



Northern  
Territory  
Government

## WASTE DISCHARGE LICENCE

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

**Licensee** Power and Water Corporation

**Licence Number:** **WDL150-08**

**Registered Business Address:** Level 2, Mitchell Centre  
55 – 59 Mitchell Street  
DARWIN NT 0800

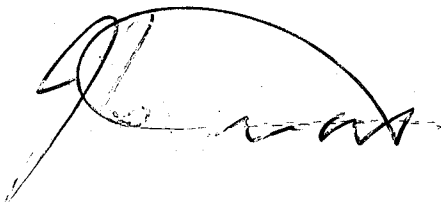
**ABN:** 15 947 352 360

**Premises:** Ludmilla Wastewater Treatment Plant  
Lot 7302 Town of Darwin  
(21 Dick Ward Drive, Ludmilla)

**Anniversary Date:** 1 November

**Commencement Date:** 1 November 2020

**Expiry Date:** 31 October 2022



**Licensed Activity:** Discharge of wastewater from Ludmilla Wastewater Treatment Plant to Darwin Harbour subject to the Licence Conditions.

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## WASTE DISCHARGE LICENCE (WDL150-08)

### INFORMATION ABOUT THIS LICENCE

#### Definitions of Terms

- A section including the definition of terms used in this Licence can be found at the end of it.
- Terms used in the waste discharge licence which are defined in the *Water Act 1992* (the Act) have the meaning given in that Act unless specifically indicated otherwise.

#### Responsibilities of Licensee

- It is an offence under the *Water Act 1992*, if the holder of a waste discharge licence contravenes or fails to comply with the conditions of a waste discharge licence.
- Licensees must comply at all times with the requirements of the *Water Act 1992* and all applicable laws.
- Except as expressly provided for in this licence, the licensee must not:
  - cause environmental harm either directly or indirectly;
  - allow waste to come into contact with water; or
  - allow water to be polluted.
- Without limiting the conditions of this licence, in conducting the activity, the licensee must do all things reasonable and practicable to:
  - prevent or minimise the likelihood of pollution occurring as a result of, or in connection with, the activity;
  - prevent or minimise the likelihood of environmental harm occurring as a result, or in connection with, the activity;
  - effectively respond to pollution and the risk of pollution occurring as a result of, or in connection with, the activity;
  - effectively respond to environmental harm and the risk of environmental harm occurring as a result of or in connection with the activity; and
  - apply the principles of ecologically sustainable development.

#### 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.
- As set out in section 94 of the *Water Act 1992*, the holder of a licence may, at any time, surrender the licence.

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### Amendment, Modification or Revocation of Licence (section 93 of the *Water Act 1992*)

- As set out in section 93 of the *Water Act 1992*, the Controller of Water Resources may, by notice:
  - amend or modify the terms and conditions of a licence;
  - revoke a licence; or
  - suspend a licence.

### Public Register

- A copy of this Licence will be placed on a register in accordance with section 95 of the *Water Act 1992*.
- A copy of waste discharge licences and any plans for environmental management, reports, submissions or documents required as a condition of a waste discharge licence, will be placed on a register.
- The Administering Agency makes this register freely available from the Northern Territory Environment Protection Authority (NT EPA) website.

### Beneficial Use Declaration (section 73 of the *Water Act 1992*)

- Beneficial Use Declaration (BUD) is a legislated process that reduces the effects of water pollution and assists in the protection and management of water. The community decides how a particular water body should be used by choosing on one or more Beneficial Use categories.

### Environmental Interests

- This section highlights the beneficial uses as declared under the *Water Act 1992* and the sensitivity of the surrounding land use and environment associated with the location of the approved activity.
  - Declared beneficial uses and or water quality objectives: *Darwin Harbour Region*
  - Sites of Conservation Significance: SOCS 6, *Darwin Harbour*

### Cultural Interests

- 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 licenced activity are obtained and complied with.

### RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

- 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.

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- Any reference to any standard (Australian or international) in this licence means the relevant parts of the current version of that standard.
- A reference to any guideline or code of practice (or to the relevant parts of any guideline or code of practice) in this licence means the current version of the guideline or code of practice.
- Under section 76 of the *Water Act 1992*, any contravention of or failure to comply with this licence by the licensee may be an offence.
- In this licence, unless the contrary intention appears, words that are defined in the *Water Act 1992* are intended to have the meaning given to them in that Act.

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### LICENCE CONDITIONS

#### GENERAL

1. The licensee must ensure the contact details recorded with Administering Agency for this licence are correct at all times.
2. The licensee must at all times have a 24 hour emergency contact.
3. 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.
4. The licensee must cause clear and legible signage, in English, to be displayed in a prominent location at each public entrance to the premises that includes the following details:
  - 4.1. the number of this Waste Discharge Licence issued under the *Water Act 1992* (as identified on the first page of this Licence); and
  - 4.2. 24 hour emergency contact details.
5. The licensee must cause a copy of this licence to be available for inspection by any person, in hard copy form, at the registered business address.
6. The licensee must provide to the Administering Agency, within 10 business days of a request, a copy of any document, monitoring data or other information in relation to the activity, in the format requested by the Administering Agency.
7. All notices, reports, documents, data, information or correspondence required to be provided by the Licensee in accordance with this licence, must be provided in electronic form by emailing the document to [waste@nt.gov.au](mailto:waste@nt.gov.au).
8. The licensee must maintain and implement the current version of the documents listed in Table 1.

**Table 1 – Documents Relevant to Licenced Activity**

Document ID	Document Title
D2019/418906	Environmental Risk Assessment 2019
D2015/500627	Communications Strategy
D2019/231299	Ludmilla Wastewater Treatment Plant Management Goals
BDOC2013/130	Emergency Response Plan

9. Within 10 business days of any amendment (other than typographical changes or revisions to formatting or referencing) being made to a document listed in Table 1 the licensee must provide the amended document to the Administering Agency, along with:
  - 9.1. a tabulated summary of the amendment(s) with document references;
  - 9.2. reasons for the amendment(s); and

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- 9.3. an assessment of environmental risk associated with the amendment(s).
10. The Administering Agency may require the licensee to revise or amend and resubmit any amended document. Where the Administering Agency requires a document to be resubmitted, the licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
11. The licensee must operate and maintain a community feedback number.
12. The licensee must display the community feedback number:
  - 12.1. where the licensee has a website, in a prominent location on the licensee's website;
  - 12.2. in the Communications Strategy referred to in Table 1; and
  - 12.3. in other publicly available documents relating to the activity.
13. The licensee must maintain a Complaint Log for all complaints received by the licensee in relation to the activity.
14. The licensee must ensure that the Complaint Log includes, for each complaint received by the licensee, the following information:
  - 14.1. the person to whom the complaint was made;
  - 14.2. the person responsible for managing the complaint;
  - 14.3. the date and time the complaint was reported;
  - 14.4. the date and time of the event(s) that led to the complaint;
  - 14.5. the contact details of the complainant if known, or where no details are provided a note to that effect;
  - 14.6. the nature of the complaint;
  - 14.7. the nature of event(s) giving rise to the complaint;
  - 14.8. prevailing weather conditions at the time (where relevant to the complaint);
  - 14.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and
  - 14.10. if no action was taken, why no action was taken.

### **EARLY SURRENDER OF LICENCE**

15. Any reports, records or other information required or able to be provided by the licensee under this licence must be submitted to the Administering Agency prior to the licensee surrendering the licence. If the date on which a report, record or other information is required falls after the date the licensee requests to surrender this licence, the licensee must provide the report, record or information as far as possible using data available to the licensee up to and including the date the request to surrender the licence is made.

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### OPERATIONAL

16. The licensee must, without limiting any other condition of this licence, in conducting the activity do all things reasonable and practicable to ensure the activity does not adversely affect the Declared Beneficial Uses and Objectives as declared from time to time, including those applying to:

- Darwin Harbour Region, Northern Territory Government Gazette No. G27, 7 July 2010.

17. The licensee must ensure any plant and equipment used by the licensee in conducting the activity:

- 17.1. is reasonably fit for the purpose and use to which it is put;
- 17.2. is maintained; and
- 17.3. is operated by a person trained to use the plant and equipment.

### DISCHARGES

18. This licence authorises wastewater to be discharged from the authorised discharge point(s) as identified in Table 2 and shown in Appendix 4 of this licence, and as otherwise allowed in accordance with the conditions of this licence.

**Table 2 Authorised Discharge Points**

Authorised Discharge Point	Description	Location
SLuEPO1	Ludmilla waste water treatment plant treated effluent	Latitude: -12.4015° Longitude: 130.8223°
SLuLCDP	Ludmilla waste water treatment plant treated effluent – overflow weir discharge to Ludmilla Creek via concrete drain	Latitude: -12.42051° Longitude: 130.8450°

19. The licensee must ensure that all discharge events at each authorised discharge point consist only of waste from the source(s) as specified in Table 2.
20. Discharges from Authorised Discharge Point SLuLCDP must only occur when average inflows to the WwTP during the discharge period to SLuLCDP exceed 1000 L/second during wet weather events.
21. The licensee must ensure that the discharge from all discharge events at the authorised discharge point does not:
- 21.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;
  - 21.2. cause or generate odours which would adversely affect the use of the surrounding waters;
  - 21.3. cause algal blooms in the receiving water;



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- 21.4. cause visible change in the typical behaviour of fish or other aquatic organisms in the receiving environment;
- 21.5. cause mortality of fish or other aquatic organisms; or
- 21.6. cause adverse impacts on plants or animals.

### MONITORING

- 22. The licensee must conduct water monitoring in accordance with Appendix 1 of this licence.
- 23. The licensee must conduct sediment monitoring in accordance with Appendix 2 of this licence.
- 24. The licensee must conduct biological monitoring in accordance with Appendix 3 of this licence.
- 25. The licensee must ensure that all samples and field environmental data are representative of the conditions at the time of sampling.
- 26. 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, ANZG 2018)
- 27. The licensee must ensure that all monitoring samples are analysed at a laboratory with current NATA accreditation or equivalent, for the parameters to be measured.
- 28. The licensee must, for all land based monitoring points specified in Appendix 1, 2 and 3 of this licence:
  - 28.1. install, maintain and provide appropriate identification signage so that they are easily identifiable at all times; and
  - 28.2. maintain safe access and egress, as is reasonably practicable.
- 29. The licensee must ensure any samples collected in accordance with Appendix 1, 2 and 3 of this licence or in connection with the Licenced activity or this licence, are obtained by, or under the supervision of, a qualified sampler.
- 30. The licensee must ensure that, for each sample collected in accordance with Appendix 1, 2 and 3 of this licence for the activity, the following information must be recorded and retained:
  - 30.1. the date on which the sample was collected;
  - 30.2. the time at which the sample was collected;
  - 30.3. the location at which the sample was collected;
  - 30.4. the name of the person who collected the sample;
  - 30.5. the chain of custody forms relating to the sample;
  - 30.6. the field measurements (if any) and analytical results (if any) relating to the sample; and

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30.7. laboratory quality assurance and quality control documentation.

### RECORDING AND REPORTING

31. The licensee must keep records of all non-compliances with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence.
32. The licensee must notify the Administering Agency of any non-compliance with this licence by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au), as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.
33. The licensee must include in the notification of non-compliance the following information:
  - 33.1. when the non-compliance was detected and by whom;
  - 33.2. the date and time of the non-compliance;
  - 33.3. the actual and potential causes and contributing factors to the non-compliance;
  - 33.4. the risk of environmental harm arising from the non-compliance;
  - 33.5. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;
  - 33.6. corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur;
  - 33.7. if no action was taken, why no action was taken; and
  - 33.8. a date when an incident investigation report will be submitted to the Administering Agency.
34. A non-compliance with this licence includes:
  - 34.1. an exceedance of a trigger value, as specified in Appendix 1 Table 2 of this licence, on three consecutive sampling occasions;
  - 34.2. an exceedance of three times or more of a trigger value specified in Appendix 1 Table 2 of this licence;
  - 34.3. an exceedance of a licence limit as specified in Appendix 1 Table 2 of this licence.
35. The licensee must keep records of all exceedances of trigger values as specified in Appendix 1 Table 2 of this licence. These records must be adequate to enable the licensee to comply with the exceedance notification conditions of this licence.
36. The licensee must provide to the Administering Agency annual monitoring reports prepared in accordance with the Environment Protection and Biodiversity Conservation Act Referral 2009/5113 as outlined in Appendix 3 of this licence.
37. The licensee must submit a completed Annual Audit and Compliance Report (AACR), by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au), within 30 business days after each anniversary date of this licence, which relates to the preceding 12 month period.

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38. The licensee must complete and provide to the Administering Authority a Monitoring Report, as prescribed by this licence, not less than 30 business days prior to the anniversary date of this licence by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au).
39. The licensee must ensure that each Monitoring Report:
- 39.1. is prepared in accordance with the requirements of the NT EPA *Guideline for Reporting on Environmental Monitoring*;
  - 39.2. includes a tabulation of all monitoring data required as a condition of this licence including surface water, sediment and biological monitoring;
  - 39.3. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the licenced activity over a minimum period of three years (where the data is available);
  - 39.4. provides an assessment against the annual report reporting criteria notes in Appendix 1 Table 2 of this licence;
  - 39.5. includes an assessment of environmental impact from the activity;
  - 39.6. contains a summary of the licence limit (site specific trigger value) exceedances that have occurred during the reporting period; and
  - 39.7. reports on annual loads discharged from SLu080 as per Appendix 1 of this licence.
40. The Administering Agency may require the licensee to revise or amend and resubmit any Report prepared in response to a condition of this licence. Where the Administering Agency requires a Report to be resubmitted, the Licensee must submit it to the Administering Agency by the date specified by the Administering Agency.

### PERFORMANCE IMPROVEMENT

41. The licensee must comply with the actions identified in the current version of the Ludmilla Wastewater Treatment Plant Improvement Plan 2019 (Document ID: D2019/231281).
42. The licensee must submit an updated Ludmilla Wastewater Treatment Plant Improvement Plan. The updated Plan must:
- 42.1. report on progress of implementing the current version of the Ludmilla Wastewater Treatment Plant Improvement Plan; and
  - 42.2. be submitted to the Administering Agency by 30 June 2022.
43. The licensee must develop and submit an Environmental Management Plan for the activity. The Environmental Management Plan must:
- 43.1. be prepared in accordance with the NT EPA *Guideline for the Preparation of an Environmental Management Plan*;
  - 43.2. include an updated Environmental Risk Assessment (see clause 8);
  - 43.3. incorporate the Ludmilla Wastewater Treatment Plant Management Goals (see clause 8);

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- 43.4. incorporate an updated Communications Strategy (see clause 8);
- 43.5. incorporate an Emergency Response Plan (see clause 8); and
- 43.6. be submitted to the Administering Agency by 30 June 2022.

### END NOTES

This licence is a renewal and supersedes WDL150-07

WDL150-07 was an amendment and superseded WDL150-06. It was issued on 9 August 2019 and expired on 31 October 2020.

WDL150-06 was a renewal and superseded WDL150-05. It was issued on 1 November 2018 and expired on 31 October 2020.

WDL150-05 was a renewal and superseded WDL15-04. It was issued on 1 November 2016 and expired on 31 October 2018.

WDL150-04 was a renewal and superseded WDL150-03. It was issued on 1 November 2014 and expired on 31 October 2016.

WDL150-03 was an amendment and superseded WDL150-02. It was issued on 2 August 2013 and expired on 31 March 2014.

WDL150-02 was a renewal and superseded WDL150-01. It was issued on 31 October 2012 and expired on 31 March 2014.

WDL150-01 was a renewal and superseded WDL150. It was issued on 1 November 2011 and expired on 31 October 2012.

WDL150 was issued on 13 August 2006 and expired on 31 October 2011.

The end notes are to assist with historical records

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**END OF LICENCE CONDITIONS**

This licence is not valid unless signed below:



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JOANNE TOWNSEND

Controller of Water Resources

Dated 18 November 2020

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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 activity.
Activity	the Licenced activity as described on the covering page of this licence.
Administering Agency	means the Department of Environment, Parks and Water Security, or if dissolved, another Government Department with responsibility for administering the <i>Water Act 1992</i> .
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.
Business days	a day not Saturday, Sunday or a public holiday, in the Northern Territory.
Community feedback number	a 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 activity, and to which the licensee must respond.
Complaint Log	a register of complaints to be maintained by the Licensee that records the details of each complaint received in relation to the activity.
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 activity.
Contaminant	a solid, liquid or gas or any combination of such substances and includes: <ul style="list-style-type: none"><li>(a) noise, odour, heat and electromagnetic radiation;</li><li>(b) a prescribed substance or prescribed class of substances;</li><li>and</li><li>(c) a substance having a prescribed property or prescribed class of properties.</li></ul>
Discharges	allow a liquid, gas or other substance to flow out from where it has been confined.
Environmental harm	any harm to or adverse effect on, or potential harm to or potential adverse effect on, the environment.
incident	includes: <ul style="list-style-type: none"><li>(a) an accident, emergency or malfunction; and</li></ul>

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<b>Term</b>	<b>Definition</b>
	(b) a deliberate action, whether or not that action was taken by the person conducting the activity in the course of which the incident occurred.
Land	includes water and air on, above or under land.
Litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
Maintain	kept in a manner that it does not present or cause a risk of environmental harm or a hazard to persons or property or, for the purposes of documents including plans, a process of reviewing and amending documentation to ensure it is relevant.
NATA	National Association of Testing Authorities, Australia.
Non-compliance	failure or refusal to comply, whether by act or omission, with obligations or requirements and includes any exceedance of a licence limit.
Non-compliance notification	an Administering Agency prescribed format for notifying the Administering Agency of a non-compliance.
Plant and equipment	all material items used in association with the activity, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.
Pollute	in relation to water, means directly or indirectly to alter the physical, thermal, chemical, biological or radioactive properties of the water so as to render it less fit for a prescribed beneficial use for which it is or may reasonably be used, or to cause a condition which is hazardous or potentially hazardous to: <ul style="list-style-type: none"><li>(a) public health, safety or welfare;</li><li>(b) animals, birds, fish or aquatic life or other organisms; or</li><li>(c) plants.</li></ul>
Pollution	<ul style="list-style-type: none"><li>(a) a contaminant or waste that is emitted, discharged, deposited or disturbed or that escapes; or</li><li>(b) a contaminant or waste, effect or phenomenon, that is present in the environment as a consequence of an emission, discharge, deposition, escape or disturbance or a contaminant or waste.</li></ul>
Premises	the premises identified in this licence which includes equipment, plant and structures, whether stationary or portable, and the land on which premises are situated.
Public entrance	access to the premises that is utilised by the public.
Qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Trigger values	assigned value for each indicator used to assess the risk to an environmental value, a value that initiates some type of pre-defined management action.
Waste	Includes matter or a thing, whether wholly or partly in a solid, liquid or gaseous state, which, if added to water, may pollute the water.



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<b>Term</b>	<b>Definition</b>
Wastewater	water that contains a contaminant or waste.
Water	means water, whether or not it contains impurities.
WwTP	Wastewater Treatment Plant



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**APPENDIX 1: SURFACE WATER MONITORING SCHEDULE**

**Appendix 1 - Table 1: Sampling locations; parameters and frequency**

Sample locations*		LWwTP	East Point Outfall	Ludmilla Creek	Darwin Harbour			Ludmilla Creek			
Site Code		SLu080 / SLuLCDP#	SLuEP01	SLuLC03	SLuEP02	SLuEP03	SLuLC01	SLuLC02	SLuLC04		
Site location			Locations as per Appendix 4								
Site Description		Effluent Discharge	Zone of Influence		Darwin Harbour beyond zone of influence		Ludmilla Creek U/S	Ludmilla Creek U/S	Ludmilla Creek D/S		
Management Intent		Effluent	Disturbed		Slightly to moderately disturbed zone						
Indicator	Units										
<b>Physico-chemical parameters</b>											
Flow	kL/day		D								
pH	pH units										
Electrical conductivity	$\mu\text{Scm}^{-1}$										
Dissolved oxygen	%saturation										
Temperature	$^{\circ}\text{C}$									M	
Turbidity	NTU										
Total Suspended Solids	$\text{mgL}^{-1}$										
<b>Biotic parameters</b>											
Biological oxygen demand	$\text{mgL}^{-1}$										
Chlorophyll-a	$\mu\text{gL}^{-1}$									M	
EDCs 4-t-octylphenol; Nonylphenol; Bisphenol A; Andosterone; Etiocholanolone	$\text{ngL}^{-1}$									S	
<b>Nutrient parameters</b>											
Ammonia (as total N)	$\mu\text{gL}^{-1}$										
Total Nitrogen	$\mu\text{gL}^{-1}$										
Oxides of Nitrogen (NOx as N)	$\mu\text{gL}^{-1}$									M	
Total Phosphorus	$\mu\text{gL}^{-1}$										
Filterable Reactive Phosphorus	$\mu\text{gL}^{-1}$										
<b>Metals parameters</b>											
Copper (filtered)	$\mu\text{gL}^{-1}$										
Zinc (filtered)	$\mu\text{gL}^{-1}$									M	
<b>Pathogen Indicators</b>											
Escherichia coli	Cfu /100 mL or MPN / 100 mL										
Enterococci										M	

Key: D= daily; M= monthly; S= seasonal 1 wet and 1 dry season sample; NR= not required \* as identified in Appendix 4: Monitoring points location maps  
 # Sites SLu080 and SLuLCDP are the same physical location, to allow monthly monitoring both codes are required as SLuLCDP is defined as the overflow weir from the recarbonation chamber while DLu080 is the recarbonation chamber.

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**Appendix 1 - Table 2: Surface Water Quality Assessment: Site Specific Trigger Value and Licence Limits**

Management Intent		Sample Locations <sup>A</sup>								All sites
		Ludmilla WwTP effluent channel	East Point Outfall	Ludmilla Creek	Darwin Harbour		Ludmilla Creek			
		Effluent	Zone of Influence		Darwin Harbour beyond zone of influence		Upstream	Downstream		
	Site Code	SLu080 / SLuLCDP	SLuEP01	SLuLC03 <sup>B</sup>	SLuEP02	SLuEP03	SLuLC01 <sup>B</sup>	SLuLC02 <sup>B</sup>	SLuLC04 <sup>B</sup>	
Indicator	Units	Site Specific Trigger Values (SSTV's) <sup>B</sup>							Licence Limits <sup>B</sup>	Annual Report Reporting Requirements
<b>Physico-chemical parameters</b>										
Flow	kL/day	kL/day			NR				NR	Annual trends to be reported
pH	pH units	<7.0- >8.5 <sup>1</sup>	<7.0 - >8.5 <sup>2,D</sup>		<7.0 - >8.5 <sup>D</sup>				<6.0 - >9.0	Annual trends compare to SSTV's 20 and 95 <sup>th</sup> percentiles
Electrical Conductivity	µS/cm	Annual trend to be reported								
Dissolved oxygen	% saturation	Annual trend to be reported <sup>1</sup>	<50 - >110 <sup>2</sup>		<80 - >110				<30	Annual trends compare to SSTV's 20 and 95 <sup>th</sup> percentiles
Temperature	°C	Annual trend to be reported								
Total Suspended Solids	mg/L	Annual trend to be reported <sup>1</sup>	10 <sup>D</sup>	15	6 <sup>D</sup>	10 <sup>D</sup>			-	Annual trend compare rolling annual median to SSTV
<b>Biotic parameters</b>										
Biological Oxygen Demand	Mg/L	Annual load to be reported <sup>1</sup>	>5+ annual load		5				-	Annual report compare 95 <sup>th</sup> percentiles to SSTV
Chlorophyll-a <sup>C</sup>	µg/L	Annual trend to be reported <sup>1</sup>	2 <sup>D</sup>	4 <sup>D</sup>	Annual trend compare rolling annual median to SSTV		4 <sup>D</sup>		-	Annual trend compare rolling annual median to SSTV
EDCs :4-t-octylphenol; Nonylphenol; Bisphenol A; Andosterone; Etiocholanolone	ng/L	No SSTV reporting of annual maximums			NR				-	Annual reporting of maximum values only
<b>Nutrient parameters</b>										
Ammonia (as total N) <sup>C</sup>	toxicant	Annual load to be reported <sup>1</sup>	1200 <sup>E</sup>	95 <sup>th</sup> species protection based on pH corrected toxicant marine values as per ANZG 2018 <sup>E</sup>				-	SMD Reporting statistic 95 <sup>th</sup> percentile of pH corrected SSTV of most recent 24 monthly samples. ZOI Annual trend based on 90 <sup>th</sup> percentile of pH corrected SSTV of most recent 24 monthly samples. Annual trend compare rolling annual median to SSTV	
	nutrient		Annual Loads based on median	20 <sup>C,D</sup>				-		
Total Nitrogen <sup>C</sup>	300 <sup>C,D</sup>				-					
Oxides of Nitrogen (NOx as N) <sup>C</sup>	20 <sup>C,D</sup>				-					
Total Phosphorus <sup>C</sup>	30 <sup>C,D</sup>				-					
Filterable Reactive Phosphorus <sup>C</sup>	µg/L	10 <sup>C,D</sup>				-				
<b>Metals parameters</b>										
Copper (filtered)	*µg/L	Annual load to be reported <sup>1</sup>	3 <sup>E</sup>	1.3 <sup>E</sup>				-	Annual reporting statistic 95 <sup>th</sup> percentile of most recent 24 monthly samples.	
Zinc (filtered)	µg/L		23 <sup>E</sup>	15 <sup>E</sup>				-		
<b>Pathogen Indicators</b>										
Escherichia coli	Cfu org/100mL or	50 <sup>1</sup>	50 <sup>1,D</sup>	50 <sup>D</sup>	Median >14 <sup>D</sup> 90 <sup>th</sup> percentile > 43 <sup>D</sup>				200 <sup>B</sup>	Annual reporting against SSTV
Enterococci	mpn org/100mL	500 <sup>1,F</sup>	200 <sup>F</sup>	200 <sup>F</sup>	95 <sup>th</sup> percentile > 40 <sup>F</sup>				200 <sup>B</sup>	

## WASTE DISCHARGE LICENCE (WDL150-08)

### Reporting Triggers

Percentile calculations: All 90 and 95<sup>th</sup> percentiles calculated as rolling percentile using the most recent 24 months of monitoring data:

Medians calculated as an annual median using the most recent 12 months of monitoring data.

Annual licence reports to include assessment against seasonal trends.

NR Parameter is not relevant for the site.

<sup>1</sup> Treatment train within Ludmilla WwTP at point of transfer to discharge points SLuEP01 or SLu080/SLuLCDP

Annual reporting and source identification only for this site;

Annual report annual discharge flow (ML/year) from discharge points;

Annual trends for all measured parameters; and

Annual loads discharged for all relevant measured parameters.

<sup>2</sup> Annual reporting of trends and discharge loads.

A Site locations as described in Appendix 4.

B Ludmilla Creek sites only considered an exceedance of SSTVs if discharges from SLuLCDP have occurred in the preceding 10 days and / or except when following rainfall in preceding 10 days.

C Chlorophyll-a is the primary indicator of impacts associated with nutrient enrichment, nutrients outside the SSTV range are only considered as an exceedance of the primary indicator also exceeds the SSTV.

D Darwin Harbour Water Quality Objectives (NRETAS 2010).

E Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) as amended from time to time.

F National Health and Medical Research Council, Guidelines for Managing Risks in Recreational Water.

In WDL 150-06 all exceedances of SSTVs were considered a non-compliance with the licence unless they were at sites in Ludmilla Creek and there had been no discharges to the creek in the previous 10 days or they were an exceedance of the pathogen indicators and followed a period of rain.

WDL150-07 amended the relationship between exceedances of SSTVs and licence non-compliances with a non-compliance being an exceedance of an SSTV on three consecutive occasions; an exceedance of an SSTV by more than three times the SSTV; or and exceedance of a licence limit. The qualifying condition in relation to water quality exceedances in Ludmilla Creek only being considered an exceedance if there has been a discharge to the creek in the preceding 10 days or for bacterial indicators following rainfall remain as an assessment criteria.

The majority of exceedances related to the Ludmilla Creek upstream sites, which recorded low dissolved oxygen and exceedance of pathogen guidelines in the absence of inputs from the Ludmilla Waterwater Treatment Plan.

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APPENDIX 2: SEDIMENT MONITORING SCHEDULE

Appendix 2 - Table 1: Sediment Monitoring Program and Assessment and Reporting Schedule

Water Quality Management Zone		Zone of impact			Darwin Harbour and Ludmilla Creek SMD Zone				
Sampling Site Code		SLuEP01	SLuLC03	SLuEP02	SLuEP03	SLuEP04	SLuLC01	SLuLC02	SLuLC04
Monitoring point		Easting		As per attachment Appendix 4					
		Northing							
Sample medium									
Indicator	Units	Sediment	Pore waters	Monitoring Frequency					Assessment Protocol
<b>Interpretative indicators</b>									
Total Organic Carbon	%	✓	✗	Annual - Dry Season					Calculate C:N ratios
Aluminium	mg/kg	✓	✗						AI normalisation of metals in sediments
pH	pH units	✗	✓						Calculation of pH adjusted ammonia criteria
<b>Biological indicators</b>									
Chlorophyll a	mg/kg	✓	✗	Annual - Dry Season					<ol style="list-style-type: none"> <li>1. Calculate 2x 80th percentile of reference data</li> <li>2. Calculate ration to phaeophytin-a</li> </ol>
<b>Nutrient indicators</b>									
Total P	mg/kg	✓	✗	Annual - Dry Season					Annual trend assessment in comparison to loads.
Filterable reactive phosphorus	µg/L	✗	✓						Compare to 80th percentile of reference site data
Total N	mg/kg	✓	✗						Annual trend assessment in comparison to loads and for determining C:N ratios
Ammonia-Total as N)	µg/L	✗	✓						<ol style="list-style-type: none"> <li>1. Compare to pH adjusted SMD SSTV</li> <li>2. Compare to 2x 80th percentile of reference sites</li> </ol>
<b>Metals indicators</b>									
Copper	mg/kg sediment and µg/L pore water	✓	✓	Annual - Dry Season					<ol style="list-style-type: none"> <li>1. Compare total in sediments to ISQG low ISQG and then if exceeds compare Bioavailable metals in sediments to ISQG low</li> <li>2. Compare metals in pore water to SMD SSTV (&gt;1.3 µg/L Cu; &gt; 15 µg/L Zn); ZOI (&gt;3.0 µg/L Cu; &gt;15 µg/L Zn)</li> </ol>
Zinc		✓	✓						<ol style="list-style-type: none"> <li>3. If ISQG low exceeded compare Total and Bioavailable metals in sediment and filtered metals in pore water to 2x 80th percentile of reference data</li> <li>4. Compare AI normalised Total metals in sediment to 2x 80th percentile of reference data in that season and assess for significant difference</li> </ol>

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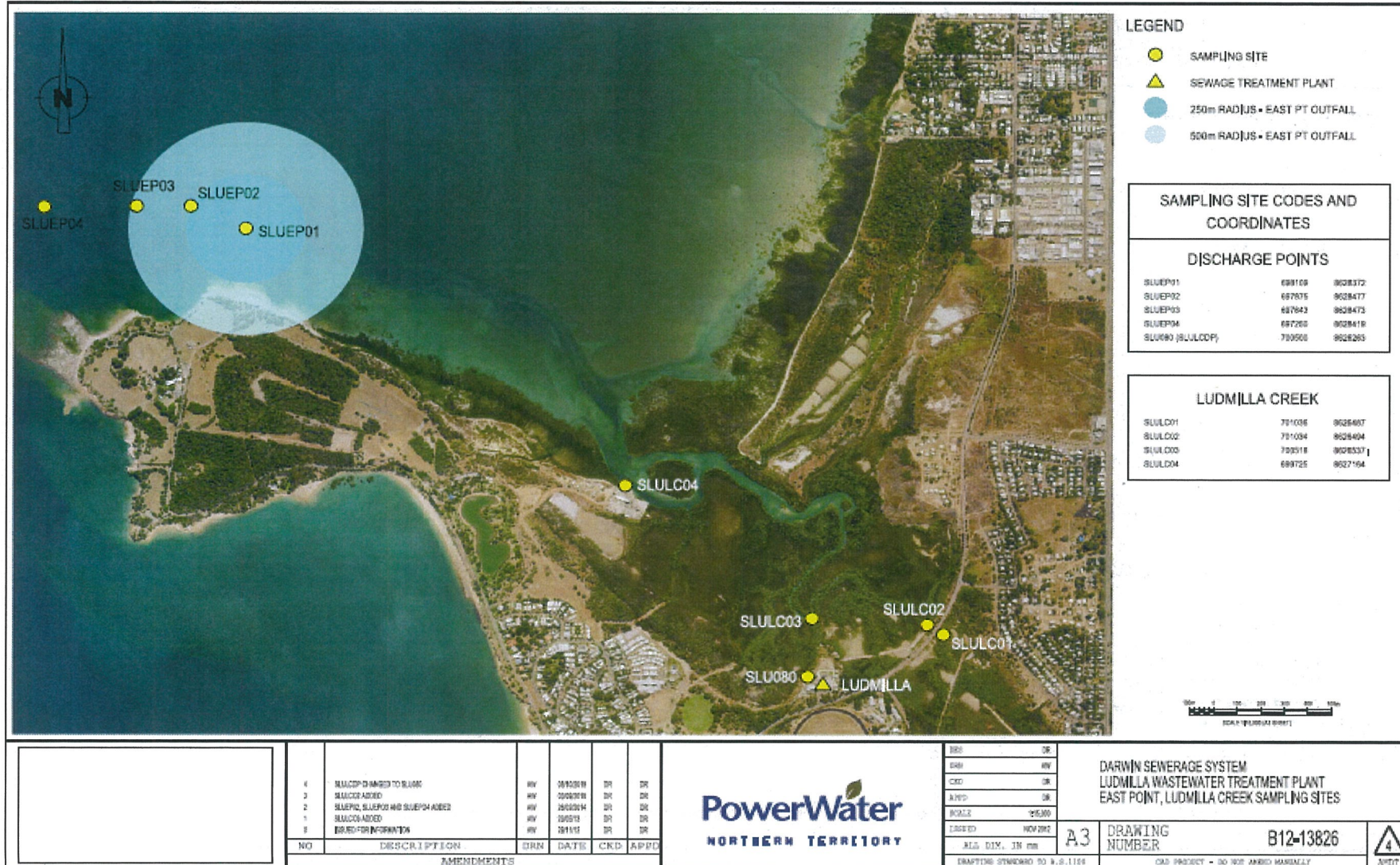
**APPENDIX 3: BIOLOGICAL MONITORING SCHEDULEF**

Sampling Site Code	Sampling Locations									FFGuideline	Assessment and Reporting
	Zone of impact		Darwin Harbour SMD Zone			Ludmilla Creek SMD Zone					
Sampling Site Co-ordinates	SLuLCDP	SLuEP01	SLuEP02	SLuEP03	SLuEP04	SLuLC01	SLuLC02	SLuLC03	SLuLC04		
Rationale	As per Appendix 4									Sampling Period	
<b>Program: Ecotoxicological Assessment</b>											
<p>Effluent Toxicity Assessment:</p> <p>Implement the Power and Water Corporation: Ecotoxicological Investigation Plan: GHD December 2013 (as approved by the responsible minister)</p> <p>An investigation plan developed by independent technical experts to directly assess the risks to relevant species due to exposure to the treated effluent discharged from the Ludmilla WwTP.</p> <p>Assessment once per licence or after major operational change.</p>	√	x	x	x	x	x	x	x	x	ANZG 2018 (as amended from time to time)	<p>Assessment report data provided in Annual Monitoring Report for the period within the assessment is conducted.</p> <p>Assessment is undertaken in accordance with the Plan approved by the Commonwealth Minister for the EPBC Act.</p>
<b>Program: Benthic Infauna Monitoring and Management Plan</b>											
<p>Benthic Infauna and Seagrass Monitoring:</p> <p>A Benthic Infauna Monitoring and Management Plan was approved by the Commonwealth Minister for the Environment in June 2014. The plan aims to identify and respond to changes in the benthic infauna and seagrass communities in the vicinity of the Ludmilla WwTP discharge via the East Point Outfall.</p> <p>The BIMMP has been provided to DENR (NT EPA) and it is designed to provide an early warning of changes in infauna which may have impacts on sensitive (listed) species present in Darwin Harbour.</p> <p>The PIMMP includes reporting and action triggers and includes detailed monitoring in a zone to at least 1000 metres from the outfall.</p> <p>The BIMMP also includes requirements to conduct seasonal surveys of seagrass communities in the vicinity of the outfall and action triggers to respond to changes that may have resulted due to the impact of discharges from the outfall</p>	x	√ Seasonal	√ Seasonal	√ Seasonal	√ Seasonal	x	x	x	x	<p>Monitoring in accordance with the Benthic Infauna Monitoring and Management Plan as approved by the Minister Responsible for the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)</p> <p>Annual report and compliance reports prepared for the Department of Environment will be provided to the Administering Authority</p>	
<b>Total Phytoplankton enumeration an Blue Green Algae (cyanobacteria) enumeration (cells/ml) and bio volume (mm3/L)</b>											
<p>Toxic algal blooms may result from the discharge of excess nutrients and may pose a risk to the protection of beneficial use of swimming and aquatic foods.</p>	x	√ Monthly	√ Monthly	√ Monthly	√ Monthly	√ Monthly	√ Monthly	√ Monthly	√ Monthly	√ Monthly	Annual reporting in period that the data is collected



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## APPENDIX 4: MONITORING POINTS



# WASTE DISCHARGE LICENCE (WDL150-08)

