



'Commercial in Confidence'

Rowe Group
Preliminary Site Investigation

Woolstores Place
Western Australia

27 February 2023
63117/ 145,568 (Rev B)

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Executive Summary

JBS&G Australia Pty Ltd, was commissioned by Rowe Group (the client) to undertake a Preliminary Site Investigation (PSI) for the ten (10) Lot parcel of land at Woolstores Place (the site). The site includes ten cadastral lots as detailed in Table 1-1. The site location and layout are presented in **Figure 1** and **Figure 2** respectively.

The objective of the project was to undertake a PSI, to assess the nature of current and or historical potentially contaminating activities that may have previously occurred within the site or on adjacent properties.

The following scope of works was completed in order to meet the project objectives.

- Completion of a site inspection to identify potentially contaminating activities including but not limited to the observation of the following:
 - Location and condition of visible features including foundations, tanks, pits, wells and bores.
 - Chemical storage and transfer areas, including the presence of waste or chemical containers.
 - Suspect or known hazardous building materials in site structures.
 - Assessment of areas fly tipping/ waste disposal.
 - Observations of obvious evidence of hazardous materials/ conditions (evidence of surface staining, pits, ponding, stressed vegetation, etc.).
- Completion of a desktop review of available client provided and publicly available information including, but not limited to:
 - Local topography, geology, hydrology, hydrogeology and meteorological data (i.e. environmental setting).
 - Historical aerial photographs, including a review of previous and current site activities.
 - Current and historical land title search, including a review of the historical owners and occupiers of the site.
 - Drainage at the site.
 - Readily available government/council records.
 - Any dangerous goods records from the DMIRS.
 - DWER records on the contamination classification of the site
- Preparation of an interpretative PSI report (this report) including a Conceptual Site Model (CSM), in general conformance with the WA DWER Contaminated Sites Guidelines (2021), National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013¹ (NEPM), relevant Australian Standards (e.g., AS4482.1, AS4482.2) and industry standards.

The key findings of the PSI are as follows:

¹ National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 published by the National Environment Protection Council (NEPC 2013) (NEPM)

Former Site Structures and Stockpiled Soil

The site investigation included an assessment for Potentially Asbestos Containing Material (PACM) associated with demolition and dilapidation of former site structures and stockpiled soils. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk. The potential for fibre generation during civil works also poses a risk to on-site receptors.

Stockpiled soil was also present throughout the site. Stockpiled soil on the Woolstores lots was observed to contain a combination of building rubble, sheet metal, steel and PACM.

Illegal Dumping/ Fly Tipping

Along the eastern portion of the Woolstores lots, illegal dumping/ fly tipping was observed. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments and other COPCs associated with fly tipping (metal pipes, steel framework, sheet metal, concrete, paint tins, bricks, tyres etc.) presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

Potential Uncontrolled Fill

The Woolstores site has been built on reclaimed land. There is a potential risk associated with the unknown nature and extent of the imported material. During the preliminary site investigation, PACM fragments were observed within the fill material that was used to create site levels as they are today. The uncontrolled fill presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

At the time of inspection, a limestone road base had been imported to assist with site levels off-site. The limestone road base originated from virgin quarry material². As the material has been directly sourced from a quarry, the potential for contamination from this material to migrate on-site is considered negligible. It should be noted that the imported limestone clean fill is off-site as the site boundary has changed.

Historical Land Uses

The Woolstores site has been subject to commercial/ industrial land uses for roughly 70 years. There is potential for site wide contamination associated with these historical potentially contaminating activities to exist. The Woolstores site while operational was used as a wool storage facility with truck and machinery access. During the PSI, soak wells were observed but the linings were unable to be visually assessed. Further assessment to determine whether the soak wells are lined or unlined is required. Most of the site is also unsealed creating a potential pathway for contaminants from onsite activities to leach through the soil profile to impact groundwater.

Migration of potentially contaminated groundwater from up-gradient properties

Table 3.3 identified various up-gradient properties that are impacted by contaminated groundwater. Based on the information reviewed, it is possible that these impacts have migrated on-site. General regional groundwater quality is known to be acidic. As future land uses on-site are proposed to be a combination of residential and mixed commercial uses, there is a risk that site receptors may come into contact with this contaminated groundwater if abstracted for use. Groundwater in the local area is also relatively shallow (<2m bgl).

² Mainroads Western Australia – Great Sothorn Region – ARR Material Summary, Armstrong's Gravel Pit, Main Roads Limestone Pit.

Acid Sulfate Soils

The DWER (2015) guidance states that in areas of 'High to Moderate risk' of ASS occurring, an ASS investigation is required prior to the following ground disturbance activities:

- Earthworks that will disturb more than 100 m³ of soil.
- During dewatering or soil draining activity.

Given the site's aim is for re-zoning to a residential land use it is likely that both the ground disturbance events above will occur. This will, therefore, trigger the requirements for ASS investigation.

Recommendations

Based on the investigation conclusions, the following recommendations are made.

Further assessment or management/remediation of the potentially impacted soils and groundwater should be considered to assess the potential risks to future site receptors. It is noted that an intrusive sampling program should be considered to characterise impacts associated with the APECs identified.

It is recommended that JBS&G provide a scope for a Sampling Analysis and Quality Plan (SAQP) and subsequent Detailed Site Investigation (DSI) in order to characterise the nature, extent and risk of potential contamination onsite (site derived and offsite migration).

It is recommended that waste material identified on site, derived from the illegal dumping/fly tipping activity is removed and disposed of off-site appropriately at the time of demolition, prior to the completion of further investigative activities.

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd, was commissioned by Rowe Group (the client) to undertake a Preliminary Site Investigation (PSI) for the ten (10) Lot parcel of land at Woolstores Place (the site). The site includes ten cadastral lots as detailed in Table 1-1 below. The site location and layout are presented in **Figure 1** and **Figure 2** respectively.

Table 1-1: Site Lot Details

Lot address	Certificate of title	Lot area (ha)
34 Woolstores Place	Lot 1104 on Deposited Plan 165964	2.00
34 Woolstores Place	Lot 1209 on Deposited Plan 173935	3.36
34 Woolstores Place	Lot 895 on Deposited Plan 161301	4.05
34 Woolstores Place	Lot 1350 on Deposited Plan 184224	0.43
N/A	Lot 1156 on Deposited Plan 171141	0.20
N/A	Lot 1157 on Deposited Plan 171141	2.25
23 Woolstores Place	Lot 141 on Deposited Plan 27076	0.20
23 Woolstores Place	Lot 140 on Deposited Plan 27076	2.40
15 Woolstores Place	Lot 11 on Diagram 53535	1.90
N/A	Lot 44 on Deposited Plan 171141	0.30

1.2 Objectives

The objective of the project was to undertake a PSI, to assess the nature of current and/ or historical potentially contaminating activities that may have previously occurred within the site or on adjacent properties.

A conclusion will be provided as to whether there may be potential for site contamination to exist, and if so, what further site assessment/investigation is required to establish the suitability of the site for a residential land use or what remedial action is required to manage/mitigate any unacceptable risks.

1.3 Scope

The following scope of works was completed in order to meet the project objectives.

- Completion of a site inspection to identify potentially contaminating activities including but not limited to the observation of the following:
 - Location and condition of visible features including foundations, tanks, pits, wells and bores.
 - Chemical storage and transfer areas, including the presence of waste or chemical containers.
 - Suspect or known hazardous building materials in site structures.
 - Assessment of areas fly tipping/ waste disposal.
 - Observations of obvious evidence of hazardous materials/ conditions (evidence of surface staining, pits, ponding, stressed vegetation, etc.).
- Completion of a desktop review of available client provided and publicly available information including, but not limited to:

- Local topography, geology, hydrology, hydrogeology and meteorological data (i.e. environmental setting).
- Historical aerial photographs, including a review of previous and current site activities.
- Current and historical land title search, including a review of the historical owners and occupiers of the site.
- Drainage at the site.
- Readily available government/council records.
- Any dangerous goods records from the DMIRS.
- DWER records on the contamination classification of the site
- Preparation of an interpretative PSI report (this report) including a Conceptual Site Model (CSM), in general conformance with the WA DWER Contaminated Sites Guidelines (2021), National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013³ (NEPM), relevant Australian Standards (e.g., AS4482.1, AS4482.2) and industry standards.

³ National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 published by the National Environment Protection Council (NEPC 2013) (NEPM)

2. Site Condition and Surrounding Land Use

2.1 Site Identification

The location of the site is shown in Figure 1 and the layout of the site is shown in Figure 2. Site identification details are summarised in Table 2-1 and described in the following sections. The Certificate of Title for each of the individual Lots is provided in Appendix E.

Table 2-1: Site Details

Site Address & Lot ID	34 Woolstores Place (Lot 1104 on Deposited Plan 165964) 34 Woolstores Place (Lot 1209 on Deposited Plan 173935) 34 Woolstores Place (Lot 895 on Deposited Plan 161301) 34 Woolstores Place (Lot 1350 on Deposited Plan 184224) 23 Woolstores Place (Lot 141 on Deposited Plan 27076) 23 Woolstores Place (Lot 140 on Deposited Plan 27076) 15 Woolstores Place (Lot 11 on Diagram 53535) N/A (Lot 1156 on Deposited Plan 171141) N/A (Lot 1157 on Deposited Plan 171141) N/A (Lot 44 on Deposited Plan 171141)
Approximate Coordinates of Estate Boundary (UTM)	N Corner = -35.023117, 117.859034 E Corner = -35.026987, 117.867681 W Corner = -35.026381, 117.856086 S Corner = -35.027743, 117.856934
Site Area (ha)	19.66
Site Owner(s)	Mainbeam PTY LTD – Lot 1156, Lot 1157, Lot 895, Lot 1104, Lot 1209, Lot 140, Lot 141 Main Roads Western Australia – Lot 11 State of Western Australia – Lot 44 City of Albany – Lot 1350
Site Operator	Sandhurst Trustees LTD, Department of Planning, Lands and Heritage, Public Transport Authority of Western Australia
Current Land Use	Rural residential and commercial purposes. Parking and protection of public utility services.
Former Land Use	Rural residential properties, and Commercial Warehouse
Proposed Land Use	Residential land use (medium and high-density housing) with commercial land uses
Local Government Authority	City of Albany
Zoning	Rural (Small Lot Holdings), General Industry and Park and Recreation
Proposed Zoning	Mixed Use – Residential and Commercial Spaces
Site Classification	Currently not classified

2.2 Site Inspection

On 4-5th July 2022, an experienced JBS&G environmental scientist undertook a site inspection as part of the PSI (2022). The observations made have been separated into two tables. Table 2.2 summarises the site inspection findings for the undeveloped northern rural properties and summaries for the large commercial warehouses present are summarised in Table 2.3 below. Key site observations are presented in the photographs included in Appendix B.

Table 2-2: Site Inspection Findings Summary – Northern Rural Properties⁴

Aspect	Observations
Accessibility	Access to these lots is Woolstores Place, there is a main driveway that allows access to each of the residential properties. At the time of inspection, the Northern Rural Residential Properties remained undeveloped, although clean limestone roadbase has been imported to the north of the site for construction activities and assisting in site levels.
Topography	The lots are generally flat, with a progressive slope to the south toward Lockyer Bay. Ground levels as depicted on Landgate range from 1 – 2 m AHD. There are surface water expressions present.
Surface drainage	All soils on site comprise of permeable sand, therefore most of the drainage onsite will be through infiltration.
Site nature and condition	Most of the site has been undeveloped. There is remnant vegetation present.
Visible signs of contamination	There were no notable visible signs of contamination.
On-site buildings and other infrastructure	The whole site did not contain infrastructure. The only buildings and other infrastructure that were present onsite at the time of inspection was the demountable dongas for the civil works being undertaken to the north (off-site).
Aesthetic issues	No odours or visual signs of contamination were detected, and general housekeeping was appropriate.
Stockpiled material	There was a large stockpile of material located to the north (off-site), most likely associated with the topsoil scrape of the site before the fill was imported. The extent of the material is estimated to be circa 765m ³ . As this material was located off-site, no further assessment was undertaken.
Presence of PACM	No PACM was observed
Groundwater bores	No groundwater bores were observed
Surrounding land use	The surrounding land is used for rural residential, general industry and parks and recreation purposes.

Table 2-3: Site Inspection Findings Summary – Commercial/ Industrial Warehouses⁵

Aspect	Observations
Accessibility	Access to these lots is Woolstores Place, there is a main driveway that allows access the lots. The boundary of the lots is bounded by temporary fencing.
Topography	The lots are generally flat, with a progressive slope to the south toward Lockyer Bay. Ground levels range from 1 – 2 m AHD.
Surface drainage	All soils on site comprise of permeable sand, therefore most of the drainage onsite will be through infiltration. There were various drains and sumps present on site.
Site nature and condition	At the time of inspection, the warehouse located on Lot 895 had been partially demolished with all roofing and wall structures removed. The warehouse to the south is still in good condition with only roughly 10% of roofing panels removed.
Visible signs of contamination	No gross contamination was observed. Fugitive PACM fragments were found around the warehouses and within the imported fill material along the southern and eastern boundary of the site.
On-site buildings and other infrastructure	Two historical warehouses associated with the historical Woolstores operations were present at the time of inspection. Both were in the process of being demolished. Roofing panels on both buildings comprised predominantly of PACM.
Aesthetic issues	No odours were detected, however, at the time of inspection the site was covered in demolition material from the warehouses.
Stockpiled material	Stockpiled material was present throughout site with C & D waste with PACM scattered throughout the site
Presence of PACM	PACM fibre-cement sheeting observed around the warehouses and within the imported fill material along the southern and eastern boundary of the site.
Groundwater bores	Three groundwater bores were observed around the boundary of the site.

⁴ Northern Rural Properties – Lot 141 on DP 27076, Lot 140 on DP 27076, Lot 11 on D 53535, Lot 1157 on DP 171141, Lot 44 on DP 171141.

⁵ Lot 1104 on DP 165964, Lot 1209 on DP 173935, Lot 895 on DP 161301, Lot 1350 on DP 184224.

Aspect	Observations
Surrounding land use	The surrounding land is used for residential, public open space and mixed purposes

2.3 Surrounding Land Use

Under the Albany Local Planning Scheme 1, the site is bordered by Urban Residential and General Industry. The surrounding land uses are depicted in Figure 1.

Further details on the surrounding land use are presented in Table 2-5.

Table 2-4: Surrounding Land Use

Location	Detail
North	The site is bounded by a priority road (Frenchman Bay Road) and a railway. Further to the northeast is remnant bushland zoned as parks and recreation. Northwest of the site is zoned as rural with small lot holdings.
East	Directly east of the site is the rail line and Princess Royal Drive (Major Road). There are residential dwellings further east
South	The site is bound by Frenchman Bay to the south.
West	Land to the west is zoned as Tourist/ Residential with various tourist accommodation and residential dwellings.

3. Desktop Study

3.1 Environmental Setting

3.1.1 Topography

Review of available online topographic maps indicated that site lies at approximately 5 – 11 m Australian Height Datum (AHD).

During the site inspection, the site was observed to be typically flat, with minor surface depressions towards surface drainage infrastructure.

3.1.2 Hydrology

The site is situated within the Bremer West Aquifer. There is one permanent surface water bodies on site, this is located on Lot 11 on Diagram 53535. Shoal Bay located immediately south of Lot 1209 on Deposited Plan 173935.

3.1.3 Hydrogeology

According to data published by the DWER in the Perth Groundwater Atlas (PGA), the site is underlain by the Bremer West Superficial Sediment Aquifer.

Given the site's proximity to the coast, groundwater levels range from approximately 7.5 metres below ground level (mbgl) to less than 1 mbgl. Groundwater flow direction within the site broadly flows southward, toward the coast.

Groundwater quality in the area is noted to be from fresh to saline, with approximate total dissolved solid (TDS) measurements between 100 – 100,000 mg/L. The site does not fall within a Public Drinking Water Source Areas (PDWSA), with the closest PDWSA being approximately 1km west of the site.

3.1.3.1 Groundwater Bore Search

A review of the Department of Water and Environmental Regulation (DWER) Water Register indicates that there are 0 licensed⁶ groundwater abstraction bores located within a 1.0 km radius of the site. The closest abstraction bore is located approximately 1.2km west of the site.

There are 10 registered bores within 500 m of the site (Appendix C), all of which are located within the boundary of the site. The details of the bores registered within the boundary of the site is summarised in Table 3-1 below. It is recognised that in WA in most instances there is no requirement to obtain a license for a domestic groundwater bore.

Table 3-1: Onsite Registered Groundwater Bore Details (DWER)

Licence #	Drill Depth (m bgl)	Bore Use	Direction and distance from centre of site	Additional information
60210190	4 m bgl	Groundwater bore	310 m south west	Department of Water
60210191	4 m bgl	Groundwater bore	320 m south west	Department of Water
60210112	5.5 m bgl	Groundwater bore	300 m north east	Department of Water
60210113	9.8 m bgl	Groundwater bore	300 m north east	Department of Water
60210114	15.2 m bgl	Groundwater bore	300 m north east	Department of Water

⁶ There is a requirement to obtain a groundwater abstraction licence where groundwater is used for commercial/industrial purposes (e.g. process water), especially if abstraction is occurring from deeper confined aquifers. There may be additional unregistered groundwater wells in the area.

Licence #	Drill Depth (m bgl)	Bore Use	Direction and distance from centre of site	Additional information
60210115	4 m bgl	Groundwater bore	In Centre of Site	Department of Water
60210116	8.3m bgl	Groundwater bore	In Centre of Site	Department of Water
60210117	11.2 bgl	Groundwater bore	In Centre of Site	Department of Water
60210118	14.3 m bgl	Groundwater bore	In Centre of Site	Department of Water
60210411	15.2 m bgl	Groundwater bore	350 m north west	CSBP

3.1.4 Geology

The site is located within the Albany-Fraser Orogen Nornalup Complex range formation, comprising of gneiss, metamorphic rock and granitoid.

Porphyritic biotite granite and adamellite and a quartz-feldspar-biotite gneiss; compositionally layered gneiss with granofels; includes amphibolite and mafic granulite layers; granoblastic fabric.

3.1.4.1 Acid Sulfate Soils

Acid sulfate soils (ASS) are naturally occurring, iron-sulfide rich soils, sediments, or organic substrates, formed under waterlogged conditions. If exposed to air, these sulfides can oxidise and release sulfuric acid and heavy metals. This process can occur due to drainage, dewatering or excavation.

The ASS risk mapping available from the Australian Soil Resource Information System (ASRIS) (2013) and DWER (2017). The site is classed as having a 'High Probability of Occurrence' (ASRIS 2013) and/or 'High to Moderate risk' (DWER 2017) of ASS occurring within 3 m of the natural soil surface that could be disturbed by most land development activities. The DWER (2015) guidance states that in areas of 'High to Moderate risk' of ASS occurring, an ASS investigation is required prior to the following ground disturbance events:

- Earthworks that will disturb more than 100 m³ of soil.
- During dewatering or soil draining activity.

3.2 Site History

3.2.1 Current land use

The Woolstores lots are currently zoned General Industry with the surrounding lots zoned as Rural residential under the City of Albany's Local Planning Strategy (2019).

Based on information obtained in the site inspection and desktop study, the current land use is considered to comprise of:

- **Lot 1104** – Commercial / industrial property. The western half of the lot is covered in a warehouse structure while the eastern half is covered in vegetation with a dirt path running north to south.
- **Lot 1209**– Commercial / industrial property. The whole lot is covered in a warehouse structure.
- **Lot 895**- Commercial / industrial property. The northern portion of the lot is split into two warehouses with the southern portion warehouse being part of lot 1209s warehouse. The southern portion of the lot is vegetated.
- **Lot 1350**– Site comprises of vegetated land.
- **Lot 1156**– Site comprises of vegetated land.
- **Lot 1157**– Site comprises of vegetated land.

- **Lot 140** - Site comprises of vegetated land. At the southern portion of the lot there is a residential driveway built.
- **Lot 141** - Rural residential with a small scale workshop and associated laydown area in the northern portion of the site. The remainder of the site vegetated.
- **Lot 11** – Rural residential at the southern portion of the lot. The remainder of the lot is vegetated with a surface water body present in the south.
- **Lot 44**– Site comprises of vegetated land.

3.2.2 Historical land use

Historical aerial photographs have been reviewed in order to gain an understanding of the historical use of the site, and to identify areas and activities of potential environmental concern with respect to contamination. A summary of the available aerial images from Landgate 'Map Viewer Plus' were reviewed as part of the investigation and are summarised in Table 3-2.

Table 3-2: Summary of Historical Aerial Photograph Observations

Date	General Observation	Lot Specific Observations
1954	<ul style="list-style-type: none"> • First available photograph, Woolstores place seems to be a sealed road. • The surrounding land remains mainly uncleared. 	<ul style="list-style-type: none"> • All lots remain uncleared with the exception of Lot 895 which contains a commercial/industrial building.
1961	<ul style="list-style-type: none"> • Remains largely unchanged from previous photo. • The surrounding land remains mainly uncleared. 	<ul style="list-style-type: none"> • Lot 895 had expanded its commercial/industrial building into Lot 1104.
1977	<ul style="list-style-type: none"> • Land within the lots has been cleared for agricultural purposes. • Surrounding land continues with residential development to the west, and industrial/commercial development to the north. 	<ul style="list-style-type: none"> • The expansion of the commercial/industrial building on Lot 895 has continued and now occupies Lot 895, Lot 1104 and Lot 1209. • Lot 1209 has been filled to reclaim land for the warehouses to be built on. • Lot 140 further development of residential property at northern part of the lot.
1988	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. • Commercial/industrial development continues to the north and east of the lots. 	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. • A surface water body has appeared on Lot 140
1996	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. • Commercial/industrial development continues to the north and east of the lots. 	<ul style="list-style-type: none"> • Residential building developed on Lot 11.
2007	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. • Commercial/industrial development continues to the north of the lots. 	<ul style="list-style-type: none"> • The commercial/industrial building that crosses over Lot 895 and Lot 1104 has been demolished.
2012	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. 	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph.
2018	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. • Commercial/industrial development continues to the north of the lots. 	<ul style="list-style-type: none"> • Lot 140 has developed a dam like structure along the eastern border of the lot. • Surface water bodies are present in Lot 141.
2020	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph. 	<ul style="list-style-type: none"> • Remains largely unchanged from previous photograph.

3.3 Dangerous Goods Search

A dangerous goods license search request was completed on 20th May 2022 with the WA Government Department of Mines, Industry Regulation and Safety (DMIRS) for each of the site Lots. The Notice of Decision provided by DMIRS found various documents pertaining to the storage of Dangerous Goods onsite dating from 1993 – 2002. The response provided by DMIRS is included in Appendix D. The dangerous goods documents for the site related to the storage of a 3.8 KL Liquid

Petroleum Gas Tank from 1993 to 2002. The latest correspondence with DMIRS in relation to the storage of the tank was in 2002. The letter stated, *“The Albany Woolstores are no longer in operation and the gas tank has been removed.”*

3.4 DWER Records

3.4.1 Site Records

A BSR Request was submitted to DWER for each of the Lots on 20/05/2022. A search of the department’s records indicate that the site has not been reported to the department as a known or suspected contaminated site.

The BSR search responses are provided in Appendix E.

3.4.2 Surrounding properties

Seven (7) properties within a 1 km radius have been classified as *‘Remediated for restricted use’*, located north of the site. Table 3-3 provides a summary of the property details, and the BSR for the properties is provided in Appendix E.

Table 3-3: DWER Online Contaminated Sites Database Search

Property Description	Address	Classification	Distance from Site	Reason for Classification
Lot 201 on Plan 76615	198 Hanrahan Rd Mount Elphinstone, WA, 6330	Remediated for Restricted Use (26/02/2021) ID no: 72939	820 m	<p>A preliminary site investigation in 2004 identified that the north-eastern portion of this site was historically used as a sand quarry up until the 1960s. The quarry void was subsequently used for the disposal of industrial wastes associated with the nearby fertiliser works. Wastes disposed included neutralised lead sulphate chamber washings, and contaminated sediments dredged from drainage systems during the 1980s. At the time of classification, the site was used for passive agricultural uses, including a tree plantation. Remedial works were historically undertaken at this site which involved the excavation and off-site disposal of lime solids waste. It is understood that remedial works were guided by in-field x-ray fluorescence measurements and included the collection of soil validation samples. However, limited documentation was prepared at the time to demonstrate the effectiveness of these remedial works.</p> <p>A targeted soil investigation was undertaken in 2018 as part of a broader detailed site investigation. Elevated concentrations of metals, such as lead, cadmium and copper, were identified at depths up to 1.5 metres below ground level. Groundwater at the site has been found to be acidic and have elevated concentrations of some metals (such as aluminium and iron) and fluoride. The elevated concentrations of aluminium and iron are associated with the acidic groundwater conditions which are likely caused, in part, by the presence of naturally occurring acid sulfate soils in the area.</p>
Lot 201 on Plan 76615	198 Hanrahan Rd. Mount Elphinstone, WA, 6330	Remediated for Restricted Use (26/02/2021) ID no: 72938	615 m	<p>A superphosphate fertiliser plant historically operated on the site for approximately 47 years, from 1954 to 2001. The site has also been used for fuel and chemical storage and fertiliser dispatch for approximately 67 years, since 1954. Historically, solid, and liquid wastes were disposed on-site. Fertiliser production, fuel and chemical storage and landfilling are land uses which have the potential to cause contamination. Lead-impacted soils in the sulphur pad area were further investigated (2018) and confirmed to be</p>

Property Description	Address	Classification	Distance from Site	Reason for Classification
				<p>localised in nature. Several soil samples reported lead at concentrations exceeding Ecological Investigation Levels and Health Investigation Levels for commercial and industrial land. An estimated 220 cubic metres of lead-impacted material remains at the site which poses a potential risk to human health and requires ongoing management.</p> <p>Anecdotal information indicates empty railway carts were historically parked in this area and residual superphosphate fertiliser in the carts was swept out onto the soil surface. This area was subject to targeted remediation in June 2019, with approximately 200 cubic metres of phosphorus-impacted surface soils being excavated and reused off-site as fertiliser. Groundwater in the vicinity of the sulfur pad is highly acidic, with pH values less than 3 in some monitoring locations. Concentrations of lead in groundwater near the sulfur pad (where lead-impacted soils remain) are generally low and appear to be decreasing over time. Concentrations of lead in recent years have been well below assessment levels relevant to the non-potable use of groundwater.</p>
Lot 76 on Plan 26132	76 Grey St Mount Melville, WA, 6330	Remediated for Restricted Use (29/10/2018)	420 m	<p>This site formed a portion of a larger land-holding occupied by the Albany fertiliser works. A preliminary site investigation was undertaken in 2004 which found that the site had not historically been used for any purpose related to the fertiliser works. However, the south-western portion of the site was used as a bulk fuel depot for approximately 18 years between 1956 and 1974. Soil investigations were undertaken in 2017 specifically targeting soils in the vicinity of the abandoned ASTs and other buildings associated with the former use of the site. Petroleum hydrocarbon impacts were not identified, however, an area of lead-impacted soils was identified adjacent to the opening of an unknown concrete building. The source of the lead was not known but was suspected to be associated with runoff from surfaces of the building potentially coated with lead-based paint. Remedial works were undertaken during 2018 comprising the excavation and off-site disposal of approximately half a cubic metre of lead-contaminated soils.</p>
Lot 877 on Plan 159791	877 Grey St Mount Melville, WA, 6330	Remediated for Restricted Use (29/10/2018)	420 m	
Lot 76 on Plan 26132	76 Grey St Mount Melville, WA, 6330	Remediated for Restricted Use (29/10/2018)	420 m	
Lot 893 on Plan 159791	893 Spearwood Rd Mount Melville, WA, 6330	Remediated for Restricted Use (29/10/2018)	420 m	
Lot 91 on Plan 222006	294 Grey St Mount Melville, WA, 6330	Remediated for Restricted Use (29/10/2018)	420 m	<p>Final validation sampling and analysis demonstrated that lead-impacted soils exceeding relevant health-based and ecological based screening criteria had been successfully remediated. Periodic groundwater monitoring has been undertaken at the site and across the broader catchment area which includes a former fertiliser manufacturing facility to the west and an operating municipal landfill to the north. These investigations have found that groundwater to the north and west of this site has been impacted by landfill leachate associated with the municipal landfill located at 37 Maxwell Street, Mount Melville. Nutrients, acidity and metals (such as iron, copper and zinc) were also identified in groundwater at levels exceeding assessment levels for marine waters (DER, 2014). These criteria are relevant given the site is within 500 metres of Princess Royal Harbour. However, a review of groundwater data from across the catchment area indicates that the levels of nutrients, acidity, and metals in groundwater beneath this site are indicative of background up-hydraulic</p>

Property Description	Address	Classification	Distance from Site	Reason for Classification
				gradient groundwater quality.

3.5 Australian and State Heritage Registers

3.5.1 Federal Heritage

A search of the Australian Heritage Trust Database⁷ was undertaken on 15 June 2022 for wider site area. The search did not identify the presence of any items of national significance at, or in the immediate vicinity of the site.

3.5.2 Heritage Council of Western Australia

A database search of the WA State Heritage Office⁸ was undertaken on 15 June 2022 for the wider site area. The search did not identify the presence of any items of state registered places at the site.

3.5.3 Department of Indigenous Affairs

A search of the Government of Western Australia, Department of Aboriginal Affairs Aboriginal Heritage Inquiry System (AHIS)⁹ was undertaken on 15 June 2022. The search did not identify the presence of any heritage item on the AHIS. The closest heritage item is located immediately north of the sites and is called the Frenchman Bay Road Camp and is registered for Mythological, Camp and Natural Feature.

3.6 Previous Site Investigations

JBS&G is unaware of any previous environmental investigations undertaken at the site.

⁷ <http://www.environment.gov.au/cgi-bin/ahdb/search.pl>

⁸ <http://inherit.stateheritage.wa.gov.au/Public/?advanced=True>.

⁹ <https://espatial.dph.wa.gov.au/AHIS/index.html?viewer=AHIS>.

4. Discussion

4.1 Site Observation

During the site inspection, notable illegal dumping/fly tipping was observed throughout the south-eastern corner of the historical Woolstores site, which generally comprised of material including PACM, household rubbish, white goods, tyres, steel beams, wooden pallets, and building rubble. PACM was also observed around the warehouses being demolished. No obvious contamination was observed in the rural residential properties surrounding the Woolstores site. Although off-site, earthworks had begun to the north of the northern rural properties and clean imported fill (limestone roadbase – sourced from a quarry) covering most of the lots. It should be noted that although no visual or olfactory signs of contamination were observed, although undeveloped, potential contamination may exist in the undeveloped rural properties that were not inspected.

4.2 Areas of Potential Environmental Concern

Based on the information obtained in the desktop component of the investigation and site works the areas of potential environmental concern (APEC) outlined below were identified and assessed as part of the PSI.

1. Former site structures and stockpiled soils.
2. Illegal dumping/fly tipping activities.
3. Potential uncontrolled fill.
4. Historical industrial land use of the site.
5. Migration of potentially contaminated groundwater beneath the site from up-gradient properties.

4.2.1 Former Site Structures and Stockpiled Soil

The site investigation included an assessment for potential ACM (PACM) associated with demolition, dilapidation of former site structures and stockpiled soils. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk. The potential for fibre generation during civil works also poses a risk to on-site receptors.

Stockpiled soil was also present throughout the site. Stockpiled soil on the Woolstores lots was observed to contain a combination of building rubble, sheet metal, steel and PACM. Stockpiled material present off-site of the northern boundary of the northern rural residential properties was assumed to be representative of the topsoil layer that was been scraped away before the limestone roadbase was imported. The origin of this limestone road base is from the Great Southern Region Quarry Pits. The quarry certificates are presented in Appendix G.

4.2.2 Illegal Dumping/ Fly Tipping

Along the eastern portion of the Woolstores lots, illegal dumping/ fly tipping was observed. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments and other COPCs associated with fly tipping (metal pipes, steel framework, sheet metal, concrete, paint tins, bricks, tyres etc.) presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

4.2.3 Potential Uncontrolled Fill

The Woolstores site has been built on reclaimed land. There is a potential risk associated with the unknown nature and extent of the imported material. During the preliminary site investigation,

PACM fragments were observed within the fill material that was used to create site levels as they are today. The uncontrolled fill presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

At the time of inspection, north of the northern rural residential properties (off-site) had been cleared of most vegetation and site structures (residential houses). Limestone road base had been imported to assist with site levels. The origin of this limestone road base is from the Great Southern Region Quarry Pits. The quarry certificates are presented in Appendix G.

4.2.4 Historical Land Uses

The Woolstores site has been subject to commercial/ industrial land uses for roughly 70 years. There is potential for site wide contamination associated with these historical potentially contaminating activities to exist. The Woolstores site while operational was used as a wool storage facility with truck and machinery access. During the PSI, soak wells were observed but the linings were unable to be visually assessed. Further assessment to determine whether the soak wells are lined or unlined is required. Most of the site is also unsealed creating a potential pathway for contaminants from onsite activities to leach through the soil profile to impact groundwater.

The remainder of the site has been subject to rural residential land uses. The southern properties contained residential dwellings and small sheds. At the time of inspection there was no visual or olfactory signs of contamination on the properties. Although there were no visual or olfactory signs of contamination observed, this does not discount the possibility that contamination exists.

At the time of inspection, the northern rural properties had been cleared of all dwellings and structures. Imported limestone roadbase was present on the surface to assist with site levels. Therefore, the northern rural properties could not be inspected for potential areas of contamination. An assessment of contaminants associated with the rural residential properties will also be required. This will confirm if there are potential sources of contamination present that have been covered by the roadbase fill material that pose risk to current and future receptors.

4.2.5 Migration of potentially contaminated groundwater from up-gradient properties

Table 3.3 identified various up-gradient properties that are impacted by contaminated groundwater. Based on the information reviewed, it is possible that these impacts have migrated on-site. General regional groundwater quality is known to be acidic. As future land uses on-site are proposed to be a combination of residential and mixed commercial uses, there is a risk that site receptors may come into contact with this contaminated groundwater if abstracted for use. Groundwater in the local area is also relatively shallow (<2m bgl).

5. Conceptual Site Model

The information herein together with the figures included with this report, aid in presenting a conceptual site model (CSM) for the site, based on relevant site setting information, background historical site information.

For a potential contamination risk to be present at a site, a complete exposure pathway must exist which consists of:

- areas of potential environmental concern (e.g., primary sources such as leaking chemical tanks; secondary sources such as impacted soils/groundwater/surface water);
- a transport mechanism (pathway) between the source and the receptor (e.g., direct dermal contact with soil/dust/water, inhalation of vapours, migration of groundwater through aquifer matrix);
- an exposure point where a receptor comes into contact with the contamination; and
- an exposure route (i.e., inhalation, ingestion or dermal).

5.1 Areas of Potential Environmental Concern

Based on the information obtained in the desktop assessment and site inspection the following APEC were identified:

1. Former site structures and stockpiled soils
2. Illegal dumping/fly tipping activities.
3. Potential uncontrolled fill.
4. Historical land uses of the site.
5. Migration of potentially contaminated groundwater beneath the site from up-gradient properties.

5.2 Potential Receptors

On Site

- Current and future excavation/maintenance workers potentially exposed to impacted soils and groundwater during trenching works, dewatering works or remedial works.
- Future on-site residents
- Terrestrial ecology.
- Surface water at the site
- Groundwater beneath the site.

Off Site

The following potential off-site receptors have been identified in the event that site derived contamination is migrating off site.

- Current and future excavation/maintenance workers potentially exposed to impacted soils and/or groundwater during trenching works or remedial works completed adjacent to the site.

- Future off-site residents and site visitors.
- Terrestrial ecology
- Surface water bodies

5.3 Potential Pathways

Potential contaminant exposure or migration pathways for the COPCs are summarised below.

- Infiltration of contaminants into the underlying soil and groundwater.
- Vapour migration from impacted soil or groundwater.
- Direct contact with impacted soils or groundwater.
- Windblown dusts and/or fibres.
- Groundwater migration and abstraction.

Potential exposure routes for human health include:

- Dermal contact.
- Ingestion.
- Inhalation.

Potential exposure routes for ecological receptors include:

- Direct contact.
- Uptake through roots.

5.4 Potential Pollutant Linkages

Table 5-1 provides a summary of updated potential pollutant linkages of the conceptual site model.

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
<p>1. Contamination associated with the former site structures and stockpiled soils.</p> <p><u>COPC</u></p> <ul style="list-style-type: none"> • ACM • TRH • BTEX • PAH • VOC/sVOC • Metals 	Onsite - future site visitors and residents.	Dermal contact and incidental ingestion of soil and/or groundwater.	Possible	Stockpiled soils were observed on Lot 1104 and off-site (north of Lot 11 and Lot 140 – not included in this investigation). The nature and extent of potential contamination within the stockpiled soil on Lot 1104 is currently unknown. Risks to onsite workers, visitors and residents via dermal contact of soil is possible. The leaching of potential contaminants associated with the stockpiled soils can possibly migrate to groundwater. Dermal contact of groundwater for site visitors and residents on-site will only be possible through groundwater abstraction. Dermal contact of groundwater for on-site site visitors and residents is considered highly unlikely as there are no current abstraction bores on-site. It is highly unlikely that a bore will be installed in the future due to the saline nature of the groundwater.
		Inhalation of dust and fibres	Possible	There is a possibility that wind can generate dust off the stockpiles and therefore mobilise the identified stockpiles COPC, creating unacceptable risks to future on-site workers, visitors and residents via dust inhalation. The preliminary site investigation identified PACM within Lot 1104, 1209, 895 and 1350. The presence of PACM fragments in these areas present a potentially unacceptable health risk to future residents, workers and site visitors, including an aesthetic risk. Qualitative Risk Rating: Moderate
	Onsite - intrusive maintenance and civil contractors	Dermal contact and incidental ingestion of soil and/or groundwater.	Possible	Stockpiled soils were observed on Lot 1104 and off-site (north of Lot 11 and Lot 140 – not included in this investigation). The nature and extent of potential contamination within the stockpiled soils is currently unknown. Risks to intrusive maintenance workers and civil contractors via dermal contact of stockpiled soil is possible. The leaching of potential contaminants associated with the stockpiled soils can possibly migrate to groundwater. As groundwater at the site is shallow, intrusive maintenance workers and civil contractors may encounter potentially contaminated groundwater.
		Inhalation of dust and fibres	Possible	There is a possibility that future civil works generate dust and therefore mobilise the identified stockpiles COPC, creating unacceptable risks to intrusive maintenance and civil contractors via dust inhalation. The preliminary site investigation identified PACM within Lot 1104, 1209, 895 and 1350. Excavation activities (particularly during development) could result in significant disturbance of PACM and potential for generation of fibres if not appropriately managed. Qualitative Risk Rating: Moderate
	Onsite – Ecological Receptors	Uptake by roots	Possible	Vegetated areas for the current (general industry and rural residential) and future (mixed use) land uses are considered to be low ecological significance. No signs of vegetation stress were observed during the preliminary site investigation.
				Qualitative Risk Rating: Low

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
	Offsite - human receptors including recreational users of the Royal Princess Harbour	Dermal contact and incidental ingestion of groundwater.	Unlikely	Stockpiled soils were observed on Lot 1104 and off-site (north of Lot 11 and Lot 140 – not included in this investigation). The nature and extent of potential contamination within the stockpiled soils is currently unknown. There is a possibility (unlikely) that potentially impacted soils may leach into groundwater and then migrate off-site where recreational users of the marine environment may be exposed via dermal contact and incidental ingestion. The closest groundwater abstraction bore is 1.2 km cross-gradient (west) of the site, it is therefore considered that potential contaminants from the site present in groundwater (if present) will not impact the human receptors abstracting water from the bore.
		Inhalation of dust and fibres	Possible	There is a possibility that future civil works and wind generate dust and therefore mobilise the identified stockpiles COPC, creating unacceptable risks to off-site human receptors via dust inhalation. The preliminary site investigation identified PACM within Lot 1104, 1209, 895 and 1350. Development activities would result in significant disturbance of soils and possible generation of fibres which may impact offsite receptors if not appropriately managed. Qualitative Risk Rating: Low
	Offsite - Ecological Receptors	Direct Contact	Unlikely	The Royal Princess Harbour is the closest down-gradient ecological receptor to the site. The Royal Princess Harbour is located along the southern boundary of the site. Leaching of contaminants within the stockpiled material to groundwater and subsequent off-site migration is possible, although unlikely, and could pose risks to the sensitive ecological receptors (if reported above ecological criteria) within the Harbour. Qualitative Risk Rating: Low
2. Illegal dumping/ Fly tipping activities <u>COPC</u> • ACM • TRH • BTEX • PAH • VOC/sVOC • Metals	Onsite - future site visitors and residents.	Dermal contact and incidental ingestion of soil and/or groundwater.	Possible	During the site inspection, fly tipping was observed in areas of cleared land, primarily located in the eastern portion of the site. The nature and extent of this fly tipping is currently unknown but is comprised mainly of steel structures, metal sheeting and wire, concrete, rubble, concrete pipes etc. It is possible that fly tipping may have resulted in contamination to the underlying soils. If disturbance works are completed on the material, there is possibility for residents, on-site workers and visitors to be exposed to contaminants. Fly tipping also represents an aesthetic risk. Potential groundwater impacts through leaching are unknown but are considered unlikely.
		Inhalation of impacted dusts/fibres	Possible	PACM along with other COPCs were observed in association with the fly tipping observed on-site. It is possible that fly tipping may have resulted in contamination to the underlying soils. Therefore, future civil works that generate dust and therefore mobilise the identified COPC, can creating unacceptable risks on-site future workers, site visitors and residents via dust and fibre inhalation. Qualitative Risk Rating: Low

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
	Onsite - intrusive maintenance and civil contractors	Inhalation of impacted dusts/fibres. Dermal contact and incidental ingestion of soil and/or groundwater.	Possible Possible	During the site inspection, fly tipping was observed in areas of cleared land, primarily located in the eastern portion of the site. The nature and extent of this fly tipping is currently unknown but is comprised mainly of steel structures, metal sheeting and wire, concrete, rubble, concrete pipes etc. If disturbance works are completed on the material, there is possibility for contaminants and PACM to be exposed to onsite intrusive maintenance workers. The current nature and extent of contaminants associated with fly tipping is currently unknown, although, potential groundwater impacts through leaching that pose risks to future onsite intrusive maintenance and civil contractors are considered low (groundwater assumed to be less than 2 m bgl). Qualitative Risk Rating: Low
	Onsite – Ecological Receptors	Uptake by roots	Unlikely	Vegetated areas for the current (general industry and rural residential) and future (mixed use) land uses are considered to be low ecological significance. No signs of vegetation stress were observed during the preliminary site investigation. Qualitative Risk Rating: Low
	Offsite - Current and future off-site workers and residents	Inhalation of impacted dusts/fibres Dermal contact and incidental ingestion groundwater.	Possible Unlikely	During the site inspection, fly tipping was observed in areas of cleared land, primarily located in the eastern portion of the site. The nature and extent of this fly tipping is currently unknown but is comprised mainly of steel structures, metal sheeting and wire, concrete, rubble, concrete pipes etc. On-site civil works and wind can mobilise contaminants and PACM associated with fly tipping, it is possible for contaminants to pose a risk to off-site site workers and residents. The current nature and extent of contaminants associated with fly tipping is unknown, therefore, potential groundwater impacts through leaching are unknown. Dermal contact and incidental ingestion of potentially contaminated groundwater for future off-site workers and residents is considered unlikely as there are no down gradient off-site residents or site workers. The closest groundwater abstraction bore is 1.2 km cross-gradient (west) of the site, it is therefore considered that potential contaminants from the site present in groundwater will not impact the human receptors abstracting water from the bore. Qualitative Risk Rating: Low
	Offsite – recreational users of the Royal Princess Harbour	Inhalation of impacted dusts/fibres Dermal contact and incidental ingestion of groundwater.	Possible Unlikely	During the site inspection, fly tipping was observed in areas of cleared land, primarily located in the eastern portion of the site. The nature and extent of this fly tipping is currently unknown but is comprised mainly of steel structures, metal sheeting and wire, concrete, rubble, concrete pipes etc. On-site civil works and wind can mobilise contaminants and PACM associated with fly tipping, it is possible for contaminants to pose a risk to off-site recreational users of the Royal Princess Harbour. Potential contaminants associated with onsite fly tipping are unknown. Contaminated groundwater on-site associated with the leaching of COPC from fly tipping could migrate off-site and be expressed as surface water in Princess Harbour. Ingestion of this contaminated groundwater by recreational users (now

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
				expressed as surface water) is unlikely. Qualitative Risk Rating: Low
	Offsite – Ecological Receptors	Direct Contact	Unlikely	The Royal Princess Harbour is the closest down-gradient ecological receptor to the site. The Royal Princess Harbour is located along the southern boundary of the site. Leaching of contaminants within the fly tipping material to groundwater and subsequent off-site migration is possible, although unlikely, and could pose risks to the sensitive ecological receptors (if reported above ecological criteria) within the Harbour. Qualitative Risk Rating: Low
3. Potential uncontrolled fill <u>COPC</u> • Asbestos • TRH • BTEX • PAH • VOC/sVOC • Metals	Onsite - future site visitors and residents.	Dermal contact and incidental ingestion of soil and/or groundwater. Inhalation of impacted dusts/fibres	Possible Possible	Review of historical aerial imagery at the site identified the potential for uncontrolled fill placement prior to, and during, development of the Woolstores site. During the site inspection it was noted that the site was generally flat, and slopes to the south towards Princess Royal Harbour. The Woolstores warehouses have been built on top of the reclaimed land. The imported material was observed to contain PACM along with other rubble. At the time of inspection, the off-site northern rural residential properties had been cleared of most vegetation and site structures (residential houses). A limestone road base was imported to assist with site levels. The origin of this limestone road base is from the Great Southern Region Quarry Pits. The quarry certificates are presented in Appendix G and does not pose any risks to receptors. The areas that have been subject to imported fill (the material under the Woolstores warehouses) could potentially pose risks via direct contact, dust and fibre inhalation, although the nature and extent of contamination is currently unknown. As the nature and extent of contaminants associated with the potential uncontrolled fill is currently unknown, potential groundwater impacts through leaching are possible. Dermal contact of groundwater for site visitors and residents on-site will only be possible through groundwater abstraction. Dermal contact of groundwater for on-site site visitors and residents is considered highly unlikely as there are no current abstraction bores on-site. It is also highly unlikely that a bore will be installed in the future due to the saline nature of the groundwater. Qualitative Risk Rating: Low/Moderate
	Onsite - intrusive maintenance and civil contractors	Inhalation of impacted dusts/fibres. Dermal contact and incidental ingestion of soil and/or groundwater.	Possible Possible	Review of historical aerial imagery at the site identified the potential for uncontrolled fill placement prior to, and during, development of the site. During the site inspection it was noted that the site was generally flat, and slopes to the south towards Princess Royal Harbour. The Woolstores warehouses have been built on top of the reclaimed land. The imported material was observed to contain PACM along with other rubble. At the time of inspection, the off-site northern rural residential properties had been cleared of most vegetation and site structures (residential houses). A limestone road base was imported to assist with site levels. The origin of this limestone road base is from the Great Southern Region Quarry Pits. The quarry certificates are presented in Appendix G and does not pose any risks to receptors. The areas that have been subject to imported fill (the material under the warehouses) could potentially pose risks via direct contact and fibre inhalation, when civil works begin or general intrusive maintenance works. The current nature and

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
				<p>extent of contaminants associated with the imported fill is currently unknown, therefore, potential groundwater impacts through leaching of the potentially contaminated soil are unknown but could pose risks to future onsite intrusive maintenance and civil contractors (groundwater assumed to be less than 2 m bgl).</p> <p>Qualitative Risk Rating: Low/Moderate</p>
	Onsite – Ecological Receptors	Uptake by roots	Possible	<p>Vegetated areas for the current (general industry and rural residential) and future (mixed use) land uses are considered to be low ecological significance. No signs of vegetation stress were observed during the preliminary site investigation.</p> <p>Qualitative Risk Rating: Low</p>
	Offsite - Current and future off-site workers and residents	Inhalation of impacted dusts/fibres	Possible	<p>It is possible for dust to be generated during future excavation and earthworks of material on-site. PACM was observed within the fill material present on the Woolstores lots. There are surrounding residential and industrial properties that may be at risk from impacted dusts/ fibres once airborne.</p>
		Dermal contact and incidental ingestion of groundwater.	Unlikely	<p>a potential pathway link via leaching of contaminants within the fill to offsite receptors. As groundwater flow direction is to the south (Princess Harbour), the likelihood of exposure to off-site site workers and residents is unlikely Potential contaminants present in the fill material on site are unknown. Groundwater is present between roughly 0 – 2 m bgl and is therefore.</p> <p>Qualitative Risk Rating: Low</p>
	Offsite – recreational users of the Royal Princess Harbour	Inhalation of impacted dusts/fibres	Possible	<p>On-site civil works and wind can mobilise contaminants and PACM associated with fly tipping, it is possible for contaminants to pose a risk to off-site recreational users of the Royal Princess Harbour.</p>
		Dermal contact and incidental ingestion of groundwater.	Unlikely	<p>Contaminated groundwater on-site associated with the leaching of COPC from the imported fill could migrate off-site and be discharged to surface water in Princess Harbour. Contact with contaminated groundwater by recreational users is unlikely.</p> <p>Qualitative Risk Rating: Moderate</p>
	Offsite – Ecological Receptors	Direct Contact	Possible	<p>The Royal Princess Harbour is the closest down-gradient ecological receptor to the site. The Royal Princess Harbour is located along the southern boundary of the site. Leaching of contaminants within the fly tipping material to groundwater and subsequent off-site migration is possible, although unlikely, and could pose risks to the sensitive ecological receptors (if reported above ecological criteria) within the Harbour.</p> <p>Qualitative Risk Rating: Moderate</p>
4. Historical land uses of the site.	Onsite - Current and site visitors	Dermal contact and incidental ingestion of soil and/or groundwater.	Possible	<p>The historical operation of the Woolstores lots as industrial since the 1950s and rural residential land uses in the remaining lots has the potential to cause contamination. Historical aerals suggest that the site has been predominantly unsealed including at the time of this investigation. Potential hydrocarbons, pesticides</p>

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
COPC • TRH • BTEX • PAH • VOC/sVOC • OCP/OPP • Metals • Asbestos	and residents.			and heavy metals could be present through the unsealed soil profile and groundwater onsite. The on-site drain network present on the Woolstores lots could act as a potential pathway for contaminated soils to leach into groundwater on-site.
		Inhalation of vapours	Unlikely	The northern rural residential lots, although undeveloped, have the potential to be the source of contamination. No visual or olfactory contamination was observed at the rural residential lots at the time of inspection, although, this does not discount the possibility of contamination being present. As the nature and extent of contaminants associated with the historical land uses is currently unknown, potential groundwater impacts through leaching are possible. Dermal contact of groundwater for site visitors and residents on-site will only be possible through groundwater abstraction. Dermal contact of groundwater for on-site site visitors and residents is considered highly unlikely as there are no current abstraction bores on-site. It is also highly unlikely that a bore will be installed in the future due to the saline nature of the groundwater.
		Inhalation of fibres	Possible	Potential hydrocarbon contamination in the soil profile can also migrate via leaching into groundwater and may represent a risk to human receptors via vapour inhalation. Although, no hydrocarbon staining or contamination was observed, therefore, the risk of this is considered low.
	Onsite - intrusive maintenance and civil contractors			Historical building structures (PACM roofing panels) were observed during the site inspection, although were in the process of being removed. There is still a possibility that fugitive PACM fragments will exist in the surrounding soil once the roofing panels have been removed. Qualitative Risk Rating: Low
		Dermal contact and incidental ingestion of soil and/or groundwater.	Possible	The historical operation of the Woolstores lots as industrial since the 1950s and rural residential land uses in the remaining lots has the potential to cause contamination. Historical arials suggest that the site has been predominantly unsealed including at the time of this investigation. Potential hydrocarbons, pesticides and heavy metals could be present through the unsealed soil profile and groundwater onsite. The on-site drain network present on the Woolstores lots could act as a potential pathway for contaminated soils to leach into groundwater on-site.
		Inhalation of vapours	Possible	No visual or olfactory contamination was observed at the rural residential lots at the time of inspection, although, this does not discount the possibility of contamination being present. As the nature and extent of contaminants associated with the historical land uses is currently unknown, potential groundwater impacts through leaching are possible and pose risks to intrusive maintenance workers and civil contractors (groundwater assumed to be less than 2 m bgl). Based on the depth to groundwater, intrusive workers could potentially come into contact with groundwater at the site. The current nature and extent of contaminants associated with the historical industrial land use is currently unknown, therefore, potential groundwater impacts through leaching are

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
		Inhalation of fibres	Possible	<p>unknown but could pose risks to future onsite intrusive maintenance and civil contractors (groundwater assumed to be less than 2 m bgl). If present, vapours have the potential to accumulate in trenches and excavations posing unacceptable risks to intrusive maintenance workers and civil contractors.</p> <p>Historical building structures (PACM roofing panels) were observed during the site inspection, although were in the process of being removed. There is still a possibility that fugitive PACM fragments will exist in the surrounding soil once the roofing panels have been removed. This PACM material (if present) will pose risks to onsite intrusive maintenance and civil contractors via fibre inhalation.</p> <p>Qualitative Risk Rating: Low</p>
	Onsite – Ecological Receptors	Uptake by roots	Possible	<p>Vegetated areas for the current (general industry and rural residential) and future (mixed use) land uses are considered to be low ecological significance. No signs of vegetation stress were observed during the preliminary site investigation.</p> <p>Qualitative Risk Rating: Low</p>
	Offsite - human receptors including residents and recreational users of the Royal Princess Harbour	<p>Dermal contact and incidental ingestion of groundwater.</p> <p>Inhalation of dust and fibres</p>	<p>Unlikely</p> <p>Possible</p>	<p>Potential contaminants associated with the historical industrial land use of the Woolstores lots are unknown. Potentially contaminated soils on-site could possibly leach into the shallow groundwater and migrate down gradient to the Princess Harbour and become expressed as surface water. Dermal contact and incidental ingestion of potentially contaminated groundwater (expressed as surface water) for recreational receptors in the Royal Princess Harbour is considered possible but unlikely.</p> <p>It is possible for contaminated dust and PACM fibres to be generated during future excavation, earthworks and wind. Surficial PACM was observed throughout the Woolstores lots. There are surrounding residential and industrial properties that may be at risk from impacted dusts/ fibres if airborne. Recreational users of the Royal Princess Harbour could potentially be at risk from fibres and dust generated from wind and during future excavation and earthworks of material onsite.</p> <p>Qualitative Risk Rating: Low</p>
	Offsite - Ecological Receptors	Direct Contact	Possible	<p>The Royal Princess Harbour is the closest down-gradient ecological receptor to the site. The Royal Princess Harbour is located along the southern boundary of the site. Leaching of contaminants within the soil to groundwater and subsequent off-site migration is possible, although unlikely, and could pose risks to the sensitive ecological receptors (if reported above ecological criteria) within the Harbour.</p> <p>Qualitative Risk Rating: Low</p>
5. Migration of contaminated groundwater	Onsite - Current and future on-site	Dermal contact and incidental ingestion of groundwater.	Possible	<p>There are various properties to the north of the site that have been classified as Remediated for Restricted Use (commercial/ industrial). Groundwater from these up-gradient properties have reported acidic conditions and contain elevated concentrations of metals (aluminium, iron, copper and zinc). The acidic</p>

Table 5-1: Updated Potential Pollution Linkages

APEC	Receptor	Exposure Pathway	Linkage Status	Justification
from up-gradient properties <u>COPC</u> • pH • Metals	workers, site visitors and residents.			groundwater conditions are thought to be representative of regional conditions, although, elevated concentrations of metals are associated with the contaminating activities from the up-gradient classified sites. There is no evidence to confirm that these impacts have migrated off-site (creating a 'source site'). If these impacts were to migrate off-site and come on-site, dermal contact and ingestion of water would only be possible through groundwater abstraction. Dermal contact of groundwater for on-site site visitors and residents is considered highly unlikely as there are no current abstraction bores on-site. It is also highly unlikely that a bore will be installed in the future due to the saline nature of the groundwater. Qualitative Risk Rating: Low
	Onsite intrusive maintenance and civil contractors	Dermal contact and incidental ingestion of groundwater.	Possible	There are various properties to the north of the site that have been classified as Remediated for Restricted Use (commercial/ industrial). Groundwater from these up-gradient properties have reported acidic conditions and contain elevated concentrations of metals (aluminium, iron, copper and zinc). However, a review of groundwater data from across the catchment area indicates that the levels of nutrients, acidity, and metals in groundwater beneath this site are indicative of background up-hydraulic gradient groundwater quality. There is no evidence to confirm that these impacts have migrated off-site (creating a 'source site'). Groundwater on-site could potentially be intersected by regular maintenance activities and therefore may present unacceptable risks for intrusive maintenance workers.. Qualitative Risk Rating: Moderate
	Onsite – Ecological Receptors	Uptake by roots	Possible	Vegetated areas for the current (general industry and rural residential) and future (mixed use) land uses are considered to be low ecological significance. No signs of vegetation stress were observed during the preliminary site investigation. Qualitative Risk Rating: Low

6. Conclusions and Recommendations

6.1 Conclusions

JBS&G Australia Pty Ltd, was commissioned by Rowe Group (the client) to undertake a Preliminary Site Investigation (PSI) for the ten (10) Lot Parcel of land at Woolstores Place (the site).

Based on the information obtained in the desktop assessment and site inspection the following APEC were identified at the site, which are discussed in detail below:

1. Former site structures and stockpiled soils
2. Illegal dumping/fly tipping activities.
3. Potential uncontrolled fill.
4. Historical land uses of the site.
5. Migration of potentially contaminated groundwater beneath the site from up-gradient properties.

Former Site Structures and Stockpiled Soils

The site investigation included an assessment for potential ACM (PACM) associated with demolition, dilapidation of former site structures and stockpiled soils. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk. The potential for fibre generation during civil works also poses a risk to on-site receptors.

Stockpiled soil was also present throughout the site. Stockpiled soil on the Woolstores lots was observed to contain a combination of building rubble, sheet metal, steel and PACM.

Illegal Dumping/ Fly Tipping

Along the eastern portion of the Woolstores lots, illegal dumping/ fly tipping was observed. Fragments of PACM were observed at multiple locations during the site inspection. The presence of PACM fragments and other COPCs associated with fly tipping (metal pipes, steel framework, sheet metal, concrete, paint tins, bricks, tyres etc.) presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

Potential Uncontrolled Fill

The Woolstores site has been built on reclaimed land. There is a potential risk associated with the unknown nature and extent of the imported material. During the preliminary site investigation, PACM fragments were observed within the fill material that was used to create site levels as they are today. The uncontrolled fill presents a potentially unacceptable health risk to future residents and construction workers, as well as an aesthetic risk.

At the time of inspection, a limestone road base had been imported to assist with site levels off-site. The limestone road base originated from virgin quarry material¹⁰. As the material has been directly sourced from a quarry, the potential for contamination from this material to migrate on-site is considered negligible. It should be noted that the imported limestone clean fill is off-site as the site boundary has changed.

¹⁰ Mainroads Western Australia – Great Sothorn Region – ARR Material Summary, Armstrong's Gravel Pit, Main Roads Limestone Pit.

Historical Land Uses

The Woolstores site has been subject to commercial/ industrial land uses for roughly 70 years. There is potential for site wide contamination associated with these historical potentially contaminating activities to exist. The Woolstores site while operational was used as a wool storage facility with truck and machinery access. During the PSI, soak wells were observed but the linings were unable to be visually assessed. Further assessment to determine whether the soak wells are lined or unlined is required. Most of the site is also unsealed creating a potential pathway for contaminants from onsite activities to leach through the soil profile to impact groundwater.

Migration of potentially contaminated groundwater from up-gradient properties

Table 3.3 identified various up-gradient properties that are impacted by contaminated groundwater. Based on the information reviewed, it is possible that these impacts have migrated on-site. General regional groundwater quality is known to be acidic. As future land uses on-site are proposed to be a combination of residential and mixed commercial uses, there is a risk that site receptors may come into contact with this contaminated groundwater if abstracted for use. Groundwater in the local area is also relatively shallow (<2m bgl).

Acid Sulfate Soils

The DWER (2015) guidance states that in areas of 'High to Moderate risk' of ASS occurring, an ASS investigation is required prior to the following ground disturbance activities:

- Earthworks that will disturb more than 100 m³ of soil.
- During dewatering or soil draining activity.

Given the site's aim is for re-zoning to a residential land use it is likely that both the ground disturbance events above will occur. This will, therefore, trigger the requirements for ASS investigation.

6.2 Recommendations

Further assessment or management/remediation of the potentially impacted soils should be considered to manage the potential risks to future site receptors. It is noted that an intrusive sampling program should be considered to fully characterise impacts associated with the APECs identified.

It is anticipated that construction works at the site, namely the installation of deep sewer, will necessitate the requirement for an ASS investigation. As such, it is recommended that an ASS investigation is completed so that any ASS risk can be understood and managed during construction.

It is recommended that JBS&G develop a Sampling Analysis and Quality Plan (SAQP) and subsequent Detailed Site Investigation (DSI) in order to characterise the nature, extent and risk of potential contamination onsite.

Table 6-1 below outlines a summary of the APECs that require further investigation and the assessment recommended to close relevant data gaps. It is strongly recommended that the proposed sampling regime be implemented after site demolition activities and removal of fly tipped wastes have been completed.

Table 6-1: Proposed Sampling Regime

APEC	Rationale	Assessment Required	Contaminants of potential concern (COPC)
1. Contamination associated with the former site structures and stockpiled soils	Assess the contamination status of the material throughout stockpiled material and assess presence of surficial ACM on-site (subsequent to the completion of site demolition activities).	Soil and Groundwater	<ul style="list-style-type: none"> • ACM • TRH • BTEX • PAH • VOC/sVOC • OCP/OPP • Metals
2. Illegal dumping/fly tipping activities.	Assess the contamination status of the material located below the fly tipping areas (subsequent to removal during demolition activities).	Soil and Groundwater	<ul style="list-style-type: none"> • ACM • TRH • BTEX • PAH • VOC/sVOC • Metals
3. Potential uncontrolled fill (Woolstores re-claimed land).	Assess the contamination status of the fill material comprising reclaimed land.	Soil and Groundwater	<ul style="list-style-type: none"> • Asbestos • TRH • BTEX • PAH • OCP/OPP • Metals
4. Historical land uses of the site.	Assess the contamination status of the material throughout the site, focused on industrial drainage infrastructure.	Soil and Groundwater	<ul style="list-style-type: none"> • TRH • BTEX • PAH • VOC/sVOC • OCP/OPP • Metals • Asbestos
5. Migration of potentially contaminated groundwater beneath the site from up-gradient properties.	Assess the contamination status of the groundwater migrating on-site.	Groundwater	<ul style="list-style-type: none"> • pH • Metals Nutrients

7. Limitation

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

This report makes reference to legislation; however, JBS&G do not provide legal advice. The client should seek legal advice from a suitably qualified and experience professional in relation to the legislation referred to.

Figures



OVERVIEW MAP

LOWER KING
GLEDHOW
CUTHBERT
ALBANY

Legend

- Site boundary
- Cadastral boundary
- Highways
- Main road
- Minor road
- Pedestrian way
- Track



Job No: 63117

Client: Rowe Group

Version: A

Date 10/02/2023

Drawn By: ianandagoda

Checked By: JN

Scale 1:7,500 at A4



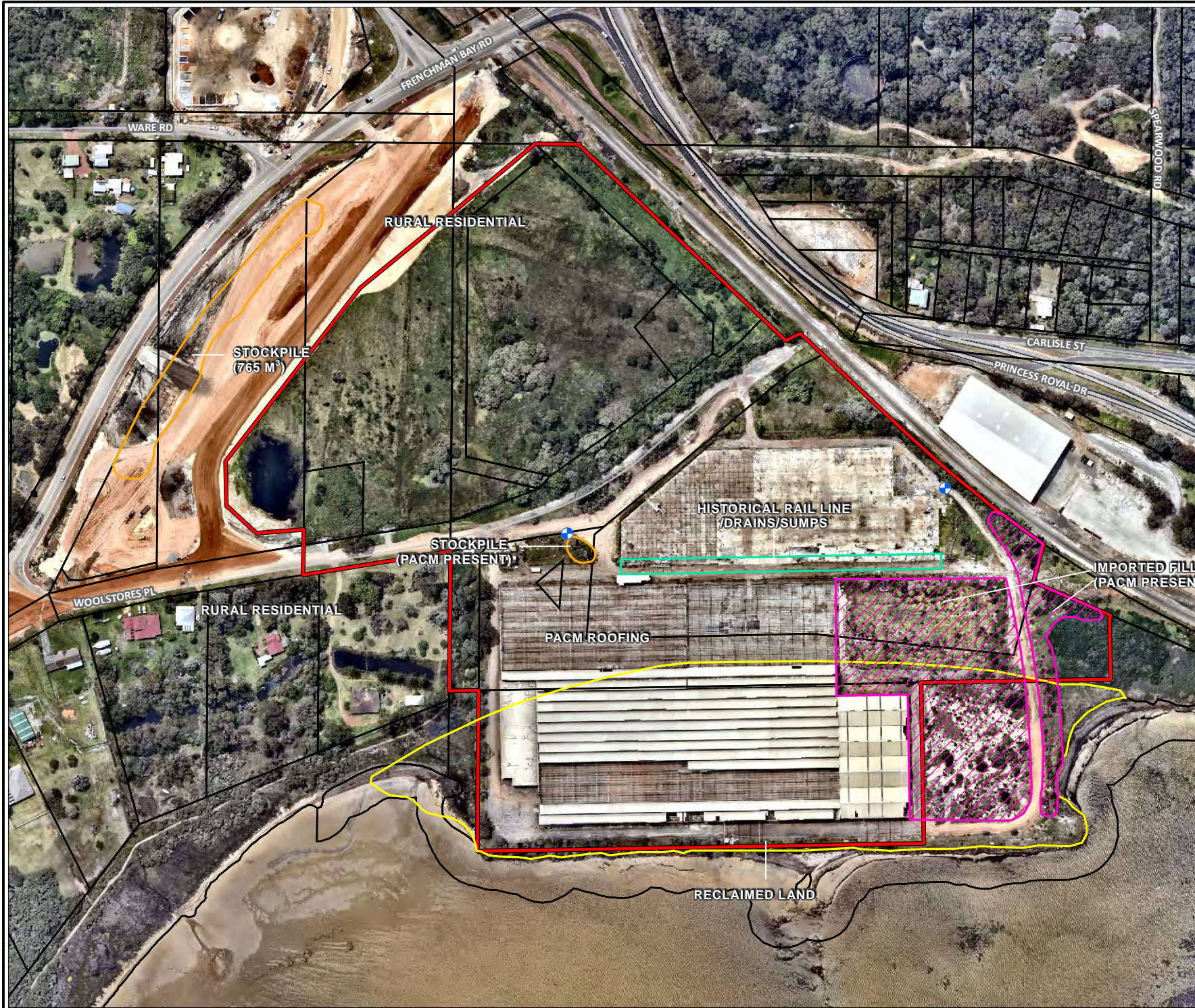
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metres

Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt. Elphinstone, WA**

SITE LOCATION

FIGURE 1



Legend

- Site boundary
- Reclaimed land
- Stockpile
- Imported fill/fly tipping (PACM present)
- Historical rail line/ drains/ sumps
- PACM sheets
- Cadastral boundary
- Monitoring well
- Highways
- Main road
- Minor road
- Track



Job No: 63117

Client: Rowe Group

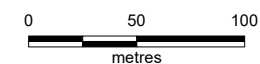
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Date 10/02/2023

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Checked By: JN

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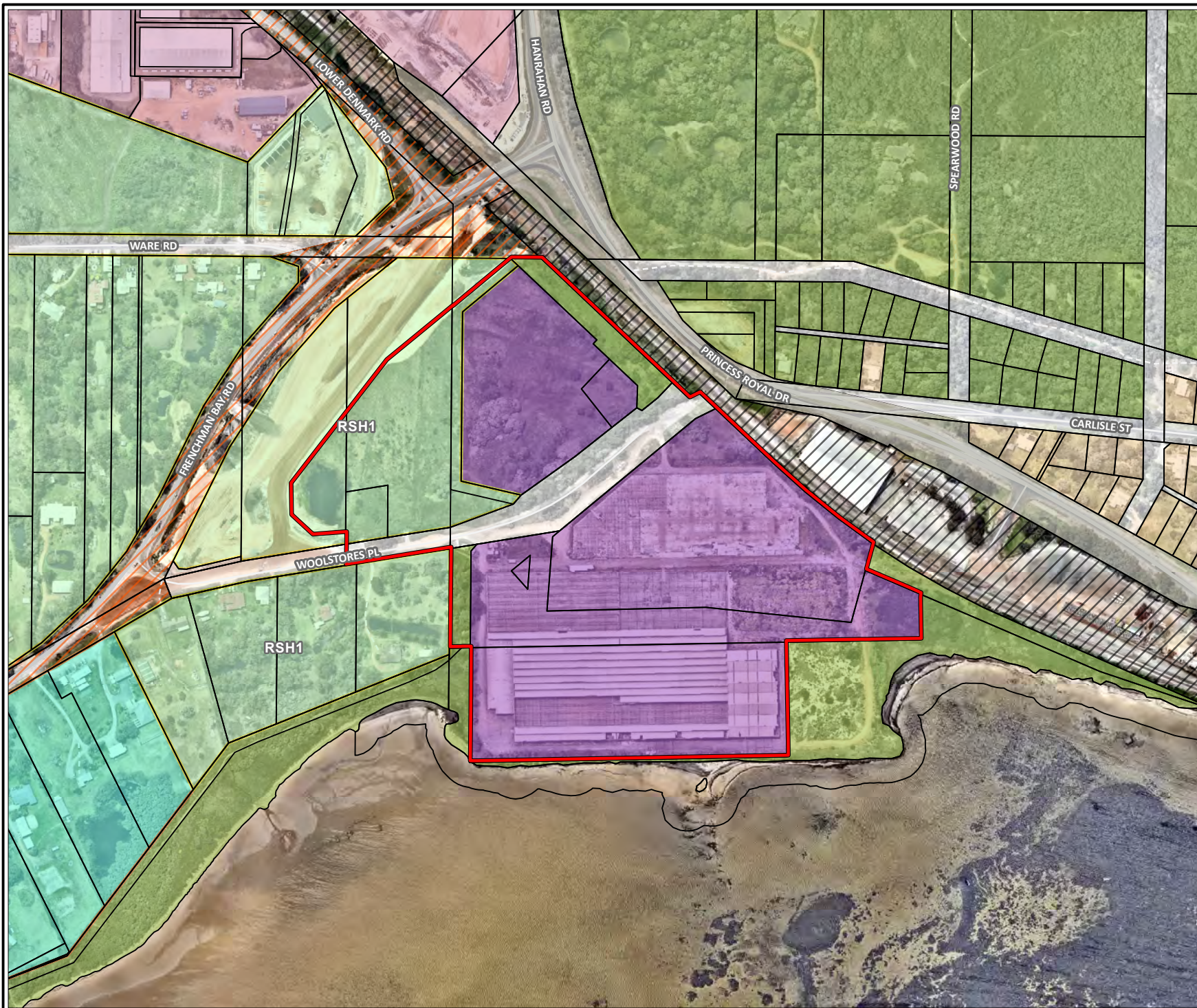


Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt. Elphinstone, WA**

SITE LAYOUT

FIGURE 2



Legend

- Site boundary
- Cadastre Address (LGATE-002)
- Local Planning Scheme - Zones and Reserves (DPLH-071)
- General industry
- Light industry
- Local road
- Major road
- Parks and recreation
- Priority road
- Rail
- Residential
- Rural small lot holdings
- Tourist residential
- Major road
- Minor road
- Tracks



Job No: 63117

Client: Rowe Group

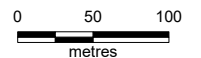
Version: A

Date: 10/02/2023

Drawn By: ianandagoda

Checked By: JN

Scale 1:5,000 at A4

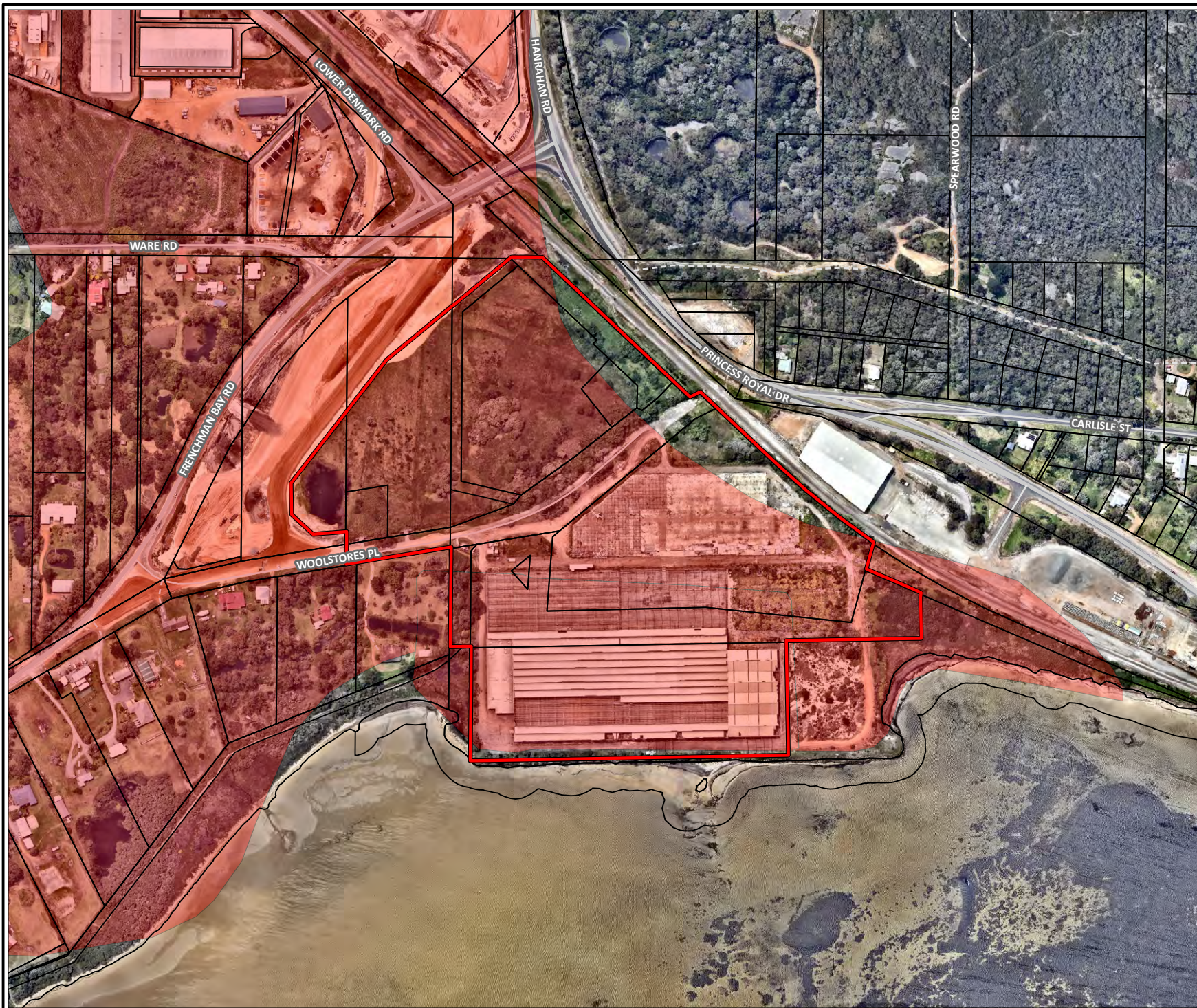


Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt. Elphinstone, WA**

SURROUNDING LAND USES

FIGURE 3



Legend

- Site boundary
- Cadastre Address (LGATE-002)
- Acid Sulphate Risk Albany-Torbay (DWER-054)
- High to moderate risk
- Major road
- Minor road
- Tracks



Job No: 63117

Client: Rowe Group

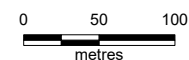
Version: A

Date: 10/02/2023

Drawn By: ianandagoda

Checked By: JN

Scale 1:5,000 at A4



Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt.Elphinstone, WA**

ACID SULFATE SOIL RISK MAPPING

FIGURE 4



Legend

- Site boundary
- Cadastral Address (LGATE-002)
- Aboriginal heritage places (DPLH-001)
- Other heritage place
- Heritage Council WA - State Register (DPLH-006)
- Individual Place
- Major road
- Minor road
- Tracks

Job No: 63117

Client: Rowe Group

Version: A	Date: 10/02/2023
Drawn By: ianandagoda	Checked By: JN

Scale 1:5,000 at A4

Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt.Elphinstone, WA**

HERITAGE SITES

FIGURE 5



Legend

- Site boundary
- Contaminated sites database (DWER-059)
- Remediated for restricted use
- Major road
- Minor road
- Tracks



Job No: 63117

Client: Rowe Group

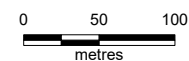
Version: A

Date: 10/02/2023

Drawn By: ianandagoda

Checked By: JN

Scale 1:5,000 at A4



Coord. Sys. GDA 1994 MGA Zone 50

**11 Lots, Woolstores Place
Mt. Elphinstone, WA**

CONTAMINATED SITES

FIGURE 6

Appendix A Certificate of Title

WESTERN



AUSTRALIA

REGISTER NUMBER

1157/DP171141DUPLICATE
EDITION**2**

DATE DUPLICATE ISSUED

6/5/2004

VOLUME

123

FOLIO

109A

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 1157 ON DEPOSITED PLAN 171141

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

MAINBEAM PTY LTD OF 15 BROCK STREET, PORT ADELAIDE, SOUTH AUSTRALIA

(T I817683) REGISTERED 12/3/2004

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. I847975 MORTGAGE TO SANDHURST TRUSTEES LTD REGISTERED 8/4/2004.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 123-109A (1157/DP171141)
PREVIOUS TITLE: 123-109A
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF ALBANY TOWN LOT/LOT 1157 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 1157 ON DEPOSITED PLAN 171141 ON 14-MAY-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.

NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN



AUSTRALIA

REGISTER NUMBER N/A	
DUPLICATE EDITION N/A	DATE DUPLICATE ISSUED N/A

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
445FOLIO
169A

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES



THIS IS A MULTI-LOT TITLE

LAND DESCRIPTION:

LOT 895 ON DEPOSITED PLAN 161301
LOT 1104 ON DEPOSITED PLAN 165964
LOT 1209 ON DEPOSITED PLAN 173935

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

MAINBEAM PTY LTD OF 15 BROCK STREET, PORT ADELAIDE, SOUTH AUSTRALIA
(T I817683) REGISTERED 12/3/2004

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. T16935/1957 SUBJECT TO CERTAIN RESERVATIONS AS SET OUT IN TRANSFER 16935/1957 WHICH ARE IN ADDITION TO THOSE RESERVATIONS CONTAINED IN THE ORIGINAL GRANT. AS TO LOT 895 ON DP 161301 ONLY REGISTERED 7/11/1957.
2. I847975 MORTGAGE TO SANDHURST TRUSTEES LTD REGISTERED 8/4/2004.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 445-169A (895/DP161301), 445-169A (1104/DP165964), 445-169A (1209/DP173935)
PREVIOUS TITLE: 349-101A, 1207-631, 1245-637
PROPERTY STREET ADDRESS: 34 WOOLSTORES PL, MOUNT MELVILLE (895/DP161301).
34 WOOLSTORES PL, MOUNT MELVILLE (1209/DP173935).
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

END OF PAGE 1 - CONTINUED OVER

RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: N/A

VOLUME/FOLIO: 445-169A

PAGE 2

NOTE 1: L090466 DIAGRAM 73166 LODGED.
NOTE 2: LAND PARCEL IDENTIFIER OF ALBANY TOWN LOT 895, ALBANY LOTS 1104 AND 1209
CHANGED TO LOT 895 ON DEPOSITED PLAN 161301, LOT 1104 ON DEPOSITED PLAN
165964 AND LOT 1209 ON DEPOSITED PLAN 173935 ON 1.10.2009 TO ENABLE ISSUE OF
A DIGITAL CERTIFICATE OF TITLE.
NOTE 3: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE
OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN



AUSTRALIA

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

REGISTER NUMBER	
141/DP27076	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
2	18/5/2004

VOLUME
1133FOLIO
829

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 141 ON DEPOSITED PLAN 27076

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

MAINBEAM PTY LTD OF 15 BROCK STREET, PORT ADELAIDE, SOUTH AUSTRALIA

(T I817683) REGISTERED 12/3/2004

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. I847975 MORTGAGE TO SANDHURST TRUSTEES LTD REGISTERED 8/4/2004.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP27076
PREVIOUS TITLE: 640-8
PROPERTY STREET ADDRESS: 23 WOOLSTORES PL, MOUNT ELPHINSTONE.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

WESTERN



AUSTRALIA

REGISTER NUMBER

140/DP27076DUPLICATE
EDITION**2**

DATE DUPLICATE ISSUED

18/5/2004VOLUME
1290FOLIO
605

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 140 ON DEPOSITED PLAN 27076

REGISTERED PROPRIETOR:
 (FIRST SCHEDULE)

MAINBEAM PTY LTD OF 15 BROCK STREET, PORT ADELAIDE, SOUTH AUSTRALIA

(T 1817683) REGISTERED 12/3/2004

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
 (SECOND SCHEDULE)

1. I847975 MORTGAGE TO SANDHURST TRUSTEES LTD REGISTERED 8/4/2004.
2. *O905968 NOTICE OF INTENTION TO TAKE FOR THE DESIGNATED PURPOSE OF ALBANY RING ROAD STAGE 2. AS TO PORTION ONLY. REGISTERED 14/10/2021.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
 * Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
 Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP27076
 PREVIOUS TITLE: 640-8
 PROPERTY STREET ADDRESS: 23 WOOLSTORES PL, MOUNT ELPHINSTONE.
 LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY

NOTE 1: P065207 DEPOSITED PLAN 416233 LODGED

WESTERN



AUSTRALIA

REGISTER NUMBER

11/D53535DUPLICATE
EDITION**1**

DATE DUPLICATE ISSUED

25/5/2015VOLUME
1492FOLIO
23

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BG Roberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 11 ON DIAGRAM 53535

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

COMMISSIONER OF MAIN ROADS OF OF CARE OF DON AITKEN CENTRE WATERLOO CRESCENT EAST PERTH
WA 6004

(TO O625734) REGISTERED 28/1/2021

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. *O625734 TAKING ORDER. THE DESIGNATED PURPOSE OF ALBANY RING ROAD, ALBANY
REGISTERED 28/1/2021.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land
and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1492-23 (11/D53535)
PREVIOUS TITLE: 1138-359
PROPERTY STREET ADDRESS: 15 WOOLSTORES PL, MOUNT ELPHINSTONE.
LOCAL GOVERNMENT AUTHORITY: CITY OF ALBANY
RESPONSIBLE AGENCY: MAIN ROADS WESTERN AUSTRALIA

NOTE 1: O625734 NO DUPLICATE TITLE ISSUED
NOTE 2: P065221 DEPOSITED PLAN 416232 LODGED

WESTERN



AUSTRALIA

REGISTER NUMBER

44/DP171141DUPLICATE
EDITION**N/A**

DATE DUPLICATE ISSUED

N/AVOLUME
LR3008FOLIO
848

**RECORD OF QUALIFIED CERTIFICATE
OF
CROWN LAND TITLE
UNDER THE TRANSFER OF LAND ACT 1893
AND THE LAND ADMINISTRATION ACT 1997
NO DUPLICATE CREATED**

The undermentioned land is Crown land in the name of the STATE OF WESTERN AUSTRALIA, subject to the interests and Status Orders shown in the first schedule which are in turn subject to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES



LAND DESCRIPTION:

LOT 44 ON DEPOSITED PLAN 171141

**STATUS ORDER AND PRIMARY INTEREST HOLDER:
(FIRST SCHEDULE)**

STATUS ORDER/INTEREST: UNALLOCATED CROWN LAND

PRIMARY INTEREST HOLDER: STATE OF WESTERN AUSTRALIA

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)**

- Warning:
- (1) A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.
 - (2) The land and interests etc. shown hereon may be affected by interests etc. that can be, but are not, shown on the register.
 - (3) The interests etc. shown hereon may have a different priority than shown.

-----END OF CERTIFICATE OF CROWN LAND TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP171141
PREVIOUS TITLE:	LR3008-833
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF ALBANY
RESPONSIBLE AGENCY:	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)

WESTERN



AUSTRALIA

REGISTER NUMBER

1350/DP184224DUPLICATE
EDITION**N/A**

DATE DUPLICATE ISSUED

N/AVOLUME
LR3009FOLIO
754

**RECORD OF QUALIFIED CERTIFICATE
OF
CROWN LAND TITLE**

**UNDER THE TRANSFER OF LAND ACT 1893
AND THE LAND ADMINISTRATION ACT 1997
NO DUPLICATE CREATED**

The undermentioned land is Crown land in the name of the STATE OF WESTERN AUSTRALIA, subject to the interests and Status Orders shown in the first schedule which are in turn subject to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 1350 ON DEPOSITED PLAN 184224

**STATUS ORDER AND PRIMARY INTEREST HOLDER:
(FIRST SCHEDULE)**

STATUS ORDER/INTEREST: RESERVE UNDER MANAGEMENT ORDER

PRIMARY INTEREST HOLDER: CITY OF ALBANY OF YORK STREET, ALBANY
(XE H678284) REGISTERED 26/2/2001

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)**

1. RESERVE 37011 FOR THE PURPOSE OF PARKING AND PROTECTION OF PUBLIC UTILITY SERVICES
H678284 MANAGEMENT ORDER. CONTAINS CONDITIONS TO BE OBSERVED. WITH POWER TO
LEASE FOR ANY TERM NOT EXCEEDING 21 YEARS, SUBJECT TO THE CONSENT OF THE
MINISTER FOR LANDS. REGISTERED 26/2/2001.

Warning: (1) A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
Lot as described in the land description may be a lot or location.
(2) The land and interests etc. shown hereon may be affected by interests etc. that can be, but are not, shown on the register.
(3) The interests etc. shown hereon may have a different priority than shown.

-----END OF CERTIFICATE OF CROWN LAND TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	LR3009-754 (1350/DP184224)
PREVIOUS TITLE:	LR3009-754
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF ALBANY
RESPONSIBLE AGENCY:	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)

END OF PAGE 1 - CONTINUED OVER

ORIGINAL CERTIFICATE OF CROWN LAND TITLE
QUALIFIED

REGISTER NUMBER: 1350/DP184224

VOLUME/FOLIO: LR3009-754

PAGE 2

NOTE 1: A000001A CORRESPONDENCE FILE 01886-1974-01RO.
NOTE 2: LAND PARCEL IDENTIFIER OF ALBANY TOWN LOT/LOT 1350 ON SUPERSEDED PAPER
CERTIFICATE OF CROWN LAND TITLE CHANGED TO LOT 1350 ON DEPOSITED PLAN
184224 ON 16-AUG-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 3: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE
OF TITLE.

Appendix B Site Photographs

DRIVEWAY TO WAREHOUSES



DRIVEWAY TO WAREHOUSES



LAYDOWN AREA / HARDSTAND



HARDSTAND / BITUMEN



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

WAREHOUSE WITH PACM FENCING



WAREHOUSE WITH RAIL TRACK



PCAM FENCING



PCAM



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

NON-POTABLE WATER TANKS



SUMP AND RAIL TRACK



PACM ROOFING



POTENTIAL BROKEN ACM FENCING



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

LANDFILL STOCKPILE



LANDFILL STOCKPILE



MONITORING WELL



PACM IN LANDFILL STOCKPILE



Job No: 63117

Client: Rowe Property Group

Version: Rev A Date: 14/07/2022

Drawn By: PE Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

Various Lots on Woolstores Place and Mount Elphinstone

APPENDIX B

OUTDOOR OPEN WAREHOUSE



OUTSIDE WAREHOUSE



WASTE LAYDOWN



WASTE LAYDOWN



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

WAREHOUSE PACM FENCING



LAYDOWN AREA



OUTDOOR OPEN WAREHOUSE LAYDOWN



HARDSTAND LAYDOWN AREA



Job No: 63117	
Client: Rowe Property Group	
Version: Rev A	Date: 14/07/2022
Drawn By: PE	Checked By: JN
Not to Scale	
Coord. Sys n/a	
Woolstores Place PSI	
Various Lots on Woolstores Place and Mount Elphinstone	
APPENDIX B	

OUTDOOR LAYDOWN AREA



OUTDOOR LAYDOWN AREA



OUTDOOR LAYDOWN AREA



OUTDOOR LAYDOWN AREA / CRACKED BITUMEN



Job No: 63117	
Client: Rowe Property Group	
Version: Rev A	Date: 14/07/2022
Drawn By: PE	Checked By: JN
Not to Scale	
Coord. Sys n/a	
Woolstores Place PSI	
Various Lots on Woolstores Place and Mount Elphinstone	
APPENDIX B	

HARDSTAND / WOODEN LAYDOWN AREA



LAYDOWN AREA



LAYDOWN AREA



TYRE WASTE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

PACM FENCING AND FILL



PACM FENCING AND FILL



FILL



FILL



Job No: 63117

Client: Rowe Property Group

Version: Rev A Date: 14/07/2022

Drawn By: PE Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

STOCKPILE FILL



STOCKPILE FILL



STOCKPILE FILL



STOCKPILE FILL



Job No: 63117

Client: Rowe Property Group

Version: Rev A	Date: 14/07/2022
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Drawn By: PE	Checked By: JN
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Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

STOCKPILE FILL AND PACM FENCING



STOCKPILE FILL



PACM FRAGMENTS



STOCKPILE FILL



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

DIRT PATH TO OPEN WAREHOUSE



LAYDOWN WASTE



VEGETATED PATH



LAYDOWN WASTE



Job No: 63117	
Client: Rowe Property Group	
Version: Rev A	Date: 14/07/2022
Drawn By: PE	Checked By: JN
Not to Scale	
Coord. Sys n/a	
Woolstores Place PSI Various Lots on Woolstores Place and Mount Elphinstone	
APPENDIX B	

LAYDOWN WASTE



LAYDOWN WASTE



LAYDOWN WASTE



LAYDOWN WASTE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

LAYDOWN WASTE



LAYDOWN WASTE



LAYDOWN WASTE / STOCKPILE WASTE



LAYDOWN WASTE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

PACM FENCING



WAREHOUSE STRUCTURE



STOCKPILE WASTE



STOCKPILE WASTE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

PACM FENCING AND ROOFING



PACM FENCING



STOCKPILE WASTE



INSIDE WAREHOUSE LAYDOWN



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

INSIDE WAREHOUSE



INSIDE WAREHOUSE



INSIDE WAREHOUSE



WATER TANKS INSIDE WAREHOUSE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

LAYDOWN INSIDE WAREHOUSE



LAYDOWN INSIDE WAREHOUSE



AIR VENT INSIDE WAREHOUSE



LAYDOWN INSIDE WAREHOUSE



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

OUTSIDE WAREHOUSE WITH PACM FENCING



OUTSIDE WAREHOUSE METAL BEAMS



METALS BEAMS



VEGETATION OUTSIDE WAREHOUSE



Job No: 63117	
Client: Rowe Property Group	
Version: Rev A	Date: 14/07/2022
Drawn By: PE	Checked By: JN
Not to Scale	
Coord. Sys n/a	
Woolstores Place PSI	
Various Lots on Woolstores Place and Mount Elphinstone	
APPENDIX B	

ALGAE WATERWAY



ALGAE WATERWAY



VEGETATED LOT



VEGETATED LOT NEXT TO ROAD



Job No: 63117

Client: Rowe Property Group

Version: Rev A

Date: 14/07/2022

Drawn By: PE

Checked By: JN

Not to Scale

Coord. Sys n/a

Woolstores Place PSI

**Various Lots on Woolstores Place
and Mount Elphinstone**

APPENDIX B

Appendix C DWER Groundwater Information

INTRODUCTION

The *Perth Groundwater Map* has been designed to help water-bore drillers, irrigators, and private householders establish groundwater bores in the watertable (i.e. superficial) aquifer within the Perth metropolitan area. The aims of the Atlas are to provide information that:

- Indicates which areas are suitable/unsuitable for the development of a groundwater bore within the watertable (superficial) aquifer;
- Estimates the depth to the watertable beneath a property;
- Estimates the depth to the base of the watertable (superficial) aquifer beneath a property – this is the maximum allowable bore depth permitted for non-commercial use without an [approved groundwater licence](#);
- Gives an indication of the salinity of the groundwater at the bore site.
-

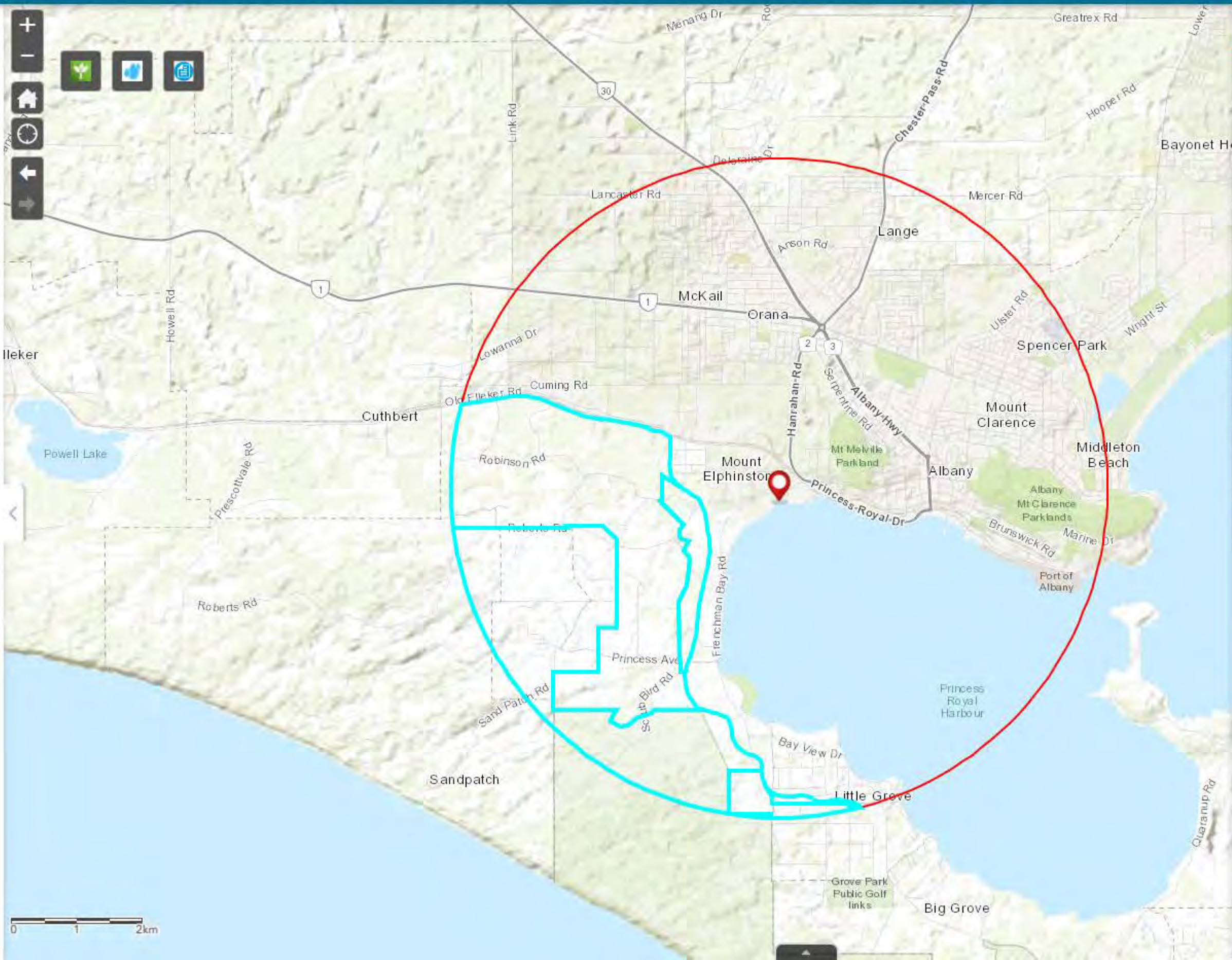
Garden Bore Suitability is a layer symbolised as follows:

- Suitable
- Unsuitable

To view the Department's policy on Garden Bores, click [here](#).

Contact the Department

We want to hear what you have to say about the Groundwater Map. Please [contact us](#) to provide your feedback, and follow these links to review our [disclaimer](#) and [accessibility](#) statement. For technical information contact us via email: wir@dwer.wa.gov.au



Groundwater Report

Report

Back

Area : 78,521,932.17 m²

Refresh

Print

Settings

+ Depths

(0)

Settings

+ Groundwater Salinity

(0)

Settings

+ Surface Geology

(0)

Settings

+ Iron Staining Risk

(0)

Settings

+ Garden Bore Suitability

(0)

Settings

+ Acid Sulfate Soil Risk Map

(0)

Settings

- Public Drinking Water Source Areas

(6)

Settings

Public Drinking Water Source Areas (PDWSA):

South Coast Water Reserve

Area: 18,973,826.02 m²

Area: **Albany**
Subarea: **Racecourse**
Aquifer: **Bremer West - Superficial**
Level: 1

Area: **Albany**
Subarea: **Racecourse**
Aquifer: **Bremer West - Sedimentary**
Level: 2

Resource Legend

Water availability is shown as a combination of resource type and colour:

Surface water Groundwater

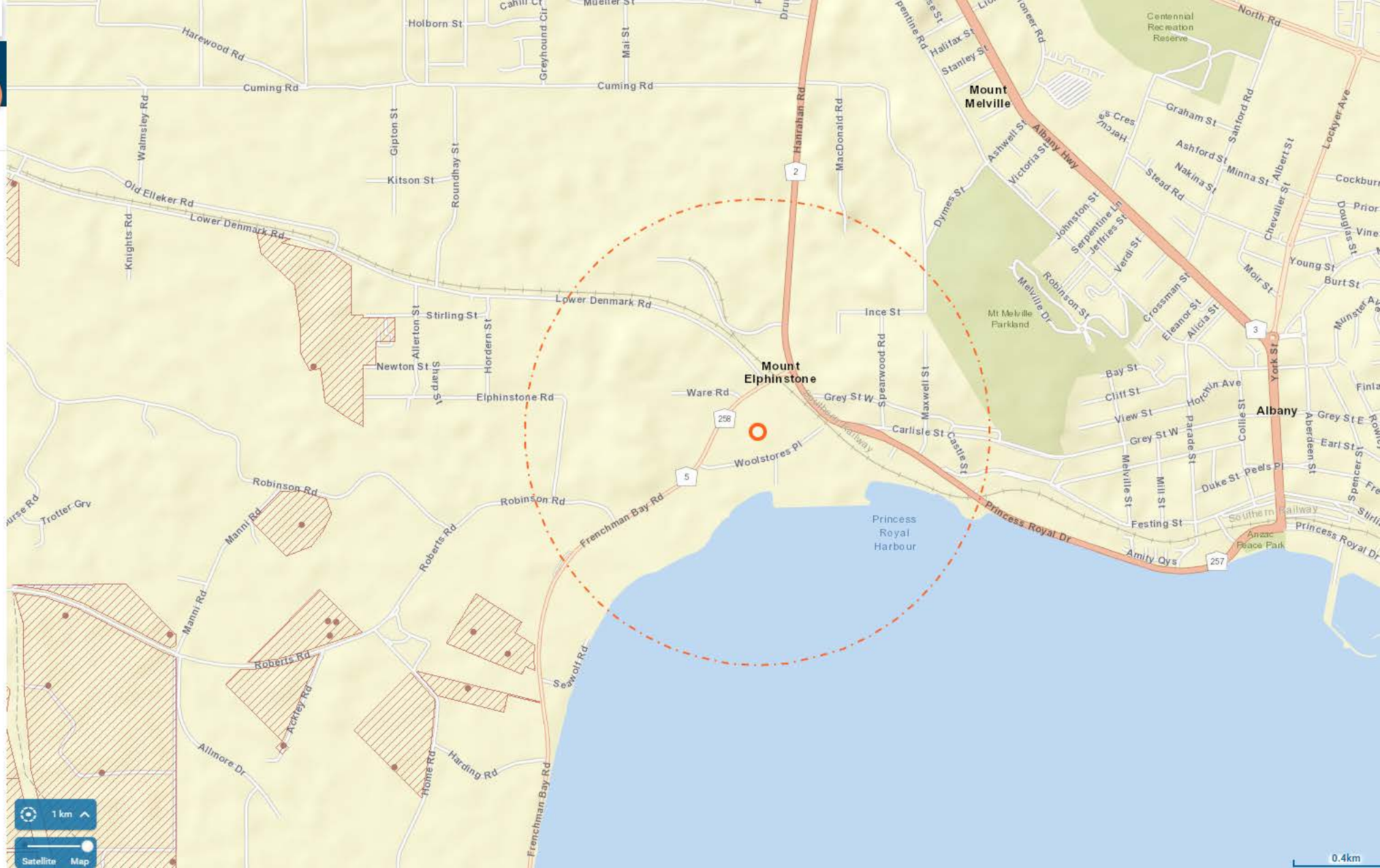
Allocation Available
Fully Allocated
Limited Information

Water Availability Disclaimer

Water availability gives a general indication as to whether water is still available in a resource for licensing. It is determined from the amount of water that may be available to take sustainably from a resource, minus water that has already been allocated or committed to licensed users.

However, additional applications may already be under assessment to access the remaining water, and water availability does not reflect the water that may be assigned to these applications until they are finalised.

This information changes on a daily basis. To discuss water availability for your resource, please contact your [regional licensing office](#).





Site Details Report

Date: 26/05/2022

Site reference 60210112 - Munster Hill Catchment - MHC 9A - MHC 9A

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210112	Munster Hill Catchment - MHC 9A	MHC 9A
WIN_ID	20083560		MHC 9A
AQWAB	2427-1-NW-0248	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT - MHC 9A	MHC 9A

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6124062	Easting	578594	Zone	50
Latitude	-35.023048552	Longitude	117.861515540	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT MELVILLE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Karri	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210112)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	10.2	AHD	Surveyed	16/03/1999	
Top of collar	10.2	AHD	Surveyed	16/03/1999	

Drilling - No Data Available

Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210112)

Completed Date	25/11/1998	Drill Method Name	Direct push		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	5.5	Depth Drilled (mbGL)	5.5
Comments	Comment: Headwork details: gatic Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210112)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	2.000	Casing	PVC	Not applicable	20.000			
2.000	5.500	Inlet (screen)	Unknown	Slotted				

Fill (Site reference: 60210112)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	1.700	Void Fill	Unknown		
1.700	3.500	Annular Fill	Unknown		
3.500	5.500	Annular Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210112)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Soil	Top soil is gravel with lateritic pebbles
0.800	1.600	Geologist--Internal staff	Gravel	Gravel, orange-yellow-rusty brown (20); sand, white, medium (50)
1.600	2.400	Geologist--Internal staff	Sand	Sand, white, medium (60)
2.400	3.200	Geologist--Internal staff	Sand	Sand, white, medium to coarse, minor silty sand (50)
3.200	4.800	Geologist--Internal staff	Sand	Sand, brown, medium to coarse, minor fines (40)

Stratigraphy Log - No Data Available

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210112 WIN Site ID: 60210112)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210112	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	17/03/1998	17/03/1998	2
60210112	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	17/03/1998	17/03/1998	5

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210112	Water levels - discrete	17/03/1998	17/03/1998	2
60210112	Water quality indicators - discrete	17/03/1998	17/03/1998	5

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210112	Measurement or observation of physical properties	17/03/1998	17/03/1998	5
60210112	Water level (discrete)	17/03/1998	17/03/1998	2



Site Details Report

Date: 26/05/2022

Site reference 60210113 - Munster Hill Catchment - MHC 9B - MHC 9B

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210113	Munster Hill Catchment - MHC 9B	MHC 9B
WIN_ID	20083561		MHC 9B
AQWAB	2427-1-NW-0249	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT-MHC 9B	MHC 9B

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6124061	Easting	578594	Zone	50
Latitude	-35.023057569	Longitude	117.861515634	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT MELVILLE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Karri	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210113)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	10.08	AHD	Surveyed	16/03/1999	
Top of collar	10.08	AHD	Surveyed	16/03/1999	

Drilling - No Data Available



Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210113)

Completed Date	13/01/1999	Drill Method Name	Auger		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	9.8	Depth Drilled (mbGL)	9.8
Comments	Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210113)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	6.000	Casing	PVC	Not applicable	20.000			
6.000	9.500	Casing	PVC	Not applicable	20.000			
9.500	9.800	Inlet (screen)	PVC	Slotted	20.000			

Fill (Site reference: 60210113)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	6.600	Void Fill	Unknown		
6.600	9.200	Void Fill	Unknown		
9.200	9.500	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210113)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Soil	Top soil is gravel with lateritic pebbles
0.800	1.600	Geologist--Internal staff	Gravel	Gravel, orange-yellow-rusty brown (20); sand, white, medium (50)
1.600	2.400	Geologist--Internal staff	Sand	Sand, white, medium (60)
2.400	3.200	Geologist--Internal staff	Sand	Sand, white, medium to coarse (30)
3.200	4.000	Geologist--Internal staff	Sand	Sand, white, medium to coarse, minor silty sand (50)
4.000	4.800	Geologist--Internal staff	Sand	Sand, brown, medium to coarse, minor fines (40)
4.800	5.600	Geologist--Internal staff	Unknown	-
5.600	6.400	Geologist--Internal staff	Unknown	-
6.400	7.200	Geologist--Internal staff	Unknown	-
7.200	8.000	Geologist--Internal staff	Sand	Sand, brown, medium (25)
8.000	8.800	Geologist--Internal staff	Unknown	-
8.800	9.600	Geologist--Internal staff	Sand	Sand, grey, medium to coarse, minor fines (30); silty clay, tan-light grey, minor micas, minor gravels (10)

Stratigraphy Log - No Data Available

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210113 WIN Site ID: 60210113)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210113	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	17/03/1999	17/03/1999	2
60210113	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	17/03/1999	17/03/1999	5

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210113	Water levels - discrete	17/03/1999	17/03/1999	2
60210113	Water quality indicators - discrete	17/03/1999	17/03/1999	5

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210113	Measurement or observation of physical properties	17/03/1999	17/03/1999	5
60210113	Water level (discrete)	17/03/1999	17/03/1999	2



Site Details Report

Date: 26/05/2022

Site reference 60210114 - Munster Hill Catchment - MHC 9C - MHC 9C

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210114	Munster Hill Catchment - MHC 9C	MHC 9C
WIN_ID	20083562		MHC 9C
AQWAB	2427-1-NW-0250	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT-MHC 9C	MHC 9C

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6124063	Easting	578594	Zone	50
Latitude	-35.023039536	Longitude	117.861515445	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT MELVILLE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Karri	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210114)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	10.28	AHD	Surveyed	16/03/1999	
Top of collar	11.03	AHD	Surveyed	16/03/1999	

Drilling - No Data Available

Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210114)

Completed Date	17/11/1998	Drill Method Name	Auger		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	15.2	Depth Drilled (mbGL)	15.2
Comments	Comment: Headwork details: standpipe (0.75m) Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210114)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	12.400	Casing	PVC	Not applicable	20.000			
12.400	13.700	Inlet (screen)	PVC	Slotted	20.000			
13.700	15.200	Casing	PVC	Not applicable				

Fill (Site reference: 60210114)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	12.400	Void Fill	Unknown		
12.400	15.200	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210114)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Soil	Top soil is gravel with lateritic pebbles
0.800	1.600	Geologist--Internal staff	Gravel	Gravel, orange-yellow-rusty brown (20); sand, white, medium (50)
1.600	2.400	Geologist--Internal staff	Sand	Sand, white, medium (60)
2.400	3.200	Geologist--Internal staff	Sand	Sand, white, medium to coarse (30)
3.200	4.000	Geologist--Internal staff	Sand	Sand, white, medium to coarse, minor silty sand (50)
4.000	4.800	Geologist--Internal staff	Sand	Sand, brown, medium to coarse, minor fines (40)
4.800	5.600	Geologist--Internal staff	Unknown	-
5.600	6.400	Geologist--Internal staff	Unknown	-
6.400	7.200	Geologist--Internal staff	Unknown	-
7.200	8.000	Geologist--Internal staff	Sand	Sand, brown, medium (25)
8.000	8.800	Geologist--Internal staff	Unknown	-
8.800	9.600	Geologist--Internal staff	Sand	Sand, grey, medium to coarse, minor fines (30); silty clay, tan-light grey, minor micas, minor gravels (10)
9.600	10.400	Geologist--Internal staff	Clay	Silty clay, tan-light grey, minor micas, minor gravels, minor angular quartz pebbles (80)
10.400	11.200	Geologist--Internal staff	Clay	Silty clay, tan-light grey, minor micas, minor gravels, minor angular quartz pebbles (55); silty clay, black-dark brown-white-dark, minor gravels, angular quartz pebbles, fresh to weathered feldspars, micaceous (25) to weathered granite
11.200	12.000	Geologist--Internal staff	Clay	Silty clay, black-dark brown-white-dark grey, minor gravels, angular quartz pebbles, fresh to weathered feldspars, micaceous (80) to weathered granite
12.000	12.800	Geologist--Internal staff	Clay	Silty clay, black-dark brown-white-dark grey, minor gravels, angular quartz pebbles, fresh to weathered feldspars, micaceous (20); clayey fine sand, micaceous (60) to weathered granite
12.800	13.600	Geologist--Internal staff	Sand	Silty sand, green-grey, micaceous (80) to weathered granite
13.600	14.400	Geologist--Internal staff	Sand	Silty sand, green-grey, micaceous (10); clayey fine sand, micaceous (50) to weathered granite
14.400	15.200	Geologist--Internal staff	Gravel	Clayey gravels, light grey-white-light green, coarse to very coarse, angular to sub-angular, quartz (80) to weathered granite

Site Details Report

Date: 26/05/2022

Stratigraphy Log - No Data Available

Advanced Data Summary (Site reference: 60210114 WIN Site ID: 60210114)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210114	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	17/03/1999	17/03/1999	2

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210114	Water levels - discrete	17/03/1999	17/03/1999	2

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210114	Water level (discrete)	17/03/1999	17/03/1999	2



Site Details Report

Date: 26/05/2022

Site reference 60210115 - Munster Hill Catchment - MHC 10A - MHC 10A

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210115	Munster Hill Catchment - MHC 10A	MHC 10A
WIN_ID	20083564		MHC 10A
AQWAB	2427-1-NW-0251	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT - MHC 10A	MHC 10A

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123804	Easting	578445	Zone	50
Latitude	-35.025386379	Longitude	117.859906760	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210115)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	2.5	AHD	Surveyed	16/03/1999	
Top of collar	2.5	AHD	Surveyed	16/03/1999	

Drilling - No Data Available



Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210115)

Completed Date	16/11/1998	Drill Method Name	Direct push		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	4	Depth Drilled (mbGL)	4
Comments	Comment: Headwork details: gatic Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210115)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	1.000	Casing	PVC	Not applicable	20.000			
1.000	4.000	Inlet (screen)	Unknown	Slotted	20.000			

Fill (Site reference: 60210115)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	0.800	Void Fill	Unknown		
0.800	4.000	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210115)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Sand	Silty sand, black-light grey (30)
0.800	1.600	Geologist--Internal staff	Sand	Sand, light grey, medium (35)
1.600	2.400	Geologist--Internal staff	Sand	Sand, light grey-rusty brown, medium (20); silty sand, rusty brown(40)
2.400	3.200	Geologist--Internal staff	Sand	Sand, rusty brown, coarse (35)
3.200	4.000	Geologist--Internal staff	Sand	Sand, brown, medium to coarse (70)

Stratigraphy Log - No Data Available

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210115 WIN Site ID: 60210115)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210115	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	19/03/1999	19/03/1999	2
60210115	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	19/03/1999	19/03/1999	5

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210115	Water levels - discrete	19/03/1999	19/03/1999	2
60210115	Water quality indicators - discrete	19/03/1999	19/03/1999	5

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210115	Measurement or observation of physical properties	19/03/1999	19/03/1999	5
60210115	Water level (discrete)	19/03/1999	19/03/1999	2



Site Details Report

Date: 26/05/2022

Site reference 60210116 - Munster Hill Catchment - MHC 10B - MHC 10B

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210116	Munster Hill Catchment - MHC 10B	MHC 10B
WIN_ID	20083566		MHC 10B
AQWAB	2427-1-NW-0252	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT-MHC 10B	MHC 10B

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123803	Easting	578446	Zone	50
Latitude	-35.025395318	Longitude	117.859917816	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210116)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	2.46	AHD	Surveyed	16/03/1999	

Drilling - No Data Available



Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210116)

Completed Date	13/01/1999	Drill Method Name	Direct push		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	8.3	Depth Drilled (mbGL)	8.3
Comments	Comment: Headwork details: gatic Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210116)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	5.000	Casing	PVC	Not applicable	20.000			
5.000	8.300	Inlet (screen)	Unknown	Slotted	20.000			

Fill (Site reference: 60210116)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	4.700	Void Fill	Unknown		
4.700	5.100	Void Fill	Unknown		
5.100	8.300	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210116)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Sand	Silty sand, black-light grey (30)
0.800	1.600	Geologist--Internal staff	Sand	Sand, light grey, medium (35)
1.600	2.400	Geologist--Internal staff	Sand	Sand, light grey-rusty brown, medium (20); silty sand, rusty brown(40)
2.400	3.200	Geologist--Internal staff	Sand	Sand, rusty brown, coarse (35)
3.200	4.000	Geologist--Internal staff	Sand	Sand, brown, medium to coarse (70)
4.000	4.800	Geologist--Internal staff	Sand	Gravelly sand, brown, fine to very coarse (20); silty gravels, light grey-light blue (40)
4.800	5.600	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor angular, pebbles (60)
5.600	6.400	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (70)
6.400	7.200	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (50); sand, white-light grey, medium to very coarse, minor fines (30)
7.200	8.000	Geologist--Internal staff	Unknown	-
8.000	8.300	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous

Stratigraphy Log - No Data Available

Advanced Data Summary - No Data Available



Site Details Report

Date: 26/05/2022

Site reference 60210117 - Munster Hill Catchment - MHC 10C - MHC 10C

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210117	Munster Hill Catchment - MHC 10C	MHC 10C
WIN_ID	20083567		MHC 10C
AQWAB	2427-1-NW-0253	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT-MHC 10C	MHC 10C

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123803	Easting	578445	Zone	50
Latitude	-35.025395396	Longitude	117.859906855	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210117)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	2.47	AHD	Surveyed	16/03/1999	
Top of collar	2.47	AHD	Surveyed	16/03/1999	

Drilling - No Data Available



Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210117)

Completed Date	12/01/1999	Drill Method Name	Auger		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	11.2	Depth Drilled (mbGL)	11.2
Comments	Comment: Headwork details: gatic Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210117)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	10.400	Casing	PVC	Not applicable	20.000			
10.400	11.200	Inlet (screen)	Unknown	Slotted	20.000			

Fill (Site reference: 60210117)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	9.800	Void Fill	Unknown		
9.800	11.200	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210117)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Sand	Silty sand, black-light grey (30)
0.800	1.600	Geologist--Internal staff	Sand	Sand, light grey, medium (35)
1.600	2.400	Geologist--Internal staff	Sand	Sand, light grey-rusty brown, medium (20); silty sand, rusty brown(40)
2.400	3.200	Geologist--Internal staff	Sand	Sand, rusty brown, coarse (35)
3.200	4.000	Geologist--Internal staff	Sand	Sand, brown, medium to coarse (70)
4.000	4.800	Geologist--Internal staff	Sand	Gravelly sand, brown, fine to very coarse (20); silty gravels, light grey-light blue (40)
4.800	5.600	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor angular, pebbles (60)
5.600	6.400	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (70)
6.400	7.200	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (50); sand, white-light grey, medium to very coarse, minor fines (30)
7.200	8.000	Geologist--Internal staff	Unknown	-
8.000	8.800	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous
8.800	9.600	Geologist--Internal staff	Clay	Sandy clay, ligh grey-light brown, micaceous (80)
9.600	10.400	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous (80)
10.400	11.200	Geologist--Internal staff	Unknown	-

Stratigraphy Log - No Data Available

Advanced Data Summary - No Data Available



Site Details Report

Date: 26/05/2022

Site reference 60210118 - Munster Hill Catchment - MHC 10D - MHC 10D

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210118	Munster Hill Catchment - MHC 10D	MHC 10D
WIN_ID	20083568		MHC 10D
AQWAB	2427-1-NW-0254	602 ALBANY COAST BASIN - MUNSTER HILL CATCHMENT-MHC 10D	MHC 10D

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123802	Easting	578444	Zone	50
Latitude	-35.025404490	Longitude	117.859895988	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-5m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area (km2)	N/A
Site Comment					

Depth Measurement Points (Site reference: 60210118)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	2.49	AHD	Surveyed	16/03/1999	
Top of collar	2.49	AHD	Surveyed	16/03/1999	

Drilling - No Data Available



Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210118)

Completed Date	12/01/1999	Drill Method Name	Auger		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	13.8	Depth Drilled (mbGL)	14.3
Comments	Comment: Headwork details: gatic Log event: Core samples retrieved in 0.8m length core barrel				

Casing (Site reference: 60210118)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	12.800	Casing	PVC	Not applicable	20.000			
12.800	13.800	Inlet (screen)	Unknown	Slotted	20.000			

Fill (Site reference: 60210118)

From (mbGL)	To (mbGL)	Fill Type	Material Type	Fill Volume (m3)	Grain Size (mm)
0.000	1.400	Void Fill	Unknown		
12.400	13.800	Void Fill	Unknown		

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210118)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.800	Geologist--Internal staff	Sand	Silty sand, black-light grey (30)
0.800	1.600	Geologist--Internal staff	Sand	Sand, light grey, medium (35)
1.600	2.400	Geologist--Internal staff	Sand	Sand, light grey-rusty brown, medium (20); silty sand, rusty brown(40)
2.400	3.200	Geologist--Internal staff	Sand	Sand, rusty brown, coarse (35)
3.200	4.000	Geologist--Internal staff	Sand	Sand, brown, medium to coarse (70)
4.000	4.800	Geologist--Internal staff	Sand	Gravelly sand, brown, fine to very coarse (20); silty gravels, light grey-light blue (40)
4.800	5.600	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor angular, pebbles (60)
5.600	6.400	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (70)
6.400	7.200	Geologist--Internal staff	Sand	Sand, white-light grey, coarse to very coarse, minor, angular, pebbles (50); sand, white-light grey, medium to very coarse, minor fines (30)
7.200	8.000	Geologist--Internal staff	Unknown	-
8.000	8.800	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous
8.800	9.600	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous (80)
9.600	10.400	Geologist--Internal staff	Clay	Sandy clay, light grey-light brown, micaceous (80)
10.400	11.200	Geologist--Internal staff	Unknown	-
11.200	12.000	Geologist--Internal staff	Clay	Clay, dark brown, minor silverish micas (70)
12.000	12.800	Geologist--Internal staff	Clay	Clay, dark brown, minor silverish micas (80)
12.800	13.600	Geologist--Internal staff	Clay	Clay, dark brown, minor silverish micas (20); gravelly sand, dark brown, fine to very coarse (60)
13.600	14.400	Geologist--Internal staff	Sand	Sand, dark brown, medium to coarse, very hard (65)

Stratigraphy Log - No Data Available

Advanced Data Summary - No Data Available



Site Details Report

Date: 26/05/2022

Site reference 60210190 - Princess Royal Harbour - PRH 20 - PRH 20

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210190	Princess Royal Harbour - PRH 20	PRH 20
WIN_ID	20055311		PRH 20
AQWAB	2427-1-NW-0206	602 - ALBANY COAST - PRH#20	PRH 20

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123686	Easting	578145	Zone	50
Latitude	-35.026473573	Longitude	117.856629561	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-10m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area(km2)	N/A
Site Comment	Samples stored. Princess royal harbour nutrient project. Headworks: plastic gatic at ground level. Hole size: 4in. Piez diameter: 50mm. Field measurments - sample: 1192, ec: 403 us/cm, ph: 5.7, temp: 18.9 deg Celsius, eh: -133 mv, do 2.0 mg/L,. Swl recorded as 1.53m btoc. Total piezo depth recorded as 3.7m bgl, strata log recorded to 4m.				

Depth Measurement Points (Site reference: 60210190)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	2.5	AHD	Geographic Information System	27/05/1997	

Drilling - No Data Available

Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210190)

Completed Date	27/05/1997	Drill Method Name	Hollow stm aug		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	3.2	Depth Drilled (mbGL)	4
Comments					

Casing (Site reference: 60210190)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	0.000	Unknown	Unknown	Not applicable				0 - 1.7m class 6 PVC casing
1.700	3.200	Inlet (screen)	Unknown	Slotted			0.400	Screen length 1.5m

Fill - No Data Available

Aquifers - No Data Available

Lithology Log (Site reference: 60210190)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.200	Geologist--Internal staff	Soil	Top soil: dark brown top soil
0.200	1.100	Geologist--Internal staff	Sand	Clayey sand: dark brown clayey fine to medium sand with occasional gravel
1.100	4.000	Geologist--Internal staff	Sand	Sand: dark brown to black fine to medium sand with occasional clay

Stratigraphy Log - No Data Available

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210190 WIN Site ID: 60210190)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210190	SC-G-PRINCESSRYLHRBR	Princess Royal Harbour GW Invstgn for AQWABase	28/05/1997	17/10/1997	43
60210190	WA-G-1998AQWABDATA	1998 AQWABase Data Capture	27/05/1997	27/05/1997	3

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210190	Water levels - discrete	27/05/1997	27/05/1997	2
60210190	Water quality indicators - discrete	27/05/1997	27/05/1997	1
60210190	Water quality indicators - discrete	28/05/1997	17/10/1997	43

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210190	Inorganic metals	17/10/1997	17/10/1997	5
60210190	Inorganic non-metals	28/05/1997	17/10/1997	4
60210190	Measurement or observation of physical properties	28/05/1997	17/10/1997	12
60210190	Nutrients	28/05/1997	17/10/1997	22
60210190	Physical	27/05/1997	27/05/1997	1
60210190	Water level (discrete)	27/05/1997	27/05/1997	2



Site Details Report

Date: 26/05/2022

Site reference 60210191 - Princess Royal Harbour - PRH 21 - PRH 21

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210191	Princess Royal Harbour - PRH 21	PRH 21
WIN_ID	20055312		PRH 21
AQWAB	2427-1-NW-0207	602 - ALBANY COAST - PRH#21	PRH 21

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6123660	Easting	578167	Zone	50
Latitude	-35.026706297	Longitude	117.856873153	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	+/-10m		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area(km2)	N/A
Site Comment	Samples stored. Princess royal harbour nutrient project. Headworks: plastic gatic at ground level. Hole size: 4in. Piez diameter: 50mm. Field measurments - sample: 1193, ec: 1582 us/cm, ph: 6.2, temp: 19.0 deg Celsius, eh: -219 mv, do 3.9 mg/L,. Swl recorded as 1.17m btoc.				

Depth Measurement Points (Site reference: 60210191)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level		2 AHD	Geographic Information System	27/05/1997	

Drilling - No Data Available

Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210191)

Completed Date	27/05/1997	Drill Method Name	Hollow stm aug		
Owner Name	Department of Water	Drill Rig Name	Unknown		
Drill Company Name	Water and Rivers Commission	Total Construction Depth (mbGL)	3.5	Depth Drilled (mbGL)	4
Comments					

Casing (Site reference: 60210191)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	0.000	Unknown	Unknown	Not applicable				0 - 2m class 6 PVC casing
2.000	3.500	Inlet (screen)	Unknown	Slotted			0.400	Screen length 1.5m

Fill - No Data Available

Aquifers - No Data Available

Lithology Log (Site reference: 60210191)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	0.300	Geologist--Internal staff	Unknown	Roadbase: clayey gravel
0.300	1.300	Geologist--Internal staff	Sand	Sand: brown to dark brown fine to medium sand
1.300	4.000	Geologist--Internal staff	Sand	Clayey sand: brown clayey fine to medium sand with occasional shells

Stratigraphy Log - No Data Available

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210191 WIN Site ID: 60210191)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210191	SC-G-PRINCESSRYLHRBR	Princess Royal Harbour GW Invstgn for AQWABase	28/05/1997	17/10/1997	38
60210191	WA-G-1998AQWABDATA	1998 AQWABase Data Capture	27/05/1997	27/05/1997	3

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210191	Water levels - discrete	27/05/1997	27/05/1997	2
60210191	Water quality indicators - discrete	27/05/1997	27/05/1997	1
60210191	Water quality indicators - discrete	28/05/1997	17/10/1997	38

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210191	Inorganic metals	17/10/1997	17/10/1997	5
60210191	Inorganic non-metals	28/05/1997	17/10/1997	4
60210191	Measurement or observation of physical properties	28/05/1997	17/10/1997	12
60210191	Nutrients	28/05/1997	17/10/1997	17
60210191	Physical	27/05/1997	27/05/1997	1
60210191	Water level (discrete)	27/05/1997	27/05/1997	2



Site Details Report

Date: 26/05/2022

Site reference 60210411 - Mount Elphinstone - C22 - C22

Alternative Site References

Numbering System	Reference Code	Site Name	Short Name
AWRC	60210411	Mount Elphinstone - C22	C22
WIN_ID	20055334		C22
AQWAB	2427-1-NW-0229	602 - ALBANY COAST BASIN - C22	C22

General Details

Site Type	Groundwater	Sub Type	Bore or Well	Site Geofeature	Ground
Northing	6124077	Easting	578214	Zone	50
Latitude	-35.022942801	Longitude	117.857349063	Spheroid	GDA94
Thou250 Map Index	SI5011	Geographic Precision (+/- m)	Unknown		
Local Govt Authority	CITY OF ALBANY	Locality	MOUNT ELPHINSTONE	DWER Region	South Coast
Catchment	Princess Royal Harbour	Estuary		BOM Rainfall District	9A - South Coast
River Basin	602 - Albany Coast	Groundwater Area	Albany	Groundwater Province	Bremer West
Surface Water Area	Albany Coast	Surface Water SubArea	Princess Royal Harbour	GgStn Catchment Area(km2)	N/A
Site Comment	Hazli a. Koombieri (hr 117, October 1998): unconfined aquifer in the quaternary sand and in the werillup formation sand and sandy clay; not suitable to take groundwater quality samples as the bore is slotted to above the surface and there is no cement block. Recovery: to 0.6m bswl in 30min. Filter pack material: 0 - 13.6m, 1 to 3.2mm graded gravel. Coordinates also recorded as: easting - 578090; northing - 6123940.				

Depth Measurement Points (Site reference: 60210411)

Measurement Point Type	Elevation (m as per Datum Plane)	Datum	Measurement Method	Date	Comments
Ground level	9.03	AHD	Geographic Information System	27/10/1990	
Top of casing	9.65	AHD	(none)	27/10/1990	

Drilling - No Data Available

Site Details Report

Date: 26/05/2022

Borehole Information (Site reference: 60210411)

Completed Date	27/10/1990	Drill Method Name	Cable tool		
Owner Name	CSBP	Drill Rig Name	Unknown		
Drill Company Name	Western Irrigation Pty Ltd	Total Construction Depth (mbGL)	12.98	Depth Drilled (mbGL)	14
Comments	How pump tested: Pumped: mma for 1.7 hours				

Casing (Site reference: 60210411)

From (mbGL)	To (mbGL)	Element	Material	Inlet Type	Inside Dia. (mm)	Outside Dia. (mm)	Aperture (mm)	Comments
0.000	0.000	Unknown	Unknown	Not applicable	0.001			0.3m agl - 1.5m, 150mm diam. Id steel; 0.62m agl - 13.38m, 100mm diam. Class 9 PVC. Diameter modified from 0 to 0.001 to meet system key constraints. JAA 16-09-2016
0.000	12.980	Inlet (screen)	Unknown	Slotted				100mm diam. Class 9 PVC machine slotted 1.0%; originally slotted from 0.62m above surface

Fill - No Data Available

Aquifers - No Data Available

Site Details Report

Date: 26/05/2022

Lithology Log (Site reference: 60210411)

From (mbGL)	To (mbGL)	Interpreted By	Substance	Lithological Description
0.000	1.000	Non geologist--Consultant/Mining		Sand, black, fine to medium grained, moderately sorted, with some silt
1.000	2.000	Non geologist--Consultant/Mining		Sand, light brown, moderately rounded, well sorted
2.000	3.000	Non geologist--Consultant/Mining		Sand, dark brown, with some black silt
3.000	4.000	Non geologist--Consultant/Mining		Sand, silty, dark brown, fine grained, well rounded
4.000	7.000	Non geologist--Consultant/Mining		Sand, brown, moderately rounded
7.000	8.000	Non geologist--Consultant/Mining		Sand, brown, moderately rounded, 5% brown clay
8.000	9.000	Non geologist--Consultant/Mining		Sand, brown, fine to medium grained
9.000	10.500	Non geologist--Consultant/Mining		Sand, light brown, fine to medium grained, poorly sorted
10.500	14.000	Non geologist--Consultant/Mining		Clay, silty, brown, with some fine sand

Stratigraphy Log (Site reference: 60210411)

From (mbGL)	To (mbGL)	Interpreted By	Interpreted Date	Stratigraphy	Lithology1	Lithology2	Lithology3
0.000	10.800	Non geologist--Consultant/Mining	20/04/1999	? Quaternary	sand	(none)	(none)
10.800	14.000	Non geologist--Consultant/Mining	20/04/1999	? Werillup Fm	clay	silt, silty	sand

Site Details Report

Date: 26/05/2022

Advanced Data Summary (Site reference: 60210411 WIN Site ID: 60210411)

Readings by Project

Default Site Reference	Project Code	Project Name	First Measurement	Last Measurement	No of Measurements
60210411	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	28/10/1990	28/10/1990	2
60210411	SC-G-MNSTRHLLCTMNT	Munster Hill Catchment GW Invstgn for AQWABase	28/10/1990	28/10/1990	6
60210411	SC-G-PRINCESSRYLHRBR	Princess Royal Harbour GW Invstgn for AQWABase	29/05/1997	17/10/1997	35

Readings by Data Category

Default Site Reference	Data Category	First Measurement	Last Measurement	No of Measurements
60210411	Water levels - discrete	28/10/1990	28/10/1990	2
60210411	Water quality indicators - discrete	28/10/1990	17/10/1997	41

Readings By Variable Type

Default Site Reference	Variable Type	First Measurement	Last Measurement	No of Measurements
60210411	Inorganic metals	17/10/1997	17/10/1997	5
60210411	Inorganic non-metals	29/05/1997	17/10/1997	3
60210411	Measurement or observation of physical properties	28/10/1990	17/10/1997	15
60210411	Nutrients	29/05/1997	17/10/1997	16
60210411	Organics	15/10/1997	15/10/1997	2
60210411	Water level (discrete)	28/10/1990	28/10/1990	2

Appendix D Dangerous Goods



Spearwood Wool Complex
Cnr Phoenix & Sudlow Roads
Spearwood
Western Australia
Tel (618) 9418 0300
Fax (618) 9418 6444

Postal Address
PO Box 1394 Bibra Lake
Western Australia 6965

18th October 2002

██████████
Department of Mineral & Petroleum Resources
100 Plain Street
East Perth WA 6004

Dear ██████████

**Re: Storage of Dangerous Goods – Overdue Licence Fees
Invoice / File No. S013122**

I refer to your letters dated 17th September 2002 and 3rd October 2002 regarding the above and advise that we will not be renewing the overdue licence.

The Albany Woolstores are no longer in operation and the gas tank has been removed.

If you have any further queries, please call me on ██████████

Regards

████████████████████

████████████████████

DKB.nrc/6012

**Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act**

National Office
PO Box 283 Lara
Victoria 3212
Ph (03) 5272 9200
Fax (03) 5274 2084

Yennora Wool Complex
PO Box 718 Guildford
New South Wales 2161
Ph (02) 9790 9000
Fax (02) 9892 1111

Lara Wool Complex
PO Box 283 Lara
Victoria 3212
Ph (03) 5272 9200
Fax (03) 5274 2221

Gillman Wool Complex
PO Box 2423 Port Adelaide
South Australia 5015
Ph (08) 8240 8400
Fax (08) 8240 0080



Department of
Mineral and Petroleum Resources

Our ref: MR: S013122

Enquiries: [REDACTED]

Fax: 9222 3525

WOOLDUMPERS AUSTRALIA PTY LTD
PO BOX 283
LARA VIC 3212

Mineral House
100 Plain Street East Perth
Western Australia 6004
ABN 69 410 335 356

Telephone +618 9222 3333
Facsimile +618 9222 3430
www.mpr.wa.gov.au

Dear Sir/Madam

STORAGE OF DANGEROUS GOODS – OVERDUE LICENCE FEES

An audit check of our records has revealed that the licence to store dangerous goods issued in respect to the premises detailed below has expired.

INVOICE/ FILE NO.	LOCATION OF STORAGE	EXPIRY DATES	AMOUNT PAYABLE PER ANNUM
S 013122	1 SOUTH COAST RD ALBANY WA 6330	28/07/2002 to 2003 (1 year outstanding)	\$29.00
TOTAL DUE			\$29.00

If the above premises is still being used for the storage of dangerous goods then the licence must be renewed and transferred into your name (application form to transfer the licence is enclosed).

Please forward to this office the amount owing or notification of the current status of the storage premises before **7 October 2002**. Payment methods available are explained on the attachment.

Alternatively, if storage has ceased, then your written confirmation that all storage facilities have been removed is required. If you have any queries, please telephone [REDACTED]

You are reminded that storage of dangerous goods on unlicensed premise constitutes a breach of the Explosives & Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992 and it is therefore requested that this matter be given your urgent attention.

Yours sincerely

[REDACTED]

for DIRECTOR
EXPLOSIVES AND DANGEROUS GOODS
17 September 2002



Department of
Mineral and Petroleum Resources

File Note

REF:	S013122	DATE:	17 September 2002
SUBJECT:	NEW OWNER ADDRESS		

Contacted council new owner address is:

WOOLDUMPERS AUSTRALIA PTY LTD
PO BOX 283
LARA VIC 3212



EXPLOSIVES AND DANGEROUS GOODS

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act



LICENCE TO STORE DANGEROUS GOODS

Issued in accordance with the Explosives and Dangerous Goods Act, 1961.

Chief Inspector

Business Name ALBANY WOOLSTORES P/L
Address of Storage 1 SOUTH COAST ROAD
ALBANY WA 6330

File Number S013122

Expiry Date 28/07/2002

Holder Name and Address AUSTRALIAN WOOL HANDLERS
1 SOUTH COAST ROAD
ALBANY WA 6330

Storage Details
Product Name LP GAS

Licence Fee \$29.00

No. of Depots	Depot Type	Tank / Depot I.D.	UN No	Class	Sub Risk	Packing Group	Max. Storage (KL/TONNES)
1	GTD	19955	1075	2.1		I	3.80

Department of Mines, Industry Regulation and Safety
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This is your Validated Licence (Receipt details are shown below)

\$28.00 being part of \$28.00 received on 01/08/2001 Receipt No. 83481



Department of
Mineral and Petroleum Resources

Your ref:

Our ref: MR S013122

Enquiries: [REDACTED]

Email: [REDACTED]

Mineral House
100 Plain Street East Perth
Western Australia 6004
ABN 69 410 335 356

Telephone +618 9222 3333
Facsimile +618 9222 3430
www.mpr.wa.gov.au

AUSTRALIAN WOOL HANDLERS
1 SOUTH COAST ROAD
ALBANY WA 6330

RTS

Dear Sir/Madam

STORAGE OF DANGEROUS GOODS – OVERDUE LICENCE FEES

Your licence to store dangerous goods issued in respect to the premises detailed below has expired.

INVOICE/FILE NO.	LOCATION OF STORAGE	EXPIRY DATE	AMOUNT DUE
S013122	ALBANY WOOLSTORES P/L 1 SOUTH COAST ROAD ALBANY WA 6330	28/07/2002	\$29.00

If the above premises is still being used for the storage of dangerous goods then the licence must be renewed.

Please forward to this office the amount owing before **30 September 2002**. Payment methods available are explained on the attachment.

Alternatively, if storage has ceased, then your written confirmation that all storage facilities have been removed is required. If you have any queries, please telephone [REDACTED].

You are reminded that storage of dangerous goods on unlicensed premise constitutes a breach of the Explosives & Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992 and it is therefore requested that this matter be given your urgent attention.

Yours sincerely

[REDACTED]

for DIRECTOR
EXPLOSIVES AND DANGEROUS GOODS
2 September 2002

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

IMPORTANT NOTICE

- ❖ Licensees must ensure that a current licence is maintained as legal proceedings may commence as a consequence of operating without a valid licence.
- ❖ Any accident which occurs after the expiry date may nullify an insurance claim.
- ❖ A licensee shall notify the Chief Inspector of any proposed change in circumstances to licensed dangerous goods storage premises and shall notify the Chief Inspector if there is a new owner or occupier of licensed premises.

❖ **Please return your remittance to:**

Department of Mineral and Petroleum Resources
100 Plain Street
EAST PERTH WA 6004

❖ **Cheques and money orders are to be made payable to:**

Department of Mineral and Petroleum Resources

❖ **Credit card payments may be accepted by telephoning: 9222 3392**

NB: Office hours only (between 8:30am – 4:30pm Monday to Friday)

.....
.
**Complete this Section if paying by credit card and post to Dept of Mineral
& Petroleum Resources, 100 Plain Street, East Perth WA 6004**

INVOICE / FILE NUMBER

S013122

Card number

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--	--	--	--

--	--	--	--

Please tick:

☐

Bank Card

☐

Master Card

☐

Visa Card

Card Holder Name (Please Print): _____

Expiry Date: _____

Amount : \$ _____

Signature: _____

PJ:EEB A13122
[REDACTED]

Albany Woolstores P/L
1 South Coast Road
ALBANY WA 6330

Attention: [REDACTED]

Dear Sir

DANGEROUS GOODS REGULATIONS 1992
PREMISES: 1 SOUTH COAST ROAD, ALBANY
PROPOSAL: 1X 3.8 KL LP GAS TANK

Thank you for your submission dated 11 October 1995. The assessment has now been completed and the licence will be amended subject to the following conditions.

1. It is required that no fixed ignition source be located within the hazardous zone surrounding the tank, i.e. 1m vertically and 4.6m laterally from the tank shell as defined in Australian Standard 2430.3-1991.
2. Vegetation which might become a fire hazard shall be kept short in the vicinity of the LP Gas tank.
3. No ignition source shall be located within the hazardous zone of a decanting cylinder as defined by Figure G4 of Australian Standard 1596-1989 (copy enclosed).

General Requirements

1. Placarding is required in accordance with the Worksafe Guidance Note "Storage of Chemicals". Please review and ensure compliance with the relevant requirements of the attached Divisional Guidance Note S302
2. An Emergency Plan is required in accordance with Regulation 4.28 of the above mentioned Regulations. Please review and ensure compliance with the relevant requirements of the attached Divisional Guidance Note S310.

Full compliance with Australian Standard 1596-1989 is required for the storage and handling of LP Gas.

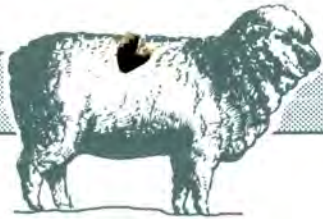
If you have any queries, please do not hesitate to contact this Division.

Yours faithfully



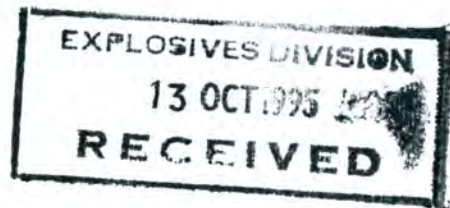
FOR CHIEF INSPECTOR
EXPLOSIVES AND DANGEROUS GOODS DIVISION

16 October, 1995
Encl.



ALBANY WOOLSTORES PTY LTD

ACN 008 674 253



1 South Coast Road
PO Box 475
Albany W A 6330

Telephone (098) 41 2177
Facsimile (098) 42 1024

11th October 1995

Mr [REDACTED]
Department of Minerals and Energy
Explosives and Dangerous Goods Division
Mineral House
100 Plain Street
East Perth WA 6004.

Dear [REDACTED]

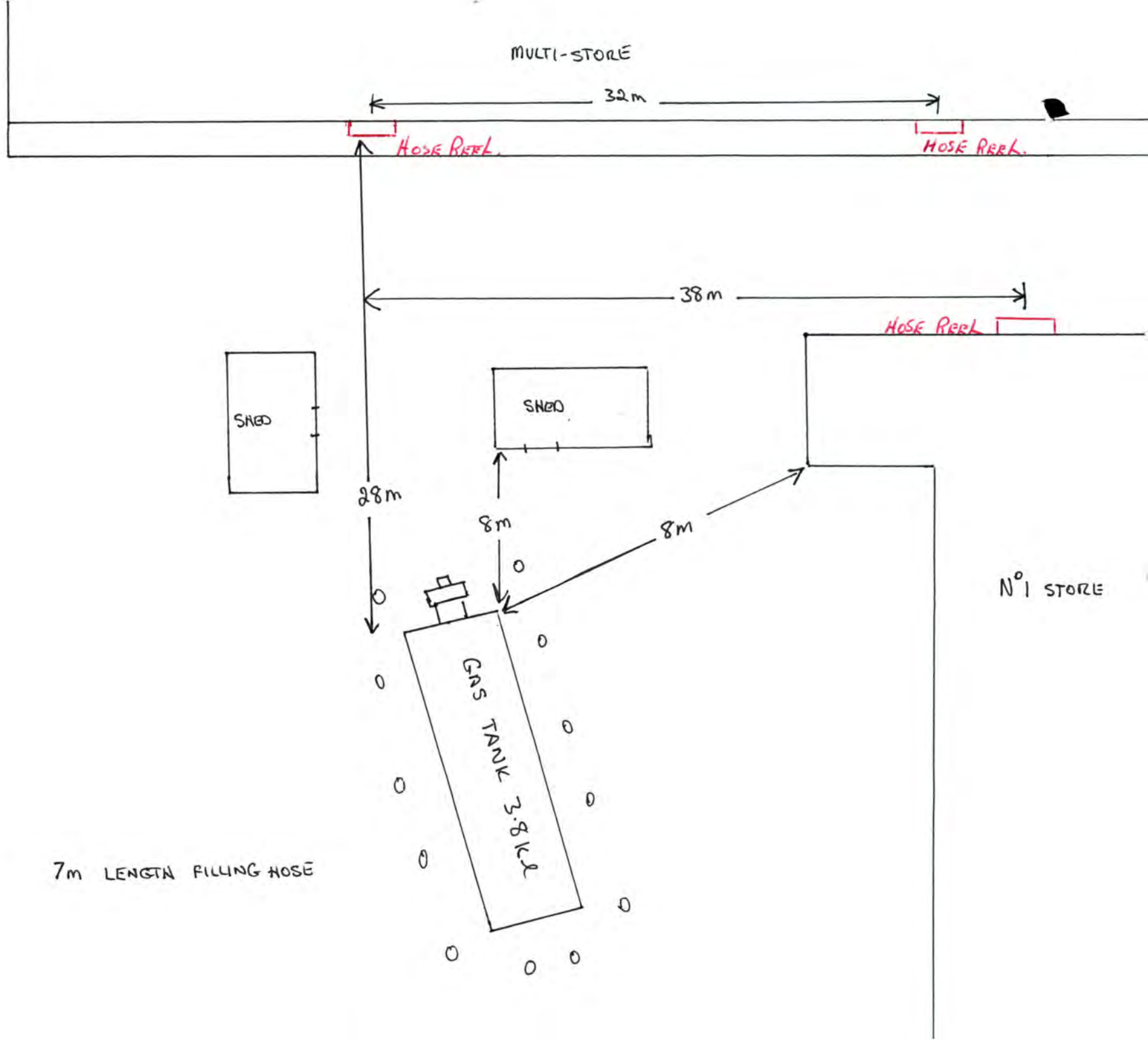
In reply to your letter dated 6th September 1995, the following alterations to our gas tank will take place in the next couple of weeks.

- (1) When the tank is down to 10% off capacity, Kleenheat Gas will move the tank to a distance of not less than 7.2m from the store and old work shop.
- (2) A barrier will be erected 3 metres from the nozzle for refilling.
- (3) 3 Fire fighting hydrants are available in case of fire (Fire Brigade use only).
- (4) Length of hose for filling gas bottles is 7 metres.

A plan is enclosed for your information on the relevant requirements to be addressed as above.

Yours faithfully, [REDACTED]

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act



TRANSMISSION REPORT

:MINES DEPT HUMAN RES (06 OCT '95 09:24)

DATE	START TIME	REMOTE TERMINAL IDENTIFICATION	MODE	TIME	RESULTS	TOTAL PAGES	DEPT. FILE CODE NO.
06 OCT	09:22	098 421024	G3ST	01'03"	OK	02	

[REDACTED] informed me the tank is
 being moved when its nearly empty and he
 will notify us in the next few weeks [REDACTED] 6/10/95
 B4 [REDACTED] 16/11/95

Department of Mines, Industry Regulation and Safety
 Released through an application under the FOI Act



DEPARTMENT OF MINERALS AND ENERGY, WESTERN AUSTRALIA
EXPLOSIVES AND DANGEROUS GOODS DIVISION

100 Plain Street, East Perth WA 6004 Tel - (09) 222 3333 Fax - (09) 222 3525

FAX TRANSMISSION

TO:	[REDACTED]	
COMPANY NAME:	Albany Woolstores	
FROM:	[REDACTED]	
DATE:	6 October 1995	
FILE REFERENCE:	A13122	TOTAL NUMBER OF PAGES: 2

Attached is the copy of the letter as
promised.

Regards



Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

**EXPLOSIVES AND
DANGEROUS GOODS
DIVISION**

 MINERAL HOUSE
100 PLAIN STREET (CNR ADELAIDE TCE)
EAST PERTH
WESTERN AUSTRALIA 6004

TELEPHONE (09) 222 3333

FACSIMILE (09) 222 3525

 Your Ref : PJ:EEB A13122
 Our Ref :
 Enquiries to :
 Telephone :

 Albany Woolstores Pty Ltd
1 South Coast Rd
ALBANY WA 6330

Attention:

Dear Sir

DANGEROUS GOODS REGULATIONS 1992
PREMISES: 1 SOUTH COAST RD, ALBANY WA 6330
PROPOSAL: 1X 3.8 KL LP GAS TANK
DRAWING NOS: DOM 139

Further to your application dated 21 December 1992 you were issued a provisional licence pending a full assessment. The assessment is now being pursued and I advise that the licence cannot be amended until written advice on how the following items are to be addressed is forwarded to this office.

1. Please provide the length of the hose for filling forks lift tanks.
2. The separation distance from the tank to the "store" and the "old shops" as marked on plan.
3. Under Australian Standard 1596-1988 the required separation distance from the tank to the workshop is 7.2m. The plan indicates that it is 5m. A proposal to remedy this non-compliance is required. If the wall of the workshop is a 4 hour rated fire wall the separation distance may be measured to the nearest opening in the wall (door, window, vent), if this is the case please submit a plan showing this.
4. Indicate provisions made to prevent connection of a nozzle to a vehicle within 3 metres of the tank.
5. Indicate any fire fighting equipment you may have.

If you have any queries, please do not hesitate to contact this Division.

Yours faithfully

 FOR CHIEF INSPECTOR
EXPLOSIVES AND DANGEROUS GOODS DIVISION
6 September 1995

DOC

PJ:EEB A13122
[REDACTED]

Albany Woolstores Pty Ltd
1 South Coast Rd
ALBANY WA 6330

Attention: [REDACTED]

Dear Sir

DANGEROUS GOODS REGULATIONS 1992
PREMISES: 1 SOUTH COAST RD, ALBANY WA 6330
PROPOSAL: 1X 3.8 KL LP GAS TANK
DRAWING NOS: DOM 139

Further to your application dated 21 December 1992 you were issued a provisional licence pending a full assessment. The assessment has now been completed and the licence will be renewed subject to the following items being suitably addressed.

1. The length of the hose for filling forks lift tanks.
2. The separation distance from the tank to the "store" and the "old shops" as marked on plan.
3. Under Australian Standard 1596-1988 the required separation distance from the tank to the workshop is 7.2m. The plan indicates that it is 5m. A proposal to remedy this non-compliance is required. If the wall of the workshop is a 4 hour rated fire wall the separation distance may be measured to the nearest opening in the wall (door, window, vent), if this is the case please submit a plan showing this.
4. Indicate provisions made to prevent connection of a nozzle to a vehicle within 3 metres of the tank.
5. Indicate any fire fighting equipment you may have.

If you have any queries, please do not hesitate to contact this Division.

Yours faithfully
[REDACTED]

FOR CHIEF INSPECTOR
EXPLOSIVES AND DANGEROUS GOODS DIVISION
6 September 1995

[REDACTED].DOC

STORAGE OF DANGEROUS GOODS ASSESSMENT FORM

HOLDER DETAILS: ALBANY WOOLSTORES

FILE NO: A13122

PREMISES DETAILS: 1 South Coast Rd Albany

098 412 177

PREMISES CODE:

PLAN NO:

DEXIS CHECK OF PREMISES: Y/N

DEXIS UPDATED: Y/N

FILE TRACKING: Y/N

1.0 PROPOSED STORAGE:

Depot type	Correct technical name of goods	UN No.	Class, subrisk	Pckg group	Amount	Factor	Storage Factor
GTD	LPGAS	1075	2.1	-	3.8KL	2	7600

2.0 SEPARATION DISTANCES

LIQUID WITH DRAVAL. Forklifts

SEPARATION TO:

	REG (m)	ACTUAL (m)	STATUS
(i) Protected Works	1596		
- Workshop	7.2m	8m \geq 5m	✓
- STORE		8m?	✓
- OLD SHOPS.		8m?	✓
hose reach to STORE.		?	
OLD SHOP.		?	
(ii) Boundary / Public Places			
	4.6	28	✓
(iii) Ignition sources			
	4.6m		conditional
(iv) Other dangerous goods			
hose reach zone.		5m beyond	✓

Department of Mines, Industry Regulation and Safety
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3.0 BUILDING

Status N/A

Capacity: _____

Liquid Tight: _____

Clearance Distance: _____

4.0 VENTILATION

Status ✓

Open Air

5.0 FIRE PROTECTION

Status ✓

Requires hose reel or fire extinguisher.

Hose Reel there

6.0 PLACARDING/NOTICES:

Status ✓

7.0 EMERGENCY PLAN:

Status ✓

MANIFESTS : _____

Status _____

8.0 BULK CONTAINER : CONST. STD _____

Status _____

9.0 OTHER

has crash procedures
private compound
Dispenser is protected




10.0 SUMMARY 1.0 COMPLIES 2.0 DOES NOT COMPLY 3.0 MORE INFO REQ'D

REFER TO LETTER / FAX DATED: _____

INSPECTOR: _____ DATE: _____

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

DANEX UPDATED WITH
STORAGE AND HOLDER DETAILS



 09.09.93 PLEASE ISSUE AUTOMATIC LICENCE
LETTER /


30/8/93



**EXPLOSIVES AND
DANGEROUS GOODS
DIVISION**

MINERAL HOUSE
100 PLAIN STREET (CNR ADELAIDE TCE)
EAST PERTH
WESTERN AUSTRALIA 6004

TELEPHONE (09) 222 3333
FACSIMILE (09) 222 3525

Your Ref: 13122
Our Ref: Duty Inspector
Enquiries to: [REDACTED]
Telephone: [REDACTED]

Shire Clerk
Shire of Albany
PO Box 809
ALBANY WA 6330

Dear Sir,

DANGEROUS GOODS REGULATIONS, 1992

An application for a licence to store dangerous goods has been received by this Division (copy enclosed).

This Division is considering the application and if all the requirements of the above regulations in respect to public safety and protection of property are met a licence will be issued.

This advice is forwarded to enable Council to consider the implications of the proposal in respect to your by-laws if necessary.

Yours faithfully



CHIEF INSPECTOR
02.09.93

Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

DEPARTMENT OF MINERALS AND ENERGY WESTERN AUSTRALIA
EXPLOSIVES AND DANGEROUS GOODS ACT 1961 - DANGEROUS GOODS REGULATIONS 1992

APPLICATION FOR LICENCE TO STORE DANGEROUS GOODS

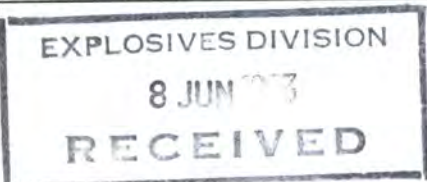
READ THIS FIRST

1. YOU CAN AVOID UNNECESSARY DELAYS IN THE ASSESSMENT OF THIS APPLICATION BY READING GUIDANCE NOTE S301 (STORAGE OF DANGEROUS GOODS - LICENSING AND EXEMPTIONS) FIRST AND CHECKING THAT ALL OF THE FOLLOWING MATTERS HAVE BEEN SUITABLY ADDRESSED:
 - All information as requested in parts A and B of this application
 - Provision of a ground plan showing the proposed location of all storage facilities, dispensers and handling areas and the separation distances to buildings, boundaries and protected works
 - Provision of a scaled plan showing the position of the premises in relation to roads, railways, buildings and protected works within 50 metres of the boundaries of the premises (this and the above requirement may be satisfied by one drawing)
 - Provision of other information necessary to determine whether the proposal will comply with the regulations. Such information will depend on the complexity of the proposal and may include detailed engineering design drawings, tank installation details, fire protection, emergency response plans, quantitative risk assessment, segregation proposals, bund design and system controls.
2. THIS APPLICATION DOES NOT CONSTITUTE AN APPLICATION FOR BUILDING APPROVAL AND ANY LICENCE ISSUED IN RESPECT OF THIS APPLICATION IS NOT A BUILDING APPROVAL FOR THE PURPOSES OF COMPLYING WITH LOCAL AUTHORITY BY-LAWS OR ANY OTHER APPLICABLE BUILDING REGULATIONS.
3. APPLICATIONS FOR LICENCE ARE TO BE MADE TO :
CHIEF INSPECTOR
DEPARTMENT OF MINERALS AND ENERGY
EXPLOSIVES AND DANGEROUS GOODS DIVISION
100 Plain Street
EAST PERTH WA 6004
Phone (09)222 3333 Fax (09) 222 3525

PART A - APPLICANT AND PREMISES DETAILS

1. INTENDED LICENSEE	
NAME: <u>ALBANY WOOLSTORES PTY LTD</u>	
ADDRESS: <u>1 SOUTH COAST RD ALBANY WA</u>	POSTCODE: <u>6330</u>
2. PREMISES TO BE LICENSED	
BUSINESS TRADING NAME: <u>ALBANY WOOLSTORES PTY LTD</u>	
ADDRESS: <u>1 SOUTH COAST RD</u>	
TOWN: <u>ALBANY</u>	POSTCODE: <u>6330</u>
NATURE OF BUSINESS: <u>WOOL HANDLING CENTRE</u>	
PURPOSE OF STORAGE: <u>STORAGE FACILITY - GAS FORK TRUCKS</u>	
IF PREMISES IS CURRENTLY LICENSED, WHAT IS THE LICENCE FILE NUMBER ? _____	
SHIRE / LOCAL AUTHORITY: <u>TOWN OF ALBANY</u>	
3. APPLICANT DETAILS	
NAME: _____	PHONE: _____
SIGNATURE: _____	DATE: <u>21/12/92.</u>
POSITION (eg Manager, Secretary): _____	

OFFICE USE ONLY

	CLERK _____	ATTN _____	DISCUSS _____
	DATE _____	FROM _____	REVIEW _____
	MSB/ _____	DATE <u>5/1/93</u>	DRAFT REPLY _____
		ACTION BY _____	REPLY _____

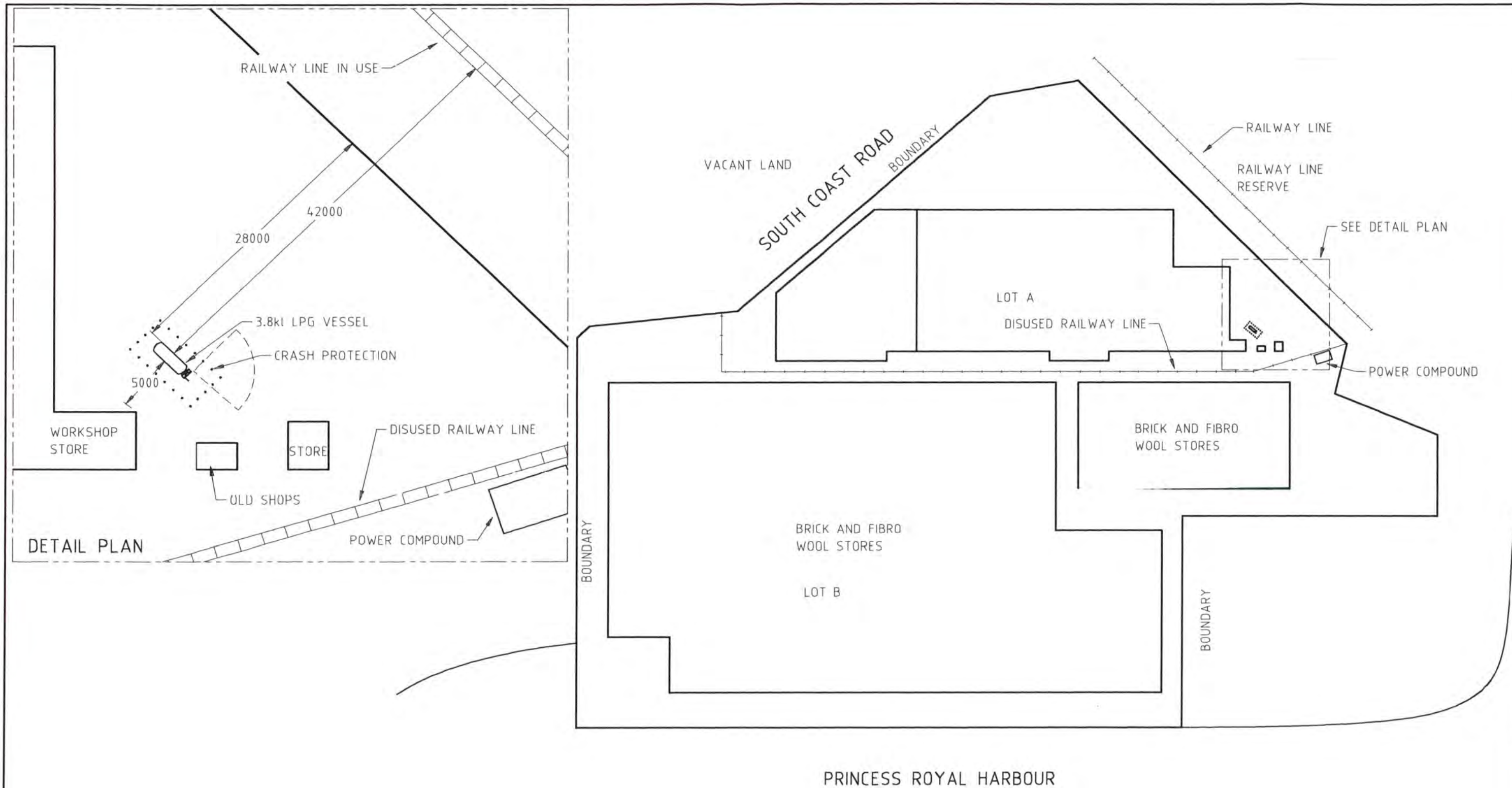
Department of Mines, Industry Regulation and Safety
Released through an application under the FOI Act

PART B - DETAILS OF PROPOSED STORAGE

[illegible]

NOTES:

1. An identification or serial number must be specified for each bulk container / tank and this number must be clearly marked on the external surface of the container. It is recommended that the identification number also be marked on the roof of each tank. For underground tanks the identification number may be embossed on the tank dipstick and should correspond with the manufacturers serial number.
2. Each individual bulk container and depot must be listed separately above and its location shown on an attached plan of the premises. All dangerous goods intended or likely to be stored on the premises must be specified.
3. For package depots containing numerous types of dangerous goods it is sufficient to group the goods according to class and packaging group provided that any non-compatible goods are listed separately.
4. Technical information such as UN No., Packaging Group etc. may be sourced from the manufacturer / supplier, package labels, material safety data sheets or the ADR Code. Guidance Note S301 lists the necessary information for many of the commonly encountered dangerous goods.



<p>NORTH</p> 	APPLICATION FOR LICENCE TO STORE DANGEROUS GOODS			 CADD SHEET SIZE A3	
	APPLICATION BY		DRAWING NUMBER		REVISION
	ALBANY WOOL STORES		DOM 139		0
	1 SOUTH COAST ROAD		SCALE		DO NOT SCALE
	ALBANY		DRAWN		21.05.93
		CHECKED			
		JOB No	930601	1330	

Appendix E Basic Summary of Records



Logan Penman
JBS&G
1/50 Subiaco Square Rd
Subiaco WA 6008

Our ref: DMO 10921
Enquiries: Registrar
Phone: 1300 762 982
Fax: (08) 6364 7001
Email: info@dwer.wa.gov.au

Dear Sir/Madam

BASIC SUMMARY OF RECORDS REQUEST

Thank you for your Basic Summary of Records request for the site consisting of the following parcel(s) of land:

- LOT 52 ON PLAN 3571 as shown on certificate of title 1123/15 known as 22 Woolstores Pl, Mount Elphinstone WA 6330
- LOT 53 ON PLAN 3571 as shown on certificate of title 1123/16 known as 18 Woolstores Pl, Mount Elphinstone WA 6330
- LOT 54 ON PLAN 3571 as shown on certificate of title 1433/470 known as 10 Woolstores Pl, Mount Elphinstone WA 6330
- LOT 55 ON PLAN 3571 as shown on certificate of title 1246/459 known as 53 Frenchman Bay Rd, Mount Elphinstone WA 6330

which Department of Water and Environmental Regulation (the department) received on 21/07/2022.

A search of the department's records of known and suspected contaminated sites was undertaken however, our records indicate that as of 26/07/2022 this site has not been reported to the department as a known or suspected contaminated site either prior to or after the commencement of the *Contaminated Sites Act 2003*.

For general enquiries, please contact the Registrar on 1300 762 982.

Yours sincerely

Penny Woodberry, Manager

CONTAMINATED SITES REGULATION
Delegated Officer under section 91
of the *Contaminated Sites Act 2003*

26/07/2022
Enc. Receipt Number RR029091



Contaminated Sites Act 2003 Basic Summary of Records Search Response

Report generated at 03:44:30PM, 02/08/2022

Search Results

Receipt No:

ID No: 39171

This response relates to a search request received for:

76 Grey St
Mount Melville, WA, 6330

This parcel belongs to a site that contains 5 parcel(s).

According to Department of Water and Environmental Regulation records, this land has been reported as a known or suspected contaminated site.

Address	76 Grey St Mount Melville, WA, 6330
Lot on Plan Address	Lot 76 On Plan 26132
Parcel Status	<p>Classification: 29/10/2018 - <i>Remediated for restricted use</i></p> <p>Nature and Extent of Contamination:</p> <p>Groundwater beneath the site has been impacted by landfill leachate and contains elevated levels of metals, nutrients and acidity.</p> <p>Restrictions on Use:</p> <p>Groundwater quality has been impacted by landfill leachate and should not be abstracted for any purpose without prior testing to ensure it is suitable for its proposed use.</p> <p>The land use of the site is restricted to recreational open space, which excludes sensitive uses with accessible soil such as childcare centres, kindergartens, pre-schools and primary schools. The site should not be developed for a more sensitive use such as residential use or childcare centres without further contamination assessment and/or remediation.</p> <p>Reason for Classification:</p> <p>This site was reported to the Department of Water and Environmental Regulation (DWER) as per reporting obligations under section 11 of the 'Contaminated Sites Act 2003' (the Act), which commenced on 1 December 2006.</p> <p>The site was first classified under section 13 of the Act based on information submitted to DWER by July 2011. The site has been classified again under section 13 of the Act to reflect additional technical information submitted to DWER by October 2018.</p> <p>This site, known as 'Area C', formed a portion of a larger land-holding occupied by the Albany fertiliser works. A preliminary site investigation was undertaken in 2004 which found that the site had not historically been used for any purpose related to the fertiliser works. However, the south-western portion of the site was used as a bulk fuel depot for approximately 18 years between 1956 and 1974. This is a potentially contaminating activity as specified in the guideline 'Assessment and management</p>

Disclaimer

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:44:30PM, 02/08/2022

of contaminated sites' (Department of Environment Regulation [DER], 2014). The site is understood to have remained vacant since the fuel depot was abandoned in 1974.

The site was reported in 2011 on the basis of results from the sampling of groundwater monitoring wells installed on the site which found low pH and elevated metals and nutrients.

A limited soil and groundwater investigation was undertaken between 2005 and 2007 to assess the potential for contamination associated with the historical use of the site for fuel storage. These investigations did not identify contamination associated with fuel storage, such as from petroleum hydrocarbons, in soil or groundwater in the vicinity of the abandoned above-ground storage tanks (ASTs). However, it is not clear that the soil investigations appropriately targeted areas of potential contamination associated with the historical fuel depot.

Further soil investigations were undertaken in 2017 specifically targeting soils in the vicinity of the abandoned ASTs and other buildings associated with the former use of the site as a fuel depot. Petroleum hydrocarbon impacts were not identified, however, an area of lead-impacted soils were identified adjacent to the opening of an unknown concrete building. The source of the lead was not known, but was suspected to be associated with runoff from surfaces of the building potentially coated with lead-based paint. The concentration of lead identified in shallow soils exceeded Health Investigation Levels for recreational land and Ecological Investigation Levels for urban residential land and public open space as published in the 'National Environment Protection (Assessment of Site Contamination) Measure 1999' (the NEPM). These are relevant criteria given that the site is proposed to be developed for public recreation purposes including a mountain bike park and centre for youth and culture events.

A systematic inspection undertaken in 2017 did not identify any evidence of contamination at the site such as from the unauthorised disposal of solid wastes.

Remedial works were undertaken during 2018 comprising the excavation and off-site disposal of approximately half a cubic metre of lead-contaminated soils. Remedial works were undertaken in successive phases based on the analysis of validation samples. Final validation sampling and analysis demonstrated that lead-impacted soils exceeding relevant health-based and ecological based screening criteria had been successfully remediated.

Following remediation, no soil contamination has been identified that would pose a potential risk to human health under the proposed recreational land use. However, it is noted that soil investigations completed at the site were limited by the presence of residual infrastructure, such as the seven concrete ASTs, and by the absence of specific historical information regarding the use of the site as a fuel depot, such as the location of pipework or pumps.

Periodic groundwater monitoring has been undertaken at the site and across the broader catchment area which includes a former fertiliser manufacturing facility to the west and an operating municipal landfill to the north. These investigations have found that groundwater to the north and west of this site has been impacted by landfill leachate associated with the municipal landfill located at 37 Maxwell Street, Mount Melville. Waste disposal has been undertaken since the 1970s into an unlined cell and is anticipated to continue until approximately 2026. Landfilling and waste disposal is a potentially contaminating activity as specified in the guideline 'Assessment and management of contaminated sites' (DER, 2014). The landfill site has been classified separately under the Act.

Groundwater monitoring undertaken at this site has found that that chloride and metals (such as iron and aluminium) are present in groundwater beneath the site at concentrations exceeding assessment

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:44:30PM, 02/08/2022

levels for non-potable use of groundwater specified in the 'Assessment and management of contaminated sites' (DER, 2014). However, the criteria for the substances identified are based on aesthetic considerations, such as taste or impact upon pipework through corrosion or scale formation. No potential contaminants were identified in groundwater at concentrations that would pose a potential risk to human health.

Nutrients, acidity and metals (such as iron, copper and zinc) were also identified in groundwater at levels exceeding assessment levels for marine waters (DER, 2014). These criteria are relevant given the site is within 500 metres of Princess Royal Harbour. However, a review of groundwater data from across the catchment area indicates that the levels of nutrients, acidity and metals in groundwater beneath this site are indicative of background up-hydraulic gradient groundwater quality. The groundwater data suggests that regional groundwater quality has been impacted by off-site up gradient sources, such as the municipal landfill to the north, which has been classified separately under the Act and at the time of classification is subject to ongoing investigations.

Based on the information provided, the site appears suitable for proposed public open space and recreational land use, but may not be suitable for more sensitive land uses (e.g. residential housing or child care centres).

The site has been remediated such that it is suitable for the proposed public open space and recreational land use, but may not be suitable for a more sensitive land use. Therefore, the site is classified as 'remediated for restricted use'.

A memorial stating the site's classification has been placed on the certificate of title, and will trigger the need for further investigations and risk assessment should the site be proposed for a more sensitive land use.

DWER, in consultation with the Department of Health, has classified this site based on the information available to DWER at the time of classification. It is acknowledged that the contamination status of the site may have changed since the information was collated and/or submitted to DWER, and as such, the usefulness of this information may be limited.

Other Relevant Information:

Additional information included herein is relevant to the contamination status of the site and includes DWER's expectations for action that should be taken to address potential or actual contamination described in the Reasons for Classification.

Where the land is part of a transaction - sale, mortgagee or lease agreement, the land owners **MUST PROVIDE WRITTEN DISCLOSURE** (on the prescribed Form 6) of the site's status to any potential owner, mortgagee (e.g financial institutions) or lessee at least 14 days before the completion of the transaction. A copy of the disclosure must also be forwarded to DWER.

Based on the available information, groundwater contamination on this site appears to have originated from nearby land at 37 Maxwell Street, Mount Meville, which has been classified separately under the Act. Therefore this site appears to be consistent with the definition of an "affected site" as specified in Part 1, Section 3 of the Act. Under the Act, the person responsible for the remediation of a source site is also responsible for remediation of any resulting contamination at related affected sites.

Action Required:

Disclaimer

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:44:30PM, 02/08/2022

As the soil investigations at the site were limited by the presence of residual fuel depot infrastructure, such as the large concrete storage tanks, DWER recommends that further assessment be undertaken in the future if these structures are proposed to be removed.

Certificate of Title Memorial

Under the Contaminated Sites Act 2003, this site has been classified as "remediated for restricted use". For further information on the contamination status of this site, please contact Contaminated Sites at the Department of Water and Environmental Regulation.

Current Regulatory Notice Issued

Type of Regulatory Notice: *Nil*

Date Issued: *Nil*

General

No other information relating to this parcel.

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Contaminated Sites Act 2003 Basic Summary of Records Search Response

Report generated at 03:48:19PM, 02/08/2022

Search Results

Receipt No:

ID No: 72938

This response relates to a search request received for:

198 Hanrahan Rd
Mount Elphinstone, WA, 6330

This parcel belongs to a site that contains 1 parcel(s).

According to Department of Water and Environmental Regulation records, this land has been reported as a known or suspected contaminated site.

Address	198 Hanrahan Rd Mount Elphinstone, WA, 6330
Lot on Plan Address	Lot 201 On Plan 76615
Parcel Status	<p>Classification: 26/02/2021 - Remediated for restricted use</p> <p>Nature and Extent of Contamination:</p> <p>Lead is present in soil at the sulfur pad, within the footprint of the former acid plant, and at the lime solids ponds at variable depths between 0.5 and 3 metres below ground level.</p> <p>Buried wastes, potentially including asbestos-containing material, are present beneath the sulfur pad area.</p> <p>Stockpiles of 'lime solids' waste remain at the western edge of the sulfur pad.</p> <p>Groundwater quality varies across the site, with groundwater in some locations having elevated levels of acidity, fluoride and metals.</p> <p>Nutrients, such as phosphorus and ammonia, are present in groundwater beneath the site and in surface water within the site's drainage network. Nutrients are also present in Munster Hill Drain located along the site's western boundary.</p> <p>Restrictions on Use:</p> <p>The land use of the site is restricted to the existing licensed commercial/industrial land use, which excludes sensitive uses with accessible soil such as childcare centres, kindergartens, pre-schools and primary schools. The site should not be developed for a more sensitive use such as residential use, childcare centres or recreational open space, without further contamination assessment and/or remediation.</p> <p>Due to the nature and extent of groundwater contamination, the abstraction and use of groundwater for any purpose is not recommended.</p> <p>Reason for Classification:</p> <p>This site, known as 'Area D north', forms a portion of a larger landholding occupied by the Albany</p>

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:48:20PM, 02/08/2022

fertiliser works, and was reported to the Department of Water and Environmental Regulation (the department) as per reporting obligations under section 11 of the 'Contaminated Sites Act 2003' (the Act), which commenced on 1 December 2006.

The site was first classified under section 13 of the Act based on information submitted to the Department by May 2007. The site has been classified again under section 13 of the Act to reflect additional technical information submitted to the department by November 2020.

A superphosphate fertiliser plant historically operated on the site for approximately 47 years, from 1954 to 2001. The site has also been used for fuel and chemical storage and fertiliser dispatch for approximately 67 years, since 1954. Historically, solid and liquid wastes were disposed on-site. Fertiliser production, fuel and chemical storage and landfilling are land uses which have the potential to cause contamination, as specified in the guideline 'Assessment and management of contaminated sites' (Department of Environment Regulation [DER], 2014).

A preliminary site investigation (PSI) was carried out at the site in May 2004 which identified a number of potential sources of soil and groundwater contamination associated with historical and current site infrastructure and/or activities.

A limited soil investigation was undertaken in 2004 north of 'superphosphate bin' in an area known as the former 'sulfur pad'. The PSI had found that this area was historically used for the storage of raw materials and wastes associated with fertiliser manufacturing. Test pitting identified the presence of buried wastes (such as wood, metal and wire). Soil sampling identified elevated levels of acidity and sulfate. Lead was found at concentrations exceeding ecological and health-based screening criteria applicable at the time of the investigation. These soil impacts were believed to be associated with the historical disposal of lead sulphate wastes.

Further detailed soil investigations were undertaken in the former 'sulfur pad' area during 2013. Various metals (such as cadmium, copper, lead and zinc) phosphorus and sulfate were found at concentrations exceeding Ecological Investigations Levels as specified in 'Assessment Levels for Soil, Sediment and Water' (Department of Environment and Conservation [DEC], 2010). Lead was also identified in three locations at concentrations exceeding Health Investigation Levels for commercial industrial land use, as specified in DEC, 2010. These were relevant criteria at the time the investigations were undertaken.

A small fragment of asbestos-containing material (ACM) was identified in one location entrained within buried wastes. Based on available information, ACM does not appear to be widespread within the buried wastes at the sulfur pad.

Elevated levels of phosphorus were detected in shallow soils in the vicinity of the former rock phosphate storage area. Elevated levels of acidity were identified in shallow soils in the eastern portion of the sulfur pad area which are likely to be associated with the former acid plant which was located at the eastern boundary of the sulfur pad 2013 investigation area.

The 2013 investigation also involved the characterisation of stockpiles of 'lime solids' waste in the western portion of the sulfur pad area. At the time of classification an estimated 5230 cubic metres of lime solids waste remained stockpiled on the site. These wastes were historically excavated from effluent disposal ponds located north of the sulfur pad area. The wastes were produced from the reaction between fluorosilicic acid (liquid 'den scrubber' effluent) and hydrated lime (used to neutralise the acid wastes). Sampling and analysis of the lime solids found them to contain metals (such as cadmium, mercury and lead) and high levels of fluoride (up to 10 percent by weight). The lime solids

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:48:20PM, 02/08/2022

were found to be acidic and potentially a source of leachable fluoride and lead.

Further detailed site investigations were undertaken during 2018 across the site targeting identified data gaps. These works are summarised below.

Lead-impacted soils in the sulfur pad area were further investigated and confirmed to be localised in nature. Several soil samples reported lead at concentrations exceeding Ecological Investigation Levels and Health Investigation Levels for commercial and industrial land, as published in the 'National Environment Protection (Assessment of Site Contamination) Measure 1999' (the NEPM). An estimated 220 cubic metres of lead-impacted material remains at the site which poses a potential risk to human health and requires ongoing management.

Soil investigations at the former acid plant found elevated metals, nutrients sulfate and acidity. The concentrations of lead in three locations exceeded ecological and health-based investigation levels for commercial and industrial land, as published in the NEPM.

Further characterisation of the stockpiled lime solids confirmed that metal concentrations were below relevant ecological and health-based investigation levels for commercial and industrial land, as published in the NEPM. Soil samples were also undertaken collected from natural soils beneath the stockpiled lime solids. These samples contained relatively low levels of metals and nutrients and were alkaline, indicating limited vertical leaching had occurred from the lime solids.

Soil investigations at the location of the former cooling tower did not identify any evidence of historical fluoride waste disposal.

Soil investigations were also undertaken at the former lime solids ponds located to the north of sulfur pad. Lead was identified in two locations at concentrations exceeding ecological and health-based investigation levels for commercial and industrial land, as published in the NEPM.

A visual inspection of the oil and fuel storage area and workshop did not identify any evidence of contamination (such as poor housekeeping or stained soils) and therefore intrusive investigations were not deemed necessary.

A soil investigation was undertaken in the south-eastern corner of the site to investigate the source of elevated nutrients and acidity detected in groundwater. High concentrations of phosphorus were detected in shallow soils correlating with the alignment of a former railway siding. Anecdotal information indicates empty railway carts were historically parked in this area and residual superphosphate fertiliser in the carts was swept out onto the soil surface. This area was subject to targeted remediation in June 2019, with approximately 200 cubic metres of phosphorus-impacted surface soils being excavated and reused off-site as fertiliser.

A number of environmental management improvements were implemented at the site during the 1980s after it was recognised that industrial discharges from the site were impacting the nearby Princess Royal Harbour estuarine environment. These improvements included the construction of a network of bitumen-lined drains to intercept surface water. In the early 1990s the sulfur pad was covered in compacted lateritic gravel with the intention of reducing infiltration and leaching. Unlined drains were constructed around the southern, northern and western perimeter of the former fertiliser works which seasonally intercept groundwater. Tree plantations were also established on-site and off-site to reduce groundwater flow into the harbour, and for the direct uptake of excess nutrients from groundwater.

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Contaminated Sites Act 2003

Basic Summary of Records Search Response

Report generated at 03:48:20PM, 02/08/2022

Stormwater from the site's lined drainage system is directed to a lined pond in the south-western corner of the site. Water within the lined pond is treated through an onsite water treatment plant which removes nutrients (principally phosphorus) prior to discharge via a v-notch weir to the Munster Hill Drain. Intercepted groundwater from the unlined drains is directed to an unlined pond adjacent to the lined pond. Subject to capacity, water within the unlined pond is opportunistically pumped to the lined pond for treatment prior to discharge. The stormwater management controls at the site (including the treatment system and related discharge limits) are subject to the site's licence under Part V of the 'Environmental Protection Act 1986' (EP Act).

Groundwater at and in the vicinity of the site has been monitored since the 1980s and, at the time of classification, continued to be monitored on a periodic basis in accordance with the site's licence under the EP Act. Groundwater monitoring found that historical activities associated with the former fertiliser works had resulted in the contamination of shallow groundwater. Key contaminants of concern included nutrients (phosphorus and nitrate), metals, acidity, fluoride and sulphate.

Groundwater quality within the south-eastern portion of the site has been impacted by off-site sources, such as the municipal landfill located to the north-east. Landfill leachate impacts to groundwater are characterised by elevated levels of metals, nutrients (in particular ammonia) and total dissolved solids (TDS). The landfill has been classified separately under the Act and at the time of classification is subject to ongoing investigations.

A review of groundwater was undertaken between 2013 and 2014 for the purposes of the Act. These works included the installation and sampling of an additional 20 groundwater monitoring wells. Groundwater across the site was found to be impacted by elevated levels of nutrients, metals, acidity and fluoride.

At the time of classification the most recent groundwater data available to the department was collected during the course of the 2018 detailed site investigations. These works included the installation of additional monitoring wells to characterise potential groundwater impacts associated with the areas of concern identified during the preceding data gap analysis.

Groundwater in the vicinity of the sulfur pad is highly acidic, with pH values less than 3 in some monitoring locations. Concentrations of lead in groundwater near the sulfur pad (where lead-impacted soils remain) are generally low and appear to be decreasing over time. Concentrations of lead in recent years have been well below assessment levels relevant to the non-potable use of groundwater, as published in the guideline 'Assessment and management of contaminated sites' (DER, 2014). Historically, concentrations of lead in groundwater have marginally exceeded assessment levels for marine waters (DER, 2014). These are relevant criteria given that shallow groundwater discharges into Princess Royal Harbour. The metals cobalt and cadmium have also been detected in groundwater at concentrations exceeding marine water guideline levels. However, the concentrations of metals in groundwater down-hydraulic gradient of the sulfur pad are low and generally below the marine water assessment level.

Groundwater in the vicinity of the operational area remains contaminated with nutrients (total nitrogen and phosphorus) at concentrations exceeding South-west Australian aquatic ecosystems guidelines specified in Table 3.3.6 in the "Australian and New Zealand Guidelines for Fresh and Marine Water Quality" (Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000). Nutrient-impacted groundwater represents a potential source of nutrient loading into the nearby Princess Royal Harbour. Groundwater monitoring down-hydraulic gradient of the site indicates that natural attenuation processes are likely to reduce

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the mass of nutrients entering the harbour via direct groundwater discharge.

Impacted groundwater on-site seasonally discharges into the Munster Hill Drain which runs along the site's western boundary before discharging into the harbour via Robinson Drain. A review of surface water quality was undertaken in 2014 to support a review of the site's discharge criteria under the EP Act licence. This review identified elevated levels of nutrients within the Munster Hill Drain upstream of the site's licensed discharge point. However, the site's nutrient contributions to the harbour were estimated to be proportionally higher than would be expected given that the site's water flow represents only three per cent of the overall water flow into the harbour via the Munster Hill and Robinson drains. At the time of classification the discharge of wastewater from the site is subject to conditions under the site's EP Act licence.

A risk assessment has indicated that the contamination present on the site does not currently pose an unacceptable risk to human health, the environment or environmental values under the current commercial/industrial land use. However, the contamination may present an unacceptable risk to human health under a more sensitive land use.

A site management plan, dated May 2020, defines the nature and extent of residual contamination and sets out ongoing management measures, such as avoiding exposure with soil contamination and ongoing groundwater monitoring.

The site is contaminated, but small areas of soil have been remediated and the site continues to be regulated under Part V of the 'Environmental Protection Act 1986', such that it is suitable for the existing commercial/industrial land use. The site is not suitable for a more sensitive land use (e.g. residential housing, childcare centres) and therefore the site is classified as 'remediated for restricted use'.

A memorial stating the site's classification will be placed on the certificate of title, and will trigger the need for further investigations and risk assessment should the site be proposed for a more sensitive land use.

The department, in consultation with the Department of Health, has classified this site based on the information available to the department at the time of classification. It is acknowledged that the contamination status of the site may have changed since the information was collated and/or submitted to the department, and as such, the usefulness of this information may be limited.

Other Relevant Information:

Additional information included herein is relevant to the contamination status of the site and includes the department's expectations for action that should be taken to address potential or actual contamination described in the Reasons for Classification.

Where the land is part of a transaction - sale, mortgagee or lease agreement, the land owners **MUST PROVIDE WRITTEN DISCLOSURE** (on the prescribed Form 6) of the site's status to any potential owner, mortgagee (e.g. financial institutions) or lessee at least 14 days before the completion of the transaction. A copy of the disclosure must also be forwarded to the department.

As a prescribed premise, the site is currently licensed under Part V of the 'Environmental Protection Act 1986'.

Action Required:

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	<p>Due to the presence of substances of concern in soil and exceeding aesthetic assessment levels in groundwater, site specific operational procedures are recommended to address risks posed to workers and potential aesthetic issues as outlined in the site management plan dated May 2020, and any subsequent revisions to the plan.</p>
Certificate of Title Memorial	<p>Under the Contaminated Sites Act 2003, this site has been classified as "remediated for restricted use". For further information on the contamination status of this site, please contact Contaminated Sites at the Department of Water and Environmental Regulation.</p>
Current Regulatory Notice Issued	<p>Type of Regulatory Notice: <i>Nil</i></p> <p>Date Issued: <i>Nil</i></p>
General	<p>No other information relating to this parcel.</p>

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Search Results

Receipt No:

ID No: 72939

This response relates to a search request received for:

198 Hanrahan Rd
Mount Elphinstone, WA, 6330

This parcel belongs to a site that contains 4 parcel(s).

According to Department of Water and Environmental Regulation records, this land has been reported as a known or suspected contaminated site.

Address	198 Hanrahan Rd Mount Elphinstone, WA, 6330
Lot on Plan Address	Lot 201 On Plan 76615
Parcel Status	<p>Classification: 26/02/2021 - Remediated for restricted use</p> <p>Nature and Extent of Contamination:</p> <p>Metals (such as cadmium, copper and lead) and fluoride are present in soils in the north-eastern corner of the site associated with the historical disposal of industrial waste.</p> <p>Metals (such as iron, aluminium, cobalt and zinc), acidity, and nutrients (such as ammonia and phosphorus) are present in groundwater across the site.</p> <p>Historical sand quarrying activities extended into this area. Limited information is available regarding the potential disposal of wastes and detailed soil investigations have not been undertaken.</p> <p>Restrictions on Use:</p> <p>The land use of the site is restricted to the existing passive agricultural use, which excludes sensitive uses with accessible soil such as residential development, childcare centres, kindergartens, pre-schools and primary schools. The site should not be developed for a more sensitive use such as residential use, recreational open space, residential use or childcare centres without further contamination assessment and/or remediation.</p> <p>Due to the presence of lead-impacts in soil in the north-eastern portion of the site the ongoing Site Management Plan dated 8 May 2020 (and any subsequent revisions) must be implemented for any intrusive works that may intercept contaminated soil.</p> <p>Reason for Classification:</p> <p>This site comprises land parcels located south of Lower Denmark Road in Mount Elphinstone and is known as 'CSBP Albany Area D south'.</p> <p>This site was reported to the Department of Water and Environmental Regulation (the department) as per reporting obligations under section 11 of the 'Contaminated Sites Act 2003' (the Act), which commenced on 1 December 2006.</p>

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The site was reported along with other parcels of land to the north as it comprised a portion of a superphosphate fertiliser manufacturing facility. At the time of classification, land comprising the former fertiliser works (Area D north) is used for fertiliser storage and dispatch and is classified separately under the Act.

A preliminary site investigation in 2004 identified that the north-eastern portion of this site was historically used as a sand quarry up until the 1960s. The quarry void was subsequently used for the disposal of industrial wastes associated with the nearby fertiliser works. Wastes disposed included neutralised lead sulphate chamber washings, and contaminated sediments dredged from drainage systems during the 1980s. At the time of classification, the site was used for passive agricultural uses, including a tree plantation.

Fertiliser production, extractive industries and landfilling are land uses which have the potential to cause contamination, as specified in the guideline 'Assessment and management of contaminated sites' (Department of Environment Regulation [DER], 2014).

Remedial works were historically undertaken at this site which involved the excavation and off-site disposal of lime solids waste. It is understood that remedial works were guided by in-field x-ray fluorescence measurements and included the collection of soil validation samples. However, limited documentation was prepared at the time to demonstrate the effectiveness of these remedial works.

A targeted soil investigation was undertaken in 2018 as part of a broader detailed site investigation. Elevated concentrations of metals, such as lead, cadmium and copper, were identified at depths up to 1.5 metres below ground level. The concentrations of copper in soil marginally exceeded Ecological Investigation Levels for urban residential land and public open space, as published in the 'National Environment Protection (Assessment of Site Contamination) Measure 1999' (the NEPM). The concentrations of cadmium in soil marginally exceeded generic Ecological Investigation Levels as published in 'Assessment Levels for Soil, Sediment and Water' (Department of Environment and Conservation, 2010) (adopted in the absence of an ecological criterion in the NEPM).

Lead was detected in soil at two locations in the northern portion of the former quarry at concentrations exceeding Health Investigation Levels for residential land with accessible soil, as published in the NEPM. These are relevant criteria given that the land is zoned 'rural small lot holdings' and may be used for residential purposes in the future. In one location the concentration of lead also exceeded Ecological Investigation Levels for urban residential land and public open space, as published in the NEPM.

Soil samples were also analysed for fluoride, a contaminant of concern associated with the industrial wastes disposed at the site. Concentrations of total fluoride were elevated in the limited samples analysed, whereas concentrations of 'water soluble fluoride' were consistently low.

The soil investigations indicate that the historic remedial works were largely successful, however, some residual soil contamination remains.

Groundwater monitoring has been undertaken for several decades to characterise the nature and extent of groundwater contamination associated with the historical fertiliser works. This groundwater monitoring also included the sampling of monitoring wells located across this site. At the time of classification, the most recent groundwater monitoring data available was from December 2018.

Groundwater at the site has been found to be acidic and have elevated concentrations of some metals (such as aluminium and iron) and fluoride. The elevated concentrations of aluminium and iron

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are associated with the acidic groundwater conditions which are likely caused, in part, by the presence of naturally occurring acid sulfate soils in the area.

The concentrations of other metals, such as lead, cadmium and copper were not detected at elevated concentrations, indicating that the historical disposal of fertiliser works waste has not resulted in significant groundwater contamination at the site. Elevated concentrations of fluoride have been detected in groundwater, with the highest concentrations detected immediately down-hydraulic gradient of the former waste disposal area. However, the concentrations detected have not exceeded assessment levels for the non-potable use of groundwater, as published in the guideline 'Assessment and management of contaminated sites' (DER, 2014).

Ammonia, iron and aluminium are present in groundwater at concentrations exceeding aesthetic-based assessment levels for the non-potable use of groundwater, as published in the guideline 'Assessment and management of contaminated sites' (DER, 2014).

Phosphorus and the metals cobalt and zinc have been detected in groundwater at concentrations marginally exceeding assessment levels for marine waters, as published in 'Assessment and management of contaminated sites' (DER, 2014). These are relevant criteria given the estuarine environment of Princess Royal Harbour approximately 800m south-east of the site. However, given the marginal nature of the exceedances and the attenuation processes that would occur prior to discharge into the harbour, groundwater quality at the site is not considered to pose an unacceptable ecological risk.

Periodic groundwater monitoring is being undertaken at this site as part of the ongoing environmental management of the nearby former historical fertiliser works.

Surface water bodies at the site, including a soak in the central portion of the site, and the Munster Hill Drain which intersects the north-western corner of the site, have not been specifically assessed as part of the investigation of this site. However, water quality within the soak is expected to be comparable to groundwater quality. The Munster Hill Drain has been monitored for several decades as part of the broader environmental management of Princess Royal Harbour, and the management of discharges from the former fertiliser works. The Munster Hill Drain is a known source of nutrient input into the harbour, which is a result of land uses throughout the catchment, as well as licensed discharges from the former fertiliser works site.

A risk assessment has indicated that the contamination present on the site does not currently pose an unacceptable risk to human health, the environment or environmental values under the ongoing passive agricultural land use. However, the contamination may present an unacceptable risk to human health under a more sensitive land use.

Although the site is contaminated, some undocumented soil remediation is believed to have occurred in the past such that the site is suitable for the current passive agricultural land use. The site is not suitable for a more sensitive land use (e.g. residential housing, childcare centres) and therefore the site is classified as 'remediated for restricted use'.

A memorial stating the site's classification will be placed on the certificate of title, and will trigger the need for further investigations and risk assessment should the site be proposed for a more sensitive land use.

The department, in consultation with the Department of Health, has classified this site based on the information available to the department at the time of classification. It is acknowledged that the

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contamination status of the site may have changed since the information was collated and/or submitted to the department, and as such, the usefulness of this information may be limited.

In accordance with Department of Health advice, if groundwater is being, or is proposed to be abstracted, the department recommends that analytical testing should be carried out to determine whether the groundwater is suitable for its intended use.

Other Relevant Information:

Additional information included herein is relevant to the contamination status of the site and includes the department's expectations for action that should be taken to address potential or actual contamination described in the Reasons for Classification.

Where the land is part of a transaction - sale, mortgagee or lease agreement, the land owners **MUST PROVIDE WRITTEN DISCLOSURE** (on the prescribed Form 6) of the site's status to any potential owner, mortgagee (e.g. financial institutions) or lessee at least 14 days before the completion of the transaction. A copy of the disclosure must also be forwarded to the department.

Based on available information, industrial waste disposal does not appear to have extended into Lot 1 on Diagram 5668 or the portion of Lot 201 identified with PIN 12038206. However, based on a review of available historical aerial imagery, sand quarrying operations did extend into this portion of the site. Therefore, given the potential for waste disposal in former quarry voids, and the lack of detailed soil investigations in this area, these land parcels are also classified as 'remediated for restricted use' and will require further investigations if proposed for a more sensitive use.

Action Required:

Please refer to the Restrictions on Use applicable to the site.

Ongoing groundwater monitoring should continue to be undertaken at this site in conjunction with groundwater monitoring activities at the nearby former fertiliser works. The groundwater monitoring is to be undertaken in accordance with the Site Management Plan dated 8 May 2020 (and any subsequent revisions of this plan).

Certificate of Title Memorial

Under the Contaminated Sites Act 2003, this site has been classified as "remediated for restricted use". For further information on the contamination status of this site, please contact Contaminated Sites at the Department of Water and Environmental Regulation.

Current Regulatory Notice Issued

Type of Regulatory Notice: *Nil*

Date Issued: *Nil*

General

No other information relating to this parcel.

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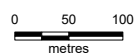
Appendix F Aboriginal Heritage Enquiry System Search Records



Legend

- ▮ Project area
- Aboriginal heritage places (DPLH-001)
- ▮ Other heritage place

Scale: 1:7,000 at A4



Coord. Sys. GDA2020 MGA Zone 50



Job Number: 62317

Client: Rowe Group

Version: A

Drawn By: ctatcher

Date: 01-Sep-2022

Checked By: NM

HERITAGE SITES

FIGURE 3.12



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