



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:	L9375/2023/1	Licence file number:	DER2023/000114
Licence holder name:	OZ Minerals Musgrave Operations Pty Ltd		
Trading as:	N/A		
ACN:	640 213 341		
Registered business address:	2 Hamra Drive ADELAIDE AIRPORT SA 5950		
Reporting period:	30/06/2023 to 31/12/2023		

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
Category 54: Sewage facility: premises — (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters Assessed production capacity: 30m³/day	Actual average production for reporting period: 10.82m³/day Please see table of cumulative site meter readings in Section D, below.

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
Category 54: Sewage facility: premises — (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters	SBR1: 557.84kL SBR2: 416.15kL Total: 973.99kL Readings are taken on the first day of each month and recorded in the site-wide water balance.

Section E (1) – 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:	Condition 4, Table 3	Date(s) of non-compliance:	28/6/2023 to 31/10/2023
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Details of non-compliance: **Non-compliance 1**

SBR1 and SBR2: Quarterly Sampling 28 June 2023

During a quarterly sampling event conducted on 28 June 2023, leading onto the current reporting period, effluent quality exceedances were identified at SBR1, as set out in the table below. SBR2 was compliant with all parameter limits.

Parameter	Unit	Limit (L9375/2023/1)	SBR1	SBR2
pH (Field)	pH units	6.5 – 8.5	7.81	8.08
Biological Oxygen Demand (BOD)	mg/L	20	26	3
Total Suspended Solids (TSS)	mg/L	30	60	<5
Total Nitrogen	mg/L	30	73.9	12.3
Total Phosphorous	mg/L	8	11.7	6.72
<i>E. coli</i>	CFU/100mL	1000	<1	~3
Residual Chlorine (Field)	mg/L	0.2 – 2.0	1.23	0.98

Please see Attachment 1 for the Certificate of Analysis (COA) and Attachment 1A for the Summary Report.

SBR1 and SBR2: Management Sampling (28/7/23)

Sampling was conducted at both SBRs to monitor the effectiveness of management actions to improve compliance. As indicated below, while BOD and TSS were within specification, Total Nitrogen removal at SBR1 improved slightly, but was still non-compliant. Total Phosphorous at SBR2 was non-compliant.

Parameter	Unit	Limit (L9375/2023/1)	SBR1	SBR2
pH (Field)	pH units	6.5 – 8.5	7.32	7.47
Biological Oxygen Demand (BOD)	mg/L	20	<2	2
Total Suspended Solids (TSS)	mg/L	30	16	<5
Total Nitrogen	mg/L	30	53.5	11.5
Total Phosphorous	mg/L	8	4.78	10.4

Section E (1) – Details of non-compliance with licence condition

<i>E. coli</i>	CFU/100mL	1000	<1	<1
Residual Chlorine (Field)	mg/L	0.2 – 2.0	0.68	1.0

All waste previously treated by SBR1 was diverted to SBR 2 from 27 July 2023 and SBR1 was decommissioned on 8 September. Its untreated contents were transferred to the newly commissioned Passive WWTP (W6579/2021/1). Please see Attachment 2 for the COA.

SBR2: Management Sampling to decommissioning (23/8/2023 and 12/9/2023)

Prior to SBR2 decommissioning at the end of October 2023, effluent quality at SBR2 was sampled on 23/8/2023 and 12/9/2023 to monitor the effectiveness of management actions. Exceedances of Total Nitrogen, Total Phosphorous and Residual Chlorine values were recorded, as indicated below:

Parameter	Unit	Limit (L9375/2023/1)	SBR2 (23/8)	SBR2 (12/9)
pH (Field)	pH units	6.5 – 8.5	7.1	7.3
Biological Oxygen Demand (BOD)	mg/L	20	6	6
Total Suspended Solids (TSS)	mg/L	30	7	10
Total Nitrogen	mg/L	30	45	81.3
Total Phosphorous	mg/L	8	10.7	17.8
<i>E. coli</i>	CFU/100mL	1000	<1	<1
Residual Chlorine (Field)	mg/L	0.2 – 2.0	4	1.9

SBR2 was decommissioned at the end of October 2023 and its remaining contents transferred to the Passive WWTP. Please See Attachments 3 and 4 for the COAs.

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.

The environmental impact of the non-compliances would have manifested at the spray field, primarily in the form of increased total nitrogen and phosphorous loading, as well as a short-term increase in residual chlorine in irrigated effluent (August) and elevated BOD and TSS for the June 2023 SBR1 sampling run. The location of the irrigation field is indicated in Attachment 5, being the Prescribed Premises map from L9375/2023/1.

The elevated nitrate and phosphate concentrations, especially, should be viewed in the context of the total effluent volumes, i.e., an average of 10.8m³/day for both plants, versus the licensed discharge volume of 30 m³/day. While an accurate estimate of average discharge concentrations is not possible using the spot sampling data only, a rough estimate (using the average of all measured concentrations for SBR1 and SBR2) would indicate the following:

- Total Nitrates ~46.25 (SBR1&2 total nitrates for all 4 sampling runs ÷ 6)
- Total Phosphorous ~ 10.35 (SBR1&2 total phosphorous for all 4 sampling runs ÷ 6)

Given that the average concentrations do not exceed the respective limits for total nitrogen (30 mg/L) and total phosphorous (8mg/L) by more than ~33% to ~23% respectively and considering the discharge volume was roughly 30% of the spray field design nutrient loading limit, no unacceptable environmental impact is expected. A visual inspection of the decommissioned spray field on 10 January 2024 did not yield any apparent indications of environmental impacts (e.g., crusting, precipitates or abnormal vegetation growth). The total volume of nitrogen and phosphorus discharged to the spray field remained within the limits appropriate for the size of the spray field, which was calculated in accordance with the Department of Health and Water Quality

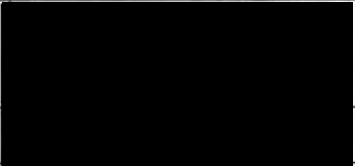
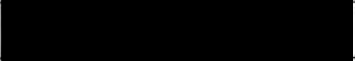
Section E (1) – Details of non-compliance with licence condition	
Protection note 22 requirements.	
Cause (or suspected cause) of non-compliance:	
<p>The report on 28 June 2023 sampling event recommended a process investigation into the causes of the exceedances (Attachment 1A). As the decision to decommission both SBRs had been taken by then, a full investigation was not deemed necessary. The causes of the exceedances were however identified by subject matter experts at Tristar Water Solutions as follows:</p> <ul style="list-style-type: none"> • High nitrate concentrations are primarily caused by the SBR receiving low inflow volumes (significantly below design operating volumes). This affects the effectiveness of the biological process leading to high nitrate levels in effluent. • The high phosphate levels are also associated with the low inflow that causes low levels of flocculant dosing, resulting in a reduced ability of the process to trap phosphates in sludge. • The blending of reject from the reverse osmosis plant into the treated effluent tank, upstream of the sampling point at SBR has likely contributed to the exceedances in TSS, BOD and nitrates. Noting this was as per the design of the SBR provided by Tristar. <p>Although not covered by the Tristar's response, the single Residual Chlorine exceedance may also be related to excessive contact time as a result of low flow conditions. A conclusive cause has however not been established.</p>	
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:	
Both SBRs were decommissioned within four months of the licence application being granted for their operation (SBR1 08/08/2023 and SBR2 30/10/2023), and their remaining sewage and process contents transferred for complete processing to the operational passive WWTP or taken offsite for disposal by Cleanaway at a licensed landfill facility. The tanks and pipework have been dismantled, ready for removal from site. As of the site inspection of 10 January 2024, the irrigation sprinklers and pipework still have to be dismantled for removal.	
Was this non-compliance previously reported to DWER? No, due to subsequent decommissioning of the SBRs	
<input type="checkbox"/> Yes, and	
<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input type="checkbox"/> Reported to DWER in writing	Date: / /

Section E (2) – 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:	Condition 1, Table 1 (c)	Date(s) of non-compliance:	2/7/2023
Details of non-compliance: Non-compliance 2			
<p>Condition 1, Table 1 (c) requires "Alarms installed, functional and operated to alert operators of:</p> <p>i. Pump faults,</p> <p>ii. High tank levels; and</p> <p>iii. Tank overflows"</p>			

Section E (2) – Details of non-compliance with licence condition	
On 2/7/2023 raw effluent was overflowing from tank 1, the inground pump station and macerator, at SBR2.	
<p>What was the actual (or suspected) environmental impact of the non-compliance?</p> <p>NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>	
<p>Effluent that had overflowed from the tank drained towards the old, decommissioned leach drains, away from any paths or areas that people access, and covered an area of approximately 15 m² of previously disturbed ground No sludge or solids overflowed, only liquid effluent.</p> <p>As this small spill was immediately treated with lime the environmental impact is rated as minimal.</p>	
Cause (or suspected cause) of non-compliance:	
The tank had overflowed because the circuit breaker for the tank pump had tripped at the generator, and it appears that the high-level alarm failed to activate because it is powered by the same circuit that had tripped.	
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:	
<ul style="list-style-type: none"> The areas were cordoned off, treated with lime and covered with sand. An investigation into the feasibility of powering the high-level alarm off a different circuit was commenced. As the decision to decommission the SBR within the next few months was taken, no amendments were made to the circuit. No further incidents occurred until SBR2 was decommissioned at the end of October 2023. 	
Was this non-compliance previously reported to DWER? Not required.	
<input type="checkbox"/> Yes, and	
<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input type="checkbox"/> Reported to DWER in writing	Date: / /

Section F – Declaration

Department of Water and Environmental Regulation

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.			
Signature ² :		Signature:	
Name: (printed)		Name: (printed)	
Position:	Manager Social Performance and Regulatory Affairs	Position:	
Date:	31-Jan-2024	Date:	
Seal (if signing under seal):			

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