

Environmental Approval

PURSUANT TO SECTION 69 OF THE ENVIRONMENT PROTECTION ACT 2019

Approval number	EPA2022/018-001
Approval holder	INPEX Operations Australia Pty Ltd
Australian business number (ABN)	48 150 217 262
Registered business address	Level 22/100 St Georges Terrace Perth, Western Australia 6000
Action	Ichthys LNG Maintenance Dredging Program 2023-2027

Action description

Undertake maintenance dredging activities within the existing dredged footprint of the shipping channel and turning basin in Darwin Harbour. Direct loading of the dredge material, transport of spoil and spoil disposal would be by a single trailing suction hopper dredge to the previously used dredge spoil disposal area in NT coastal waters of the Beagle Gulf. Maintenance dredging is proposed to be undertaken within a five year period.

The action includes:

- one planned maintenance dredging campaign and up to four contingency campaigns
- dredging of a maximum of 1.5 million cubic metres (Mm³) of material
- no single dredge campaign to exceed 0.75 Mm³

Advisory notes

- i. Approval is granted under section 69 of the *Environment Protection Act 2019* for the action to be undertaken in the manner described, including with implementation of the environmental management measures, commitments and safeguards documented in the Referral information (including the Referral Report and Appendices). If there is an inconsistency between the Referral information and this environmental approval, the requirements of this environmental approval prevail.
- ii. This approval does not authorise the approval holder to undertake an activity that would otherwise be an offence under the *Water Act 1992*.
- iii. Submission of all notices, reports, documents or other correspondence required as a condition of this approval must be provided in electronic form by emailing environmentalregulation@nt.gov.au

Address of action NT Portion 7168, Darwin Harbour
NT Portion 7634, Beagle Gulf

NT EPA Assessment Report number 100

Person authorised to make decision Hon Lauren Jane Moss MLA,
Minister for Environment, Climate Change and
Water Security

Signature



Date of decision 02 JUN 2023

Environmental approval conditions

Marine environmental quality and marine ecosystems

1 Limitations and extent

- 1-1 When implementing the action, the approval holder must ensure the action does not exceed the limitations and extent in **Table 1**:

Table 1 Limitations and extent

Action element	Figure	Limitation or maximum extent
Dredging	Figure 1	No more than 1.5 Mm ³ of material to be dredged within the 248 hectare (ha) dredge area of the approved extent . No single dredge campaign to exceed 0.75 Mm ³ within the approved extent .
Overflow	Figure 1	Overflow may only occur during the months of November to April inclusive. Overflow must be limited to ≤60 minutes per cycle. Overflow must not occur when dredging material with fines content* ≥75%.
Seabed levelling	Figure 1	Seabed levelling may only occur within the 248 ha dredge area of the approved extent
Spoil disposal	Figure 1	Spoil disposal may only occur within the 125 ha area of the dredge spoil disposal area of the approved extent .

* The Australian Standard (Geotechnical site investigations) AS 1726-1993 defines fine sediment as a particle size <75 µm.

2 Environmental objectives

- 2-1 The approval holder must ensure the implementation of the action achieves the following environmental objectives:
- (1) no **material environmental harm** to the environmental values and declared **beneficial uses** of water in Darwin Harbour, including but not limited to ecosystem health, cultural, aesthetic, recreational, aquaculture;
 - (2) no **material environmental harm** to **benthic habitats and communities** beyond the zones of impact; and
 - (3) risks of physical injury, mortality, behavioural changes and health impacts on protected marine fauna are minimised.
- 2-2 The approval holder must undertake monitoring in the zones of impact and influence during and following the cessation of **dredging activity** that is capable of demonstrating whether the environmental objectives in condition 2-1(1) and 2-1(2) have been met.

3 Maintenance Dredging and Spoil Disposal Management Plan

3-1 Prior to **dredging activity**, the approval holder must submit to the **Minister a Maintenance Dredging and Spoil Disposal Management Plan (DMP)** to meet the requirements specified in condition 3-2.

3-2 The **DMP** required by condition 3-1 must include:

- (1) a requirement for all **dredging activity** to achieve the environmental objectives required by condition 2-1;
- (2) benthic mapping showing the field-validated extent and distribution of potentially affected **benthic habitats and communities**;
- (3) the modelled zones of impact and influence from **dredging activity** and dredge-generated sediment plumes on **benthic habitats and communities**, including a cumulative loss assessment;
- (4) management **trigger values** based on seasonal pressure response pathways including:
 - (a) turbidity (**NTU**) **trigger values** in accordance with **Table 2**
 - (b) light availability (**PAR**¹) **trigger values**:
 - (i) interim **PAR trigger values** must be set by the approval holder based on current available data and be implemented prior to commencement of any **dredging activity** in 2023; and
 - (ii) final **PAR trigger values** must be set by the approval holder as the preferred indicator to measure dredging impacts, and be implemented prior to commencement of any dredging activity in 2024.
- (5) a trigger action response plan (with actions to be initiated if **trigger values** are exceeded) to manage **dredging activity** to achieve the environmental objectives required by condition 2-1;
- (6) a detailed description of the water quality monitoring program associated with dredge-generated sediment plumes (in line with condition 2-2), including:
 - (a) monitoring indicators, methods and sampling frequency;
 - (b) reference and impact monitoring site locations;
 - (c) quality assurance methods and reporting of results;
 - (d) a requirement for near real-time telemetered monitoring of turbidity, benthic and surface **PAR**, depth, conductivity and temperature, with **continuous logging** at reference and impact sites with a **baseline data** collection phase;

¹ PAR monitoring must be undertaken consistent with the Queensland Government 2018, [Guidance on using Photosynthetically Active Radiation \(PAR\) as a method to measure light availability for aquatic photosynthetic organisms facing acute impacts](#), Queensland.

- (e) a requirement for monitoring of total suspended solids, total organic carbon and spectrophotometric water colour at reference and impact sites, with a **baseline data** collection phase;
 - (f) use of accurate and reliable monitoring approaches sufficient to describe temporal variation e.g. seasonality, tidal cycles and weather conditions; and
 - (g) a requirement for the monitoring program to facilitate assessment against the environmental objectives in conditions 2-1(1) and 2-1(2), **trigger values** in condition 3-2(4), and to inform adaptive monitoring and management in line with condition 3-2(11).
- (7) procedures to minimise impacts of **dredging activity** and vessel anchoring;
- (8) a regime for dredge **overflow** including but not limited to requirements that **overflow** at the dredge site must:
- (a) only occur in line within the limitations and extent in condition 1-1;
 - (b) only occur with green valves on **overflow** funnel(s) at all times;
 - (c) cease if the 21 day rolling daily average water temperature at all water quality sites adjacent to coral communities exceeds 31°C and only recommence once the 21 day rolling average water temperature is below 31°C;
 - (d) cease three days before, and not recommence within seven days after any potential **coral spawning window**; and
 - (e) cease in the event that monitoring indicates that a management **trigger value** has been exceeded and only recommence once the relevant water quality parameter has fallen below the **trigger value** and the risk of any further exceedance is minimised in line with the trigger, action, response plan required by condition 3-2(5) and after the **Minister** has been advised.
- (9) procedures to prevent the introduction of marine pests into the Northern Territory;
- (10) monitoring and management measures to achieve the environmental objective required by condition 2-1(3) including but not limited to:
- (a) measures to avoid vessel strikes with marine megafauna including vessel speed limits and marine megafauna approach distances for all vessels used during implementation of the action;
 - (b) defined exclusion zones and **dredging activity** protocols for marine megafauna, including observation and recording sightings and locations of marine fauna in the vessels' daily log book;
 - (c) trained marine megafauna observers on duty during daylight **dredging activity** including spoil disposal;
 - (d) night and low visibility marine megafauna observation procedures;

- (e) measures to minimise direct entrainment impacts on turtles; and
 - (f) documenting and reporting to relevant regulators any incidents relating to marine fauna injury / mortality.
- (11) a tiered adaptive monitoring and management approach (including a feedback loop) to manage **dredging activity** to achieve the environmental objectives required by condition 2-1;
- (12) procedures for determining whether any management **trigger value** exceedances are attributable to the action;
- (13) contingency management strategies to be implemented and clear reporting procedures to be employed if management **trigger values** are reached; and
- (14) mechanisms to publish reports with details of dredging attributable exceedances of management **trigger values** and contingency actions as soon as practicable.
- 3-3 The approval holder:
- (1) must review and revise the **DMP** as and when directed by the **Minister**; or
 - (2) may review and revise the **DMP**, and must provide:
 - (a) the revised **DMP** to the **Minister** within 10 business days prior to any amendment(s) being implemented;
 - (b) a tabulated summary of the amendment(s) with document references;
 - (c) reasons for the amendment(s);
 - (d) an assessment of environmental risks and potential impacts associated with the amendment(s); and
 - (e) a written review and endorsement from an **independent qualified person** that the amended **DMP** appropriately identifies and mitigates any environmental risk and complies with the conditions of this approval.
- 3-4 The approval holder must implement the action to comply with the latest revision of the **DMP** required by condition 3-1.
- 3-5 In the event that monitoring carried out under the **DMP** determines that the relevant environmental objectives required by condition 2-1 are not being achieved, the approval holder must:
- (1) immediately implement the relevant response and contingency management measures specified in the **DMP**, and continue implementation of those actions until it is demonstrated that the environmental objectives are being achieved and will continue to be achieved;
 - (2) investigate the likely root cause of non-achievement of the environmental objectives;

- (3) within twenty-four (24) hours of determining that any of the environmental objectives are not being achieved, report the non-achievement to the **Minister**;
- (4) within seven (7) days of determining that any of the environmental objectives are not being achieved submit to the **Minister** a report detailing the following:
 - (a) the results of the monitoring that led to the determination that any of the environmental objectives are not being achieved;
 - (b) the investigation being undertaken as required by condition 3-5(2);
 - (c) any notifications and contingency management actions implemented by the approval holder following determination that any of the environmental objectives are not being achieved; and
 - (d) the findings of the investigation required by condition 3-5(2) to the **Minister** within twenty-one (21) days of first determining that any of the environmental objectives are not being achieved.

4 Commencement of action

- 4-1 This approval expires five years after the date on which it is granted, unless **dredging activity** has commenced on or before that date.
- 4-2 The approval holder must provide notification in writing to the **Minister**, at least 5 business days prior to the commencement of **dredging activity**.

5 Change of contact details

- 5-1 The approval holder must notify the **Minister** in writing of any change of its name, physical address or postal address for the serving of notices or other correspondence within 10 business days of such change.

6 Environmental performance reporting

- 6-1 The approval holder must:
 - (1) within six months of the completion of **dredging activity** carried out under this approval, obtain from an **independent qualified person**, a report on the environmental performance of the action and compliance with the conditions of this environmental approval; and
 - (2) submit each report to the **Minister** within 30 days of its completion.
- 6-2 The reports required by condition 6-1(1) must:
 - (1) provide all monitoring data and reportable incidents required by the conditions of this approval;
 - (2) provide an analysis and interpretation of monitoring data to demonstrate whether compliance with the requirements of condition 2-1 has been achieved;

- (3) describe the approaches used to validate the sediment plume modelling outputs;
- (4) provide a comparison between the actual and predicted:
 - (a) turbidity, suspended sediment and total suspended solids concentrations and **PAR**; and
 - (b) spatial extent of sediment plumes in relation to **dredging activity**.
- (5) describe measurements of sediment and hydrodynamic information obtained under representative conditions;
- (6) include an assessment of the effectiveness of monitoring, management and contingency measures implemented to comply with the requirements of condition 2-1;
- (7) be endorsed by the approval holder's Chief Executive Officer or a person delegated to sign on the approval holder's Chief Executive Officer's behalf;
- (8) include a statement as to whether the approval holder has complied with the conditions of this approval; and
- (9) identify all non-compliances and describe corrective and preventative actions taken.

7 Provision of environmental data

- 7-1 All environmental monitoring data required to be collected or obtained under this environmental approval must be retained by the approval holder for a period of not less than 10 years commencing from the date that the data is collected or obtained.
- 7-2 The approval holder must, as and when directed by the **Minister**, provide any environmental data (including sampling design, sampling methodologies, empirical data and derived information products such as maps) relevant to the assessment of the action and implementation of this environmental approval, to the **Minister** in the form and manner and at the intervals specified in the direction.

Definitions

The terms used in this approval have the same meaning as the terms defined in the *Environment Protection Act 2019* and *Environment Protection Regulations 2020*.

Term	Definition
approved extent	The extent identified in Figure 1 of this approval that is the dredging footprint, the dredge spoil disposal area and water on which the action is situated.
baseline data	The environmental monitoring data, including chemical, physical and biological data collected (from studies undertaken) prior to commencement of dredging activity , that is used to characterise baseline conditions.
beneficial uses	Has the same meaning as in section 4 of the <i>Water Act 1992</i> .
benthic habitats and communities	The areas of seafloor that support functional ecological communities (e.g. high relief reef, platform reef, sand, silt and the depth they occur). The communities may include light dependent taxa (e.g. algae, seagrass, corals, some sponges, mangroves) or animals that obtain their energy by consuming live or dead organisms (e.g. ascidians, sponges, soft corals).
CEO	Has the same meaning as in section 4 of the <i>Environment Protection Act 2019</i> .
continuous logging	Requires ongoing data collection to be undertaken during and between dredging activity . Parameters specified in condition 3-2(6)(d) must be telemetered to ensure near real time availability of data to satisfy compliance monitoring.
coral spawning window	Identified as, but not limited to, the coral spawning window defined as four days after the first full moon in April of any calendar year.
dredging activity	Dredging works carried out under this approval including dredging, overflow , seabed levelling and spoil disposal.
DMP	Dredging Management Plan, which includes management and disposal of spoil.
EP Act	<i>Environment Protection Act 2019</i> .
independent qualified person	A qualified person as defined under section 4 of the EP Act ; and who also meets the following requirements: <ul style="list-style-type: none"> a) was not involved in the preparation of the approval holder's referral; b) is independent of the personnel involved in the design and implementation of the action; and

	c) has obtained written approval from the CEO , on the advice of the Executive Director, of the NT Department of Environment, Parks and Water Security Flora and Fauna Division to be the qualified person to satisfy the independent qualified person reporting requirements under this approval.
material environmental harm	Has the same meaning as in section 8 of the <i>Environment Protection Act 2019</i> .
Minister	The Minister responsible for administering the <i>Environment Protection Act 2019</i> .
NT EPA	Northern Territory Environment Protection Authority.
overflow	A method used to optimise loading of the dredge hopper through the release of water with some fine sediment and maximise the quantity of sediment within the hopper prior to transport of the dredged material to the dredge spoil disposal area.
PAR	Photosynthetically active radiation (including benthic and surface)
referral	The approval holder's referral to the NT EPA under section 48 of the EP Act ; Ichthys LNG Maintenance Dredging Program 2023-2027: Referral Report, dated 9 August 2022.
trigger value(s)	The values of monitored environmental parameters that indicate when response actions are required to prevent impact.

Location and extent of action

Spatial data depicting information provided in Figure 1 are held by the Department of Environment, Parks and Water Security as follows:

NTEPA2022/0126-005: Spatial files - Ichthys LNG Maintenance Dredging Program 2023-2027.



Figure 1. Location and approved extent of dredge footprint and dredge spoil disposal area (Source: Draft DMP, Appendix A of the referral)

Table 2 Trigger values - turbidity and time limits for reactive monitoring sites shown in Figure 2 (Source DSDMP, Appendix A of the referral)²

Monitoring site	Season	Level 1 trigger (daily average) >intensity value and >duration or >frequency			Level 2 trigger (daily average) >intensity value and >duration or >frequency		
		Intensity (95 th ile)	Duration (consecutive days)	Frequency (days per 7 day rolling period)	Intensity (99 th ile)	Duration (consecutive days)	Frequency (days per 7 day rolling period)
South Shell Island	Wet season	27 NTU	4 days	4 days	35 NTU	1 day	1 day
	Dry season	13 NTU	5 days	4 days	21 NTU	5 days	5 days
Northeast Wickham Point	Wet season	30 NTU	7 days	5 days	48 NTU	3 days	3 days
	Dry season	14 NTU	3 days	3 days	17 NTU	2 days	2 days
Fannie Bay*	Dry season	13 NTU	7 days	5 days	24 NTU	5 days	4 days

*Only applicable where volumes to be dredged are more than 0.25 Mm³

² Weed Reef monitoring site is not included in this table as it is an informative monitoring site in line with the DMP.

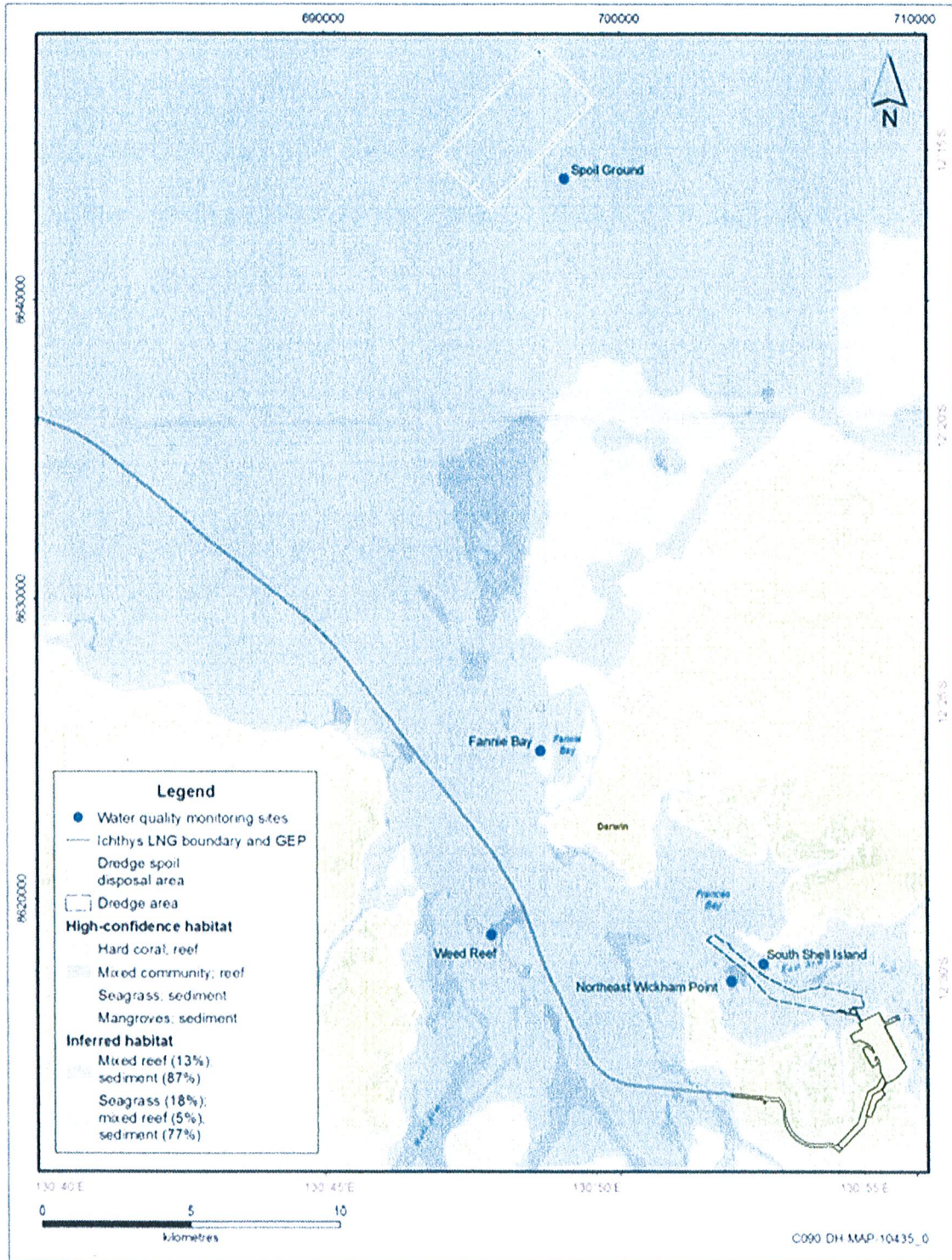


Figure 2 Indicative water quality monitoring sites (Source: Draft DMP, Appendix A of referral)