SHIRE OF MANJIMUP

Biennial Environmental Report

FOR THE TWO-YEAR PERIOD 01/01/2024 to 31/12/2025

and

Annual Audit Compliance Report

FOR THE ONE-YEAR PERIOD 01/01/2025 to 31/12/2025

Manjimup Recycling & Refuse Centre
62 Ralston Road, Manjimup WA 6258

LICENCE # L7007/1997/11

March 2026

MRRC cover photographs
top row l to r: natural vegetation, mattress stockpile, Bomag compactor
centre row l to r: e-waste crates, excavator, habitat tree
bottom row l to r: drumMUSTER compound, tyre stockpile, whitegoods stockpile

[drone images: Harley Dykstra, Feb 2026]

SHIRE OF MANJIMUP

Biennial Environmental Report

FOR THE TWO-YEAR PERIOD 01/01/2024 to 31/12/2025

Manjimup Recycling & Refuse Centre
62 Ralston Road, Manjimup WA 6258

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A. Reference grid, Manjimup Recycling & Refuse Centre

The grid in Figure 1 is used to reference locations and areas within the Premises. The underlying aerial (drone) image was captured in January 2019.

The grid references run in rows C to T and in columns 7 to 19 so as to correspond to an historical version of the grid superimposed on an earlier aerial image. That image extended further north and significantly further west than the Premises cadastral boundaries.

For the purposes of definition of location in the prescribed premises licence, any point within the Premises in this aerial and grid will have precisely the same grid reference as it had in the previous (out-of-date) image and grid.

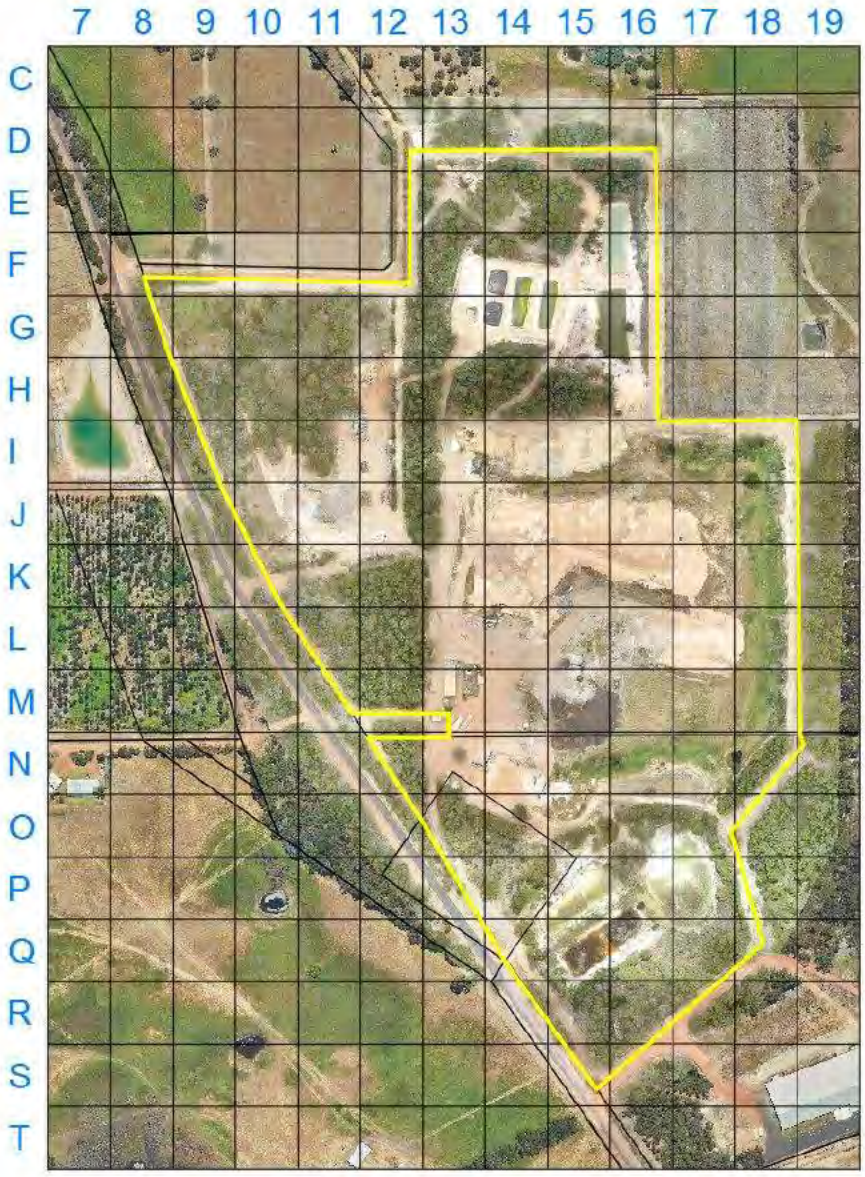


Figure 1: Reference grid for the Manjimup Recycling & Refuse Centre.

B. Monitoring Report for the MRRC, as at 31 Dec 2025

Occupier : Shire of Manjimup
Premises : Manjimup Recycling & Refuse Centre
Location : 62 Ralston Road, Ringbark WA 6258
(Lot 501 on Plan 403155)

Licence No : L7007/1999/11

1. Mass of waste deposited *(estimated tonnage)*

The estimated mass of waste received in the **biennial period** from 1 January 2024 to 31 December 2025 was **29,512 tonnes** (15,242 t in 2024 and 14,270 t in 2025). This represented a 7.1% decrease in total biennial tonnage received, compared to the previous period (2022 and 2023).

Tables 1 & 2 (following) show the total volumes (m^3), mass (t), or number of individual articles (N) received for all reportable waste categories and for total waste received during years 2024 and 2025 respectively; the conversion factor applied to each in order to generate an estimated mass; the calculated mass for each stream; and the aggregate calculated mass of waste deposited for each year.

Other than waste categories which are counted for number of items on arrival (e.g. mattresses, tyres, and car batteries), waste arriving at the MRRC was quantified by volume, either by estimation or by recording the capacity of the load container. The resulting estimated total tonnage was the sum of the tonnages for each waste category. In turn, the tonnage figures for each waste stream were derived by either:

- direct weighing (e.g. in the case of e-waste, exported to a recycle facility)
- using Waste Authority volume-to-mass conversion factors; or
- using accepted weights-per-unit (e.g. in the case of tyres & EPUs).

The **total mass of waste** figures represent first (for 2024) a **5.8% decrease** from the 2023 total tonnage (16,175 t), then (for 2025) a **6.4% decrease** from the 2024 total tonnage (15,381 t).

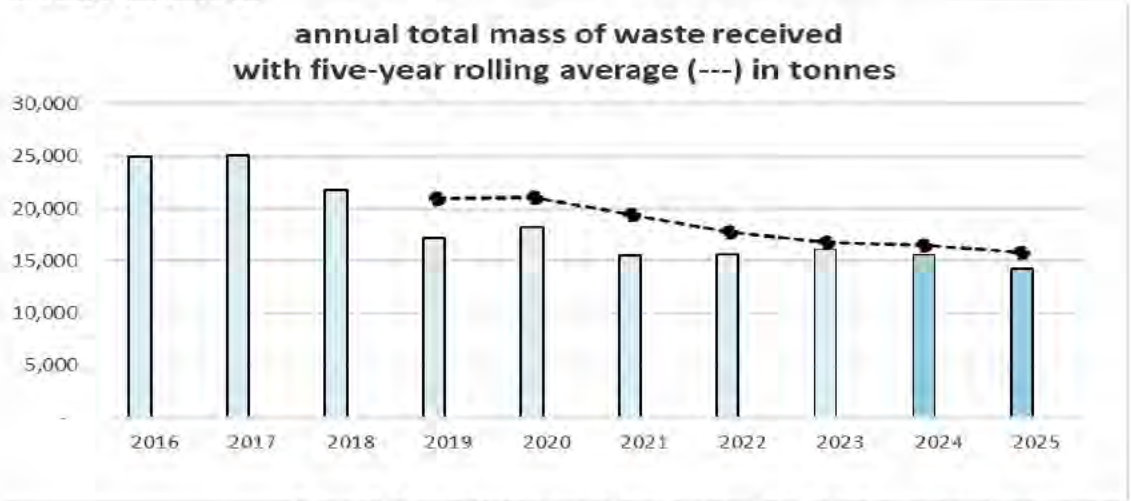


Figure 2: Annual total mass of waste received with five-year rolling averages

The graphs in Figure 2 show annual total mass of waste received for each year of the past decade, and the five-year rolling average for the past seven years. They reflect an early period (2016 to 2019) of major municipal and civic reconstruction projects which required the disposal of large volumes of **C & D waste**. The peak of demolition followed by a reduction in C & D waste disposal after the completion of these significant civil works is apparent in the graphs. Recent years' data may be starting to indicate that ongoing levels of annual waste disposal will fluctuate around 15,000 to 20,000 tonnes; however, further years of data are required before a trend can be more confidently identified.

The waste receival data also reflect changes in other solid waste categories during the two-year reporting period. **Green waste** disposal has begun to decrease in volume annually, after a pandemic-period surge: the tonnage received in 2024 was 19.5% less than in 2023, and a further 2.4% less again for 2025 compared to 2024.

Similarly, annual **scrap metal** tonnage decreased 16.6% in 2024 compared to 2023, and decreased a further 10.4% in 2025 compared to 2024.

Counter to this declining trend, **mattress** tonnage increased by 10.3% in 2024 over 2023, with a further 8.4% increase in 2025 over 2024. However, the 2025 mattress tonnage (14.25 t) was still 2.3% less than the total mattress tonnage received in 2022 (14.58 t).

The mass of **all controlled liquid wastes (Cat 61)** received in 2024 (657 t) was a 6.5% increase over 2023 (617 t), while 2025 (642 t) was only marginally less (2.3%) than 2024.

The calculated mass of **municipal waste (including putrescible)** received in 2024 (11,338.28 t) was 2.7% less than in 2023 (11,656.35 t); while in 2025 (10,551.40 t) it was a further 6.9% reduced from 2024.

Asbestos (tonnes) received for immediate burial in 2024 (129.22 t) marginally less (1.4%) than for 2023 (131.12 t), but 2025 (153.58 t) was an 18.9% increase on 2024. The nature of asbestos removal tends to result in dynamically fluctuating disposal data, with a relatively low number of actual disposals each year. Indeed, all of the most recent three years total asbestos disposal tonnages have been less than half of the 2022 total (360.78 t). This marked reduction in asbestos received tonnes also reflects this local government's resolution during 2023 not to receive asbestos waste from outside of its own Shire boundaries.

The mass of all waste received in 2024 (15,242 t) was **5.8% less** than that received in 2023 (16,175 t), while the total received in 2025 (14,270 t) was **6.4% less** than in 2024 .

The annual volumetric site survey and graphs depicting key annual figures and the past-decade trends for waste received are included in this Report under Part 1C and Part 1D.

Table 1: 2024 annual period total volumes or numbers, conversion factors and estimated mass by waste category.

PRESCRIBED PREMISES CATEGORY	CATEGORY DESCRIPTION	MRRC WASTE STREAM DESCRIPTOR	VOLUME (m^3) or MASS (t) or number (N)	CONVERSION FACTOR	ESTIMATED MASS (tonnes)	CATEGORY TOTAL MASS (tonnes)
13	building material crushed	construction & demolition waste	0.00	1.300	0.00	
13	**building material crushed**	**CATEGORY TOTAL** (approved premises capacity = 10,000 tpa)				**0**
61	K110 waste from grease traps	liquid waste	239.50	0.900	215.55	
	K210 septage wastes	liquid waste	598.60	0.721	431.59	
	L150 industrial; wash waters contaminated with a controlled waste	liquid waste	10.00	1.000	10.00	
61	**liquid waste**	**CATEGORY TOTAL** (approved premises capacity = 700 tpa)				**657**
61A	solid waste facility: solid waste is stored, reprocessed, treated or discharged onto land	domestic, commercial & Council green waste	7,709.00	0.150	1,156.35	
61A	**solid waste facility**	**CATEGORY TOTAL** (approved premises capacity = 20,000 tpa)				**1,156**
62	solid waste depot: solid waste is stored and sorted pending final disposal or reuse	scrap metal	2,110.20	0.900	1,899.18	
		recyclables (including co-mingled recyclables)	475.00	0.063	29.93	
		tyres (recorded as EPUs)	533.0	0.008	4.26	
		mattresses (volume figure is # of mattresses)	506	0.030	13.15	
		e-waste (converted to mass in tonnes on receival)	12.23	--	12.23	
		car batteries (volume figure is # of batteries)	204	0.013	2.55	
62	**solid waste depot**	**CATEGORY TOTAL** (approved premises capacity = 20,000 tpa)				**1,961**
64	Class II putrescible landfill site: waste is accepted for burial	municipal waste (including putrescible)	26,678.30	0.425	11,338.28	
	solid waste facility: solid waste is stored, reprocessed, treated or discharged onto land	special burial waste	92.30	1.400	129.22	
64	**Class II putrescible landfill site**	**CATEGORY TOTAL** (approved premises capacity = 50,000 tpa)				**11,325**
TOTAL MASS OF WASTE (tonnes)			**--**	**--**	**15,242.29**	**15,242**

Table 2: 2025 annual period total volumes or numbers, conversion factors and estimated mass by waste category.

PRESCRIBED PREMISES CATEGORY	CATEGORY DESCRIPTION	MRRC WASTE STREAM DESCRIPTOR	VOLUME (m^3) or MASS (t) or number (N)	CONVERSION FACTOR	ESTIMATED MASS (tonnes)	CATEGORY TOTAL MASS (tonnes)
13	building material crushed	construction & demolition waste	0.00	1.300	0.00	
13	**building material crushed**	**CATEGORY TOTAL (approved premises capacity = 10,000 tpa)**				**0**
61	K110 waste from grease traps	liquid waste	234.05	0.900	210.65	
	K210 septage wastes	liquid waste	579.08	0.721	417.52	
	L100 car & truck wash waters	Liquid waste	6.50	1.000	6.50	
	L150 industrial; wash waters contaminated with a controlled waste	liquid waste	7.00	1.000	7.00	
61	**liquid waste**	**CATEGORY TOTAL (approved premises capacity = 700 tpa)**				**642**
61A	solid waste facility: solid waste is stored, reprocessed, treated or discharged onto land	domestic, commercial & Council green waste	7,523	0.150	1,128.45	
61A	**solid waste facility**	**CATEGORY TOTAL (approved premises capacity = 20,000 tpa)**				**1,128**
62	solid waste depot: solid waste is stored and sorted pending final disposal or reuse (each stream converted to mass (tonnes) either: (a) by item, on arrival; or (b) in total, at end of year)	scrap metal (b)	1,890.70	0.900	1,701.63	
		recyclables (b) (including co-mingled recyclables)	599.61	0.063	37.78	
		tyres (a)	4.79	--	4.79	
		mattresses (a)	14.25	--	14.25	
		e-waste (a)	33.40	--	33.40	
		car batteries (b)	234	0.013	2.93	
62	**solid waste depot**	**CATEGORY TOTAL (approved premises capacity = 20,000 tpa)**				**1,795**
64	Class II putrescible landfill site: waste is accepted for burial	municipal waste (including putrescible)	24,826.82	0.425	10,551.40	
	solid waste facility: solid waste is stored, reprocessed, treated or discharged onto land	special burial waste	109.70	1.400	153.58	
64	**Class II putrescible landfill site**	**CATEGORY TOTAL (approved premises capacity = 50,000 tpa)**				**10,705**
TOTAL MASS OF WASTE (tonnes)			**--**	**--**	**14,269.86**	**14,270**

2. Fire control *(number of fires, how extinguished)*

There were four (4) instances during the annual period when fire or suspected fire (other than the authorised burning of the oversize green waste stockpile) occurred, was reported or required attention within the Premises. All of the four instances occurred within a 64 day period during late-2025.

1	**day & date:** Wednesday 15 October 2025		
location within the Premises: active face of landfill			
cause: small handheld battery			
☐ possible	☑ probable	☐ confirmed	
origin waste stream: Municipal Solid Waste (street and public bin) OR C&I waste (commercial front-lift bin)			
☑ possible	☐ probable	☐ confirmed	
treatment: • smoke detected late in the day, during compaction and daily cover application • material surrounding ignition source removed (excavator), deposited in open • fire-fighting unit brought to location; water applied • fire dowsed, material cool • ignition source isolated, identified as handheld battery (damaged) • ignition source removed off-site; site monitored and checked 15 hours later • no evidence of further burning			
result: • site declared safe, fire-free 16/10/2025 • burn did not extend beyond material in immediate contact with ignition source			

2	**day & date:** Wednesday 29 October 2025		
location within the Premises: active face of landfill			
cause: small handheld battery, remnant circuitry attached (suggests low quality)			
☐ possible	☐ probable	☑ confirmed	
origin waste stream: C&I waste (commercial front-lift bin)			
☑ possible	☐ probable	☐ confirmed	
treatment: • smoke detected late in the day, during compaction and daily cover application • material surrounding ignition source removed (shovel), deposited in open • fire-fighting unit brought to location; water applied • fire dowsed, material cool • ignition source isolated, identified as handheld battery (damaged) • ignition source removed off-site; site monitored and checked 15 hours later • no evidence of further burning			
result: • site declared safe, fire-free 30/10/2025 • burn did not extend beyond material in immediate contact with ignition source			

3	**day & date:** Monday 15 December 2025

location within the Premises: active face of landfill

cause: larger 'power bank'-type device

☐ possible	☑ probable	☐ confirmed

origin waste stream: Municipal Solid Waste (street and public bin)

☐ possible	☑ probable	☐ confirmed

treatment:

- smoke detected through coincidental observation (during the day)
- material surrounding ignition source removed (excavator), deposited in open
- fire-fighting unit brought to location; water applied
- fire dowsed, material cool
- ignition source isolated, identified as power-bank-type device (damaged)
- ignition source removed off-site; site monitored and checked at intervals during the same day and at the start of the next day
- no evidence of further burning

result:

- site declared safe, fire-free 16/12/2025
- burn did not extend beyond material in immediate contact with ignition source

4	**day & date:** Wednesday 17 December 2025

location within the Premises: active face of landfill

cause: marine signal flare

☐ possible	☑ probable	☐ confirmed

origin waste stream: C&I waste (commercial front-lift bin)
OR Municipal Solid Waste (unclear)

☑ possible	☐ probable	☐ confirmed

treatment:

- smoke detected through coincidental observation (during the day)
- material surrounding ignition source removed (excavator), deposited in open
- fire-fighting unit brought to location; water applied
- fire dowsed, material cool
- ignition source isolated, identified as marine signal flare (damaged)
- ignition source removed off-site; site monitored and checked at intervals during the same day and at the start of the next day
- no evidence of further burning

result:

- site declared safe, fire-free 18/12/2025
- burn did not extend beyond material in immediate contact with ignition source

Oversize green waste burning

Oversized green waste (too large to be chipped or mulched) is stockpiled for periodic burning in order to minimise the fire hazard it would otherwise represent if allowed to accumulate.

The proportion of green waste received which is 'oversize' (too large for the contracted site operator's chipping plant) is typically between 1% and 2% of the total green waste accepted.

During **2024** the total volume of oversize green waste received was 127.60 cubic metres. This represented **1.66%** of all green waste received (7,709 cubic metres).

in **2025** the total volume of oversize green waste received was 98.10 cubic metres. This represented **1.35%** of all green waste received (7,253 cubic metres).

Historically, oversize green waste has been burned once or twice annually at the MRRC, but only when fire hazard conditions permit. More recently, the number of oversize green waste burns has decreased to about once per year or once each two years. The reason for this decrease in frequency is that the Shire of Manjimup's MRRC site operation contractor has acquired a larger slow shredder which is capable of shredding much larger green waste, so that a significant proportion of what was formerly assessed as 'oversize' is now assessed as processable green waste. The oversize green waste pile for eventual burning therefore remains smaller.

In this reporting period (2024 and 2025), green waste burning was undertaken in the Premises' designated green waste burning area on only one occasion, which was during the three week period 16 July 2024 to 9 August 2024 (late winter).

Burning at MRRC is carried out by the contracted site operator. To ensure compliance with all conditions of the premises licence, burning only occurs following receipt of a **written 'record of instruction'** from the Shire of Manjimup Waste Management Officer. In turn, this instruction is generated only following receipt of **appropriate (written) permit** from the Shire of Manjimup Community Emergency Services Manager after his receipt of **express (written) permission** from the Shire of Manjimup Chief Executive Officer.

In the reporting period all organisational procedures were adhered to, and all licence conditions were complied with on the occasion the oversize green waste was burned.

3. Dust suppression

Effectiveness

- In terms of the occupational health and safety of operators and users of the site, raised dust has not presented a significant problem.

- However, other than the first 150 m of the entrance driveway which has a bitumen surface, the site is broadly unsealed. Defined traffic routes within the site and key operations areas have, over the course of many years, had coarse gravel or rough-crushed C & D waste applied from time to time in order to reduce dust.

- The contracted site operator supplies and operates a water tanker fitted with water sprinkler bar at rear at particular periods of each year in order to ensure dry internal tracks do not emit dust.

- It would be desirable to tar seal the entrance driveway the remaining 55 metres to the site office and around that building and the weighbridge in order to provide a fully sealed entry and departure loop. However, such an improvement is entirely subject to Council's annual budget priorities.

Actions already taken

- Roads and routes within the site have been maintained to be trafficable as per the landfill contract requirements: coarse gravel and crushed C & D waste have been applied to reduce dust, as has water. Traffic speed continues to be regulated by onsite staff, signage and barriers. These restrictions are reinforced by the *Shire of Manjimup Waste Local Law (2022).*

- Members of the public entering the property to deposit waste material are directed to transfer station-style facilities onsite to place household putrescible waste, recycling, e-waste and etc. thus removing most need to drive onto the active landfill area. This reduction in onsite traffic movement serves to reduce the generation of raised dust. Problem dust areas are water sprayed for suppression when required.

- Clean fill and/or mulch (generated from green waste) are generally used to cover waste and non-vegetated areas of the landfill and serve to reduce dust generation in the dry summer period.

- Previously completed landfill areas have been covered or partially covered by the propagation and self-generation of various grass species. This grass cover is mowed when required. In the past, some areas have been planted with low growing native species.

4. Windblown waste

Effectiveness

- The combination of daily covering of deposited waste, the growth of grass cover over previously completed landfill areas, the deployment of a semi-portable mobile mesh litter fence downwind from the active landfill area and the great attention paid to any errant windblown items by onsite staff has resulted in the control of windblown waste to a good level of management.

- One neighbouring property owner has notified the Shire of Manjimup of litter which reached his property. However, the property owner made the observation that the litter was not carried by wind but was dropped on his property by birds (ibis and ravens) flying from the landfill to perch in trees on his property.

Actions already taken:

- The tip face has been covered and compacted daily and large bulk deliveries from kerbside collections and the outlying transfer station drop-off bins have been processed on arrival. Compaction has been carried out using a *Bomag* landfill compactor resulting in very little loose surface debris.

- The tipping area is very restricted in size, and compaction has been carried out on a very regular basis.

- Windblown and bird-carried waste has been picked up onsite as required; a bi-weekly patrol has been carried out on neighbouring properties when necessary, as per site contract requirements; and site staff carried out additional checks on these properties on or after windy days and after notification from the property owner.

- Members of the public entering the property to deposit waste material are directed to transfer station-style facilities onsite to place household putrescible waste in a large open-top bulk bin (32 cubic metres). This bulk bin is taken to the active landfill area for emptying by a contractor on a weekly (or more if required) basis. Contract waste collection services are directed to specific tipping points on the active landfill area. These measures ensure waste is deposited to a limited area thus reducing covering time. Reducing indiscriminate dumping through these procedures resulted in reduced windblown litter.

5. Complaints *(number, type, name & address of complainant & actions taken)*

No written complaints were recorded during the 2024 & 2025 reporting period.

6. Compaction *(compaction rates, where determined, expressed in kg/m³ or t/m³)*

MASS

In terms of the **mass of waste to landfill** received during the 2024 and 2025 biennial reporting period, only the total mass values for Categories 13, 61A and 64 are included in the calculation because other categories (61 liquid waste and 62 solid waste depot) are not sent to landfill and so do not contribute to the overall tonnage total. During the reporting period, **24,314 tonnes** of solid waste was sent to landfill.

During the same period **1,299 tonnes** of liquid waste (predominantly K110 grease trap wastes and K210 septage wastes) was disposed into the **liquid waste facility**.

LANDFILL COMPACTION DENSITY

The compaction calculation was made using the annual volumetric survey data and the estimated tonnages for C & D waste (Cat 13), solid waste (Category 61A) and for class II putrescible and special burial waste (Cat 64) because other waste categories received did not, in general, contribute to the volume of the landfill (having been diverted to recycling and etc).

In the 2024 and 2025 biennial reporting period this means that:

- in **2024**, 12,481 t of Cat 13, 61A and 64 wastes were compacted into 8,813 cubic metres resulting in a compaction density of 1.416;
- in **2025**, 11,833 t of Cat 13, 61A and 64 wastes were compacted into 8,133 cubic metres resulting in a compaction density of 1.455; and
- over the **two years**, 24,314 t Cat 13, 61A and 64 wastes were compacted into 16,946 cubic metres resulting in an overall compaction density of **1.435.**

Compaction was achieved using a 30 tonne *Bomag* waste compactor.

VOLUME

In terms of ***volume*** of solid waste received, **71,744.63 m³** of mixed waste was received from 1 January 2024 to 31 December 2025 while the annual volumetric surveys [refer to Attachment 4] determined that a space of **16,946 m³** had been filled in the same period.

DIVERSION & COMPACTION

These data together suggest that the **'volume diversion and compaction ratio'** for waste received to landfill during the reporting period has been about **4.23 : 1**.

In other words, because of ongoing systems to divert appropriate waste streams received from actually being landfilled, and through work to compact landfilled waste, for every 4.23 m^3 of solid waste received, the landfill grew by only 1 m^3.

7. Site changes

There have been no changes to significant site infrastructure during the annual period.

8. Projected changes to site or operating procedures during next 12 months

The **liquid waste facility** requires further work on its freeboard heights.

Some **older sections of landfill** require final cover with clay and then revegetation.

The **public access** ('transfer station') area of the Premises requires improvements to address potential public safety issues and amenity (winter rain period surface water diversion). These works may commence during the next biennial period (2026 & 2027) or they may be deferred.

While they may not occur during the next twelve months (2026), an approved **new asbestos burial area** and an approved **new landfill area with prepared solid waste cell** will be required for operational use within the next three years.

9. Management Plans *(reviews, updates or renewals)*

Three new plans, the **MRRC Site Master Plan 2025**, the **MRRC Landfill Sequence Plan 2025**, and the **MRRC Operational & Environmental Management Plan 2025** were prepared for the Shire of Manjimup by consultants (Talis Consultants).

The creation of these three plans were recommended in the MRRC Site Study Report 2023.

The Shire of Manjimup has created a Manjimup Recycling & Refuse Centre Site Management System (**MRRC SMS**) which at present includes the Site Study Report, the Landfill Closure Management Plan 2023, the three new plans (listed above), the Asbestos Management Plan, and the Emergency Response Plan (both mentioned below). Future additions to the MRRC SMS may include a Fire Management Plan, a Liquid Waste Facility Management Plan, a Leachate Management Plan, an Airborne Emissions Management Plan, a Waste Management Reserve Fund Plan, and other plans as required.

The **MRRC Asbestos Management Plan 2017** will be reviewed in the 2026 or 2027 annual periods.

The **MRRC Emergency Response Plan 2011** will be reviewed in the 2026 or 2027 annual periods.

10. Groundwater monitoring program

An assessment of the available data from the Manjimup Recycling & Refuse Centre ground water monitoring program is provided as Attachment 2, parts A, B & C. This report includes graphical representation of the data collected over the preceding ten years (back to and including 2016).

C. Annual volumetric survey, MRRC

Volumetric surveys of the landfill site were made on 13 February 2025 and again on 4 February 2026. These surveys were commissioned by Verge Enviro Pty Ltd (the contracted site operator) and carried out by Harley Dykstra. Verge Enviro have kindly provided copies of the survey results for inclusion in this report.

Figures 3 & 4 provide "thumbnail" images of the two survey maps. Complete images are provided as Attachment 4.

Figure 3:
Drone image generated by Harley Dykstra for the volumetric survey carried out on 13/02/2025.
(Larger image attached as Attachment 4 of BER)

The **2025** volumetric survey calculated that during the period 3 January 2024 to 13 February 2025 (406 days) there was an increase in volume of the landfill of 9,057 m^3 after compaction, and a decrease in the volume of the C & D waste depot (pending crushing or transport to other final destination) of 244 m^3. This resulted in a net increase in volume of **8,813 m^3** over the period between surveys.

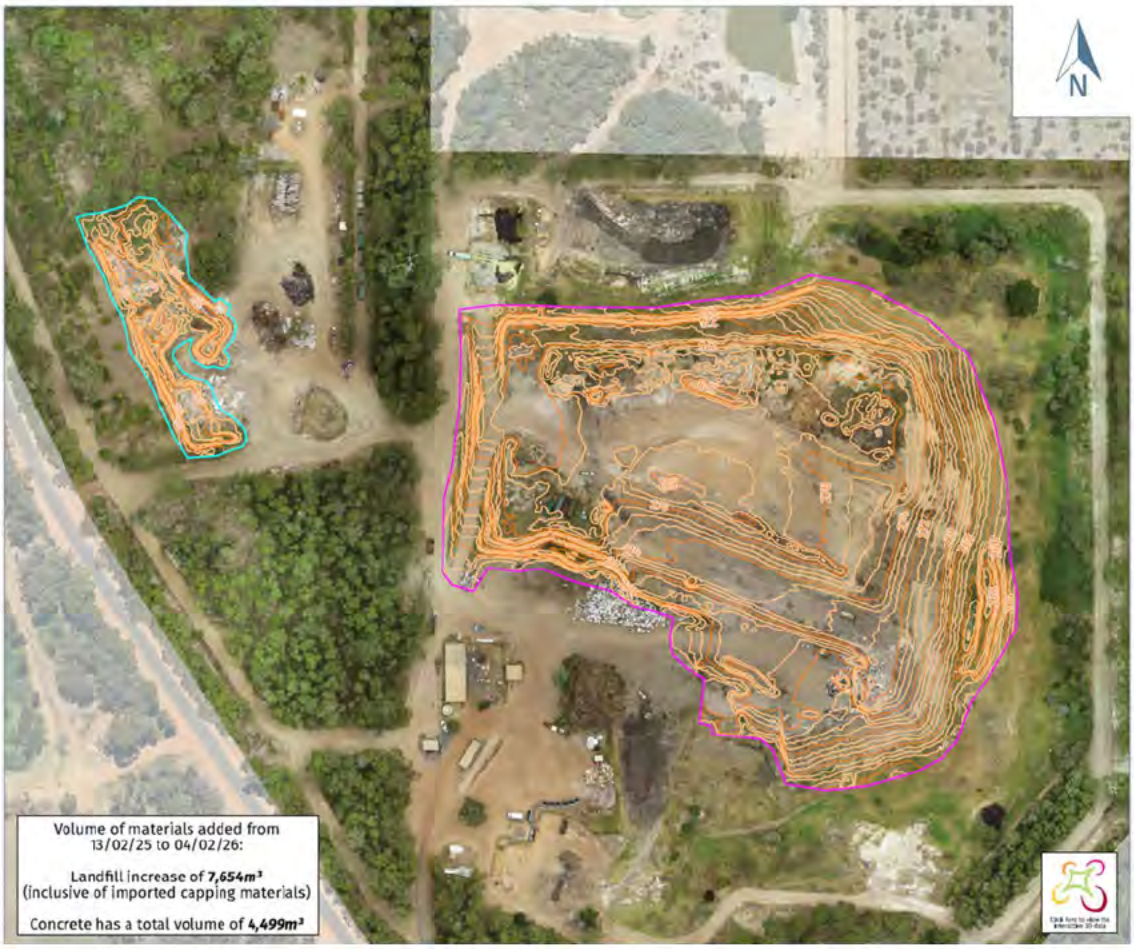


Figure 4:
Drone image generated by Harley Dykstra for the volumetric survey carried out on 04/02/2026. (Larger image attached as Attachment 4 of BER)

The **2026** volumetric survey calculated that during the period 13 February 2025 to 4 February 2026 (355 days) there was an increase in volume of the landfill of 7,654 m^3 after compaction, and an increase in the volume of the C & D waste depot (pending crushing or transport to other final destination) of 479 m^3. This resulted in a net increase in volume of **8,133 m^3** over the period between surveys.

Longer-term volumetric survey data (January 2014 to present) suggests that the average annual volumetric growth of the MRRC landfill, expressed in compacted m^3 growth per day, has been gradually declining from a five-year rolling average of approximately 25.2 m^3 per day (for 2009 to 2014) down to approximately **21.2 m^3** per day most recently (for 2021 to 2025).

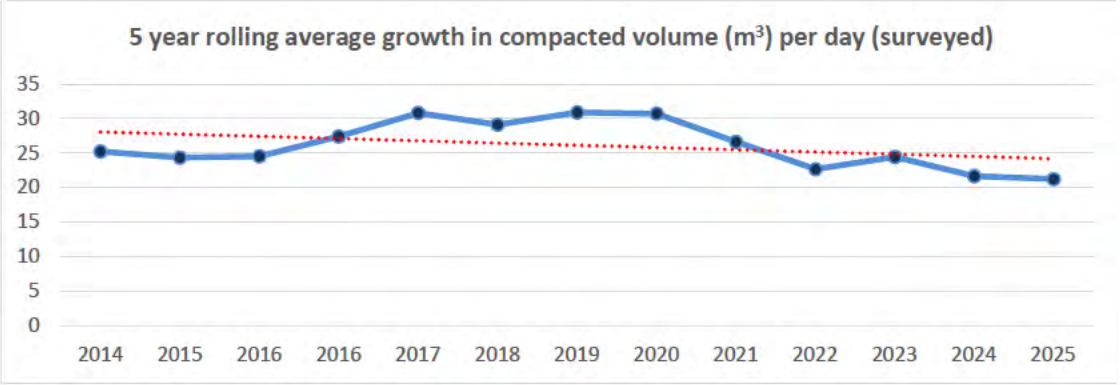


Figure 5:
Graph illustrating gradual decline trend (red line) for average daily volumetric growth according to data from annual volumetric surveys (blue points) 2015 to 2026 (for years 2014 to 2025).

D. Volumes: solid waste | general | C & D | green waste

1. Solid waste

In terms of volume of solid waste received, **71,744.63 m³** of mixed solid waste was received during the biennial reporting period. This is shown graphically as a comparison to annual figures from the preceding decade in Figure 6 below:

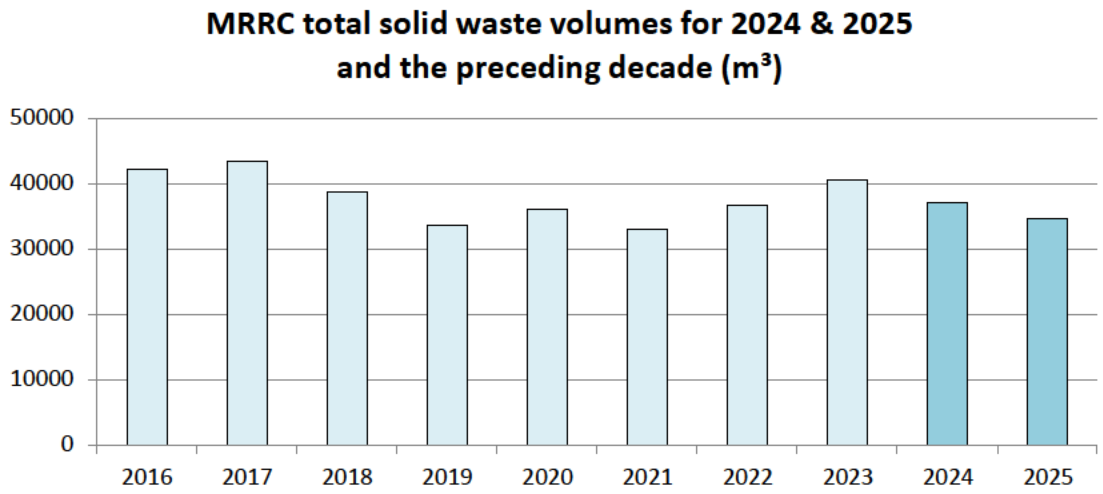


Figure 6: Total waste received annually at Manjimup Recycling & Refuse Centre 2016 to 2025.

The change (expressed as a percent) in volume received, over the previous year and over the preceding five year period is shown in Figure 7 below:

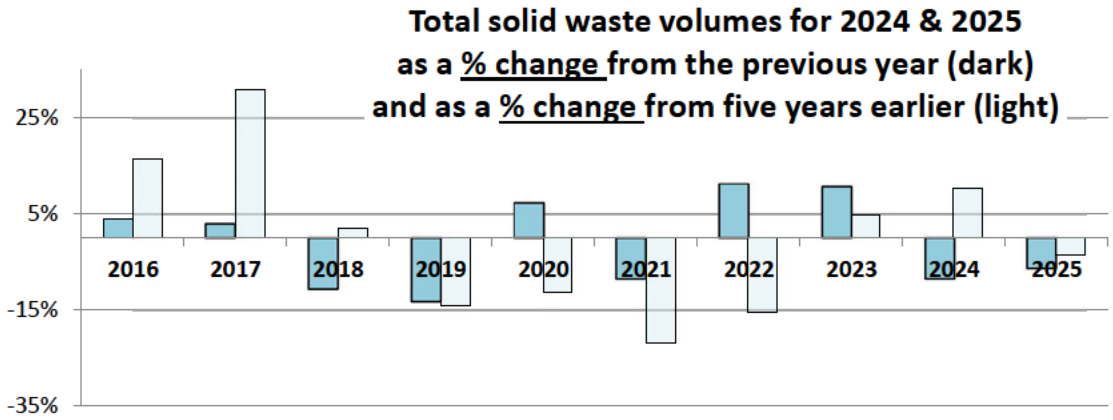


Figure 7: Volumes received: the percent change in volume annually and the net change over the preceding five year period at the Manjimup Recycling & Refuse Centre 2016 to 2025.

The two most significant contributors to the volume of waste received have been **general waste to landfill (71%** of total waste received over the reporting period), and **green waste (21%)** in total representing approximately **92%** of the total volume received during the period 1 January 2024 to 31 December 2025.

This is illustrated in Figure 8 below. The period 2016 to 2021 includes a period of significant civic construction in the Manjimup townsite during which some older public buildings were demolished and replaced, new public buildings and structures were constructed, and some major road intersections were modified.

These large-scale civic construction activities are reflected in the significantly greater proportion of total solid waste which was C & D waste during those years.

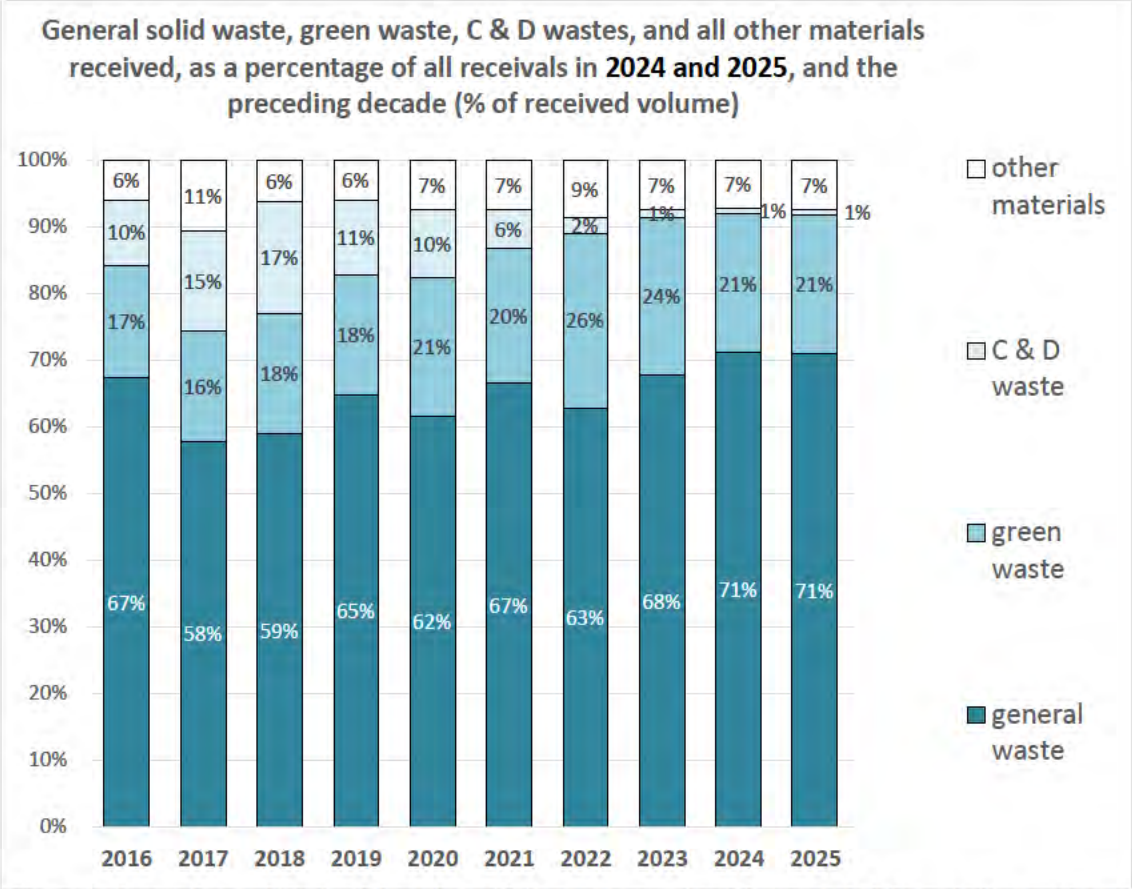


Figure 8: Proportions of total solid wastes which were general solid, green, C & D and other wastes at the Manjimup Recycling & Refuse Centre during the period 2016 to 2025.

2. General or Municipal Solid Waste (including putrescible waste) to landfill

During the biennial reporting period the volume of general waste received and sent to landfill was **50,959.42m³,** representing **71.03%** of the total volume of waste received.

This volume represented just a **0.98%** increase in volume of general (municipal solid) waste received compared to the previous biennial period (2022 & 2023).

Figure 9 below shows the volume of general solid waste received and sent to landfill for 2024 & 2025 and for the preceding decade as cubic metres, while Figure 10 below it shows the volume of general waste received and sent to landfill for 2024 & 2025 and for the preceding decade as a percentage of total solid waste.

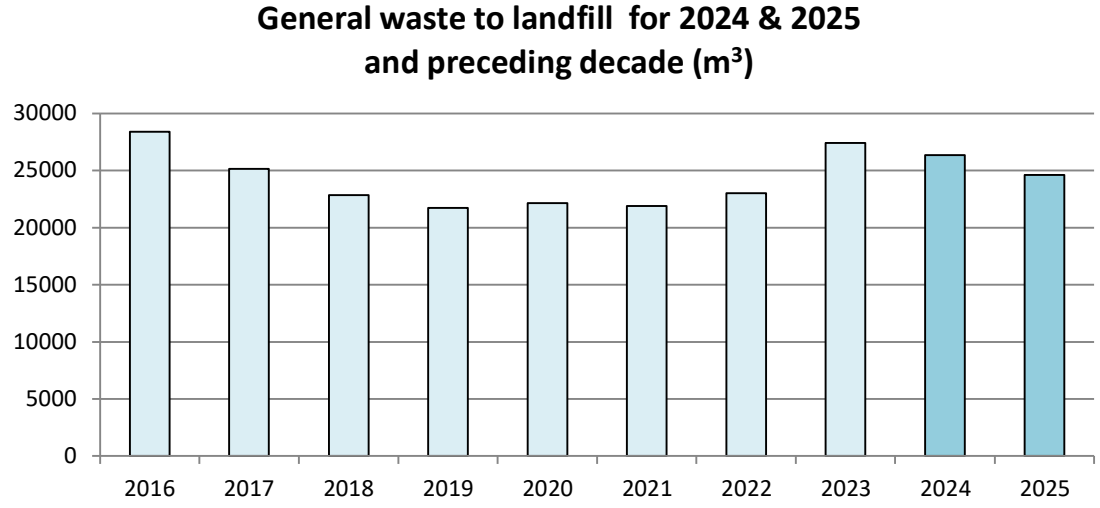


Figure 9: Volume of general waste sent to landfill for 2024 & 2025 and for the preceding decade as cubic metres at the Manjimup Recycling & Refuse Centre 2016 to 2025.

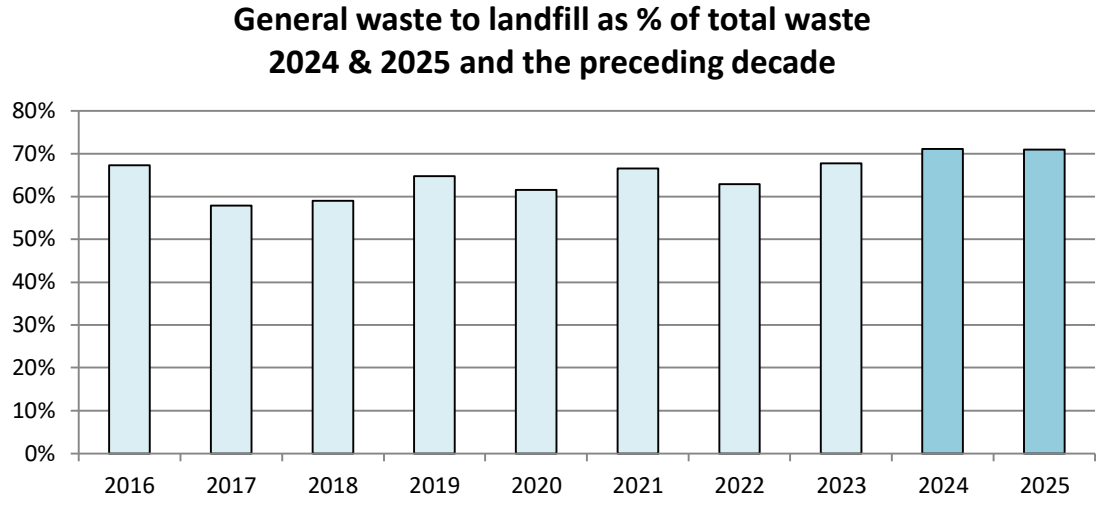


Figure 10: Volume of general waste sent to landfill for 2024 & 2025 and for the preceding decade as a percentage of total waste received at the Manjimup Recycling & Refuse Centre 2016 to 2025.

3. Construction and demolition waste

During the biennial reporting period the volume of construction and demolition (C & D) waste received was **545.70 m³**, representing just **0.76%** of the total volume of waste received.

Figure 11 below shows the volume of C & D waste received for 2024 & 2025 and for the preceding decade as cubic metres, while Figure 12 after it shows the volume of C & D waste as a percentage of total waste received for 2024 & 2025 and for the preceding decade.

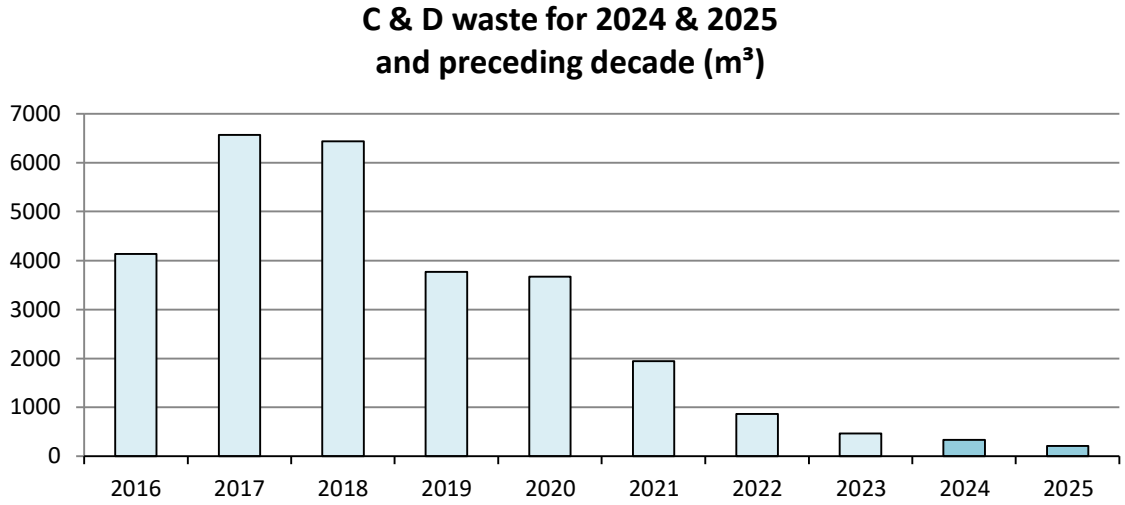


Figure 11: Volume of C & D waste received for 2024 & 2025 and for the preceding decade as cubic metres at the Manjimup Recycling & Refuse Centre 2016 to 2025.

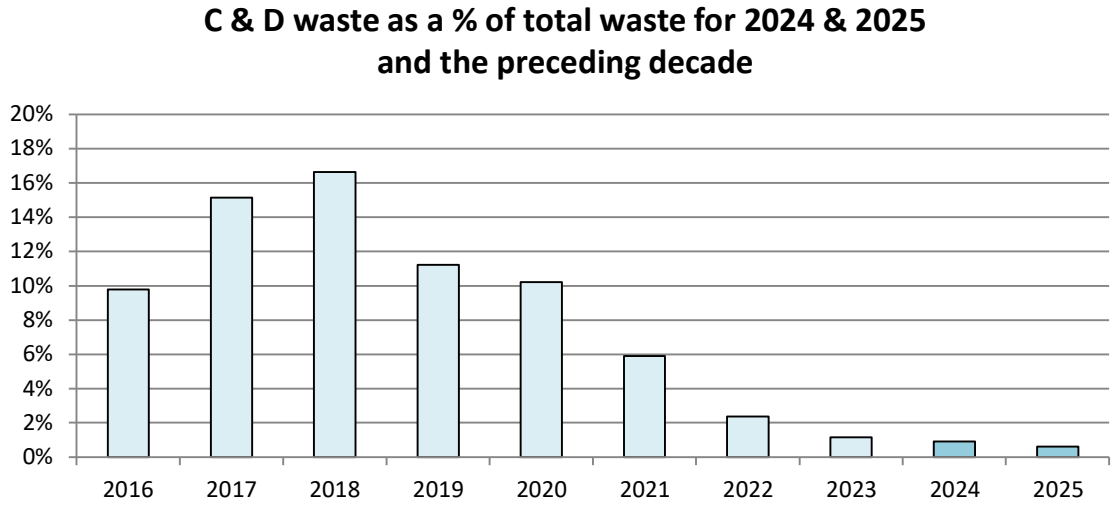


Figure 12: Volume of C & D waste received for 2022 & 2023 and for the preceding decade as a percentage of total waste received at the Manjimup Recycling & Refuse Centre 2014/15 to 2023.

4. Green waste

During the biennial reporting period the volume of green waste received was **14,962.00 m³.** This represented **20.85%** of the total volume of waste received.

Figure 13 below shows the volume of green waste received for 2024 & 2025 and for the preceding decade as cubic metres, while Figure 14 after it shows the volume of green waste as a percentage of total waste received for 2024 & 2025 and for the preceding decade.

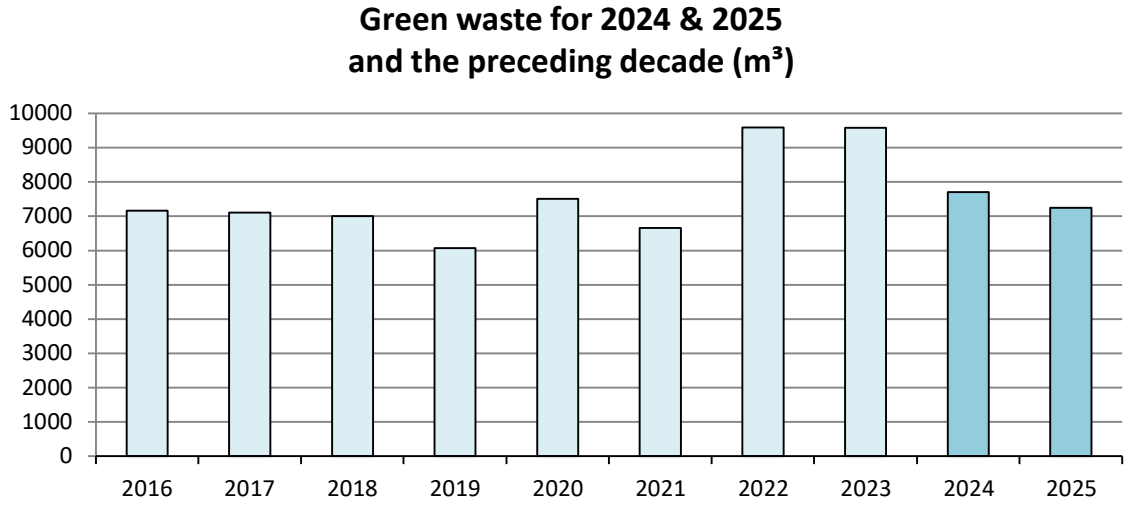


Figure 12: Volume of green waste received for 2024 & 2025 and for the preceding decade as cubic metres at the Manjimup Recycling & Refuse Centre 2016 to 2025.

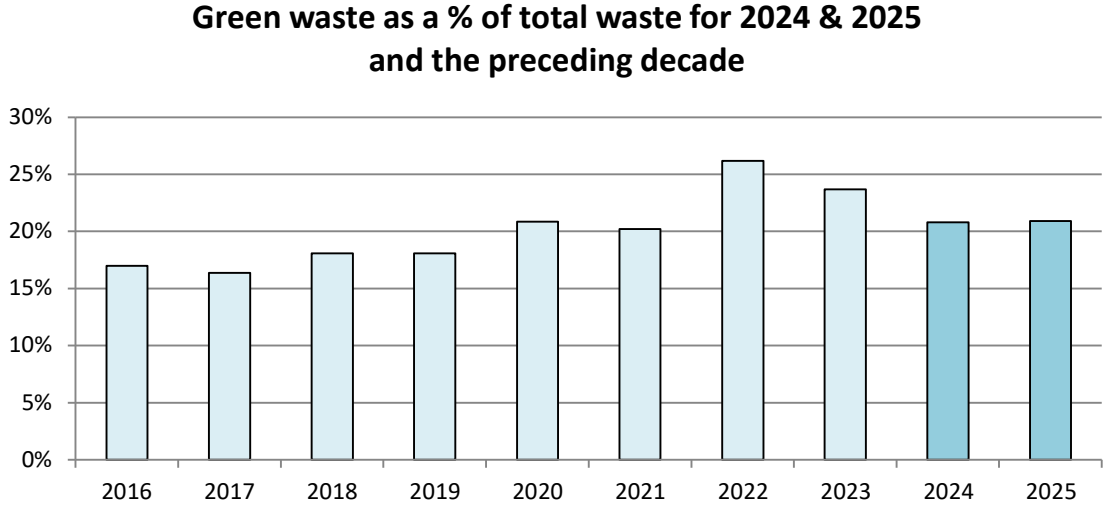


Figure 13: Volume of green waste received for 2024 & 2025 and for the preceding decade as a percentage of total waste received at the Manjimup Recycling & Refuse Centre 2016 to 2025.

ATTACHMENT 1: (A) annual summary of waste volumes, 2024

MANJIMUP RECYCLING & REFUSE CENTRE

ANNUAL SUMMARY – WASTE VOLUMES

FOR THE YEAR 01/01/2024 TO 31/12/2024

VOLUME AND TYPE OF WASTE											
MONTH (2024)	general waste to landfill (MSW1) m^3	Council & municipal waste (MSW2) m^3	community and other group waste to landfill m^3	green waste m^3	oversize green waste m^3	special burial waste m^3	C & D waste m3	scrap metal m^3	commingled recyclables m^3	vehicle batteries N (count)	TOTAL WASTE m^3
January	1505.50	1106.60	0.00	782.10	5.50	4.70	30.30	142.20	47.30	25	3,624.20
February	1479.90	869.50	0.00	510.40	0.90	3.70	21.50	105.40	42.10	35	3,033.40
March	1150.60	911.80	0.00	816.10	14.50	10.70	26.00	187.60	42.30	11	3,159.60
April	1047.00	840.30	0.00	770.60	1.30	12.60	37.40	143.60	33.00	20	2,885.80
May	1601.40	1365.50	0.00	704.70	3.20	12.10	25.00	591.40	28.70	5	4,332.00
June	838.80	830.80	19.30	466.10	4.40	0.90	13.70	148.80	29.60	15	2,352.40
July	1523.10	867.70	0.00	462.00	8.00	5.30	5.00	148.80	32.60	14	3,052.50
August	1185.10	854.80	0.00	542.00	21.70	6.20	10.00	168.20	30.50	5	2,818.50
September	1065.30	863.80	0.00	649.00	7.60	8.80	115.10	145.80	35.20	11	2,890.60
October	1192.00	952.30	0.00	646.80	52.40	9.80	17.70	148.20	33.40	10	3,052.60
November	1210.20	819.60	0.00	643.80	4.70	11.10	17.50	101.30	47.70	18	2,855.90
December	1173.50	1069.20	0.00	587.80	3.40	6.40	15.50	78.90	72.60	35	3,007.30
TOTAL VOLUMES	14,972.40	11,351.90	19.30	7,581.40	127.60	92.30	334.70	2,110.20	475.00	204	37,064.80

ATTACHMENT 1: (B) annual summary of waste volumes, 2025

MANJIMUP RECYCLING & REFUSE CENTRE

ANNUAL SUMMARY – WASTE VOLUMES

FOR THE YEAR 01/01/2025 TO 31/12/2025

VOLUME AND TYPE OF WASTE											
MONTH (2025)	general waste to landfill (MSW1) m^3	Council & municipal waste (MSW2) m^3	community and other group waste to landfill m^3	green waste m^3	oversize green waste m^3	special burial waste m^3	C & D waste m3	scrap metal m^3	commingled recyclables m^3	vehicle batteries N (count)	TOTAL WASTE m^3
January	1138.60	1067.70	0.00	577.50	22.70	21.20	10.80	143.00	68.40	4	3,049.90
February	1091.30	933.60	0.00	519.50	12.90	13.10	17.50	108.30	50.50	9	2,746.70
March	1189.60	852.50	0.00	583.30	5.70	3.60	11.20	96.20	53.60	18	2,795.70
April	1487.90	1010.10	0.00	572.50	4.40	7.10	18.50	132.70	55.00	21	3,288.20
May	1321.80	952.30	0.00	575.00	11.90	13.00	15.80	284.80	36.10	11	3,210.70
June	905.10	764.80	0.00	585.80	4.30	5.30	17.50	209.30	41.90	33	2,534.00
July	1039.70	689.70	0.00	477.30	3.50	2.90	11.00	106.50	76.60	17	2,407.20
August	1074.71	651.20	2.00	733.30	4.60	2.40	24.80	228.30	39.49	9	2,760.80
September	1039.28	810.60	0.00	567.60	5.20	7.90	24.30	172.10	23.63	50	2,650.61
October	1202.22	978.90	0.00	540.80	14.50	10.60	14.60	181.50	46.64	39	2,989.76
November	1296.31	752.50	4.00	718.30	5.60	12.20	28.40	116.70	37.95	7	2,971.96
December	1419.60	939.80	0.00	704.00	2.80	10.40	16.60	111.30	69.80	16	3,274.30
TOTAL VOLUMES	14,206.12	10,403.70	6.00	7,154.90	98.10	109.70	211.00	1,890.70	599.61	234	34,679.83

ATTACHMENT 2A

Evaluation, assessment & interpretation of data from the groundwater monitoring program

FOR THE BIENNIAL PERIOD 01/01/24 to 31/12/25

Manjimup Recycling & Refuse Centre
62 Ralston Road, Manjimup WA 6258

LICENCE # L7007/1997/11

March 2026

This report is an assessment of the available data from the Manjimup Recycling & Refuse Centre groundwater monitoring program.

For purposes of historic continuity, at some points in this report data from the Northcliffe, Pemberton and Walpole Transfer Station sites are incorporated, although these sites are not a part of licence L7007/1997/11 to which this report refers.

The report includes graphical representation of the data collected over the preceding ten years (back to January 2014). While for purposes of graphic clarity the data from earlier years of the monitoring program are not included in this report, the data set is retained by the Shire of Manjimup in its entirety should it be required for future reference.

While the graphs cover the preceding decade, this report focuses particularly on trends and anomalies discerned over the most recent three years, since January 2021 and up to the date of the most recent samples included in this report (being March 2024).

Historic omissions

This report responds to the specifications set out in the current licence, in Table 2.4.1 (reproduced below).

2.4 Ambient environmental quality monitoring

2.4.1 The Licensee shall undertake the monitoring in Table 2.4.1 according to the specifications in Table 2.4.1.

Table 2.4.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
MAN1, MAN2 and MAN3	Dissolved oxygen[1]	mg/L	Spot sample	Quarterly
	Electrical conductivity[1]	µS/cm		
	Oxidation/ reduction potential[1]	mV		
	pH[1]	-		
	Standing water level[1]	m(AHD) and mBGL		
	Biochemical oxygen demand; Chloride, fluoride, potassium, sulfate; Total metals: aluminium, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury , nickel, zinc; Total dissolved solids; Total nitrogen, nitrate-nitrogen, nitrite-nitrogen, ammonia-nitrogen; and Total phosphorus, phosphate.	mg/L		Six monthly

Note 1: In-field non-NATA accredited analysis permitted.

However, there are some historic omissions from this list.

Prior to the October 2015 groundwater sampling round, the monitoring program did not include analysis of the following six parameters:

- biochemical oxygen demand
- oxidation / reduction potential
- dissolved oxygen
- fluoride
- aluminium
- phosphate

The following four previously omitted parameters were first included for samples taken from the original three Manjimup bores (MJP1, MJP2 & MJP3) in the October 2015 sampling round, and for the two newer bores (MJP4 & MJP5) from the following round in May 2016 (and onwards):

- biochemical oxygen demand
- fluoride
- aluminium
- phosphate

Therefore only limited graphical representation of data for these four analyses can be included in this report.

The following two parameters have been measured and recorded only since May 2016:

- oxidation / reduction potential
- dissolved oxygen

Until May 2016, the analysis of samples for concentration of mercury had only been carried out for the rounds of October 2011 and May 2012.

No monitoring of groundwater was carried out in February 2016 during a brief period of transition of responsibility to a new Shire of Manjimup Waste Management Officer.

Until April 2016 only three bores (MJP1, MJP2 & MJP3) had been commissioned. MJP4 and MJP5 were commissioned, and monitoring commenced, in May 2016.

In August 2016, after a period of rainfall, MJP2 bore was in an inundated area too wet to access for monitoring on the appointed date and no readings were made.

During 2023, miscommunication with the nearest service provider resulted in lost opportunity to carry out groundwater monitoring rounds in June 2023 and again in September 2023, then the sudden final closure of the same regional provider's business in December 2023 again resulted in lost opportunity just before the end of the reporting period.

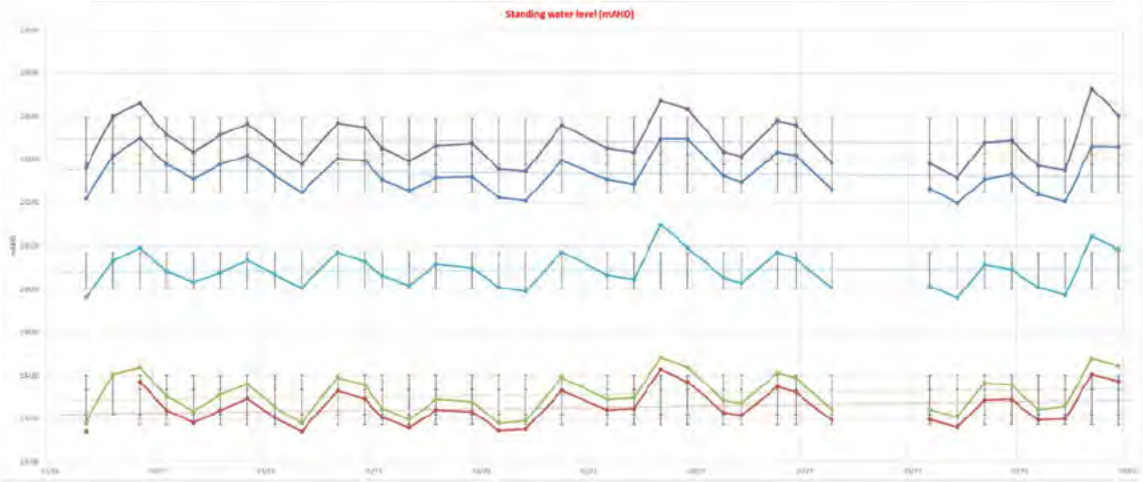
For this 2024 & 2025 reporting period, while there are eight sets of field test results available for the quarterly parameters, only four sets (six-monthly) have been included in this report (for brevity). All four sets of groundwater sample analysis results available for the six monthly parameters have been included. Tabular results for standing water levels presented in this report include data from all eight site monitoring visits.

A. Standing water levels

The current licence requires *(in Table 2.4.1)* that standing water levels be expressed in m(AHD) and mBGL. Historically, however, in this groundwater monitoring program, standing water levels for each bore have been measured as a distance in mm below the top of the bore casing (- mmBTB). The table below includes data extending back ten years to 2016 and is illustrated in thumbnail graph form below.

Height of standing water level above AHD (m)

DATE	MJP1	MJP2	MJP3	MJP4	MJP5
05/16	262.18	251.41	251.84	263.62	257.60
08/16	264.16	too wet to access	254.05	266.02	259.32
11/16	264.97	253.71	254.37	266.59	259.92
02/17	263.76	252.39	253.03	265.12	258.82
05/17	263.11	251.82	252.35	264.34	258.34
08/17	263.77	252.40	253.12	265.13	258.78
11/17	264.20	252.94	253.62	265.66	259.34
02/18	263.27	252.05	252.55	264.66	258.69
05/18	262.47	251.41	251.80	263.77	258.06
09/18	264.04	253.30	253.92	265.69	259.73
12/18	263.95	252.93	253.56	265.49	259.27
02/19	263.06	252.05	252.47	264.51	258.62
05/19	262.56	251.58	251.97	263.93	258.17
08/19	263.16	252.42	252.90	264.63	259.15
12/19	263.20	252.33	252.78	264.74	258.97
03/20	262.22	251.45	251.78	263.54	258.10
06/20	262.08	251.52	251.89	263.45	257.89
10/20	263.94	253.30	253.91	265.59	259.74
03/21	263.07	252.42	252.90	264.52	258.65
06/21	262.87	252.48	252.97	264.34	258.46
09/21	264.94	254.29	254.81	266.70	260.96
12/21	264.94	253.71	254.38	266.33	259.92
04/22	263.24	252.29	252.84	264.36	258.54
06/22	262.94	252.16	252.70	264.12	258.28
10/22	264.33	253.49	254.13	265.80	259.72
12/22	264.19	253.23	253.90	265.61	259.40
04/23	262.63	251.93	252.43	263.83	258.08
09/23	no data	no data	no data	no data	no data
03/24	262.65	251.96	252.43	263.80	258.14
06/24	261.95	251.59	252.06	263.13	257.59
09/24	263.07	252.87	253.66	264.77	259.13
12/24	263.30	252.90	253.57	264.88	258.91
03/25	262.38	251.94	252.42	263.69	258.09
06/25	262.05	251.99	252.58	263.50	257.73
09/25	264.60	254.07	254.77	267.28	260.42
12/25	264.58	253.74	254.43	266.04	259.84



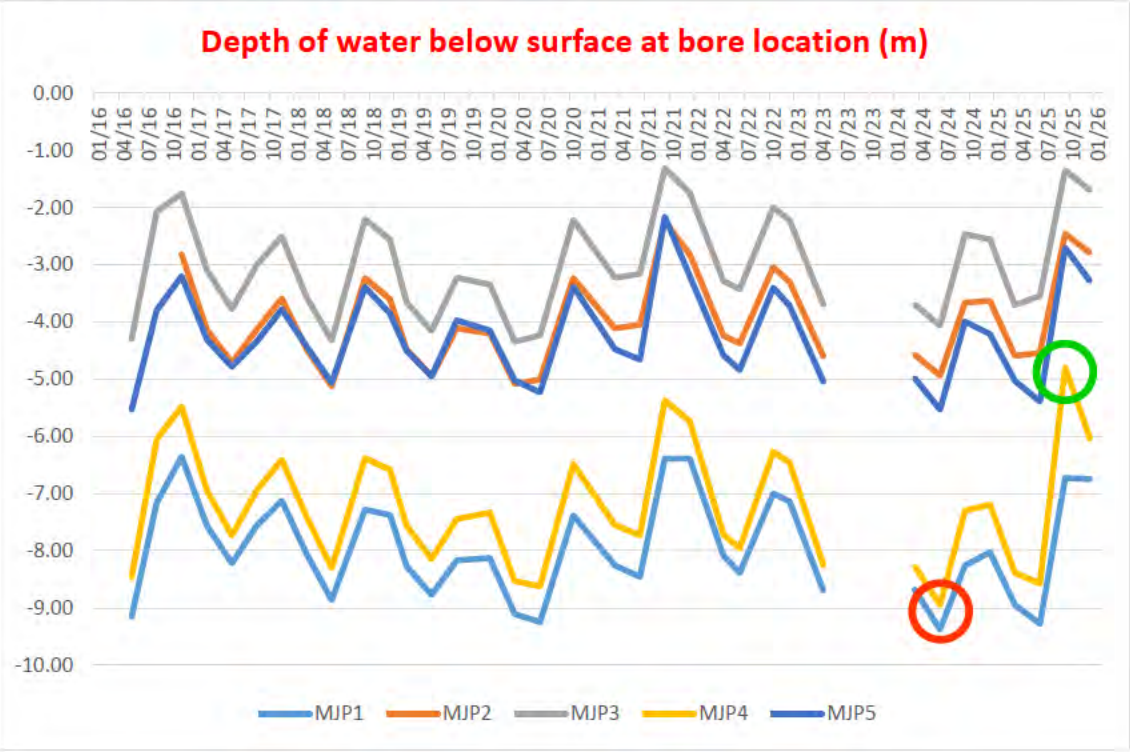
[This graph appears in larger format in Attachment 2B Groundwater monitoring graphs]

The following table and graph together illustrate the depth (m) of the standing water level **below the ground surface** at the location of the sampling bore.

Three readings taken during this reporting period are worthy of note.

The **June 2024** groundwater level readings for **MJP4** (-8.95 m) and **MJP5** (-5.54 m) bores (red circle) were the **lowest** (greatest distance below the surface at the bore location) recorded since the bores were both commissioned and first measured in May 2016. (The three other, older bores within the Premises all recorded near-to-lowest groundwater depths at the same time.)

The **September 2025** groundwater level reading for **MJP4** bore (-4.80 m) was the highest recorded for that bore (green circle).



Depth of standing water level below the surface (m)

DATE	MJP1	MJP2	MJP3	MJP4	MJP5
05/16	-9.15	-5.13	-4.29	-8.46	-5.53
08/16	-7.17	too wet to access	-2.08	-6.06	-3.81
11/16	-6.36	-2.83	-1.76	-5.49	-3.21
02/17	-7.57	-4.15	-3.10	-6.96	-4.31
05/17	-8.22	-4.72	-3.78	-7.74	-4.79
08/17	-7.56	-4.14	-3.01	-6.95	-4.35
11/17	-7.13	-3.60	-2.51	-6.42	-3.79
02/18	-8.06	-4.49	-3.58	-7.42	-4.44
05/18	-8.86	-5.13	-4.33	-8.31	-5.07
09/18	-7.29	-3.24	-2.21	-6.39	-3.40
12/18	-7.38	-3.61	-2.57	-6.59	-3.86
02/19	-8.27	-4.49	-3.66	-7.57	-4.51
05/19	-8.77	-4.96	-4.16	-8.15	-4.96
08/19	-8.17	-4.12	-3.23	-7.45	-3.98
12/19	-8.13	-4.21	-3.35	-7.34	-4.16
03/20	-9.11	-5.09	-4.35	-8.54	-5.03
06/20	-9.25	-5.02	-4.24	-8.63	-5.24
10/20	-7.39	-3.24	-2.22	-6.49	-3.39
03/21	-8.26	-4.12	-3.23	-7.56	-4.48
06/21	-8.46	-4.06	-3.16	-7.74	-4.67
09/21	-6.39	-2.25	-1.32	-5.38	-2.17
12/21	-6.39	-2.83	-1.75	-5.75	-3.21
04/22	-8.09	-4.25	-3.29	-7.72	-4.59
06/22	-8.39	-4.38	-3.43	-7.96	-4.85
10/22	-7.00	-3.05	-2.00	-6.28	-3.41
12/22	-7.14	-3.31	-2.23	-6.47	-3.73
04/23	-8.70	-4.61	-3.70	-8.25	-5.05
09/23	no data	no data	no data	no data	no data
03/24	-8.68	-4.58	-3.70	-8.28	-4.99
06/24	-9.38	-4.95	-4.07	-8.95	-5.54
09/24	-8.26	-3.67	-2.47	-7.31	-4.00
12/24	-8.03	-3.64	-2.56	-7.20	-4.22
03/25	-8.95	-4.60	-3.71	-8.39	-5.04
06/25	-9.28	-4.55	-3.55	-8.58	-5.40
09/25	-6.73	-2.47	-1.36	-4.80	-2.71
12/25	-6.75	-2.80	-1.70	-6.04	-3.29

red cells = lowest standing water levels ever recorded at those bores

green cell = highest standing water level ever recorded at that bore

B. Water quality and ion concentrations

The ambient groundwater quality monitoring program employs four (quarterly) rounds of testing and/or sampling for laboratory analysis. The program used is illustrated in the table below.

At the four quarterly rounds a series of five parameters is tested in the field. At two six-monthly rounds a further 22 parameters are also sampled and sent for NATA-accredited laboratory analysis. Over time, the months for each round of field testing have been adjusted to March, June, September and December. The sampling program is carried out in March and September only. This change was made for purposes of logistic efficiency.

Certificates of Analysis for the four six-monthly rounds occurring in this reporting period are included in this report as attachment 2C.

Shire of Manjimup
WASTE MANAGEMENT
Annual ambient groundwater quality monitoring schedule (per DER licence L7007)

note	PARAMETER	UNIT	Mar	Jun	Sep	Dec
in-field non NATA-accredited analysis permitted	standing water level	m(AHD) & mBGL	•	•	•	•
	dissolved oxygen	mg/L	•	•	•	•
	electrical conductivity	µS/cm	•	•	•	•
	oxidation / reduction potential	mV	•	•	•	•
	pH	-	•	•	•	•
NATA-accredited laboratory analysis required	biochemical oxygen demand	mg/L	•		•	
	chloride		•		•	
	fluoride		•		•	
	potassium		•		•	
	sulphate		•		•	
	aluminium		•		•	
	arsenic		•		•	
	cadmium		•		•	
	chromium		•		•	
	copper		•		•	
	iron		•		•	
	lead		•		•	
	manganese		•		•	
	mercury		•		•	
	nickel		•		•	
	zinc		•		•	
	total dissolved solids		•		•	
	total nitrogen		•		•	
	nitrate nitrogen		•		•	
	nitrite nitrogen		•		•	
	ammonia nitrogen		•		•	
	total phosphorus		•		•	
	phosphate		•		•	

ATTACHMENT 2B

Graphic & tabular depiction of data from groundwater monitoring program

FOR THE ANNUAL PERIOD 01/01/24 to 31/12/25

Manjimup Recycling & Refuse Centre
62 Ralston Road, Manjimup WA 6258

LICENCE # L7007/1997/11

March 2026

37-39 Rose St
PO Box 1
MANJIMUP WA 6258
P: (08) 9771 7777
E: info@manjimup.wa.gov.au

This plan is intended for internal Shire of Manjimup use only. It is not to be used as a site plan for planning, building or environmental health applications.

Manjimup Recycling & Refuse Centre
62 Ralston Road Ringbark 6258
LOCATION OF GROUNDWATER MONITORING BORES

Image date 03/01/2019

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Shire of Manjimup
Geological and Hydrogeological Assessment

Figure 3: Groundwater Well Locations and Groundwater Modelling

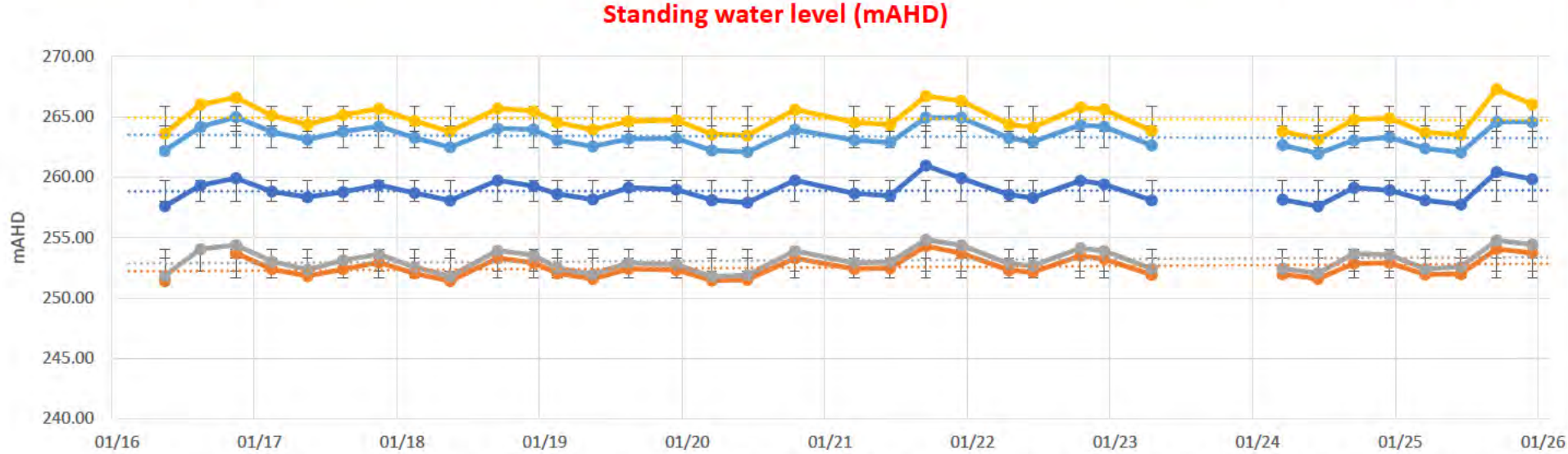
astron

Author: S. Mueller	Date: 07-05-2015
Drawn: C. Dyde	Figure Ref: 21142-15-ASWDR-1RevA_150507_Fig03

Datum: GDA 1994 - Projection: MGA Zone 50
0 20 40 60 80 100 Metres

N

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

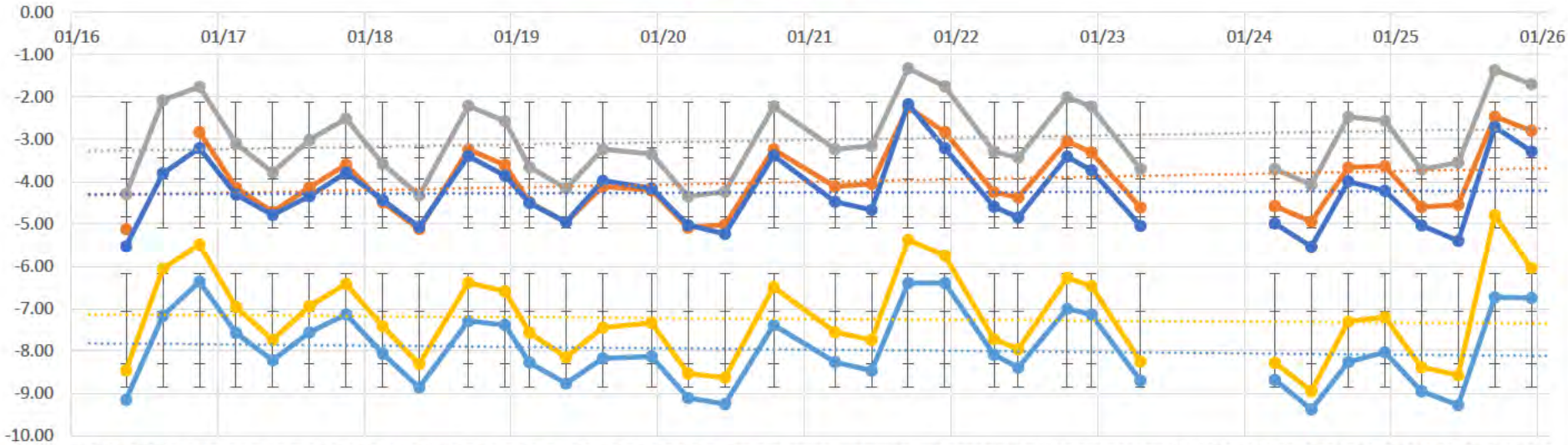


	02/16	05/16	08/16	11/16	02/17	05/17	08/17	11/17	02/18	05/18	09/18	12/18	02/19	05/19	08/19	12/19	03/20	06/20	10/20	03/21	06/21	09/21	12/21	04/22	06/22	10/22	12/22	04/23	09/23	03/24	06/24	09/24	12/24	03/25	06/25	09/25	12/25
Series1		262.	264.	264.	263.	263.	263.	264.	263.	262.	264.	263.	263.	262.	263.	263.	262.	262.	263.	263.	262.	264.	264.	263.	262.	264.	264.	262.		262.	261.	263.	263.	262.	262.	264.	264.
Series2		251.		253.	252.	251.	252.	252.	252.	251.	253.	252.	252.	251.	252.	252.	251.	251.	253.	252.	252.	254.	253.	252.	252.	253.	253.	251.		251.	251.	252.	252.	251.	251.	254.	253.
Series3		251.	254.	254.	253.	252.	253.	253.	252.	251.	253.	253.	252.	251.	252.	252.	251.	251.	253.	252.	252.	254.	254.	252.	252.	254.	253.	252.		252.	252.	253.	253.	252.	252.	254.	254.
Series4		263.	266.	266.	265.	264.	265.	265.	264.	263.	265.	265.	264.	263.	264.	264.	263.	263.	265.	264.	264.	266.	266.	264.	264.	265.	265.	263.		263.	263.	264.	264.	263.	263.	267.	266.
Series5		257.	259.	259.	258.	258.	258.	259.	258.	258.	259.	259.	258.	258.	259.	258.	258.	257.	259.	258.	258.	260.	259.	258.	258.	259.	259.	258.		258.	257.	259.	258.	258.	257.	260.	259.

annual period	comments
2021	Four of five bores ended the annual period at their highest recorded standing water levels; MJP 1 being just 30 mm lower than its record (Nov 2016). Monitor for continuing gradual trend to higher standing groundwater levels. Complete rainfall data not available for Manjimup 2021, however, Balbarrup was 938 mm.
2022 & 2023	Currently oscillating between seasonal highs and lows very similar to previous recent years. No new extremes observed.
2024 & 2025	MJP4 & MJP5 record lowest-ever standing water levels (June 2024); MJP4 records highest-ever standing water level (September 2025). However, seasonal oscillations continue to return all standing water levels to within the expected range and there is no discernible trend to deeper nor shallower levels.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

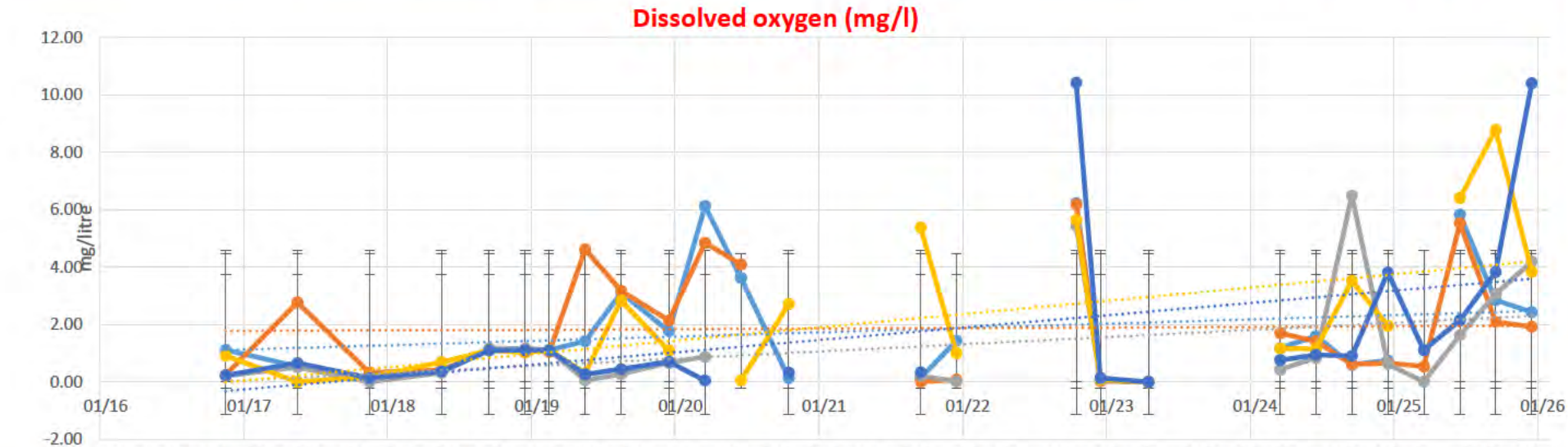
Standing water level (mBGL)



	02/16	05/16	08/16	11/16	02/17	05/17	08/17	11/17	02/18	05/18	09/18	12/18	02/19	05/19	08/19	12/19	03/20	06/20	10/20	03/21	06/21	09/21	12/21	04/22	06/22	10/22	12/22	04/23	09/23	03/24	06/24	09/24	12/24	03/25	06/25	09/25	12/25
MJP1		-9.1	-7.1	-6.3	-7.5	-8.2	-7.5	-7.1	-8.0	-8.8	-7.2	-7.3	-8.2	-8.7	-8.1	-8.1	-9.1	-9.2	-7.3	-8.2	-8.4	-6.3	-6.3	-8.0	-8.3	-7.0	-7.1	-8.7		-8.6	-9.3	-8.2	-8.0	-8.9	-9.2	-6.7	-6.7
MJP2		-5.1		-2.8	-4.1	-4.7	-4.1	-3.6	-4.4	-5.1	-3.2	-3.6	-4.4	-4.9	-4.1	-4.2	-5.0	-5.0	-3.2	-4.1	-4.0	-2.2	-2.8	-4.2	-4.3	-3.0	-3.3	-4.6		-4.5	-4.9	-3.6	-3.6	-4.6	-4.5	-2.4	-2.8
MJP3		-4.2	-2.0	-1.7	-3.1	-3.7	-3.0	-2.5	-3.5	-4.3	-2.2	-2.5	-3.6	-4.1	-3.2	-3.3	-4.3	-4.2	-2.2	-3.2	-3.1	-1.3	-1.7	-3.2	-3.4	-2.0	-2.2	-3.7		-3.7	-4.0	-2.4	-2.5	-3.7	-3.5	-1.3	-1.7
MJP4		-8.4	-6.0	-5.4	-6.9	-7.7	-6.9	-6.4	-7.4	-8.3	-6.3	-6.5	-7.5	-8.1	-7.4	-7.3	-8.5	-8.6	-6.4	-7.5	-7.7	-5.3	-5.7	-7.7	-7.9	-6.2	-6.4	-8.2		-8.2	-8.9	-7.3	-7.2	-8.3	-8.5	-4.8	-6.0
MJP5		-5.5	-3.8	-3.2	-4.3	-4.7	-4.3	-3.7	-4.4	-5.0	-3.4	-3.8	-4.5	-4.9	-3.9	-4.1	-5.0	-5.2	-3.3	-4.4	-4.6	-2.1	-3.2	-4.5	-4.8	-3.4	-3.7	-5.0		-4.9	-5.5	-4.0	-4.2	-5.0	-5.4	-2.7	-3.2

annual period	comments
2021	Four of five bores ended the annual period at their highest recorded standing water levels; MJP 1 being just 30 mm lower than its record (Nov 2016). Monitor for continuing gradual trend to higher standing groundwater levels. Complete rainfall data not available for Manjimup 2021, however, Balbarrup was 938 mm.
2022 & 2023	Currently oscillating between seasonal highs and lows very similar to previous recent years. No new extremes observed.
2024 & 2025	MJP4 & MJP5 record lowest-ever standing water levels (June 2024); MJP4 records highest-ever standing water level (September 2025). However, seasonal oscillations continue to return all standing water levels to within the expected range and there is no discernible trend to deeper nor shallower levels.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

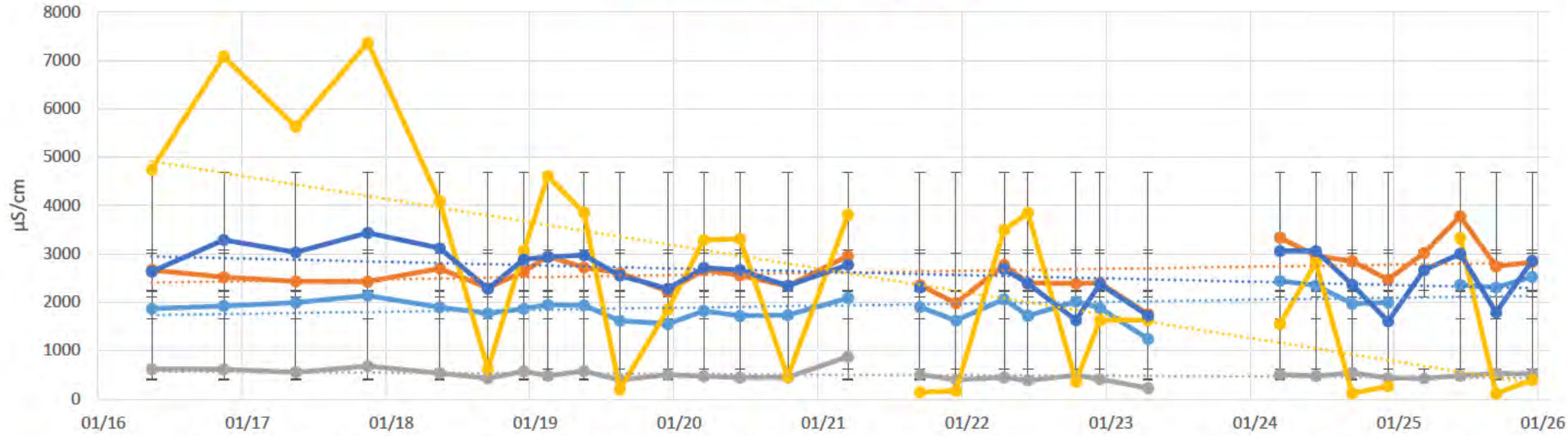


	11/16	05/17	11/17	05/18	09/18	12/18	02/19	05/19	08/19	12/19	03/20	06/20	10/20	03/21	06/21	09/21	12/21	04/22	06/22	10/22	12/22	04/23	09/23	03/24	06/24	09/24	12/24	03/25	06/25	09/25	12/25
MJP1	1.12	0.54	0.15	0.35	1.13	1.13	1.12	1.42	3.11	1.77	6.13	3.63	0.14			0.14	1.44			6.23	0.08	0		1.18	1.6	0.60	0.75		5.83	2.85	2.43
MJP2	0.25	2.78	0.33	0.41	1.11	1.12	1.05	4.62	3.17	2.14	4.85	4.10				0.01	0.09			6.18	0.03	0		1.70	1.42	0.62	0.66	0.54	5.53	2.10	1.93
MJP3	0.22	0.52	0	0.32	1.17	1.16	1.12	0.06	0.28	0.67	0.88					0.22	0.02			5.45	0.07	0		0.43	0.84	6.49	0.63	0.01	1.63	3.06	4.20
MJP4	0.92	0	0.17	0.69	1.11	1.02	1.11	0.3	2.84	1.09		0.06	2.72			5.38	1.01			5.65	0.10	0		1.17	1.15	3.52	1.96		6.41	8.78	3.84
MJP5	0.23	0.66	0.14	0.37	1.10	1.11	1.10	0.27	0.45	0.71	0.05		0.33			0.34				10.4	0.14	0		0.77	0.95	0.91	3.82	1.11	2.15	3.83	10.4

annual period	comments
2021	Despite monitoring equipment failures, discernible trend towards consistently low levels of dissolved oxygen across all bores including MJP 4.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	MJP4 and MJP5 continue to show erratic dissolved oxygen readings; however, further monitoring is required to discern any ongoing trends.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

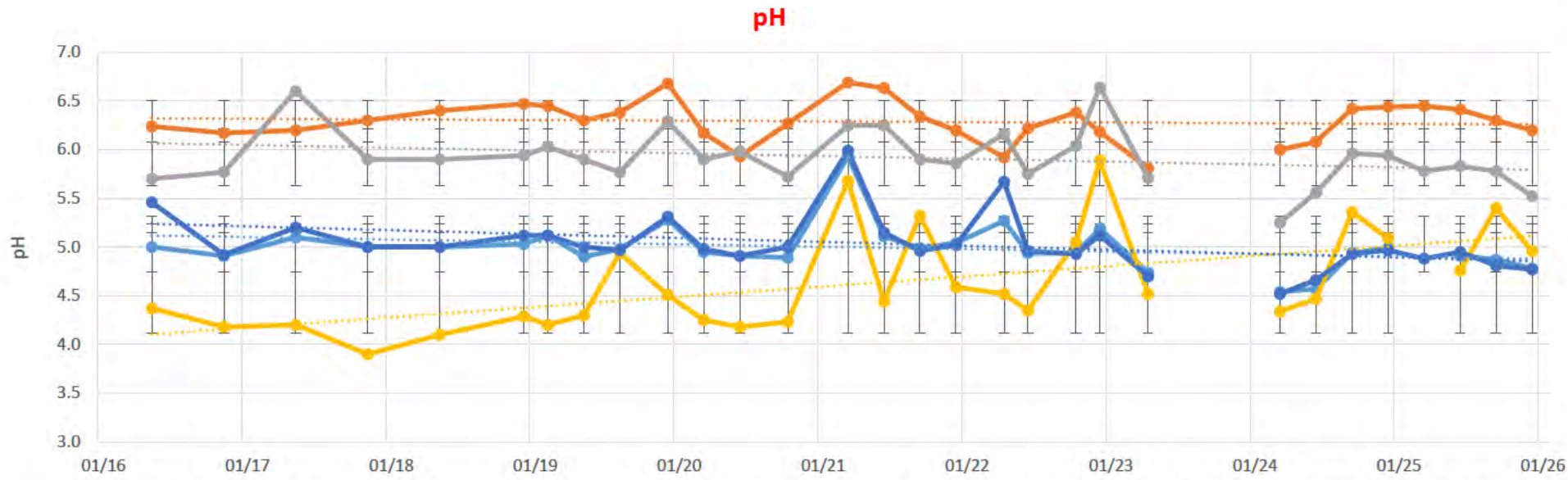
Electrical conductivity (µS/cm)



	05/16	11/16	05/17	11/17	05/18	09/18	12/18	02/19	05/19	08/19	12/19	03/20	06/20	10/20	03/21	06/21	09/21	12/21	04/22	06/22	10/22	12/22	04/23	09/23	03/24	06/24	09/24	12/24	03/25	06/25	09/25	12/25
MJP1	1870	1926	1995	2136	1901	1771	1866	1951	1940	1621	1554	1820	1722	1736	2085		1904	1623	2061	1728	2017	1884	1243		2443	2349	1970	1998		2362	2306	2523
MJP2	2670	2521	2434	2427	2701	2294	2636	2947	2717	2606	2225	2674	2554	2336	2958		2358	1983	2769	2402	2387	2404	1758		3341	2958	2849	2468	3020	3777	2745	2831
MJP3	620	615	555	682	537	425.5	576	480.7	577	397.2	502	469.8	443.0	449.1	877		510	399.3	448.6	383.9	492.8	409.2	226.0		509.6	479.5	544.0	436.9	428.6	484	529	517.6
MJP4	4740	7082	5632	7366	4088	613	3064	4607	3857	201.4	1852	3290	3308	463	3810		143.3	169.2	3499	3848	367.1	1624	1632		1552	2828	123.1	263.8		3331	115	393.8
MJP5	2630	3291	3036	3437	3124	2283	2887	2940	2974	2550	2279	2712	2666	2341	2776		2305		2690	2390	1628	2377	1719		3062	3059	2369	1609	2666	3005	1790	2859

annual period	comments
2021	Despite monitoring equipment failures, discernible trend towards levels of reduction oxidation potential near to the decade mean across all bores.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	MJP4 continues to show erratic electrical conductivity readings; however, further monitoring is required to discern any ongoing trend.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025



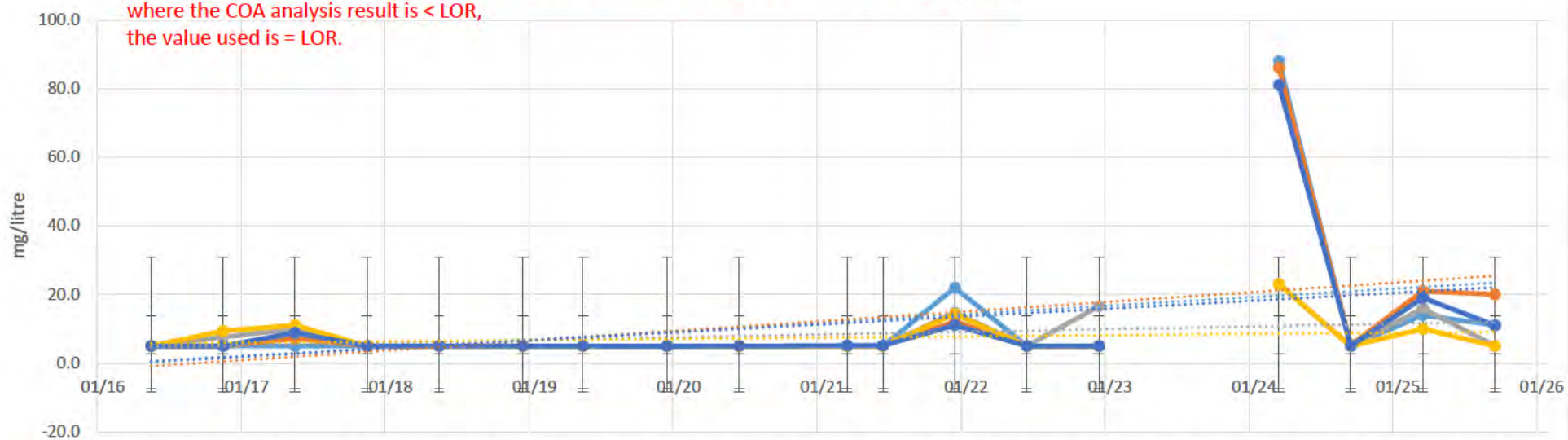
	05/16	11/16	05/17	11/17	05/18	12/18	02/19	05/19	08/19	12/19	03/20	06/20	10/20	03/21	06/21	09/21	12/21	04/22	06/22	10/22	12/22	04/23	09/23	03/24	06/24	09/24	12/24	03/25	06/25	09/25	12/25
MJP1	5.0	4.9	5.1	5.0	5.0	5.0	5.1	4.9	4.98	5.28	4.95	4.91	4.89	5.93	5.11	4.99	5.04	5.27	4.94	4.94	5.19	4.74		4.54	4.57	4.94	4.99		4.91	4.87	4.78
MJP2	6.2	6.2	6.2	6.3	6.4	6.5	6.5	6.3	6.38	6.68	6.17	5.93	6.27	6.69	6.63	6.34	6.2	5.92	6.22	6.38	6.18	5.81		6.00	6.08	6.42	6.44	6.45	6.41	6.30	6.20
MJP3	5.7	5.8	6.6	5.9	5.9	5.9	6.0	5.9	5.77	6.29	5.90	5.98	5.72	6.25	6.25	5.90	5.86	6.16	5.75	6.04	6.64	5.71		5.25	5.56	5.96	5.94	5.78	5.83	5.78	5.52
MJP4	4.4	4.2	4.2	3.9	4.1	4.3	4.2	4.3	4.94	4.51	4.25	4.18	4.23	5.68	4.44	5.32	4.59	4.52	4.35	5.05	5.89	4.52		4.34	4.47	5.36	5.09		4.76	5.40	4.96
MJP5	5.5	4.9	5.2	5.0	5.0	5.1	5.1	5.0	4.97	5.31	4.98	4.91	5.00	5.99	5.15	4.96	5.02	5.67	4.96	4.93	5.12	4.70		4.52	4.66	4.93	4.97	4.88	4.95	4.81	4.77

annual period	comments
2021	No significant change over the previous annual period. MJP 2, 3 & 5 almost stable, MJP 1 very gradual decrease in pH, and MJP 4 very gradual increase.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores gradually tending towards stability. MJP1 & MJP5 may be trending towards greater acidity; MJP4 towards neutral. Further monitoring required.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

LOR = 5.0
where the COA analysis result is < LOR,
the value used is = LOR.

Biochemical oxygen demand (BOD) (mg/l)



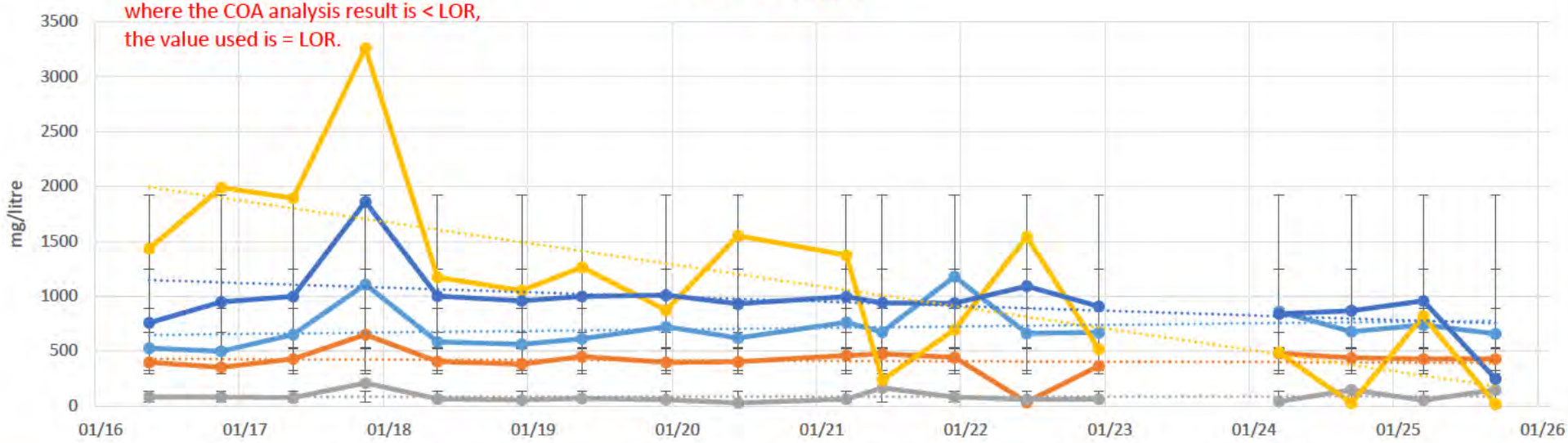
	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	22.0	5.0	5.0			88.0	5.0	14.0	11.0
MJP2	5.0	5.0	7.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	12.1	5.0	5.0			86.0	5.3	21.0	20.0
MJP3	5.0	7.6	10.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	14.7	5.0	16.6			23.0	5.0	16.0	5.0
MJP4	5.0	9.4	11.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	14.3	5.0	5.0			23.0	5.0	10.0	5.0
MJP5	5.0	5.0	8.9	5.0	5.0	5.0	5.0	5.0	5.0	5.2	5.2	11.1	5.0	5.0			81.0	5.1	19.0	11.0

annual period	comments
2021	MJP 1, 2, 3 & 5 continuing consistently low levels of BOD; MJP 4 elevated during annual period: monitor MJP 4.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	Very high recordings in March 2024 may be due to use of new instrumentation rather than actual changes in BOD. Further monitoring required.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

LOR = 1.0
where the COA analysis result is < LOR,
the value used is = LOR.

Chloride (mg/l)

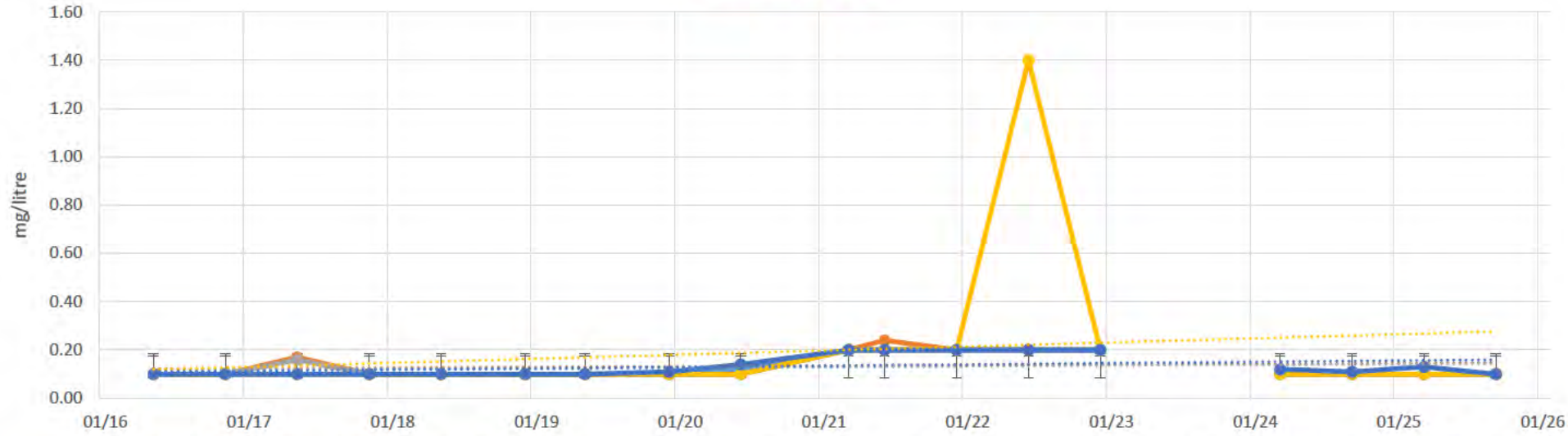


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	530	500	653	1108	585	565	615	725	622	764	675	1180	664	670			860	680	740	660
MJP2	400	355	431	652	407	384	450	400	404	463	476	444	38	367			480	440	430	430
MJP3	85	85	78	211	67	57	70	60	31	64	166	84	62	63			44	150	55	150
MJP4	1435	1990	1894	3260	1173	1054	1265	875	1553	1376	238	697	1543	520			490	28	820	20
MJP5	760	950	1000	1861	1002	960	1000	1010	932	997	941	940	1094	910			840	870	960	250

annual period	comments
2021	All bores trending towards common levels, similar to historical values, although MJP 1 and 4 with recent increases should be monitored.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores remain within expected variation, tending towards lower levels of chloride present.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Fluoride (mg/l)

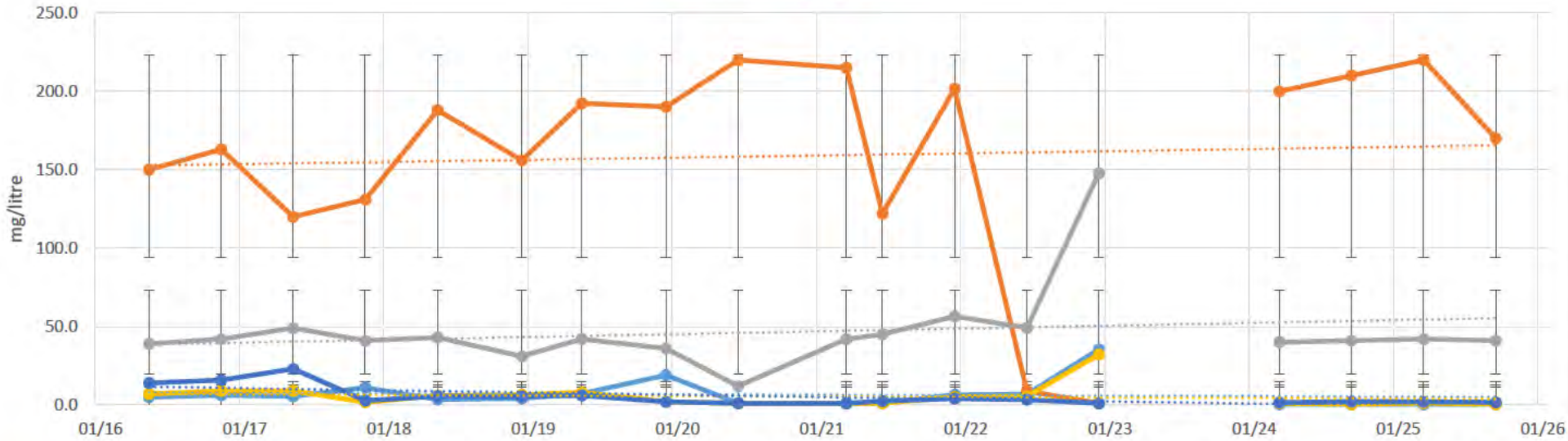


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.12	0.20	0.20	0.20	0.20	0.20			0.10	0.10	0.10	0.1
MJP2	0.10	0.10	0.17	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.24	0.20	0.20	0.20			0.10	0.10	0.10	0.1
MJP3	0.10	0.10	0.16	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20			0.10	0.10	0.10	0.1
MJP4	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	1.40	0.20			0.10	0.10	0.10	0.1
MJP5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.14	0.20	0.20	0.20	0.20	0.20			0.12	0.11	0.13	0.1

annual period	comments
2021	Trend towards uniformity across all bores continues.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	Trend towards uniformity at low fluoride levels across all bores continues.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Potassium (mg/l)

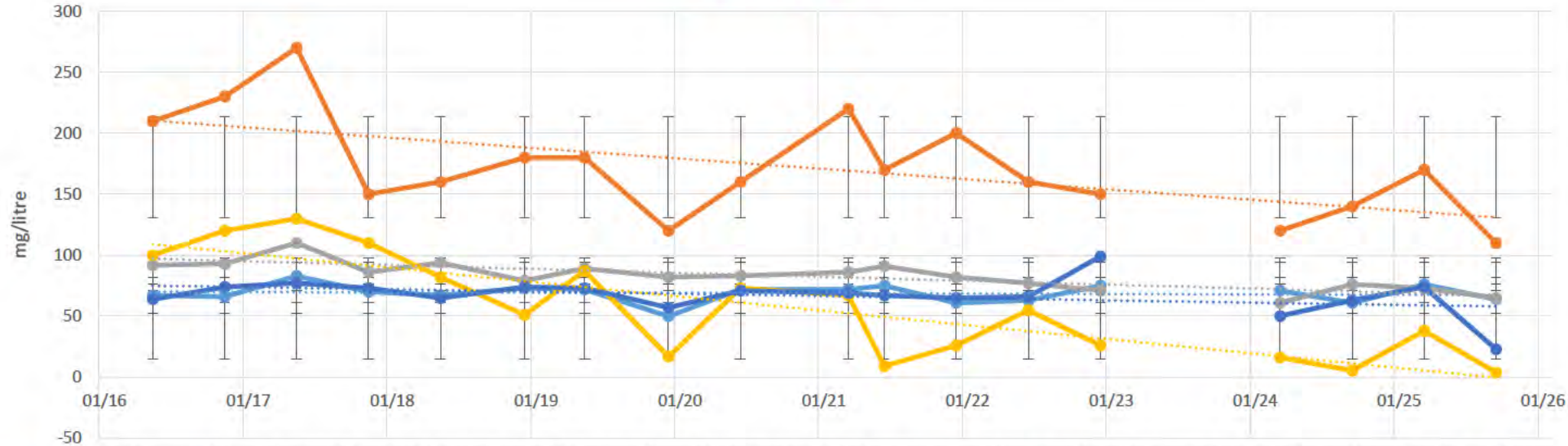


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	5.0	6.2	5.5	11.1	3.5	4.2	7.1	19.0	1.0	1.0	1.0	6.6	6.9	35.4			0.5	0.5	0.5	0.5
MJP2	150.0	163.0	120.0	131.0	188.0	156.0	192.2	190.0	220.0	215.0	122.0	201.7	8.9	1.0			200	210	220	170
MJP3	39.0	42.0	49.0	41.0	43.0	31.0	42.1	36.0	12.0	42.0	45.0	56.5	49.2	147.8			40	41	42	41
MJP4	7.0	9.0	9.0	1.7	6.0	6.6	8.0	2.0	1.0	1.0	1.0	5.2	5.4	32.2			1.1	0.5	1.3	0.5
MJP5	14.0	16.0	23.0	3.0	5.6	5.4	6.1	2.0	1.0	1.0	2.5	4.1	3.4	1.0			1.5	2.2	2	1.7

annual period	comments
2021	MJP 2 remains elevated but possibly dropping. Monitor MJP 2 & 3.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present. Continue to monitor MJP 2.
2024 & 2025	MJP2, previously erratic, still at higher levels of potassium than other bores, however, levels may be decreasing. Others low, steady. Monitor MJP2 ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Sulphate (mg/l)

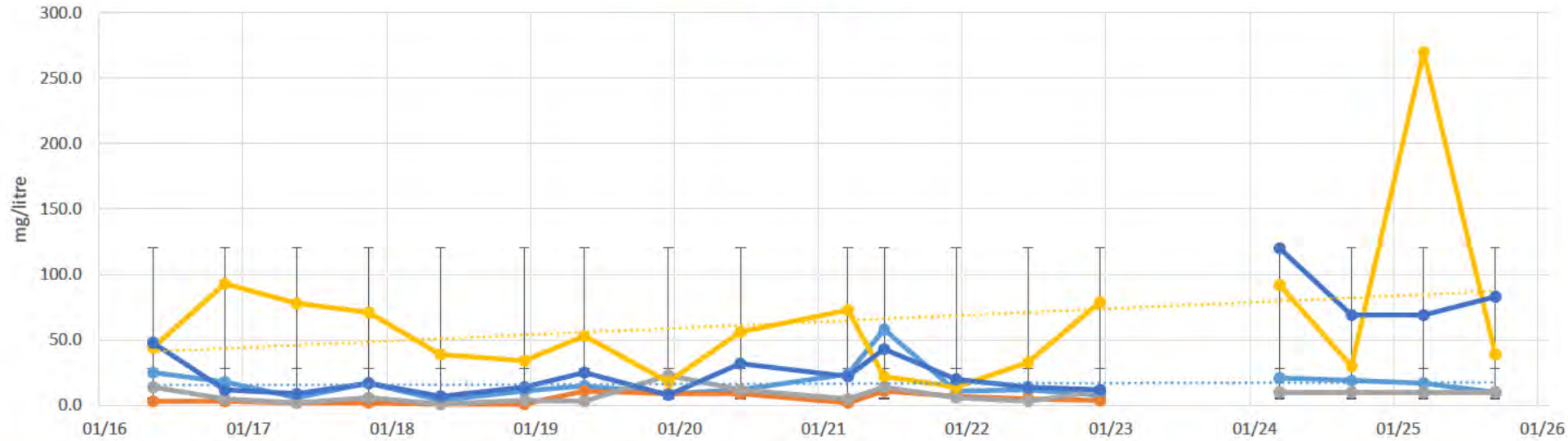


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	67	66	83	70	67	73	72	50	72	72	75	61	63	75			71	61	76	64
MJP2	210	230	270	150	160	180	180	120	160	220	170	200	160	150			120	140	170	110
MJP3	92	93	110	86	94	79	89	82	83	86	91	82	77	71			61	76	73	65
MJP4	100	120	130	110	82	51	87	17	73	67	9	26	55	26			16	5.4	38	3.9
MJP5	64	74	77	73	65	74	73	57	71	69	67	65	66	99			50	63	74	23

annual period	comments
2021	MJP 2 continues erratic and elevated but within its standard deviation; all other bores stable.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	MJP 2 somewhat elevated for sulphate, but generally reducing; all other bores stable, low. Monitor MJP2 ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Aluminium (mg/l)

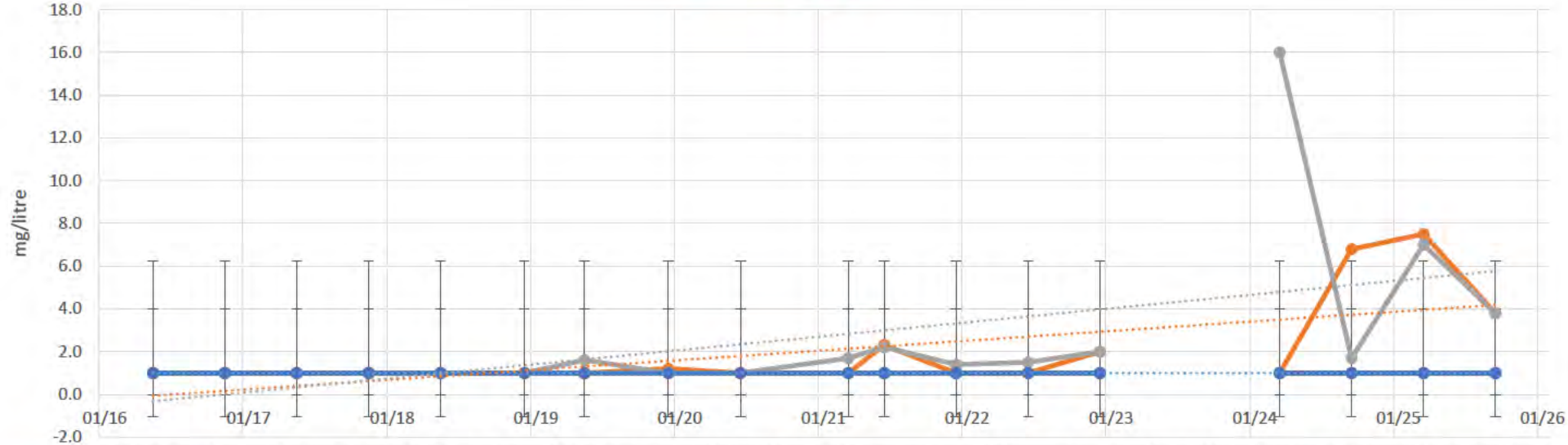


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	25.0	18.0	6.0	17.0	4.0	11.0	15.0	9.0	12.0	24.0	58.0	11.0	12.0	7.8			21.0	19	17	10
MJP2	3.0	3.0	2.0	2.0	1.0	1.0	11.0	9.0	9.0	2.0	11.0	7.0	5.0	3.9			10.0	10	10	10
MJP3	14.0	5.0	2.0	6.0	1.0	4.0	3.0	23.0	12.0	5.0	14.0	6.0	3.0	11.0			10.0	10	10	10
MJP4	44.0	93.0	78.0	71.0	39.0	34.0	53.0	18.0	56.0	73.0	22.0	14.0	33.0	79.0			92.0	30	270	39
MJP5	48.0	12.0	9.0	17.0	7.0	14.0	25.0	8.0	32.0	22.0	43.0	20.0	14.0	12.0			120.0	69	69	83

annual period	comments
2021	MJP 4 trending lower and towards levels close to all other bores.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	MJP 4 erratic but returning towards levels close to all other bores. MJP5 slightly erratic. Monitor MJP4 & MJP5 for aluminium ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Arsenic (mg/l)

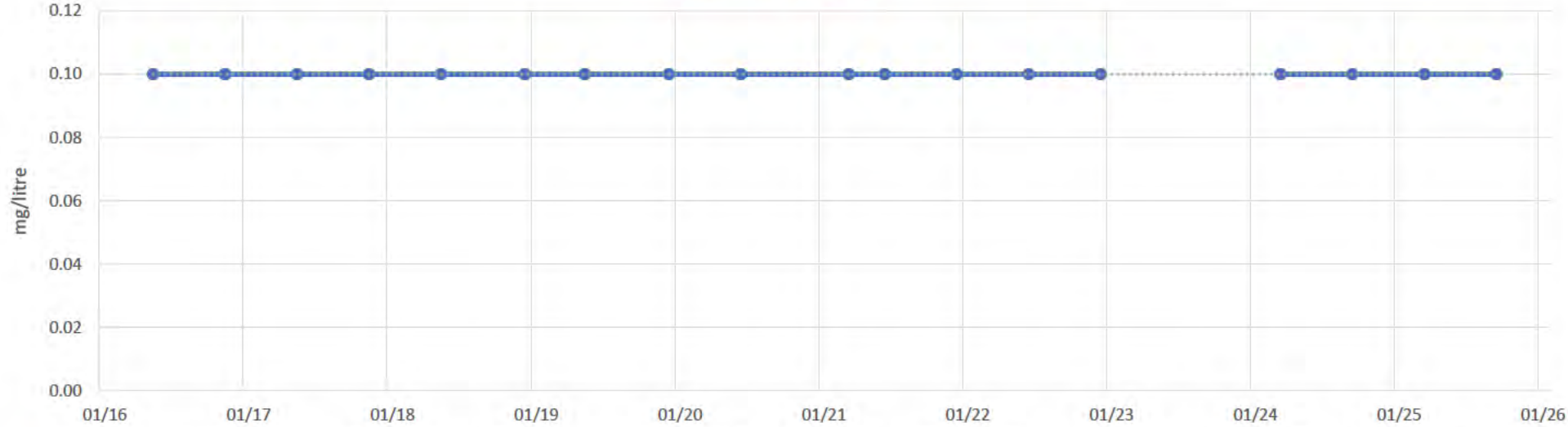


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1
MJP2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.0	1.0	2.3	1.0	1.0	2.0			1.0	6.8	7.5	3.8
MJP3	1.0	1.0	1.0	1.0	1.0	1.0	1.6	1.0	1.0	1.7	2.2	1.4	1.5	2.0			16.0	1.7	7.0	3.8
MJP4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1
MJP5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1

annual period	comments
2021	MJP 2 & 3 continue erratic and elevated but without any clear trend.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	MJP3 erratic but may be returning to levels of arsenic similar to other bores.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

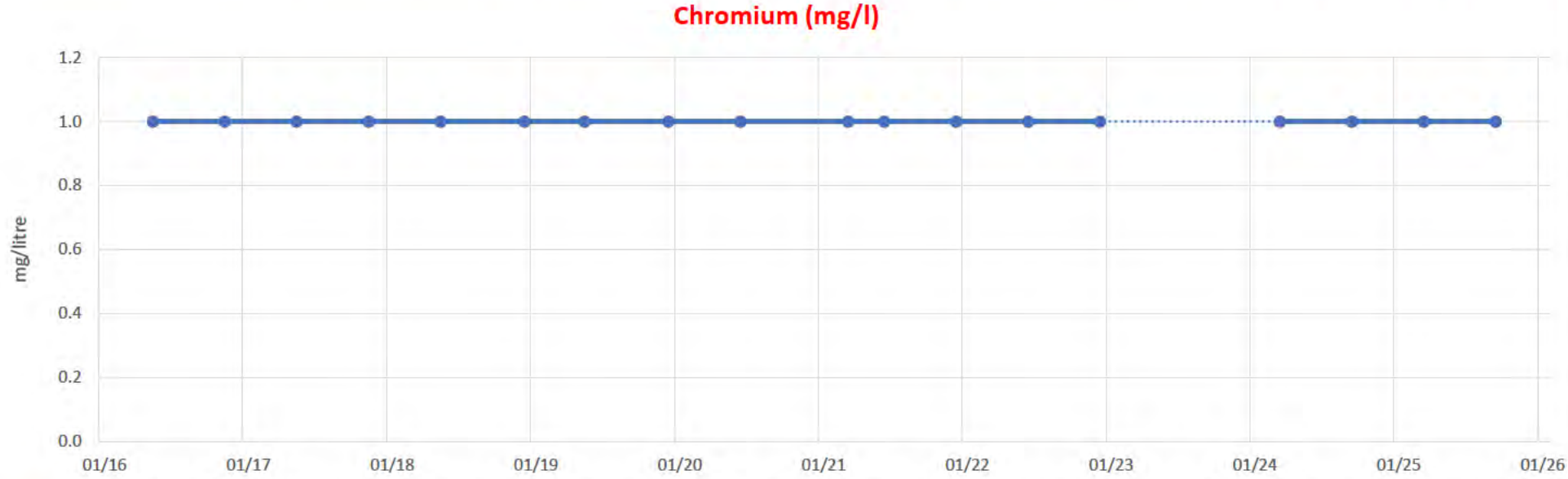
Cadmium (mg/l)



	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			0.10	0.10	0.10	0.10
MJP2	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			0.10	0.10	0.10	0.10
MJP3	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			0.10	0.10	0.10	0.10
MJP4	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			0.10	0.10	0.10	0.10
MJP5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			0.10	0.10	0.10	0.10

annual period	comments
2021	All bores very low and very stable over past five years.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	All bores very low and very stable over past ten years. Readings at or below LOR.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

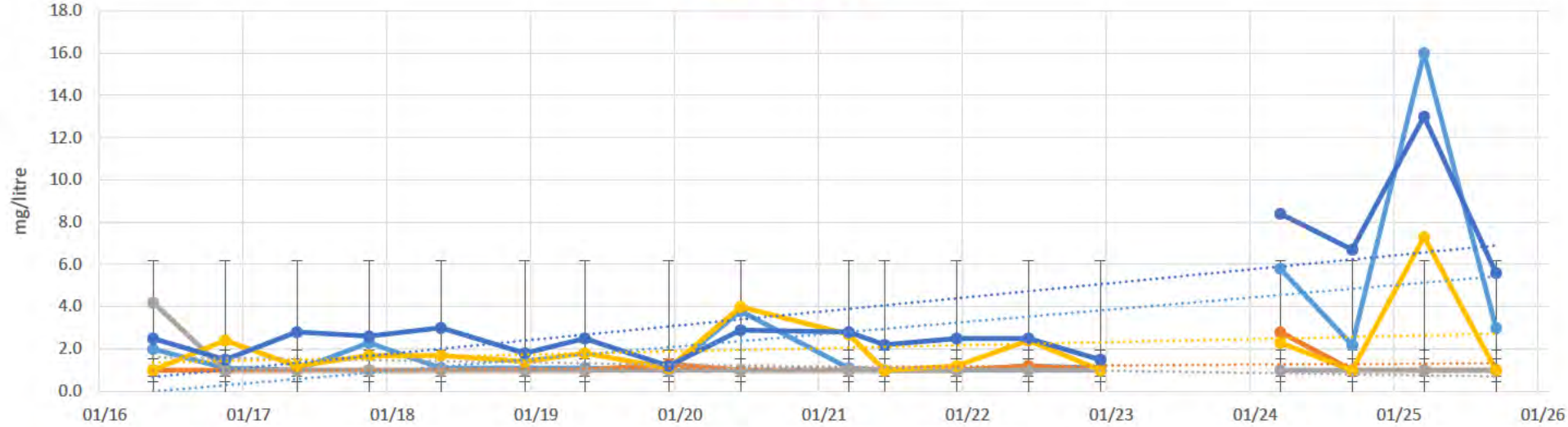


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0
MJP2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0
MJP3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0
MJP4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0
MJP5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	1.0

annual period	comments
2021	All bore readings tending towards consistently low readings including MJP 3.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	All bores very low and very stable over past ten years. Readings at or below LOR.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

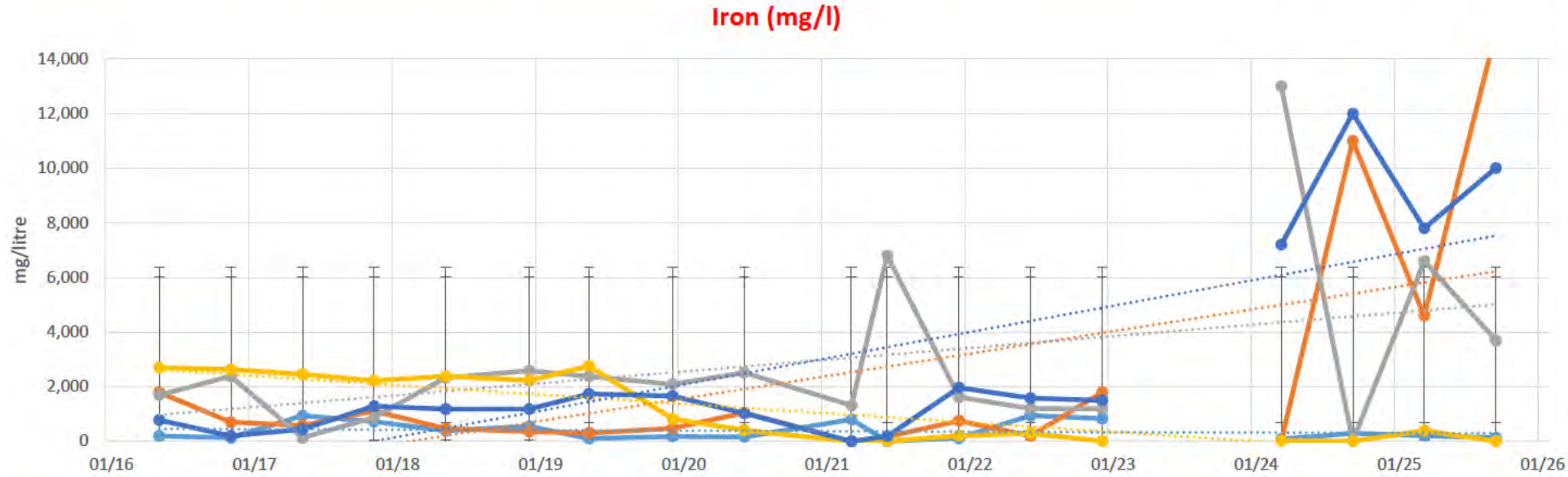
Copper (mg/l)



	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	2.0	1.1	1.0	2.3	1.1	1.1	1.1	1.0	3.8	1.1	1.0	1.0	1.2	1.1			5.8	2.2	16	3
MJP2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.0	1.0	1.0	1.0	1.2	1.0			2.8	1.0	1	1
MJP3	4.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1	1
MJP4	1.0	2.4	1.2	1.7	1.7	1.4	1.8	1.1	4.0	2.7	1.0	1.2	2.4	1.0			2.3	1.0	7.3	1
MJP5	2.5	1.5	2.8	2.6	3.0	1.8	2.5	1.2	2.9	2.8	2.2	2.5	2.5	1.5			8.4	6.7	13	5.6

annual period	comments
2021	MJP 5 erratic, elevated; requires monitoring.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	MJP1, 4 & 5 somewhat erratic in 2025; however, all returned towards previous norms (although still elevated). Monitor all three bores for copper ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025



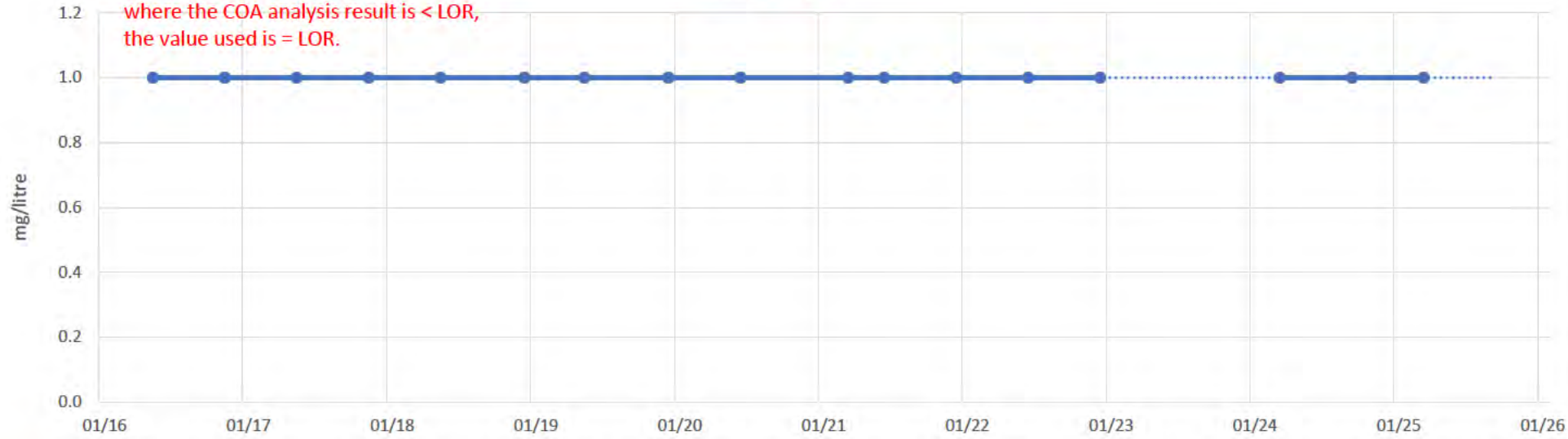
	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	200	130	940	720	392	550	101	179	160	800	5	117	940	840			86	290	210	130
MJP2	1800	700	580	1120	472	360	309	475	1050	1	174	761	200	1800			26	11000	4600	15000
MJP3	1700	2380	130	870	2329	2590	2372	2094	2520	1310	6800	1614	1204	1200			13000	10	6600	3700
MJP4	2700	2630	2450	2220	2384	2230	2756	828	407	1	12	210	300	15			21	13	390	15
MJP5	780	200	440	1290	1174	1174	1736	1662	1030	1	189	1971	1581	1500			7200	12000	7800	10000

annual period	comments
2021	Long-term trend to decreasing levels in all bores; MJP 5 requires monitoring.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	MJP2, 3 & 5 all highly erratic for iron during reporting period. Ongoing close attention to data over next reporting period required.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Lead (mg/l)

LOR = 1.0
where the COA analysis result is < LOR,
the value used is = LOR.

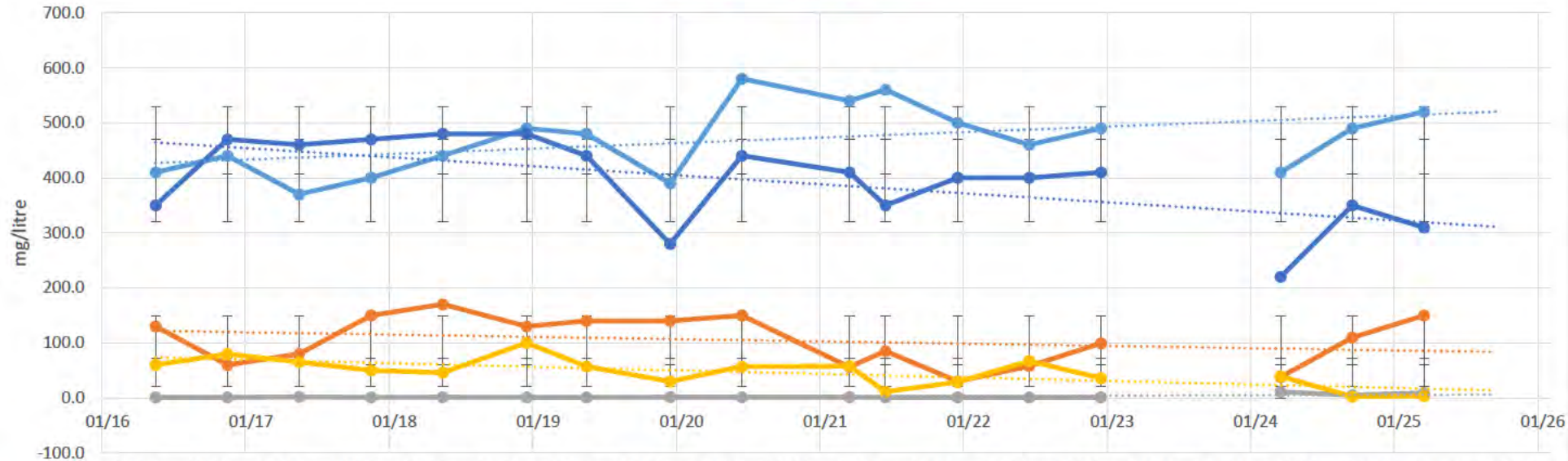


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	
MJP2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	
MJP3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	
MJP4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	
MJP5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1.0	

annual period	comments
2021	MJP 1, 2, 3 & 5 all continuing toward consistent and low levels; however, MJP 4 erratic and elevated, requires monitoring.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	All bores very low and very stable over past ten years. Readings at or below LOR.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Manganese (mg/l)

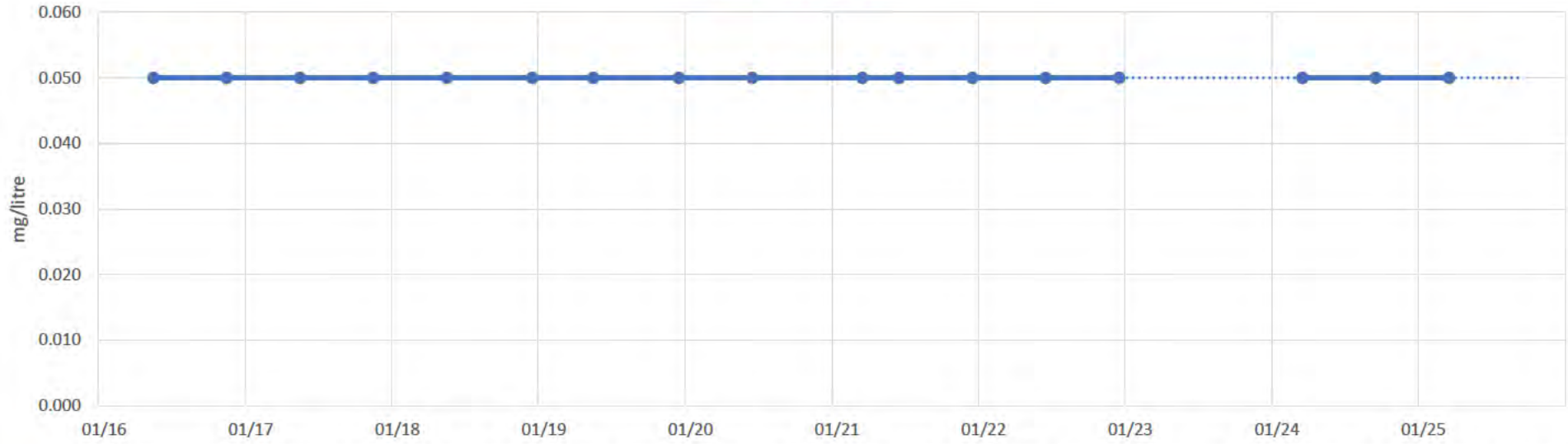


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	410.0	440.0	370.0	400.0	440.0	490.0	480.0	390.0	580.0	540.0	560.0	500.0	460.0	490.0			410.0	490	520	
MJP2	130.0	60.0	80.0	150.0	170.0	130.0	140.0	140.0	150.0	56.0	85.0	30.0	58.0	99.0			38.0	110	150	
MJP3	1.0	1.0	2.0	1.0	1.5	1.0	1.1	1.4	1.3	1.2	1.0	1.0	1.0	1.0			11.0	4.9	9	
MJP4	60.0	80.0	65.0	50.0	46.0	100.0	57.0	30.0	57.0	58.0	11.0	29.0	67.0	36.0			39.0	2.2	3.2	
MJP5	350.0	470.0	460.0	470.0	480.0	480.0	440.0	280.0	440.0	410.0	350.0	400.0	400.0	410.0			220.0	350	310	

annual period	comments
2021	MJP1 & MJP5 remain higher level; however, both may be returning to similar levels to the other bores. **Requires further monitoring for emerging trends.**
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	No clear trends emerging during reporting period. Continue to monitor MJP 1 especially, and also MJP5 for manganese levels, ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Mercury (mg/l)

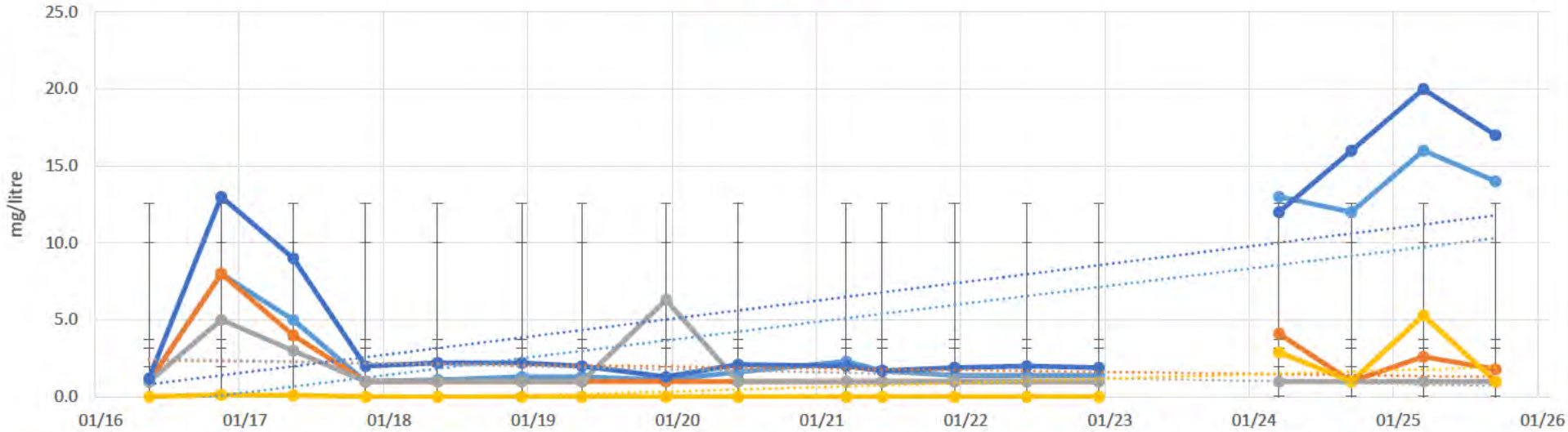


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050			0.050	0.050	0.050	
MJP2	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050			0.050	0.050	0.050	
MJP3	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050			0.050	0.050	0.050	
MJP4	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050			0.050	0.050	0.050	
MJP5	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050			0.050	0.050	0.050	

annual period	comments
2021	All bores showing consistently low levels, although MJP 5 slightly elevated and requires monitoring.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	All bores very low and very stable over past ten years. Readings at or below LOR.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Nickel (mg/l)

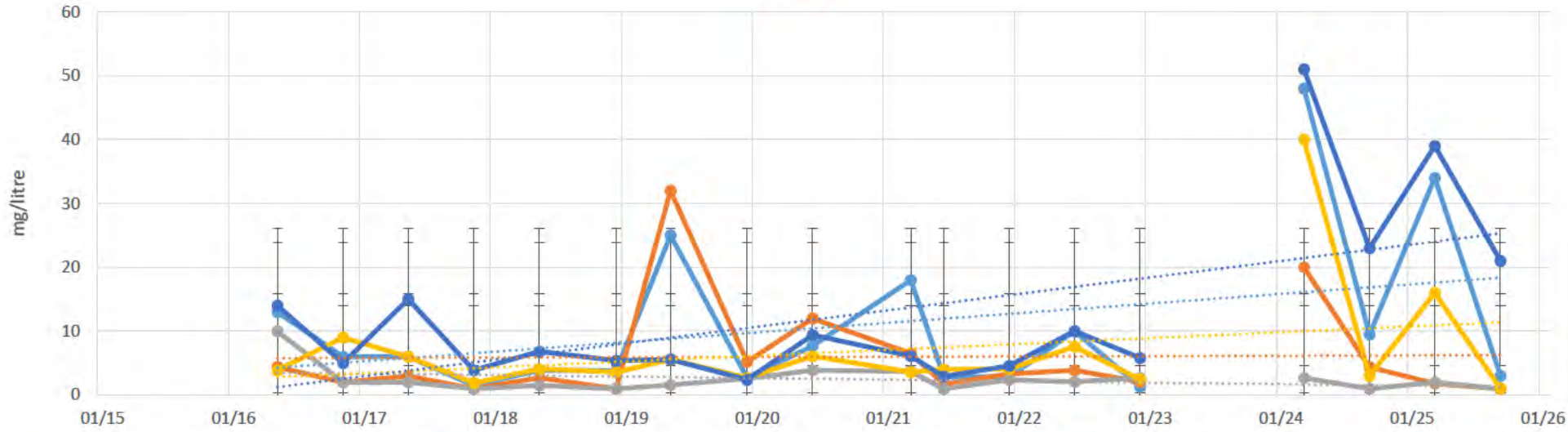


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	1.0	8.0	5.0	1.0	1.1	1.3	1.3	1.1	1.6	2.3	1.7	1.4	1.4	1.4			13.0	12	16	14
MJP2	1.0	8.0	4.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0			4.1	1.0	2.6	1.8
MJP3	1.0	5.0	3.0	1.0	1.0	1.0	1.0	6.3	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	1	1
MJP4	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			2.9	1.0	5.3	1
MJP5	1.2	13.0	9.0	2.0	2.2	2.2	2.0	1.3	2.1	2.0	1.7	1.9	2.0	1.9			12.0	16	20	17

annual period	comments
2021	All bores consistent and low over past year.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	No clear trends emerging during reporting period. Continue to monitor MJP 1 and MJP5 for nickel levels, ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Zinc (mg/l)



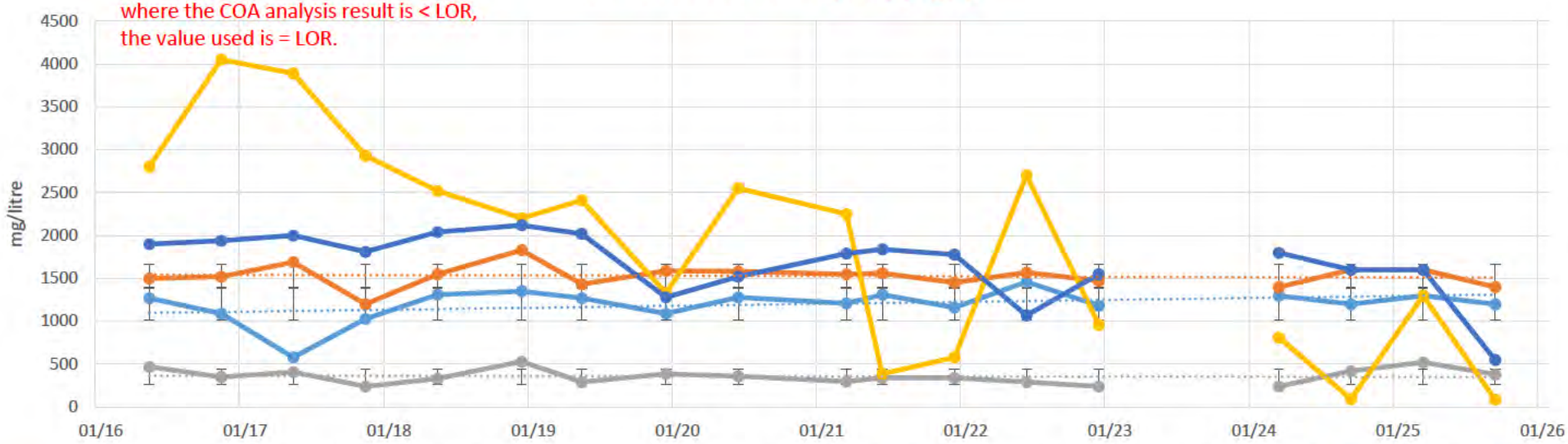
	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	13.0	6.0	6.0	1.5	3.9	3.8	25.0	2.7	7.7	18.0	2.9	2.8	10.0	1.3			48.0	9.5	34	3
MJP2	4.4	2.0	3.0	1.0	2.7	1.0	32.0	5.2	12.0	6.5	1.7	3.3	3.9	2.1			20.0	4.4	1.8	1
MJP3	10.0	2.0	2.0	1.0	1.5	1.0	1.6	2.6	3.9	3.7	1.0	2.4	2.1	2.7			2.7	1.0	2	1
MJP4	3.9	9.0	6.0	1.9	4.1	3.6	5.6	2.7	6.1	3.6	4.0	4.1	7.6	2.5			40.0	3.0	16	1
MJP5	14.0	5.0	15.0	3.9	6.8	5.4	5.6	2.4	9.4	6.1	2.9	4.6	10.0	5.8			51.0	23	39	21

annual period	comments
2021	All bores showing low levels and well within long-term standard deviations.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor all bores carefully during 2024/25 biennial period.
2024 & 2025	All bores except MJP3 erratic; MJP1 & 4 may be trending to increased zinc levels. Monitor all bores ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

LOR = 5.0
where the COA analysis result is < LOR,
the value used is = LOR.

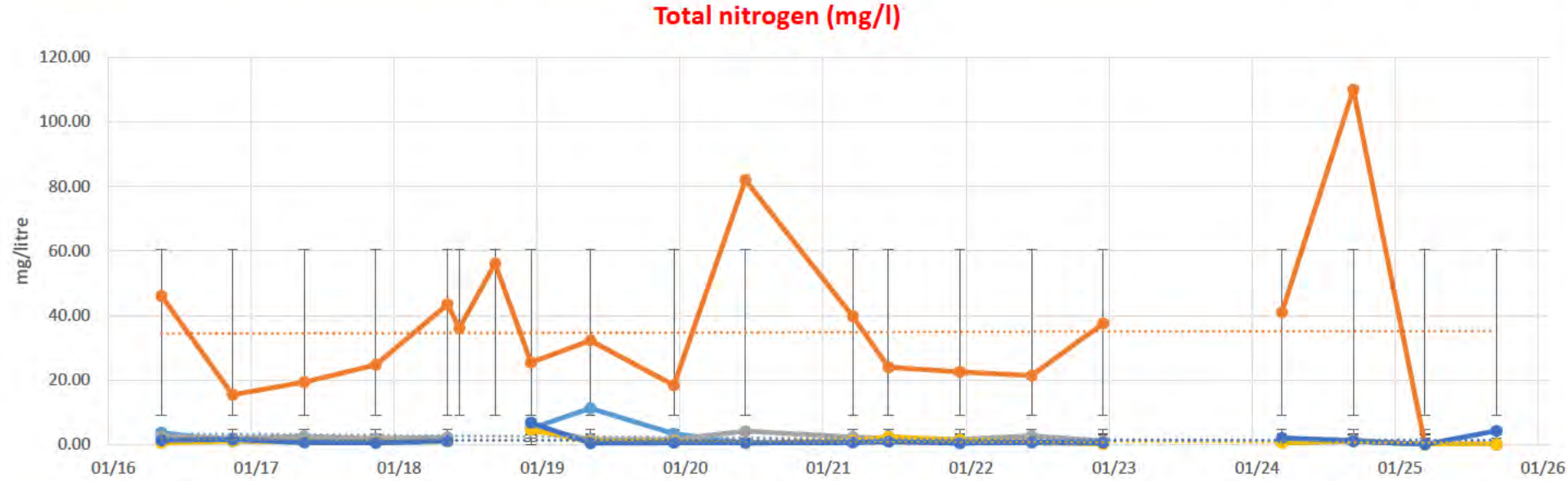
Total dissolved solids (TDS) (mg/l)



	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	1270	1090	580	1030	1310	1350	1270	1090	1280	1210	1310	1160	1460	1180			1300	1200	1300	1200
MJP2	1500	1520	1690	1200	1550	1830	1430	1590	1580	1550	1560	1450	1570	1470			1400	1600	1600	1400
MJP3	470	350	410	240	330	530	290	390	360	300	340	340	290	240			240	420	520	380
MJP4	2800	4050	3890	2930	2520	2200	2410	1330	2550	2250	390	580	2700	960			810	93	1300	86
MJP5	1900	1940	2000	1810	2040	2120	2020	1280	1520	1790	1840	1780	1070	1550			1800	1600	1600	550

annual period	comments
2021	All bores at low levels and well within decade's standard deviations.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores at low levels and well within decade's standard deviations.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

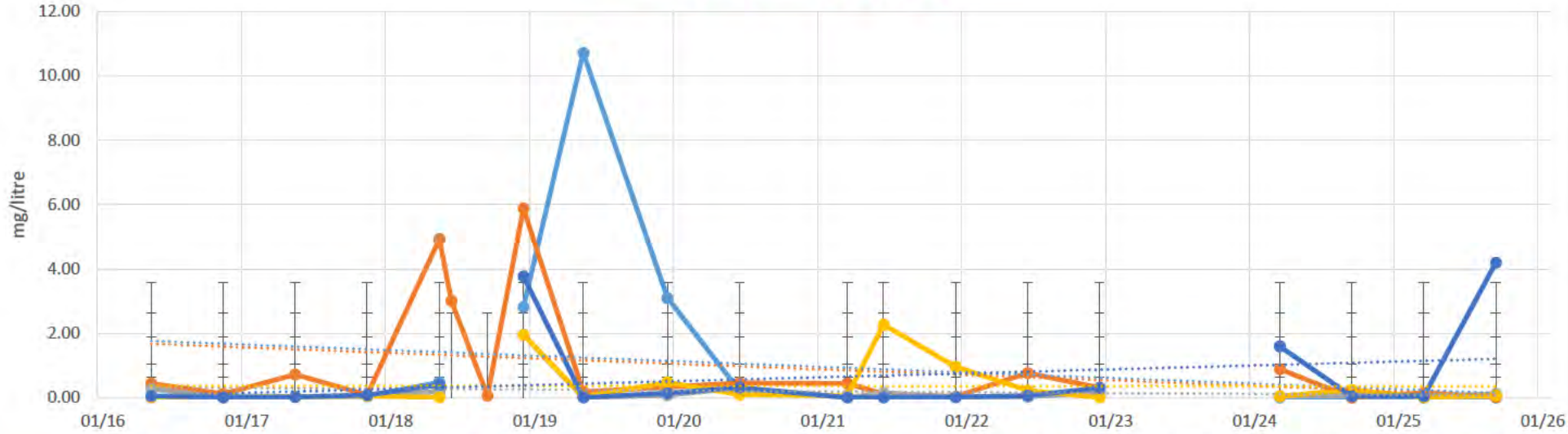


	05/16	11/16	05/17	11/17	05/18	06/18	09/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	3.70	1.00	1.55	0.45	0.96			4.99	11.23	3.39	0.38	0.75	2.52	0.45	0.58	0.37			0.5	1.0	0.0096	0.0053
MJP2	46.10	15.42	19.28	24.70	43.38	36.19	56.10	25.45	32.29	18.38	82.00	39.77	23.98	22.53	21.34	37.51			41	110	0.16	0.025
MJP3	2.60	1.90	2.56	1.86	2.26			5.30	1.50	1.54	4.12	2.27	1.92	1.57	2.66	1.09			1.8	1.4	0.05	0.12
MJP4	0.50	1.10	0.74	0.66	1.09			4.50	0.92	0.94	0.54	1.13	2.40	1.38	0.88	0.16			0.5	1.1	0.019	0.067
MJP5	1.30	1.50	0.63	0.48	1.16			6.79	0.41	0.57	0.57	0.65	0.87	0.43	0.75	0.55			2.1	1.1	0.05	4.2

annual period	comments
2021	MJP2 returning to lower end of its standard deviation; all other bores consistently low readings.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	MJP2 erratic but returning to lower end of its standard deviation; all other bores consistently low readings.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Nitrate (NO_3) nitrogen (mg/l)

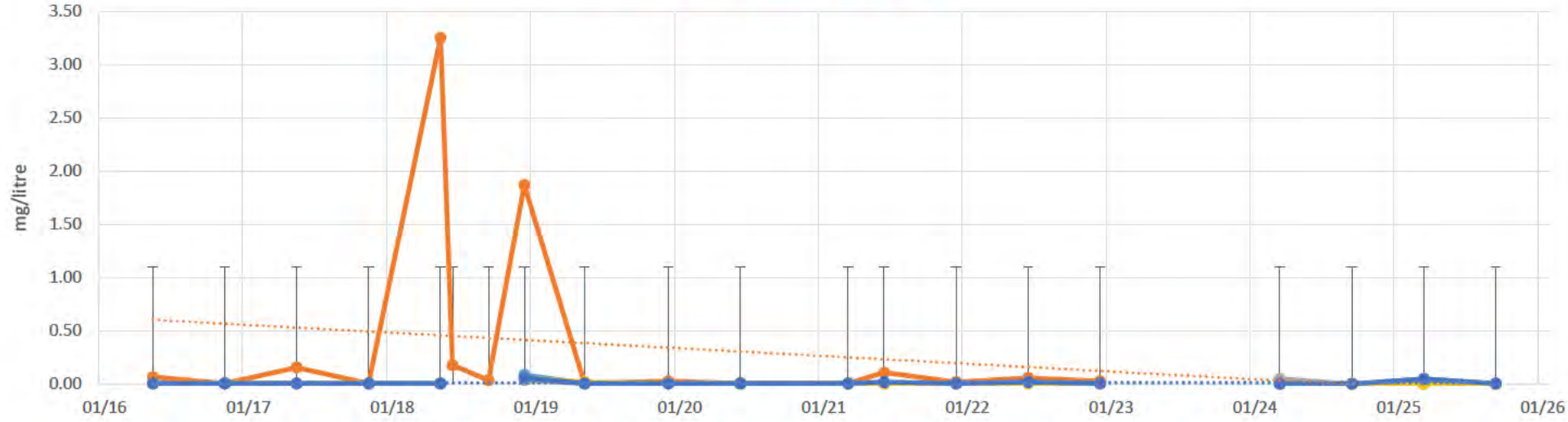


	05/16	11/16	05/17	11/17	05/18	06/18	09/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.03	0.05	0.04	0.05	0.48			2.82	10.71	3.10	0.22	0.02	0.01	0.01	0.04	0.15			0.005	0.015	0.0087	0.005
MJP2	0.45	0.12	0.72	0.09	4.93	3.01	0.07	5.88	0.19	0.33	0.46	0.45	0.11	0.04	0.77	0.31			0.89	0.005	0.15	0.023
MJP3	0.27	0.01	0.03	0.06	0.20			1.96	0.01	0.08	0.31	0.01	0.15	0.02	0.04	0.21			0.05	0.073	0.05	0.12
MJP4	0.01	0.01	0.03	0.06	0.01			1.95	0.02	0.48	0.10	0.07	2.27	0.97	0.23	0.01			0.042	0.25	0.016	0.066
MJP5	0.05	0.01	0.02	0.08	0.40			3.77	0.01	0.14	0.32	0.01	0.01	0.02	0.07	0.31			1.6	0.041	0.05	4.2

annual period	comments
2021	All bores at very low levels of NO_3. However, MJP 4 slightly erratic and elevated, requires monitoring. Ongoing slight increasing trend over all bores.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores at very low levels of NO_3. However, MJP 4 slightly erratic and elevated, requires monitoring. Trend towards level or decreasing for all other bores.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Nitrite (NO_2) nitrogen (mg/l)

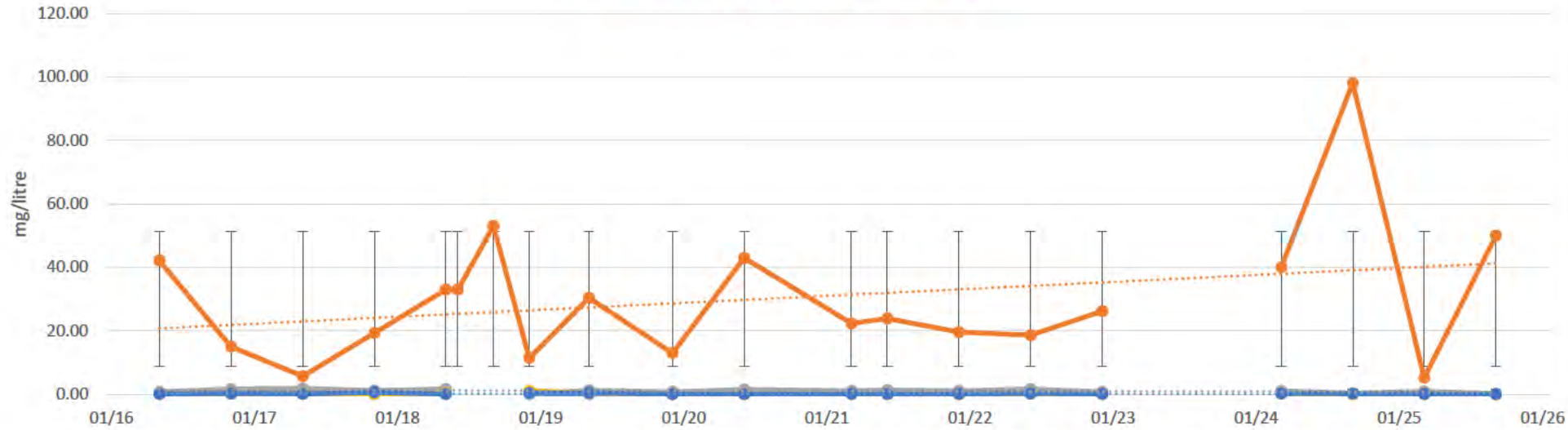


	05/16	11/16	05/17	11/17	05/18	06/18	09/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.01	0.01	0.01	0.01	0.01			0.09	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01			0.005	0.005	0.005	0.005
MJP2	0.07	0.01	0.16	0.01	3.25	0.18	0.04	1.87	0.01	0.03	0.01	0.01	0.11	0.02	0.06	0.03			0.021	0.005	0.011	0.005
MJP3	0.01	0.01	0.01	0.01	0.01			0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01			0.05	0.005	0.05	0.005
MJP4	0.01	0.01	0.01	0.01	0.01			0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01			0.005	0.005	0.005	0.005
MJP5	0.01	0.01	0.01	0.01	0.01			0.06	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01			0.005	0.005	0.05	0.0098

annual period	comments
2021	All bores at very low levels of NO_2.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores now at very low levels of NO_2. Trend towards level or decreasing for all bores.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Ammonium (NH_3) nitrogen (mg/l)

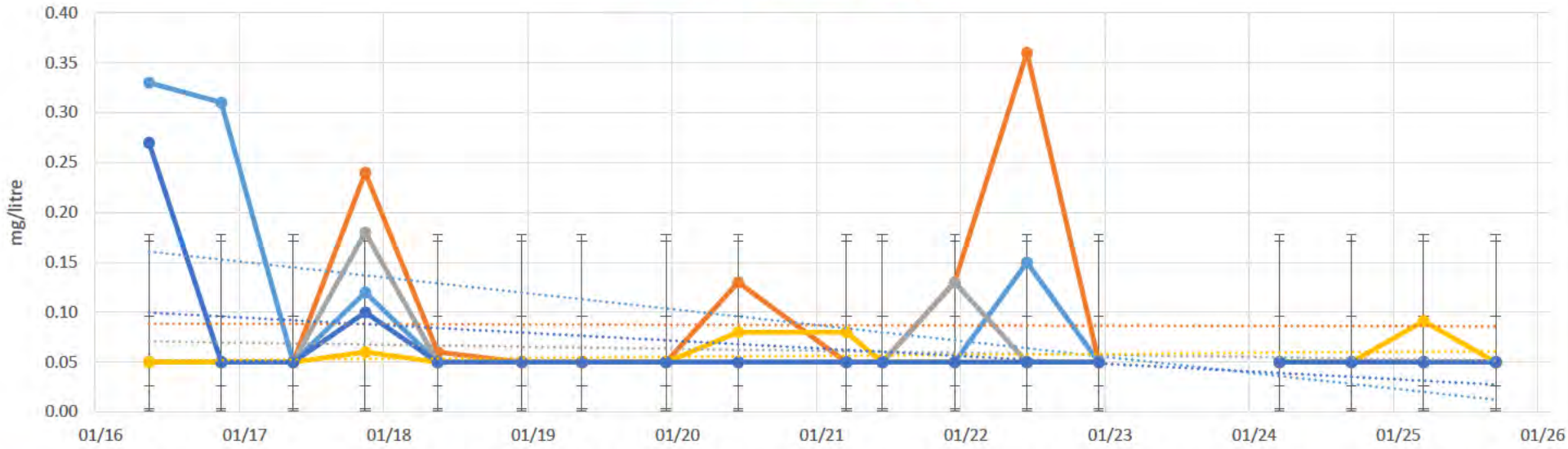


	05/16	11/16	05/17	11/17	05/18	06/18	09/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.02	0.10	1.02	0.02	0.02			0.03	0.02	0.02	0.02	0.08	0.42	0.03	0.13	0.02			0.22	0.022	0.032	0.031
MJP2	42.20	15.02	5.70	19.30	33.00	33.00	53.00	11.40	30.35	12.98	43.00	22.30	23.87	19.63	18.61	26.20			40.00	98	5.2	50
MJP3	0.71	1.66	1.85	1.21	1.65			0.12	1.29	0.79	1.52	1.14	1.35	1.11	1.69	0.75			1.10	0.36	1.0	0.2
MJP4	0.11	0.19	0.13	0.02	0.44			1.16	0.39	0.03	0.02	0.05	0.02	0.02	0.19	0.02			0.18	0.022	0.048	0.005
MJP5	0.13	0.31	0.12	0.63	0.14			0.43	0.40	0.03	0.02	0.10	0.02	0.09	0.26	0.12			0.27	0.17	0.14	0.036

annual period	comments
2021	MJP2 trending down towards lower readings also found at all other bores.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. Monitor MJP 2 in particular.
2024 & 2025	MJP2 erratic; all others low, stable. Monitor MJP2 for NH_3 ongoing.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Total phosphorous (mg/l)

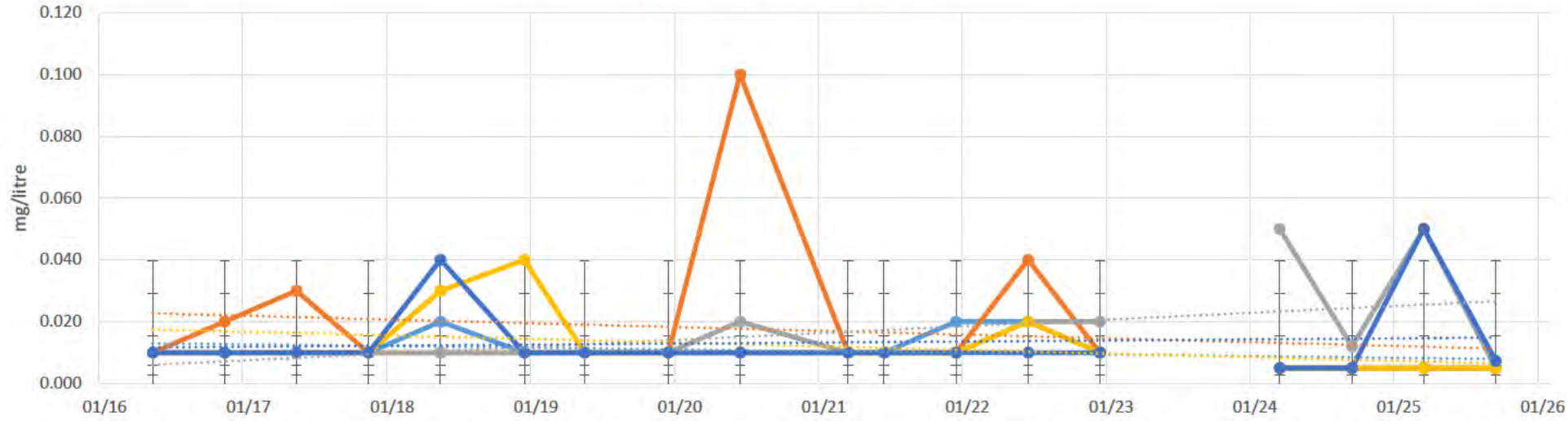


	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.33	0.31	0.05	0.12	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15	0.05			0.05	0.05	0.05	0.05
MJP2	0.05	0.05	0.05	0.24	0.06	0.05	0.05	0.05	0.13	0.05	0.05	0.13	0.36	0.05			0.05	0.05	0.05	0.05
MJP3	0.05	0.05	0.05	0.18	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.13	0.05	0.05			0.05	0.05	0.05	0.05
MJP4	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.08	0.08	0.05	0.05	0.05	0.05			0.05	0.05	0.091	0.05
MJP5	0.27	0.05	0.05	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05			0.05	0.05	0.05	0.05

annual period	comments
2021	Long-term low levels at all bores although not as low as two years ago (2019). Monitor all.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores returning towards low, stable levels of phosphorous.

Manjimup Recycling & Refuse Centre L7007/1999/11	**AMBIENT GROUNDWATER MONITORING PROGRAM**	for the decade Jan 2016 to Dec 2025

Phosphate PO_4 (mg/l)



	05/16	11/16	05/17	11/17	05/18	12/18	05/19	12/19	06/20	03/21	06/21	12/21	06/22	12/22	04/23	09/23	03/24	09/24	03/25	09/25
MJP1	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.020	0.010			0.005	0.005	0.005	0.005
MJP2	0.010	0.020	0.030	0.010	0.010	0.010	0.010	0.010	0.100	0.010	0.010	0.010	0.040	0.010			0.005	0.005	0.005	0.005
MJP3	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.020	0.020			0.050	0.012	0.05	0.005
MJP4	0.010	0.010	0.010	0.010	0.030	0.040	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010			0.005	0.005	0.005	0.005
MJP5	0.010	0.010	0.010	0.010	0.040	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010			0.005	0.005	0.05	0.0073

annual period	comments
2021	Long-term low levels at all bores continue, albeit MJP 1 may require monitoring.
2022 & 2023	New NATA-accredited analysis provider may suggest that previous readings not always accurate. However, no discernible concerns at present.
2024 & 2025	All bores returning towards low, stable levels of phosphate.

ATTACHMENT 2C

Annual monitoring schedule, Field test records, Chain of Custody forms, and Certificates of Analysis

MRRC groundwater monitoring program

FOR THE ANNUAL PERIOD 01/01/24 to 31/12/25

Manjimup Recycling & Refuse Centre
62 Ralston Road, Manjimup WA 6258

LICENCE # L7007/1997/11

March 2026

Shire of Manjimup
WASTE MANAGEMENT
Annual ambient groundwater quality monitoring schedule (per DER licence L7007)

note	PARAMETER	UNIT	Mar	Jun	Sep	Dec
in-field non NATA-accredited analysis permitted	standing water level	m(AHD) & mBGL	●	●	●	●
	dissolved oxygen	mg/L	●	●	●	●
	electrical conductivity	µS/cm	●	●	●	●
	oxidation / reduction potential	mV	●	●	●	●
	pH	--	●	●	●	●
NATA-accredited laboratory analysis required	biochemical oxygen demand	mg/L	●		●	
	chloride		●		●	
	fluoride		●		●	
	potassium		●		●	
	sulphate		●		●	
	aluminium		●		●	
	arsenic		●		●	
	cadmium		●		●	
	chromium		●		●	
	copper		●		●	
	iron		●		●	
	lead		●		●	
	manganese		●		●	
	mercury		●		●	
	nickel		●		●	
	zinc		●		●	
	total dissolved solids		●		●	
	total nitrogen		●		●	
	nitrate nitrogen		●		●	
	nitrite nitrogen		●		●	
	ammonia nitrogen		●		●	
	total phosphorus		●		●	
	phosphate		●		●	

Shire of Manjimup
WASTE MANAGEMENT

FIELD RECORD: Quarterly ambient groundwater quality monitoring
(per DER licence L7007)

[redacted]

		Date	Tues & Wed 12+13 [day] / 03 [date] / 2024
Standards	*AS / NZS 5667.1 & 5667.11*	**Meter**	*YSI ProPlus, Quatro cable, using flow cell*

BORE #	PARAMETER	UNIT	METER READING	
NCF1	depth of bore **Db**	mBGL	9.22	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	6.57	m below top of bore
	water temperature **Tw**	°C	16.5	°C
DATE	dissolved oxygen **DO**	% & mg/L	19.0 %	1.88 mg/L
12/03/2024	electrical conductivity **C**	µS/cm	476.3	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	200.6	mV
1:30 pm	**pH**	--	4.43	

BORE #	PARAMETER	UNIT	METER READING	
PMB1	depth of bore **Db**	mBGL	8.67	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	6.40	m below top of bore
	water temperature **Tw**	°C	15.8	°C
DATE	dissolved oxygen **DO**	% & mg/L	31.9 %	3.19 mg/L
12/03/2024	electrical conductivity **C**	µS/cm	370.2	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	256.6	mV
2:45 pm	**pH**	--	4.01	

BORE #	PARAMETER	UNIT	METER READING	
WLP2	depth of bore **Db**	mBGL	7.41	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	3.48	m below top of bore
	water temperature **Tw**	°C	16.2	°C
DATE	dissolved oxygen **DO**	% & mg/L	9.0 %	0.89 mg/L
12/03/2024	electrical conductivity **C**	µS/cm	262.7	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	246.4	mV
11:40 pm	**pH**	--	3.99	

BORE #	PARAMETER	UNIT	METER READING	
MJP 1	depth of bore **Db**	mBGL	11.14	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	9.43	m below top of bore
	water temperature **Tw**	°C	16.8	°C
DATE	dissolved oxygen **DO**	% & mg/L	12.3 %	1.18 mg/L
13/03/2024	electrical conductivity **C**	µS/cm	2443	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	204.0	mV
11:15 am	pH	--	4.54	

BORE #	PARAMETER	UNIT	METER READING	
MJP 2	depth of bore **Db**	mBGL	6.98	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	5.15	m below top of bore
	water temperature **Tw**	°C	18.4	°C
DATE	dissolved oxygen **DO**	% & mg/L	19.0 %	1.70 mg/L
13/03/2024	electrical conductivity **C**	µS/cm	3341	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	129.2	mV
11:57 am	pH	--	6.00	

BORE #	PARAMETER	UNIT	METER READING	
MJP 3	depth of bore **Db**	mBGL	7.76	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	4.61	m below top of bore
	water temperature **Tw**	°C	17.8	°C
DATE	dissolved oxygen **DO**	% & mg/L	4.5 %	0.43 mg/L
13/03/2024	electrical conductivity **C**	µS/cm	509.6	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	141.1	mV
12:12 pm	pH	--	5.25	

BORE #	PARAMETER	UNIT	METER READING	
MIP 4	depth of bore **Db**	mBGL	11.69	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	9.02	m below top of bore
	water temperature **Tw**	°C	17.5	°C
DATE	dissolved oxygen **DO**	% & mg/L	12.9 %	1.17 mg/L
13/03/2024	electrical conductivity **C**	µS/cm	1552	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	200.3	mV
10:45 am	**pH**	--	4.34	

BORE #	PARAMETER	UNIT	METER READING	
MIP 5	depth of bore **Db**	mBGL	9.70	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	5.66	m below top of bore
	water temperature **Tw**	°C	18.5	°C
DATE	dissolved oxygen **DO**	% & mg/L	8.3 %	0.77 mg/L
13/03/2024	electrical conductivity **C**	µS/cm	3062	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	196.6	mV
11:40 am	**pH**	--	4.52	

BORE #	PARAMETER	UNIT	METER READING	
	depth of bore **Db**	mBGL		m below top of bore
	standing water level **SWL**	m(AHD) & mBGL		m below top of bore
	water temperature **Tw**	°C		°C
DATE	dissolved oxygen **DO**	% & mg/L	%	mg/L
	electrical conductivity **C**	µS/cm		µS/cm
TIME	oxidation / reduction potential **ORP**	mV		mV
	pH	--		

CHAIN OF CUSTODY FORM - Client

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08 8967 1201 | darwin@envirolab.com.au

Company:	Shire of Manjimup
Contact Person:	[redacted]
Project Mgr:	
Sampler:	
Address:	
Phone:	
Email Results to:	
Email Invoice to:	

Client Project Name/Number/Site etc (ie report title): Manjimup Recycling and Refuse Centre

PO No. (if applicable): SOM PO 21378

Envirolab Quote No. : 24PE133

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

Sample information				Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Date Sampled	Type of Sample	Analysis as per Quote																	Provide as much information about the sample as you can
1	MJP1	13/03/2024	Groundwater	✓																	NOT filtered in the field; THREE sample bottles 1.1, 1.2 & 1.3
2	MJP2	13/03/2024	Groundwater	✓																	NOT filtered in the field; THREE sample bottles 2.1, 2.2 & 2.3
3	MJP3	13/03/2024	Groundwater	✓																	NOT filtered in the field; THREE sample bottles 3.1, 3.2 & 3.3
4	MJP4	13/03/2024	Groundwater	✓																	NOT filtered in the field; THREE sample bottles 4.1, 4.2 & 4.3
5	MJP5	13/03/2024	Groundwater	✓																	NOT filtered in the field; THREE sample bottles 5.1, 5.2 & 5.3

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company):	Shire of Manjimup	[redacted]
Print Name:	[redacted]	
Date & Time:		
Signature:		

Lab Use Only

Job number: PFC0924

Temperature: 15.5

Cooling: Ice / Ice pack / None

Security seal: Intact / Broken / None

TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PFC0924

Client Details

Client	Shire of Manjimup
Contact	Accounts Payable
Address	PO Box 1, MANJIMUP, WA, 6258

Sample Details

Your Reference	Manjimup Recycling and Refuse Centre
Number of Samples	5 Groundwater
Date Samples Received	14/03/2024
Date Instructions Received	14/03/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date Results Requested by	21/03/2024
Date of Issue	21/03/2024

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By

Laboratory Manager

[redacted]

Certificate of Analysis PFC0924

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PFC0924-01	MJP1	Groundwater	13/03/2024	14/03/2024
PFC0924-02	MJP2	Groundwater	13/03/2024	14/03/2024
PFC0924-03	MJP3	Groundwater	13/03/2024	14/03/2024
PFC0924-04	MJP4	Groundwater	13/03/2024	14/03/2024
PFC0924-05	MJP5	Groundwater	13/03/2024	14/03/2024

Acid Extractable Metals (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Phosphorus	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Certificate of Analysis PFC0924

Dissolved Low Level Metals (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Aluminium	µg/L	10	21	<10	<10	92	120
Arsenic	µg/L	1.0	<1.0	<1.0	16	<1.0	<1.0
Cadmium	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	µg/L	1.0	5.8	2.8	<1.0	2.3	8.4
Iron	µg/L	10	86	26	13000	21	7200
Mercury	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Manganese	µg/L	1.0	410	38	11	39	220
Nickel	µg/L	1.0	13	4.1	<1.0	2.9	12
Lead	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	µg/L	1.0	48	20	2.7	40	51

Inorganics - Physical Parameters (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Total Dissolved Solids	mg/L	5.0	1300	1400	240	810	1800

Inorganics - Ionic Balance and Indexes (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Chloride	mg/L	1.0	860	480	44	490	840
Sulfate	mg/L	1.0	71	120	61	16	50
Calcium	mg/L	0.50	2.8	76	10	8.6	12
Magnesium	mg/L	0.50	42	73	8.6	31	31
Potassium	mg/L	0.50	<0.50	200	40	1.1	1.5
Sodium	mg/L	0.50	410	220	29	200	310
Hardness as CaCO3	mg/L	3.0	180	490	61	150	160

Certificate of Analysis PFC0924

Inorganics - Miscellaneous and Common Anions (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Fluoride	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.12

Inorganics - Nutrients (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
Ammonia as N	mg/L	0.0050	0.22	40	1.1	0.18	0.27
Nitrate as N	mg/L	0.0050	<0.0050	0.89	<0.050 [2]	0.042	1.6
Nitrate as NO3 by calculation	mg/L	0.020	<0.020	4.0	<0.20 [2]	0.18	7.2
Nitrite as N	mg/L	0.0050	<0.0050	0.021	<0.050 [2]	<0.0050	<0.0050
Nitrite as NO2 by calculation	mg/L	0.020	<0.020	0.070	<0.20 [2]	<0.020	<0.020
Total Nitrogen	mg/L	0.10	<0.50	41	1.8	<0.50 [3]	2.1
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050	<0.050 [2]	<0.0050	<0.0050

Certificate of Analysis PFC0924

Inorganics - Common Wastewater Parameters (Groundwater)

Envirolab ID	Units	PQL	PFC0924-01	PFC0924-02	PFC0924-03	PFC0924-04	PFC0924-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			13/03/2024	13/03/2024	13/03/2024	13/03/2024	13/03/2024
BOD	mg/L	5.0	88 [6]	86 [6]	23 [6]	23 [6]	81 [6]

Result Comments

Identifier	Description
[2]	PQL(s) has/have been raised due to matrix interference.
[3]	PQL has been raised due to matrix requiring dilution
[6]	Sample frozen on receipt to elongate technical holding time.

Method Summary

Method ID	Methodology Summary
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-026	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Solids are reported from a 1:5 water extract unless otherwise specified.
INORG-055	Nitrate/Nitrite/NOx/TKN - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils/solids are analysed following a water extraction.
INORG-057	Ammonia - determined colourimetrically. Water samples are filtered on receipt prior to analysis. Soils and OHS media are analysed following a water extraction. Alternatively, Ammonia can be extracted from soil using 1M KCl.
INORG-060	Phosphate - determined colourimetrically using APHA latest edition 4500 P E. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-091	BOD and/or cBOD - Analysed in accordance with APHA latest edition 5210 D.
INORG-127	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Organic Carbon forms (inorganic, organic, total) determined using a TOC/NDIR analyser via combustion. Dissolved forms require filtering prior to determination.
METALS-020	Determination of various metals by ICP-OES.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PFC0924

Client Details

Client	Shire of Manjimup
Your Reference	Manjimup Recycling and Refuse Centre
Date Issued	21/03/2024

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	No	Duplicate Outliers Exist - See detailed list below
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PFC0924

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Phosphorus | Water	1-5	13/03/2024	18/03/2024	19/03/2024	Yes
Dissolved Metals (LL) | Water	1, 4-5	13/03/2024	18/03/2024	19/03/2024	Yes
	2-3	13/03/2024	18/03/2024	20/03/2024	Yes
Dissolved Metals (LL)-Hg | Water	1-5	13/03/2024	18/03/2024	18/03/2024	Yes
TDS | Water	1-5	13/03/2024	18/03/2024	18/03/2024	Yes
Chloride | Water	1-5	13/03/2024	15/03/2024	18/03/2024	Yes
Dissolved Cations | Water	1-5	13/03/2024	18/03/2024	19/03/2024	Yes
Sulfate | Water	1-5	13/03/2024	15/03/2024	18/03/2024	Yes
Fluoride | Water	1-5	13/03/2024	18/03/2024	18/03/2024	Yes
Nitrogen - Ammonia | Water	1-2, 4-5	13/03/2024	18/03/2024	18/03/2024	Yes
	3	13/03/2024	18/03/2024	19/03/2024	Yes
Nitrogen - Nitrate | Water	1-2, 4-5	13/03/2024	18/03/2024	18/03/2024	Yes
	3	13/03/2024	18/03/2024	19/03/2024	Yes
Nitrogen - Nitrite | Water	1-2, 4-5	13/03/2024	18/03/2024	18/03/2024	No
	3	13/03/2024	18/03/2024	19/03/2024	No
Nitrogen - Total N | Water	1-5	13/03/2024	20/03/2024	21/03/2024	Yes
Phosphate as P | Water	1-2, 4-5	13/03/2024	18/03/2024	18/03/2024	No
	3	13/03/2024	18/03/2024	19/03/2024	No
BOD | Water	1-5	13/03/2024	18/03/2024	21/03/2024	No

Outliers: Duplicates

METALS-020|Inorganics - Ionic Balance and Indexes (Water)| Batch BFC1879

Sample ID	Duplicate ID	Analyte	% Limits	RPD
PFC0924-01	DUP1	Calcium	20.00	47.9[5]

METALS-022|Dissolved Low Level Metals (Water)| Batch BFC1865

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BFC1865-DUP2#	DUP2	Zinc	20.00	79.8[4]

Outliers: Matrix Spike

INORG-055|Inorganics - Nutrients (Water)| Batch BFC1845

Sample ID	Analyte	% Limits	% Recovery
BFC1845-MS2#	Nitrite as N	70 - 130	##[1]

Data Quality Assessment Summary PFC0924

Outliers: QC Frequency

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BFC1913

Analysis	QC Type	Expected	Reported
BOD	Duplicate	2	0

Quality Control PFC0924

METALS-020|Acid Extractable Metals (Water) | Batch BFC1862

Analyte	Units	PQL	Blank	DUP1 BFC1862-DUP1# Samp | QC | RPD %	DUP2 BFC1862-DUP2# Samp | QC | RPD %	LCS %	Spike % BFC1862-MS1#
Phosphorus	mg/L	0.050	<0.050	<0.25 | <0.25 | [NA]	0.0658 | 0.0617 | 6.45	106	100

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BFC1865

Analyte	Units	PQL	Blank	DUP1 PFC0924-01 Samp | QC | RPD %	DUP2 BFC1865-DUP2# Samp | QC | RPD %	LCS %	Spike % PFC0924-02
Aluminium	µg/L	10	<10	21.3 | 21.8 | 2.21	257 | 242 | 6.25	109	102
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	109	126
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	109	102
Chromium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	109	102
Copper	µg/L	1.0	<1.0	5.79 | 5.83 | 0.740	<1.0 | <1.0 | [NA]	109	97.4
Iron	µg/L	10	<10	86.1 | 84.7 | 1.64	14400 | 14500 | 0.940	109	95.9
Lead	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	109	94.3
Manganese	µg/L	1.0	<1.0	408 | 405 | 0.517	64.9 | 66.3 | 2.20	109	97.7
Nickel	µg/L	1.0	<1.0	12.7 | 12.5 | 1.25	3.04 | 3.04 | 0.329	109	97.8
Zinc	µg/L	1.0	<1.0	48.0 | 47.0 | 2.19	11.5 | 4.96 | 79.8 [4]	109	94.5

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Dissolved Low Level Metals (Water) | Batch BFC1882

Analyte	Units	PQL	Blank	DUP1 BFC1882-DUP1# Samp | QC | RPD %	DUP2 PFC0924-01 Samp | QC | RPD %	LCS %	Spike % BFC1882-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	99.6	75.6

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BFC2026

Analyte	Units	PQL	Blank	DUP1 BFC2026-DUP1# Samp | QC | RPD %	DUP2 BFC2026-DUP2# Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	7340 | 7330 | 0.136	9740 | 9500 | 2.49	103

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-081|Inorganics - Ionic Balance and Indexes (Water) | Batch BFC1810

Analyte	Units	PQL	Blank	DUP1 BFC1810-DUP1# Samp | QC | RPD %	DUP2 BFC1810-DUP2# Samp | QC | RPD %	LCS %	Spike % BFC1810-MS1#
Chloride	mg/L	1.0	<1.0	293 | 292 | 0.647	12.4 | 12.5 | 0.271	102	98.6
Sulfate	mg/L	1.0	<1.0	82.7 | 82.4 | 0.298	2.73 | 2.96 | 7.81	102	112

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020|Inorganics - Ionic Balance and Indexes (Water) | Batch BFC1879

Analyte	Units	PQL	Blank	DUP1 PFC0924-01 Samp | QC | RPD %	DUP2 BFC1879-DUP2# Samp | QC | RPD %	LCS %	Spike % PFC0924-02
Calcium	mg/L	0.50	<0.50	2.85 | 4.64 | 47.9 [5]	146 | 145 | 0.916	94.6	94.9
Magnesium	mg/L	0.50	<0.50	42.5 | 42.9 | 0.982	29.0 | 29.3 | 0.916	97.1	109
Potassium	mg/L	0.50	<0.50	<0.50 | <0.50 | [NA]	89.1 | 89.0 | 0.0337	100	78.3
Sodium	mg/L	0.50	<0.50	406 | 410 | 0.882	226 | 225 | 0.527	99.8	72.1
Hardness as CaCO3	mg/L	3.0	<3.0	182 | 188 | 3.35	484 | 482 | 0.460	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PFC0924

INORG-026 | Inorganics - Miscellaneous and Common Anions (Water) | Batch BFC1910

Analyte	Units	PQL	Blank	DUP1 BFC1910-DUP1# Samp | QC | RPD %	DUP2 BFC1910-DUP2# Samp | QC | RPD %	LCS %	Spike % BFC1910-MS1#
Fluoride	mg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	104	107

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-057 | Inorganics - Nutrients (Water) | Batch BFC1845

Analyte	Units	PQL	Blank	DUP1 BFC1845-DUP1# Samp | QC | RPD %	DUP2 BFC1845-DUP2# Samp | QC | RPD %	LCS %	Spike % BFC1845-MS1#
Ammonia as N	mg/L	0.0050	<0.0050	0.418 | 0.412 | 1.57	0.179 | 0.191 | 6.14	90.9	90.0
Nitrate as N	mg/L	0.0050	<0.0050	<0.050 | <0.050 | [NA] [2]	0.469 | 0.470 | 0.0948	110	113
Nitrate as NO3 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Nitrite as N	mg/L	0.0050	<0.0050	<0.050 | <0.050 | [NA] [2]	<0.0050 | <0.0050 | [NA]	107	##[1]
Nitrite as NO2 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Phosphate as P	mg/L	0.0050	<0.0050	<0.050 | <0.050 | [NA] [2]	0.0299 | 0.0292 | 2.18	104	123

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-127 | Inorganics - Nutrients (Water) | Batch BFC2253

Analyte	Units	PQL	Blank	DUP1 BFC2253-DUP1# Samp | QC | RPD %	LCS %	Spike % PFC0924-01
Total Nitrogen	mg/L	0.10	<0.10	0.694 | 0.586 | 16.9	103	93.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BFC1913

Analyte	Units	PQL	Blank	LCS %
BOD	mg/L	5.0	<5.0	95.8

QC Comments

Identifier	Description
[1]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.
[2]	PQL(s) has/have been raised due to matrix interference.
[4]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.
[5]	The laboratory duplicate RPD acceptance criteria has been exceeded. Results are accepted due to the inhomogeneous nature of the sample.

Shire of Manjimup
WASTE MANAGEMENT

FIELD RECORD: Quarterly ambient groundwater quality monitoring
(per DER licence L7007)

[redacted]

		Date	Wed + Thurs 04+05 / 09 / 2024 [day] [date]
Standards	*AS / NZS 5667.1 & 5667.11*	**Meter**	*YSI ProPlus, Quatro cable, using flow cell*

BORE #	PARAMETER	UNIT	METER READING	
MIP 1	depth of bore **Db**	mBGL	11.14	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	9.01	m below top of bore
	water temperature **Tw**	°C	16.6	°C
DATE	dissolved oxygen **DO**	% & mg/L	6.0 %	0.60 mg/L
05/09	electrical conductivity **C**	µS/cm	1970	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-384.7	mV
0930	pH	--	4.94	

BORE #	PARAMETER	UNIT	METER READING	
MIP 2	depth of bore **Db**	mBGL	6.97	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	4.24	m below top of bore
	water temperature **Tw**	°C	16.4	°C
DATE	dissolved oxygen **DO**	% & mg/L	6.2 %	0.62 mg/L
05/09	electrical conductivity **C**	µS/cm	2849	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-413.0	mV
1040	pH	--	6.42	

BORE #	PARAMETER	UNIT	METER READING	
MIP 3	depth of bore **Db**	mBGL	7.76	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	3.38	m below top of bore
	water temperature **Tw**	°C	15.8	°C
DATE	dissolved oxygen **DO**	% & mg/L	64.9 %	6.49 mg/L
05/09	electrical conductivity **C**	µS/cm	544	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-424.8	mV
1100	pH	--	5.96	

BORE #	PARAMETER	UNIT	METER READING	
MIP 4	depth of bore **Db**	mBGL	11.71	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	8.05	m below top of bore
	water temperature **Tw**	°C	17.0	°C
DATE	dissolved oxygen **DO**	% & mg/L	35.2 %	3.52 mg/L
05/09	electrical conductivity **C**	µS/cm	123.1	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-176.2	mV
0900	**pH**	--	5.36	

BORE #	PARAMETER	UNIT	METER READING	
MIP 5	depth of bore **Db**	mBGL	9.69	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	4.67	m below top of bore
	water temperature **Tw**	°C	17.1	°C
DATE	dissolved oxygen **DO**	% & mg/L	9.1 %	0.91 mg/L
05/09	electrical conductivity **C**	µS/cm	2369	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-256.5	mV
1000	**pH**	--	4.93	

BORE #	PARAMETER	UNIT	METER READING	
	depth of bore **Db**	mBGL		m below top of bore
	standing water level **SWL**	m(AHD) & mBGL		m below top of bore
	water temperature **Tw**	°C		°C
DATE	dissolved oxygen **DO**	% & mg/L	%	mg/L
	electrical conductivity **C**	µS/cm		µS/cm
TIME	oxidation / reduction potential **ORP**	mV		mV
	pH	--		

BORE #	PARAMETER	UNIT	METER READING	
NCF1	depth of bore **Db**	mBGL	9.23	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	1.46	m below top of bore
	water temperature **Tw**	°C	14.9	°C
DATE	dissolved oxygen **DO**	% & mg/L	10.5 %	1.05 mg/L
04/09	electrical conductivity **C**	µS/cm	305.1	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-374.3	mV
1215	**pH**	--	4.49	

BORE #	PARAMETER	UNIT	METER READING	
PMB1	depth of bore **Db**	mBGL	8.67	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	2.93	m below top of bore
	water temperature **Tw**	°C	14.6	°C
DATE	dissolved oxygen **DO**	% & mg/L	15.3 %	1.53 mg/L
04/09	electrical conductivity **C**	µS/cm	171.7	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-350.9	mV
1300	**pH**	--	4.43	

BORE #	PARAMETER	UNIT	METER READING	
WLP 2	depth of bore **Db**	mBGL	7.41	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	2.06	m below top of bore
	water temperature **Tw**	°C	15.7	°C
DATE	dissolved oxygen **DO**	% & mg/L	42.8 %	4.28 mg/L
04/09	electrical conductivity **C**	µS/cm	222.3	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-80.0	mV
0930	**pH**	--	4.70	

CHAIN OF CUSTODY FORM - Client

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Company:	Shire of Manjimup
Contact Person:	[redacted]
Project Mgr:	
Sampler:	
Address:	Shire Depot , 16 Wetherell St, MANJIMUP WA 6258
Phone:	[redacted]
Email Results to:	[redacted]
Email Invoice to:	

Client Project Name/Number/Site etc (ie report title): Manjimup Recycling and Refuse Centre

PO No. (if applicable): SOM PO 23303

Envirolab Quote No.: 24PE133v1

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Date Sampled	Type of Sample	Analysis as per Quote	Comments
1	MJP1	5/09/2024	Groundwater	✓	NOT filtered in the field; THREE sample bottles 1.1, 1.2 & 1.3
2	MJP2	5/09/2024	Groundwater	✓	NOT filtered in the field; THREE sample bottles 2.1, 2.2 & 2.3
3	MJP3	5/09/2024	Groundwater	✓	NOT filtered in the field; THREE sample bottles 3.1, 3.2 & 3.3
4	MJP4	5/09/2024	Groundwater	✓	NOT filtered in the field; THREE sample bottles 4.1, 4.2 & 4.3
5	MJP5	5/09/2024	Groundwater	✓	NOT filtered in the field; THREE sample bottles 5.1, 5.2 & 5.3

Sample information | Tests Required | Comments

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company):	Shire of Manjimup [redacted]
Print Name:	
Date & Time:	
Signature:	

Lab Use Only

Job number: PFI0523 | Cooling: Ice / (Ice pack) / None

Temperature: 8.5 | Security seal: (Intact) / Broken / None

TAT Req - SAME day / 1 / 2 / 3 / 4 / (STD)

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PFI0523

Client Details

Client	Shire of Manjimup
Contact	Mark Sewell
Address	PO Box 1, MANJIMUP, WA, 6258

Sample Details

Your Reference	Manjimup Recycling and Refuse Centre
Number of Samples	5 Groundwater
Date Samples Received	06/09/2024
Date Instructions Received	06/09/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Results Requested by	18/09/2024
Date of Issue	18/09/2024

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By

Laboratory Manager

[redacted]

Certificate of Analysis PFI0523

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PFI0523-01	MJP1	Groundwater	05/09/2024	06/09/2024
PFI0523-02	MJP2	Groundwater	05/09/2024	06/09/2024
PFI0523-03	MJP3	Groundwater	05/09/2024	06/09/2024
PFI0523-04	MJP4	Groundwater	05/09/2024	06/09/2024
PFI0523-05	MJP5	Groundwater	05/09/2024	06/09/2024

Acid Extractable Metals (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Phosphorus	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Dissolved Low Level Metals (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Aluminium	µg/L	10	19	<10	<10	30	69
Arsenic	µg/L	1.0	<1.0	6.8	1.7	<1.0	<1.0
Cadmium	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	µg/L	1.0	2.2	<1.0	<1.0	<1.0	6.7
Iron	µg/L	10	290	11000	<10	13	12000
Mercury	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Manganese	µg/L	1.0	490	110	4.9	2.2	350
Nickel	µg/L	1.0	12	1.0	<1.0	<1.0	16
Lead	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	µg/L	1.0	9.5	4.4	<1.0	3.0	23

Certificate of Analysis PFI0523

Inorganics - Physical Parameters (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Total Dissolved Solids	mg/L	5.0	1200	1600 [1]	420	93	1600

Inorganics - Ionic Balance and Indexes (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Chloride	mg/L	1.0	680	440	150	28	870
Sulfate	mg/L	1.0	61	140	76	5.4	63
Calcium	mg/L	0.50	2.6	52	25	1.2	20
Magnesium	mg/L	0.50	40	95	22	3.1	45
Potassium	mg/L	0.50	<0.50	210	41	<0.50	2.2
Sodium	mg/L	0.50	380	250	79	18	470
Hardness (calc) equivalent CaCO3	mg/L	3.0	170	520	150	16	230

Certificate of Analysis PFI0523

Inorganics - Miscellaneous and Common Anions (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Fluoride	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.11

Certificate of Analysis PFI0523

Inorganics - Nutrients (Groundwater)

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
Ammonia as N	mg/L	0.0050	0.022	98	0.36	0.022	0.17
Nitrate as N	mg/L	0.0050	0.015	<0.0050	0.073	0.25	0.041
Nitrate as NO3 by calculation	mg/L	0.020	0.068	<0.020	0.32	1.1	0.18
Nitrite as N	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite as NO2 by calculation	mg/L	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Nitrogen	mg/L	0.10	1.0	110	1.4	1.1	1.1
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050

Certificate of Analysis PFI0523

Inorganics - Common Wastewater Parameters (Groundwater) - Analysed By Envirolab Services Sydney

Envirolab ID	Units	PQL	PFI0523-01	PFI0523-02	PFI0523-03	PFI0523-04	PFI0523-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024
BOD	mg/L	5.0	<5.0	5.3	<5.0	<5.0	5.1

Result Comments

Identifier	Description
[1]	Some EC to TDS ratios are outside normal expected values. Results were confirmed.

Method Summary

Method ID	Methodology Summary
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-026	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Solids are reported from a 1:5 water extract unless otherwise specified.
INORG-055	Nitrate/Nitrite/NOx/TKN - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils/solids are analysed following a water extraction.
INORG-057	Ammonia - determined colourimetrically. Water samples are filtered on receipt prior to analysis. Soils and OHS media are analysed following a water extraction. Alternatively, Ammonia can be extracted from soil using 1M KCl.
INORG-060	Phosphate - determined colourimetrically using APHA latest edition 4500 P E. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-091	BOD and/or cBOD - Analysed in accordance with APHA latest edition 5210 D.
INORG-127	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Organic Carbon forms (inorganic, organic, total) determined using a TOC/NDIR analyser via combustion. Dissolved forms require filtering prior to determination.
METALS-020	Determination of various metals by ICP-OES.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS.Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.Salt forms and/or anion/cation forms (e.g. FeO, PbO, ZnO, BO3) are determined stoichiometrically from the base metal concentration.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PFI0523

Client Details

Client	Shire of Manjimup
Your Reference	Manjimup Recycling and Refuse Centre
Date Issued	18/09/2024

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	No	Duplicate Outliers Exist - See detailed list below
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PFI0523

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Phosphorus | Water	1-5	05/09/2024	11/09/2024	12/09/2024	Yes
Dissolved Metals (LL) | Water	1-5	05/09/2024	12/09/2024	12/09/2024	Yes
Dissolved Metals (LL)-Hg | Water	1-5	05/09/2024	12/09/2024	13/09/2024	Yes
TDS | Water	1-5	05/09/2024	11/09/2024	11/09/2024	Yes
Chloride | Water	2-4	05/09/2024	10/09/2024	11/09/2024	Yes
	1, 5	05/09/2024	10/09/2024	12/09/2024	Yes
Dissolved Cations | Water	1-5	05/09/2024	12/09/2024	12/09/2024	Yes
Sulfate | Water	2-4	05/09/2024	10/09/2024	11/09/2024	Yes
	1, 5	05/09/2024	10/09/2024	12/09/2024	Yes
Fluoride | Water	1-5	05/09/2024	12/09/2024	12/09/2024	Yes
Nitrogen - Ammonia | Water	1-5	05/09/2024	11/09/2024	11/09/2024	Yes
Nitrogen - Nitrate | Water	1-5	05/09/2024	11/09/2024	11/09/2024	Yes
Nitrogen - Nitrite | Water	1-5	05/09/2024	11/09/2024	11/09/2024	No
Nitrogen - Total N | Water	1, 3-5	05/09/2024	12/09/2024	09/12/2024	Yes
	2	05/09/2024	12/09/2024	13/09/2024	Yes
Phosphate as P | Water	1-5	05/09/2024	11/09/2024	11/09/2024	No
BOD | Water	1-5	05/09/2024	13/09/2024	18/09/2024	Yes

Outliers: Duplicates

METALS-022|Dissolved Low Level Metals (Water)| Batch BFI2159

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BFI2159-DUP1#	DUP1	Zinc	20.00	54.8[4]

Data Quality Assessment Summary PFI0523

Outliers: Matrix Spike

INORG-055|Inorganics - Nutrients (Water)| Batch BFI1844

Sample ID	Analyte	% Limits	% Recovery
PFI0523-02	Nitrite as N	70 - 130	##[3]

INORG-057|Inorganics - Nutrients (Water)| Batch BFI1844

Sample ID	Analyte	% Limits	% Recovery
PFI0523-02	Ammonia as N	70 - 130	##[2]

METALS-020|Inorganics - Ionic Balance and Indexes (Water)| Batch BFI2161

Sample ID	Analyte	% Limits	% Recovery
BFI2161-MS1#	Sodium	70 - 130	##[2]

Outliers: QC Frequency

INORG-091|Inorganics - Common Wastewater Parameters (Water)| Batch BFI2506

Analysis	QC Type	Expected	Reported
BOD	Duplicate	1	0

Quality Control PFI0523

METALS-020|Acid Extractable Metals (Water) | Batch BFI1890

Analyte	Units	PQL	Blank	DUP1 BFI1890-DUP1# Samp | QC | RPD %	DUP2 PFI0523-02 Samp | QC | RPD %	LCS %	Spike % BFI1890-MS1#
Phosphorus	mg/L	0.050	<0.050	6.59 | 6.75 | 2.37	<0.050 | <0.050 | [NA]	100	94.3

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BFI2159

Analyte	Units	PQL	Blank	DUP1 BFI2159-DUP1# Samp | QC | RPD %	DUP2 BFI2159-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI2159-MS1#
Aluminium	µg/L	10	<10	45.8 | 46.8 | [NA]	<10 | <10 | [NA]	109	93.7
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	104	103
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	108	105
Chromium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	8.26 | 8.32 | 0.688	106	98.6
Copper	µg/L	1.0	<1.0	4.14 | 4.12 | [NA]	<1.0 | <1.0 | [NA]	98.7	92.5
Iron	µg/L	10	<10	79.7 | 80.4 | 0.906	<10 | <10 | [NA]	102	85.6
Lead	µg/L	1.0	<1.0	1.99 | 1.96 | [NA]	<1.0 | <1.0 | [NA]	105	92.0
Manganese	µg/L	1.0	<1.0	70.0 | 71.2 | 1.77	<1.0 | <1.0 | [NA]	109	92.9
Nickel	µg/L	1.0	<1.0	8.93 | 8.94 | 0.0560	<1.0 | <1.0 | [NA]	98.8	91.2
Zinc	µg/L	1.0	<1.0	56.7 | 32.3 | 54.8 [4]	<1.0 | <1.0 | [NA]	107	94.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Dissolved Low Level Metals (Water) | Batch BFI2204

Analyte	Units	PQL	Blank	DUP1 BFI2204-DUP1# Samp | QC | RPD %	DUP2 BFI2204-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI2204-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	106	88.8

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BFI1900

Analyte	Units	PQL	Blank	DUP1 PFI0523-01 Samp | QC | RPD %	DUP2 BFI1900-DUP2# Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	1240 | 1290 | 3.64	538 | 538 | 0.00	89.4

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-081|Inorganics - Ionic Balance and Indexes (Water) | Batch BFI1797

Analyte	Units	PQL	Blank	DUP1 BFI1797-DUP1# Samp | QC | RPD %	DUP2 BFI1797-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI1797-MS1#
Chloride	mg/L	1.0	<1.0	245 | 245 | 0.263	68.6 | 68.7 | 0.0367	98.5	103
Sulfate	mg/L	1.0	<1.0	7.51 | 7.46 | 0.729	42.3 | 42.4 | 0.186	98.4	103

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020|Inorganics - Ionic Balance and Indexes (Water) | Batch BFI2161

Analyte	Units	PQL	Blank	DUP1 BFI2161-DUP1# Samp | QC | RPD %	DUP2 BFI2161-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI2161-MS1#
Calcium	mg/L	0.50	<0.50	13.9 | 14.4 | 3.62	31.9 | 31.4 | 1.40	99.6	93.1
Magnesium	mg/L	0.50	<0.50	37.9 | 39.0 | 2.93	20.5 | 19.1 | 7.02	100	86.0
Potassium	mg/L	0.50	<0.50	15.4 | 15.6 | 0.832	5.91 | 5.90 | 0.127	99.9	98.7
Sodium	mg/L	0.50	<0.50	460 | 476 | 3.41	35.7 | 33.7 | 5.79	94.6	##[2]
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	191 | 197 | 3.06	164 | 157 | 4.25	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PFI0523

INORG-026 | Inorganics - Miscellaneous and Common Anions (Water) | Batch BFI2179

Analyte	Units	PQL	Blank	DUP1 BFI2179-DUP1# Samp | QC | RPD %	DUP2 BFI2179-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI2179-MS1#
Fluoride	mg/L	0.10	<0.10	0.228 | 0.237 | [NA]	0.154 | 0.161 | [NA]	93.7	76.7

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-057 | Inorganics - Nutrients (Water) | Batch BFI1844

Analyte	Units	PQL	Blank	DUP1 PFI0523-01 Samp | QC | RPD %	DUP2 BFI1844-DUP2# Samp | QC | RPD %	LCS %	Spike % PFI0523-02
Ammonia as N	mg/L	0.0050	<0.0050	0.0220 | 0.0230 | [NA]	0.0159 | 0.0150 | [NA]	101	##[2]
Nitrate as N	mg/L	0.0050	<0.0050	0.0153 | 0.0142 | [NA]	40.8 | 40.5 | 0.711	111	99.6
Nitrate as NO3 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Nitrite as N	mg/L	0.0050	<0.0050	<0.0050 | <0.0050 | [NA]	0.192 | 0.193 | 0.278	107	##[3]
Nitrite as NO2 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050 | <0.0050 | [NA]	<0.0050 | <0.0050 | [NA]	113	112

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-127 | Inorganics - Nutrients (Water) | Batch BFI2212

Analyte	Units	PQL	Blank	DUP1 BFI2212-DUP1# Samp | QC | RPD %	DUP2 BFI2212-DUP2# Samp | QC | RPD %	LCS %	Spike % BFI2212-MS1#
Total Nitrogen	mg/L	0.10	<0.10	54.1 | 51.6 | 4.70	4.75 | 4.56 | 3.93	110	95.9

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BFI2506

Analyte	Units	PQL	Blank	LCS %
BOD	mg/L	5.0	<5.0	83.0

Batch QC Comments: [5]

QC Comments

Identifier	Description
[2]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.
[3]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.
[4]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.
[5]	Unable to perform all QC according to our internal guidelines due to the limited amount of sample(s) available for testing.

Shire of Manjimup
WASTE MANAGEMENT

FIELD RECORD: Quarterly ambient groundwater quality monitoring
(per DER licence L7007)

[redacted]		**Date**	Wednesday [day] 12 / 03 [date] / 2025
Standards	*AS / NZS 5667.1 & 5667.11*	**Meter**	*YSI ProPlus, Quatro cable, using flow cell*

BORE #	PARAMETER	UNIT	METER READING
MJP 1	depth of bore **Db**	mBGL	11.14 m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	9.70 m below top of bore
	water temperature **Tw**	°C	°C
DATE	dissolved oxygen **DO**	% & mg/L	% mg/L
12/03/25	electrical conductivity **C**	µS/cm	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	mV
0945	**pH**	--	

pump fail, no field tests (managed to collect samples)

BORE #	PARAMETER	UNIT	METER READING
MJP 2	depth of bore **Db**	mBGL	6.98 m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	5.17 m below top of bore
	water temperature **Tw**	°C	18.6 °C
DATE	dissolved oxygen **DO**	% & mg/L	5.4 % no read mg/L
12/03/25	electrical conductivity **C**	µS/cm	3020 µS/cm
TIME	oxidation / reduction potential **ORP**	mV	68.3 mV
1110	**pH**	--	6.45

BORE #	PARAMETER	UNIT	METER READING
MJP 3	depth of bore **Db**	mBGL	7.76 m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	4.62 m below top of bore
	water temperature **Tw**	°C	18.0 °C
DATE	dissolved oxygen **DO**	% & mg/L	0.1 % no read mg/L
12/03/25	electrical conductivity **C**	µS/cm	428.6 µS/cm
TIME	oxidation / reduction potential **ORP**	mV	95.3 mV
1130	**pH**	--	5.78

BORE #	PARAMETER	UNIT	METER READING
MJP 4	depth of bore **Db**	mBGL	11.69 m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	9.13 m below top of bore
	water temperature **Tw**	°C	°C
DATE	dissolved oxygen **DO**	% & mg/L	% mg/L
12/03/25	electrical conductivity **C**	µS/cm	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	mV
0915	**pH**	--	

pump fail
no field tests
(managed to collect samples)

BORE #	PARAMETER	UNIT	METER READING
MJP 5	depth of bore **Db**	mBGL	9.70 m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	5.71 m below top of bore
	water temperature **Tw**	°C	18.8 °C
DATE	dissolved oxygen **DO**	% & mg/L	11.1 % no read mg/L
12/03/25	electrical conductivity **C**	µS/cm	2666 µS/cm
TIME	oxidation / reduction potential **ORP**	mV	100.1 mV
1015	**pH**	--	4.88

BORE #	PARAMETER	UNIT	METER READING
	depth of bore **Db**	mBGL	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	m below top of bore
	water temperature **Tw**	°C	°C
DATE	dissolved oxygen **DO**	% & mg/L	% mg/L
	electrical conductivity **C**	µS/cm	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	mV
	pH	--	

NOTE: was unable to go to NCF, PMB or WLP while the YSI meter was available due to other work requirements beyond my control. Result: no field tests data available

CHAIN OF CUSTODY FORM - Client

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08 8967 1201 | darwin@envirolab.com.au

Company:	Shire of Manjimup
Contact Person:	[redacted]
Project Mgr:	
Sampler:	
Address:	
Phone:	
Email Results to:	
Email Invoice to:	

Client Project Name/Number/Site etc (ie report title): Manjimup Waste Transfer Stations

PO No. (if applicable): SOM PO 25456

Envirolab Quote No. : 24PE133v1

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

Sample information				Tests Required																Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Date Sampled	Type of Sample	Analysis as per Quote																Provide as much information about the sample as you can
1	MJP1	12/03/2025	Groundwater	✓																NOT filtered in the field; FOUR sample bottles 1.1, 1.2, 1.3 & 1.4
2	MJP2	12/03/2025	Groundwater	✓																NOT filtered in the field; FOUR sample bottles 2.1, 2.2, 2.3 & 2.4
3	MJP3	12/03/2025	Groundwater	✓																NOT filtered in the field; FOUR sample bottles 3.1, 3.2, 3.3 & 3.4
4	MJP4	12/03/2025	Groundwater	✓																NOT filtered in the field; FOUR sample bottles 4.1, 4.2, 4.3 & 4.4
5	MJP5	12/03/2025	Groundwater	✓																NOT filtered in the field; FOUR sample bottles 5.1, 5.2, 5.3 & 5.4

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company):	Shire of Manjimup	[redacted]
Print Name:	[redacted]	
Date & Time:		
Signature:		

Lab Use Only

Job number: PG-C08566	Cooling: Ice / Ice pack / None
Temperature: 21	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505
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www.mpl.com.au

Certificate of Analysis PGC0866

Client Details

Client	Shire of Manjimup
Contact	Mark Sewell
Address	PO Box 1, MANJIMUP, WA, 6258

Sample Details

Your Reference	Manjimup Waste Transfer Stations
Number of Samples	5 Groundwater
Date Samples Received	13/03/2025
Date Instructions Received	13/03/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Results Requested by	31/03/2025
Date of Issue	26/03/2025

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By

[redacted]

Laboratory Manager

Certificate of Analysis PGC0866

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PGC0866-01	MJP1	Groundwater	12/03/2025	13/03/2025
PGC0866-02	MJP2	Groundwater	12/03/2025	13/03/2025
PGC0866-03	MJP3	Groundwater	12/03/2025	13/03/2025
PGC0866-04	MJP4	Groundwater	12/03/2025	13/03/2025
PGC0866-05	MJP5	Groundwater	12/03/2025	13/03/2025

Acid Extractable Metals (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Phosphorus	mg/L	0.050	<0.050	<0.050	<0.050	0.091	<0.050

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Dissolved Low Level Metals (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Aluminium	µg/L	10	17	<10	<10	270	69
Arsenic	µg/L	1.0	<1.0	7.5	7.0	<1.0	<1.0
Cadmium	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	µg/L	1.0	16	<1.0	<1.0	7.3	13
Iron	µg/L	10	210	4600	6600	390	7800
Mercury	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Manganese	µg/L	1.0	500	67	11	40	360
Nickel	µg/L	1.0	16	2.6	<1.0	5.3	20
Lead	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	µg/L	1.0	34	1.8	2.0	16	39

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Inorganics - Physical Parameters (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Total Dissolved Solids	mg/L	5.0	1300	1600	520	1300	1600

Inorganics - Ionic Balance and Indexes (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Chloride	mg/L	1.0	740	430	55	820	960
Sulfate	mg/L	1.0	76	170	73	38	74
Calcium	mg/L	0.50	2.8	79	9.7	11	20
Magnesium	mg/L	0.50	44	67	9.6	54	45
Potassium	mg/L	0.50	<0.50	220	42	1.3	2.0
Sodium	mg/L	0.50	380	240	29	370	440
Hardness (calc) equivalent CaCO3	mg/L	3.0	190	470	64	250	230

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Inorganics - Miscellaneous and Common Anions (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Fluoride	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.13

Inorganics - Nutrients (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
Ammonia as N	mg/L	0.0050	0.032	5.2	1.0	0.048	0.14
Nitrate as N	mg/L	0.0050	0.0087	0.15	<0.050 [2]	0.016	<0.050 [2]
Nitrate as NO3 by calculation	mg/L	0.020	0.038	0.64	<0.20 [2]	0.073	<0.20 [2]
Nitrite as N	mg/L	0.0050	<0.0050	0.011	<0.050 [2]	<0.0050	<0.050 [2]
Nitrite as NO2 by calculation	mg/L	0.020	<0.020	0.035	<0.20 [2]	<0.020	<0.20 [2]
NOx as N	mg/L	0.0050	0.0096	0.16	<0.050 [2]	0.019	<0.050 [2]
TKN as N by calculation	mg/L	0.10	2.3	44	2.0	0.92	0.81
Organic Nitrogen by calc.	mg/L	0.10	2.2	39	0.92	0.87	0.67
Total Nitrogen	mg/L	0.10	2.3	45	2.0	0.94	0.82
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050	<0.050 [2]	<0.0050	<0.050 [2]

Certificate of Analysis PGC0866

Inorganics - Common Wastewater Parameters (Groundwater)

Envirolab ID	Units	PQL	PGC0866-01	PGC0866-02	PGC0866-03	PGC0866-04	PGC0866-05
Your Reference			MJP1	MJP2	MJP3	MJP4	MJP5
Date Sampled			12/03/2025	12/03/2025	12/03/2025	12/03/2025	12/03/2025
BOD	mg/L	5.0	14	21	16	10	19

Result Comments

Identifier	Description
[2]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.

Method Summary

Method ID	Methodology Summary
Calc	Calculation
Calc - TKN	TKN determined by calculation (Total Nitrogen NOx).
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-026	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Solids are reported from a 1:5 water extract unless otherwise specified.
INORG 055	Nitrate/Nitrite/NOx/TKN - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils/solids are analysed following a water extraction.
INORG-057	Ammonia - determined colourimetrically. Water samples are filtered on receipt prior to analysis. Soils and OHS media are analysed following a water extraction. Alternatively, Ammonia can be extracted from soil using 1M KCl.
INORG-060	Phosphate - determined colourimetrically using APHA latest edition 4500 P E. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-091	BOD and/or cBOD - Analysed in accordance with APHA latest edition 5210 D.
INORG-127	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Organic Carbon forms (inorganic, organic, total) determined using a TOC/NDIR analyser via combustion. Dissolved forms require filtering prior to determination.
METALS-020	Determination of various metals by ICP-OES. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PGC0866

Client Details

Client	Shire of Manjimup
Your Reference	Manjimup Waste Transfer Stations
Date Issued	26/03/2025

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PGC0866

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Phosphorus | Water	1-5	12/03/2025	19/03/2025	19/03/2025	Yes
Dissolved Metals (LL) | Water	1-5	12/03/2025	18/03/2025	19/03/2025	Yes
Dissolved Metals (LL)-Hg | Water	1-5	12/03/2025	18/03/2025	18/03/2025	Yes
TDS | Water	1-5	12/03/2025	18/03/2025	18/03/2025	Yes
Chloride | Water	1-5	12/03/2025	18/03/2025	19/03/2025	Yes
Dissolved Cations | Water	1-5	12/03/2025	18/03/2025	19/03/2025	Yes
Sulfate | Water	1-5	12/03/2025	18/03/2025	19/03/2025	Yes
Fluoride | Water	1-5	12/03/2025	17/03/2025	17/03/2025	Yes
Nitrogen - Ammonia | Water	1-5	12/03/2025	18/03/2025	18/03/2025	Yes
Nitrogen - Nitrate | Water	1-5	12/03/2025	18/03/2025	18/03/2025	Yes
Nitrogen - Nitrite | Water	1-5	12/03/2025	18/03/2025	18/03/2025	No
Nitrogen - NOx | Water	1-5	12/03/2025	18/03/2025	18/03/2025	No
Nitrogen - Total N | Water	1-5	12/03/2025	19/03/2025	20/03/2025	Yes
Phosphate as P | Water	1-2, 4-5	12/03/2025	18/03/2025	18/03/2025	No
	3	12/03/2025	18/03/2025	19/03/2025	No
TKN as N calc | Water	1-5	12/03/2025	14/03/2025	20/03/2025	Yes
BOD | Water	1-5	12/03/2025	18/03/2025	24/03/2025	Yes

Outliers: Matrix Spike

INORG-055|Inorganics - Nutrients (Water)| Batch BGC2800

Sample ID	Analyte	% Limits	% Recovery
BGC2800-MS1#	Nitrate as N	70 130	##[2]

METALS-020|Inorganics - Ionic Balance and Indexes (Water)| Batch BGC2684

Sample ID	Analyte	% Limits	% Recovery
PGC0866-01	Sodium	70 - 130	##[1]

METALS-022|Dissolved Low Level Metals (Water)| Batch BGC2681

Sample ID	Analyte	% Limits	% Recovery
PGC0866-01	Manganese	70 - 130	63.8[1]

Data Quality Assessment Summary PGC0866

Outliers: QC Frequency

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BGC2878

Analysis	QC Type	Expected	Reported
BOD	Duplicate	2	0

Quality Control PGC0866

METALS-020|Acid Extractable Metals (Water) | Batch BGC3027

Analyte	Units	PQL	Blank	DUP1 BGC3027-DUP1# Samp | QC | RPD %	DUP2 PGC0866-01 Samp | QC | RPD %	LCS %	Spike % BGC3027-MS1#
Phosphorus	mg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	109	98.0

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BGC2681

Analyte	Units	PQL	Blank	DUP1 BGC2681-DUP1# Samp | QC | RPD %	DUP2 PGC0866-05 Samp | QC | RPD %	LCS %	Spike % PGC0866-01
Aluminium	µg/L	10	<10	<10 | <10 | [NA]	69.1 | 67.6 | 2.18	102	102
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	111	109
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	114	109
Chromium	µg/L	1.0	<1.0	1.24 | 1.22 | [NA]	<1.0 | <1.0 | [NA]	113	111
Copper	µg/L	1.0	<1.0	2.43 | 2.42 | [NA]	13.2 | 13.2 | 0.417	112	106
Iron	µg/L	10	<10	39.2 | 40.4 | [NA]	7750 | 7620 | 1.70	113	89.5
Lead	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	106	101
Manganese	µg/L	1.0	<1.0	5.02 | 5.04 | 0.537	359 | 356 | 0.934	110	63.8[1]
Nickel	µg/L	1.0	<1.0	8.29 | 8.04 | 3.00	19.6 | 19.2 | 1.99	112	106
Zinc	µg/L	1.0	<1.0	24.1 | 23.9 | 0.807	39.1 | 43.1 | 9.85	115	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Dissolved Low Level Metals (Water) | Batch BGC2757

Analyte	Units	PQL	Blank	DUP1 BGC2757-DUP1# Samp | QC | RPD %	DUP2 BGC2757-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC2757-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	105	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BGC2664

Analyte	Units	PQL	Blank	DUP1 BGC2664-DUP1# Samp | QC | RPD %	DUP2 PGC0866-01 Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	134 | 161 | 18.3	1320 | 1330 | 0.377	112

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020|Inorganics - Ionic Balance and Indexes (Water) | Batch BGC2684

Analyte	Units	PQL	Blank	DUP1 BGC2684-DUP1# Samp | QC | RPD %	DUP2 PGC0866-05 Samp | QC | RPD %	LCS %	Spike % PGC0866-01
Calcium	mg/L	0.50	<0.50	3.67 | 3.63 | 0.972	19.6 | 20.6 | 4.79	104	98.4
Magnesium	mg/L	0.50	<0.50	34.6 | 34.2 | 0.948	45.2 | 47.7 | 5.38	106	84.0
Potassium	mg/L	0.50	<0.50	13.4 | 13.3 | 0.525	2.01 | 1.99 | [NA]	102	106
Sodium	mg/L	0.50	<0.50	304 | 302 | 0.561	442 | 459 | 3.81	93.2	##[1]
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	151 | 150 | 0.950	235 | 248 | 5.26	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-081|Inorganics - Ionic Balance and Indexes (Water) | Batch BGC2750

Analyte	Units	PQL	Blank	DUP1 BGC2750-DUP1# Samp | QC | RPD %	DUP2 PGC0866-04 Samp | QC | RPD %	LCS %	Spike % BGC2750-MS1#
Chloride	mg/L	1.0	<1.0	145 | 144 | 0.304	821 | 827 | 0.701	108	82.0
Sulfate	mg/L	1.0	<1.0	19.3 | 19.2 | 0.538	37.6 | 37.3 | 0.786	107	115

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGC0866

INORG-026 | Inorganics - Miscellaneous and Common Anions (Water) | Batch BGC2470

Analyte	Units	PQL	Blank	DUP1 PGC0866-01 Samp | QC | RPD %	DUP2 BGC2470-DUP2# Samp | QC | RPD %	LCS %	Spike % PGC0866-02
Fluoride	mg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	0.668 | 0.685 | 2.51	97.8	99.8

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-057 | Inorganics - Nutrients (Water) | Batch BGC2800

Analyte	Units	PQL	Blank	DUP1 BGC2800-DUP1# Samp | QC | RPD %	DUP2 BGC2800-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC2800-MS1#
Ammonia as N	mg/L	0.0050	<0.0050	0.309 | 0.324 | 4.73	<0.0050 | <0.0050 | [NA]	110	105
Nitrate as N	mg/L	0.0050	<0.0050	0.400 | 0.366 | 8.89	0.467 | 0.454 | 2.93	106	##[2]
Nitrate as NO3 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Nitrite as N	mg/L	0.0050	<0.0050	0.155 | 0.155 | 0.296	<0.0050 | <0.0050 | [NA]	98.7	111
Nitrite as NO2 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
NOx as N	mg/L	0.0050	<0.0050	0.555 | 0.522 | 6.24	0.468 | 0.455 | 2.92	106	129
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050 | <0.0050 | [NA]	0.00595 | 0.00564 | [NA]	104	112

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-127 | Inorganics - Nutrients (Water) | Batch BGC3030

Analyte	Units	PQL	Blank	DUP1 BGC3030-DUP1# Samp | QC | RPD %	DUP2 BGC3030-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3030-MS1#
Total Nitrogen	mg/L	0.10	<0.10	0.608 | 0.648 | 6.42	2.42 | 2.53 | 4.62	112	104

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BGC2878

Analyte	Units	PQL	Blank	LCS %
BOD	mg/L	5.0	<5.0	70.0

QC Comments

Identifier	Description
[1]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.
[2]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.

Shire of Manjimup
WASTE MANAGEMENT

FIELD RECORD: Quarterly ambient groundwater quality monitoring
(per DER licence L7007)

[redacted]

		Date	Wed & Thurs 17/18/09 / 20 25 [day] [date]
Standards	*AS / NZS 5667.1 & 5667.11*	**Meter**	*YSI ProPlus, Quatro cable, using flow cell*

BORE #	PARAMETER	UNIT	METER READING	
MJP 1	depth of bore **Db**	mBGL	11.14	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	7.48	m below top of bore
	water temperature **Tw**	°C	17.0	°C
DATE	dissolved oxygen **DO**	% & mg/L	29.7 %	2.85 mg/L
17/09/25	electrical conductivity **C**	µS/cm	2306	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	228.6	mV
1030	**pH**	--	4.87	

BORE #	PARAMETER	UNIT	METER READING	
MJP 2	depth of bore **Db**	mBGL	6.97	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	3.04	m below top of bore
	water temperature **Tw**	°C	16.7	°C
DATE	dissolved oxygen **DO**	% & mg/L	21.7 %	2.10 mg/L
17/09/25	electrical conductivity **C**	µS/cm	2745	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	-7.4	mV
1050	**pH**	--	6.30	

BORE #	PARAMETER	UNIT	METER READING	
MJP 3	depth of bore **Db**	mBGL	7.76	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	2.27	m below top of bore
	water temperature **Tw**	°C	15.8	°C
DATE	dissolved oxygen **DO**	% & mg/L	30.9 %	3.06 mg/L
17/09/25	electrical conductivity **C**	µS/cm	529.0	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	45.9	mV
1115	**pH**	--	5.78	

BORE #	PARAMETER	UNIT	METER READING	
MJP 4	depth of bore **Db**	mBGL	11.71	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	5.54	m below top of bore
	water temperature **Tw**	°C	16.6	°C
DATE	dissolved oxygen **DO**	% & mg/L	90.0 %	8.78 mg/L
17/09/25	electrical conductivity **C**	µS/cm	115.0	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	258.9	mV
0900	**pH**	--	5.40	

BORE #	PARAMETER	UNIT	METER READING	
MJP 5	depth of bore **Db**	mBGL	9.69	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	3.38	m below top of bore
	water temperature **Tw**	°C	17.3	°C
DATE	dissolved oxygen **DO**	% & mg/L	40.1 %	3.83 mg/L
17/09/25	electrical conductivity **C**	µS/cm	1790	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	194.3	mV
1000	**pH**	--	4.81	

BORE #	PARAMETER	UNIT	METER READING	
	depth of bore **Db**	mBGL		m below top of bore
	standing water level **SWL**	m(AHD) & mBGL		m below top of bore
	water temperature **Tw**	°C		°C
DATE	dissolved oxygen **DO**	% & mg/L	%	mg/L
	electrical conductivity **C**	µS/cm		µS/cm
TIME	oxidation / reduction potential **ORP**	mV		mV
	pH	--		

BORE #	PARAMETER	UNIT	METER READING	
NCF 1	depth of bore **Db**	mBGL	9.23	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	1.30	m below top of bore
	water temperature **Tw**	°C	14.5	°C
DATE	dissolved oxygen **DO**	% & mg/L	26.7 %	2.72 mg/L
18/09/25	electrical conductivity **C**	µS/cm	386.9	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	224.7	mV
0850	**pH**	--	4.54	

BORE #	PARAMETER	UNIT	METER READING	
PMB 1	depth of bore **Db**	mBGL	8.67	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	2.19	m below top of bore
	water temperature **Tw**	°C	14.5	°C
DATE	dissolved oxygen **DO**	% & mg/L	25.3 %	2.59 mg/L
18/09/25	electrical conductivity **C**	µS/cm	173.1	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	31.7	mV
0800	**pH**	--	4.67	

BORE #	PARAMETER	UNIT	METER READING	
WLP 2	depth of bore **Db**	mBGL	7.41	m below top of bore
	standing water level **SWL**	m(AHD) & mBGL	1.96	m below top of bore
	water temperature **Tw**	°C	15.7	°C
DATE	dissolved oxygen **DO**	% & mg/L	64.7 %	6.39 mg/L
18/09/25	electrical conductivity **C**	µS/cm	237.8	µS/cm
TIME	oxidation / reduction potential **ORP**	mV	267.0	mV
1050	**pH**	--	4.67	

CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

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Company:	Shire of Manjimup
Contact Person:	[redacted]
Project Mgr:	
Sampler:	
Address:	
Phone:	
Email Results to:	
Email Invoice to:	

Client Project Name/Number/Site etc (ie report title): Manjimup Waste Transfer Stations

PO No. (if applicable): SOM PO 27943

Envirolab Quote No. : 24PE095

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: Esdat Equis

Lab Comments:

Sample information				Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Date Sampled	Type of Sample	Analysis as per Quote																	Provide as much information about the sample as you can
1	MJP 1	17/09/2025	Groundwater	✓					NOT filtered in the field; FOUR sample bottles labelled: MJP 1.1, MJP 1.2, MJP 1.3, MJP 1.4												
2	MJP 2	17/09/2025	Groundwater	✓					NOT filtered in the field; FOUR sample bottles labelled: MJP 2.1, MJP 2.2, MJP 2.3, MJP 2.4												
3	MJP 3	17/09/2025	Groundwater	✓					NOT filtered in the field; FOUR sample bottles labelled: MJP 3.1, MJP 3.2, MJP 3.3, MJP 3.4												
4	MJP 4	17/09/2025	Groundwater	✓					NOT filtered in the field; FOUR sample bottles labelled: MJP 4.1, MJP 4.2, MJP 4.3, MJP 4.4												
5	MJP 5	17/09/2025	Groundwater	✓					NOT filtered in the field; FOUR sample bottles labelled: MJP 5.1, MJP 5.2, MJP 5.3, MJP 5.4												

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company):	Shire of Manjimup
Print Name:	[redacted]
Date & Time:	
Signature:	

[redacted]

Lab Use Only

Job number: PGI1401	Cooling: Ice / Ice pack / None
Temperature: 11.5	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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Certificate of Analysis PGI1401

Client Details

Client	Shire of Manjimup
Contact	Mark Sewell
Address	PO Box 1, MANJIMUP, WA, 6258

Sample Details

Your Reference	Manjimup Waste Transfer Stations
Number of Samples	5 Groundwater
Date Samples Received	18/09/2025
Date Instructions Received	18/09/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Final Results Expected	07/10/2025
Date of Issue	30/09/2025

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By

Laboratory Manager

[redacted]

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Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PGI1401-01	MJP 1	Groundwater	17/09/2025	18/09/2025
PGI1401-02	MJP 2	Groundwater	17/09/2025	18/09/2025
PGI1401-03	MJP 3	Groundwater	17/09/2025	18/09/2025
PGI1401-04	MJP 4	Groundwater	17/09/2025	18/09/2025
PGI1401-05	MJP 5	Groundwater	17/09/2025	18/09/2025

Acid Extractable Metals (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Phosphorus	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050

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Dissolved Low Level Metals (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Aluminium	µg/L	10	10	<10	<10	39	83
Arsenic	µg/L	1.0	<1.0	3.8	3.8	<1.0	<1.0
Cadmium	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	µg/L	1.0	3.0	<1.0	<1.0	<1.0	5.6
Iron	µg/L	10	130	15000	3700	15	10000
Mercury	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Manganese	µg/L	1.0	520	150	9.0	3.2	310
Nickel	µg/L	1.0	14	1.8	<1.0	<1.0	17
Lead	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	µg/L	1.0	3.0	<1.0	<1.0	<1.0	21

Inorganics - Physical Parameters (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Total Dissolved Solids	mg/L	5.0	1200	1400	380	86	550

Inorganics - Ionic Balance and Indexes (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Chloride	mg/L	1.0	660	430	150	20	250
Sulfate	mg/L	1.0	64	110	65	3.9	23
Calcium	mg/L	0.50	2.5	55	19	1.3	17
Magnesium	mg/L	0.50	40	54	15	2.9	40
Potassium	mg/L	0.50	<0.50	170	41	<0.50	1.7
Sodium	mg/L	0.50	350	220	50	14	370
Hardness (calc) equivalent CaCO3	mg/L	3.0	170	360	110	15	210

Inorganics - Miscellaneous and Common Anions (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Fluoride	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10

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Inorganics - Nutrients (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
Ammonia as N	mg/L	0.0050	0.031	50	0.20	<0.0050	0.036
Nitrate as N	mg/L	0.0050	<0.0050	0.023	0.12	0.066	4.2
Nitrate as NO3 by calculation	mg/L	0.020	0.022	0.10	0.51	0.29	18
Nitrite as N	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098
Nitrite as NO2 by calculation	mg/L	0.020	<0.020	<0.020	<0.020	<0.020	0.032
NOx as N	mg/L	0.0050	0.0053	0.025	0.12	0.067	4.2
TKN as N by calculation	mg/L	0.10	0.16	66	1.6	0.24	0.41
Organic Nitrogen by calc.	mg/L	0.10	0.13	16	1.4	0.24	0.37
Total Nitrogen	mg/L	0.10	0.16	66	1.7	0.31	4.6
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0073

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Inorganics - Common Wastewater Parameters (Groundwater)

Envirolab ID	Units	PQL	PGI1401-01	PGI1401-02	PGI1401-03	PGI1401-04	PGI1401-05
Your Reference			MJP 1	MJP 2	MJP 3	MJP 4	MJP 5
Date Sampled			17/09/2025	17/09/2025	17/09/2025	17/09/2025	17/09/2025
BOD	mg/L	5.0	11	20	<5.0	<5.0	11

Method Summary

Method ID	Methodology Summary
Calc	Calculation
Calc - TKN	TKN determined by calculation (Total Nitrogen NOx).
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-026	Fluoride determined by ion selective electrode (ISE) based on APHA latest edition, 4500-F-C. Solids are reported from a 1:5 water extract unless otherwise specified.
INORG 055	Nitrate/Nitrite/NOx/TKN - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils/solids are analysed following a water extraction.
INORG-057	Ammonia - determined colourimetrically. Water samples are filtered on receipt prior to analysis. Soils and OHS media are analysed following a water extraction. Alternatively, Ammonia can be extracted from soil using 1M KCl.
INORG-060	Phosphate - determined colourimetrically using APHA latest edition 4500 P E. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-091	BOD and/or cBOD - Analysed in accordance with APHA latest edition 5210 D.
INORG-127	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Organic Carbon forms (inorganic, organic, total) determined using a TOC/NDIR analyser via combustion. Dissolved forms require filtering prior to determination.
METALS-020	Determination of various metals by ICP-OES. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volume(s) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PGI1401

Client Details

Client	Shire of Manjimup
Your Reference	Manjimup Waste Transfer Stations
Date Issued	30/09/2025

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PGI1401

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Phosphorus | Water	1-5	17/09/2025	23/09/2025	24/09/2025	Yes
Dissolved Metals (LL) | Water	1-3	17/09/2025	19/09/2025	22/09/2025	Yes
	4-5	17/09/2025	22/09/2025	23/09/2025	Yes
Dissolved Metals (LL)-Hg | Water	1-5	17/09/2025	23/09/2025	25/09/2025	Yes
TDS | Water	1-5	17/09/2025	23/09/2025	23/09/2025	Yes
Chloride | Water	1-5	17/09/2025	19/09/2025	20/09/2025	Yes
Dissolved Cations | Water	1-3	17/09/2025	19/09/2025	22/09/2025	Yes
	4-5	17/09/2025	22/09/2025	22/09/2025	Yes
Sulfate | Water	1-5	17/09/2025	19/09/2025	20/09/2025	Yes
Fluoride | Water	1-5	17/09/2025	18/09/2025	19/09/2025	Yes
Nitrogen - Ammonia | Water	1-5	17/09/2025	22/09/2025	22/09/2025	Yes
Nitrogen - Nitrate | Water	1-5	17/09/2025	22/09/2025	22/09/2025	Yes
Nitrogen - Nitrite | Water	1-5	17/09/2025	22/09/2025	22/09/2025	No
Nitrogen - NOx | Water	1-5	17/09/2025	22/09/2025	22/09/2025	No
Nitrogen - Total N | Water	1	17/09/2025	23/09/2025	24/09/2025	Yes
	2-5	17/09/2025	23/09/2025	25/09/2025	Yes
Phosphate as P | Water	1-5	17/09/2025	22/09/2025	22/09/2025	No
TKN as N calc | Water	1-5	17/09/2025	22/09/2025	25/09/2025	Yes
BOD | Water	1-5	17/09/2025	22/09/2025	30/09/2025	Yes

Data Quality Assessment Summary PGI1401

Outliers: Matrix Spike

INORG-055|Inorganics - Nutrients (Water)| Batch BGI3660

Sample ID	Analyte	% Limits	% Recovery
BGI3660-MS1#	Nitrate as N	70 - 130	##[2]
BGI3660-MS1#	NOx as N	70 - 130	##[2]

METALS-020|Inorganics - Ionic Balance and Indexes (Water)| Batch BGI3513

Sample ID	Analyte	% Limits	% Recovery
BGI3513-MS1#	Calcium	70 - 130	##[1]
BGI3513-MS1#	Magnesium	70 - 130	##[1]
BGI3513-MS1#	Potassium	70 - 130	##[1]
BGI3513-MS1#	Sodium	70 - 130	##[1]

METALS-022|Dissolved Low Level Metals (Water)| Batch BGI3509

Sample ID	Analyte	% Limits	% Recovery
BGI3509-MS1#	Arsenic	70 - 130	##[2]
BGI3509-MS1#	Manganese	70 - 130	##[1]
BGI3509-MS1#	Nickel	70 - 130	##[1]

METALS-022|Dissolved Low Level Metals (Water)| Batch BGI3897

Sample ID	Analyte	% Limits	% Recovery
PGI1401-05	Iron	70 - 130	##[1]

Outliers: QC Frequency

INORG-091|Inorganics - Common Wastewater Parameters (Water)| Batch BGI3957

Analysis	QC Type	Expected	Reported
BOD	Duplicate	2	0

Quality Control PGI1401

METALS-020|Acid Extractable Metals (Water) | Batch BGI4029

Analyte	Units	PQL	Blank	DUP1 PGI1401-02 Samp | QC | RPD %	DUP2 BGI4029-DUP2# Samp | QC | RPD %	LCS %	Spike % PGI1401-01
Phosphorus	mg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	106	107

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BGI3509

Analyte	Units	PQL	Blank	DUP1 BGI3509-DUP1# Samp | QC | RPD %	DUP2 BGI3509-DUP2# Samp | QC | RPD %	LCS %	Spike % BGI3509-MS1#
Aluminium	µg/L	10	<10	304000 | 282000 | 7.53	<20 | 20.5 | [NA] [3]	95.1	##[2]
Arsenic	µg/L	1.0	<1.0	34.3 | 29.1 | [NA]	<2.0 | <2.0 | [NA]	101	##[2]
Cadmium	µg/L	0.10	<0.10	<1.0 | <1.0 | [NA]	2.66 | 2.70 | 1.49	103	82.8
Chromium	µg/L	1.0	<1.0	18.3 | 16.9 | [NA]	<2.0 | <2.0 | [NA]	103	99.6
Copper	µg/L	1.0	<1.0	245 | 230 | 5.98	5.40 | 6.18 | [NA]	100	78.2
Iron	µg/L	10	<10	12600 | 11700 | 7.94	115 | 113 | 1.75	94.8	##[2]
Lead	µg/L	1.0	<1.0	339 | 326 | 3.67	<2.0 | <2.0 | [NA]	98.1	88.4
Manganese	µg/L	1.0	<1.0	23000 | 21400 | 7.44	12600 | 12300 | 2.53	99.8	##[1]
Nickel	µg/L	1.0	<1.0	939 | 904 | 3.83	889 | 877 | 1.36	101	##[1]
Zinc	µg/L	1.0	<1.0	201 | 181 | 10.4	79.1 | 79.3 | 0.253	101	76.2

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BGI3897

Analyte	Units	PQL	Blank	DUP1 PGI1401-04 Samp | QC | RPD %	DUP2 BGI3897-DUP2# Samp | QC | RPD %	LCS %	Spike % PGI1401-05
Aluminium	µg/L	10	<10	39.2 | 29.1 | [NA] [3]	216 | 210 | 3.11	94.9	93.5
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	98.7	103
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	101	103
Chromium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	98.2	101
Copper	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	98.7	100
Iron	µg/L	10	<10	14.7 | 13.7 | [NA]	169 | 168 | 0.971	92.4	##[1]
Lead	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	99.1	95.6
Manganese	µg/L	1.0	<1.0	3.17 | 3.07 | [NA]	2.46 | 2.30 | [NA]	97.2	86.0
Nickel	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	98.7	97.8
Zinc	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	1.70 | 1.54 | [NA]	100	98.8

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Dissolved Low Level Metals (Water) | Batch BGI4186

Analyte	Units	PQL	Blank	DUP1 BGI4186-DUP1# Samp | QC | RPD %	DUP2 BGI4186-DUP2# Samp | QC | RPD %	LCS %	Spike % PGI1401-01
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	102	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BGI4144

Analyte	Units	PQL	Blank	DUP1 PGI1401-01 Samp | QC | RPD %	DUP2 BGI4144-DUP2# Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	1170 | 1160 | 0.344	3720 | 3890 | 4.47	101

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGI1401

INORG-081 | Inorganics - Ionic Balance and Indexes (Water) | Batch BGI3493

Analyte	Units	PQL	Blank	DUP1 BGI3493-DUP1# Samp | QC | RPD %	DUP2 BGI3493-DUP2# Samp | QC | RPD %	LCS %	Spike % BGI3493-MS1#
Chloride	mg/L	1.0	<1.0	14.9 | 15.3 | 2.35	19500 | 19300 | 0.714	98.6	97.7
Sulfate	mg/L	1.0	<1.0	4.59 | 4.63 | [NA]	1990 | 1970 | 1.33	92.3	97.6

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020 | Inorganics - Ionic Balance and Indexes (Water) | Batch BGI3513

Analyte	Units	PQL	Blank	DUP1 BGI3513-DUP1# Samp | QC | RPD %	DUP2 BGI3513-DUP2# Samp | QC | RPD %	LCS %	Spike % BGI3513-MS1#
Calcium	mg/L	0.50	<0.50	2470 | 2470 | 0.0851	588 | 573 | 2.63	94.8	##[1]
Magnesium	mg/L	0.50	<0.50	1230 | 1230 | 0.0653	2770 | 2700 | 2.60	94.3	##[1]
Potassium	mg/L	0.50	<0.50	290 | 287 | 0.884	106 | 103 | 3.45	94.2	##[1]
Sodium	mg/L	0.50	<0.50	23400 | 23400 | 0.214	8330 | 8200 | 1.55	92.2	##[1]
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	11200 | 11200 | 0.0762	12900 | 12500 | 2.60	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020 | Inorganics - Ionic Balance and Indexes (Water) | Batch BGI3898

Analyte	Units	PQL	Blank	DUP1 BGI3898-DUP1# Samp | QC | RPD %	DUP2 BGI3898-DUP2# Samp | QC | RPD %	LCS %	Spike % BGI3898-MS1#
Calcium	mg/L	0.50	<0.50	5.04 | 4.98 | 1.17	53.5 | 54.0 | 0.847	102	93.1
Magnesium	mg/L	0.50	<0.50	9.67 | 9.72 | 0.492	26.5 | 26.8 | 1.13	98.4	84.7
Potassium	mg/L	0.50	<0.50	3.63 | 3.59 | 1.20	5.66 | 5.81 | 2.65	99.6	84.4
Sodium	mg/L	0.50	<0.50	77.3 | 77.0 | 0.389	42.0 | 42.6 | 1.25	96.5	80.6
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	52.4 | 52.5 | 0.0951	243 | 245 | 0.974	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-026 | Inorganics - Miscellaneous and Common Anions (Water) | Batch BGI3424

Analyte	Units	PQL	Blank	DUP1 BGI3424-DUP1# Samp | QC | RPD %	DUP2 BGI3424-DUP2# Samp | QC | RPD %	LCS %	Spike % BGI3424-MS1#
Fluoride	mg/L	0.10	<0.10	0.443 | 0.447 | [NA]	0.226 | 0.185 | [NA]	107	100

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-057 | Inorganics - Nutrients (Water) | Batch BGI3660

Analyte	Units	PQL	Blank	DUP1 BGI3660-DUP1# Samp | QC | RPD %	DUP2 PGI1401-03 Samp | QC | RPD %	LCS %	Spike % BGI3660-MS1#
Ammonia as N	mg/L	0.0050	<0.0050	0.0478 | 0.0499 | 4.42	0.202 | 0.196 | 3.22	95.4	100
Nitrate as N	mg/L	0.0050	<0.0050	0.0157 | 0.0150 | [NA]	0.115 | 0.138 | 17.9	102	##[2]
Nitrate as NO3 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Nitrite as N	mg/L	0.0050	<0.0050	<0.0050 | <0.0050 | [NA]	<0.0050 | <0.0050 | [NA]	[NA]	[NA]
Nitrite as NO2 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
NOx as N	mg/L	0.0050	<0.0050	0.0183 | 0.0176 | [NA]	0.117 | 0.138 | 16.6	102	##[2]
Phosphate as P	mg/L	0.0050	<0.0050	0.0158 | 0.0150 | [NA]	<0.0050 | <0.0050 | [NA]	119	119

Analyte	Units	PQL	Blank	LCS %	Spike % BGI3660-MS2#
Nitrite as N	mg/L	0.005		108	128

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGI1401

INORG-127 | Inorganics - Nutrients (Water) | Batch BGI4040

Analyte	Units	PQL	Blank	DUP1 BGI4040-DUP1# Samp | QC | RPD %	DUP2 PGI1401-03 Samp | QC | RPD %	LCS %	Spike % BGI4040-MS1#
Total Nitrogen	mg/L	0.10	<0.10	5.95 | 5.95 | 0.100	1.70 | 1.45 | 16.0	100	108

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-091 | Inorganics - Common Wastewater Parameters (Water) | Batch BGI3957

Analyte	Units	PQL	Blank	LCS %
BOD	mg/L	5.0	<5.0	85.0

QC Comments

Identifier	Description
[1]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.
[2]	Spike recovery is outside routine acceptance criteria (70-130%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.
[3]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.

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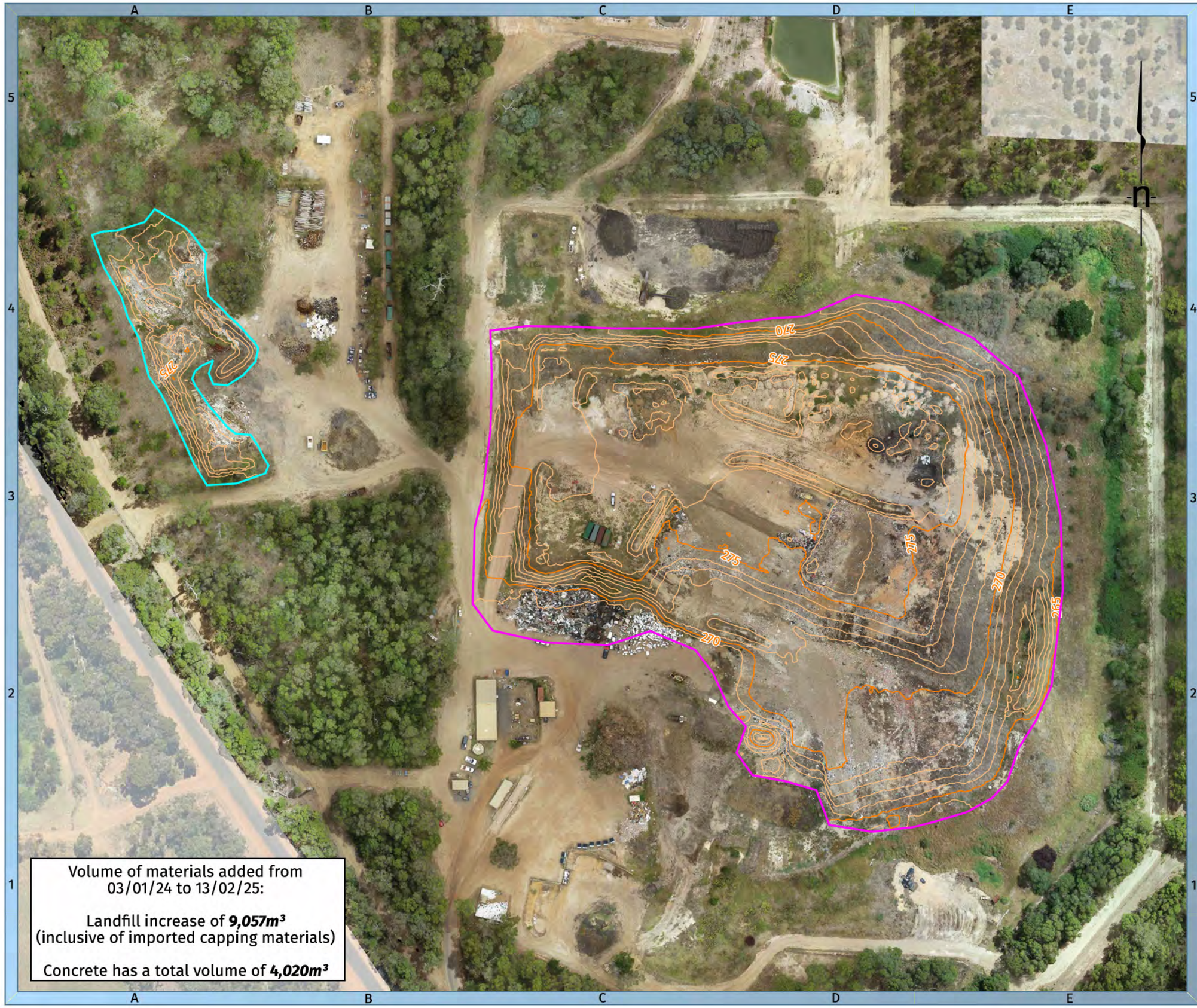
Manjimup Recycling & Refuse Centre
L7007/1997/11
62 Ralston Road Ringbark 6258
MOST RECENT AERIAL IMAGE AVAILABLE

image date
March 2023

scale
1:3500



Harley Dykstra

PLANNING & SURVEY SOLUTIONS

This plan has been prepared for Verge Earthmoving from field survey via geo-referenced drone capture. Horizontal accuracy 2-4cm (1-2 GSD) with an expected vertical accuracy of 2-6cm (1-3 GSD).

Contractors to verify all survey control marks to be correct (by field checks) prior to utilisation for construction purposes. This note is an integral part of this plan or the data as transmitted. Failure to reproduce this note on providing this plan or accompanying data or any part thereof to any third party will render this plan or data invalid.

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In any event the liability of Harley Dykstra Pty Ltd is limited to the resupply of the relevant goods and/or services or the reasonable cost of resupply.

rev	details	approved	date
A	Original drawing	PH	19/02/25

survey: PH 13/02/25	cad file: 22587-06A.dgn
drawn: NP 19/02/25	checked: PH 19/02/25
horiz datum: MGA94 Z50	level datum: AHD
scale at A3: 1 : 1500	all distances are in metres: 0 20 40

plan type
VOLUME & CONTOUR SURVEY

client
VERGE EARTHMOVING

description
MANJIMUP REFUSE AND RECYCLING CENTRE
13th FEBRUARY 2025

drawing no
22587-06A

BUNBURY OFFICE:
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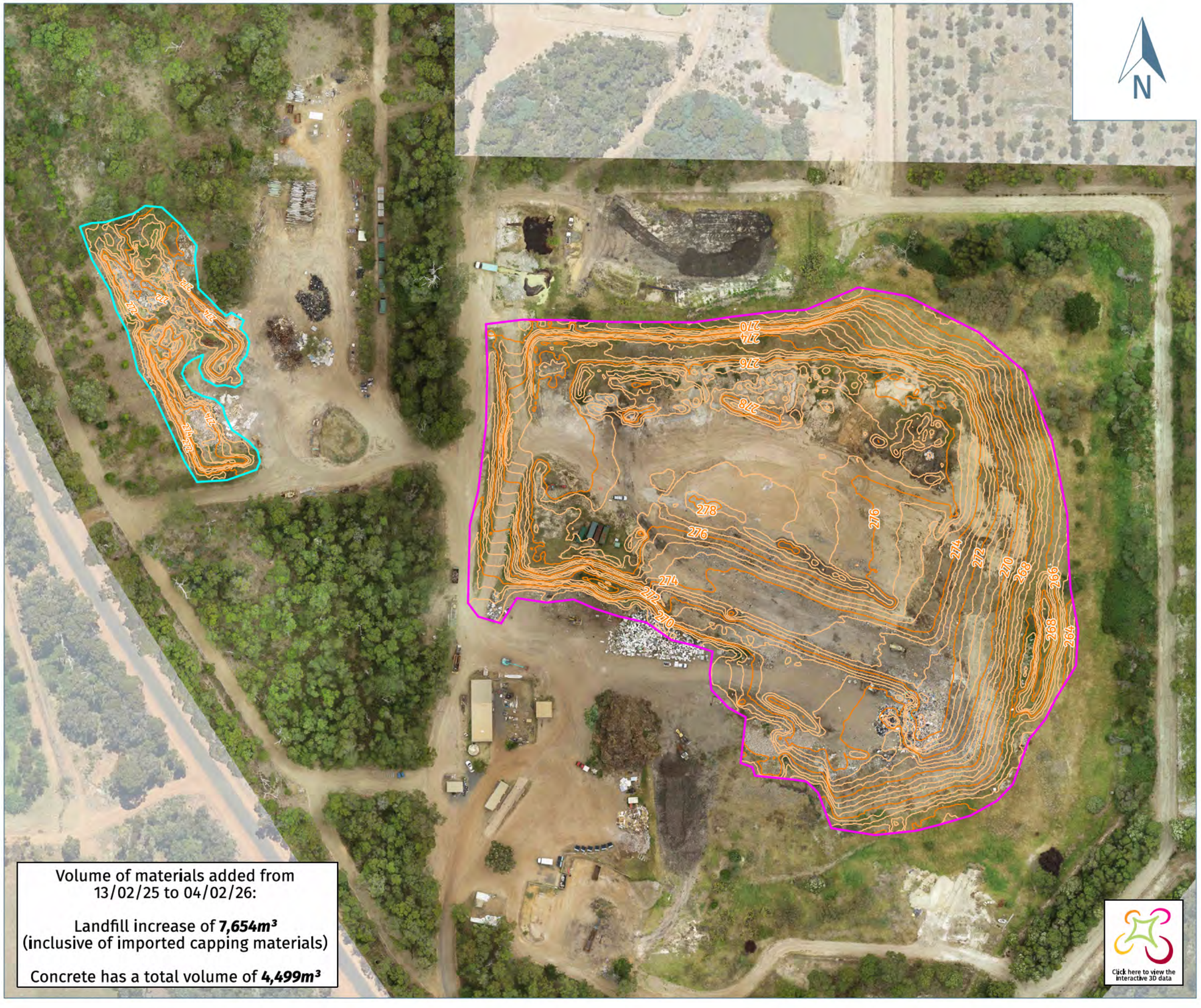

Harley Dykstra

SURVEYING | TOWN PLANNING | PROJECT MANAGEMENT

This plan has been prepared for Verge Earthmoving from field survey via geo-referenced drone capture. Horizontal accuracy 2-4cm (1-2 GSD) with an expected vertical accuracy of 3cm (1-3 GSD).

Contractors to verify all survey control marks to be correct (by field checks) prior to utilisation for construction purposes. This note is an integral part of this plan or the data as transmitted. Failure to reproduce this note on providing this plan or accompanying data or any part thereof to any third party will render this plan or data invalid.

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In any event the liability of Harley Dykstra Pty Ltd is limited to the resupply of the relevant goods and/or services or the reasonable cost of resupply.

Rev	Details	Approved	Date
A	Original drawing	PH	11/02/26

Survey: PH 04/02/26	Cad File No.: 22587-08A.dgn
Drawn: WP 10/02/26	Checked: PH 11/02/26
Horizontal Datum: MGA94 Z50	Level Datum: AHD
Scale @ A3: 1 : 1500	All Distances Are In Metres: 0 20m 40m

Plan Type

VOLUME & CONTOUR SURVEY

Client

VERGE EARTHMOVING

Description

MANJIMUP REFUSE AND RECYCLING CENTRE
4th FEBRUARY 2026

Drawing No.

22587-08A

BEFORE YOU DIG 1yda.com.au
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SOUTH WEST 9792 6000
GREAT SOUTHERN 9844 5100

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Annual Audit Compliance Report Form

Environmental Protection Act 1986, Part V Division 3

Once completed, please submit this form either via email to info@dwer.wa.gov.au, or to the below postal address:

Department of Water and Environmental Regulation
Locked Bag 10
Joondalup DC WA 6919

Section A – Licence details			
Licence number:	L7007 / 1997 / 11	Licence file number:	DER2016 / 000020
Licence holder name:	Shire of Manjimup		
Trading as:	Shire of Manjimup (Manjimup Recycling & Refuse Centre or MRRC)		
ABN:	36 453 349 691		
Registered business address:	Shire of Manjimup : 37 – 39 Rose Street, Manjimup, WA 6258 MRRC : 62 Ralston Road, Ringbark, WA 6258		
Reporting period:	01 / 01 / 2025 **to** 31 / 12 / 2025		

Section B – Statement of compliance with licence conditions

Did you comply with all of your licence conditions during the reporting period? (please tick the appropriate box)

☐ Yes – please complete:
- section C;
- section D (if required); and
- sign the declaration in Section F.

☒ No – please complete:
- section C;
- section D (if required);
- section E; and
- sign the declaration in Section F.

Section C – Statement of actual production

Provide the actual production quantity for this reporting period. Supporting documentation is to be attached.

Prescribed premises category	Actual production quantity
13 – crushing of building material	0 tonnes
61 – liquid waste facility	642 tonnes
61A – solid waste facility	1,128 tonnes
62 – solid waste depot	1,795 tonnes
64 – class II putrescible landfill	10,705 tonnes

Section D – Statement of actual Part 2 waste discharge quantity	
Provide the actual Part 2 waste discharge quantity for this reporting period. Supporting documentation is to be attached.	
Prescribed premises category	**Actual Part 2 waste discharge quantity**
not applicable	not applicable

Section E – Details of non-compliance with licence condition			
Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.3.4	Date(s) of non-compliance:	March and October 2025
Details of non-compliance:			
More than 100 tyres were stored on the Premises pending their dispatch to a recycler.			
What was the actual (or suspected) environmental impact of the non-compliance? **NOTE** – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.			
While the presence of tyres presents the potential for environmental impact, no discernible environmental impacts occurred. The tyres were stored in the designated area with at least 6 metres separation from other flammable materials. There is potential for stockpiled tyres to hold small pools of water suitable for mosquito breeding.			
Cause (or suspected cause) of non-compliance:			
There are two main drivers of tyre numbers on site. There is a seasonal (both Autumn and Spring) increase in the total number of tyres being disposed. There are occasional arrivals of large numbers of tyres (10 or more) disposed by one customer. These drivers can combine: five of the six largest disposals (ranging from 10 to 36 tyres) occurred in March, September and October, disposed by individual customers at each instance. (The contractor's staff at the weighbridge, receiving the tyres, is unaware of the number of tyres already stockpiled.) Additionally, arrivals of undetected tyres in skip bins go unrecorded in waste data until retrieved from the landfill later. There may also be an unavoidable time lag between requesting a tyre pick-up from a licensed tyre recycler (licensed to cart a controlled waste) and receiving the service. The result is that the stockpile limit (100 tyres) can be exceeded suddenly, and without notice. All of these factors combined have resulted in the number of stockpiled tyres rising above 100 during March 2025 and again during October 2025.			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			
Efforts were made to empty water pools from stockpiled tyres (Spring 2025). The stockpile separation of 6+ metres from other flammable materials was maintained. Recent data-gathering improvements are resulting in clearer understanding of the seasonality of tyre disposal, allowing more timely ordering of tyre pick-up by a licensed tyre recycler. A Recycling Modernisation Fund 2026 grant application has been made which included funding to improve tyre storage in such a way as to significantly improve monitoring of tyre stockpile size. (The result is still pending.)			
Was this non-compliance previously reported to DWER?			
☐ Yes ☒ No (other than in writing in the AACR)			
☐ Reported to DWER verbally		Date: / /	
☐ Reported to DWER in writing		Date: / /	

Condition no:	4.3.1	Date(s) of non-compliance:	15/10/2025 29/10/2025 15/12/2025 17/12/2025
Details of non-compliance:			
Unauthorised fires occurred within the Premises on four occasions: 15/10, 29/10, 15/12 & 17/12. These are reported to DWER in the 2024/2025 Biennial Environmental Report (BER); however, they were not reported to DWER within fourteen days of time of occurrence.			
What was the actual (or suspected) environmental impact of the non-compliance? **NOTE** – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.			
No discernible long-term or permanent environmental impacts were detected.			
Cause (or suspected cause) of non-compliance:			
Cause of each fire is documented in BER; however, the ignition points were: • 15/10 – small handheld battery in MSW, at the active face of the landfill; • 29/10 – small handheld battery in MSW, at the active face of the landfill; • 15/12 – larger power bank or similar device in MSW, at the active face of the landfill; and • 17/12 – marine signal flare, possibly damaged by compaction in collection truck, in MSW, at the active face of the landfill. Cause of non-compliance (failure to report within 14 days) was simple oversight.			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			
Separate actions taken in each case to reduce likelihood of recurrence (refer BER report). WMO now aware of fourteen day reporting requirement.			
Was this non-compliance previously reported to DWER?			
☐ Yes ☒ No			
☐ Reported to DWER verbally		Date: / /	
☐ Reported to DWER in writing		Date: / /	

Section F – Declaration

I / ~~We~~ declare that the information in this Annual Audit Compliance Report is true and correct and is not false or misleading in a material particular[1].

I / ~~We~~ consent to the Annual Audit Compliance Report being published on the Department of Water and Environmental Regulation's (DWER) website.

[redacted]

Date:	27.03.26	Date:	--
Seal (if signing under seal):	n/a		

[1] It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular.

[2] AACRs can only be signed by the licence holder or an authorised person with the legal authority to sign on behalf of the licence holder.