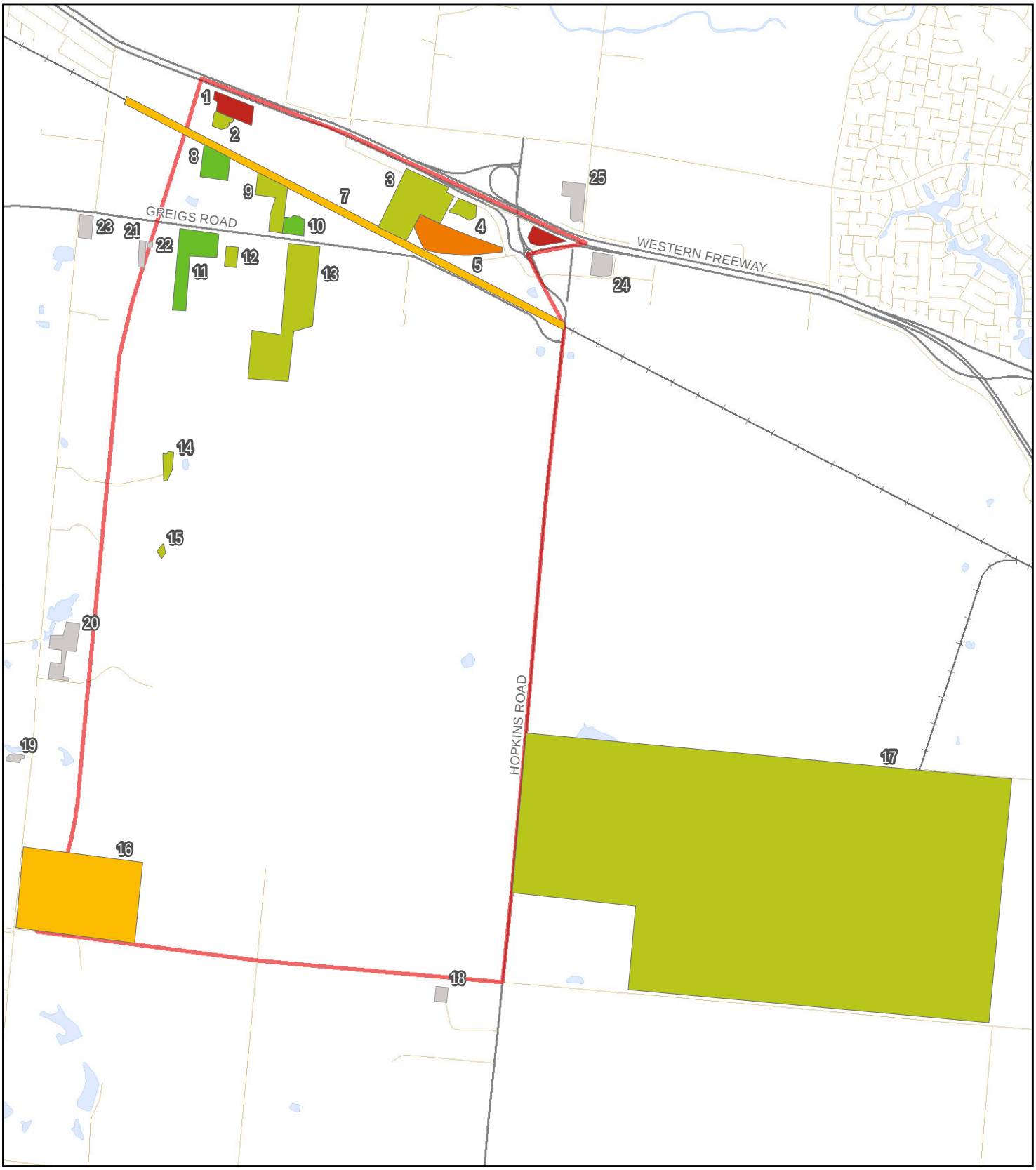
[Figure 9 - Qualitative Risk Assessment Overview]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Qualitative Risk Rating
- H
- M - H
- M
- L - M
- L
- VL
- Precinct Structure Plan Boundary

Hydrology
- Watercourse
- Waterbody

Infrastructure
- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:35,000

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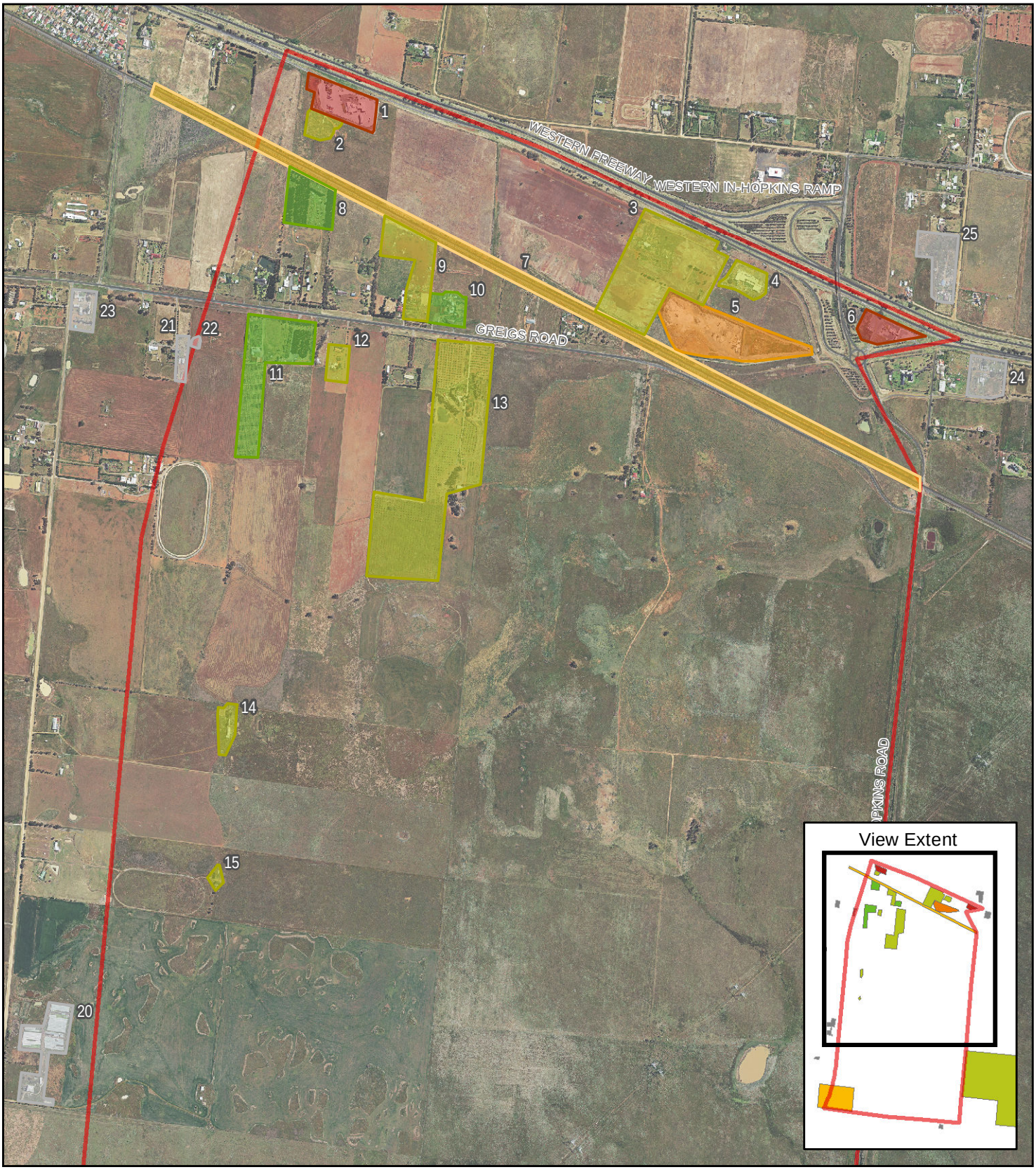
[Figure 10a - Qualitative Risk Assessment (North)]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Qualitative Risk Rating

- H
- M - H
- M
- L - M
- L
- VL

- Precinct Structure Plan Boundary

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:20,000

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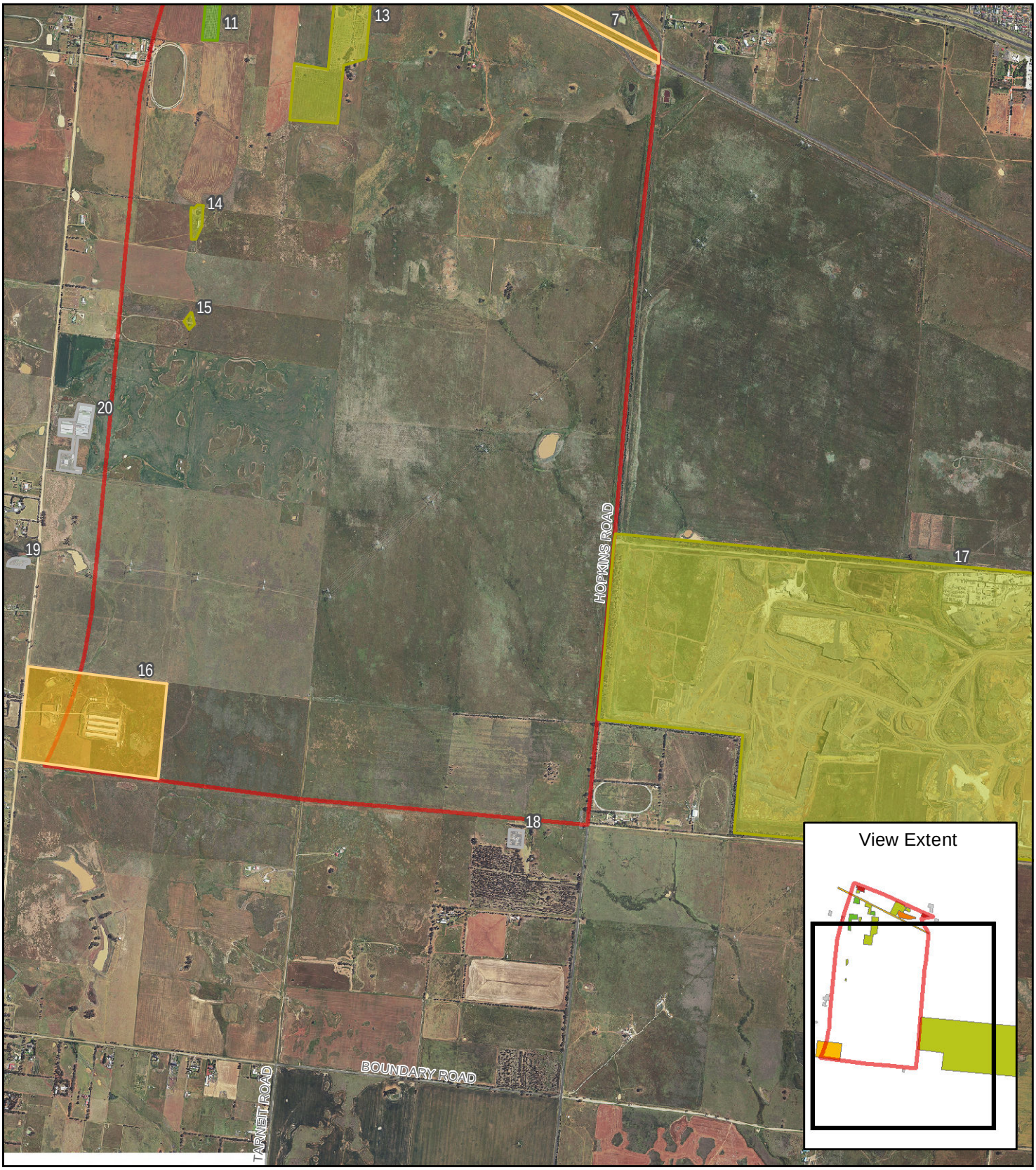
[Figure 10b - Qualitative Risk Assessment (South)]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

Precinct Structure Plan Boundary

Qualitative Risk Rating

- H
- M - H
- M
- L - M
- L
- VL

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500

Meters

[GDA 94 | MGA Zone 55]

1:30,000

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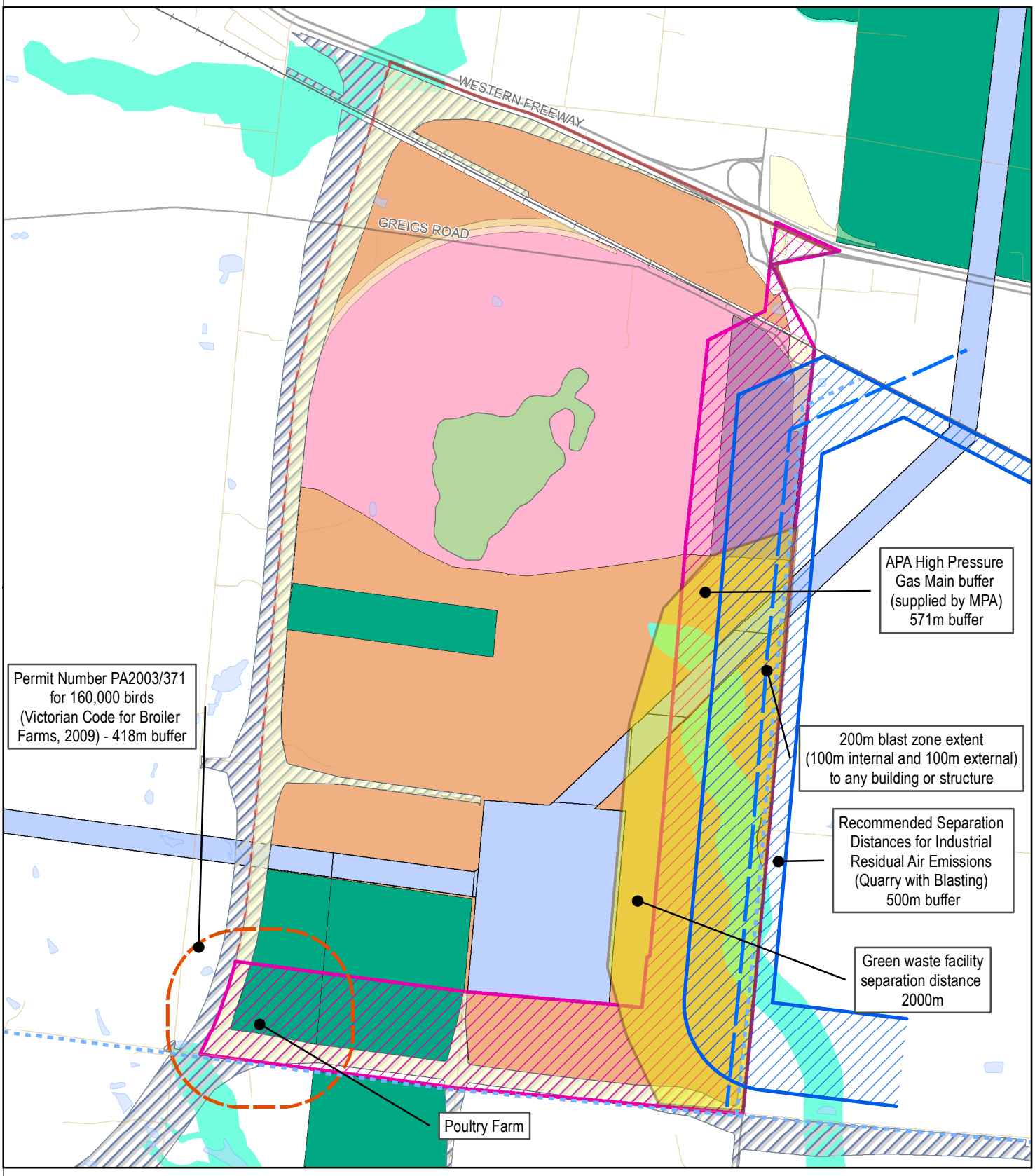
[Figure 11 - Buffers Map]



[Mt Atkinson & Tarneit Plains - Land Capability Assessment | VW07592]

LEGEND

- Precinct Structure Plan Boundary
- Business
- Industrial
- Residential
- PAO (MPA)
- OMR (MPA)
- Waterway
- Utilities
- Green Waste Facility Separation
- Biodiversity
- Landscape Values
- Amendments Gas Pipelines
- Quarry Blast Buffer

Mitigation buffers

- Gas Main
- Quarry

Hydrology

- Watercourse
- Waterbody

Infrastructure

- Freeway
- Major Roads
- Local Road
- Railway
- Railway Station

0 500
Meters

[GDA 94 | MGA Zone 55]

1:30,000

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Appendix A. SEPP information

A.1 Land SEPP

A.1.1 Land use categories

The following land use categories are defined in Clause 9(1) of the Land SEPP:

- *"Sensitive uses: consisting of land used for residential use, a child care centre, pre-school, or primary school. A sensitive use may occur in an area of high density)where development makes maximum use of available land space and there is minimal access to soil) or in Other low density areas (where there is generally substantial access to soil)";*
- *"Agricultural: consisting of rural areas involved in agricultural or horticultural practices"*
- *"Parks and Gardens: consisting of parks and forested area as defined in any Victorian or Commonwealth legislation or subordinate legislation, or any regions designated by the Authority or Department of Natural Resources and Environment"*
- *"Recreation / Open Space: consisting of general open space and public recreation areas";*
- *"Commercial: consisting of a range of commercial and business activities"; and*
- *"Industrial: consisting of utilities and a range of industrial activities".*

We understand that the end use of the site is yet to be determined and may comprise one or more of the above land uses.

A.1.2 Beneficial uses of land to be protected

The Land SEPP (2002) states that the following beneficial uses must be protected for the following land uses:

Table A.1 : Beneficial uses of land

Land Use/ Beneficial Use	Parks & Reserves	Agricultural	Sensitive Use		Recreation / Open Space	Commercial	Industrial
			High Density	*Other*			
Maintenance of Ecosystems							
• *Natural Ecosystems*	✓						
• *Modified Ecosystems*	✓	✓		✓	✓		
• *Highly Modified Ecosystems*		✓	✓	✓	✓	✓	✓
Human Health	✓	✓	✓	✓	✓	✓	✓
Buildings and Structures	✓	✓	✓	✓	✓	✓	✓
Aesthetics	✓		✓	✓	✓	✓	
Production of food, flora & fibre	✓	✓		✓			

A.2 Groundwater SEPP

A.2.1 Beneficial uses of groundwater to be protected

Table A.2 : Beneficial uses of groundwater

	Segment (TDS)				
Segment / Beneficial Use	**Segment A1 (0-500 mg//L)**	**Segment A2 (501-1000 mg//L)**	**Segment B (1001-3500 mg//L)**	**Segment C (3501-13000 mg/L)**	**Segment D (> 13,000 mg/L)**
Maintenance of Ecosystems	✓	✓	✓	✓	✓
Potable Water Supply					
a) Desirable	✓				
b) Acceptable		✓			
Potable Mineral Water Supply	✓	✓	✓		
Agricultural, parks & gardens	✓	✓	✓		
Stock Watering	✓	✓	✓	✓	
Industrial Water Use	✓	✓	✓	✓	✓
Primary Contact Recreation	✓	✓	✓	✓	
Buildings and Structures	✓	✓	✓	✓	✓

Appendix B. Certificate of title information

Appendix B has not been included in this version of the Land Capability Assessment.

Appendix C. Priority sites register

PRIORITY SITES REGISTER

Information as at 31 May 2014

BACKGROUND

EPA has a key responsibility in protecting beneficial uses of land. Many of these uses are regulated or controlled through a range of measures to prevent contamination of land and groundwater. Land contaminated by former waste disposal, industrial and similar activities is frequently discovered during changes to land use - for example, from industrial to residential use. In most cases these can be managed at the time that the change of land use occurs. Some sites however, present a potential risk to human health or to the environment and must be dealt with as a priority. Such sites are typically subject to clean-up and/or management under EPA directions.

WHAT ARE PRIORITY SITES?

Priority Sites are sites for which EPA has issued a Clean Up Notice pursuant to section 62A, or a Pollution Abatement Notice pursuant to section 31A or 31B (relevant to land and/or groundwater) of the Environment Protection Act 1970. Typically these are sites where pollution of land and/or groundwater presents a potential risk to human health or to the environment. The condition of these sites is not compatible with the current or approved use of the site without active management to reduce the risk to human health and the environment. Such management can include clean up, monitoring and/or institutional controls.

The Priority Sites Register does not list sites managed by voluntary agreements or sites subject to management by planning controls (e.g. sites managed in accordance with a section 173 agreement under the Planning and Environment Act 1987). Land purchasers should be aware of these limitations and make their own enquiries. A site is listed on the Priority Sites Register when EPA issues a Clean Up Notice or a Pollution Abatement Notice (relevant to land and/or groundwater). A notice is a means by which EPA formalises requirements to manage pollution. Sites are removed from the Priority Sites Register once all conditions of a Notice have been complied with. This is formalised through a Notice of Revocation pursuant to section 60B of the Act.

FURTHER INFORMATION

Additional information is available from:
EPA Information Centre
200 Victoria Street
Carlton VIC 3053
1300 EPA VIC (1300 372 842)
www.epa.vic.gov.au

Municipality	Suburb	Address	Issue	Notice Number
Alpine Shire Council	POREPUNKAH	Part There Of Allot. 8 Sec. 8 Parish Of Porepunkah	Former Landfill. Requires ongoing management	0090003842
Alpine Shire Council	POREPUNKAH	Part There Of Allot. 8 Sec. 8 Parish Of Porepunkah	Former Landfill. Requires ongoing management	0090003843
Ararat Rural City Council	ARARAT	26 Grano ST	Former Industrial Site. Requires assessment and/or clean up	0090001739
Ararat Rural City Council	ARARAT	Mclellan ST	Railway yard. Requires assessment and/or clean up	0090001744
Ballarat City Council	BALLARAT	1003 Humffray ST	Former Industrial Site. Requires assessment and/or clean up	0090001857
Ballarat City Council	BALLARAT	Canadian Gully Reserve Geelong RD	Historical deposit of mine tailings. Requires assessment and/or clean up	0090000494
Ballarat City Council	BALLARAT	Volume 6747 Folio 250	Current Industrial Site. Requires assessment and/or clean up	0090001913
Ballarat City Council	MOUNT CLEAR	3 WHITEHORSE RD	Former Landfill. Requires ongoing management	0090003912
Ballarat City Council	WARRENHEIP	Ballarat-Burrumbeet RD	Accidental spill/leak (non-industrial site). Requires ongoing management	0090002430
Banyule City Council	GREENSBOROUGH	131 Grimshaw ST	Current Service Station. Requires assessment and/or clean up	0090002585
Bass Coast Shire Council	WONTHAGGI	C/a 15 Section 58 Cameron St	Former Landfill. Requires ongoing management	0090003536
Baw Baw Shire Council	TRAFALGAR SOUTH	200 Giles RD	Former Landfill. Requires ongoing management	0090003781
Baw Baw Shire Council	TRAFALGAR SOUTH	200 Giles RD	Former Landfill. Requires ongoing management	0090003782
Bayside City Council	BRIGHTON	316 New ST	Former Service Station. Requires assessment and/or clean up	0090001698
Bayside City Council	CHELTENHAM	18 Hamlet ST	Current Industrial Site. Requires ongoing management	0090001671
Brimbank City Council	BROOKLYN	42 Market RD	Former Landfill. Requires ongoing management	0090004022
Brimbank City Council	BROOKLYN	44 Mcdonald RD	Former Landfill. Requires ongoing management	0090003591
Brimbank City Council	BROOKLYN	52 MARKET RD	Former Landfill. Requires ongoing management	0090004023
Brimbank City Council	BROOKLYN	594 Geelong RD	Former Landfill. Requires ongoing management	0090003478
Brimbank City Council	BROOKLYN	Bunting RD	Former Landfill. Requires ongoing management	0090002743
Brimbank City Council	BROOKLYN	The Western Side Of Jones RD	Former Landfill. Requires ongoing management	0090004024
Brimbank City Council	BROOKLYN	The Western Side Of Jones RD	Former Landfill. Requires ongoing management	0090004025
Brimbank City Council	DEER PARK	765 BALLARAT RD	Current Industrial Site. Requires assessment and/or clean up	0090001886
Brimbank City Council	KEILOR DOWNS	Green Gully RD	Former Landfill. Requires ongoing management	0090003524
Brimbank City Council	SUNSHINE	16 THIRD AV	Current Industrial Site. Requires assessment and/or clean up	0090003227
Brimbank City Council	SUNSHINE	47 Mcintyre RD	Former Industrial Site. Requires ongoing management	0090001549

Brimbank City Council	SYDENHAM	362 SYDENHAM RD	Former Landfill. Requires assessment and/or clean up	0090000921
Brimbank City Council	SYDENHAM	362 SYDENHAM RD	Former Landfill. Requires ongoing management	0090003753
Campaspe Shire Council	Bamawm Extension	Lot 2 Plan Of Subdivision 544316m Parish Of Torrumburry	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090001745
Campaspe Shire Council	DIGGORA	ODONNELL RD	Former Landfill. Requires ongoing management	0090003586
Campaspe Shire Council	DIGGORA	ODONNELL RD	Former Landfill. Requires ongoing management	0090003587
Campaspe Shire Council	DIGGORA	ODONNELL RD	Former Landfill. Requires ongoing management	0090003588
Campaspe Shire Council	ECHUCA	Echuca Landfill Echuca-Kyabram RD	Former Landfill. Requires ongoing management	0090003569
Campaspe Shire Council	KYABRAM	Graham RD	Former Landfill. Requires ongoing management	0090003563
Cardinia Shire Council	PAKENHAM	570 Bald Hill Road	Former Landfill. Requires ongoing management	0090003597
Casey City Council	CRANBOURNE	Lot 7, 9, 10, 11 & 12 Stevensons Rd	Former Landfill. Requires ongoing management	0090000281
Casey City Council	NARRE WARREN	188 QUARRY RD	Former Landfill. Requires ongoing management	0090003600
Central Goldfields Shire Council	CARISBROOK	129 WILLIAMS RD	Former Landfill. Requires ongoing management	0090003566
Colac-Otway Shire Council	COLAC	Bruce ST	Former Landfill. Requires ongoing management	0090001464
Colac-Otway Shire Council	COLAC	Bruce ST	Former Landfill. Requires ongoing management	0090003696
Colac-Otway Shire Council	COROROOKE	Factory RD	Current Industrial Site. Requires assessment and/or clean up	0090002082
Colac-Otway Shire Council	MARENGO	42 FERRIER DR	Former Industrial Site. Requires assessment and/or clean up	0090004494
Colac-Otway Shire Council	MARENGO	Roberts RD	Former Landfill. Requires ongoing management	0090003634
Corangamite Shire Council	GLENORMISTON	Terang-Mortlake RD	Former Landfill. Requires ongoing management	0090003622
Darebin City Council	NORTHCOTE	Clifton ST	Former Landfill. Requires ongoing management	0090003493
Darebin City Council	PRESTON	140 High ST	Former Industrial Site. Requires assessment and/or clean up	0090000660
Darebin City Council	PRESTON	140 High ST	Former Industrial Site. Requires assessment and/or clean up	0090002948
Darebin City Council	PRESTON	194 Bell ST	Former Industrial Site. Requires assessment and/or clean up	0090002088
Darebin City Council	PRESTON	3 & 7 NEWMAN ST	Former Industrial Site. Requires assessment and/or clean up	0090003150
Darebin City Council	PRESTON	62 Albert ST	Current Industrial Site. Requires ongoing management	0090000535
Darebin City Council	PRESTON	67 High ST	Former Service Station. Requires assessment and/or clean up	0090001449
Darebin City Council	RESERVOIR	87 Newlands RD	Former Landfill. Requires ongoing management	0090003508
East Gippsland Shire Council	BAIRNSDALE	201 Main ST	Former Service Station. Requires assessment and/or clean up	0090001552
East Gippsland Shire Council	BAIRNSDALE	BOSWORTH RD	Former Landfill. Requires ongoing management	0090003783
East Gippsland Shire Council	BAIRNSDALE	BOSWORTH RD	Former Landfill. Requires ongoing management	0090003784
East Gippsland Shire Council	ORBOST	44 Salsibury ST	Former Service Station. Requires assessment and/or clean up	0090001588
Frankston City Council	Frankston	McClelland DR	Former Landfill. Requires ongoing management	0090003594
Frankston City Council	FRANKSTON	3 Rosella ST	Former Industrial Site. Requires assessment and/or clean up	0090003211
Frankston City Council	FRANKSTON	3 Rosella ST	Former Industrial Site. Requires assessment and/or clean up	0090003212
Frankston City Council	FRANKSTON	3 Rosella ST	Former Industrial Site. Requires assessment and/or clean up	0090003213
Glen Eira City Council	CAULFIELD SOUTH	371 Hawthorn RD	Former Service Station. Requires assessment and/or clean up	0090001532
Glen Eira City Council	CAULFIELD SOUTH	818 Glen Huntly RD	Former Service Station. Requires assessment and/or clean up	0090004221
Glenelg Shire Council	PORTLAND	210 Cape Nelson RD	Current landfill. Requires ongoing management	0090001966
Golden Plains Shire Council	MEREDITH	119 MEREDITH-MT MERCER RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090004477
Greater Bendigo City Council	MYERS FLAT	28 WILLIAMS RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090004173
Greater Dandenong City Council	DANDENONG SOUTH	20 Cahill ST	Former Industrial Site. Requires assessment and/or clean up	0090002115
Greater Dandenong City Council	DANDENONG SOUTH	Greens Road GREENS RD	Former Industrial Site. Requires ongoing management	0090001391
Greater Dandenong City Council	SPRINGVALE	310 Springvale RD	Former Service Station. Requires ongoing management	0090001607
Greater Dandenong City Council	SPRINGVALE	917 Princes HWY	Former Industrial Site. Requires assessment and/or clean up	0090001557
Greater Dandenong City Council	SPRINGVALE SOUTH	Clarke RD	Former Landfill. Requires ongoing management	0090003850

Greater Dandenong City Council	SPRINGVALE SOUTH	East Side Of Clarke RD	Former Landfill. Requires ongoing management	0090000608
Greater Dandenong City Council	SPRINGVALE SOUTH	East Side Of Clarke RD	Former Landfill. Requires ongoing management	0090003691
Greater Dandenong City Council	SPRINGVALE SOUTH	East Side Of Clarke RD	Former Landfill. Requires ongoing management	0090003692
Greater Dandenong City Council	SPRINGVALE SOUTH	East Side Of Clarke RD	Former Landfill. Requires ongoing management	0090003693
Greater Geelong City Council	BELMONT	180 Barwon Heads RD	Former Service Station. Requires assessment and/or clean up	0090002289
Greater Geelong City Council	CORIO	1500 Biddlecombe AV	Current landfill. Requires assessment and/or clean up	0090002361
Greater Geelong City Council	CORIO	246 Princes HWY	Current Service Station. Requires assessment and/or clean up	0090000150
Greater Geelong City Council	CORIO	83 Purnell RD	Current Service Station. Requires ongoing management	0090002343
Greater Geelong City Council	CORIO	Off Harpur RD	Former Service Station. Requires assessment and/or clean up	0090000782
Greater Geelong City Council	CORIO	Refinery RD	Current Industrial Site. Requires assessment and/or clean up	0090004215
Greater Geelong City Council	CORIO	Refinery RD	Current petroleum storage site. Requires ongoing management	0090000024
Greater Geelong City Council	DRYSDALE	97 High ST	Current Service Station. Requires ongoing management	0090001808
Greater Geelong City Council	EAST GEELONG	HEARNE PDE	Gun, pistol or rifle range. Requires assessment and/or clean up	0090000498
Greater Geelong City Council	GEELONG NORTH	1 Roseneath ST	Former chemical storage facility. Requires assessment and/or clean up	0090001664
Greater Geelong City Council	GEELONG WEST	151 Church ST	Former Service Station. Requires assessment and/or clean up	0090002218
Greater Geelong City Council	LARA	Princes HWY	Accidental spill/leak (non-industrial site). Requires assessment and/or clean up	0090001012
Greater Geelong City Council	MANIFOLD HEIGHTS	35 Shannon AV	Former Service Station. Requires assessment and/or clean up	0090004098
Greater Geelong City Council	MOOLAP	132 Point Henry RD	Current Industrial Site. Requires assessment and/or clean up	0090001832
Greater Geelong City Council	MOOLAP	132 Point Henry RD	Current Industrial Site. Requires assessment and/or clean up	0090001833
Greater Geelong City Council	NORLANE	5 PRINCES HWY	Former Industrial Site. Requires assessment and/or clean up	0090004126
Greater Geelong City Council	NORLANE	60 NORTH SHORE RD	Current Industrial Site. Requires assessment and/or clean up	0090004132
Greater Geelong City Council	NORTH GEELONG	343 MELBOURNE RD	Former Industrial Site. Requires assessment and/or clean up	0090004124
Greater Geelong City Council	NORTH GEELONG	Foreshore Area At End Of Crowle ST	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090000226
Greater Shepparton City Council	COSGROVE	205 COSGROVE-LEMNOS RD	Former Landfill. Requires ongoing management	0090003551
Greater Shepparton City Council	KIALLA WEST	7358 Goulburn Valley HWY	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090000083
Greater Shepparton City Council	SHEPPARTON NORTH	280 Daldy RD	Former Industrial Site. Requires assessment and/or clean up	0090001776
Hepburn Shire Council	CRESWICK	18 Clunes RD	Former Service Station. Requires assessment and/or clean up	0090000263
Hepburn Shire Council	CRESWICK	C/a 45a Parish Of Creswick County Of Talbot	Former Landfill. Requires ongoing management	0090003558
Hepburn Shire Council	CRESWICK	C/a 45a Parish Of Creswick County Of Talbot	Former Landfill. Requires ongoing management	0090003559
Hepburn Shire Council	CRESWICK	C/a 45a Parish Of Creswick County Of Talbot	Former Landfill. Requires ongoing management	0090003560
Hobsons Bay City Council	ALTONA	351 MILLERS RD	Current Industrial Site. Requires assessment and/or clean up	0090000597
Hobsons Bay City Council	ALTONA	401 Kororoit Creek RD	Current Industrial Site. Requires assessment and/or clean up	0090000009
Hobsons Bay City Council	ALTONA	401 Kororoit Creek RD	Current Industrial Site. Requires assessment and/or clean up	0090003368
Hobsons Bay City Council	ALTONA	541 Kororoit Creek RD	Current chemical storage facility. Requires assessment and/or clean up	0090000425
Hobsons Bay City Council	ALTONA	Elfield Meadows Estate Defined By Volume 10426	Waste Acid Sulfate Soils. Requires ongoing management	0090002765
Hobsons Bay City Council	ALTONA	Queen ST	Former Landfill. Requires ongoing management	0090003472
Hobsons Bay City Council	ALTONA MEADOWS	306 Queen ST	Current Service Station. Requires assessment and/or clean up	0090002186
Hobsons Bay City Council	ALTONA NORTH	Kyle RD	Former Landfill. Requires ongoing management	0090003527
Hobsons Bay City Council	BROOKLYN	Hardie RD	Former Landfill. Requires ongoing management	0090003487

Hobsons Bay City Council	NEWPORT	411 DOUGLAS PDE	Current Industrial Site. Requires assessment and/or clean up	0090002086
Hobsons Bay City Council	NEWPORT	Burleigh ST	Current petroleum storage site. Requires assessment and/or clean up	0090001325
Hobsons Bay City Council	SOUTH KINGSVILLE	22 New ST	Former Landfill. Requires assessment and/or clean up	0090001727
Hobsons Bay City Council	SOUTH KINGSVILLE	38 Blackshaws RD	Former Industrial Site. Requires ongoing management	0090002381
Hobsons Bay City Council	SPOTSWOOD	144 HALL ST	Current Industrial Site. Requires assessment and/or clean up	0090003301
Hobsons Bay City Council	SPOTSWOOD	18 Drake ST	Current petroleum storage site. Requires assessment and/or clean up	0090001709
Hobsons Bay City Council	SPOTSWOOD	42 Simcock AV	Former Industrial Site. Requires assessment and/or clean up	0090002179
Hobsons Bay City Council	SPOTSWOOD	512 Melbourne RD	Railway yard. Requires assessment and/or clean up	0090000799
Hobsons Bay City Council	WILLIAMSTOWN	12 Seaview PDE	Current Industrial Site. Requires ongoing management	0090002444
Hume City Council	BULLA	315 Loemans RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090000177
Hume City Council	CAMPBELLFIELD	150 NORTHBOURNE RD	Illegal dumping. Requires assessment and/or clean up	0090004190
Hume City Council	CAMPBELLFIELD	1735 Sydney RD	Current Industrial Site. Requires assessment and/or clean up	0090002373
Hume City Council	CAMPBELLFIELD	26 GLENBARRY RD	Illegal dumping. Requires assessment and/or clean up	0090003380
Hume City Council	CAMPBELLFIELD	26 GLENBARRY RD	Illegal dumping. Requires assessment and/or clean up	0090003863
Hume City Council	CAMPBELLFIELD	2 8 REO CR	Former chemical storage facility. Requires assessment and/or clean up	0090004284
Hume City Council	CAMPBELLFIELD	5 REO CR	Current Industrial Site. Requires assessment and/or clean up	0090003276
Hume City Council	CAMPBELLFIELD	Bolinda RD	Former Landfill. Requires ongoing management	0090003793
Hume City Council	CAMPBELLFIELD	Bolinda RD	Former Landfill. Requires ongoing management	0090003794
Hume City Council	CAMPBELLFIELD	Mahoneys RD	Former Landfill. Requires ongoing management	0090003496
Hume City Council	CRAIGIEBURN	Craigieburn RD	Former Landfill. Requires ongoing management	0090003107
Hume City Council	CRAIGIEBURN	Craigieburn RD	Former Landfill. Requires ongoing management	0090003475
Hume City Council	DIGGERS REST	65 EDWARDS RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090003640
Hume City Council	GREENVALE	100 OAKLANDS RD	Illegal dumping. Requires ongoing management	0090001856
Hume City Council	MELBOURNE AIRPORT	206 WESTERN AV	Former Landfill. Requires assessment and/or clean up	0090003661
Hume City Council	SOMERTON	Cliffords RD	Former Industrial Site. Requires assessment and/or clean up	0090002446
Hume City Council	Tullamarine	105 ANNANDALE RD	Illegal dumping. Requires assessment and/or clean up	0090004149
Hume City Council	TULLAMARINE	Western AV	Former Landfill. Requires ongoing management	0090003530
Kingston City Council	CHELSEA	476 Nepean HWY	Former Service Station. Requires assessment and/or clean up	0090001389
Kingston City Council	CHELSEA	Scotch PDE	Former Landfill. Requires ongoing management	0090003613
Kingston City Council	CLAYTON SOUTH	8 Elder ST	Former Landfill. Requires ongoing management	0090003610
Kingston City Council	CLAYTON SOUTH	Cnr Deals RD & Heatherton RD	Former Landfill. Requires ongoing management	0090003759
Kingston City Council	CLAYTON SOUTH	Cnr Deals RD & Heatherton RD	Former Landfill. Requires ongoing management	0090003780
Kingston City Council	CLAYTON SOUTH	Ryans RD	Former Landfill. Requires ongoing management	0090003607
Kingston City Council	CLAYTON SOUTH	RYANS RD	Former Landfill. Requires ongoing management	0090003604
Kingston City Council	DINGLEY VILLAGE	370 Old Dandenong RD	Former Landfill. Requires ongoing management	0090003831
Kingston City Council	DINGLEY VILLAGE	370 Old Dandenong RD	Former Landfill. Requires ongoing management	0090003832
Kingston City Council	MENTONE	17 BALCOMBE RD	Former Service Station. Requires assessment and/or clean up	0090004424
Kingston City Council	MOORABBIN	1 10 Ebden ST	Former Industrial Site. Requires ongoing management	0090002273
Kingston City Council	MOORABBIN	SOUTH WEST CNR HEATHERTON SANDS & BUNNYS LANE	Former Landfill. Requires ongoing management	0090004461
Kingston City Council	MOORABBIN	SOUTH WEST CNR HEATHERTON SANDS & BUNNYS LANE	Former Landfill. Requires ongoing management	0090004462
Kingston City Council	MORDIALLOC	78 White ST	Former Industrial Site. Requires assessment and/or clean up	0090002256
Knox City Council	WANTIRNA	706 BORONIA RD	Illegal dumping. Requires assessment and/or clean up	0090000181
Knox City Council	WANTIRNA SOUTH	14 COPPELIA ST	Former Landfill. Requires ongoing management	0090003736
Knox City Council	WANTIRNA SOUTH	14 COPPELIA ST	Former Landfill. Requires ongoing management	0090003737
Knox City Council	WANTIRNA SOUTH	14 COPPELIA ST	Former Landfill. Requires ongoing management	0090004220
Knox City Council	WANTIRNA SOUTH	Cathies LANE	Former Landfill. Requires ongoing management	0090000475
Knox City Council	WANTIRNA SOUTH	Cathies LANE	Former Landfill. Requires ongoing management	0090003738

Latrobe City Council	MORWELL	PT CA 86B & CA 104A Parish of Maryvale	Former Landfill. Requires ongoing management	0090003787
Latrobe City Council	MORWELL	PT CA 86B & CA 104A Parish of Maryvale	Former Landfill. Requires ongoing management	0090003788
Latrobe City Council	NEWBOROUGH	Haunted Hills RD	Former Landfill. Requires ongoing management	0090003785
Latrobe City Council	NEWBOROUGH	Haunted Hills RD	Former Landfill. Requires ongoing management	0090003786
Latrobe City Council	TRARALGON	TRARALGON WEST RD	Former Landfill. Requires assessment and/or clean up	0090003964
Latrobe City Council	TRARALGON SOUTH	Loy Yang B3/4 Bartons Lane	Ash pond with a Groundwater Attenuation Zone. Requires ongoing management	0090002894
Macedon Ranges Shire Council	BULLENGAROOK	Hobbs RD	Former Landfill. Requires ongoing management	0090003580
Macedon Ranges Shire Council	BULLENGAROOK	Hobbs RD	Former Landfill. Requires ongoing management	0090003581
Macedon Ranges Shire Council	BULLENGAROOK	Hobbs RD	Former Landfill. Requires ongoing management	0090003582
Macedon Ranges Shire Council	KYNETON	Redesdale RD	Former Landfill. Requires ongoing management	0090003555
Macedon Ranges Shire Council	KYNETON	Redesdale RD	Former Landfill. Requires ongoing management	0090003556
Macedon Ranges Shire Council	KYNETON	Redesdale RD	Former Landfill. Requires ongoing management	0090003557
Macedon Ranges Shire Council	SPRINGFIELD	130 Toomeys LANE	Illegal dumping. Requires assessment and/or clean up	0090004043
Macedon Ranges Shire Council	SPRINGFIELD	130 Toomeys LANE	Illegal dumping. Requires assessment and/or clean up	0090004044
Macedon Ranges Shire Council	WOODEND	130 High ST	Current Service Station. Requires assessment and/or clean up	0090004073
Mansfield Shire Council	MANSFIELD	Monkey Gully RD	Former Landfill. Requires ongoing management	0090003844
Mansfield Shire Council	MANSFIELD	Monkey Gully RD	Former Landfill. Requires ongoing management	0090003845
Maribyrnong City Council	BRAYBROOK	30 SOUTH RD	Former Industrial Site. Requires assessment and/or clean up	0090004372
Maribyrnong City Council	BROOKLYN	550 GEELONG RD	Former Industrial Site. Requires assessment and/or clean up	0090002056
Maribyrnong City Council	FOOTSCRAY	Farnsworth AV	Former Landfill. Requires ongoing management	0090003484
Maribyrnong City Council	MAIDSTONE	9 WILLIAMSON RD	Former Industrial Site. Requires assessment and/or clean up	0090001771
Maribyrnong City Council	MAIDSTONE	9 WILLIAMSON RD	Former Industrial Site. Requires assessment and/or clean up	0090003767
Maribyrnong City Council	WEST FOOTSCRAY	Somerville RD	Former Industrial Site. Requires assessment and/or clean up	0090002163
Maribyrnong City Council	Yarraville	325 Whitehall Street	Former Industrial Site. Requires assessment and/or clean up	0090001942
Maribyrnong City Council	Yarraville	325 Whitehall Street	Former Industrial Site. Requires ongoing management	0090001941
Maribyrnong City Council	YARRAVILLE	1 High ST	Former Industrial Site. Requires ongoing management	0090000134
Maribyrnong City Council	YARRAVILLE	2A FRANCIS ST	Current Industrial Site. Requires assessment and/or clean up	0090001122
Maribyrnong City Council	YARRAVILLE	Yarraville Terminal Francis ST	Current petroleum storage site. Requires assessment and/or clean up	0090000989
Maroondah City Council	CROYDON	171 Mt Dandenong RD	Former Service Station. Requires ongoing management	0090002862
Maroondah City Council	RINGWOOD	385 Canterbury RD	Current Service Station. Requires ongoing management	0090003514
Maroondah City Council	RINGWOOD EAST	18 Mount Dandenong RD	Current Service Station. Requires assessment and/or clean up	0090001804
Melton Shire Council	MELTON	Ferris RD	Former Landfill. Requires ongoing management	0090003481
Melton Shire Council	MELTON SOUTH	2 FERRIS RD	Former Landfill. Requires ongoing management	0090003480
Melton Shire Council	MOUNT COTTRELL	180 Faulkners RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up	0090000416
Melton Shire Council	PLUMPTON	1 Holden RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up	0090000159
Melton Shire Council	PLUMPTON	627 Plumpton RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up	0090000300
Melton Shire Council	PLUMPTON	627 PLUMPTON RD	Illegal dumping. Requires assessment and/or clean up	0090004146
Melton Shire Council	PLUMPTON	627 PLUMPTON RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up	0090003893
Melton Shire Council	RAVENHALL	48A ORBIS DR	Illegal dumping. Requires assessment and/or clean up	0090003361
Mildura Rural City Council	KOORLONG	Twentieth ST	Former Landfill. Requires ongoing management	0090003585
Mildura Rural City Council	MILDURA	42 NINTH ST	Former petroleum storage site. Requires assessment and/or clean up	0090004105
Mildura Rural City Council	MILDURA	42 NINTH ST	Former petroleum storage site. Requires assessment and/or clean up	0090004154
Mitchell Shire Council	BROADFORD	High ST	Former Landfill. Requires ongoing management	0090003542

Mitchell Shire Council	KILMORE	Walders RD	Former Landfill. Requires ongoing management	0090003834
Mitchell Shire Council	KILMORE	Walders RD	Former Landfill. Requires ongoing management	0090003835
Mitchell Shire Council	NORTHWOOD	1630 Northwood RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up	0090004152
Mitchell Shire Council	SEYMOUR	117 Wimble ST	Current Industrial Site. Requires assessment and/or clean up	0090001737
Mitchell Shire Council	SEYMOUR	HUME AND HOVELL ROAD	Former Landfill. Requires ongoing management	0090003836
Mitchell Shire Council	SEYMOUR	HUME AND HOVELL ROAD	Former Landfill. Requires ongoing management	0090003837
Moira Shire Council	NUMURKAH	Parish Of Katunga C/a 14 Sect D Naring Rd	Former Landfill. Requires ongoing management	0090003545
Moira Shire Council	YARRAWONGA	81 Channel RD	Former Landfill. Requires ongoing management	0090003539
Monash City Council	CLAYTON	1555 Centre RD	Current Industrial Site. Requires ongoing management	0090004466
Monash City Council	GLEN WAVERLEY	310 SPRINGVALE RD	Current Industrial Site. Requires assessment and/or clean up	0090002027
Monash City Council	OAKLEIGH	1386 Dandenong RD	Current Service Station. Requires assessment and/or clean up	0090003887
Moonee Valley City Council	ASCOT VALE	556 MT ALEXANDER RD	Current Service Station. Requires assessment and/or clean up	0090004430
Moonee Valley City Council	MOONEE PONDS	783 Mt Alexander RD	Current Service Station. Requires assessment and/or clean up	0090000664
Moorabool Shire Council	BACCHUS MARSH	End of Halletts WAY	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090001880
Moorabool Shire Council	MADDINGLEY	Side Of Kerrs RD	Former Landfill. Requires ongoing management	0090003631
Moreland City Council	Brunswick	225 and 227-231 Barkly Street	Former Industrial Site. Requires ongoing management	0090004362
Moreland City Council	BRUNSWICK	225 and 227-231 Barkly Street	Former Industrial Site. Requires ongoing management	0090004520
Moreland City Council	COBURG NORTH	46 Newlands RD	Current petroleum storage site. Requires assessment and/or clean up	0090004468
Moreland City Council	PASCOE VALE	512 PASCOE VALE RD	Current Service Station. Requires assessment and/or clean up	0090002542
Mornington Peninsula Shire Council	CRIB POINT	2 Lens ST	Former Landfill. Requires ongoing management	0090003619
Mornington Peninsula Shire Council	CRIB POINT	The Esplanade	Former Industrial Site. Requires ongoing management	0090002897
Mornington Peninsula Shire Council	MOUNT ELIZA	250 Moorooduc HWY	Former Landfill. Requires ongoing management	0090000477
Mornington Peninsula Shire Council	MOUNT ELIZA	250 Moorooduc HWY	Former Landfill. Requires ongoing management	0090003744
Mornington Peninsula Shire Council	ROSEBUD WEST	119 Truemans RD	Former Landfill. Requires ongoing management	0090003616
Mornington Peninsula Shire Council	RYE	2233 POINT NEPEAN RD	Current Service Station. Requires ongoing management	0090000658
Mornington Peninsula Shire Council	SOMERVILLE	182 Eramosa RD	Illegal dumping. Requires assessment and/or clean up	0090000097
Mount Alexander Shire Council	Castlemaine	74 Tomkies Road Lane	Contaminated soil is retained and managed onsite. Requires ongoing management	0090004156
Mount Alexander Shire Council	WALMER	20 CENTRE RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090004101
Moyne Shire Council	ALLANSFORD	5331 Great Ocean RD	Current Industrial Site. Requires ongoing management	0090004322
Moyne Shire Council	PORT FAIRY	Allotment 36a (pt) Parish Of Koroit Township Of Port Fairy -	Former Landfill. Requires assessment and/or clean up	0090003337
Moyne Shire Council	PORT FAIRY	Badhams LANE	Former Landfill. Requires ongoing management	0090003625
Moyne Shire Council	PORT FAIRY	Portion 10(pt) Parish Of Koroit Property Number 506450	Former Landfill. Requires assessment and/or clean up	0090003335
Nillumbik Shire Council	DIAMOND CREEK	50 Fraser ST	Historical deposit of mine tailings. Requires assessment and/or clean up	0090002671
Nillumbik Shire Council	ELTHAM	197 Sherbourne RD	Former petroleum storage site. Requires assessment and/or clean up	0090004460
Nillumbik Shire Council	KANGAROO GROUND	105 GRAHAM RD	Former Landfill. Requires ongoing management	0090003503
Nillumbik Shire Council	KANGAROO GROUND	105 GRAHAM RD	Former Landfill. Requires ongoing management	0090003504
Nillumbik Shire Council	KANGAROO GROUND	105 GRAHAM RD	Former Landfill. Requires ongoing management	0090003505
Nillumbik Shire Council	PANTON HILL	165 MOTSCHALL RD	Current Industrial Site. Requires ongoing management	0090002787
Nillumbik Shire Council	PANTON HILL	165 MOTSCHALL RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090002083
Nillumbik Shire Council	YARRAMBAT	Yan Yean RD	Former Landfill. Requires ongoing management	0090003407
Nillumbik Shire Council	YARRAMBAT	Yan Yean RD	Former Landfill. Requires ongoing management	0090003408
Northern Grampians Shire Council	Stawell	Tailings Storage Facility No.2 ,CA1 Sec5 CA4 Sec5, CA5 Sec5, CA6 Sec5, CA18V Sec2	Historical deposit of mine tailings. Requires assessment and/or clean up	0090004168
Northern Grampians Shire Council	STAWELL	25 Horsham RD	Former Industrial Site. Requires ongoing management	0090002140

Port Phillip City Council	ELWOOD	54A MARINE PDE	Current Service Station. Requires assessment and/or clean up	0090000663
South Gippsland Shire Council	FOSTER	4090 SOUTH GIPPSLAND HWY	Former Landfill. Requires ongoing management	0090003533
South Gippsland Shire Council	FOSTER	4090 SOUTH GIPPSLAND HWY	Former Landfill. Requires ongoing management	0090003747
South Gippsland Shire Council	LEONGATHA SOUTH	630 ROUGHEADS RD	Former Landfill. Requires ongoing management	0090003789
South Gippsland Shire Council	LEONGATHA SOUTH	630 ROUGHEADS RD	Former Landfill. Requires ongoing management	0090003790
Stonnington City Council	PRAHRAN	549 High ST	Current Service Station. Requires assessment and/or clean up	0090000662
Strathbogie Shire Council	VIOLET TOWN	190 Mcdiarmids RD	Former Landfill. Requires ongoing management	0090003846
Strathbogie Shire Council	VIOLET TOWN	190 Mcdiarmids RD	Former Landfill. Requires ongoing management	0090003847
Surf Coast Shire Council	MOUNT MORIAC	450 Hendy Main RD	Former Industrial Site. Requires assessment and/or clean up	0090003712
Surf Coast Shire Council	WINCHELSEA	114 Trebeck CT	Illegal dumping. Requires assessment and/or clean up	0090001935
Swan Hill Rural City Council	ROBINVALE	CA2022\PP2269 and 2C\PP2269 HAPPY VALLEY TRACK	Illegal dumping. Requires assessment and/or clean up	0090003340
Swan Hill Rural City Council	Swan Hill	3 Hastings Street	Current petroleum storage site. Requires assessment and/or clean up	0090003573
Swan Hill Rural City Council	TOL TOL	3216 Murray Valley HWY	Industrial waste has been dumped at the site. Requires assessment and/or clean up	0090000256
Towong Shire Council	BETHANGA	4 MARTIN ST	Former Landfill. Requires ongoing management	0090003554
Warrnambool City Council	ALLANSFORD	137 Ziegler PDE	Contaminated soil is retained and managed onsite. Requires assessment and/or clean up	0090000492
Warrnambool City Council	WARRNAMBOOL	Braithwaite ST	Former Landfill. Requires ongoing management	0090003637
Wellington Shire Council	LONGFORD	746 LONGFORD-LOCH SPORT RD	Former Landfill. Requires ongoing management	0090003791
Wellington Shire Council	LONGFORD	746 LONGFORD-LOCH SPORT RD	Former Landfill. Requires ongoing management	0090003792
Wellington Shire Council	MAFFRA	57 Johnson ST	Current Industrial Site. Requires assessment and/or clean up	0090001587
Wellington Shire Council	YARRAM	Off Yarram-Traralgon RD	Former Landfill. Requires ongoing management	0090003055
Whitehorse City Council	BLACKBURN	21 Blackburn RD	Current Service Station. Requires ongoing management	0090002839
Whitehorse City Council	BLACKBURN	21 Blackburn RD	Current Service Station. Requires ongoing management	0090003034
Whitehorse City Council	BLACKBURN	24 Blackburn RD	Former Service Station. Requires assessment and/or clean up	0090003153
Whitehorse City Council	BLACKBURN	2 CENTRAL RD	Former Service Station. Requires assessment and/or clean up	0090002076
Whitehorse City Council	BOX HILL	14 Federation ST	Former Landfill. Requires ongoing management	0090003499
Whittlesea City Council	EPPING	215 COOPER ST	Current landfill. Requires ongoing management	0090003348
Whittlesea City Council	EPPING	490 COOPER ST	Former Landfill. Requires ongoing management	0090003502
Whittlesea City Council	EPPING	500 Cooper ST	Former Landfill. Requires ongoing management	0090003490
Whittlesea City Council	THOMASTOWN	342 Settlement RD	Former Service Station. Requires assessment and/or clean up	0090001959
Whittlesea City Council	THOMASTOWN	51 High ST	Current Industrial Site. Requires assessment and/or clean up	0090004421
Wodonga Rural City Council	BARANDUDA	219 & Part Of 221 Whytes Rd	Current Industrial Site. Requires ongoing management	0090003307
Wodonga Rural City Council	WODONGA	3437 Beechworth-Wodonga RD	Former Landfill. Requires ongoing management	0090003548
Wyndham City Council	Laverton North	19 Little Boundary RD	Current Industrial Site. Requires assessment and/or clean up	0090000003
Wyndham City Council	LAVERTON NORTH	142 FITZGERALD RD	Current chemical storage facility. Requires assessment and/or clean up	0090004097
Wyndham City Council	LAVERTON NORTH	3 PROGRESS CT	Illegal dumping. Requires assessment and/or clean up	0090004467
Wyndham City Council	LAVERTON NORTH	41 LEAKES RD	Former Industrial Site. Requires assessment and/or clean up	0090000864
Wyndham City Council	LAVERTON NORTH	41 LEAKES RD	Former Industrial Site. Requires ongoing management	0090003389
Wyndham City Council	LITTLE RIVER	490 EDGARS RD	Illegal dumping. Requires assessment and/or clean up	0090004276
Yarra City Council	RICHMOND	3-21a Kent St 1/4-14/4 Little Buckingham St	Former Industrial Site. Requires ongoing management	0090001920
Yarra Ranges Shire Council	COLDSTREAM	Ingram RD	Former Landfill. Requires ongoing management	0090003838
Yarra Ranges Shire Council	COLDSTREAM	Ingram RD	Former Landfill. Requires ongoing management	0090003839
Yarra Ranges Shire Council	HEALESVILLE	Mt Riddel RD	Former Landfill. Requires ongoing management	0090003840

Yarra Ranges Shire Council	HEALESVILLE	Mt Riddel RD	Former Landfill. Requires ongoing management	0090003841
Yarra Ranges Shire Council	KILSYTH	1 76 Fussell RD	Former Industrial Site. Requires assessment and/or clean up	0090000004
Yarra Ranges Shire Council	KILSYTH	1 76 Fussell RD	Former Industrial Site. Requires assessment and/or clean up	0090000006
Yarra Ranges Shire Council	KILSYTH	2 76 Fussell RD	Former Industrial Site. Requires assessment and/or clean up	0090000005
Yarra Ranges Shire Council	KILSYTH	2 76 Fussell RD	Former Industrial Site. Requires assessment and/or clean up	0090000007

Appendix D. Groundwater bores

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
22	109574	293210	5822195	55	27/05/71	37.49	GW	Groundwater Investigation
23	109575	293210	5822195	55	27/05/71	37.49	GW	Groundwater Investigation
50	109683	295469	5813588	55	17/03/71	44.5	GW	Groundwater Investigation
51	109684	295539	5813494	55	17/03/71	44.5	GW	Groundwater Investigation
61	111535	293233	5821164	55	3/12/91	37.5	GW	Domestic
62	111566	294593	5819844	55	4/12/91	43.5	GW	Domestic
98	122101	295243	5819734	55	13/07/94	70	GW	Domestic
100	132814	294373	5819944	55	30/05/97	52	GW	Stock
102	133023	293713	5814584	55	10/01/98	57	GW	Domestic
103	134071	292593	5815464	55	29/03/98	77	GW	Domestic
104	134089	297413	5820324	55	6/05/98	30	GW	Domestic
105	135083	300153	5819639	55	21/04/98	61	GW	Irrigation
106	135898	292333	5822514	55	7/11/98	34.5	GW	Domestic
108	138895	295793	5819244	55	4/11/99	63	GW	Domestic
109	139966	293753	5819899	55	26/09/98	32	GW	Domestic
110	139983	292613	5812464	55	3/05/98	40	GW	Domestic
111	140009	295893	5819644	55	13/06/99	57	GW	Stock
116	141607	296583	5819704	55	23/10/98	48	GW	Domestic
118	141690	297413	5822684	55	31/03/98	62	GW	Domestic
120	141762	293013	5821824	55	19/05/98	48	GW	Domestic
134	142136	292933	5813664	55	22/10/98	77	GW	Domestic
137	142288	293363	5819834	55	20/12/98	63	GW	Domestic
202	144924	293863	5813934	55	8/03/00	63	GW	Domestic and Stock
336	306031	299433	5819870	55	20/04/72	67.66	GW	Non Groundwater
337	306032	296726	5819644	55	13/06/72	115.82	GW	Non Groundwater
340	306035	298930	5814696	55	11/10/81	164	GW	Non Groundwater
347	311291	293039	5820470	55	30/05/72	116.27	GW	Non Groundwater
356	315714	298959	5822678	55	31/12/52	1.76	GW	Non Groundwater
357	315715	298959	5822678	55	31/12/52	2.43	GW	Non Groundwater
358	315716	298959	5822678	55	31/12/52	2.43	GW	Non Groundwater
359	315717	298959	5822678	55	31/12/52	1.67	GW	Non Groundwater
360	315718	298959	5822678	55	31/12/52	9.44	GW	Non Groundwater
369	326204	294218	5816648	55	23/03/76	92.5	GW	Non Groundwater
380	326215	294338	5817806	55	10/11/81	152	GW	Non Groundwater
382	329262	296077	5813493	55	21/09/74	60.96	GW	Non Groundwater
387	329270	297079	5813380	55	3/04/76	57.91	GW	Non Groundwater
388	329271	293223	5813751	55	11/12/75	87	GW	Non Groundwater
390	330360	298664	5813173	55	30/10/74	80.16	GW	Non Groundwater
424	59421	296651	5815887	55	31/12/70	54.8	GW	Domestic
426	59423	300058	5813166	55	31/12/70	21.3	GW	Domestic

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
427	59424	296999	5814824	55	31/12/70	32.9	GW	Domestic
428	59425	297495	5813337	55	31/12/70	24.3	GW	Unknown
429	59426	298602	5813198	55	31/12/70	30.4	GW	Domestic
430	59427	299525	5813115	55	31/12/70	28.9	GW	Domestic
431	59428	300256	5814139	55	31/12/70	27.4	GW	Domestic
432	59429	299406	5814320	55	31/12/70	30.4	GW	Domestic
433	59430	298124	5814552	55	31/12/70	33.5	GW	Domestic
434	59431	298806	5816495	55	31/12/70	33.5	GW	Domestic
435	59432	296514	5819197	55	31/12/70	51.8	GW	Domestic
436	59433	297107	5817896	55	31/12/70	36.5	GW	Stock
437	59434	297852	5819363	55	31/12/70	12.2	GW	Domestic
438	59435	300551	5818988	55	31/12/70	18.3	GW	Domestic
439	59436	297343	5814874	55	31/12/70	25.9	GW	Domestic
440	59437	298280	5819087	55	31/12/70	21.3	GW	Stock
441	59438	298233	5819358	55	31/12/70	36.5	GW	Domestic
442	59439	297975	5819601	55	31/12/70	31.3	GW	Stock
443	59440	297877	5820402	55	31/12/70	19.8	GW	Domestic
444	59441	300538	5818870	55	31/12/70	24.6	GW	Domestic
445	59442	299671	5819248	55	31/12/70	24.3	GW	Domestic
446	59443	297924	5820894	55	31/12/70	17.6	GW	Domestic
447	59444	297905	5820614	55	31/12/70	N/A	GW	Domestic
448	59445	297747	5819828	55	31/12/70	33.5	GW	Domestic
449	59447	298529	5815781	55	31/12/70	30.4	GW	Stock
453	59451	299603	5819010	55	31/12/70	29.8	GW	Domestic
457	59455	297666	5819737	55	31/12/70	39.6	GW	Domestic
458	59456	300822	5813087	55	31/12/70	N/A	GW	Unknown
459	59457	296539	5813957	55	31/12/70	N/A	GW	Unknown
462	59460	299594	5813430	55	31/12/70	N/A	GW	Unknown
463	59461	297027	5816924	55	31/12/70	N/A	GW	Unknown
466	59466	299606	5819461	55	31/12/70	N/A	GW	Unknown
467	59468	297244	5820629	55	31/12/70	N/A	GW	Unknown
468	59469	296821	5820265	55	31/12/70	N/A	GW	Unknown
469	59470	299900	5819674	55	31/12/70	N/A	GW	Unknown
470	59471	297476	5814938	55	31/12/70	N/A	GW	Unknown
471	59472	297769	5819836	55	31/12/64	N/A	GW	Unknown
472	59473	300422	5818061	55	1/01/70	36.5	GW	Stock
473	59474	300127	5818465	55	1/01/70	26.2	GW	Stock
474	59475	300173	5818922	55	1/01/70	30.4	GW	Stock
475	59476	299201	5818923	55	1/01/70	41.4	GW	Stock
476	59477	299135	5819188	55	1/01/70	27.7	GW	Stock

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
477	59478	300711	5814205	55	2/11/70	22.86	GW	Domestic
478	59479	297665	5819609	55	6/04/72	36.57	GW	Domestic
479	59480	297641	5819736	55	3/02/02	54.8	GW	Domestic
480	59481	297723	5820225	55	18/08/74	21.33	GW	Stock
482	59483	297580	5819771	55	7/03/77	39.62	GW	Domestic
483	59484	296233	5819840	55	19/02/78	30.5	GW	Domestic
484	59485	298182	5819235	55	28/10/79	37.5	GW	Domestic
485	59486	296741	5814044	55	14/08/80	50	GW	Domestic
486	59487	296795	5814786	55	2/10/80	35	GW	Domestic
487	59488	297413	5814909	55	29/07/82	30	GW	Domestic
489	59490	297813	5820334	55	8/11/81	26	GW	Domestic
490	59491	297933	5820314	55	9/10/81	26	GW	Domestic
493	59494	297623	5820774	55	4/04/84	42	GW	Domestic
494	59495	296772	5817362	55	5/04/84	40	GW	Domestic
495	59496	297773	5820104	55	20/08/84	24.4	GW	Domestic
497	59498	297833	5819364	55	14/05/85	47	GW	Domestic
498	59499	296063	5814534	55	12/03/87	55.5	GW	Stock
499	59500	296953	5820964	55	16/03/87	47	GW	Domestic
500	59501	297653	5820254	55	13/03/87	46	GW	Domestic
501	59502	300743	5818764	55	19/04/88	31	GW	Domestic
506	59507	297938	5819804	55	14/12/88	45	GW	Domestic
507	59508	297763	5819924	55	8/03/89	38	GW	Domestic
508	59509	296713	5821084	55	5/12/88	22.8	GW	Domestic
512	59514	296693	5820584	55	18/07/91	36	GW	Domestic
515	60511	297093	5820694	55	2/11/88	41	GW	Domestic
517	73199	293222	5822184	55	13/10/83	37	GW	Observation
518	73200	293223	5822180	55	20/10/83	57	GW	Observation
519	73205	293313	5821153	55	31/12/60	0	GW	Unknown
521	73237	294335	5821025	55	31/12/70	27.4	GW	Domestic
523	73241	293871	5821202	55	31/12/70	15.2	GW	Domestic
524	73242	294038	5821108	55	31/12/70	15.2	GW	Domestic
525	73243	294072	5821279	55	31/12/70	15.2	GW	Domestic
526	73244	293707	5821484	55	31/12/70	15.2	GW	Unknown
527	73245	293237	5821960	55	31/12/70	19.5	GW	Domestic
528	73246	293130	5822005	55	31/12/70	18.2	GW	Domestic
529	73247	292800	5821429	55	31/12/70	35	GW	Stock
530	73251	295159	5820681	55	31/12/70	15.2	GW	Stock
532	73261	295015	5821186	55	31/12/70	N/A	GW	Unknown
533	73262	295686	5820975	55	31/12/70	N/A	GW	Unknown
534	73263	292865	5821970	55	31/12/70	N/A	GW	Unknown

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
535	73271	291738	5822312	55	2/08/72	19.81	GW	Domestic
536	73274	295630	5820494	55	30/06/76	25.9	GW	Domestic
537	73284	295419	5820435	55	24/02/82	23.97	GW	Domestic
543	73294	296153	5821224	55	16/09/86	29	GW	Domestic
544	73295	293133	5820364	55	28/03/86	93	GW	Domestic
545	73296	293333	5820744	55	28/01/86	39.5	GW	Domestic
546	73297	291193	5822324	55	27/11/84	35	GW	Domestic
549	73304	294823	5821094	55	19/05/87	49	GW	Domestic
552	73322	295913	5821424	55	11/05/87	23	GW	Domestic
557	73340	297793	5819644	55	1/01/88	34.4	GW	Domestic
558	73342	292613	5821544	55	13/08/91	34.5	GW	Domestic
571	77276	296793	5820624	55	11/08/87	46	GW	Domestic
576	89217	294036	5813768	55	31/01/63	N/A	GW	Unknown
577	89218	294640	5814473	55	31/01/63	N/A	GW	Unknown
585	89226	293503	5813850	55	31/01/69	N/A	GW	Unknown
586	89227	294585	5820103	55	31/12/70	39.6	GW	Stock
587	89228	291321	5819898	55	31/12/70	10.6	GW	Domestic
590	89231	295026	5818262	55	31/12/70	24.3	GW	Stock
591	89232	295482	5819737	55	31/12/70	39.6	GW	Stock
592	89233	294426	5819276	55	31/12/70	24.3	GW	Domestic
593	89234	294834	5819840	55	31/12/70	18.2	GW	Domestic
594	89235	294627	5814682	55	31/12/70	21.3	GW	Stock
595	89236	294311	5816488	55	31/12/70	27.4	GW	Stock
596	89237	295025	5816789	55	31/12/70	39.3	GW	Domestic
597	89238	295290	5819758	55	31/12/70	24.3	GW	Domestic
598	89239	292932	5819887	55	31/12/70	N/A	GW	Unknown
599	89240	294163	5813817	55	31/12/70	N/A	GW	Unknown
611	89253	293228	5815414	55	31/12/70	N/A	GW	Unknown
614	89256	291112	5817087	55	31/12/70	N/A	GW	Unknown
615	89257	292418	5816959	55	31/12/70	N/A	GW	Unknown
617	89262	293776	5814482	55	5/11/74	47.24	GW	Stock
620	89265	294368	5820029	55	4/02/76	22	GW	Domestic
622	89267	294408	5819289	55	2/03/77	27.5	GW	Domestic
623	89268	296047	5819865	55	16/12/75	37.5	GW	Domestic
626	89272	294216	5820077	55	3/10/80	55	GW	Domestic
627	89273	293553	5814324	55	2/10/80	33.5	GW	Domestic
628	89274	293573	5814644	55	4/10/80	28.7	GW	Stock
629	89277	293893	5815104	55	4/03/82	76	GW	Stock
630	89278	295073	5817734	55	30/03/83	41	GW	Domestic
631	89279	292553	5816044	55	29/01/83	62	GW	Domestic

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
632	89280	294813	5819374	55	1/05/84	41	GW	Domestic
633	89281	294533	5819644	55	29/09/84	46	GW	Stock
634	89282	294543	5819614	55	31/10/84	31	GW	Stock
635	89283	294083	5815614	55	21/12/84	38	GW	Domestic
636	89284	294353	5818404	55	1/08/85	73	GW	Domestic
637	89285	294153	5817664	55	1/08/85	91	GW	Domestic
638	89286	293963	5816684	55	18/05/85	77	GW	Domestic
639	89287	294743	5819984	55	27/04/88	59	GW	Domestic
640	89288	295393	5819884	55	2/03/88	64	GW	Domestic
641	89289	295423	5819644	55	18/06/88	89	GW	Domestic
642	89290	294273	5818454	55	22/10/87	55	GW	Domestic
643	89291	293993	5815244	55	1/03/90	70	GW	Domestic
644	89292	294333	5816804	55	1/02/90	53	GW	Domestic
649	89297	291414	5820505	55	1/01/88	27.4	GW	Unknown
650	89298	291317	5820386	55	1/01/88	27.4	GW	Unknown
653	89301	294205	5816488	55	1/01/88	39.62	GW	Unknown
655	89303	294448	5819176	55	1/01/88	N/A	GW	Stock
656	89304	294092	5819214	55	1/01/88	N/A	GW	Stock
663	93702	294492	5813662	55	25/08/77	56	GW	Unknown
664	93703	294339	5813676	55	25/08/77	35	GW	Unknown
666	93705	295534	5813494	55	23/08/83	24	GW	Observation
669	93711	296645	5812604	55	31/12/53	30.4	GW	Stock
678	93728	293708	5812756	55	31/12/70	N/A	GW	Unknown
680	93730	295305	5812548	55	31/12/70	N/A	GW	Unknown
687	93742	292361	5812719	55	13/02/77	57.91	GW	Stock
688	93743	292360	5812878	55	19/02/77	66.44	GW	Domestic
689	93745	294560	5812937	55	3/10/80	20	GW	Domestic
691	93747	292393	5813764	55	2/08/82	28	GW	Domestic
692	93748	292533	5813784	55	4/08/82	36.6	GW	Domestic
693	93749	295273	5812744	55	4/12/82	45.72	GW	Domestic
694	93755	293733	5812584	55	20/12/81	30	GW	Domestic
697	93767	291913	5812717	55	7/03/83	40	GW	Stock
698	93768	294273	5813514	55	16/08/84	27.4	GW	Domestic
702	93782	293783	5813124	55	1/11/89	46	GW	Domestic
705	93786	294773	5813384	55	4/11/88	55	GW	Domestic
713	96911	298987	5812459	55	31/12/67	27.43	GW	Unknown
725	96986	299321	5812475	55	1/01/88	27	GW	Stock
744	N/A	294791	5820846	55	14/11/03	22	GW	Domestic and Stock
746	N/A	293008	5819046	55	8/04/04	100	GW	Domestic and Stock
747	N/A	300000	5815000	55	17/05/04	30	GW	Groundwater Investigation

DEPI ID	Bore ID	Easting	Northing	MGA	Date	Depth (m)	Type	Uses
755	N/A	300461	5814634	55	9/03/05	250	GW	Unknown
756	N/A	296141	5814233	55	N/A	100	GW	Unknown
758	N/A	295517	5814686	55	12/09/06	59	GW	Domestic and Stock
759	N/A	294088	5821092	55	23/01/07	20	GW	Domestic and Stock
760	N/A	294490	5813939	55	23/01/07	51	GW	Domestic and Stock
762	N/A	297820	5820459	55	2/03/07	46	GW	Domestic and Stock
763	N/A	297783	5820558	55	28/02/07	30	GW	Domestic and Stock
778	N/A	297482	5821318	55	N/A	25	GW	Unknown
784	N/A	298360	5822013	55	N/A	40	GW	Unknown
802	N/A	296251	5822435	55	N/A	150	GW	Unknown
811	N/A	293214	5822200	55	17/02/09	31.4	GW	State Observation Network
812	N/A	293214	5822200	55	17/02/09	65	GW	State Observation Network
814	N/A	294461	5821183	55	N/A	25	GW	Unknown
815	N/A	296130	5822020	55	N/A	150	GW	Unknown
839	N/A	300481	5813467	55	N/A	60	GW	Unknown
866	N/A	299488	5812684	55	7/12/98	40	GW	Domestic
867	N/A	293693	5812924	55	21/11/99	92.5	GW	Irrigation
868	N/A	294298	5815379	55	2/02/00	24	GW	Domestic
872	N/A	299573	5815494	55	10/05/92	36	GW	Industrial
873	N/A	300573	5816104	55	30/05/92	45	GW	Industrial
874	N/A	300623	5819864	55	16/04/98	88	GW	Irrigation
876	N/A	299865	5816251	55	18/09/67	54.8	GW	Domestic
877	N/A	299253	5816064	55	11/01/90	52	GW	Unknown
881	N/A	300897	5821832	55	19/09/08	31	GW	Domestic
949	N/A	299825	5815243	55	8/10/10	13	GW	Observation
982	N/A	300792	5816790	55	1/09/11	38	GW	Domestic and Stock
1036	N/A	300900	5818279	55	1/02/10	4	GW	Observation
1038	N/A	300009	5818280	55	1/02/10	4	GW	Observation
1146	N/A	294169	5815496	55	24/01/13	49	GW	Industrial

Appendix E. Examples of sources of potential contamination sources

	
Tip-face at Boral landfill site (Middle Road) – AOI 17	**7-11 Service Station (Western Highway) – AOI 6**
	
BP Service Station (Western Highway) AOI 1	**Example of dumped drums and soil mounds (southern-side of BP Service Station) AOI 1**

	
Example of dumped material (southern-side of BP Service Station) AOI 1	**Rail easement area (Troups Road North) AOI 7**
	
Example of market garden (Greigs Road) AOI 10	**Example of stockpiled goods in yard area (Sheahan Road) AOI 24**
	
Example of re-worked soil stockpiles (Meskos Road Nursery Site) AOI 3	**Example of stockpiled material on farm property. (Sinclairs Road) AOI 25**