

ENVIRONMENT PROTECTION LICENCE

(Pursuant to section 34 of the *Waste Management and Pollution Control Act*)

Licensee	ConocoPhillips Pipeline Australia Pty Ltd
Licence Number	EPL217 - 02
Registered Business Address	ConocoPhillips Pipeline Australia Pty Ltd 53 Ord Street West Perth WA 6005
ACN	093 316 959
ABN	60 093 316 959
Premises Address	Section 01860 Hundred of Ayers plan(s) S2002/189 and Section 01870 Hundred of Ayers plan(s) S2002/189 and Section 01871 Hundred of Ayers plan(s) S2002/189 611A WICKHAM POINT RD, WICKHAM and 611C WICKHAM POINT RD, WICKHAM and 611B WICKHAM POINT RD, WICKHAM
Anniversary Date:	19 September
Commencement Date:	19/09/2017
Expiry Date:	18/09/2022
Scheduled Activity	Operating premises for processing hydrocarbons so as to produce, store and /or despatch liquefied natural gas or methanol, where: (a) the premises are designed to produce more than 500,000 tonnes annually of liquefied natural gas and/or methanol; and (b) no lease, licence or permit under the <i>Petroleum Act or the Petroleum (Submerged lands) Act</i> relates to the land on which the premises are situated.

Description

The production of liquefied natural gas and natural gas liquids at Darwin liquefied natural gas (LNG) production plant at Wickham Point with nameplate production capacity equivalent to 3.7 million tonnes of LNG per annum.

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- 1 Appendix A - DLNG Environment Protection Licence Figures.pdf
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- 3 Appendix C - Acid Gas Hot Venting Trial.pdf
- 4 Appendix D - DLNG Mangrove Surveillance and Chemical Monitoring Program.pdf

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INFORMATION ABOUT THIS LICENCE

- This licence does not in any way relieve the licence holder from its obligations to comply with the *Waste Management and Pollution Control Act* (WMPC Act), including the general environmental duty in section 12 of the WMPC Act and the duty to notify of incidents causing or threatening to cause pollution under section 14 of the WMPC Act.

Duration of a licence (section 40, 43 and 45 of the WMPC Act)

- A licence will remain in force until its expiry date or until it is surrendered by the licensee or is suspended or cancelled in accordance with the WMPC Act.
- The licensee must notify the Northern Territory Environment Protection Authority (NT EPA) within 14 days after ceasing to conduct the activity.
- The licensee may, with the approval of the NT EPA, surrender the licence to the NT EPA.

Amendment or Revocation of a licence (section 37 of the WMPC Act)

- The licensee may apply to amend or revoke a condition of this licence.
- A fee applies and the application must be made using the designated form via NT EPA Online.
- The NT EPA may also amend or revoke a condition of this licence as set out in section 38 of the WMPC Act.

Transfer of a licence (section 46 of the WMPC Act)

- The licensee can apply to transfer their licence to another person.

Renewal of a licence (section 40 of the WMPC Act and section 3 of the Regulations)

- The licensee may apply for the renewal of their licence not earlier than 90 days, and not later than 30 days, before their licence expires.
- A fee applies and the application must be made via NT EPA Online.

Public Register

- A copy of environment protection licences and any plans for environmental management, reports, submissions or documents required as a condition of an environment protection licence, will be placed on a register in accordance with section 9 of the WMPC Act.
- A copy of the Annual Return will be placed on the register.
- The NT EPA makes this register freely available from the NT EPA website.

Environment Protection Objectives (Part 4 of the WMPC Act), and Water Quality Standards (section 73 of the *Water Act*)

- An Environment Protection Objective (EPO) is a statutory instrument to establish principles on which:
 - a. environmental quality is to be maintained, enhanced, managed or protected;
 - b. pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; and
 - c. effective waste management is to be implemented or evaluated.
- In accordance with section 18 of the WMPC Act a beneficial use, quality standard, criteria or objective declared under section 73 of the *Water Act* and in force is an environment protection objective for the purposes of the WMPC Act.

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- The following EPOs and Beneficial Use Declarations (BUDs) are relevant to this licence:
 - Declaration of Beneficial Uses and Objectives, Darwin Harbour Region, Northern Territory Government Gazette No. G27, 7 July 2010
 - Declaration of Beneficial Uses and Objectives, Elizabeth-Howard Rivers Region Groundwater, Northern Territory Government Gazette No. G27, 7 July 2010
 - National Environment Protection (National Pollutant Inventory) Objective.

Environmental Interests

- This section highlights sensitivity of the surrounding land use and environment associated with the location of the approved activity.
- In conducting the Licensed Activity, the licensee shall do all things reasonable and practicable to ensure the Licensed Activity does not adversely affect the ambient air quality of the Darwin region.
- The volume of wastewater discharged to Darwin Harbour from the Licensed Activity will be reduced over the life of the licence.
- Sites of Conservation Significance (SOCS)
 - Darwin Harbour SOCS No. 6.

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.

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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.
- 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 39 of the WMPC Act, any contravention of or failure to comply with this licence by the licensee may be an offence.
- In determining whether the licensee has committed an offence, the licensee may be liable for the conduct of its directors, employees or agents.
- The licensee should ensure that each of its directors, employees, contractors or agents are aware of, and comply with, this licence.
- In this licence, unless the contrary intention appears, words that are defined in the WMPC Act 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 in NT EPA Online 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 pay the annual fee calculated in accordance with the method prescribed in the Regulations within 50 business days of the anniversary of the commencement date of this licence, for each year or part of a year that this licence is in force.
- 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 environment protection licence number issued under the WMPC Act; 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 premises.
- 6 The licensee must provide to the NT EPA, 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 NT EPA.
- 7 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 uploading the document via NT EPA Online (or by emailing waste@nt.gov.au).
- 8 The NT EPA may require the licensee to revise or amend and resubmit any document. Where NT EPA requires a document to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.
- 9 The licensee must, for the duration of this licence, implement, maintain and follow a Consultation and Communication Plan which includes a strategy for communicating with persons who are likely to have a real interest in, or be affected by, the activity.
- 10 The licensee must operate and maintain a community feedback number.
- 11 The licensee must display the community feedback number:
 - 11.1 where the licensee has a website, in a prominent location on the licensee's website;
 - 11.2 in the Consultation and Communication Plan; and
 - 11.3 in other publicly available documents relating to the activity.
- 12 The licensee must maintain a Complaint Log for all complaints received by the licensee in relation to the activity.
- 13 The licensee must ensure that the Complaint Log includes, for each complaint received by the licensee, the following information:
 - 13.1 the person to whom the complaint was made;
 - 13.2 the person responsible for managing the complaint;

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- 13.3 the date and time the complaint was reported;
 - 13.4 the date and time of the event(s) that led to the complaint;
 - 13.5 the contact details of the complainant if known, or where no details are provided a note to that effect;
 - 13.6 the nature of the complaint;
 - 13.7 the nature of event(s) giving rise to the complaint;
 - 13.8 prevailing weather conditions at the time (where relevant to the complaint);
 - 13.9 the action taken in relation to the complaint, including any follow-up contact with the complainant; and
 - 13.10 if no action was taken, why no action was taken.
- 14 The licensee must implement, maintain and follow an Emergency Response Plan that addresses procedures for responding to emergencies associated with the activity that may cause environmental harm.

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 NT EPA 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 licensee, 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.

OPERATIONAL

- 16 The licensee must, without limiting any other condition of this licence, in conducting the Licensed Activity, do all things reasonable and practicable to ensure the Licensed Activity does not adversely affect the relevant Declared Beneficial Uses and Objectives as declared from time to time.
- 17 The licensee must ensure any plant and equipment used by the licensee in conducting the activity:
- 17.1 is 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.
- 18 No change, replacement or alteration of plant or equipment is permitted if the change, replacement or alteration increases the risk of environmental harm from the licensed activity, unless approved in writing by the NT EPA.
- 19 The licensee must ensure that all instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this licence must be calibrated, appropriately operated and maintained.
- 20 All analyses and tests required to be conducted in accordance with this licence must be carried out by a laboratory that has N.A.T.A. certification for the analysis and test, except as otherwise authorised by the NT EPA.

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Waste Management

- 21 The licensee must ensure:
- 21.1 all listed waste transported from the premises is transported by a person licensed to transport the listed waste; and
 - 21.2 waste is transported to facilities that are licensed to accept the waste and are capable of containing and/or treating the waste.
- 22 The licensee must keep records of listed waste in accordance with the approved manner.

Environmental Management Plans

23 **Table 1 - Plans for Environmental Management**

Document Reference	Document Title
DLNG/HSE/PLN/001	Darwin LNG Operations Environmental Management Plan
ALL/HSE/002	Darwin LNG Emergency Response Plan

- 24 The licensee must implement an auditable Operational Environmental Management Plan (OEMP). The OEMP must:
- 24.1 be prepared in consideration of the *NT EPA Guideline for the Preparation of an Environmental Management Plan*;
 - 24.2 include environmental management strategies for managing greenhouse gas emissions;
 - 24.3 include measures to ensure:
 - a. continuous improvement in environmental management practices and environmental performance for the licensed activity;
 - b. the minimisation of emissions, discharges and wastes as far as is reasonable and practicable for the licensed activity; and
 - c. management of foreseeable environmental risks and hazards for non-routine situations including corrective responses to prevent and mitigate environmental harm, including a contingency plan for shut down for maintenance or other reasons.
 - 24.4 be certified by a Qualified professional with the experience and qualifications to be able to assess the environmental risks associated with carrying out the licensed activity and to assess the adequacy of the OEMP to facilitate compliance with the conditions of this licence; and
 - 24.5 not be implemented or amended in a way that contravenes or is inconsistent with any condition of this licence.
- 25 Where documents specified in Table 1 are amended materially, the licensee must provide the amended document(s) to the NT EPA, within 20 business days prior to any amendment being implemented, with:
- 25.1 a tabulated summary of the amendment(s) with document references;
 - 25.2 reasons for the amendment(s);
 - 25.3 an assessment of environmental risk associated with the amendment(s); and
 - 25.4 a Qualified professional's written and certified review of the amended OEMP.

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26 **Environmental Auditing**

The licensee must commission an environmental audit to be undertaken by a Qualified person to evaluate compliance with:

26.1 the WMPC Act;

26.2 the *Water Act*; and

26.3 the conditions of this licence, including the OEMP, environmental monitoring programs and environmental performance.

27 The licensee must ensure that the environmental audit occurs at least 12 months prior to the expiry of the licence.

28 The licensee must submit the proposed scope for the environmental audit to the NT EPA for approval, no later than 20 business days prior to the proposed commencement date of the environmental audit (which must be specified when the proposed scope is submitted).

29 The licensee must receive written approval for the audit scope from the NT EPA before the environmental audit can commence, noting that the NT EPA may require the licensee to revise, amend or resubmit the proposed scope.

30 The licensee must ensure the environmental audit report is:

30.1 certified by the Qualified person conducting the audit;

30.2 provided to the NT EPA within five business days of being certified and signed by the Qualified person conducting the audit; and

30.3 completed within two calendar months of receipt of approval from the NT EPA unless otherwise agreed.

DISCHARGES AND EMISSIONS

31 **General**

The licensee must ensure there is no migration or overflow of a contaminant or waste, which causes or may cause environmental harm, beyond the boundary of the land, specified in Figure 1 of Appendix A, on which the premises are located. For the avoidance of doubt, this condition is not intended to authorise the discharge of a contaminant or waste to any land or water which discharge has not been specifically authorised by another condition of this licence.

32 The licensee must ensure that stormwater does not come into contact with a contaminant or waste, which causes or may cause environmental harm.

Discharges to Water

33 The licensee must ensure the release of wastewater only occurs from the authorised discharge point(s) as identified in Figure 2 of Appendix A, Table 1 of Appendix B and the natural gas liquid tank bund.

34 The licensee must ensure that all discharge events at each authorised discharge point consists only of waste from the source(s) as specified in Table 1 of Appendix B.

35 The licensee must notify the NT EPA where the total annual volume of wastewater discharged via the jetty outfall exceeds 61 megalitres. The notification must include detailed explanation of the reasons for this and what (if any) measures have been implemented to address the increase.

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- 36 The licensee must ensure that the discharge from all discharge events to water at each authorised discharge point does not exceed the licence limits specified for that discharge point in Table 2 of Appendix B.
- 37 Condition 36 does not apply to the Jetty Outfall Discharge Trigger Values specified in Appendix B Table 2.
- 38 The licensee must ensure that discharge from the Jetty Outfall Authorised Discharge Point does not result in the median of each of the water quality parameters measured at the edge of the mixing zone in each sampling event, to exceed the mixing zone trigger values specified in Appendix B Table 2:
- 38.1 on a single occasion where the measured value exceeds the trigger value and the exceedance is not present at the upstream reference site.
- 39 The licensee must ensure that the discharge from all discharge events to water at each authorised discharge point does not:
- 39.1 contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;
- 39.2 cause or generate odours which would adversely affect the use of surrounding waters;
- 39.3 cause algal blooms in the receiving water;
- 39.4 cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;
- 39.5 cause mortality of fish or other aquatic organisms; or
- 39.6 cause adverse impacts on plants.

Discharges to Land

For the purposes of these conditions the word "land" does not include water on, above, or under land.

- 40 The licensee must ensure that all discharges occur only from authorised discharge point(s) as identified in Figure 2 of Appendix A, Table 2 of Appendix B and as otherwise allowed in accordance with the conditions of this licence.
- 41 The licensee must notify the NT EPA if the total annual volume of wastewater discharged to land via irrigation exceeds 26 megaliters in any given year. The notification is to include a detailed explanation of the reasons for this and measures (if any) to reduce the volume of wastewater used for irrigation.
- 42 The licensee must ensure that all discharge events to land at each authorised discharge point consist only of waste from the source(s) as specified in Table 1 of Appendix B.
- 43 The licensee must ensure that the discharge from all discharge events to land at each authorised discharge point does not exceed the licence limits specified in Table 2 of Appendix B.

Discharges to Air - Air Emissions

- 44 This licensee must ensure that discharges to air only occurs from the authorised emission points identified in Appendix A Figure 3, Appendix B Table 3 and as otherwise authorised in accordance with the conditions of this licence.
- 45 The licensee must ensure that emissions to air from all emission events at each authorised emission point do not exceed the limits specified in Columns 4 and 5 of Table 3 in Appendix B.
- 46 The licensee must ensure all releases to air from the authorised emission release points:
- 46.1 are directed vertically upwards without impedance or hindrance; and
- 46.2 are freely discharged after release and not captured by building wakes.

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- 47 The licensee must ensure all authorised emission release points are labelled clearly and legibly and in a prominent location with the corresponding release point number as identified in column 1 of Table 3 Appendix B.

Flaring

- 48 The licensee must take all reasonable and practicable measures to minimise flaring.

Acid Gas

- 49 The licensee must not dispose of acid gas other than:
- 49.1 by acid gas incineration;
 - 49.2 by hot venting in accordance with Appendix C; or
 - 49.3 as otherwise approved by the NT EPA.
- 50 The licensee must ensure that acid gas is not disposed of by hot venting at the conclusion of the acid gas hot venting trial unless the acid gas incinerator unit is undergoing maintenance and repair, or as otherwise authorised by the NT EPA.
- 51 The licensee must ensure that the acid gas incinerator unit is not in repair and maintenance for more than 28 days at any one time and no more than 55 days per year.
- 52 The licensee must ensure that an acid gas incinerator is maintained and ready for operations at all other times.

Ambient Air Quality

- 53 The activity must not cause or release, beyond the boundary of the premises:
- 53.1 visible steam;
 - 53.2 smoke;
 - 53.3 offensive odour;
 - 53.4 dust or particulates; or
 - 53.5 noise which unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in the area.
- 54 **Storage and Handling of Chemicals, Flammable and Combustible Substances**
The licensee must keep records of the chemical content, type, volume, storage location and use of all firefighting foams.
- 55 The licensee must ensure all reasonable and practical measures are implemented to minimise, and phase out, use of firefighting foams containing PFAS and pre-cursors to PFOS and PFHxS and in any case, not to use foams containing PFOS and PFHxS.
- 56 All fluorine-containing foams used for testing of firefighting systems and training must be contained and must not contaminate land or waters or air.

MONITORING

- 57 **General**

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The licensee must ensure that, for each sample collected in accordance with the requirements of this licence the following information is recorded and retained:

- 57.1 the date on which the sample was collected;
- 57.2 the time at which the sample was collected;
- 57.3 the location at which the sample was collected;
- 57.4 the name of the person who collected the sample;
- 57.5 the chain of custody forms relating to the sample;
- 57.6 analytical results (if any) relating to the sample; and
- 57.7 laboratory quality assurance and quality control documentation.

58 The licensee must ensure all continuous monitoring equipment used for the purposes of demonstrating compliance with conditions of this licence:

- 58.1 measures the parameter of interest at intervals sufficient to detect a change relevant to the parameter being measured; and
- 58.2 measures, records and transmits measured data in real time to the premises data management system.

59 **Monitoring Discharges to Water**

The licensee must maintain and implement an environmental monitoring program for discharges to water from the licenced activity in accordance with the monitoring requirements included in Table 2 of Appendix B.

60 The licensee must monitor the quality of wastewater discharges at the Jetty Outfall Authorised Discharge Point and at the edge of the receiving environment 20m jetty outfall mixing zone specified in Table 2.

Table 2- JETTY OUTFALL MIXING ZONE MONITORING SITES

Monitoring Site	Description	Depth	Longitude	Latitude
Weak, to a weak-medium incoming tide				
North Reference	Northern-based, incoming tide upstream reference location. At the north edge of jetty infrastructure	Surface	-12.521910°	130.849215°
MZ E	Receiving environment at the eastern edge of the mixing zone, adjacent jetty infrastructure	Surface	-12.523606°	130.850100°
MZ SSE	Receiving environment at the edge of mixing zone, tide dependent.	Surface	-12.523759°	130.849955°
MZ W	Receiving environment at the western edge of the mixing zone, adjacent jetty infrastructure	Surface	-12.523598°	130.849733°
Weak, to a weak-medium outgoing tide				
South Reference	Southern-based, outgoing tide upstream reference location. At the southern edge of jetty infrastructure	Surface	-12.525022°	130.850394°
MZ E	Receiving environment at the eastern edge of the mixing zone, adjacent jetty infrastructure	Surface	-12.523606°	130.850100°

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MZ NNW	Receiving environment at the edge of mixing zone, tide dependent.	Surface	-12.523411°	130.849864°
MZ W	Receiving environment at the western edge of the mixing zone, adjacent jetty infrastructure	Surface	-12.523598°	130.849733°

- 61 The licensee must:
- 61.1 ensure all land based monitoring locations are labelled clearly and legibly and in a prominent location with the appropriate monitoring site identification; and
 - 61.2 maintain safe access and egress, as is reasonably practicable.
- 62 The licensee must ensure all sampling and analysis of water pollutants are carried out in accordance with NSW Department of Environment and Conservation and NSW EPA *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*.
- 63 The licensee must implement and maintain a mangrove monitoring program in accordance with Appendix D.
- 64 The licensee must ensure that any proposed revisions to the mangrove monitoring program in Appendix D (other than typographical changes or revisions to formatting or referencing) are:
- 64.1 reviewed by a suitably qualified professional, who must produce a written report about their review;
 - 64.2 submitted to the NT EPA with justification for revisions; and
 - 64.3 submitted to the NT EPA with a complete copy of the suitably qualified professional's written review, 20 business days prior to the proposed implementation date.
- 65 The NT EPA may require the licensee to revise or amend and resubmit the mangrove monitoring program. Where the NT EPA requires the mangrove monitoring program to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

Monitoring Air Discharges

- 66 The licensee must maintain and implement an environmental monitoring program for discharges to air from the licenced activity in accordance with the monitoring requirements included in Table 3 of Appendix B.
- 67 The licensee must ensure all sampling and analysis of air emissions are carried out in accordance with NSW EPA *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
- 68 Monitoring of air emissions must be undertaken at least once per year when the emission source is operating under maximum steady state operating conditions.

Monitoring Discharges to Land and Surrounding Environment

- 69 The licensee must maintain and implement an environmental monitoring program for discharges to land from the licenced activity in accordance with the monitoring requirements included in Table 2 of Appendix B and the ConocoPhillips Darwin LNG Proposed Groundwater Monitoring Plan dated March 2013. For the purposes of this condition, the word "land" does not include water [or air] on or above land.
- 70 The licensee must ensure all sampling and analysis of water pollutants are carried out in accordance with NSW Department of Environment and Conservation and NSW EPA *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*.

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- 71 The licensee must ensure any samples collected in accordance with this licence or in connection with the activity, are obtained by, or under the supervision of a qualified sampler.

RECORDING AND REPORTING

72 **Waste**

The licensee must maintain records of the nature, quantities and source of waste generated at the premises in each successive 12 month period following the commencement date of this licence.

- 73 The licensee must retain records relating to waste, including listed waste, as required by the conditions of this licence, for a period of 2 years after the end of the 12 month period to which the record relates.

Non-Compliance

- 74 The licensee must notify the NT EPA of any non-compliance with this licence by completing the Non-Compliance Notification via NT EPA Online (or by emailing waste@nt.gov.au), as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.

- 75 The licensee must include in the notification of non-compliance the following information:

- 75.1 when the non-compliance was detected and by whom;
- 75.2 the date and time of the non-compliance;
- 75.3 the actual and potential causes and contributing factors to the non-compliance;
- 75.4 the risk of environmental harm arising from the non-compliance;
- 75.5 the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;
- 75.6 corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; and
- 75.7 if no action was taken, why no action was taken.

- 76 A non-compliance with this licence includes an exceedance at an authorised discharge point specified in Table 1 of Appendix B, excluding the Jetty Outfall Authorised Discharge Point, of a trigger value for wastewater discharges specified in Table 2 of Appendix B:

- 76.1 on three consecutive sampling occasions; or
- 76.2 on a single sampling occasion of three times or more the trigger value.

- 77 A non-compliance with this licence includes an exceedance at the Jetty Outfall Authorised Discharge Point specified in Table 1 of Appendix B of a mixing zone trigger value specified in Table 2 of Appendix B, determined from a median value of a water quality parameter measured at the edge of the mixing zone:

- 77.1 on three consecutive occasions and the exceedance is not also present in the upstream reference site, on the same three consecutive occasions; or
- 77.2 on a single occasion where the measured value exceeds the trigger value greater than or equal to two times the trigger value, and the exceedance is not present at the upstream reference site.

- 78 A non-compliance with this licence includes an exceedance of a maximum:

- 78.1 concentration limit specified in Table 3 of Appendix B; or

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78.2 mass emission rate limit specified in Table 3 of Appendix B.

79 The licensee must keep adequate records of all exceedances of trigger values specified in Appendix B. These records must be provided to the NT EPA upon request.

80 The licensee must keep records of all non-compliances with this licence.

81 The licensee must provide an incident investigation report to the NT EPA within 10 business days of notification of the incident detailing the findings of an investigation of the incident.

82 The incident investigation report must include:

82.1 the date and time when the non-compliance was detected and by whom;

82.2 the risk of environmental harm arising from the non-compliance;

82.3 if no action was taken, why no action was taken;

82.4 corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur;

82.5 the action(s) that have been undertaken to mitigate any environmental harm arising from the non-compliance; and

82.6 the actual and potential causes and contributing factors to the non-compliance.

83 **Annual Report**

The licensee must submit a completed Annual Return via NT EPA Online each year within 10 business days of the anniversary date of the licence.

84 The licensee must, by 01 March each year, provide to the NT EPA an Annual Monitoring Report as it relates to the previous period of 01 January - 31 December.

85 The licensee must ensure that each Annual Monitoring Report:

85.1 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring';

85.2 includes a tabulation of all monitoring data required as a condition of this licence;

85.3 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available);

85.4 includes an assessment of environmental impact from the activity; and

85.5 includes analysis on the impacts of the Licensed Activity on ambient air quality.

86 The NT EPA may require the licensee to revise or amend and resubmit any Monitoring Report. Where the NT EPA requires the Annual Monitoring Report to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

PERFORMANCE IMPROVEMENT

87 **Monitoring**

Within 6 months of the commencement date of this licence the licensee must install, operate and maintain a device to measure and record, for each discharge event from the jetty outfall:

87.1 the time the discharge commenced and the duration of the discharge;

87.2 the discharge rate of flow; and

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87.3 the discharge volume.

88 The licensee must, by 19 August 2018, at each authorised discharge point to land, install, operate and maintain a device to measure:

88.1 the time the discharge commenced and the duration of the discharge;

88.2 the discharge rate of flow; and

88.3 the discharge volume.

89 Within 6 months of the commencement date of this licence the licensee must, at each authorised discharge point to air, install and maintain appropriate identification signage so that they are reasonably identifiable at all times.

Wastewater outfall improvements

90 The licensee must prepare a Performance Improvement Plan for managing wastewater discharge over time, so as to minimise the extent and impact of discharges to Darwin Harbour from the jetty outfall. The Performance Improvement Plan must include:

90.1 an assessment of options for improving the jetty outfall infrastructure to maximise the dilution achieved by the jetty outfall, through physical modification of the discharge outlet with a diffuser (or similar engineering solutions), including a preferred option;

90.2 an outline of the approach to undertake dispersion modelling to determine the mixing zone prior to installation;

90.3 timeframes for implementation, commissioning and reporting on improvements to the jetty outfall;

90.4 post-commissioning monitoring to verify any modelling used to inform selection of a preferred option; and

90.5 a receiving water monitoring program that is:

90.5.1 capable of detecting impacts to Darwin Harbour from jetty outfall discharges; and

90.5.2 developed and endorsed by a suitably qualified professional.

91 The Performance Improvement Plan must be:

91.1 submitted to the NT EPA via NT EPA Online (or email to waste@nt.gov.au) within 6 months of the commencement date of this licence; and

91.2 implemented within 12 months from the NT EPA acceptance of the plan.

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END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



Paul Purdon
Executive Director Environment Protection
Delegate of the Northern Territory
Environment Protection Authority
Dated: 04/08/2019

END NOTES

This licence is an amendment and supersedes EPL217-01 which was issued on 19 September 2017.

EPL217-01 was an amendment and superseded EPL217 which was issued on 19 September 2017 and expires on 18 September 2022.

EPL217 was a renewal and superseded EPL 54-08 which was issued on 13 June 2017 and expired on 19 September 2017.

EPL 54-08 was an amendment and superseded EPL 54-07 which was issued on 17 May 2017 and expired on 19 June 2017.

EPL 54-07 was an amendment and superseded EPL 54-06 which was issued on 4 November 2014 and expired 18 May 2017.

EPL 54-06 was an amendment and transfer of EPL 54-05 which was issued on 12 November 2012.

EPL 54-05 was a revision to correct typographical errors in EPL 54-04 which was issued on 30 October 2012.

EPL 54-04 was an amendment and superseded EPL 54-03 which was issued on 12 July 2012 with the expiry date 18 May 2017.

EPL 54-03 was an amendment and superseded EPL 54-02 which was issued on 7 October 2010.

EPL 54-02 was an amendment and superseded EPL - LNG 01.

EPL - LNG 01 was revised and re-issued on 25 September 2009.

EPL - LNG 01 was first issued to ConocoPhillips Australia Pty Ltd (ABN 092 288 376) on 9 December 2005 with an expiry date of 31 December 2022.

The end notes are to assist with historical records.

ENVIRONMENT PROTECTION LICENCE 217 - 02

DEFINITIONS

All terms in the Licence which are defined in the *Waste Management and Pollution Control Act* have the meaning given in that Act unless otherwise or further defined in this section.

DEFINITION	In this licence, unless a contrary intention appears:
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 Scheduled activity as described on the covering page of this licence.
Air	includes any layer of the atmosphere.
ALARP	As Low As Reasonably Practicable
Annual fee	yearly fee payable in respect of the activity as specified in the WMPC Act and the Regulations.
Annual Return	an NT EPA prescribed format for demonstrating and reporting compliance with the conditions of this licence and providing information on waste volumes for the preceding 12 month period.
ANZECC/ARMCANZ	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000: National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting.
Asbestos containing material	any material that contains asbestos.
Best practice environmental management	the management of an activity or premises in a cost-effective manner that, having regard to national or international practices for management of activities or premises of the same kind, ensures the continued minimisation of the actual or potential environmental impact of the activity or premises.
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.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the activity before, during and after the activity 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 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: (a) noise, odour, heat and electromagnetic radiation; (b) a prescribed substance or prescribed class of substances; and

ENVIRONMENT PROTECTION LICENCE 217 - 02

	(c) a substance having a prescribed property or prescribed class of properties.
Discharges	allow a liquid, gas or other substance to flow out from where it has been confined.
Disposal schedule	a plan for disposing of asbestos containing material such that asbestos containing material is not stored in perpetuity.
Emergency Response Plan	a written plan documenting the licensee's procedures for responding to emergencies caused by, resulting from or associated with the activity and that may cause environmental harm.
Environmental audit	has the meaning given in section 47 of the WMPC Act.
Environmental harm	(a) any harm to or adverse effect on the environment; or (b) any potential harm (including the risk of harm and future harm) to or potential adverse effect on the environment, of any degree or duration and includes environmental nuisance.
Environmental nuisance	means: (a) an adverse effect on the amenity of an area that: (i) is caused by noise, smoke, dust, fumes or odour; and (ii) unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in the area; or (b) an unsightly or offensive condition caused by contaminants or waste.
Incident	includes: (a) an accident, emergency or malfunction; and (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.
Landfill cell	a purpose built area for the disposal of waste within a landfill.
Landfill Closure and Post Closure Plan	a written plan which specifies the landfill closure and post-closure activities as set out in the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.
Leachate	any liquid produced by the action of water percolating through waste, and that contains contaminants.
Listed waste	a waste included under Schedule 2 of the Regulations.
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.
Material environmental harm	environmental harm that: (a) is not trivial or negligible in nature; (b) consists of an environmental nuisance of a high impact or on a wide scale; (c) results, or is likely to result, in not more than \$50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or (d) results in actual or potential loss or damage to the value of not more than \$50,000 or the prescribed amount (whichever is greater).

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Mixing Zone	a specifically defined area or volume of water around a waste water discharge where the water quality may be below that required to protect environmental values and beneficial uses.
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 NT EPA prescribed format for notifying the NT EPA of a non-compliance.
NT EPA Online	online system for Environment Protection Licence (EPL), Environment Protection Approval (EPA) and Waste Discharge Licence (WDL) lodgement and maintenance.
NT EPA Online Vehicle Register	the vehicle register found at NT EPA Online.
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.
Point source discharge	means any discernible, confined or discrete conveyance from which contaminants or waste are or may be discharged.
Pollute	(a) emit, discharge, deposit, or disturb, directly or indirectly, a contaminant or waste; or (b) cause, permit, or fail to prevent, directly or indirectly, the emission, discharge, deposition, disturbance or escape of a contaminant or waste.
Pollution	(a) a contaminant or waste that is emitted, discharged, deposited or disturbed or that escapes; or (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.
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.
Putrescible waste	the component of the waste stream liable to become putrid. For example, organic matter that has the potential to decompose with the formation of malodorous substances, usually refers to vegetative, food and animal products.
Qualified person	a person registered under Section 68 of the WMPC Act.
Qualified professional	A person who has professional qualifications, training, skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.
Qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Regulations	<i>Waste Management and Pollution Control (Administration) Regulations.</i>
Rehabilitation Plan	a written plan to ensure that the objectives of rehabilitation are achieved as set out in the NT EPA Guidelines for the Siting, Design and Management of Solid Waste

ENVIRONMENT PROTECTION LICENCE 217 - 02

Disposal Sites in the Northern Territory.

Serious environmental harm	environmental harm that is more serious than material environmental harm and includes environmental harm that: (a) is irreversible or otherwise of a high impact or on a wide scale; (b) damages an aspect of the environment that is of a high conservation value, high cultural value or high community value or is of special significance; (c) results or is likely to result in more than \$50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or (d) results in actual or potential loss or damage to the value of more than \$50,000 or the prescribed amount (whichever is greater).
Solid inert waste	solid waste that has no active chemical or biological properties. These wastes do not undergo environmentally significant physical, chemical or biological transformation.
Stormwater	water flowing over ground surfaces, in natural streams and drains as a direct result of rainfall over a catchment and consists primarily of rainfall runoff.
Suitably qualified professional	a person with professional qualifications, training, skills or experience and who can give authoritative assessment, advice and analysis with regards the subject matter using relevant protocols, standards, methods or literature. The assessment of whether a person is able to act as a suitably qualified professional must be based on evidence that can be provided to the NT EPA, upon request.
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	(a) a solid, a liquid or a gas; or (b) a mixture of such substances, that is or are left over, surplus or an unwanted by-product from any activity (whether or not the substance is of value) and includes a prescribed substance or class of substances.
Waste transport certificate	the NT EPA waste tracking documentation used to track listed waste being transported interstate as required in accordance with the National Environment Protection (Movement of Controlled Waste Between States and Territories) Measure.
Wastewater	water that contains a contaminant or waste.
Water	includes: (a) surface water, ground water and tidal waters; (b) coastal waters of the Territory, within the meaning of the Coastal Waters (Northern Territory Powers) Act 1980 of the Commonwealth; and (c) water containing an impurity.
WMPC Act	the Northern Territory <i>Waste Management and Pollution Control Act</i> .
Qualified auditor	A person included on the register established and maintained pursuant to section 68 of the WMPC Act.

APPENDIX A –DLNG ENVIRONMENT PROTECTION LICENCE FIGURES

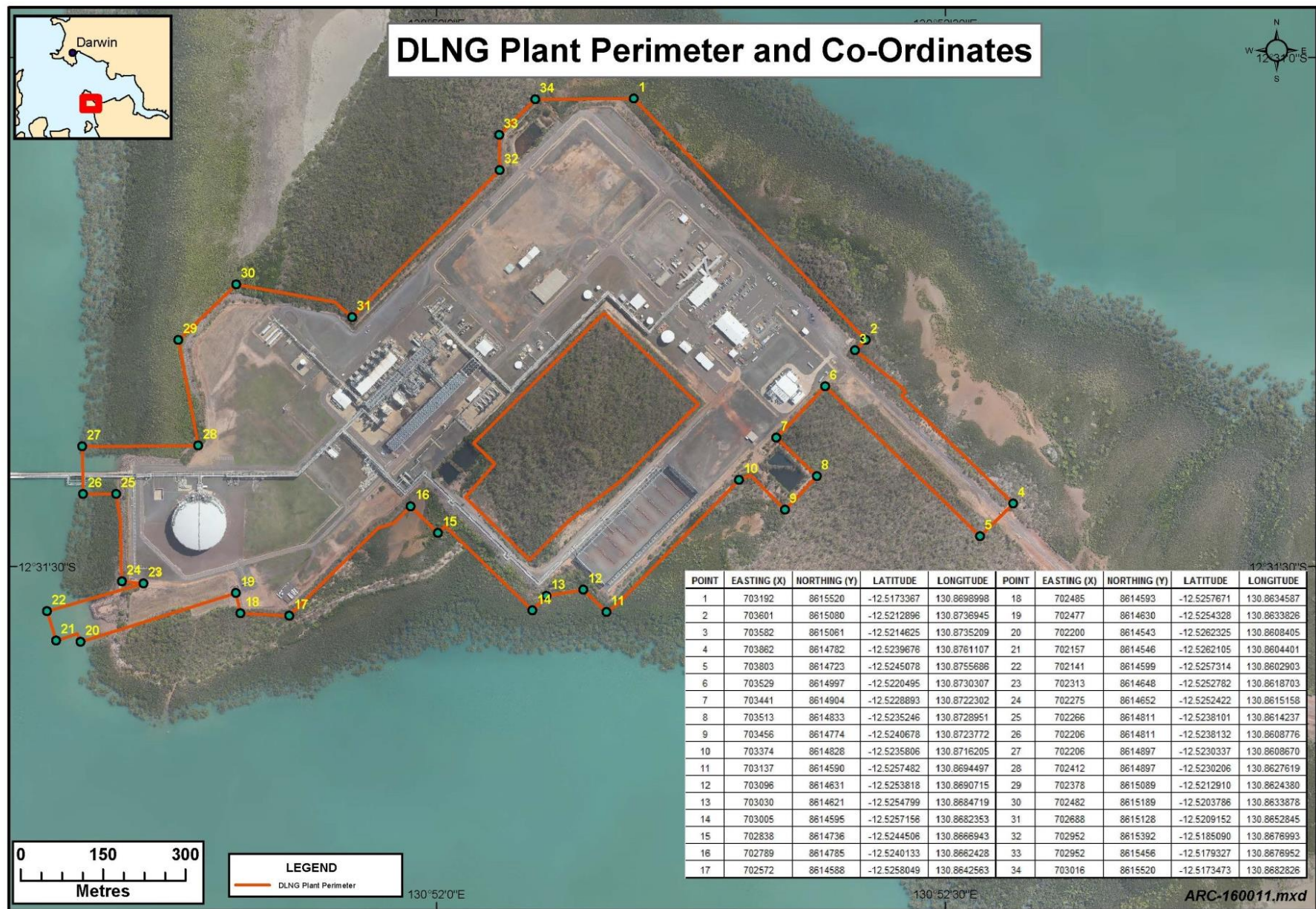


Figure 1 – Map of the premises authorised under this licence

APPENDIX A –DLNG ENVIRONMENT PROTECTION LICENCE FIGURES

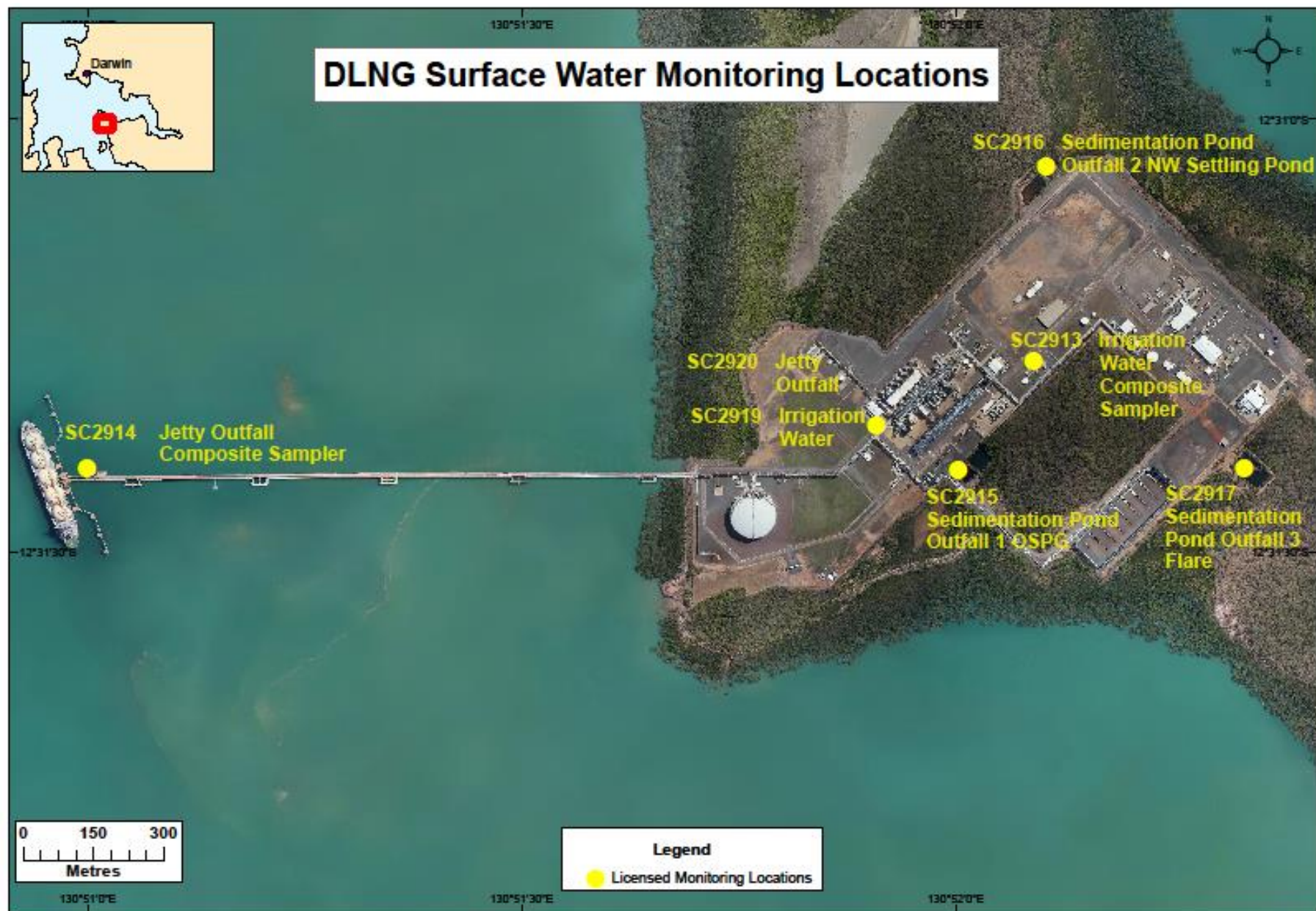


Figure 2 – Map of authorised wastewater discharge points at DLNG

APPENDIX A –DLNG ENVIRONMENT PROTECTION LICENCE FIGURES

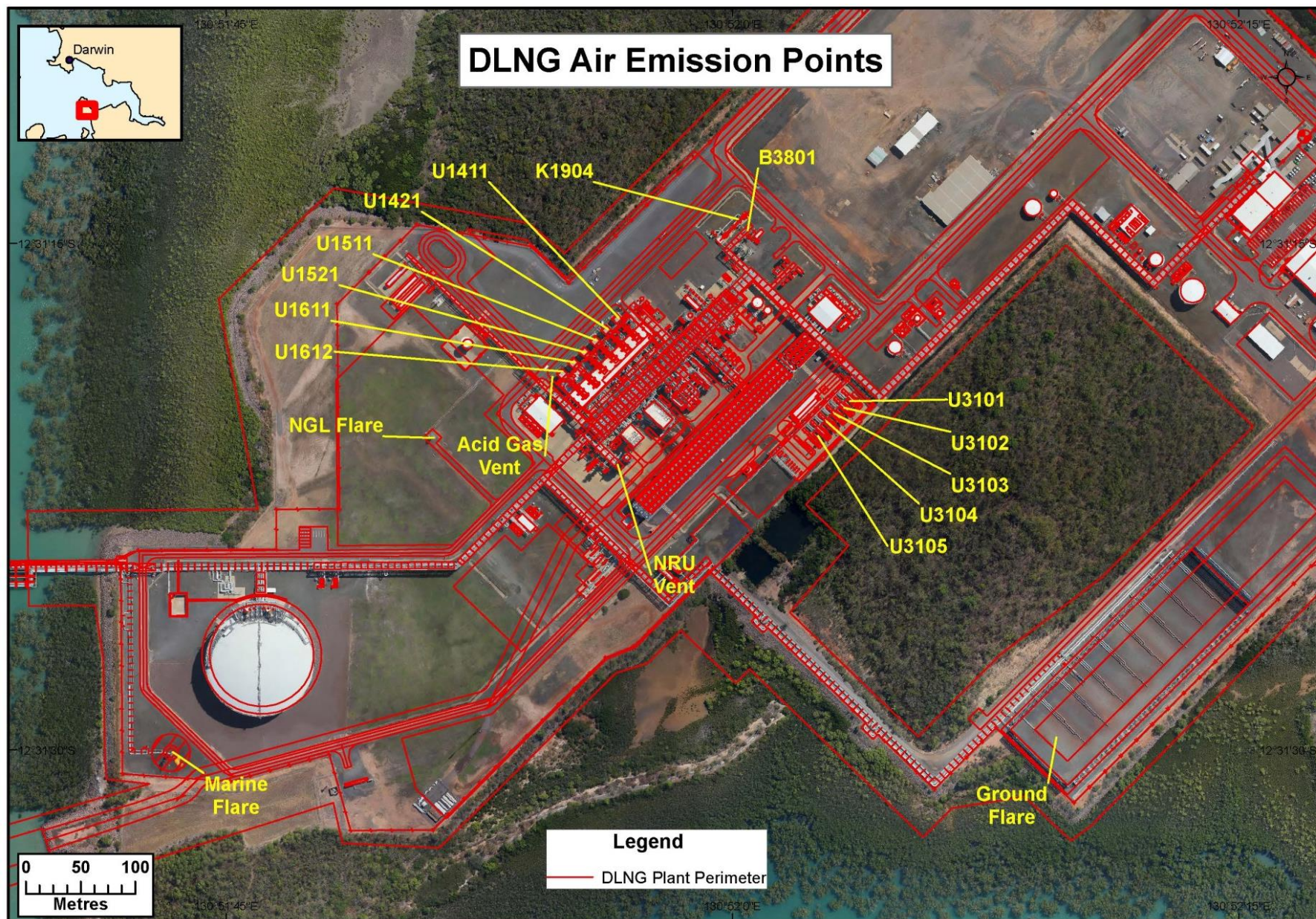


Figure 3 – Map of authorised air emission points at DLNG

APPENDIX A –DLNG ENVIRONMENT PROTECTION LICENCE FIGURES

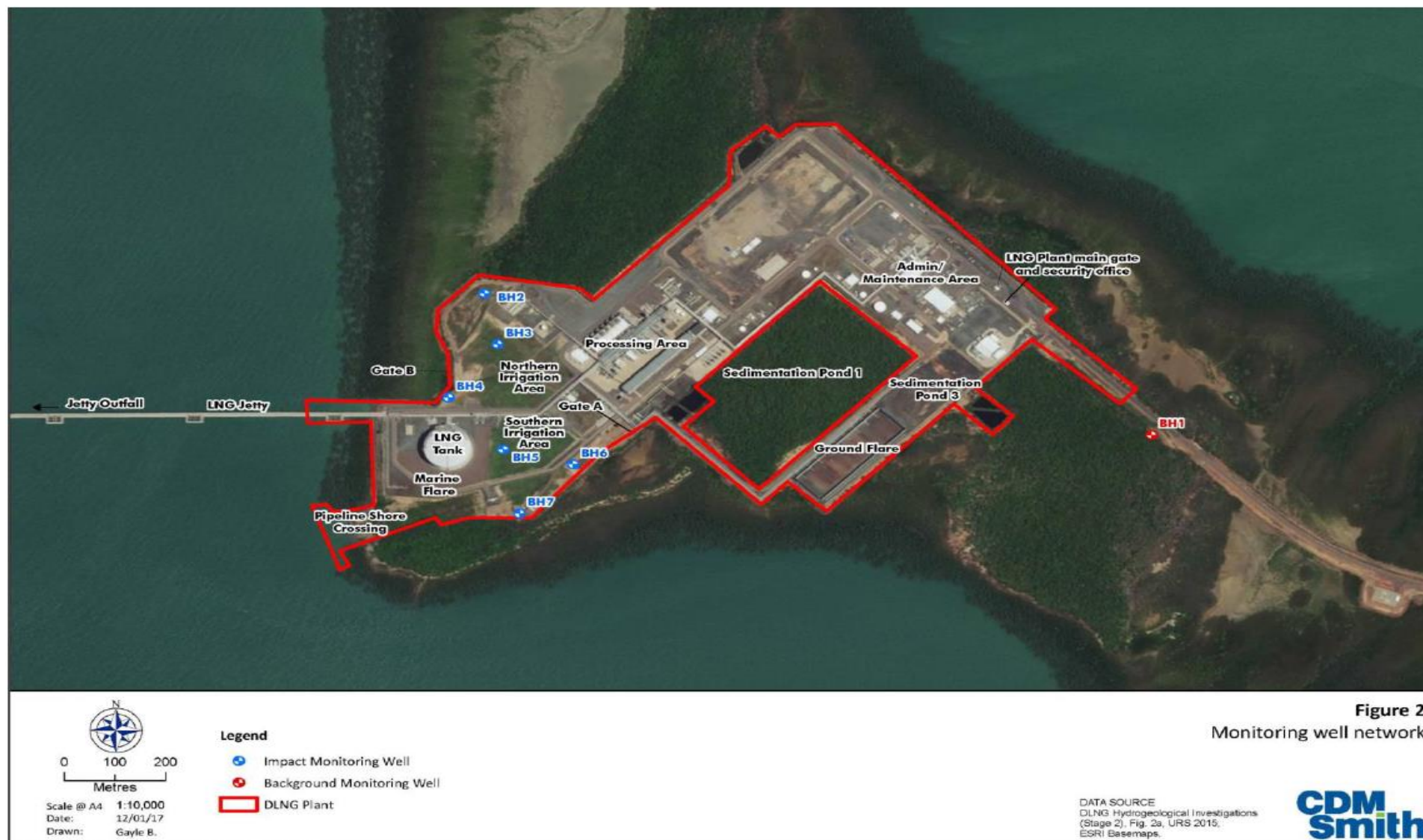


Figure 4 – Map of groundwater monitoring bores

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Table 1 – Authorised wastewater discharge points at DLNG

Authorised Discharge Point	Description	Location	Discharge Source
SC 2914	Jetty Outfall (Composite Sampler)	12.5235 S 130.8500 E	Reverse osmosis (RO) plant reject water
SC 2920	Jetty Outfall	12.3121 S 130.5154 E	
SC 2913	Irrigation Water (Composite Sampler)	12.5217 S 130.8680 E	Turbine air humidification system / boiler blowdown and water from the treated water holding tank (including tertiary treated sewage effluent)
SC 2919	Irrigation Water	12.3121 S 130.5154 E	
SC 2915	Sedimentation Pond Outfall 1	12.5236 S 138.8670 E	Stormwater runoff from process area (including the RO green sand filter backwash and discharge).
SC 2916	Sedimentation Pond Outfall 2	12.5175 S 130.8690 E	
SC 2917	Sedimentation Pond Outfall 3	12.5237 S 130.8730 E	

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Table 2 – Authorised wastewater discharge trigger values

Parameter	Units	Discharge Location							
		Irrigation Discharge ¹		Jetty Outfall				Sediment Ponds 1, 2 and 3 Discharge	
		Trigger Value	Frequency ²	Discharge Trigger Value	Frequency	Mixing Zone Trigger Value ³	Frequency ⁴	Trigger Value	Frequency ⁵
Field Measurements									
pH	-	pH 7-8.5	Monthly	pH 7-8.5	Monthly	7 - 8.5	Quarterly	pH 6-8.5	Monthly
Electrical conductivity	µs/cm	Not available	Monthly	Not available	Monthly	Not available	Quarterly	Not available	Monthly
Total suspended solids	mg/L	≤ 30	Monthly	≤ 30	Monthly	<10	Quarterly	≤ 75	Monthly
Turbidity	NTU	n	Monthly	20	Monthly	20	Quarterly	28	Monthly
Dissolved oxygen	DO% saturation	Not available	Monthly	Not available	Monthly	80 - 100	Quarterly	Not available	Monthly
Temperature	°C	Not available	Monthly	Not available	Monthly	Not available	Quarterly	Not available	Monthly
Environmental Indicators									
Ammonia nitrogen (NH ₃ -N)	µg/L	20	Annual	337	Quarterly	<20	Quarterly	94	Annual
Nitrate (NO ₃ -N)	µg/L	17	Annual	764	Quarterly	700	Quarterly	145	Annual
Nitrite (NO ₂ -N)	µg/L	17	Annual	27	Quarterly	Not available	Quarterly	17	Annual
Dissolved reactive phosphorous (PO ₄ -P)	µg/L	5	Annual	51	Biannually	5	Biannually	5	Annual
Chlorophyll-a	µg/L	2	Initial and then as required for biannual groundwater monitoring only	NA ⁶	NA ⁶	<2	Quarterly	NA ⁶	NA ⁶
Biological oxygen demand	mg/L	≤ 25	Monthly	≤ 25	Biannually	Not available	Biannually	≤ 25	Monthly

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Parameter	Units	Discharge Location							
		Irrigation Discharge ¹		Jetty Outfall				Sediment Ponds 1, 2 and 3 Discharge	
		Trigger Value	Frequency ²	Discharge Trigger Value	Frequency	Mixing Zone Trigger Value ³	Frequency ⁴	Trigger Value	Frequency ⁵
Total Recoverable Hydrocarbons	mg/L	< 6	Annual	< 6	Biannually	≤ laboratory reporting limit ⁷	Biannually	< 6	Annual
Total nitrogen	mg/L	≤ 40	Annual	≤ 40	Quarterly	<0.27	Quarterly	≤ 40	Annual
Total phosphorus	mg/L	≤ 10	Annual	≤ 10	Biannually	<0.020	Biannually	≤ 10	Annual
<i>E.coli</i>	MPN /100mL	≤ 75	Initial and then as required for biannual groundwater monitoring only	≤ 75	Biannually	<200	Biannually	≤ 305	Initial and then as required for in-field monitoring (biannually in first year)
<i>Enterococci</i>	MPN /100mL	50	Initial and then as required for biannual groundwater monitoring only	50	Biannually	50	Biannually	261	Initial and then as required for in-field monitoring (biannually in first year)
Metals & BTEX									
Arsenic	µg/L	10	Annual	Not available ⁸	Biannually	Not available	Biannually	Not available	Annual
Cadmium	µg/L	3.2	Monthly	5.5	Quarterly	5.5	Quarterly	5.5	Monthly
Chromium	µg/L	10	Annual	4.4	Biannually	4.4	Biannually	4.4	Annual
Copper	µg/L	69	Monthly	1.3	Quarterly	1.3	Quarterly	2.0	Monthly
Iron	µg/L	1,300	Annual	Not available	Biannually	Not available	Biannually	Not available	Annual
Lead	µg/L	10	Annual	4.4	Biannually	4.4	Biannually	4.4	Annual
Manganese	µg/L	15,500	Annual	Not available	Biannually	Not available	Biannually	Not available	Annual

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Parameter	Units	Discharge Location							
		Irrigation Discharge ¹		Jetty Outfall				Sediment Ponds 1, 2 and 3 Discharge	
		Trigger Value	Frequency ²	Discharge Trigger Value	Frequency	Mixing Zone Trigger Value ³	Frequency ⁴	Trigger Value	Frequency ⁵
Mercury	µg/L	0.1	Monthly	0.4	Biannually	0.4	Biannually	0.4	Monthly
Nickel	µg/L	290	Annual	70	Quarterly	70	Quarterly	70	Annual
Silver	µg/L	1.4	Annual	1.4	Biannually	1.4	Biannually	1.4	Annual
Zinc	µg/L	1780	Monthly	15	Quarterly	15	Quarterly	1000	Monthly
BTEX	µg/L	700	Monthly	700	Biannually	700	Biannually	700	Monthly

¹ The Irrigation Discharge Trigger Values for Field Measurements, Environmental Indicators and BTEX are adopted from the Darwin Harbour Water Quality Objectives (DHWQO) and are intended to be applied at the source as Interim values for the purpose of this EPL Renewal. The Irrigation Discharge Trigger Values for Metals are interim trigger values developed by ConocoPhillips using the 80th percentile value of the current groundwater reference bore (BH1) dataset, which comprises of 16 data points including 11 consecutive data points collected as part of the development of the final site specific trigger values. The estimated completion date for the final site specific trigger values for the long term irrigation discharge management is June 2019.

² The monitoring frequency presented correlates to monitoring at the source. The frequency of groundwater monitoring is included in Table 4.

³ Relevant trigger values are to be applied at the mixing zone per conditions of the licence (Condition 59, Table 2 of this EPL). Trigger Values relating to the mixing zone are adopted from both the DHWQO for priority ambient water quality indicators for mid-estuary marine and estuarine systems of the Darwin Harbour Region, Interim Recreational Guidelines and Objectives for Primary Contact and default trigger values for toxicants and BTEX at 95% species level of protection for marine water as it relates to metals. Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra (ANZECC and ARMCANZ, 2000).

⁴ The licensee must ensure that all samples and field environmental data collected are representative of the discharge conditions at the time of sampling.

⁵ Monitoring to be conducted at least one month prior to first flush sediment pond discharge and monthly during sediment pond discharge events.

⁶ Trigger value for Chlorophyll-a is not applicable, given the context of the nature of the discharges. Chlorophyll-a is an in-field response indicator to eutrophication and not a stressor or toxicant, therefore N/A for sediment ponds.

⁷ If Total Recoverable Hydrocarbons are detected over the prescribed limits, per monitoring conditions of the licence, a silica gel clean-up is to be undertaken and samples re-analysed to remove false positive from natural, normally occurring hydrocarbons. Advice from analytical laboratories regarding the limit of reporting (LOR) for TRH in receiving environment surface waters shows significant variability depending on the method used and the chain length of the hydrocarbons analysed, and will range between 100 to 500 µg/L.

⁸ The Aquatic Health Unit has advised that the DHWQO are currently being reviewed and may be released by March/April 2019. DHWQO state that “*Local guidelines in this document have been derived for physico-chemical indicators and potential stressors, and do not address toxicants (such as heavy metals). Guideline values for toxicant indicators in water and sediment will continue to be sourced from ANZECC (2000) Guidelines.*” The ANZECC guidelines advise that there was insufficient data to derive a reliable trigger value for Arsenic, Iron and Manganese.

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Table 3 – Authorised air emission points

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Release Point Number	Source	Pollutant	Concentration Limit	Maximum mass emission rate ¹	Monitoring frequency ²
			mg/Nm ³	g/s	
U3101, U3102, U3103, U3104 and U3105	Power generation turbines	NO _x as NO ₂	70 @ 15% O ₂ dry	1	Biannually
		CO	32 @ 15% O ₂ dry	0.4	Biannually
		SO ₂	23 @ 15% O ₂ dry	0.2	Biannually
U1411, U1421, U1511, U1521, U1611 and U1621	Compressor turbines	NO _x as NO ₂	212 @ 15% O ₂ dry	25	Biannually
		CO	70 @ 15% O ₂ dry	5	Biannually
		SO ₂	65 @ 15% O ₂ dry	4.7	Biannually
K-1904	Acid gas incinerator	NO _x as NO ₂	64 @ 15% O ₂ dry	1.5	Quarterly
		CO	339 @ 15% O ₂ dry	3	Quarterly
		H ₂ S	5 @ 15% O ₂ dry	0.1	Quarterly
		SO ₂	194 @ 15% O ₂ dry	4.6	Quarterly
V1206 ^{4, 5}	Solvent Regenerator Reflux Drum (Acid gas removal unit (vent) ³)	H ₂ S	136 Nm ³	1.5	Quarterly
		Benzene	16 Nm ³	0.18	Quarterly
B3801	Boiler	NO _x as NO ₂	190 @ 3% O ₂ dry	0.7	Biannually
		CO	42 @ 3% O ₂ dry	0.2	Biannually
		SO ₂	65 @ 3% O ₂ dry	0.25	Biannually

¹ Maximum mass emission rate per stack

² Stack testing methods in accordance with NSW EPA-recognised sampling standards and frequency in Table 3

³ For the purposes of the acid gas hot venting trial H₂S and benzene at the acid gas removal unit vent may exceed the concentration limits provided that the maximum mass emission rate is not exceeded.

⁴ For the purpose of condition 45 and the hot vent trial, the hot vent is angled at 45 degrees for improved dispersion.

⁵ The Acid Gas Removal Vent (V-1207) has no sample point. Samples are therefore taken from the Solvent Regenerator Reflux Drum (V-1206).

There is no compositional difference between V1207 and V1206 as there is no opportunity for compositional change, acid gas travels between the two vessels via pipe of approximately 500m distance.

APPENDIX B –DLNG ENVIRONMENT PROTECTION LICENCE TABLES

Table 4 – Groundwater monitoring bore locations and frequency

Bore	Location	Monitoring frequency¹
BH1	12.52388 S 130.8753 E	Monthly ²
BH2	12.52099 S 130.8635 E	Biannually
BH3	12.52204 S 130.8637 E	Biannually
BH4	12.52316 S 130.8628 E	Biannually
BH5	12.52424 S 130.8638 E	Biannually
BH6	12.52455 S 130.8651 E	Biannually
BH7	12.52558 S 130.8641 E	Biannually

¹Biannual groundwater monitoring to be undertaken once in the wet season and once in the dry season for the analytes specified in Table 2 with the exception of chlorophyll-a, which does not need to be monitored in groundwater.

² Monthly monitoring to establish a baseline data set over a 24-month period, then reverting to Biannually thereafter.

APPENDIX C – DARWIN LNG ACID GAS HOT VENTING TRIAL

ConocoPhillips may only conduct a hot acid gas venting trial at DLNG in accordance with the following conditions:

1. The trial must not exceed 24 months in total from the point at which the trial first commences unless otherwise approved by the NTEPA.
2. The trial shall be conducted over a sufficient period to enable collection of a total of 12 months of air emissions and ambient air monitoring data.
3. The trial must be compliant with all other requirements of the licence.
4. An air quality assessment report must be provided to the NT EPA on the results of the trial within 3 months of collecting 12 months' of monitoring data.
5. The air quality assessment report must be reviewed by a Qualified Professional prior to submission to the NT EPA. The Qualified Professional's review, and ConocoPhillips' response to the review, must be submitted to the NT EPA with the air quality assessment report.
6. The Acid Gas Incinerator must remain on standby for immediate use at all times.
7. The Acid Gas Incinerator shall be used if there is a significant increase in benzene or hydrogen sulfide emission rates in the acid gas stream above the low levels estimated for the purpose of the trial.
8. The maximum emission rates limits and monitoring frequency to be applied at the AGRU vent for the duration of the trial are specified in Table 2.

Table 2 AGRU vent maximum emission rate limits

Release Point Number	Source	Pollutant	Maximum mass emission rate ¹	Monitoring frequency ²
			g/s	
V1207	Acid gas removal unit (vent) ³	H ₂ S	1.5	Monthly
		Benzene	0.18	Monthly

9. If monitoring at the acid gas vent shows a single sample result exceeds the maximum mass emission rate in Table 2, two further samples shall be collected and tested the following week.
10. If the average of the three samples exceeds the specified limit in Table 2, the trial shall cease and ConocoPhillips will recommence acid gas

¹ Maximum mass emission rate is dependent on the concentration of the acid gas and the flow rate. ConocoPhillips has capacity to reduce the flow rate if required.

² Stack testing methods in accordance with NSW EPA-recognised sampling standards

incineration within no more than 5 days from the detection of the exceedance.

11. Concentrations of benzene and hydrogen sulfide in the ambient air must be monitored on a continuous basis at three suitably located sites.
12. Results of monitoring emissions are to be provided to the NT EPA each six months.
13. Within 6 months of commencing the trial ConocoPhillips must assess and provide a written report to the NT EPA on the risk of:
 - a. dioxins and furans forming as the mixed gas stream cools in the turbine plume and the potential implications for Darwin Harbour and the Darwin population; and
 - b. washout of benzene from the plume into Darwin Harbour and potential environmental impacts.

The report on the formation of dioxins and furans is to be informed by an analysis of hydrochloric acid presence in the acid gas stream, based on monitoring of the acid gas stream for hydrochloric acid by a qualified professional on at least three separate occasions

14. The NTEPA will, in consultation with the licensee, establish the criteria for a decision on whether acid gas hot venting can continue beyond the trial.
15. The decision making criteria will be established by no later than 30 November 2017.

Mangrove Surveillance and Chemical Monitoring Program

The Mangrove Monitoring Program for the operations phase includes a set of core monitoring components to be undertaken on an annual basis.

The scope of work includes:

- Mangrove Surveillance (including groundwater monitoring).
- Chemical Monitoring – collection and analysis of mangrove sediments and biota for hydrocarbon and heavy metals concentrations.

The methods employed for each of the above components of the monitoring program are as follows.

Mangrove Surveillance

Canopy density

Canopy density is a quantitative measure indicating the percentage of the site occupied by the mid and upper vegetation strata (i.e. foliage cover comprised of leaves and branches). This parameter is considered to be a useful indicator for environmental stress, as leaf defoliation and leaf growth are sensitive to a wide range of environmental indicators (English, Wilkinson & Baker 1997). Changes in canopy density can therefore provide a measure of mangrove health/condition and associated factors causing such changes.

Canopy density is determined using a spherical forestry densiometer to provide estimates of the foliage cover within each of the four subplots formed by the four plot corner markers (1, 2, 3, 4) and the plot centre point. The technique employed follows that used for the DIPE Darwin Harbour Mangrove Monitoring as described in Moritz-Zimmerman, Comley and Lewis 2002. The overall canopy density at each site is calculated as the mean of the readings recorded from each subplot.

Species composition and tree density

To provide a baseline description of the mangrove communities at each site, the tree species composition and density was determined when each site was established (i.e. once only data collection). The classification of 'tree' vegetation follows the criteria suggested by Brocklehurst and Edmeades (1996), being vegetation where DBH (Diameter at Breast Height) is >2 cm and height is >1 m.

Defoliation index

Defoliation index is a semi-quantitative index of mangrove health that is applied to individual trees or groups of trees. At each surveillance site the degree of defoliation of the canopies is assessed visually for each subplot using a numbering system from 0–5, where 0 represents complete defoliation of the stand, 1 represents up to 25% of the canopy present, 2 represents 25–50% of the canopy present, 3 represents 50–75% of the canopy present, 4 represents greater than 75% of the canopy present and 5 represents a full canopy.

Relative ground levels - sediment accumulation or erosion

Relative ground levels are recorded to monitor any potential accumulation of sediment in mangroves from erosion of unconsolidated construction site surfaces or potential erosion/undermining of mangroves from constructed off-site drainage facilities. Sediment eroded from non-vegetated surfaces or uncontained areas (e.g. levees, stockpiles, laydown areas) may be deposited into adjacent mangrove areas. This has the potential to cause impacts to mangrove fauna and tree stress if the depositing material accumulates in excess of natural sedimentation rates and to sufficient depths to bury or smother the aerial root system.

At each surveillance site sediment heights are recorded relative to each corner marker by measuring the vertical distance between the top of the corner marker and the ground. The overall ground level for a site during a sampling event is calculated as the mean of the readings recorded from each corner.

The mean height from subsequent surveys is then subtracted from the original mean height (i.e. height recorded when a site was originally established) to obtain a net height or ground level difference. Where possible, ground levels are taken by placing the tape measure on an area that is representative of the surrounding ground surface, and irregularities caused by mud lobster mounds, etc., are avoided.

Surveillance monitoring photographs

To characterise the condition of mangroves at each site, photographs are taken from each corner facing towards the centre of the plot. General photographs of mangrove areas adjacent to the construction site are also taken regularly from standard vantage points (e.g. from on top of perimeter embankments).

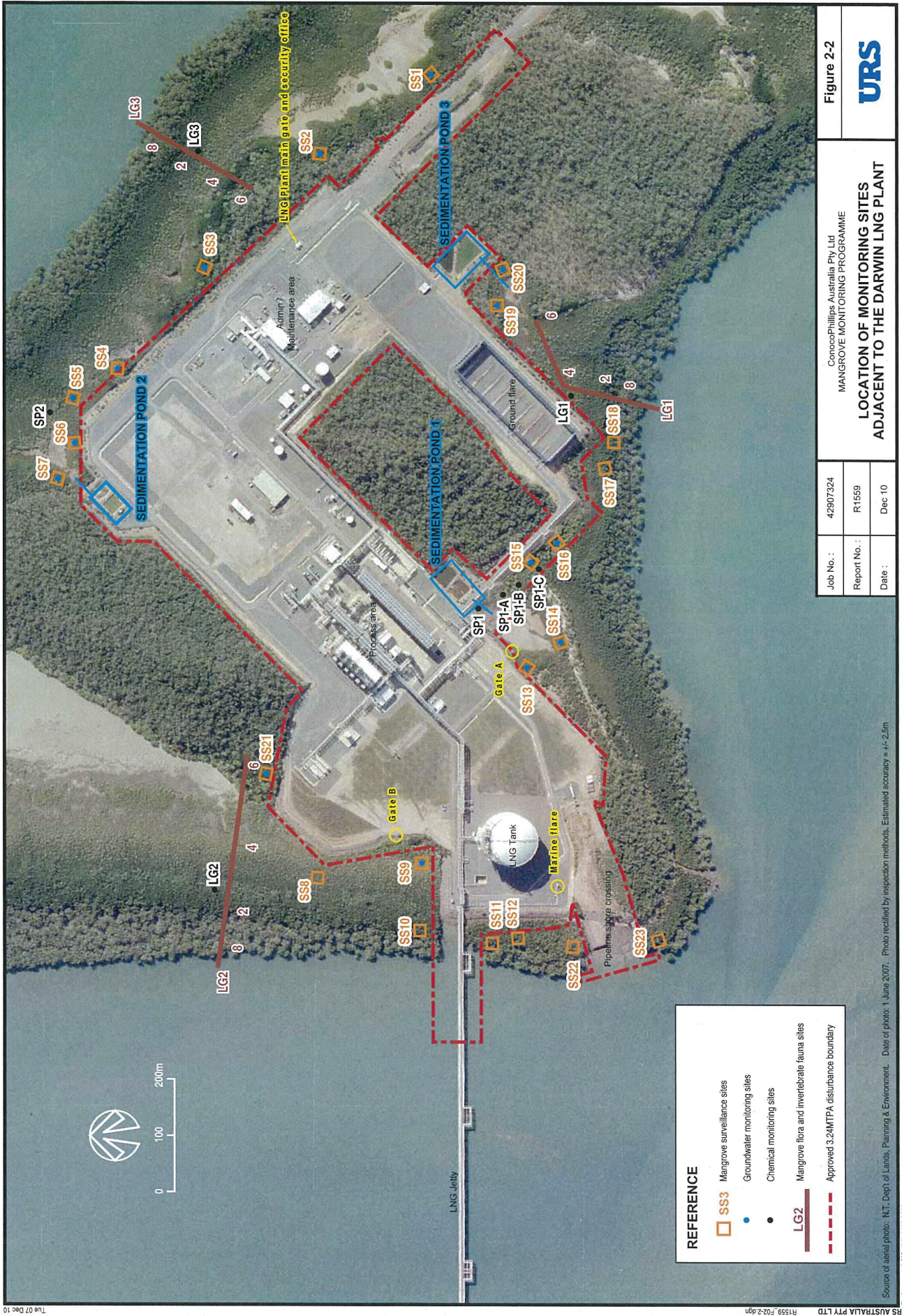
Groundwater conditions

Monitoring of groundwater conditions is undertaken at those surveillance sites where the potential modification of freshwater input (from the DLNG site) may potentially affect mangroves. This monitoring focuses on the 'hinterland fringe' mangrove zone where the maintenance of mangrove stands are, to some degree, reliant on freshwater input from upslope terrestrial areas where the LNG plant has been constructed.

At the start of construction, shallow depth [<2 m below ground level (BGL)] groundwater monitoring bores were excavated by hand auger (75 mm diameter) to approximately 1.0–1.5 m below ground surface, the depth being determined by the occurrence of compact sand/gravel or rock that could not be penetrated by the auger. The water table at all sites was shallow (<1 m BGL) as is typically found in mangrove and tidal flat environments. The bores consisted of PVC casing (50 mm) with a slotted, gravel-packed and sealed construction. Monitoring bore construction details are provided in URS (2004).

The monitoring bores are located within surveillance sites to link potential changes in freshwater input to hinterland fringe mangroves to changes in mangrove health. The location of the 15 groundwater monitoring bores is shown in Figure 2-2. The sampling of the groundwater bores is undertaken during monitoring of the surveillance sites and coincides with neap tide periods to negate the influence of tidal inundation and focus on the influence of freshwater seepage from hinterland areas on groundwater conditions. The following basic environmental parameters are recorded on-site from samples collected after purging and recharge of the bores has occurred:

- depth BGL to the water table
- groundwater salinity [Total Dissolved Salts (TDS) ‰] using a temperature-compensated refractometer
- pH using Merck indicator strips.



Chemical Monitoring

The chemical monitoring provides information on metal and hydrocarbon concentrations in mangrove sediments and in the tissue of the mudwhelk, *Telescopium telescopium*. The scope of work involves:

- Sediment sampling and analyses to determine:
 - grain size distribution;
 - concentrations of the metals cadmium, chromium, copper, lead, iron, nickel and zinc; and
 - concentrations of hydrocarbons.
- Mudwhelks are collected from mangrove areas and tissue of the mudwhelks analysed to determine:
 - concentrations of the metals cadmium, chromium, copper, lead, nickel and zinc; and
 - concentrations of hydrocarbons.