

Kylie Fitzpatrick  
Department of Environment, Parks and Water Security  
GPO Box 3675,  
DARWIN, NT 0801

Dear Ms Fitzpatrick

**Re: INPEX – Ichthys LNG Maintenance Dredging Program 2023-2027 Referral**

The Department of Environment, Parks and Water Security (DEPWS) has assessed the information contained in the above application and provides the following comments:

**Flora and Fauna Division**

The Referral generally describes values, potential impacts, mitigation measures and monitoring activities. Fauna and Flora Division have provided some recommendations to improve monitoring and further reduce risks to biodiversity values in the Appendix 1.

**Environment Division**

**Environmental Operations Unit**

In the event the Referral is considered significant under the *Environment Protection Act 2019* (EP Act), an environmental approval may be issued. Should it be deemed that an environmental approval is not required then the matter may be referred to Environmental Operations to consider a requirement for a Waste Discharge Licence (WDL). An application for a WDL renewal should not be prepared ahead of completion of the approval process.

In light of the recent developments in how dredging is regulated, Environmental Operations officers have reviewed the proposed activity and conclude that a WDL is not required based on the current information. With that in mind, Environmental Operations does not intend to renew the existing WDL.

In conducting this activity in the future, Inpex should refer to published guidance on the Northern Territory Environment Protection Authority (NT EPA) website, which is updated from time to time, in relation to dredging in NT waters. Inpex will be expected to prepare a Dredging and Dredge Spoil Disposal Management Plan that is reviewed and endorsed by a suitably qualified auditor. The plan should outline how Inpex will comply at all times with the General Environmental Duty under section 12 of the *Waste Management and Pollution Control Act 1998*. Consideration should also be given to the preparation of an environmental monitoring plan to measure actual impacts against predicted impacts. The environmental monitoring plan should include responsive actions that Inpex will take in the event predicted impacts are exceeded.

Should you have any further queries regarding these comments, please contact the Development Coordination Branch by email [DevelopmentAssessment.DEPWS@nt.gov.au](mailto:DevelopmentAssessment.DEPWS@nt.gov.au) or phone (08) 8999 4446.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'M Wauchope', written in a cursive style.

Maria Wauchope  
Executive Director Rangelands  
2 November 2022

## Appendix 1 – Flora and Fauna Detailed comments

### INPEX Operations Australia Pty Ltd – Ichthys LNG Maintenance Dredging Program 2023-2027

This submission is made under regulation 53 of the Environment Protection Regulations 2020

**Government authority:** Department of Environment, Parks and Water Security–Flora and Fauna Division.

| Section of Referral                  | Theme or issue | Comment   |
|--------------------------------------|----------------|---|
| Referral report<br>Marine Ecosystems |                | The Referral identifies a number of significant biodiversity values within Darwin Harbour that are at risk from the proposed maintenance dredging and spoil disposal.   |
|                                      |                | Identification of values - Benthic primary producer habitats and filter feeder habitats can be impacted by suspended sediment through four primary pathways: direct removal, light reduction, increased suspended sediment concentrations, and sediment deposition (smothering).  |
|                                      |                | Monitoring and impact measures - Seagrasses and other benthic flora integrate their light requirements over a period of time, days/weeks, rather than responding to spikes in turbidity, so it is the daily total amount of light that reaches them that is important rather than particular suspended sediment concentrations (SSC) in relation to a turbidity threshold. Benthic light, or photosynthetically active radiation (PAR), is a better measure to determine potential impacts on benthic habitats and communities, than turbidity (which is currently used in the form of SSC). Consistent with previous advice on the proposed maintenance dredging it is recommended that PAR be used in assessing risk and management impacts from sediment plumes (i.e. impact and trigger levels). The referral report has provided a commitment to work with relevant stakeholders to develop light based management triggers for incorporation into the DSDMP by the end of 2023. Ideally this will be developed prior to any new dredging activity to allow appropriate baseline data to be collected. |
|                                      |                | Timing of Dredging - The previous dredging campaign during construction of the Ichthys LNG project in Darwin Harbour restricted operations to the Wet season, when natural water quality is typically lower. The rationale for this was due to the high level of uncertainty surrounding the potential impact on benthic communities from increased turbidity during the dry season. The current plan is not clear about when dredging would occur. While there is now an improved understanding of dredging in   |

| Section of Referral   | Theme or issue | Comment   |
|---|----------------|---|
|   |                | <p>Darwin Harbour, there remains a reasonably high level of uncertainty of the spatial distribution of sensitive benthic habitats and their impact thresholds. Based on this, it is recommended that dredging occurs during the Wet season. If Dry season dredging is essential, dredging should be restricted to the early dry season (up until June), avoiding likely windows for coral spawning, as identified in the Referral.</p> <p>Marine Megafauna - The Referral identifies marine megafauna that are at risk from dredging through interactions with vessels and underwater noise: marine turtles, coastal dolphins and dugongs. Appropriate avoidance and mitigation measures for potential impacts on marine megafauna are proposed in the DSDMP.</p>   |
| <p>Referral Report Section 6.2<br/>Marine environmental quality</p> |                | <p>The dredge area falls within the East Arm reporting zone of the Darwin Harbour Water Quality Monitoring Program (DHWQMP) which undertakes routine surveillance monitoring of harbour waters to inform the Darwin Harbour Integrated Report Card. Although the proposed dredge monitoring program does not intend to use this data it is possible (depending on timeframe of works) that any impaired water quality condition could be publicly reported through the report card platform.</p> <p>Dredge disposal area – the proposed area was previously utilised by the capital dredge program and has a remaining capacity of approx. 7Mm<sup>3</sup>. This previously approved site remains the best option for disposal given the proposed method and characteristics of the dredge spoil. Much of the rationale for the site have been previously provided. To date there is no evidence to support that any deleterious water quality impacts emanated from the dredge spoil zone.</p> <p>Cumulative impact assessment - An assessment of concurrent harbour wide dredge campaigns is presented. INPEX determined that cumulative impacts are unlikely. This was justified with reference to the previous capital works program (16.1Mm<sup>3</sup>) which on occasion occurred concurrently with the Marine Supply Base project and from which no dredge related effects were observed.</p> <p>Modelled excess SSC will occur if all projects were undertaken simultaneously, however this is considered highly unlikely given current status and timing of other dredge activities. In the referral, impacts were considered insignificant and not predicted to impact key ecosystems such as seagrass and coral, although increased sedimentation was modelled in some low velocity zones. These intertidal flats and tidal creeks provide important ecosystem and biogeochemical services (Fortune et al., 2022). Eliminating or at least minimising the extent of these impacts should be sought so as to maintain functionality of sediments.</p> <p>We acknowledge the attempt to quantify cumulative impact and recognise that assessment of potential impacts from this project is confounded by the proximity of other activities, their respective timing and duration of dredge activity, methods,</p> |

| Section of Referral                    | Theme or issue | Comment   |
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|  |                | <p>disposal and volume and type of material dredged. Notwithstanding this, other activities (not necessarily dredge activities) are likely to occur. Five proposed dredging activities were identified and considered in this cumulative assessment. Ideally, other activities influencing water quality, such as wastewater discharge, should also be included in such a cumulative impact assessment especially when some of these activities are already placing pressure on sensitive receptors. This may not be feasible in the context of the current referral, but should at least be a longer term goal, for example through the development of a consistent guideline for the assessment of cumulative impacts that is required to be followed by all future dredging proponents.</p>  |
| Appendix A<br>Water Quality Monitoring |                | <p>The adaptive water quality monitoring program uses site specific triggers based on baseline turbidity data from local sites (Cardno, 2013). This considers the best currently available data across the domain for sensitive receptors, although as mentioned above and in the referral, this could be further supported by the collection of light measures such as PAR (Photosynthetic Active Radiation) and other variables which provide further context to condition and potential impacts to sensitive benthic receptors. As mentioned above, a commitment has been made by INPEX to develop PAR triggers by 2023.</p> <p>Although we appreciate the examination of cumulative impacts, it is important that responses to exceedance of any trigger thresholds is responded to at a project level, even if such exceedance is possibly attributable to cumulative effects from multiple sources. Monitoring responsively and/or collaborating with other proponents may be called for in these instances. It is therefore recommended that, where possible, the proponent schedule activity in conjunction with other operations in the Harbour to minimise the potential for lengthy periods of elevated SSC and allow sufficient breaks for benthic flora to recover.</p> <p>Although sedimentation is not proposed as a routine measure in the document it is possible that established RSET (Rod Surface Elevation Table) units within some mangrove zones, particularly in East Arm, may proffer some relative measure of accretion or sediment loss over time. This data will be available via the IMMRP which INPEX support, however the utility in this instance may require further exploration noting the challenges in collecting and interpreting such data identified by others (Jones et al., 2016). It is recommended that INPEX examines the utility of current RSET installations and consider additional RSET monitoring fixings at appropriate locations.</p> |
| Other<br>Dredge method                 |                | <p>The dredge method (TSHD) is optimised to reduce dispersal of fine sediment. Ongoing monitoring of the effectiveness of this method in conjunction with responsive turbidity/suspended solid (SS) monitoring is recommended to ensure minimisation of impacts to water quality and any residual effects to sensitive receptors. The regularity and emphasis of monitoring effort proposed appears to be suitable.</p>   |

Fortune, Kaestli, M., Butler, E. C. V., & Gibb, K. (2022). Denitrification in intertidal sediments of a tropical estuary subject to increasing development pressures. *Aquatic Sciences*, 84(4).

Jones, R., Bessel-Browne, P., Fisher, R., Klonowski, W. and Slivkoff, M. (2016). Assessing the impacts of sediments from dredging on corals. *Marine Pollution Bulletin* 102: 9-29.