

## **Appendix C    Groundwater Monitoring Plan**

Geraldton No. 2 Wastewater Resource Recovery Facility,  
Wonthella, Western Australia

25 October 2024

# Groundwater Monitoring Plan





# Geraldton No. 2 Wastewater Resource Recovery Facility

Groundwater Monitoring Plan  
Geraldton No. 2 Wastewater Resource Recovery Facility, Wonthella, Western Australia

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



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## Attached Figures

Figure 1: Site Location and Setting

Figure 2: Groundwater Monitoring Well Network





# List of Acronyms

Acronym	Definition
<b>AHD</b>	Australian Height Datum
<b>ANZG</b>	Australian and New Zealand Guidelines
<b>ASC</b>	Assessment of Site Contamination
<b>BOM</b>	Bureau of Meteorology
<b>CEO</b>	Chief Executive Officer
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation
<b>DER</b>	Department of Environmental Regulation
<b>DoW</b>	Department of Water
<b>DSI</b>	Detailed Site Investigation
<b>DWER</b>	Department of Water and Environmental Regulation
<b>EPA</b>	Environmental Protection Authority
<b>GDE</b>	Groundwater Dependant Ecosystems
<b>GME</b>	Groundwater Monitoring Event
<b>GMP</b>	Groundwater Monitoring Plan
<b>GSWA</b>	Geological Survey of Western Australia
<b>LEP</b>	Level of Ecological Protection
<b>m AHD</b>	Metres Australian Height Datum
<b>m bgl</b>	Metres Below Ground Level
<b>mg/L</b>	Milligrams per Litre

Acronym	Definition
<b>µg/L</b>	Micrograms per Litre
<b>NATA</b>	National Association of Testing Authorities
<b>NEPC</b>	National Environment Protection Council
<b>NEPM</b>	National Environment Protection Measure
<b>NHMRC</b>	National Health and Medical Research Council
<b>PFAS</b>	Per- and Poly- Fluoro Alkyl Substances
<b>POS</b>	Public Open Space
<b>QA</b>	Quality Assurance
<b>SPL</b>	Species Protection Level
<b>SWL</b>	Standing Water Level
<b>TDS</b>	Total Dissolved Solids
<b>TWW</b>	Treated wastewater
<b>WIR</b>	Water Information Reporting
<b>WRRF</b>	Water Resource Recovery Facility
<b>WW</b>	Wastewater
<b>WWTP</b>	Wastewater Treatment Plant



# 1.0 Introduction

Senversa Pty Ltd (Senversa) was engaged by Water Corporation in July 2024 to prepare a groundwater monitoring plan (GMP) for the Geraldton No. 2 Water Resource Recovery Facility (WRRF) located in Wonthella, Geraldton, Western Australia (hereafter referred to as the 'site'). The site location and general setting are shown in **Figure 1** (attached).

The GMP was prepared in accordance with Senversa's email proposal dated 18 July 2024 (Senversa, 2023b), unless otherwise detailed herein.

## 1.1 Background

The site is licensed under Part V of the *Environmental Protection Act 1986* (L5961/1991/12) to treat up to 3.5 ML of wastewater (WW) per day to a secondary standard. Treated wastewater (TWW) is disposed of via infiltration ponds (IP1-IP8) and recovered via production bore A1/97 near the southern end of the site for non-potable beneficial re-use off-site, including use by the City of Greater Geraldton, Geraldton Golf Club, Geraldton Turf Club, Wonthella Bowling Club and Geraldton Cemetery.

This GMP has been developed to continually monitor groundwater quality impacts from ongoing emissions from the WWTP. Water Corporation intends to utilise additional monitoring wells installed at the site between 2020 and 2024 to augment the licensed groundwater monitoring network, as detailed in this GMP.

## 1.2 Objective

The objective of this GMP is to document the augmented monitoring well network, along with the sampling and analytical methodologies employed to gather groundwater monitoring data under Licence L5961/1991/12. A secondary objective of the GMP is to ensure the continued collection of representative data, demonstrating that site-related groundwater impacts remain stable and pose a low and acceptable risk to relevant off-site environmental values.

## 1.3 Relevant Guidelines

This GMP has been developed with reference to the National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) and DWER guideline 'Assessment and management of contaminated sites' guidelines (DWER, 2021).



## 2.0 Site Description

### 2.1 Site Identification

Site identification details are summarised in **Table 2-1**.

**Table 2-1: Site Identification**

Item	Details
<b>Site Address</b>	Webborton Road, Wonthella, GERALDTON, WA 6530
<b>Legal Description</b>	Lot 1 and Lot 2 on Diagram 57545 and Lot 3 on Diagram 72567
<b>Site Area</b>	Approximately 43.7 ha [The total area of the lots is approximately 55.4 ha, but a portion of the site remains vacant/disused].
<b>Site Boundary Co-ordinates – MGA 50</b>	North-east: 270262.8 E, 6816379 N North-west: 269713.9 E, 6816350 N South-east: 270278.7 E, 6815429 N South-west: 269920.2 E, 6815419 N
<b>Site Owner</b>	Water Corporation
<b>Local Government Authority</b>	City of Greater Geraldton
<b>Land-use Zoning</b>	Public Purposes (City of Geraldton, Local Planning Scheme No.1, Map 3 of 18, January 2021).
<b>On-site Land-use(s)</b>	Sewage treatment facility

### 2.2 Site Infrastructure

The general site configuration and principal infrastructure features are shown on **Figure 1** (attached).



## 3.0 Environmental Site Setting

A synthesis of the key environmental attributes of the site is provided in **Table 3-1**, primarily based on contemporary public domain data sources and review of past investigation reports.

**Table 3-1: Environmental Setting**

Item	Details																				
<b>Surrounding Land Uses</b>	<p>The following land uses exist in the surrounding area:</p> <ul style="list-style-type: none"> <li><b>North:</b> Place Road reserve, followed by a combination of residential properties and public open space (POS), with Geraldton Christian College approximately 600 m north and Chapman River approximately 650 m north-east.</li> <li><b>South:</b> Eighth Street road reserve followed by bushland (former putrescible landfill site), Geraldton pistol club (south-west) and Western Power Geraldton depot (south-east).</li> <li><b>East:</b> Vacant lots (understood to be used for grazing) followed by rural residential properties, Rowan reserve further east, and Chapman River approximately 2 km east.</li> <li><b>West:</b> Webberton Road, followed by large light industrial zoned lots, which appear generally vacant. Residential properties west of Flores Road. Geraldton Golf Club, Geraldton Turf Club, and various sporting clubs located west and south-west of Flores Road. Indian Ocean approximately 3 km west of the site.</li> </ul>																				
<b>Landform</b>	<p>The Geological Survey of Western Australia (GSWA) 1:50:000 Sheet for Geraldton (Sheet 1840 Part 3) mapping indicates that the site is hosted on deflated dunes of the Spearwood system (Sp). The surficial profile of the Spearwood system is interbedded with alluvial plain sediments of the Greenough Alluvium system (Ga) (silty sandy clay) within 500 m east and west of the site and is overlain by the Quindalup System (Safety Bay Sand) further west towards the Indian Ocean.</p>																				
<b>Geology</b>	<p><b>Regional Geology</b></p> <p>The GSWA 1:50:000 mapping indicates that the site is underlain by residual quartz sands over calcarenite of the Spearwood System. The calcarenite contains variable amounts of quartz sand and minor clayey sediments. It is cream, yellow-brown and light grey in colour, fine to coarse grained and moderately to very well sorted. Karstic features (including vertical solution channels and cavities) are characteristic of the calcarenite in some areas.</p> <p><b>Local Geology:</b></p> <p>The generalised lithological profile interpreted from historical investigations conducted at the site may be summarised as follows:</p> <table border="1"> <thead> <tr> <th>Top (m bgl)</th> <th>Base (m bgl)</th> <th>Thickness (m)</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10</td> <td>4-10</td> <td>SAND: Light brown to yellow/orange, medium to coarse grained, well sorted, sub-angular to sub-rounded. Quartz: translucent, orange stained. Minor organic matter.</td> </tr> <tr> <td>1</td> <td>16</td> <td>10-15</td> <td>ALLUVIAL SILT/CLAY: Present only off-site east and west of the site and interbedded with sands and limestone, variably low to high plasticity, soft to stiff, orange-brown to red with occasional grey mottling, trace to minor sand with gravels increasing at depth in the horizon.</td> </tr> <tr> <td>4</td> <td>48</td> <td>20-44</td> <td>CALCARENITE: With interbedded layers of sandstone and unconsolidated sands, white to yellow (in parts pale brown), variably very fine to coarse grained, moderately sorted, sub-angular, Quartz: translucent, orange, yellow and brown stained.</td> </tr> <tr> <td>41.5</td> <td>-</td> <td>-</td> <td>SHALE: no description provided.</td> </tr> </tbody> </table>	Top (m bgl)	Base (m bgl)	Thickness (m)	Description	0	10	4-10	SAND: Light brown to yellow/orange, medium to coarse grained, well sorted, sub-angular to sub-rounded. Quartz: translucent, orange stained. Minor organic matter.	1	16	10-15	ALLUVIAL SILT/CLAY: Present only off-site east and west of the site and interbedded with sands and limestone, variably low to high plasticity, soft to stiff, orange-brown to red with occasional grey mottling, trace to minor sand with gravels increasing at depth in the horizon.	4	48	20-44	CALCARENITE: With interbedded layers of sandstone and unconsolidated sands, white to yellow (in parts pale brown), variably very fine to coarse grained, moderately sorted, sub-angular, Quartz: translucent, orange, yellow and brown stained.	41.5	-	-	SHALE: no description provided.
Top (m bgl)	Base (m bgl)	Thickness (m)	Description																		
0	10	4-10	SAND: Light brown to yellow/orange, medium to coarse grained, well sorted, sub-angular to sub-rounded. Quartz: translucent, orange stained. Minor organic matter.																		
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41.5	-	-	SHALE: no description provided.																		





**Item Details**

**Hydrogeology Regional Hydrogeology**

Regional hydrogeological mapping (DoW, 2017) indicates that the site is underlain by the superficial aquifer of the Northern Perth Basin, which is unconfined within the calcarenite of the Spearwood System (interchangeably called Tamala Limestone).

The superficial aquifer is laterally extensive but is relatively thin throughout the Swan Coastal Plain and exists predominantly within the sand and limestone lithologies of the superficial formations, typically ranging between 20 and 30 m thick (DoW, 2017).

Regional groundwater flow is predominantly west-south-westerly from the elevated areas along the Gingin Scarp towards the coast. Water levels in the superficial aquifer fluctuate seasonally in response to rainfall, with levels typically lowest during March to May after the summer, and highest in August to October following winter rains (DoW, 2017). Due to the high transmissivities of the TL, seasonal fluctuations of groundwater levels are low; however, water level fluctuations related to ocean tides are expected in the coastal margins. Fluctuations in groundwater levels are expected in response to changes in annual rainfall and seasonal abstraction activities.

**Site-specific Hydrogeology**

Parameter	Value (Senversa, 2024)
Salinity	485 to 5,343 mg/L (brackish to saline)
Hydraulic Gradient ( )	0.0008 m/m (between 4/17 and 8/20)
Transmissivity (T)	813 m <sup>2</sup> /day
Hydraulic Conductivity (K)	30 m/day

**Hydrology**

There are no natural water features within the site boundary. The Chapman River is located approximately 650 m northeast of the site at its closest point; however, it is not considered a receptor for site-related groundwater discharges under current infiltration conditions, based on the regional groundwater flow regime and observed groundwater contours. Additionally, groundwater and surface elevation data suggest that the Chapman River is likely a losing stream in the vicinity of the site and is not susceptible to site-related groundwater impacts. There are no geomorphic wetlands mapped down-hydraulic gradient between the site and the Indian Ocean, which is approximately 2.5 km directly west of the site.

**Summary of Relevant Environmental Values**

**Non-potable Beneficial Use**

Groundwater is used extensively for non-potable irrigation purposes in the surrounding catchment. Potential also exists for unregistered non-potable beneficial use at down-hydraulic gradient residential properties, although groundwater depth typically ranges between 11 and 20 m BGL (dependent on location), which may reduce the likelihood of unregistered use in some areas.

Groundwater may be used in some capacity for non-potable industrial use (including dust suppression), although use for process water appears of lower likelihood based on known off-site land-uses down hydraulic gradient of the site.

**Recreational Water Beneficial Use**

Recreational users of the marine inshore environment could be exposed to contaminants via primary or secondary contact with contaminated surface water, should site-related groundwater impacts discharge at the coast (although current evidence suggests that the off-site plume extents is a significant distance from the marine environment).

**Maintenance of Ecological Health**

Other than the receiving environment of the Indian Ocean, no other surface water features are likely to receive groundwater discharge from the site. At current TWW infiltration rates and having regard to interpolated groundwater contours and inferred plume behaviour, Chapman River (approximately 650 m northeast of the site at its closest point) is not a plausible receptor to site-related groundwater contamination.

Geraldton Port is assigned a moderate level of ecological protection (LEP) according to relevant State guidelines (EPA, 2016), and a 90% species protection level (SPL) would apply to assessment of non-bioaccumulative toxicants in groundwater, and a 95% SPL for bioaccumulative substances (e.g. per- and polyfluoroalkyl substances [PFAS]). For the remainder of the coastline, which abuts the Geraldton urban centre (outside the Port designated zone), a high LEP would apply, consistent with most coastal waters in WA. This would attract a 99% SPL for both non-bioaccumulative and bioaccumulative toxicants. In the high LEP zone, physical chemical stressors would be compared to 20<sup>th</sup> and 80<sup>th</sup> percentiles of background, and the 5<sup>th</sup> and 95<sup>th</sup> percentiles of background for the moderate LEP zone associated with Geraldton Port.

Although nearby areas of terrestrial vegetation are variably mapped as low, moderate or high potential groundwater dependent ecosystems (GDEs), adverse effects on terrestrial vegetation are considered unlikely to be caused by inorganic and nutrient contamination in groundwater (CSIRO, 2009). Given the significant depth to groundwater (> 10 m BGL), root uptake by the mapped terrestrial vegetation is considered of low likelihood overall.



## 4.0 Groundwater Sampling Plan

### 4.1 Groundwater Monitoring Well Network

The proposed groundwater monitoring well network is shown on **Figure 2** (attached) and includes the locations listed in **Table 4-1**.

**Table 4-1: Groundwater Monitoring Well Network**

Aquifer	No. of Wells	Well IDs
Shallow Superficial Aquifer	16	6/94, 8/94, 1/17, 2/17, 3/17, 4/17, 5/17, 6/17, 1/20, 6/20, 8/20, 10/20, 2/22, 1/24, 5/24, 7/24
Intermediate Superficial Aquifer	9	7/94, A1/97, 2/20, 5/20, 7/20, 9/20, 11/20, 4/24, 6/24

### 4.2 Well Network Sampling Rationale

The type (i.e. target aquifer), location, rationale and screen interval depths for the selected well network are presented in **Table 4-2**. Groundwater samples should preferentially target the top metre of the water column for shallow wells, or the top metre of the screen interval for intermediate wells. The well network selection was biased to monitor the highest reported nutrient impacts, which are present within the shallow and intermediate portions of the superficial aquifer (Senversa 2024).

**Table 4-2: Monitoring Well Selection Rationale**

Well ID	Aquifer Setting	Location	Groundwater Monitoring Rationale	Screened Interval (m BTOC)
<b>On-site</b>				
A1/97	Production bore	40 m west of IP1	Monitor reuse groundwater quality	14.0 – 32.0
6/94	Shallow	15 m west of IP4	Monitor groundwater at the western site boundary, down-hydraulic gradient of Pond 2, IP3 and IP4	17.0 – 20.0
2/17	Shallow	120 m east of Pond 2	Monitor groundwater in the south-east portion of the site	17.4 – 23.4
5/17	Shallow	70 m east of IP8	Monitor groundwater in the north-east portion of the site	17.0 – 20.0
8/94	Shallow	100 m west of IP5	Monitor groundwater at the western site boundary, down-hydraulic gradient of IP5 and IP6	24.0 – 26.0
7/94	Intermediate	100 m west of IP5	Monitor groundwater at the western site boundary, down-hydraulic gradient of IP5 and IP6	34.3 – 37.3
1/17	Shallow	200 m north of IP8	Monitor groundwater at the northern site boundary	16.0 – 19.0
<b>Off-site (&lt;200 m from site)</b>				
3/17	Shallow	100 m south of site	Monitor groundwater south of the site	19.0 – 21.0



Well ID	Aquifer Setting	Location	Groundwater Monitoring Rationale	Screened Interval (m BTOC)
7/24	Shallow	110 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 1 and IP6	12.5 – 15.5
6/24	Intermediate	110 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 1 and IP6	25.0 – 28.0
4/17	Shallow	110 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP5 and IP6	14.0 – 17.0
5/20	Intermediate	110 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP5 and IP6	25.0 – 28.0
5/24	Shallow	115 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP7 and IP8	13.5 – 16.5
4/24	Intermediate	115 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP7 and IP8	25.0 – 28.5
2/22	Shallow	130 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP1	14.0 – 20.0
6/17	Shallow	200 m east of site	Monitor groundwater east of IP6 (i.e. potential impacts from radial flow)	16.0 – 19.0
<b>Off-site (300 – 800 m from site)</b>				
1/20	Shallow	500 m northeast of site	Monitor ambient background groundwater quality up-hydraulic gradient (northeast) of site	16.0 – 19.0
2/20	Intermediate	500 m northeast of site	Monitor ambient background groundwater quality up-hydraulic gradient (northeast) of site	25.0 – 28.0
6/20	Shallow	630 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 2, IP1, IP3 and IP4	12.2 – 15.2
7/20	Intermediate	630 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 2, IP1, IP3 and IP4	22.0 – 25.0
8/20	Shallow	710 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 1, IP5 and IP6	12.8 – 15.8
9/20	Intermediate	710 m west of site	Monitor groundwater down-hydraulic gradient (west) of Pond 1, IP5 and IP6	22.0 – 25.0
10/20	Shallow	790 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP5, IP7 and IP8	12.0 – 15.0
11/20	Intermediate	790 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP5, IP7 and IP8	21.0 – 24.0
<b>Off-site (1,100 - 1,300 m from site)</b>				
1/24	Shallow	1,150 m west of site	Monitor groundwater down-hydraulic gradient (west) of IP5, IP6, IP7 and IP8	11.0 – 15.0



### 4.3 Sample Collection Methodology

The sampling should be completed in accordance with Australian/New Zealand Standards (AS/NZS) and guidelines:

- AS/NZS 5667.1:1998 'Water quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples'.
- AS/NZS 5667.11:1998 'Water Quality – Sampling, Part 11: Guidance on Sampling of Groundwaters'.

### 4.4 Field and Laboratory Analysis Schedule

The parameters proposed for sampling, and the frequency at which they are proposed to be monitored, are summarised in **Table 4-3**.

Given that the stability of the nitrate plume has been demonstrated at the site (Senversa 2024), biannual monitoring (i.e. post-summer and post-winter) of speciated nutrients, total dissolved solids, pH and *E.coli* is considered adequate. Since metals are not considered the primary risk driver in groundwater (Senversa 2024), annual monitoring is deemed sufficient. Groundwater flow direction has consistently been shown to be west south-westerly towards the Indian Ocean; therefore, annual gauging of groundwater levels is adequate.

Laboratory analysis should be undertaken at National Association of Testing Authorities (NATA) accredited laboratories, using NATA accredited analytical methods.



**Table 4-3: Field and Laboratory Analysis Schedule**

Well IDs	SWL	Field Parameters		Laboratory Analysis		
		TDS	pH	E.Coli <sup>1</sup>	Nutrients <sup>2</sup>	Metals <sup>3</sup>
Unit	m BTOC	mg/L	pH units	CFU/100ml	mg/L	mg/L
Frequency	Annual	Biannual	Biannual	Biannual	Biannual	Annual
<b>On-site</b>						
A1/97	✓	✓	✓	✓	✓	✓
6/94	✓	✓	✓	✓	✓	✓
2/17	✓	✓	✓	✓	✓	✓
5/17	✓	✓	✓	✓	✓	✓
8/94	✓	✓	✓	✓	✓	✓
7/94	✓	✓	✓	✓	✓	✓
1/17	✓	✓	✓	✓	✓	✓
<b>Off-site (&lt;200 m from site)</b>						
3/17	✓	✓	✓	✓	✓	✓
7/24	✓	✓	✓	✓	✓	✓
6/24	✓	✓	✓	✓	✓	✓
4/17	✓	✓	✓	✓	✓	✓
5/20	✓	✓	✓	✓	✓	✓
5/24	✓	✓	✓	✓	✓	✓
4/24	✓	✓	✓	✓	✓	✓
2/22	✓	✓	✓	✓	✓	✓
6/17	✓	✓	✓	✓	✓	✓
<b>Off-site (300 – 800 m from site)</b>						
1/20	✓	✓	✓	✓	✓	✓
2/20	✓	✓	✓	✓	✓	✓
6/20	✓	✓	✓	✓	✓	✓
7/20	✓	✓	✓	✓	✓	✓
8/20	✓	✓	✓	✓	✓	✓
9/20	✓	✓	✓	✓	✓	✓
10/20	✓	✓	✓	✓	✓	✓
11/20	✓	✓	✓	✓	✓	✓
<b>Off-site (&gt;1 km from site)</b>						
1/24	✓	✓	✓	✓	✓	✓

**Notes**

1. Actual units are to be reported except where the result is greater than the highest detectable level of 24,000 CFU/100mL. In this case the reporting of the highest detectable level is permitted.

2. Nutrients: total nitrogen (TN), total oxidisable nitrogen as N (NOx-N), ammonium as N (NH<sub>4</sub>-N), total phosphorous (TP)

3. Dissolved metals: Al, As, Be, B, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Zn

SWL – Standing water level

TDS – Total dissolved solids





## 5.0 References

### 5.1 Historical Reports

Aurora (2021), *Geraldton #2 Water Resource Recovery Facility – Factual Report*, November 2021.

CSIRO (2022), *Treated Wastewater Infiltration: Developing Environmental Groundwater Targets (draft)*, May 2022.

Golder (2020), *Geraldton No. 2 Wastewater Treatment Plant, Baseline Assessment*, July 2020.

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Rockwater (2017), *Geraldton WWTP No.2 Monitoring Bore Completion Report*, January 2017.

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Senversa (2021), *Proposal for Summer GME, Data Gaps Assessment and Sampling and Analysis Quality Plan – Geraldton No. 2 Wastewater Treatment Plant (proposal ref: P19411\_001\_PRP\_Rev0)*, November 2021.

Senversa (2022a), *Detailed Site Investigation – Geraldton North Wastewater Treatment Plant, Glenfield, WA*, January 2022.

Senversa (2022b), *Data Gaps Assessment and Stage 1 Sampling and Analysis Quality Plan – Geraldton No. 2 Water Resource Recovery Facility, Wonthella, Western Australia*, June 2022.

Senversa (2023a) *Stage 1 Detailed Site Investigation – Geraldton No.2 Water Resource Recovery Facility, Wonthella, WA*, July 2023.

Senversa (2023b), *Stage 2 Sampling and Analysis Quality Plan - Geraldton No. 2 Water Resource Recovery Facility*, October 2023.

Senversa (2024), *Stage 2 Detailed Site Investigation - Geraldton No. 2 Water Resource Recovery Facility, Revision 1*, October 2024.

Water Corporation (2003), *Geraldton Wastewater Treatment Works No. 2 – Re-use Production Bore Drilling Report*, February 2003.

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### 5.2 Legislation, Guidelines, Standards and Other Technical References

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## Figures

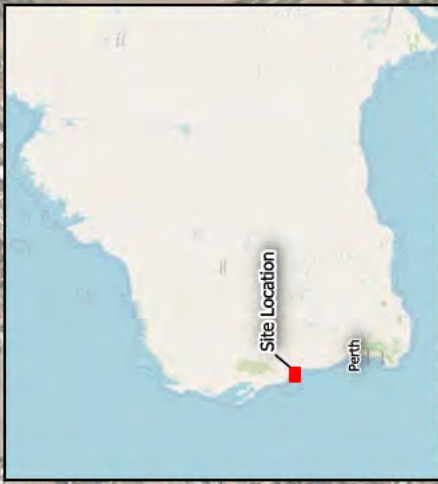
Figure 1: Site Location and Setting

Figure 2: Groundwater Monitoring Well Network





Indian Ocean



E: 270262.7591  
N: 6816378.9107

E: 269713.8667  
N: 6816349.6361

E: 270278.6939  
N: 6815429.0171

E: 269920.1971  
N: 6815419.0901

Light Industrial Precinct

AI/97 Abstraction

Pond 3 (Former IP)

Western Power Depot

IP8

IP7

IP5

IP6

Pond 1

Pond 2

IP3

IP4

IP1

Wonthella Bowling Club

Geraldton Golf Course

Geraldton Turf Club

Geraldton Cemetery & Crematorium

Legend  
Site Boundary



Figure No: 1

Site Location and Setting

Groundwater Monitoring Plan

Project: Geraldton No. 2 WRRF, Wonthella

Client: Water Corporation

Created:	Date:	22/08/2024
Reviewed:	Revision:	0
Approved:	Scale:	1:12,000 (A3)
File:	P19411_011_F001_Site Location and Setting	



Coordinate System: GDA2020 / MGA zone 50

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**Figure No:** 2

**Title:** Groundwater Monitoring Well Network

**Project:** Groundwater Monitoring Plan

**Location:** Geradton No. 2 WRRF, Wonthella

**Client:** Water Corporation

<b>Created:</b>	Date:	24/10/2024
<b>Reviewed:</b>	Revision:	1
<b>Approved:</b>	Scale:	1:9,000 (A3)
<b>File:</b>	P19411_011_F002_GMP Rev1	

**Legend**

- Site Boundary
- Groundwater Well
- Shallow
- Paired Shallow/Intermediate

**Scale:** 0 to 0.5 km

**Coordinate System:** GDA2020 / MGA zone 50

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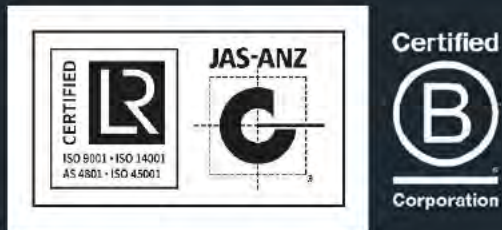
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