

## ENVIRONMENT PROTECTION LICENCE

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

<b>Licensee</b>	Ichthys LNG Pty Ltd
<b>Licence Number</b>	<b>EPL228 - 03</b>
<b>Registered Business Address</b>	Ichthys LNG Pty Ltd 100 St Georges Terrace Perth WA 6000
<b>ACN</b>	150 217 299
<b>ABN</b>	42 150 217 299
<b>Premises Address</b>	N.T. Portion 07002 plan(s) S2011/201A&B 144 WICKHAM POINT RD, WICKHAM
<b>Anniversary Date:</b>	13 December
<b>Commencement Date:</b>	13/12/2017
<b>Expiry Date:</b>	12/12/2022
<b>Scheduled Activity</b>	<p>Operating <b>premises</b> for processing hydrocarbons so as to produce, store and /or despatch liquefied natural gas or methanol, where:</p> <p>(a) the <b>premises</b> are designed to produce more than 500,000 tonnes annually of liquefied natural gas and/or methanol; and</p> <p>(b) no lease, licence or permit under the <i>Petroleum Act</i> or the <i>Petroleum (Submerged lands) Act</i> relates to the <b>land</b> on which the <b>premises</b> are situated.</p>
<b>Description</b>	<p>All the activities in relation to onshore production design capacity of 12.15 million tonnes per annum of hydrocarbons, being up to:</p> <ul style="list-style-type: none"> <li>8.9 million tonnes of liquefied natural gas per annum from two LNG processing trains;</li> </ul>

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- 1.65 million tonnes of liquefied petroleum gas per annum;  
and
- 20,000 barrels of condensate per day (1.6 million tonnes of condensate per annum).

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### ATTACHMENTS

- 1 Permit Attachments - EPL228-03 Appendices
- 2 Approved Form - Ichthys Transition Plan from EPA7 to EPL228

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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.
- A fee applies and the application must be made using the designated form via NT EPA Online.

### 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.



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- 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.
- 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.
  - 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.
  - Sites of Conservation Significance, SOCS Number 6, (NT Parks and Conservation Masterplan Map Number 12).
  - The area adjacent and surrounding the premises is zoned Conservation under the Litchfield Municipal Plan.
- The licensee must implement procedures for operating and maintaining the gas export and fuel pipelines and right of way in accordance with industry codes of environmental practice and requirements under the *Energy Pipelines Act*.

### 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.

### Additional Information

- Information about the premises including location and site layout is provided in Appendix 1 provided as Permit Attachments.

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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 This licence only applies to those activities that have been notified to the NT EPA on the approved form in accordance with condition 2.
- 2 The licensee must notify the NT EPA on the approved form by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au):
  - 2.1 ten business days prior to First Start-up of any plant and equipment that will cause an emission or discharge; and
  - 2.2 no later than five business days after First Start-up of any plant and equipment to confirm transition from the current revision of environment protection approval EPA7 to this Scheduled Activity.
- 3 The licensee must ensure the contact details recorded in NT EPA Online for this licence are correct at all times.
- 4 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.
- 5 The licensee must:
  - 5.1 at all times have a 24-hour emergency contact;
  - 5.2 cause clear and legible signage that includes the environment protection licence number issued under the WMPC Act and 24 hour emergency contact details; and
  - 5.3 the signage is must include the environment protection licence number issued under the WMPC Act and 24 hour emergency contact details.
- 6 The licensee must cause a copy of this licence to be available for inspection by any person, in hard copy form, at the premises.
- 7 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.
- 8 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](mailto:waste@nt.gov.au).
- 9 The NT EPA may require the licensee to revise or amend and resubmit any amended document. Where the 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.
- 10 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.
- 11 The licensee must operate and maintain a community feedback number.
- 12 The licensee must display the community feedback number:
  - 12.1 in a prominent location on the licensees website;
  - 12.2 in the Consultation and Communication Plan; and

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- 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.
- 15 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.
- 16 The licensee must provide the NT EPA a copy of the Emergency Response Plan no later than three months after commencement of this licence.

### EARLY SURRENDER OF LICENCE

- 17 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

- 18 The licensee must, without limiting any other condition of this licence, in conducting the Scheduled Activity, do all things reasonable and practicable to ensure the Scheduled Activity does not adversely affect the Declared Beneficial Uses and Objectives as declared from time to time, including those applying to:
- 18.1 Elizabeth-Howard Rivers Region Groundwater; and
  - 18.2 Darwin Harbour.

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- 19 The licensee must, without limiting any other condition of this licence, in conducting the Scheduled Activity, do all things reasonable and practicable to ensure the Scheduled Activity does not adversely affect the ambient air quality of the Darwin region.
- 20 The licensee must ensure any plant and equipment used by the licensee in conducting the activity which has the potential to affect environmental outcomes:
  - 20.1 is maintained in accordance with a risk-based maintenance program;
  - 20.2 is reasonably fit for the purpose and use to which it is put;
  - 20.3 is operated by a person trained to use the plant and equipment; and
  - 20.4 if used for measuring or monitoring in accordance with any condition of this licence, is calibrated.
- 21 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 Scheduled Activity, unless authorised.
- 22 All laboratory analyses and tests required to be conducted under this licence must be carried out by a laboratory or organisation that has N.A.T.A. certification for the analysis and test, except as otherwise authorised.
- 23 The licensee must develop, implement and maintain a waste management plan for the Scheduled Activity.
- 24 The waste management plan must:
  - 24.1 include a description of activities that may generate waste;
  - 24.2 include the types and amounts of wastes generated by the Scheduled Activity;
  - 24.3 include a program for reusing, recycling or disposing waste material in accordance with the waste and resource management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal);
  - 24.4 include procedures for segregating, storage, reuse, recycling, energy recovery and disposal of waste; and
  - 24.5 include procedures for documenting the type and amount of waste generated and disposed.
- 25 The licensee must ensure:
  - 25.1 all listed waste transported from the premises is transported by a person licensed under section 30 of the WMPC Act to transport the listed waste; and
  - 25.2 listed waste is transported to facilities that are licensed under section 30 of the WMPC Act to accept the waste and are capable of containing and/or treating the waste.
- 26 The licensee must ensure all materials that are likely to cause environmental harm are handled and stored in areas with a containment system in accordance with the relevant Australian Standard.
- 27 The licensee must implement best available practices for:
  - 27.1 handling, transport, storage, use and disposal of firefighting foams containing PFAS; and
  - 27.2 phasing out use of firefighting foams containing PFOA, PFOS, PFHxS, and precursor compounds to PFOA, PFOS and PFHxS, where this does not compromise safety requirements.

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- 28 The licensee must ensure all reasonable and practicable measures are implemented during testing of firefighting systems and training to contain firefighting foams and to prevent contamination of land or waters or air.
- 29 The licensee must implement an auditable Operations Environmental Management Plan (OEMP).
- 30 The OEMP must include measures to ensure:
- 30.1 compliance with this licence;
  - 30.2 continuous improvement in environmental management practices and environmental performance for the Scheduled Activity;
  - 30.3 application of best practice to the management of emissions, discharges and waste and to reduce emissions, discharges and waste disposal as far reasonable and practicable for the Scheduled Activity; and
  - 30.4 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.
- 31 The OEMP must:
- 31.1 be prepared with consideration to the NT EPA *Guideline for the Preparation of an Environmental Management Plan*;
  - 31.2 be endorsed by a Qualified Professional with the experience and qualifications to be able to assess the environmental risks associated with carrying out the Scheduled Activity and to assess the adequacy of the OEMP to facilitate compliance with the conditions of this licence; and
  - 31.3 be provided to the NT EPA with the Qualified Professional's written endorsement and review of the current OEMP, no later than three months after commencement of this licence.
- 32 Each time the OEMP is materially amended, the licensee must provide the amended OEMP to the NT EPA, within 10 business days prior to any amendment being implemented, with:
- 32.1 a tabulated summary of the amendment(s) with document references;
  - 32.2 reasons for the amendment(s);
  - 32.3 an assessment of environmental risk associated with the amendment(s); and
  - 32.4 where there are more than typographical amendments, with a Qualified Professional's written endorsement and review and endorsement of the amended OEMP that the environmental risks have been properly identified and the risk mitigated.
- 33 The most current OEMP must be made available on the licensee's website.
- 34 The licensee must commission an annual environmental audit to be undertaken by a qualified auditor to evaluate compliance with:
- 34.1 the conditions of this licence, including the OEMP, environmental monitoring programs and environmental performance;
  - 34.2 the WMPA Act; and
  - 34.3 the *Water Act*.
- 35 The licensee must submit the proposed scope for the environmental audit to the NT EPA for authorisation, no later than 15 business days prior to the proposed commencement date of the environmental audit (which must be specified when the proposed scope is submitted).

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- 36 The licensee must receive written authorisation for the audit scope from the NT EPA before the environmental audit can commence.
- 37 The licensee must ensure that:
- 37.1 a written environmental audit report is prepared, signed and certified by a qualified person who conducted the audit; and
  - 37.2 the written environmental audit report is provided within two calendar months of the audit scope being approved under condition 36 of this licence, unless otherwise authorised.

### DISCHARGES AND EMISSIONS

#### Discharges

- 38 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 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.)
- 39 The licensee must take all reasonable and practicable measures to reduce the volume of wastewater discharged to Darwin Harbour.

#### Authorised Discharge Points

- 40 This licence authorises discharge to water from the authorised discharge point(s) as identified in Table 1 in Appendix 2, and as otherwise allowed in accordance with the conditions of this licence.
- 41 The licensee must ensure all authorised wastewater discharge locations, and the compliance monitoring point 750-SC-003, are labelled legibly and clearly, and in a prominent location with the corresponding discharge point number as defined in Table 1 in Appendix 2.

#### Authorised Discharge Quality

- 42 The licensee must ensure the quality of wastewater discharged from the authorised discharge locations specified in condition 42 does not exceed the Discharge Limit specified in Column 5, Table 3 in Appendix 2.
- 43 The licensee must ensure that every time a trigger value specified in Column 7 of Table 3 in Appendix 2 of the Permit Attachments is exceeded, the cause of the exceedance is investigated, corrective actions are implemented where appropriate.
- 44 The licensee must use visual and/or qualitative observations to ensure that the discharge from all discharge events at each authorised discharge point does not:
- 44.1 contain any visible floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;
  - 44.2 cause or generate noticeable odours which would adversely affect the use of surrounding waters;
  - 44.3 cause visible algal blooms in the receiving water;
  - 44.4 cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;
  - 44.5 cause noticeable mortality of fish or other aquatic organisms; or
  - 44.6 cause noticeable adverse impacts on plants.

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### Emissions to air

- 45 The licensee must ensure emissions of benzene are reduced to the maximum extent practicable.
- 46 The licensee must install, operate and maintain pollution control equipment to minimise contaminants or waste in emissions to air.

### Authorised Stationary Point Source Emissions

- 47 The licensee must ensure that emissions to air from the stationary sources only occur at the authorised stationary point source emission release points<sup>4</sup> specified in column 1 of Table 4 in Appendix 3, from the stationary sources specified in column 2 of Table 4 in Appendix 3.
- 48 The licensee must ensure all releases to air from the authorised emission release points, except emissions from the emergency diesel generators, firewater pumps and acid gas vents<sup>1</sup>:
- 48.1 are directed vertically upwards without impedance or hindrance, unless otherwise authorised<sup>2</sup>;
  - 48.2 are freely discharged after release and not captured by building wakes;
  - 48.3 are at the minimum height specified in column 5 of Table 4 in Appendix 3;
  - 48.4 during steady-state operation achieve the minimum efflux velocity specified in column 6 of Table 4 in Appendix 3;
  - 48.5 during steady-state operation ensure corrective action measures are in place whenever the emission target specified in column 4 of Table 5 in Appendix 3 is exceeded;
  - 48.6 during steady-state operation do not exceed the concentration limit specified in column 5 of Table 5 in Appendix 3.
- 49 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 4 in Appendix 3.

### Flares

- 50 The licensee must ensure all reasonable and practicable measures to ensure all flares:
- 50.1 are designed, operated and maintained to minimise emission of volatile organic carbons (VOC) and smoke;
  - 50.2 are equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition and provides immediate notification to appropriate personnel when the ignition system ceases to function;
  - 50.3 are designed to handle large fluctuations in both the volume and the chemical content of gases; and
  - 50.4 are designed not cause excessive radiant heat, light or noise beyond the boundary of the premises.
- 51 The licensee must maintain procedures and records to demonstrate that all reasonable and practical recovery methods for excess isopentane and gas are maximised before resorting to flaring.



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52 During flaring events the licensee must:

- 52.1 implement Dark Smoke Monitoring requirements specified in the OEMP; and
- 52.2 demonstrate compliance with those requirements in the annual environmental audit.

### 53 Fugitive Emissions

The Licensee must take all reasonable and practicable measures to minimise fugitive volatile organic compound (VOC) emissions. Reasonable and practicable measures include, but are not limited to:

- 53.1 implementing a leak detection and repair program to regularly test units/components including flanges, valves, gaskets, seals and connections of pumps, pipes and controls, vessels and tanks that are most likely to leak; and
- 53.2 implementing industry standard management procedures for inspection, maintenance and, if required, change-out of flanges for pressurised systems.

### 54 Ambient Air Quality

The licensee must not cause or permit the emissions causing offensive odour beyond the boundary of the premises.

55 The licensee must verify by ground level measurements, during the first 24 months of commencement of operations, when both LNG trains and the CCPP are operating at steady state, that the licensed activity does not cause ground level concentrations of contaminants to contribute to more than 27% of the standards for pollutants specified in *National Environment Protection (Ambient Air Quality) Measure* and monitoring investigation levels for air toxicants specified in *National Environment Protection (Air Toxics) Measure*.

### Greenhouse Gas Management

56 The licensee must implement a greenhouse gas management strategy for the Scheduled Activity. The strategy must include:

- 56.1 the licensee's policy on greenhouse gas emissions;
- 56.2 an energy efficiency program; and
- 56.3 a continuous improvement program.

## MONITORING

### 57 Wastewater Discharge

The licensee must install, operate and maintain a flow meter to record combined discharge flow rate and volume from authorised discharge points.

58 The licensee must monitor wastewater for the water quality parameters at the frequency specified in Table 3 in Appendix 2 at:

- 58.1 monitoring location 750-SC-003 prior to discharge at the Jetty Outfall; and
- 58.2 the Jetty Outfall monitoring locations defined in Table 2 and Figure 4 in Appendix 2.

59 The licensee must develop and implement a commissioning monitoring plan for the combined jetty outfall to establish degree of variance in pH, electrical conductivity and temperature over time for the combined discharge to justify why continuous monitoring at 750-SC-003 is not required.

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- 60 The licensee must:
- 60.1 ensure all land based monitoring locations specified in Table 2 in Appendix 2 are labelled clearly and legibly and in a prominent location with the appropriate monitoring site identification; and
  - 60.2 maintain safe access and egress, as is reasonably practicable.
- 61 The licensee must ensure all samples and field environmental data that are collected in accordance with Appendix 2, or in connection with this licence, are:
- 61.1 obtained by, or under the supervision of a Qualified Sampler;
  - 61.2 representative of the conditions at the time of sampling; and
  - 61.3 are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667, ANZECC/ARMCANZ).
- 62 The licensee must ensure that, for each sample collected in accordance with the Appendix 2 or this licence, the following information must be recorded and retained:
- 62.1 the date on which the sample was collected;
  - 62.2 the time at which the sample was collected;
  - 62.3 the location at which the sample was collected;
  - 62.4 the name of the person who collected the sample;
  - 62.5 the chain of custody forms relating to the sample;
  - 62.6 the field measurements (if any) and analytical results (if any) relating to the sample; and
  - 62.7 laboratory quality assurance and quality control documentation.
- 63 **Air Emissions**
- The licensee must ensure sampling ports, with the exception of sampling points 551-SC-003, 552-SC-003, 541-SC-001 and 542-SC-001<sup>3</sup>:
- 63.1 are installed for each of the authorised stationary source emission release points defined in Table 4, Appendix 3; and
  - 63.2 are installed in accordance with *AS4323.1-1995 Stationary source emissions – Selection of sampling ports*.
- 64 The licensee must carry out monitoring of each of the authorised stationary source emission release points in accordance with:
- 64.1 Table 6, Appendix 3; and
  - 64.2 Approved test methods for stack emissions as specified in:
    - NSW Department of Environment and Conservation Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales; or
    - USEPA Method 30B for mercury emissions.

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- 65 Monitoring the emissions for each stationary source listed in Table 6, Appendix 3 must:
- 65.1 be undertaken during steady state conditions within two months after completion of First Start-up of the first LNG;
  - 65.2 be undertaken quarterly for the first 18 months after completion of First Start-up, and then every year thereafter; and
  - 65.3 be carried out when the emission source is operating under maximum steady-state operating conditions.
- 66 The licensee must ensure the following information is recorded during the sampling period:
- 66.1 production rate at the time of sampling;
  - 66.2 raw materials and fuel used;
  - 66.3 number of plant or equipment and operating units operating; and
  - 66.4 test methods used and accuracy of the sampling and analytical methods.
- 67 The licensee must implement engineering process controls to calculate and record the time and duration of emissions, volumetric flow rates and efflux velocity for each of the authorised stationary source emission release points specified in Column 1 of Table 4 in Appendix 3.
- 68 The licensee must calculate quarterly estimates for release of total particulates, CO<sub>2</sub>, NMVOC and CH<sub>4</sub> from each of the authorised stationary source emission points.
- 69 The licensee must install a monitoring system to manage and record the operation of all flares, including:
- 69.1 continuous flow meters to measure the volumetric flowrate of hydrocarbons combusted in the flare system;
  - 69.2 the system source of hydrocarbons combusted in the flare system; and
  - 69.3 measurement and/or calculation of the quality and quantity of VOCs and particulate emissions as a result of flaring.
- 70 The licensee must implement a first-start-up emissions test plan for the Scheduled Activity. The first start-up emissions test plan must include procedures and records to:
- 70.1 optimise operational efficiency of the facility;
  - 70.2 minimise stack emissions of air contaminants during first start-up;
  - 70.3 estimate or measure emissions of air contaminants during first start-up;
  - 70.4 demonstrate the equipment can comply with licence conditions for steady-state operations; and
  - 70.5 implement all reasonable and practicable measures to minimise period of time for commissioning from First Start-up to Steady State operations.
- 71 **Receiving Environment Monitoring Program**
- The licensee must develop a receiving environment monitoring program (REMP).
- 72 The REMP must be designed using a conceptual modelling process to identify the likely exposure pathways for pulse and press stressors as a result of the Scheduled Activity that could affect sensitive receptors, and to identify appropriate monitoring indicators, monitoring locations, methods and frequency of monitoring that are capable of detecting any impact as a result of carrying out the Scheduled Activity:

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- 72.1 to the Beneficial Uses of Darwin Harbour, including Preston Point, Cossack Creek, Lightning Creek and Darwin Harbour from the authorised release of wastewater and stormwater from the premises;
- 72.2 to the hinterland, intertidal and supratidal areas zoned for conservation adjacent to the premises, including mangrove communities;
- 72.3 to groundwater quality and hydrology adjacent to the premises; and
- 72.4 to the Darwin region ambient air quality during Wet and Dry seasons, including periods in the Dry season not affected by bushfire smoke, when the licensed fuel burning or combustion activities have operated under normal and maximum conditions.
- 73 The REMP must:
- 73.1 be endorsed by a Qualified Professional with the experience and qualifications to be able to assess the environmental risks associated with carrying out the Scheduled Activity and to assess the adequacy of the REMP to facilitate compliance with condition 75; and
- 73.2 be uploaded to NT EPA Online with the Qualified Professional's written certified review of the current REMP, or emailed to [waste@nt.gov.au](mailto:waste@nt.gov.au) no later than three months after commencement of this licence.
- 74 Each time the REMP is amended, the licensee must provide the amended REMP to the NT EPA by uploading to NT EPA Online or emailing to [waste@nt.gov.au](mailto:waste@nt.gov.au), within 10 business days prior to any amendment being implemented, with:
- 74.1 a tabulated summary of the amendment(s) with document references;
- 74.2 reasons for the amendment(s);
- 74.3 an assessment of environmental risk associated with the amendment(s); and
- 74.4 where there are more than typographical amendment(s), with a Qualified Professional's written and certified review and endorsement that the amended REMP complies with condition 75.
- 75 The most current REMP must be made available on the licensee's website.

### RECORDING AND REPORTING

#### 76 Notification of Commencement of Steady-state

The licensee must notify the NT EPA by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au) no later than five business days after first steady state operations has been achieved for:

- 76.1 LNG Train 2;
- 76.2 LNG Train 1;
- 76.3 Open Cycle CCPP; and
- 76.4 Combined Cycle CCPP.

#### 77 Notification of Seabed Levelling

The licensee must notify the NT EPA within 10 business days prior to commencement of seabed levelling activities by emailing [waste@nt.gov.au](mailto:waste@nt.gov.au) to advise when any seabed levelling is to be carried out. Notification must include:

- 77.1 location and expected duration of seabed levelling activity; and

## ENVIRONMENT PROTECTION LICENCE 228 - 03

77.2 name of vessel and contractor engaged to carry out seabed levelling.

### 78 **Notification of AGRU Incinerator By-pass**

The licensee must notify the NT EPA within 10 business days prior to any planned by-pass of the AGRU incinerator by emailing waste@nt.gov.au, and within 24 hours of any unplanned by-pass. Notification must include:

78.1 commencement and expected duration of the AGRU incinerator by-pass; and

78.2 reason for not incinerating the AGRU exhaust gas.

### 79 **Record of flaring**

The licensee must provide the NT EPA with an annual record of flaring events within 10 days after the anniversary date for this licence by emailing waste@nt.gov.au. The record must be provided in Excel Workbook and include the:

79.1 commencement and expected duration;

79.2 reason for flaring;

79.3 assessment of dark smoke prescribed in the OEMP; and

79.4 where applicable, the investigation outcome for an exceedance of the Ringelmann Shade 1 limit.

### 80 **Waste records**

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.

### 81 **Non-compliance Notification**

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.

82 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.

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

83.1 when the non-compliance was detected and by whom;

83.2 the date and time of the non-compliance;

83.3 the actual and potential causes and contributing factors to the non-compliance;

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

83.5 the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;

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

83.7 if no action was taken, why no action was taken; and

83.8 a date when an incident investigation report will be submitted to the NT EPA.

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84 The licensee must keep records of all exceedances of trigger values specified in the licence. These records must be adequate to enable the licensee to comply with the exceedance notification conditions of this licence.

85 The licensee must comply with requirements of section 14 of the *Waste Management and Pollution Control Act*.

### 86 **Annual Environmental Monitoring Report**

The licensee must submit an Annual Environmental Monitoring Report to the NT EPA by 30 September for each year of this licence unless otherwise authorised, for the Scheduled Activity conducted during the preceding 12 month period from 1 July to 30 June.

87 The Annual Environmental Monitoring Report must:

87.1 report on monitoring required under this licence;

87.2 summarise performance of the authorised discharge to water, compared to the discharge limits and trigger values specified in Table 3 in Appendix 2;

87.3 summarise performance of the authorised emissions to air, compared to the emission limits and targets specified in Table 5 in Appendix 3, when the fuel burning or combustion facilities for the Scheduled Activity have operated under normal and maximum operating conditions for the annual period;

87.4 summarise operating conditions of each emission source and the resulting air emission quality;

87.5 provide total emissions to air in tonnes per year for the air quality parameters listed in Table 6 in Appendix 3;

87.6 assess the contribution of the authorised emissions on the Darwin region ambient air quality during periods not affected by bushfire smoke for Wet and Dry seasons;

87.7 report on outcomes of the REMP monitoring and assessment;

87.8 summarise measures taken to reduce waste;

87.9 consider the NT EPA Guideline for Reporting on Environmental Monitoring;

87.10 be reviewed by Qualified Professional(s); and

87.11 be provided to the NT EPA with the Qualified Professional(s) written, certified review(s) of the Annual Environmental Monitoring Report.


### 88 **Annual Return**

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

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### END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



Leonie Cooper  
Director Environment Authorisations  
Delegate of the Northern Territory  
Environment Protection Authority  
Dated: 08/11/2019

### END NOTES

Rev	Revision Date	Expiry Date	Reason for Revision
0	13 December 2017	12 December 2020	New licence
1	22 June 2018	12 December 2020	Amendment (s38) – authorise new emissions sources from a Temporary Power Plant; replace and relocate two mercury sample locations; administrative corrections to sample location numbers in Table 6 of Appendix 3.
2	3 July 2019	12 December 2020	Amendment (s38) – insert a new test method for mercury emissions in the Monitoring conditions section.
3	8 November 2019	12 December 2020	Amendment (s38) - minor overhaul of licence to remove repetitive conditions; refine and consolidate administrative conditions; correct reference errors and typos; and limit third party audit review of the Operating Environmental Management Plan (OEMP) to material amendments as defined in the licence.

#### Footnotes:

1. The acid gas removal unit (AGRU) acid off gas vents are located on the mixed refrigerant Frame 7 gas turbine and are angled inwards into the Frame 7 gas turbine exhaust plume to maximise mixing and dispersion of the AGRU acid off gas. Venting of AGRU acid off gas will be infrequent and only when the incinerator is shut down for maintenance.
2. Rain protection devices are installed on fuel burning equipment that is only used intermittently, such as the heating medium furnaces which will not be required once the combined cycle power plant (CCPP) is operating at steady-state.
3. For the sampling points for the AGRU acid off waste stream (prior to incinerator or venting), INPEX has requested exemption from the standard methods for stack sampling due to the requirements of sampling this waste gas.

## ENVIRONMENT PROTECTION LICENCE 228 - 03

stream which requires a standard gas sampling connection arrangement. Gas flow rate and gas quality (via sampling) will be measured when the incinerator is in shut-down mode for maintenance, when AGRU acid is vented directly to the mixed refrigerant Frame 7 gas turbine exhaust.

4. The sample location numbers specified in Table 6 in Appendix 3 correspond to the release point numbers specified in Tables 4, 5 and 6.



## ENVIRONMENT PROTECTION LICENCE 228 - 03

### 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.
Act	<i>Waste Management and Pollution Control Act</i> of the Northern Territory
Activity	The Scheduled activity approved under this Licence described as the Licensed Activity on page 1 of this Licence. The Licensed Activity and the conditions of this licence commence on receipt of offshore Ichthys Field gas to the Licensed Premises through the gas export pipeline (GEP). The conditions of this licence commence at First Start-up. The conditions of the environment protection approval (EPA7, as amended) are extinguished for operational activities located within the EPL area, but not for commissioning and construction activities in those areas. This definition does not in any way limit the meaning of the term given in the Act.
Administering Authority	The Northern Territory Environment Protection Authority or if dissolved, another Northern Territory Government Department with the responsibility of administering the Act, and for this licence includes staff of the Department of Environment and Natural Resources or successor.
Air	includes any layer of the atmosphere.
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 Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, with reference to: <ol style="list-style-type: none"><li>1. National Water Quality Management Strategy, Paper No.4 <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>. October 2000, or as amended/updated.</li><li>2. National Water Quality Management Strategy, Paper No.7 <i>Australian Guidelines for Water Quality Monitoring and Reporting</i>, October 2000, or as amended/updated.</li></ol>
Approved form	NTEPA2016/0153-042~0001 Ichthys EPA7 (as amended) to EPL228 (as amended) Transition Plan
AS 1940-2004	Australian Standard. <i>The storage and handling of flammable and combustible liquids</i> .
AS 3543	Australian Standard. <i>Use of Standard Ringelmann and Australian Standard Miniature Smoke Charts</i> .
AS 3780-2008	Australian Standard. <i>The storage and handling of corrosive substances</i> .

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AS/NZS 3833-2007	Australian Standard. <i>The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers.</i>
AS 3961-2005	Australian Standard. <i>The storage and handling of liquefied natural gas.</i>
AS/NZS 4452:1997	Australian/New Zealand Standard. <i>The storage and handling of toxic substances.</i>
Authorised	means an authorisation from a delegate of the NT EPA
Beneficial Use	The uses of water specified in subsection (3) of the <i>Water Act</i> .
Business days	a day not Saturday, Sunday or a public holiday, in the Northern Territory.
CCPP	Combined Cycle Power Plant.
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.
Condensate	A mixture of hydrocarbons, normally in the carbon-chain range of C <sub>4</sub> to C <sub>8</sub> , which is liquid at standard temperature and pressure. Condensate does not require refrigeration for storage or transport.
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: <ul style="list-style-type: none"><li><b>a.</b> noise, odour, heat and electromagnetic radiation;</li><li><b>b.</b> a prescribed substance or prescribed class of substances; and</li><li><b>c.</b> 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.
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 harm	<ul style="list-style-type: none"><li><b>a.</b> any harm to or adverse effect on the environment; or</li><li><b>b.</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.</li></ul>
Environmental nuisance	means: <ul style="list-style-type: none"><li><b>a.</b> an adverse effect on the amenity of an area that:<ul style="list-style-type: none"><li><b>i.</b> is caused by noise, smoke, dust, fumes or odour; and</li></ul></li></ul>

## ENVIRONMENT PROTECTION LICENCE 228 - 03

- 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.

First steady state	First steady state operations will commence once First Start up for that equipment is complete. Stable operations will occur after initial production has commenced, and after a series of performance and emergency shutdown procedures to test Plant performance and compare performance against the design rates and specifications of the plant. See also 'steady state'.
Fugitive emissions	Hydrocarbon emissions through unintended pathways such as flanges or other pipework.
GEP	Ichthys gas export pipeline from the Offshore Facility at the Ichthys Field in the Browse Basin to the Onshore gas reception area.
Licence	A Licence granted and in force under the Act.
Incident	includes: <ul style="list-style-type: none"> <li>a. an accident, emergency or malfunction that has potential to, or has caused, environmental harm; or</li> <li>b. a deliberate action that has potential to, or has caused, environmental harm, whether or not that action was taken by the person conducting the activity in the course of which the incident occurred.</li> </ul>
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.
LNG Train 1	Gas liquefaction processing train 1 to produce liquefied petroleum gas (LPG – butane & propane) and liquefied natural gas (LNG – methane & ethane)
LNG Train 2	Gas liquefaction processing train 2 to produce liquefied petroleum gas (LPG – butane & propane) and liquefied natural gas (LNG – methane & ethane)
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.
Materially amended	means any amendment that: <ul style="list-style-type: none"> <li>• increases the environmental risk associated with the authorised activity;</li> <li>• reduces the level of operational oversight, control or reporting; or</li> <li>• modifies monitoring requirements in the OEMP.</li> </ul>
Material environmental harm	environmental harm that: <ul style="list-style-type: none"> <li>a. is not trivial or negligible in nature;</li> <li>b. consists of an environmental nuisance of a high impact or on a wide scale;</li> <li>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;</li> </ul> or

## ENVIRONMENT PROTECTION LICENCE 228 - 03

- 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).

N.A.T.A.	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.
OEMP	Operational Environmental Management Plan. Includes all measures to ensure compliance with the licence and due diligence for demonstrating compliance with the general environmental duty under the <i>Waste Management and Pollution Control Act</i> . It includes the waste management plan and the emergency management plan for management of environmental risks.
Peak monitoring station	Peak monitoring stations should be located in accordance with <i>AS/NZS 3580.1.1: 2007 Methods for sampling and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment</i> , in locations where the highest concentrations and exposure from the licensed premises are expected to occur.
Perimeter drain	A concrete drainage structure around the perimeter of the LNG plant are that regulates the flow and distribution of non-contaminated stormwater through outfall pipes to the surrounding environment.
PFAS	Per-and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid (fluorinated organic compound, CAS RN 335-67-1, $C_7F_{15}CO_2H$ )
PFOS	Perfluorooctane sulfonate (fluorinated organic compound, CAS RN 1763-23-1, $C_8F_{17}SO_3$ )
PFHxS	Perfluorohexane sulfonate (fluorinated organic compound, CAS RN 355-46-4, $C_6F_{13}O_3S$ )
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.
Plant restart	The period of time while the plant is being brought up to normal operation following a period of inactivity. Restarts normally take from a few days to up to a month.
Point source discharge	means any discernible, confined or discrete conveyance from which contaminants or waste are or may be discharged.
Pollute	<p><b>a.</b> emit, discharge, deposit, or disturb, directly or indirectly, a contaminant or waste; or</p> <p><b>b.</b> cause, permit, or fail to prevent, directly or indirectly, the emission, discharge, deposition, disturbance or escape of a contaminant or waste.</p>

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Pollution	<p><b>a.</b> a contaminant or waste that is emitted, discharged, deposited or disturbed or that escapes; or</p> <p><b>b.</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.</p>
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 auditor	a person registered under Section 68 of the WMPC Act.
Qualified professional	A person who has professional qualifications, training or 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.
Records	Any written information as requested as a condition of this licence, including logs, registers or other documents.
Regulations	<i>Waste Management and Pollution Control (Administration) Regulations.</i>
Reporting limit	The lowest concentration than can be reliably measured within specified limits of precision and accuracy.
Reporting period	Means 1 July to 30 June for each year of the licence following and including first day of First Start-up and each subsequent period of 12 months.
Serious environmental harm	<p>environmental harm that is more serious than material environmental harm and includes environmental harm that:</p> <p>(a) is irreversible or otherwise of a high impact or on a wide scale;</p> <p>(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;</p> <p>(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</p> <p>(d) results in actual or potential loss or damage to the value of more than \$50,000 or the prescribed amount (whichever is greater).</p>
Shut-down	A shut-down period means the period of time while the plant is being taken out of service from normal operation to inactivity. A minor shutdown is planned for every year, with major shutdowns occurring every three to five years.
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.
Stationary source	A source of emissions or wastes to air that is stationary during its normal operating mode.
Steady-state	Normal operating phase of the Ichthys LNG which includes production, storage and dispatch of hydrocarbons
Stormwater	water flowing over ground surfaces, in natural streams and drains as a direct result

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of rainfall over a catchment and consists primarily of rainfall runoff.

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.
Upset conditions	When steady-state operations cannot be maintained due to unplanned reasons. Plant restart will then be required until the entire plant or portions of the plant return to steady state.
Waste	<ul style="list-style-type: none"><li>a. a solid, a liquid or a gas; or</li><li>b. a mixture of such substances,</li><li>c. 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.</li></ul>
Waste transport certificate	the NT EPA waste tracking documentation used to track listed waste being transported interstate as required in accordance with the <i>National Environment Protection (Movement of Controlled Waste Between States and Territories) Measure</i> .
Wastewater	water that contains a contaminant or waste.
Water	includes: <ul style="list-style-type: none"><li>a. surface water, ground water and tidal waters;</li><li>b. coastal waters of the Territory, within the meaning of the <i>Coastal Waters (Northern Territory Powers) Act 1980</i> of the Commonwealth; and</li><li>c. water containing an impurity.</li></ul>
WMPC Act	the Northern Territory <i>Waste Management and Pollution Control Act</i> .

**ENVIRONMENT PROTECTION LICENCE**

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

**PERMIT ATTACHMENTS (EPL228-03)**

**ENVIRONMENT PROTECTION LICENCE (EPL228-03)**

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APPENDIX 1 – Information about the Premises and Scheduled Activity

Figure 1 - Location of premises

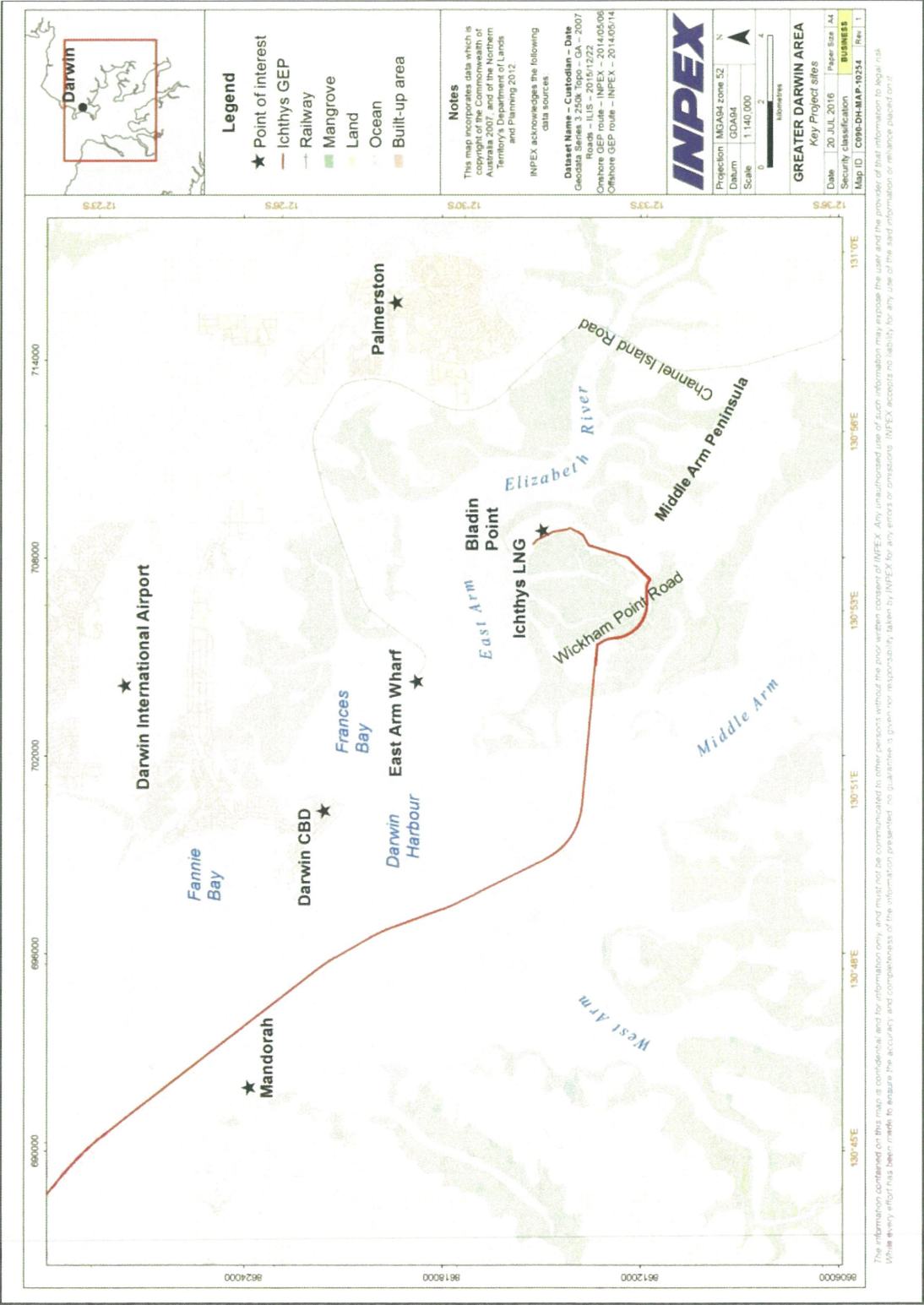


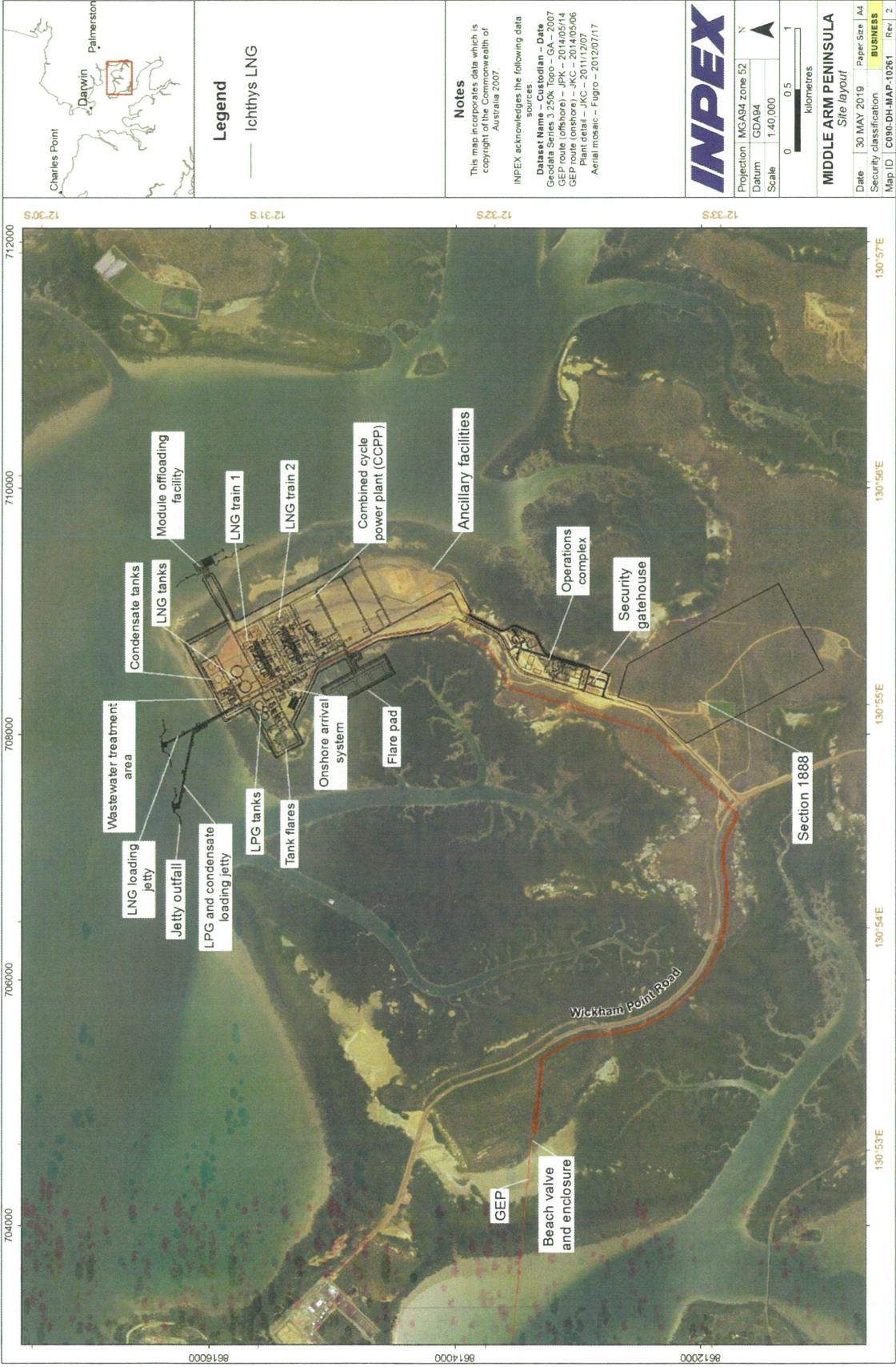


Figure 2 – Location of the Premises (NT Portion 7002)





Figure 3 – Site layout



The information contained on this map is confidential and for information only, and must not be communicated to other persons without the prior written consent of INPEX. Any unauthorised use of such information may expose the user and the provider of that information to legal risk. While every effort has been made to ensure the accuracy and completeness of the information presented, no guarantee is given nor responsibility taken by INPEX for any errors or omissions. INPEX accepts no liability for any use of the said information or reliance placed on it.

## APPENDIX 2 – Authorised Wastewater Discharge

Table 1 – Authorised Wastewater Discharge Points

Authorised Discharge Point	Description	Latitude	Longitude
ADP 1	Jetty Outfall. Central Location Coordinates for the Diffuser <ul style="list-style-type: none"> <li>outfall pipe about 20 m long, with four diffuser ports (100 mm diameter), approximately 5 m apart angled upwards by 30° from horizontal, at a minimum depth of -11m relative to Lowest Astronomical Tide</li> </ul>	-12.510025	130.908554
ADP 2	Fire water pumps	-12.510793	130.911174
ADP 3	<ul style="list-style-type: none"> <li>wastewater discharged to minimise marine fouling of the seawater firewater pumps</li> </ul>	-12.510810	130.91123
ADP 4		-12.510854	130.911294

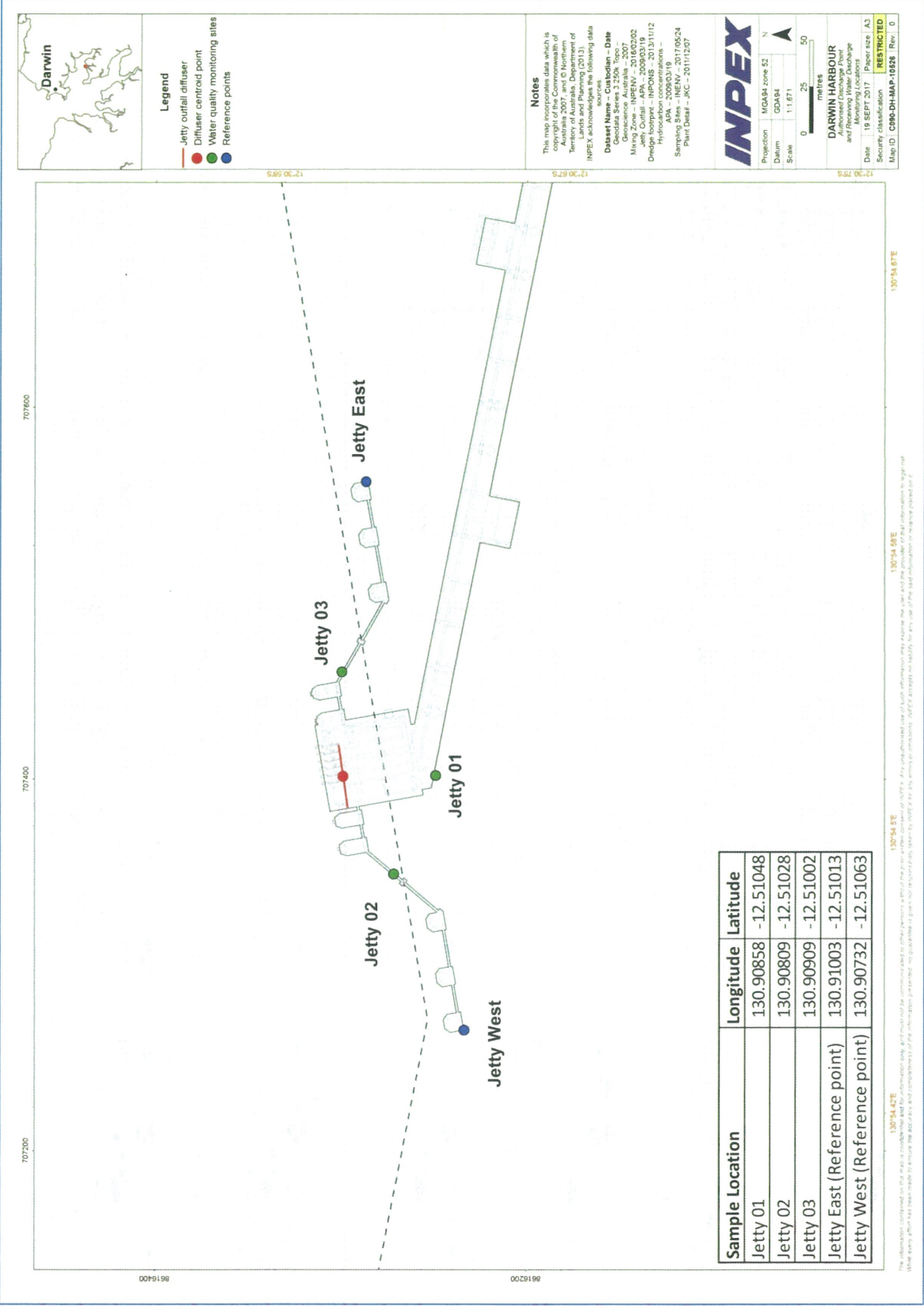
Table 2 – Monitoring Location for Authorised Discharge Point

Monitoring Location	Description	Latitude	Longitude
750-SC-003	Compliance Monitoring Location for discharge to Jetty Outfall Diffuser (ADP1) and to Firewater Pumps (ADP 2, ADP 3, ADP 4))	-12.514931	130.916643
Jetty Outfall 1 <sup>1</sup>	Receiving environment, approximately 50 m south of diffuser centroid	-12.51048	130.90858
Jetty Outfall 2 <sup>4</sup>	Receiving environment, approximately 60 m south west of diffuser centroid	-12.51028	130.90809
Jetty Outfall 3 <sup>4</sup>	Receiving environment, approximately 60 m east of diffuser centroid	-12.51002	130.90909
Reference site <sup>2,4</sup>	Jetty East	-12.51013	130.91003
Reference site <sup>2,4</sup>	Jetty West	-12.51063	130.90732

<sup>1</sup> At a depth suitable for the parameter being measured and relative to exposure pathways, depending on REMP requirements as per conditions 74 - 78 of this licence.

<sup>2</sup> Minimum requirement. Additional reference sites may be required, depending on REMP requirements as per conditions 74 – 78 of this licence.

Figure 4 – Location of Jetty Outfall Diffuser and Jetty Outfall Monitoring Locations for authorised discharge





**Table 3 – Wastewater discharge monitoring, discharge limits and receiving environment trigger values**

Water Quality Parameters to be Measured	Unit	Sampling Method <sup>3</sup>	750-SC-003		Jetty Outfall Monitoring Locations <sup>4</sup>	
			Monitoring Frequency <sup>5</sup>	Discharge Limit <sup>6</sup>	Monitoring Frequency <sup>7</sup>	Trigger Value <sup>8</sup>
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Volumetric flow rate	m <sup>3</sup> /h	CFI	C	180	n/a	n/a
pH	pH units	SFLA	W/M	not less than 6.0 & not greater than 9.0	Q	outside the range of 6.0 to 8.5
Electrical conductivity	µS/cm	SFLA	W/M	n/a	Q	n/a
Temperature	°C	CFI	W/M	35	Q	± 3 from ambient
Turbidity <sup>9</sup>	NTU	CFI or SFLA	W/M	n/a	Q	> 10 from ambient
Dissolved Oxygen	%	CFI	W/M	n/a	Q	outside the range of 80 to 100
Visual clarity and colour	-	O	n/a	n/a	Q	no decrease in visual clarity or increase in colour

<sup>3</sup> CFI = calibrated field instrument; SFLA = sample for laboratory analysis; O = field observation; all metal analysis to be carried out on filtered samples

<sup>4</sup> As defined in Figure 4

<sup>5</sup> C = continuous online measurement; W/M = grab sample, weekly during start-up when discharging, then monthly when Ichthys LNG reaches steady state operations for the first time; M = grab sample, monthly

<sup>6</sup> Not to exceed value prescribed (or as otherwise stated); n/a = not applicable

<sup>7</sup> Sampling to be carried out as close to slack water high tide during neap tidal phase, for the first 24 months following completion of first start-up of LNG Train T2; Q = quarterly; n/a = not applicable

<sup>8</sup> Not compliance limits. Exceedance of Trigger Value requires review and assessment of cause at the time results are received as per ANZECC & ARMCANZ recommendations. A trigger for investigation occurs when the median value of the three receiving environment sites from water samples collected on the same day exceeds the trigger value and the exceedance is also not present at the upstream reference site determined from the tide phase of sampling on the same sampling day.

<sup>9</sup> No limit applied at sampling point 750-SC-003 for the term of this licence, instead monitoring data will determine if discharge quality limits if required during this licence period (s38(2) of the Act), or when the licence is renewed.

Water Quality Parameters to be Measured	Unit	Sampling Method <sup>3</sup>	750-SC-003			Jetty Outfall Monitoring Locations <sup>4</sup>	
			Monitoring Frequency <sup>5</sup>	Discharge Limit <sup>6</sup>	Monitoring Frequency <sup>7</sup>	Trigger Value <sup>8</sup>	
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	
Surface films <sup>10</sup>	-	O	n/a	n/a	Q	observed from background	
TPH as oil and grease	mg/L	SFLA	W/M	6	Q	no visible sheen or emulsion, no odour	
TPH/TRH <sup>11</sup>	µg/L	SFLA	W/M	n/a	Q	greater than Reporting Limit	
Total Suspended Solids	mg/L	SFLA	W/M	10	Q	10	
Biological oxygen demand (BOD <sub>5</sub> )	mg/L	SFLA	W/M	20	n/a	n/a	
Chemical oxygen demand (COD)	mg/L	SFLA	W/M	125	n/a	n/a	
Ammonia	µg N/L	SFLA	W/M	n/a	Q	20	
Total Nitrogen	µg N/L	SFLA	W/M	10,000	Q	300	
Total Phosphorus	µg P/L	SFLA	W/M	2,000	Q	30	
Filterable Reactive Phosphorus	µg P/L	SFLA	W/M	n/a	Q	10	
Cadmium	µg/L	SFLA	W/M	n/a	Q	0.7	
Chromium	µg/L	SFLA	W/M	n/a	Q	4.4	

<sup>10</sup> Oil and petrochemicals should not be noticeable as a visible film on the water nor should they be detectable by odour (ANZECC & ARMCANZ 2000).

<sup>11</sup> The analytical method used is by Gas Chromatography-FID method. If TRH is detected over the prescribed limits, a silica gel clean-up to be undertaken and samples re-analysed to remove false positive from natural, normally occurring hydrocarbons.

Water Quality Parameters to be Measured	Unit	Sampling Method <sup>3</sup>	750-SC-003		Jetty Outfall Monitoring Locations <sup>4</sup>	
			Monitoring Frequency <sup>5</sup>	Discharge Limit <sup>6</sup>	Monitoring Frequency <sup>7</sup>	Trigger Value <sup>8</sup>
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Copper	µg/L	SFLA	W/M	n/a	Q	1.3
Lead	µg/L	SFLA	W/M	n/a	Q	4.4
Mercury	µg/L	SFLA	W/M	n/a	Q	<0.1
Nickel	µg/L	SFLA	W/M	n/a	Q	7
Silver	µg/L	SFLA	W/M	n/a	Q	1.4
Zinc	µg/L	SFLA	W/M	n/a	Q	15
<i>Enterococci</i>	cfu/100mL	SFLA	W/M	n/a	Q	50
<i>E coli</i>	cfu/100mL	SFLA	W/M	100	n/a	n/a
Faecal coliforms	cfu/100mL	SFLA	W/M	400	n/a	n/a
Anionic surfactants	mg/L	SFLA	W/M	n/a	n/a	n/a
aMDEA	mg/L	SFLA	M	n/a	n/a	n/a
Glycol	mg/L	SFLA	M	n/a	n/a	n/a



# APPENDIX 3 – Authorised Emissions to Air

Figure 5 – Location of authorised stationary emission release points

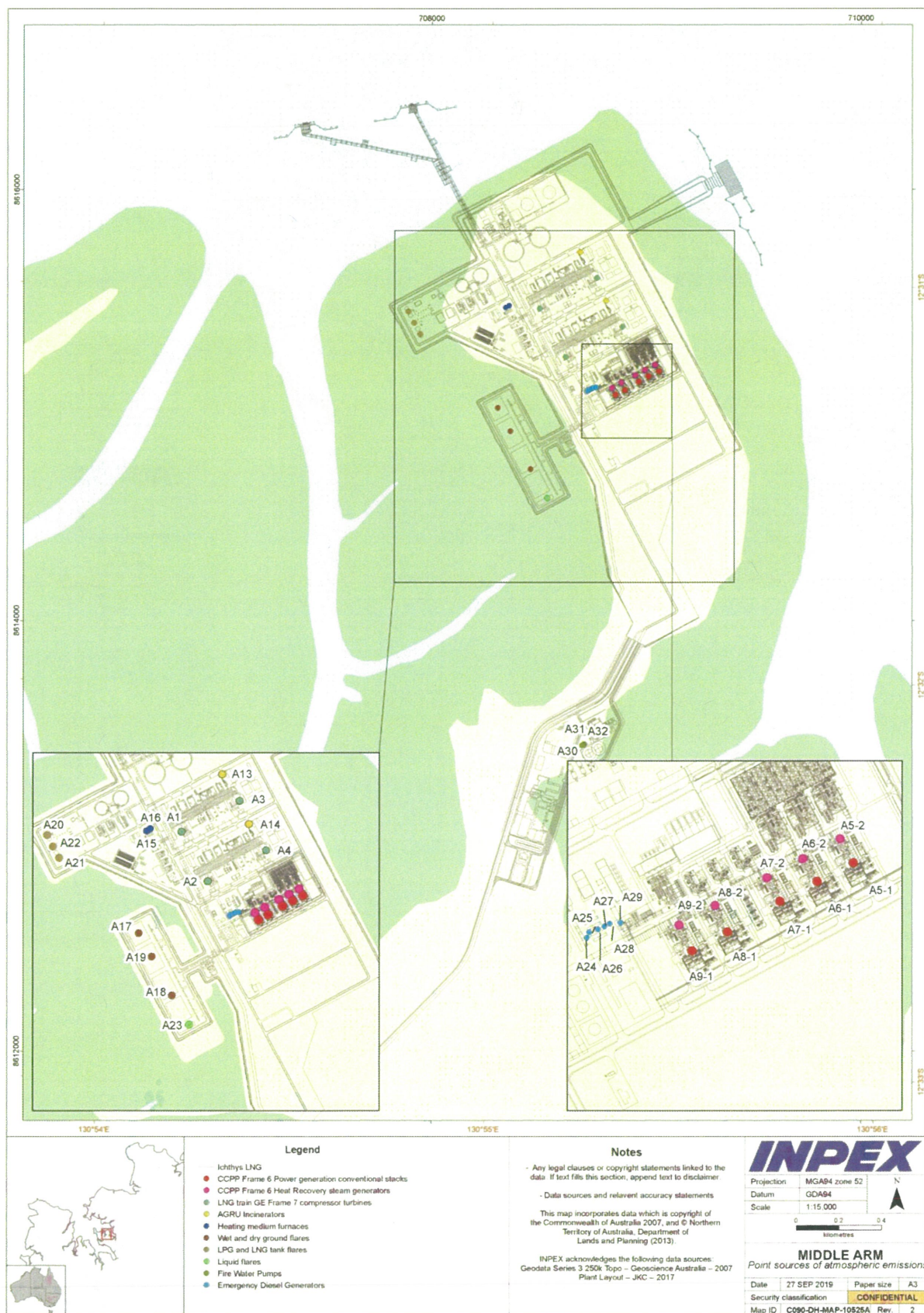
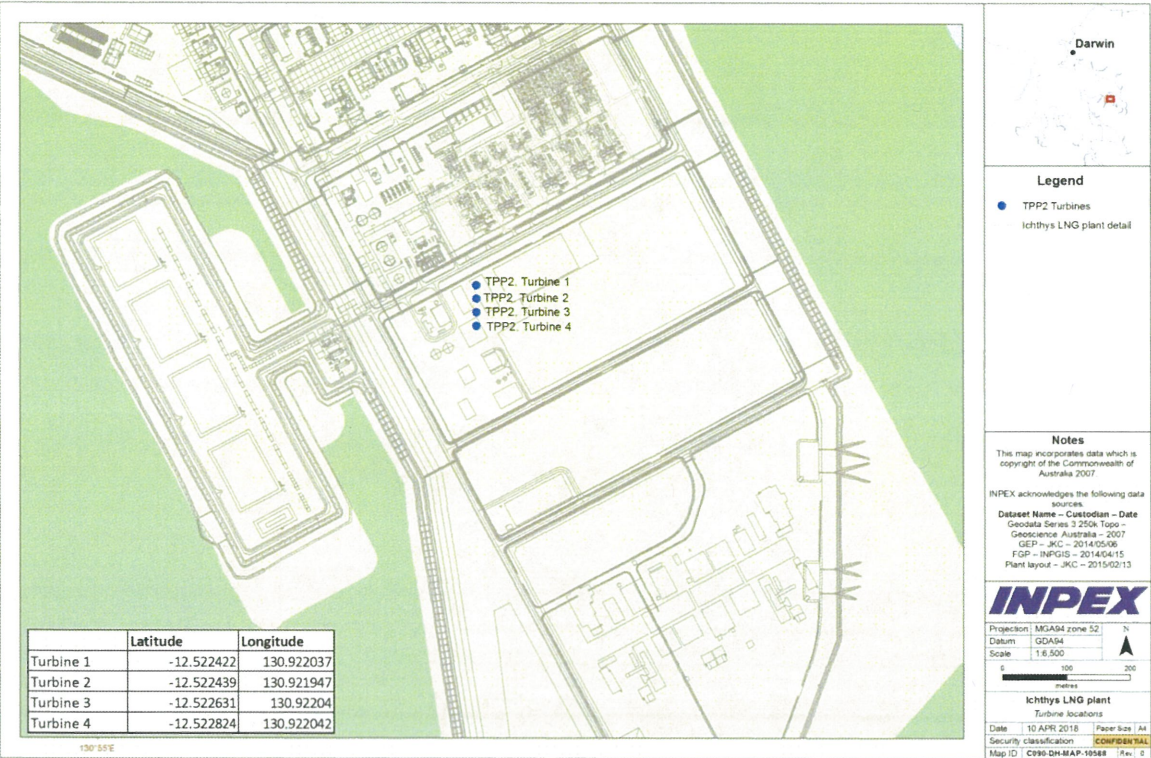


Figure 6 – Location of authorised stationary emission release points – Temporary Power Plant



The information contained on this map is confidential and for information only, and must not be communicated to other persons without the prior written consent of INPEX. Any unauthorised use of such information may expose the user and the provider of that information to legal risk. While every effort has been made to ensure the accuracy and completeness of the information presented, no guarantee is given nor responsibility taken by INPEX for any errors or omissions. INPEX accepts no liability for any use of the said information or reliance placed on it.



## ENVIRONMENT PROTECTION LICENCE (EPL228-03)

**Table 4 – Description of authorised stationary source emission release points**

Column 1	Column 2			Column 3		Column 4	Column 5	Column 6
Release Point Number	Source Description (with nominal power output)	Fuel Type	Operation	Latitude	Longitude	Release Internal Diameter (m)	Release Height (m RL)	Typical Emission Velocity (m/s)
A1	LNG Train Refrigerant Compressor Driver Gas Turbines; Frame 7 (compressor turbine WHRU West 1, 87 MW, Liquefaction Units)	high pressure fuel gas	continuous	-12.517647	130.918788	4.4	43	23
A2	LNG Train Refrigerant Compressor Driver Gas Turbines; Frame 7 (compressor turbine WHRU West 2, 87 MW, Liquefaction Units)	high pressure fuel gas	continuous	-12.516355	130.921216	4.4	43	23
A3	LNG Train Refrigerant Compressor Driver Gas Turbines; Frame 7 (compressor turbine WHRU East 1, 87 MW, Liquefaction Units) & location of AGRU bypass vent release for LNG Train 1	high pressure fuel gas	continuous	-12.519682	130.919907	4.4	43 <sup>12</sup>	23
A4	LNG Train Refrigerant Compressor Driver Gas Turbines; Frame 7 (compressor turbine WHRU East 2, 87 MW, Liquefaction Units) & location of AGRU bypass vent release for LNG Train 2	high pressure fuel gas	continuous	-12.51839	130.922335	4.4	43 <sup>13</sup>	23
A5-1	CCPP power generation Frame 6 turbine 1 (CCPP GTG 1, 38 MW)	high pressure fuel gas	intermittent	-12.520249	130.923388	3.2	40	19
A5-2 <sup>13</sup>	CCPP power generation Frame 6 turbine 1 (38 MW) with duct burners for the heat recovery steam generator (CCPP GTG 1 with STG, 100 MW)	high pressure fuel gas & vaporised	continuous	-12.519976	130.923725	3.2	40	19

<sup>12</sup> The AGRU incinerator by-pass vents (A13-2 & A14-2) are 1m higher than corresponding authorised release points (A3 and A4) to ensure the AGRU acid off gas does not corrode the gas turbine stack and gets the maximum dilution in the hot turbine exhaust plume. By-pass of the incinerator will only occur when the incinerator is undergoing major maintenance, which is likely to be every three to five years of operation, and could occur for one month, depending on circumstances. For minor issues, the AGRU acid off gas could be hot vented three to four days per year.

<sup>13</sup> 4 out 5 operating normally, one on stand-by; duct burners not used in stand-by mode

Column 1	Column 2			Column 3		Column 4	Column 5	Column 6
Release Point Number	Source Description (with nominal power output)	Fuel Type	Operation	Latitude	Longitude	Release Internal Diameter (m)	Release Height (m RL)	Typical Emission Velocity (m/s)
		isopentane to duct burners						
A6-1 <sup>13</sup>	CCPP power generation Frame 6 turbine 2 (CCPP GTG 2, 38 MW)	high pressure fuel gas	intermittent	-12.520457	130.923463	3.2	40	19
A6-2 <sup>13</sup>	CCPP power generation Frame 6 turbine 2 (38 MW) with duct burners for the heat recovery steam generator (CCPP GTG 2 with STG, 100 MW)	high pressure fuel gas & vaporised isopentane to duct burners	continuous	-12.520271	130.923453	3.2	40	19
A7-1 <sup>13</sup>	CCPP power generation Frame 6 turbine 3 (CCPP GTG 3, 38 MW)	high pressure fuel gas	intermittent	-12.520684	130.923037	3.2	40	19
A7-2 <sup>13</sup>	CCPP power generation Frame 6 turbine 3 (38 MW) with duct burners for the heat recovery steam generator (CCPP GTG 3 with STG, 100 MW)	high pressure fuel gas & vaporised isopentane to duct burners	continuous	-12.520425	130.922882	3.2	40	19
A8-1 <sup>13</sup>	CCPP power generation Frame 6 turbine 4 (CCPP GTG 4, 38 MW)	high pressure fuel gas	intermittent	-12.52104	130.922436	3.2	40	19
A8-2 <sup>13,14</sup>	CCPP power generation Frame 6 turbine 4 with duct burners for the heat recovery steam generator (CCPP GTG 4 with STG, 100 MW)	high pressure fuel gas & vaporised isopentane to duct burners	continuous	-12.520744	130.922264	3.2	40	19
A9-1 <sup>13,14</sup>	CCPP power generation Frame 6 turbine 5 (CCPP GTG 5, 38 MW)	high pressure fuel gas	intermittent	-12.521253	130.922033	3.2	40	19

<sup>14</sup> Until start-up of the second LNG train the duct burners, Heat Recovery Steam Generators (HRSOs) and steam turbines will most likely not be in operation

Column 1	Column 2			Column 3		Column 4	Column 5	Column 6
Release Point Number	Source Description (with nominal power output)	Fuel Type	Operation	Latitude	Longitude	Release Internal Diameter (m)	Release Height (m RL)	Typical Emission Velocity (m/s)
A9-2 <sup>13,14</sup>	CCPP power generation Frame 6 turbine 5 (38 MW) with duct burners for the heat recovery steam generator (CCPP GTG 5 with STG, 100 MW)	high pressure fuel gas & vaporised isopentane to duct burners	continuous	-12.520966	130.921882	3.2	40	19
A13-1	Acid Gas Incinerator #1	AGRU offgas & LP fuel gas	continuous	-12.515276	130.920481	3	40	19
A13-2 <sup>12</sup>	Acid Gas from the AGRU for LNG Train 1, by-passing the incinerator to be vented at the top of A3	AGRU offgas	Only during maintenance	-12.519682	130.919907	n/a	44	n/a
A13-3	Feed gas to AGRU – LNG Train 1 – sampling location only (541-SC-001)	AGRU feed gas	continuous	-12.519682	130.919907	N/A	N/A	N/A
A14-1	Acid Gas Incinerator #2	AGRU offgas & LP fuel gas	continuous	-12.51731	130.921609	3	40	19
A14-2 <sup>12</sup>	Acid Gas from the AGRU for LNG Train 1, by-passing the incinerator to be vented at the top of A4	AGRU offgas	Only during maintenance	-12.51839	130.922335	n/a	44	n/a
A14-3	Feed gas to AGRU – LNG Train 2 – sampling location only (542-SC-001)	AGRU feed gas	continuous	-12.51839	130.922335	N/A	N/A	N/A
A15	Heating Medium Furnace 1	low pressure fuel gas	continuous <sup>15</sup>	-12.517621	130.917316	1.8	58	n/a
A16	Heating Medium Furnace 2	low pressure fuel gas	continuous <sup>15</sup>	-12.517539	130.917462	1.8	58	n/a

<sup>15</sup> Operate at ~ 30% normally, used at higher rates during start-up or high arrival pressure.

Column 1	Column 2			Column 3		Column 4	Column 5	Column 6
Release Point Number	Source Description (with nominal power output)	Fuel Type	Operation	Latitude	Longitude	Release Internal Diameter (m)	Release Height (m RL)	Typical Emission Velocity (m/s)
A17	Warm Ground Flare – fuel gas/natural gas	LP fuel gas (pilot only)	Stand-by (pilot only)	-12.521835	130.917006	n/a	3	n/a
A18	Cold Ground Flare - gas/natural gas, gaseous propane or mixed refrigerant	LP fuel gas (pilot only)	Stand-by (pilot only)	-12.524392	130.918442	n/a	3	n/a
A19	Spare Ground Flare - fuel gas/natural gas, gaseous propane or mixed refrigerant	LP fuel gas (pilot only)	Spare (not normally operated)	-12.522798	130.917565	n/a	3	n/a
A20	LNG Tankage Flare 1 - natural gas	LP fuel gas (pilot only)	Stand-by (pilot only)	-12.517823	130.91314	n/a	25	n/a
A21	LPG Tankage Flare - butane, propane	LP fuel gas (pilot only)	Stand-by (pilot only)	-12.518759	130.913653	n/a	25	n/a
A22	Spare Tankage Flare 3 - butane, propane or natural gas	LP fuel gas (pilot only)	Spare (not normally operated)	-12.518291	130.913392	n/a	25	n/a
A23	Liquid Flare - liquid iso-pentane or off-spec condensate	LP fuel gas (pilot only)	Not normally operated	-12.525598	130.919168	n/a	3	n/a
A24	EDG1 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.521118	130.920829	n/a	8	n/a
A25	EDG2 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.521056	130.920854	n/a	8	n/a
A26	EDG3 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.521022	130.920953	n/a	8	n/a

Column 1	Column 2			Column 3		Column 4	Column 5	Column 6
Release Point Number	Source Description (with nominal power output)	Fuel Type	Operation	Latitude	Longitude	Release Internal Diameter (m)	Release Height (m RL)	Typical Emission Velocity (m/s)
A27	EDG4 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.520985	130.921028	n/a	8	n/a
A28	EDG5 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.5209804	130.9211346	n/a	8	n/a
A29	EDG6 Emergency diesel generator (2.2 MW)	diesel	Not normally operated	-12.520946	130.921211	n/a	8	n/a
A30	Firewater Pump Utility 1 (552 kW)	diesel	Not normally operated	-12.535953	130.920762	n/a	4	n/a
A31	Firewater Pump Utility 2 (552 kW)	diesel	Not normally operated	-12.535952	130.920791	n/a	4	n/a
A32	Firewater Pump Utility 3 (552 kW)	diesel	Not normally operated	-12.535909	130.92084	n/a	4	n/a
TPP Turbine 1	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 1, 25 MW)	high pressure fuel gas or diesel	Intermittent	-12.522422	130.922037	-	9.420	-
TPP Turbine 2	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 2, 25 MW)	high pressure fuel gas or diesel	Intermittent	-12.522439	130.921947	-	9.420	-
TPP Turbine 3	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 3, 25 MW)	high pressure fuel gas or diesel	Intermittent	-12.522631	130.922040	-	9.420	-
TPP Turbine 4	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 4, 25 MW)	high pressure fuel gas or diesel	Intermittent	-12.522824	130.922042	-	9.420	-

**Table 5 – Contaminant release limits to air at authorised stationary emission release points**

Column 1	Column 2	Column 3	Column 4		Column 5	
Release Point Number	Source	Pollutant	Concentration Target <sup>16</sup> mg/Nm <sup>3</sup>	Concentration Target <sup>16</sup> ppmv	Concentration Limit <sup>17</sup> mg/Nm <sup>3</sup>	Concentration Limit <sup>17</sup> ppmv
A1, A2, A3, A4	LNG Refrigerant Compressor Driver Gas Turbines (GE Frame 7s)	NO <sub>x</sub> as NO <sub>2</sub>	50 @ 15% O <sub>2</sub> dry	25 @ 15% O <sub>2</sub> dry	70	35 @ 15% O <sub>2</sub> dry
A5-1, A6-1, A7-1, A8-1, A9-1	CCPP Gas Turbine Generators (GE Frame 6s, 38 MW)	NO <sub>x</sub> as NO <sub>2</sub>	50 @ 15% O <sub>2</sub> dry	25 @ 15% O <sub>2</sub> dry	70	35 @ 15% O <sub>2</sub> dry
A5-2, A6-2, A7-2, A8-2, A9-2	CCPP Gas Turbine Generators (GE Frame 6s, 38 MW) also burning vaporised iso-pentane in duct burners	NO <sub>x</sub> as NO <sub>2</sub>	150 @ 15% O <sub>2</sub> dry	75 @ 15% O <sub>2</sub> dry	350	175 @ 15% O <sub>2</sub> dry
A13-1, A14-1	AGRU Incinerators <sup>18</sup>	NO <sub>x</sub>	320 @ 3% O <sub>2</sub> dry	160 @ 3% O <sub>2</sub> dry	350	175 @ 15% O <sub>2</sub> dry
A15, A16	Heating Medium Furnaces	NO <sub>x</sub>	160 @ 3% O <sub>2</sub> dry	80 @ 3% O <sub>2</sub> dry	350	175 @ 3% O <sub>2</sub> dry
TPP Turbine 1 TPP Turbine 2 TPP Turbine 3 TPP Turbine 4	TPP GE TM2500 dual fuel turbines (fuel source diesel)	NO <sub>x</sub> as NO <sub>2</sub>	88.8 @ 15% O <sub>2</sub> dry	44.4 @ 15% O <sub>2</sub> dry	90	45 @ 15% O <sub>2</sub> dry
TPP Turbine 1 TPP Turbine 2 TPP Turbine 3 TPP Turbine 4	TPP GE TM2500 dual fuel turbines ( fuel source gas)	NO <sub>x</sub> as NO <sub>2</sub>	50 @ 15% O <sub>2</sub> dry	25 @ 15% O <sub>2</sub> dry	70	35 @ 15% O <sub>2</sub> dry

<sup>16</sup> Ichthys LNG design criteria for normal operations

<sup>17</sup> NSW PEO Act – Group 6

<sup>18</sup> Incineration temperature to be in the range 750 to 900 °C



**Table 6 – Air emissions monitoring program**

Column 1	Column 2	Column 3	Column 4	Column 5
Release Point Number	Sampling Location Number	Source	Monitoring Frequency	Parameter <sup>19</sup>
A1	L-641-A-001	LNG Train 1 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A2	L-642-A-001	LNG Train 2 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A3	L-641-A-002	LNG Train 1 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A4	L-642-A-002	LNG Train 2 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A5-1	L-780-GT-001	CCPP Gas Turbine Generator #1 (GE Frame 6) – conventional stack	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A6-1	L-780-GT-002	CCPP Gas Turbine Generator #2 (GE Frame 6) – conventional stack		
A7-1	L-780-GT-003	CCPP Gas Turbine Generator #3 (GE Frame 6) – conventional stack		
A8-1	L-780-GT-004	CCPP Gas Turbine Generator #4 (GE Frame 6) – conventional stack		
A9-1	L-780-GT-005	CCPP Gas Turbine Generator #5 (GE Frame 6) – conventional stack		
A5-2	L-630-F-001	CCPP Gas Turbine Generator #1 (GE Frame 5) – HRSG stack		
A6-2	L-630-F-002	CCPP Gas Turbine Generator #2 (GE Frame 5) – HRSG stack		
A7-2	L-630-F-003	CCPP Gas Turbine Generator #3 (GE Frame 6) – HRSG stack		
A8-2	L-630-F-004	CCPP Gas Turbine Generator #4 (GE Frame 6) – HRSG stack		

<sup>19</sup> NO<sub>x</sub> as NO<sub>2</sub> = Oxides of nitrogen as nitrogen dioxide; PM<sub>2.5</sub> = particulate matter with a diameter of 2.5 micrometres (µm) or less; PM<sub>10</sub> = particulate matter with a diameter between 2.5 and 10 µm; TSP = total solid particles; CO = carbon monoxide; CO<sub>2</sub>= carbon dioxide; NMVOC = non-methane volatile organic carbon; CH<sub>4</sub>= methane; SO<sub>2</sub> = sulfur dioxide; BTEX = benzene, toluene, ethylbenzene, xylenes; H<sub>2</sub>S = hydrogen sulfide.

Column 1	Column 2	Column 3	Column 4	Column 5
Release Point Number	Sampling Location Number	Source	Monitoring Frequency	Parameter <sup>19</sup>
A9-2	L-630-F-005	CCPP Gas Turbine Generator #5 (GE Frame 6) – HRSG stack	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A13-1	L-551-FT-031	AGRU Incinerator – LNG Train 1	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A13-2	551-SC-003	AGRU Hot Vent – LNG Train 1, prior to release at A3	Quarterly and during incinerator by-pass <sup>20</sup>	BTEX, H <sub>2</sub> S, volumetric flow rate
A13-3	541-SC-001	Feed gas to AGRU – LNG Train 1 – prior to release at A3	Quarterly and during incinerator by-pass	Hg
A14-1	L-552-FT-031	AGRU Incinerator – LNG Train 2	Quarterly and during incinerator by-pass	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A14-2	552-SC-003	AGRU Hot Vent – LNG Train 2, prior to release at A4	Quarterly and during incinerator by-pass <sup>20</sup>	BTEX, H <sub>2</sub> S, volumetric flow rate
A14-3	542-SC-001	Feed gas to AGRU – LNG Train 2 – prior to release at A4	Quarterly and during incinerator by-pass	Hg

<sup>20</sup> If AGRU off gas quality can be demonstrated to be predictable and does not vary greatly when the by-pass of the incinerator occurs, the NT EPA may approve quarterly sampling for first 18 months after commencement of Steady-State, then annual.

Column 1	Column 2	Column 3	Column 4	Column 5
Release Point Number	Sampling Location Number	Source	Monitoring Frequency	Parameter <sup>19</sup>
A15	L-640-A-001-A	Heating Medium Furnaces	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A16	L-640-A-001-B	Heating Medium Furnaces	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A17	L-700-F-002	Ground flare #5 warm	all flare events	mass of hydrocarbons flared
A18	L-700-F-001-A/B	Ground flare #2 cold	Quarterly and during incinerator by-pass	Hg
A19	L-700-F-003	Ground flare #1 spare	quarterly	NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A20	L-700-F-005-A/B	Tank flare #1 LNG		
A21	L-700-F-006-A/B	Tank flare #2 LPG	all flare events quarterly	mass of hydrocarbons flared NO <sub>x</sub> as NO <sub>2</sub> , N <sub>2</sub> O, Hg, PM <sub>2.5</sub> , PM <sub>10</sub> , CO, temperature, efflux velocity, volumetric flow rate
A22	L-700-F-007	Tank flare #3 LNG/LPG		
A23	L-700-F-004	Liquid flare		
TPP Turbine 1	TPP Turbine 1	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 1, 25 MW)		
TPP Turbine 2	TPP Turbine 2	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 2, 25 MW)		
TPP Turbine 3	TPP Turbine 3	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 3, 25 MW)		

Column 1	Column 2	Column 3	Column 4	Column 5
Release Point Number	Sampling Location Number	Source	Monitoring Frequency	Parameter <sup>19</sup>
TPP Turbine 4	TPP Turbine 4	TPP power generation GE TM2500 dual fuel turbine (TPP Turbine 4, 25 MW)		



