

Annual Wastewater Monitoring and Testing Report 2025

Territory Wildlife Park

Reporting Period: 12 March 2024 to 11 March 2025

Report for NTEPA Licence EPL307

Submitted to NTEPA 7 March 2025

1. NTEPA Licence Details

Licensee: Territory Wildlife Parks
Licence Number: EPL307
Commencement Date: 12 March 2021
Expiry Date: 11 March 2026

Table 1 - Listed Wastes Authorised to be Handed

Listed Waste	Collection	Transport	Storage	Treatment	Recycling	Disposal
Animal effluent and residues	×	×	×	✓	×	✓
✓ Activity authorised by this licence × Activity not authorised by this licence						

2. Reporting Period

The reporting period for this report is the twelve months from 12 March 2024 through to 11 March 2025.

3. Summary

This report has been prepared for the 2025 Annual Return of the Territory Wildlife Park’s (TWP) wastewater monitoring and testing program, in accordance with the conditions set by the Northern Territory Environment Protection Authority (NTEPA) under Environment Protection Licence (EPL) EPL307.

The TWP Aquarium facilities generate wastewater contains listed waste such as animal effluent and residues. This wastewater is managed via three authorised discharge points into Berry Creek as per the conditions of EPL307. These discharge points are detailed in below in Table 2.

Table 2 - Authorised Discharge Points (DP)

Discharge Point	Source of Discharge Water	Locations
DP1	Freshwater aquariums - Discharge water is high pressure sand filtration backwash waste.	Latitude: 12°42'9.06"S Longitude: 130°59'36.46"E
DP2	Quarantine facilities - Discharge water is from large holding tanks for fish and aquatic plants.	Latitude: 12°42'9.58"S Longitude: 130°59'35.95"E
DP3	Saltwater aquariums - Discharge is from a mixture of freshwater, brackish and saltwater displays.	Latitude: 12°42'6.70"S Longitude: 130°59'37.51"E

The authorised sample point locations are listed below, as per Appendix A of EPL307.



Table 3 - Authorised Sample Points (SP)

Sample Point	Source of Discharge Water	Locations
SP1	Freshwater aquariums	Latitude: 12°42'4.38"S / Longitude: 130°59'43.60"E
SP2	Quarantine facilities	Latitude: 12°42'4.98"S / Longitude: 130°59'37.65"E
SP3	Saltwater aquariums	Latitude: 12°42'47.61"S / Longitude: 130°59'35.95"E

4. Surface Water Monitoring Program

As required by the EPL, TWP staff collect water samples from Berry Creek and the water flowing to Berry Creek during wastewater discharge events and on the falling tide. This ensures that the wastewater discharges meet the acceptable parameters outlined by the NTEPA in Appendix A of EPL307.

Appendix A – Monitoring Program

Table 1 Surface Water Monitoring Program

		Site Code Longitude Latitude	Sample Locations		
			SP1	SP2	SP3
			130°59'43.60"E	130°59'37.65"E	130°59'35.95"E
			12°42'4.38"S	12°42'4.98"S	12°41'47.61"S
Parameter	Units	Analysis	Frequency		
Field Measurement					
Flow	L/s	Field	Monthly during discharge events*		
pH	pH units				
Electrical Conductivity (EC)	µS/cm				
Dissolved Oxygen (DO)	% saturation				
Temperature	°C				
Turbidity	NTU				
Nutrients					
Total Phosphorous	µg/L	Unfiltered	Monthly during discharge events*		
Total Nitrogen					

*75% of sample events must be conducted during a backflush event.

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4.1 Wastewater Testing Sample Collection Procedure

A Standard Operating Procedure (SOP) for wastewater management was implemented at TWP in October 2022 following consultation with the NTEPA, to ensure compliance with monitoring requirements (refer to **Appendix 6.2**).

4.2 Sample Collection Procedure

This SOP identifies the locations for discharge and sample collection points, the methods of surface water sampling, and the required parameters and frequencies for testing. The results from these samples are presented in **Section 5** of this report.

4.3 Laboratory Services

TWP's wastewater samples are analysed by Envirolab Services (WA) Pty Ltd trading as MPL Laboratories ABN 53 140 099 207 (Envirolab). The samples are delivered to Envirolab's Darwin office and then airfreighted their Perth office for analysis.

5. Water Testing Results

The wastewater test results received from Envirolab are recorded into a spreadsheet, which then populates the required tables for each discharge and sample points (DP1/SP1, DP2/SP2 and DP3/SP3). Below are the recorded results for the twelve-month period from 12 March 2024 to 11 March 2025.

5.1 Discharge/Sample Point 1 - Wastewater Testing Results (12 March 2024 to 11 March 2025)

DP1/SP1	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 1 Lat: 12° 42'4.38" S Lon: 130°59'43.60"E	Mar-24	30	7.7	5.73	75.9%	140	2.0	0.27	<0.010
	Apr-24	N/R	7.9	N/R	N/R	270	1.2	0.26	<0.010
	May-24	28.9	7.9	5.64	73.1%	340	0.65	0.23	<0.010
	Jun-24	27.9	8.0	5.51	69.9%	360	0.61	0.21	<0.010
	Jul-24	28	8.0	5.64	71.8%	410	0.54	0.18	<0.010
	Aug-24	28.4	8.0	5.93	71.8%	380	0.60	0.18	<0.010
	Sep-24	29.8	8.0	5.35	70.3%	360	0.37	0.24	<0.010
	Oct-24	30.7	6.5	3.22	42.9%	260	0.77	0.15	<0.010
	Nov-24	30.1	7.8	6.33	83.7%	600	0.58	0.20	<0.010
	Dec-24	30.5	8.1	6.88	92.2%	580	0.35	0.16	<0.010
	Jan-25	28.9	7.3	8.86	115.3%	83	18	0.65	0.019
	Feb-25	29.3	7.2	6.07	79.3%	63	11	0.61	<0.010

5.2 Discharge/Sample Point 1 – Summary

The data from discharge/sample point 1 is consistent with previous years' reports, with no significant variations or concerns.

5.3 Discharge/Sample Point 1 – non-compliances and corrective actions

No non-compliance actions have been recorded for Discharge Point 1 during this reporting period.

5.4 Discharge/Sample Point 2 - Wastewater Testing Results (12 March 2024 to 11 March 2025)

DP 2/SP2	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 2 Lat: 12°42'4.98"S Lon: 130°59'37.65"E	Mar-24	28.9	7.5	3.53	45.9%	200	2.3	0.35	<0.010
	Apr-24	N/R	7.6	N/R	N/R	320	1.5	0.32	0.021
	May-24	26.9	7.6	3.55	44.4%	350	1.0	0.50	<0.010
	Jun-24	24.6	7.8	4.1	49.1%	380	0.54	0.13	<0.010
	Jul-24	25.6	7.9	3.36	40.9%	430	0.74	0.72	<0.010
	Aug-24	25.7	7.6	3.57	43.6%	410	0.45	0.15	0.016
	Sep-24	28.3	7.8	3.28	42.1%	420	6.2	0.81	0.049
	Oct-24	29.6	7.8	2.42	31.7%	450	4.3	0.46	0.024
	Nov-24	30	7.6	4.34	57.3%	490	0.75	0.19	0.020
	Dec-24	30.0	7.9	4.71	62.5%	480	0.46	0.25	0.011
	Jan-25	27.7	7.5	6.60	84.2%	520	3.9	0.93	0.021
	Feb-25	28.4	7.4	4.68	60.3%	270	3.3	1.6	0.014

5.5 Discharge/Sample Point 2 – Summary

Similar to DP1/SP1, discharge/sample point 2 shows consistency with previous reports and no significant concerns.

5.6 Discharge/Sample Point 2 – Non-compliances and corrective actions

There are no non-compliance issues for Discharge Point 2 during the reporting period.

5.7 Discharge Point 3 – Wastewater Testing Results (12 March 2024 to 11 March 2025)

DP 3	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 3 Lat: 12°41'47.61"S Lon: 130°59'35.95"E	Mar-24	30.1	7.8	6.56	87.0%	150	2.5	0.19	<0.010
	Apr-24	N/R	8.0	N/R	N/R	280	1.5	0.18	0.010
	May-24	29.2	7.8	5.91	77.0%	12000	5.8	0.18	0.014
	Jun-24	26.2	8.1	6.59	81.2%	690	1.5	0.11	<0.010
	Jul-24	27	8.1	5.87	73.2%	4400	0.98	0.65	<0.010
	Aug-24	27.6	7.7	6.42	51.0%	11000	1.4	0.21	0.011
	Sep-24	29.9	8.0	6.18	81.2%	8000	0.98	0.21	<0.010
	Oct-24	31.6	7.5	7.04	95.2%	29000	0.80	0.70	0.014
	Nov-24	30.7	7.4	75.8	101.3%	26000	0.88	0.35	0.037
	Dec-24	30.8	8.0	10.3	138.1%	7600	0.40	0.16	<0.010
	Jan-25	29.5	7.4	9.57	126.0%	7600	16	0.50	0.020
	Feb-25	29.9	7.3	6.59	87.1%	90	12	0.71	<0.010

5.8 Discharge Point 3 – Summary

Similar to DP1/SP1 and DP2/SP2, discharge/sample point 3 maintains consistency with no major concerns observed.

5.9 Discharge Point 3 – Non-compliances and corrective actions

No non-compliance actions have been recorded for Discharge Point 3 during this reporting period.

6. Appendices

6.1 TWP EPA Licence 307 – 12 Month WW Test Results Mar-24 to Feb-25 spreadsheet

6.2 Wastewater Testing Sample Collection Procedure

6.3 TWP Site map for Discharge Points/Sample Collection Points

Appendix A – Monitoring Program

Table 1 Surface Water Monitoring Program

Site Code Longitude Latitude			Sample Locations		
			SP1	SP2	SP3
			130°59'43.60"E	130°59'37.65"E	130°59'35.95"E
			12°42'4.38"S	12°42'4.98"S	12°41'47.61"S
Parameter	Units	Analysis	Frequency		
Field Measurement					
Flow	L/s	Field	Monthly during discharge events*		
pH	pH units				
Electrical Conductivity (EC)	µS/cm				
Dissolved Oxygen (DO)	% saturation				
Temperature	°C				
Turbidity	NTU				
Nutrients					
Total Phosphorous	µg/L	Unfiltered	Monthly during discharge events*		
Total Nitrogen					

*75% of sample events must be conducted during a backflush event.

Appendix A – Monitoring Program

Table 2 Surface Water Monitoring trigger values

Parameter	Units	Trigger values
Physical Parameters		
pH	pH units	7.0 – 8.0 ¹
Electrical Conductivity (EC)	µS/cm	320 – 390 ¹
Dissolved Oxygen (DO)	% saturation	85 – 120 ²
Turbidity	NTU	2 – 15 ²
Nutrients		
Total Phosphorous	µg/L	10 ²
Total Nitrogen		300 ²

¹Darwin Harbour Water Quality Objectives for freshwater rivers and streams

²Australian and New Zealand Guidelines for Fresh and Marine Water Quality – Volume 1 – Chapter 2 – Aquatic ecosystems (ANZECC, 2000)



Territory Wildlife Park									
Aquarium Waste Water Sampling Records March 2024 to February 2025									
DP1	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 1 Lat: 12° 42' 4.38" S Lon: 130° 59' 43.60" E	Mar-24	30	7.7	5.73	75.9%	140	2.0	0.27	<0.010
	Apr-24	29.6	7.9	5.42	71.3%	270	1.2	0.26	<0.010
	May-24	28.9	7.9	5.64	73.1%	340	0.65	0.23	<0.010
	Jun-24	27.9	8.0	5.51	69.9%	360	0.61	0.21	<0.010
	Jul-24	28	8.0	5.64	71.8%	410	0.54	0.18	<0.010
	Aug-24	28.4	8.0	5.93	71.8%	380	0.60	0.18	<0.010
	Sep-24	29.8	8.0	5.35	70.3%	360	0.37	0.24	<0.010
	Oct-24	30.7	6.5	3.22	42.9%	260	0.77	0.15	<0.010
	Nov-24	30.1	7.8	6.33	83.7%	600	0.58	0.20	<0.010
	Dec-24	30.5	8.1	6.88	92.2%	580	0.35	0.16	<0.010
	Jan-25	28.9	7.3	8.86	115.3%	83	18	0.65	0.019
	Feb-25	29.3	7.2	6.07	79.3%	63	11	0.61	<0.010

DP 2	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 2 Lat: 12° 42' 4.98" S Lon: 130° 59' 37.65" E	Mar-24	28.9	7.5	3.53	45.9%	200	2.3	0.35	<0.010
	Apr-24	28.1	7.6	2.90	37.1%	320	1.5	0.32	0.021
	May-24	26.9	7.6	3.55	44.4%	350	1.0	0.50	<0.010
	Jun-24	24.6	7.8	4.1	49.1%	380	0.54	0.13	<0.010
	Jul-24	25.6	7.9	3.36	40.9%	430	0.74	0.72	<0.010
	Aug-24	25.7	7.6	3.57	43.6%	410	0.45	0.15	0.016
	Sep-24	28.3	7.8	3.28	42.1%	420	6.2	0.81	0.049
	Oct-24	29.6	7.8	2.42	31.7%	450	4.3	0.46	0.024
	Nov-24	30	7.6	4.34	57.3%	490	0.75	0.19	0.020
	Dec-24	30.0	7.9	4.71	62.5%	480	0.46	0.25	0.011
	Jan-25	27.7	7.5	6.60	84.2%	520	3.9	0.93	0.021
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Aquarium Waste Water Sampling Records March 2023 to February 2024									
SP1	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 1 Lat: 12° 42' 4.38" S Lon: 130° 59' 43.60" E	Mar-23	28.8	7.3	6.68	86.6%	51	11	0.64	<0.010
	Apr-23	28.7	7.6	7.28	94.0%	150	4.4	0.69	<0.010
	May-23	27.8	7.9	5.59	70.7%	320	0.53	<0.10	0.013
	Jun-23	28.9	8.0	5.87	76.0%	350	0.75	<0.10	<0.010
	Jul-23	28.5	7.9	3.23	41.5%	360	0.72	0.14	<0.010
	Aug-23	29.4	8.1	7.99	101.4%	350	0.69	0.12	<0.010
	Sep-23	29.7	7.7	5.34	69.8%	380	0.70	0.19	0.025
	Oct-23	30.0	8.0	8.19	107.9%	350	1.3	0.18	<0.010
	Nov-23	29.7	8.0	5.64	74.1%	370	0.64	0.25	<0.010
	Dec-23	28.0	7.6	1.97	25.3%	280	4.1	0.50	<0.010
	Jan-24	28.7	7.0	6.55	85.1%	43	16.0	0.55	0.021
	Feb-24	29.9	7.5	3.71	49.0%	170	3.2	0.35	0.018

SP 2	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 2 Lat: 12° 42' 4.98" S Lon: 130° 59' 37.65" E	Mar-23	27.7	7.4	4.98	63.4%	240	2.9	0.55	<0.010
	Apr-23	27.9	7.4	5.17	65.9%	260	2.3	0.65	0.018
	May-23	23	7.7	7	81.2%	350	0.84	0.18	0.030
	Jun-23	25.5	7.9	5.46	66.5%	370	1.1	0.35	0.038
	Jul-23	28.1	7.7	4.29	54.6%	380	0.7	0.32	0.024
	Aug-23	25.4	7.8	7.5	91.1%	390	0.83	0.18	<0.010
	Sep-23	27.4	7.9	3	37.7%	11000	0.97	0.15	0.019
	Oct-23	28.5	7.8	8.29	106.4%	410	1.1	0.17	0.018
	Nov-23	28.3	7.6	2.43	31.2%	420	1.4	0.29	<0.010
	Dec-23	28.8	7.8	3.02	39.3%	450	6.4	0.87	0.047
	Jan-24	28.5	7.7	3.74	48.3%	460	0.97	0.35	0.022
	Feb-24	28.7	7.4	2.87	37.2%	230	2.8	0.44	0.025

DP 3	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 2-15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
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	Oct-24	31.6	7.5	7.04	95.2%	29000	0.80	0.70	0.014
	Nov-24	30.7	7.4	75.8	101.3%	26000	0.88	0.35	0.037
	Dec-24	30.8	8.0	10.3	138.1%	7600	0.40	0.16	<0.010
	Jan-25	29.5	7.4	9.57	126.0%	7600	16	0.50	0.020
	Feb-25	29.9	7.3	6.59	87.1%	90	12	0.71	<0.010

SP 3	Month	Temp °C	PH	Dissolved oxygen mg/L	Dissolved Oxygen Percentage	Electrical conductivity	Turbidity	Total nitrogen	Total phosphorous
Trigger Values		°C	pH units 7.0-8.0	mg/L	% Saturation 85-120	µS/cm 320-390	NTU 15	µg/L 300 or mg/L 0.3	µg/L 10 or mg/L 0.01
Discharge Point 3 Lat: 12°41'47.61"S Lon: 130°59'35.95"E	Mar-23	29	7.1	6.74	87.7%	48	12	0.54	<0.010
	Apr-23	29.2	7.8	7.06	92.1%	150	4.1	0.35	0.011
	May-23	26.2	8	7.4	91.0%	1300	0.68	<0.10	0.014
	Jun-23	28.8	8.1	7.89	101.6%	760	0.87	<0.10	<0.010
	Jul-23	28.1	8.1	4.29	54.6%	1200	0.83	0.1	<0.010
	Aug-23	26.9	7.8	8.78	109.4%	6800	1.2	0.19	<0.010
	Sep-23	29.2	7.9	6.19	8.3%	10900	0.97	0.15	0.019
	Oct-23	30.0	7.9	11.8	155.9%	11000	2.2	0.15	0.015
	Nov-23	29.9	7.9	6.29	83.0%	11000	1.4	0.22	<0.010
	Dec-23	31.0	7.9	5.69	76.7%	9800	2.0	0.34	0.015
	Jan-24	28.9	7.2	775	101.0%	69	19	0.51	0.026
	Feb-24	30.1	7.7	5.54	73.0%	170	5.7	0.4	0.18