



Northern
Territory
Government

WASTE DISCHARGE LICENCE

(Pursuant to section 74 of the *Water Act 1992*)

Licensee	Power Generation Corporation, trading as Territory Generation
Licence Number:	WDL212-04
Registered Business Address:	Building 3, Level 2 631 Stuart Highway Berrimah NT 0828
ACN:	
ABN:	72 687 980 755
Commencement Date:	25 November 2015
Anniversary Date:	12 December
Amended On:	18 July 2024 to WDL212-04
Renewed On:	WDL212-03 issued 12 December 2022 WDL212-02 issued 18 June 2020 WDL212-01 issued 18 June 2018
Expiry Date:	12 December 2032
Licensed Action:	The controlled discharge of wastewater from the cooling tower and settlement ponds, produced during electricity generation at Channel Island Power Station, to stormwater drains that flow into Darwin Harbour via the authorised discharge points and subject to the conditions of this licence.

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INFORMATION ABOUT THIS LICENCE

This waste discharge licence is granted pursuant to section 74 of the *Water Act 1992* (NT) (Water Act), which empowers the Controller of Water Resources to, in accordance with the Water Act, grant a licence to a person to carry out an action that would otherwise be an offence against this Act.

Responsibilities of Licensee

- In addition to the conditions set out in this licence, general responsibilities of Licensees are set out in the *Waste Management and Pollution Control Act 1998* (NT) (WMPC Act), the Water Act and the Water Regulations 1992 (NT) (Water Regulations).
- It is an offence under the Water Act, if the holder of a waste discharge licence contravene or cause, suffer or permit a person to contravene a term or condition to which the waste discharge licence is subject (s 76 Water Act).
- Except as expressly provided for in this licence or applicable law, it is an offence under section 16 of the Water Act to wilfully cause or cause, directly or indirectly:
 - waste to come into contact with water; or
 - water to be polluted.

Duration of Licence

- This licence will remain in force until its Expiry Date, it is surrendered by the Licensee, or until it is suspended or revoked by the Controller of Water Resources.
- A Licensee may surrender its licence at any time (s 94 Water Act).
- If the Licensee wishes to surrender its licence it should complete the notification form available from the Administering Agency.
- Once a licence is surrendered, the authority to allow waste to come into contact with water or water to be polluted ends, and causing waste to come into contact with water or water to be polluted is an offence pursuant to section 16 of the Water Act.

Amendment, Modification or Revocation of Licence

- As set out in section 93 of the Water Act, the Controller of Water Resources may, by notice served on the holder of the licence:
 - amend or modify the terms and conditions of a licence; or
 - where the Controller of Water Resources is satisfied that the holder of the licence has contravened or failed to comply with a term or condition of the licence or of any other licence previously held by the person for a similar purpose during the 12 months immediately preceding the grant of the first-mentioned licence, the Controller of Water Resources may:
 - revoke a licence; or
 - suspend a licence.

Transfer of Licence

- Where a waste discharge licence is granted to a person in relation to the person's use of land and, during the period of this licence, the person's interest in the land is transferred to another person,

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the waste discharge licence shall be deemed to have also been transferred to the other person (s 92 Water Act).

- The Licensee must ensure the contact details recorded with the Administering Agency for the licence are correct at all times in accordance with condition 6. Accordingly, it is recommended the transferee complete the notification of transfer of a waste discharge licence form available from the Administering Agency.

Public Register

- A copy of this Licence will be placed on the Register in accordance with section 95 of the Water Act.
- A copy of plans for environmental management, reports, submissions or documents provided at Schedule 1 Item 14 will be placed on the Register.
- The Register is freely available from the Northern Territory Environment Protection Authority (NT EPA) website.

Water Quality Standards

- The Administrator may declare, by notice in the *Gazette*, a beneficial use, quality standard, criteria or objectives which apply in relation to any waste or class of waste, or water or class of water (s 73 Water Act).
- A water or waste beneficial use, quality standard, criteria or objectives declared under s 73 of the Act and in force is an Environment Protection Objective for the purposes of the WMPC Act (s 18 WMPC Act).
- An Environment Protection Objective is a statutory instrument to establish principles on which:
 - Environmental quality is to be maintained, enhanced, managed or protected;
 - Pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; or
 - Effective waste management is to be implemented or evaluated.
- Schedule 1 Item 1 specifies the beneficial use, quality standard, criteria or objective relevant to this licence at the date of issue.

Environmental Interests

- Environmentally sensitive or significant areas may be captured by and protected under the *Environment Protection Act 2019* (NT) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). As such, and to best protect and regulate our waterways, waste discharge licences must identify the sensitivity of the environment surrounding the location of the Licensed Action.
- Schedule 1 Item 2 specifies the sites of conservation significance (if any) relevant to this licence at the date of issue.
- Schedule 1 Item 3 specifies the Ramsar wetlands (if any) relevant to this licence at the date of issue.

Cultural Interests

- Under Commonwealth and Northern Territory laws it can be an offence to enter or remain on or damage a sacred site.

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- Sites of Aboriginal significance including registered and recorded Aboriginal sacred sites may exist in the vicinity of the Licensed Action.
- It is the Licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any authority certificates required as a result of conducting the Licensed Action are obtained and complied with.
- Further specific advice on any cultural requirement or implication of the Licensed Action should be sought from the relevant land council and the Aboriginal Areas Protection Authority.

END NOTES

This licence is an amendment and supersedes WDL212-03, which was issued on 12 December 2022.

WDL212-03 was a renewal and superseded WDL212-02, which was issued on 18 June 2020.

WDL212-02 was a renewal and superseded WDL212-01, which was issued on 18 June 2018.

WDL212-01 was a renewal and superseded WDL212, which was issued on 25 November 2015.

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SCHEDULE 1 - ITEMS

Item	Detail	
1. Beneficial uses (condition 19)	Beneficial Uses and Objectives Darwin Harbour Region, NT Government Gazette No 27, 7 July 2010 The declared beneficial uses are: (a) aquaculture; (b) environment; and (c) cultural.	
2. Sites of conservation significance (condition 19)	SOCS No 6: Darwin Harbour (NT Parks and Conservation Masterplan Map Number 12)	
3. Ramsar wetlands (condition 19)	Not applicable	
4. Licence Documents (condition 13)	(a) Emergency Response Plan. (b) Consultation and Communication Plan. (c) Discharge Reduction Plan. (d) Environment Chemical and Hydrocarbon Management Plan.	
5. Authorised Discharge Points (condition 20)	ADP1	Latitude: -12.554612 Longitude: 130.8649699
	ADP2	Latitude: -12.5565488 Longitude: -130.8635673
	Map reference GDA94 as shown in Appendix 1.	
6. Sources of waste (condition 21)	Wastewater produced during the electricity generation process. 1. Wastewater from cooling tower discharges; and 2. Wastewater from the neutralisation basin and oil/water separator through the settling ponds.	
7. Trigger Values (condition 21)	The limits for parameters listed in Appendix 2.	
8. Compliance point (condition 21)	ADP1	Latitude: -12.554612 Longitude: 130.8649699
	ADP2	Latitude: -12.5565488 Longitude: -130.8635673
	Map reference GDA94 as shown in Appendix 1.	
9. Limitations on discharge (condition 21)	This licence authorises continuous discharge from the authorised discharge points.	

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Item	Detail
10. Notifiable incidents (conditions 25 and 26)	<ul style="list-style-type: none"> (a) An exceedance of a trigger value specified in Item 7 at the compliance points in Item 8, on three consecutive sampling occasions; (b) An exceedance of three or more times a trigger value specified in Item 7 at the compliance points in Item 8; (c) A discharge at a point not specified in Item 5; (d) A discharge from a source not specified in Item 6; (e) A failure to comply with conditions 20 or 23.
11. Monitoring Program (condition 27)	<p>The Monitoring Program includes:</p> <ul style="list-style-type: none"> (a) Monitoring of discharge volume in accordance with Appendix 2; (b) Surface water quality monitoring in accordance with Appendix 2; (c) Monitoring of annual contaminant loads discharged to Darwin Harbour in accordance with Appendix 2 and conditions 40; (d) Sediment monitoring in accordance with Appendix 3.
12. Annual Return (condition 38)	<p>The Annual Return is due on:</p> <ul style="list-style-type: none"> (a) each Anniversary Date; and (b) the Expiry Date of this licence, <p>for the preceding 12 month period from 1 November to 31 October.</p>
13. Monitoring Report (condition 39)	<p>The Monitoring Report is due on:</p> <ul style="list-style-type: none"> (a) each Anniversary Date; and (b) the Expiry Date of this licence; and (c) in the event the Licensee applies to renew the licence, 90 days prior to the Expiry Date; <p>for the preceding 12 month period from 1 November to 31 October.</p>
14. Documents placed on Register (condition 42)	<p>The following documents will be placed on the Register:</p> <ul style="list-style-type: none"> (a) The Licence Documents specified in Item 4; (b) The Monitoring Report provided in accordance with condition 39; and (c) The Annual Return provided in accordance with condition 38.
15. Special conditions (condition 43)	nil

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LICENCE CONDITIONS

RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

1. Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
2. Any reference to any standard, guideline or code of practice (Australian or international) in this licence means the relevant parts of the current version of that standard, guideline or code of practice.
3. In this licence, unless the contrary intention appears, words that are defined in the Water Act are intended to have the meaning given to them in that Act.
4. In this licence, unless a contrary intention appears, terms are defined in the Definitions at the end of this licence.
5. In this licence a reference to an Item is a reference to an Item specified in Schedule 1.

GENERAL

6. The Licensee must ensure the contact details recorded with the Administering Agency for this licence are correct at all times.
7. The Licensee must at all times have a 24 hour emergency contact.
8. The Licensee must notify the Administering Agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
9. The Licensee must display clear and legible signage, in English, in a prominent location at each public entrance to the premises of the Licensed Action that includes the following details:
 - 9.1. waste discharge licence number issued under the Water Act; and
 - 9.2. 24 hour emergency contact details.
10. The Licensee must cause a hard copy of this licence to be available for inspection, at the premises of the Licensed Action, by any person on request.
11. Unless otherwise specified, within 10 business days of a request, the Licensee must provide to the Administering Agency a copy of any record, document, monitoring data or other information in relation to the Licensed Action in electronic form by emailing environmentalregulation@nt.gov.au.
12. All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by emailing environmentalregulation@nt.gov.au.
13. The licensee must maintain, implement and comply with the current version of the documents specified in Item 4.
14. Within 10 business days of any amendment being made to a document specified in Item 4, the Licensee must provide the amended document to the Administering Agency, along with:
 - 14.1. a tabulated summary of the amendment(s) with document references;
 - 14.2. reasons for the amendment(s); and
 - 14.3. an assessment of environmental risk associated with the amendment(s).
15. The Administering Agency may require the Licensee to revise or amend and resubmit any document provided in accordance with this licence. Where the Administering Agency requires any document to be revised or amended, the Licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
16. The Licensee must operate and maintain a community feedback telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the Licensee, enquiries or complaints about the Licensed Action, and to which the Licensee must respond. The community feedback telephone number must be displayed:

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- 16.1. where the Licensee has a website, in a prominent location on the Licensee's website;
 - 16.2. in the Consultation and Communication Plan; and
 - 16.3. in other publicly available documents relating to the Licensed Action.
17. The Licensee must maintain a register of complaints that records the details of each complaint received in relation to the Licensed Action and provide a copy to the Administering Agency on request. Details of the complaints must (as is reasonably practicable) include, the following information:
 - 17.1. the person to whom the complaint was made;
 - 17.2. the person responsible for managing the complaint;
 - 17.3. the date and time the complaint was reported;
 - 17.4. the date and time of the event(s) that led to the complaint;
 - 17.5. the contact details of the complainant if known, or where no details are provided a note to that effect;
 - 17.6. the nature of the complaint;
 - 17.7. the nature of event(s) giving rise to the complaint;
 - 17.8. prevailing weather conditions at the time (where relevant to the complaint);
 - 17.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and
 - 17.10. if no action was taken, why no action was taken.

OPERATIONAL

18. Without limiting the conditions of this licence, in conducting the Licensed Action, the Licensee must do all things reasonable and practicable to:
 - 18.1. minimise the likelihood of waste coming into contact with water or water being polluted as a result of, or in connection with, the Licensed Action;
 - 18.2. prevent and minimise the likelihood of environmental harm occurring as a result, or in connection with, the Licensed Action;
 - 18.3. effectively investigate, monitor and report on water being polluted as a result of, or in connection with, the Licensed Action;
 - 18.4. effectively investigate, monitor and report on environmental harm and the risk of environmental harm occurring as a result of or in connection with the Licensed Action; and
 - 18.5. apply the principles of ecologically sustainable development.
19. The Licensee must, without limiting any other condition of this licence, in conducting the Licensed Action do all things reasonable and practicable to minimise adverse effects to any:
 - 19.1. declared beneficial use, quality, standard or objectives declared under section 73 of the Water Act;
 - 19.2. sites of conservation significance; or
 - 19.3. designated Ramsar wetlands,including, but not limited to, those specified in Items 1, 2 and 3.

DISCHARGES

20. The Licensee must only discharge waste to water from the authorised discharge points specified in Item 5.
21. Discharges from each authorised discharge point must:

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- 21.1. consist only of waste from the source(s) specified in Item 6;
 - 21.2. not exceed the trigger value limits specified in Item 7 at the compliance point specified in Item 8; and
 - 21.3. comply with the limitations specified in Item 9.
22. The Licensee must, for each authorised discharge point, install, operate and maintain a device to measure and record, for each discharge event:
- 22.1. the time the discharge commenced and the duration of the discharge;
 - 22.2. the discharge rate of flow; and
 - 22.3. the discharge volume.
23. Discharges from each authorised discharge point must not:
- 23.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;
 - 23.2. cause or generate odours which would adversely affect the use and amenity of surrounding waters;
 - 23.3. cause algal blooms in the receiving water;
 - 23.4. pollute groundwater;
 - 23.5. cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;
 - 23.6. cause mortality of fish or other aquatic organisms;
 - 23.7. cause erosion or degradation to the beds and banks of a watercourse; or
 - 23.8. cause adverse impacts on plants or animals.

INVESTIGATIONS AND NOTIFICATIONS

24. Following any exceedance of a trigger value limit specified in Item 7 at the compliance point specified in Item 8, the Licensee must:
- 24.1. investigate the exceedance, including undertaking targeted monitoring, in addition to routine monitoring; and
 - 24.2. take corrective action to mitigate any environmental harm and ensure the exceedance does not reoccur; and
 - 24.3. make a record of:
 - 24.3.1. when the exceedance was detected and by whom;
 - 24.3.2. the date and time of the exceedance;
 - 24.3.3. the actual and potential causes and contributing factors to the exceedance;
 - 24.3.4. the risk of environmental harm arising from the exceedance;
 - 24.3.5. exceedances and details of the investigation and corrective action taken; and
 - 24.3.6. if no action was taken, why no action was taken.
25. If one of the incidents specified in Item 10 occurs, the Licensee must notify the Administering Agency by emailing environmentalregulation@nt.gov.au as soon as practicable after (and in any case within 24 hours after) first becoming aware of the incident, including the following information:
- 25.1. when the incident was detected and by whom;
 - 25.2. the date and time of the incident;
 - 25.3. whether discharge was occurring at the time of the incident and the source of the discharge;

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- 25.4. whether discharge is still occurring; and
- 25.5. a date (within 10 business days of the incident) when an investigation report will be submitted to the Administering Agency.
- 26. Within 10 business days of notifying the Administering Agency of an incident specified in Item 10, the Licensee must provide the Administering Agency an investigation report that includes:
 - 26.1. when the incident was detected and by whom;
 - 26.2. the date and time of the incident;
 - 26.3. whether discharge was occurring at the time of the incident and the source of the discharge;
 - 26.4. the actual and potential causes and contributing factors to the incident;
 - 26.5. monitoring data of the discharge, and upstream and downstream water of the incident, collected for the date the incident was detected and three sampling rounds prior;
 - 26.6. available flow rates to demonstrate any influence streams and rivers may have had on the incident;
 - 26.7. rainfall recorded at the site prior to the incident;
 - 26.8. the risk of environmental harm arising from the incident;
 - 26.9. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the incident;
 - 26.10. corrective actions that have or will be undertaken to ensure the incident does not reoccur; and
 - 26.11. if no action was taken, why no action was taken.

MONITORING

- 27. From the Commencement Date of this licence, the Licensee must implement and comply with the Monitoring Program specified in Item 11.
- 28. The Licensee must to the extent practicable collect samples that are representative of discharge conditions that maximises the ability to detect potential impact from the Licenced Action, including collecting samples at sampling points.
- 29. In implementing the Monitoring Program the Licensee must to the extent practicable that samples collected at the sampling points are collected:
 - 29.1. on the same date as discharge event; and
 - 29.2. from the part of the waterway that provides representative (well mixed) samples.
- 30. If a sample is missed or cannot be collected at a sampling point at a frequency set in the Monitoring Program for any reason the Licensee must revisit the sampling point to collect a sample as soon as possible after the missed collection.
- 31. The Licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667.1 1998, ANZG (2018), as updated from time to time).
- 32. For the parameters that require analysis at a laboratory, the Licensee must ensure that:
 - 32.1. all samples are analysed at a laboratory with current NATA accreditation or equivalent; and
 - 32.2. detection and reporting limits are appropriate to determine compliance with this licence.
- 33. The Licensee must ensure any samples collected in accordance with the Monitoring Program or in connection with the Licensed Action or this licence, are obtained by, or under the supervision of a qualified sampler.
- 34. The Licensee must ensure any plant and equipment used by the Licensee in conducting the Monitoring Program:

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- 34.1. is reasonably fit for the purpose and use to which it is put, including that it is properly calibrated;
 - 34.2. is maintained and operational; and
 - 34.3. is operated by a person trained to use the plant and equipment.
35. The Licensee must ensure that, for each sample collected in accordance with the Monitoring Program or the Licensed Action, the following information must be recorded and retained:
- 35.1. the date on which the sample was collected;
 - 35.2. the time at which the sample was collected;
 - 35.3. the location at which the sample was collected;
 - 35.4. the name of the person who collected the sample;
 - 35.5. the chain of custody forms relating to the sample;
 - 35.6. the field measurements (if any) and analytical results (if any) relating to the sample; and
 - 35.7. laboratory quality assurance and quality control documentation.
36. The Licensee must for all land based monitoring points specified in the Monitoring Program:
- 36.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and
 - 36.2. maintain safe access and egress, as is reasonably practicable.

RECORDING AND REPORTING

37. The Licensee must keep records of all contraventions with this licence. These records must be adequate to enable the Licensee to comply with the notification and reporting conditions of this licence.
38. The Licensee must submit a completed Annual Return, by emailing environmentalregulation@nt.gov.au as specified in Item 12.
39. The Licensee must complete and provide to the Administering Agency a report of data and information obtained through the implementation and performance of the Monitoring Program (the Monitoring Report), as prescribed by this licence, on the dates specified in Item 13.
40. The Licensee must ensure that each Monitoring Report:
- 40.1. is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring' (or any other guideline as adopted by the Administering Agency from time to time);
 - 40.2. includes a tabulation, in Microsoft ® Excel ® format or another format requested by the Administering Agency, of all monitoring data required to be collected in accordance with this licence for the preceding 12 month period;
 - 40.3. includes a tabulation of monthly and annual contaminant loads discharged from the authorised discharge point specified in Item 5 for the preceding 12 month period. Contaminant loads must be calculated for metals, metalloids, nutrients and other parameters (excluding field parameters) listed in the monitoring program specified in Item 11. The calculations must be based on the daily discharge volume and the concentration of contaminant present in the discharge on that day. On the days when a sample was not taken then the concentration of the contaminant must be estimated using Linear Interpolation methodology;
 - 40.4. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the Licensed Action over a minimum period of three years (of part thereof);
 - 40.5. includes a summary of any investigations undertaken by the Licensee in accordance with this licence for the preceding 12 month period; and

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40.6. includes an assessment of environmental impact from the Licensed Action.

- 41. If the licence expires or is otherwise surrendered, suspended or revoked and the licence contained a condition that the Licensee provide a notice, report, record or other information after that date, the Licensee must provide any report, record, information or data available to the Licensee up to and including the date the licence expired or was surrendered, suspended or revoked.
- 42. A copy of the documents listed specified in Item 14 will be placed on the Register.

SPECIAL CONDITIONS

- 43. The Licensee must comply with the conditions specified in Item 15.

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END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



Amy Dennison

Executive Director, Regulation Division DEPWS

Delegate for the Controller of Water Resources

Dated the 18th day of July 2024

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DEFINITIONS

In this licence, unless a contrary intention appears:

Term	Definition
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the Licensed Action.
Administering Agency	means the NT Government Department with responsibility for administering the Water Act.
Anniversary Date	annual anniversary of the Commencement Date.
Annual Return	an Administering Agency prescribed format for demonstrating and reporting compliance with the conditions of this licence.
ANZG (2018)	Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at http://www.waterquality.gov.au/anz-guidelines
business days	a day not Saturday, Sunday or a public holiday, in Darwin, Northern Territory.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the Licensed Action before, during and after the Licensed Action which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the Licensed Action.
contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the Licensee who can be contacted about the licence and Licensed Action.
discharge	releasing or allowing a liquid, gas or other substance to flow out from where it has been confined.
Dry season	means 1 May to 31 October.
Emergency Response Plan	a written plan documenting the Licensee's procedures for responding to emergencies caused by, resulting from or associated with the Licensed Action and that may cause environmental harm.
Licensed Action	the Licensed Action as described on the covering page of this licence.
Linear Interpolation	<p>a method to construct new data points within the range of known data points.</p> $y = y1 + ((x - x1) * ((y2 - y1) / (x2 - x1)))$ <p>y is the unknown concentration between known concentrations y1 and y2 y1 is the first known concentration y2 is the second known concentration x is the day of the unknown concentration y x1 is the day of the first known concentration y1 x2 is the day of the second known concentration y2</p>
litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
NATA	National Association of Testing Authorities, Australia.
plant and equipment	all material items used in association with the Licensed Action, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.

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Term	Definition
pollution	has the same meaning as <i>pollute</i> as defined in section 4 of the Water Act.
public entrance	access to the licensed premises that is utilised by the public.
qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Register	the register available at the website of the Northern Territory Environment Protection Authority (NT EPA).
wastewater	water that contains a waste.
Water Act	<i>Water Act 1992</i> (NT).
Wet season	means 1 November to 30 April.

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APPENDIX 1: Site Plan



Figure 1 - Location of monitoring sites

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APPENDIX 2 : Surface Water Monitoring Program

Sampling Point					Authorised Discharge and Compliance Points		Release Points to Darwin Harbour – Information Monitoring Points		Inflow to Setting Ponds Information Monitoring Points	
Site Code					ADP1	ADP2	NODH1	SODH1	ILCP	ISCP
Latitude ¹					-12.554612	-12.5565488	-12.5540919	-12.5602148	-12.5556373	-12.5561714
Longitude ¹					130.8649699	130.8635673	130.8640302	130.8627621	130.8639617	130.86412
Parameter	Code	Unit	Anal.	Trigger Values	Frequency					
Field Parameters										
Flow		kL/day	In situ	N/A ³	C ²	C ²	N/A ³	N/A ³	N/A ³	N/A ³
Temperature		°C		N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
pH	pH	pH		6.0-8.5 ⁶	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Dissolved Oxygen	DO	%		N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Electrical Conductivity	EC	µS/cm		N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Turbidity	Turb	NTU		N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Free Chlorine		mg/L		N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Nutrients/Suspended Solids										
Total Nitrogen	TN	mg/L	Unfiltered	3.5 ⁷	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Total Phosphorus	TP			0.3 ⁷	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Total Suspended Solids	TSS			25 ⁷	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵

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Sampling Point					Authorised Discharge and Compliance Points		Release Points to Darwin Harbour – Information Monitoring Points		Inflow to Setting Ponds Information Monitoring Points	
Site Code					ADP1	ADP2	NODH1	SODH1	ILCP	ISCP
Latitude ¹					-12.554612	-12.5565488	-12.5540919	-12.5602148	-12.5556373	-12.5561714
Longitude ¹					130.8649699	130.8635673	130.8640302	130.8627621	130.8639617	130.86412
Parameter	Code	Unit	Anal.	Trigger Values	Frequency					
Metals and Metalloids ¹⁰										
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	82 ⁹	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Arsenic	As			N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Cadmium	Cd			14 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Chromium (III/VI)	Cr			49/20 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Cobalt	Co			14 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Copper	Cu			8 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Lead	Pb			6.6 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Mercury	Hg			0.7 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Nickel	Ni			200 ⁸	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Zinc	Zn			152 ⁹	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Hydrocarbons										
Total Petroleum Hydrocarbons	TPH	µg/L	Unfiltered	N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Polycyclic aromatic hydrocarbons	PAH			N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵

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Sampling Point					Authorised Discharge and Compliance Points		Release Points to Darwin Harbour – Information Monitoring Points		Inflow to Setting Ponds Information Monitoring Points	
Site Code					ADP1	ADP2	NODH1	SODH1	ILCP	ISCP
Latitude ¹					-12.554612	-12.5565488	-12.5540919	-12.5602148	-12.5556373	-12.5561714
Longitude ¹					130.8649699	130.8635673	130.8640302	130.8627621	130.8639617	130.86412
Parameter	Code	Unit	Anal.	Trigger Values	Frequency					
Benzene	BTEX			N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Toluene				N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Ethylbenzene				N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵
Xylenes				N/A ³	M ⁴	M ⁴	M ⁴	M ⁴	Q ⁵	Q ⁵

Footnotes:

1. Coordinate reference system GDA94
2. C = continuous, at least one reading per hour; for data capture to be considered continuous, any data gaps must be <10% of data in total for the reporting period.
3. N/A = not applicable
4. M = monthly, one sample to be collected monthly per discharge event
5. Q = quarterly, one sample to be collected quarterly per discharge event
6. pH range for Darwin Harbour Water Quality Objectives, upper estuary.
7. Trigger value applies to ADP1, ADP2, NODH1 and SODH1. Trigger value derived from maximum end-of-pipe values recorded at ADP1 or ADP2 from the 2016 to 2023 dataset (Trop Water 2023).
8. Default ANZG (2018) Trigger Values for 90% species protection in Marine Waters.
9. Trigger value applies to ADP1, ADP2, NODH1 and SODH1. Trigger value derived from 2016 to 2023 dataset (Trop Water 2023).
10. Trigger values for metals and metalloids apply to filtered fraction

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APPENDIX 3: Sediment Monitoring Program

NOTE: Sampling and analysis methods must follow Munksgaard (2013) and include normalisation to 1% organic carbon as per ANZG 2018. Sediment quality trigger values apply to the < 2 mm fraction of sediment samples

Monitoring Point Code	NODH2	SODH2	Trigger Value** (mg/kg dry weight)
Latitude *	-12.5544821°	-12.560561°	
Longitude *	130.8632593°	130.8631102°	
	Sampling frequency		
Total and filtered metals			
Aluminium	Annually	18800 ^a	
Arsenic	Annually	<20	
Cadmium	Annually	<1.5	
Chromium	Annually	<80	
Cobalt	Annually	8 ^a	
Copper	Annually	<65	
Lead	Annually	<50	
Mercury	Annually	<0.15	
Nickel	Annually	<21	
Zinc	Annually	<200	
Hydrocarbons			
Total Petroleum Hydrocarbons (TPH)	Annually	As per Appendix 4	
Polycyclic aromatic hydrocarbons (PAH)	Annually	As per Appendix 4	
Benzene	Annually	0.2	
Ethylbenzene	Annually	0.5	
Xylenes	Annually	0.5	
Toluene	Annually	0.5	

* Map reference GDA94 / MGA Zone 52

** Trigger Values are the toxicant default guideline values (DGV) for sediment quality from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG2018) unless otherwise indicated

^a Site-specific trigger values (Trop Water 2022 – Development of Site-specific trigger values)

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APPENDIX 4: Site specific trigger values for sediment quality (hydrocarbons) (Trop Water 2022)

Table 5: Site-Specific trigger values for Hydrocarbons in Sediment.

Chemical Name	Units	LOR	SODH2	NODH2	Site-specific Trigger Value
			80th percentile	80th percentile	
C10 - C14 Fraction	mg/kg	50	50	50	50
>C10 - C16 Fraction	mg/kg	50	50	50	50
C15 - C28 Fraction	mg/kg	100	100	100	100
>C16 - C34 Fraction	mg/kg	100	100	100	100
C29 - C36 Fraction	mg/kg	100	100	100	100
>C34 - C40 Fraction	mg/kg	100	100	100	100
C10 - C36 Fraction (sum)	mg/kg	50	50	50	50
>C10 - C40 Fraction (sum)	mg/kg	50	50	50	50
>C10 - C16 Fraction minus Naphthalene (F2)	mg/kg	50	50	50	50
Benzene	mg/kg	0.2	0.2	0.2	0.2
C6 - C10 Fraction	mg/kg	10	10	10	10
C6 - C9 Fraction	mg/kg	10	10	10	10
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	10	10	10
Toluene	mg/kg	0.5	0.5	0.5	0.5
Ethylbenzene	mg/kg	0.5	0.5	0.5	0.5
meta- & para-Xylene	mg/kg	0.5	0.5	0.5	0.5
ortho-Xylene	mg/kg	0.5	0.5	0.5	0.5
Total Xylenes	mg/kg	0.5	0.5	0.5	0.5
Sum of BTEX	mg/kg	0.2	0.2	0.2	0.2
Naphthalene	mg/kg	1	1	1	1
Naphthalene (Ex SVOC)	mg/kg	0.5	0.8	0.8	0.8
Acenaphthylene	mg/kg	0.5	0.8	0.8	0.8
Acenaphthene	mg/kg	0.5	0.8	0.8	0.8
Fluorene	mg/kg	0.5	0.8	0.8	0.8
Phenanthrene	mg/kg	0.5	0.8	0.8	0.8
Anthracene	mg/kg	0.5	0.8	0.8	0.8
Fluoranthene	mg/kg	0.5	0.8	0.8	0.8
Pyrene	mg/kg	0.5	0.8	0.8	0.8
Benz(a)anthracene	mg/kg	0.5	0.8	0.8	0.8
Chrysene	mg/kg	0.5	0.8	0.8	0.8
Benzo(b+j)fluoranthene	mg/kg	0.5	0.8	0.8	0.8
Benzo(k)fluoranthene	mg/kg	0.5	0.8	0.8	0.8
Benzo(a)pyrene	mg/kg	0.5	0.8	0.8	0.8
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	0.8	0.8	0.8
Dibenz(a,h)anthracene	mg/kg	0.5	0.8	0.8	0.8
Benzo(g,h,i)perylene	mg/kg	0.5	0.8	0.8	0.8
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	0.5	0.5	0.5

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References:

ANZG (2018). Australian and New Zealand guidelines for fresh and marine water quality.

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