Infrastructure upgrades at the Ichthys LNG onshore facilities

INPEX Operations Australia Pty Ltd (INPEX), on behalf of the Ichthys Joint Venture, is currently in the process of preparing referrals to support carbon capture and storage (CCS) readiness activities, as required under the Northern Territory *Environment Protection Act 2019* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

INPEX carbon capture and storage (CCS) activities

INPEX is actively working to decarbonise its operations, to provide a stable supply of diverse and clean energy sources.

Key to the planned decarbonisation of the INPEX-operated Ichthys LNG facilities is the development of a CCS compression system at Bladin Point, near Darwin. CCS is a safe and proven emissions reduction technology enabling the capture of carbon dioxide (CO_2) during liquefied natural gas (LNG) production.

The extracted CO_2 can then be compressed and transported via a pipeline to a permanent underground storage reservoir.

INPEX aims to be CCS-ready by the late 2020s and is currently preparing for upgrades to key infrastructure at the Ichthys LNG onshore facilities to enable the separation and capture of CO_2 during LNG production.

In parallel, INPEX is assessing the technical and commercial feasibility of transporting, and permanently and safely storing CO_2 in a deep subsea geological basin. This includes investigating potential pipeline routes for transporting CO_2 from the Ichthys LNG onshore facilities to suitable offshore storage locations.

These development opportunities are subject to separate future approvals.

What is changing at the Ichthys LNG onshore facilities?

At the Ichthys LNG onshore facilities near Darwin, natural gas is transported by an 890-kilometre-pipeline from the Ichthys Field offshore Western Australia where it is processed, ready for export to the Indo-Pacific region.

In its raw or unprocessed form, natural gas contains CO_2. This is separated from LNG during processing. INPEX on behalf of its joint venture participants is proposing to install a CCS compression system and additional modularised equipment to upgrade the Acid Gas Removal Units (AGRU) at the Ichthys LNG onshore facilities.

This will allow the CO_2 removed from the natural gas to be redirected, compressed, treated, transported by pipeline and stored permanently in deep subsea geological basins.

To support this, construction and installation activities are proposed to connect with existing Ichthys LNG processing systems – located in LNG Trains 1 and 2.

General Processing at Ichthys LNG

Scan to watch

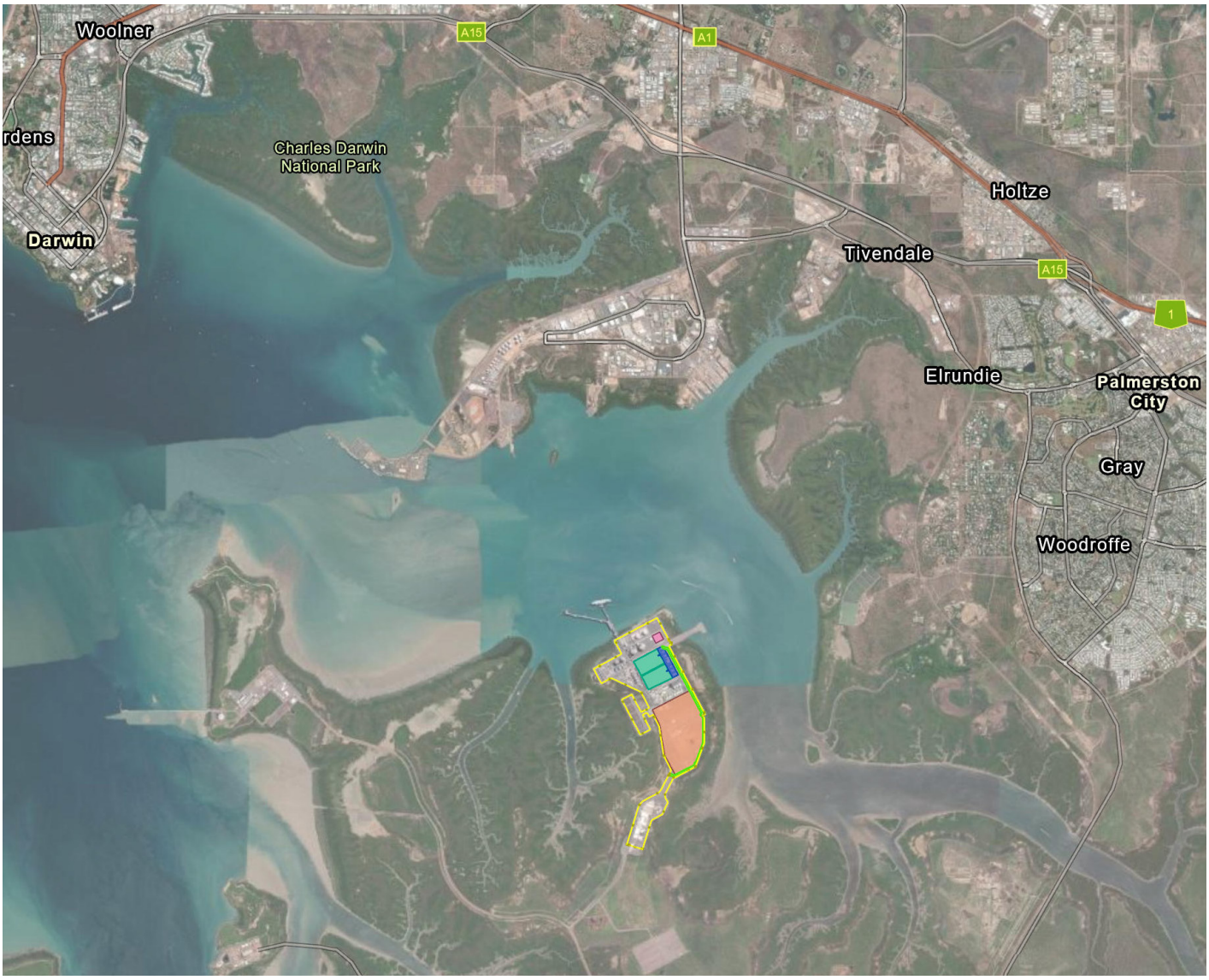

Figure 1 Location of proposed upgrade and new infrastructure works within the Ichthys LNG onshore facilities.

Overview of proposed construction and installation activities at Ichthys LNG

The following activities are required during construction and installation:

- Establishment of temporary laydown and office areas within the existing site boundary.
- Site preparation and completion of civil works.
- Maintenance dredging at the module offloading facility (MOF).
- Delivery of up to seven pre-fabricated modules and up to 12 pipe racks via the MOF.
- Installation, testing and preservation of new CCS compression system (including compressors and an in-plant section of CO_2 export pipeline).
- Installation, testing and preservation of AGRU modules.

Overview and location of proposed works

All works associated with construction and installation of new infrastructure is located wholly within the Ichthys LNG plant boundary, within pre-existing disturbed areas. No new clearing will be required.

Minor maintenance dredging works are proposed within the existing berthing pockets of the MOF. Spoil removed during maintenance dredging is proposed to be disposed of in the Beagle Gulf, at the same dredge spoil disposal area used during the construction of Ichthys LNG.

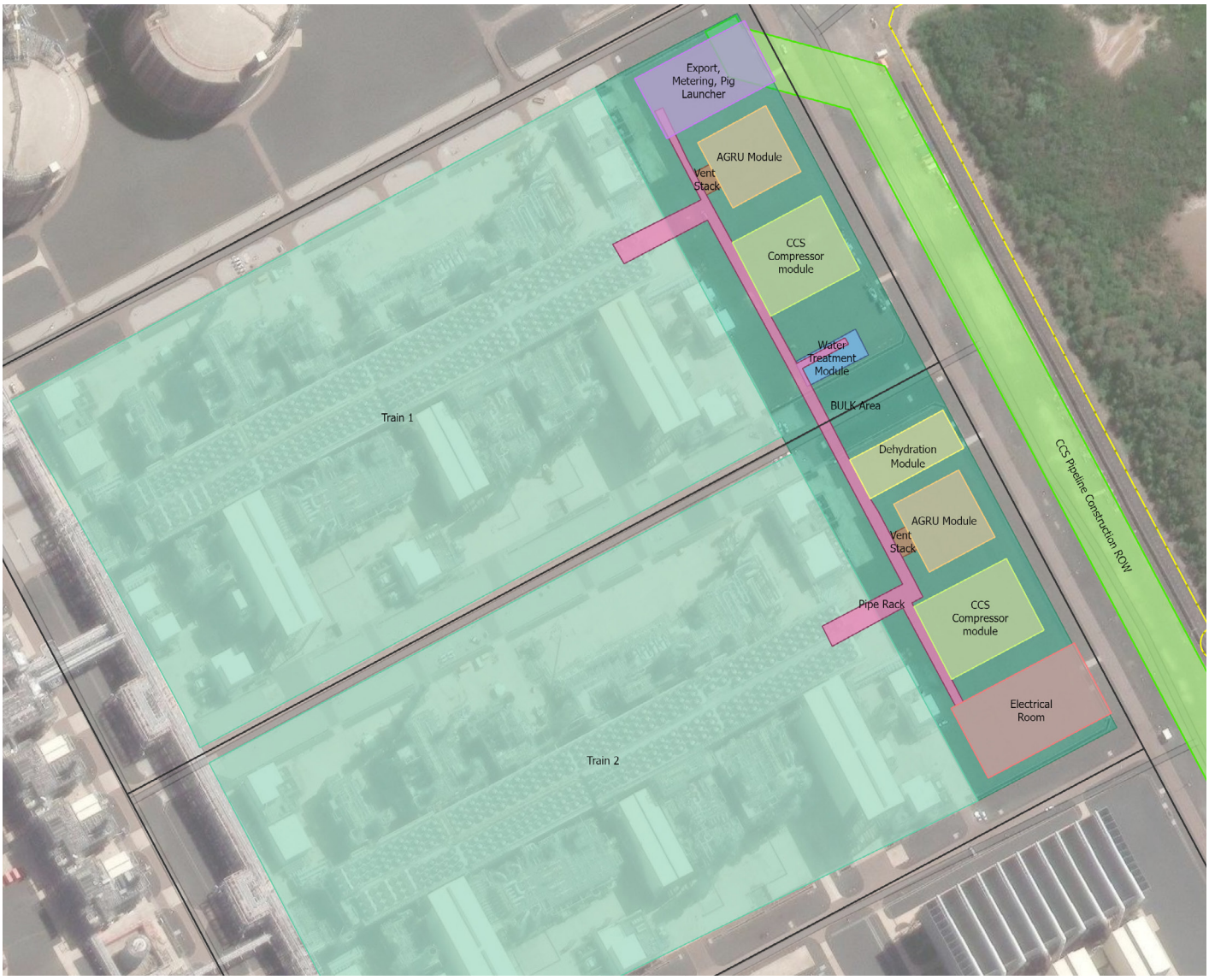

Figure 2 Overview of proposed infrastructure upgrades at the Ichthys LNG onshore facilities.

Establishment of temporary facilities and laydown areas

From the commencement of site preparation and throughout the construction phase, areas within Ichthys LNG will be needed for laydown or to cater for other temporary facilities. These may include, but are not limited to, storage areas for equipment and materials (piping materials, cables, steel, etc.), temporary workshops, offices and cribs, ablution facilities and parking areas.

Site preparation and civil works

Site preparation and civil works are required prior to the installation of prefabricated modules and the in-plant CO_2 pipeline. Such works include, but are not limited to:

- Earthworks and trenching required to support module foundation, in-plant CO_2 pipeline and other underground utilities.
- Construction of module foundations including installation of bored piles and concrete pads.

Figure 3 Berth pockets at the module offloading facility.

Maintenance dredging at the Module Offloading Facility (MOF) berth pockets

Over time, sediment has naturally accumulated within areas of the existing dredged MOF footprint berth pockets. This has the potential to impact on the MOF's operability, in terms of restricting safe clearance of vessels which will be used to import modules. To support the proposed upgrades, a minor maintenance dredging campaign is required to be undertaken within the existing berth pockets of the MOF (Figure 3).

Maintenance dredging at the MOF is proposed to be undertaken by a single backhoe dredge. A maximum volume Figure 3 Berth pockets at the module offloading facility.

Figure 4 Minor dredging campaign location and dredge spoil disposal area. of 50,000 cubic metres of spoil is required to be removed and loaded onto a split hopper barge and subsequently transported to a dredge spoil disposal area (DSDA – Figure 4).

The duration of the MOF maintenance dredging campaign is estimated to be approximately eight weeks. The timing of the campaign is indicatively scheduled for Q3/ Q4 2026, prior to the arrival of the first modules; however, the exact timing is subject to final environmental and regulatory approvals and dredge vessel availability (including consideration of dredge vessels of opportunity). To date, no maintenance dredging has been required at the Ichthys LNG onshore facilities.

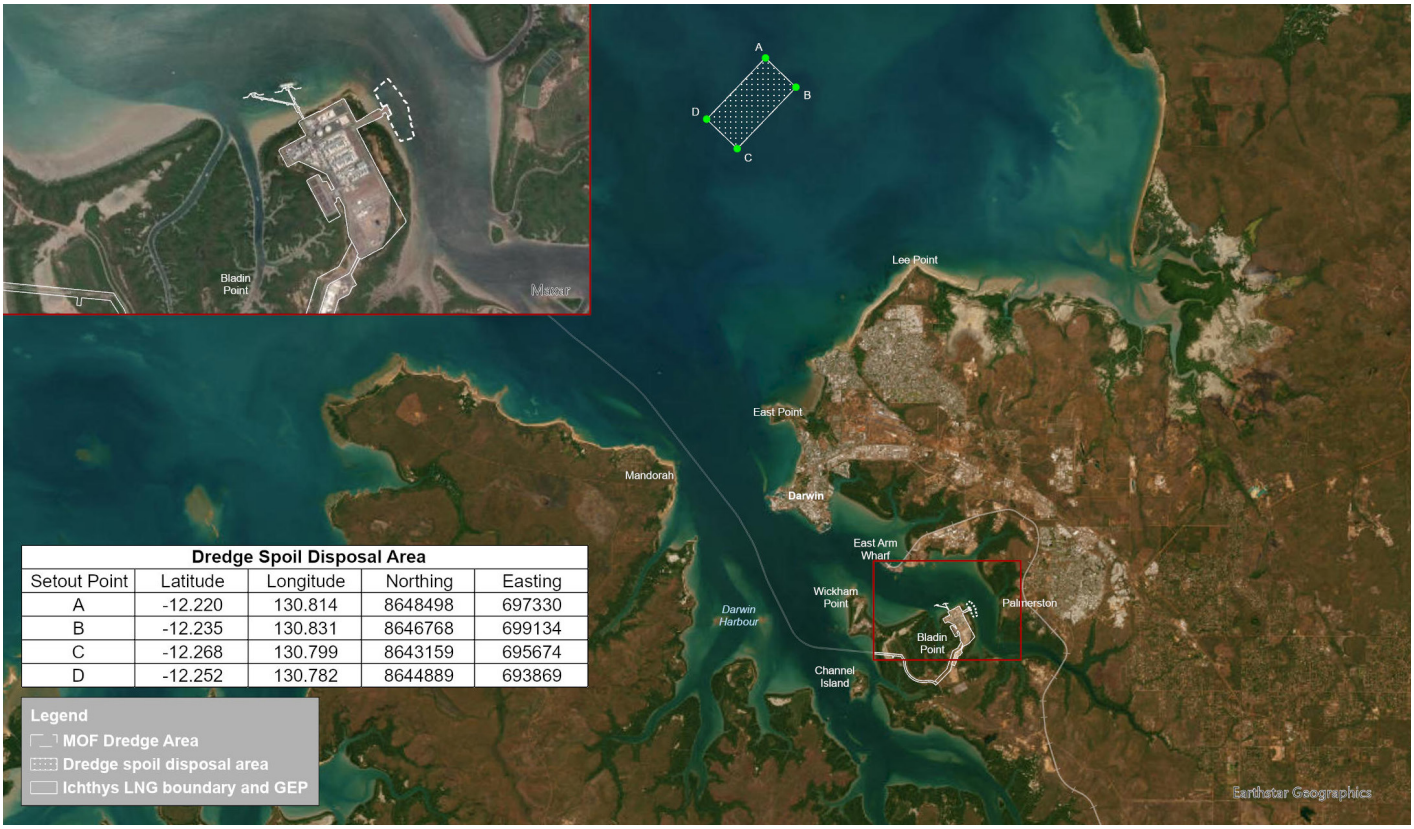

Figure 4 Minor dredging campaign location and dredge spoil disposal area.

Figure 5 Module being unloaded at the MOF during construction of Ichthys LNG onshore facilities in 2016.

Delivery of prefabricated modules

To support the development of the new infrastructure; prefabricated modules will be delivered to the site via specialised vessel/barge and offloaded at the MOF. Between seven and ten equipment modules and a series of pipe rack modules are expected to be delivered at various stages between 2028 and 2029.

New infrastructure to be installed at Ichthys LNG

New infrastructure is proposed to be installed, including:

- Modularised equipment to upgrade two Acid Gas Removal Units
- CCS compressor modules (including auxiliary vents)
- In-plant section of CO_2 export pipeline, export metering, and PIG (pipeline inspection gauge) launcher
- A modular building with combined electrical and control equipment to power and control the new facilities
- A common dehydration module
- A water treatment system, including water tanks, to treat and reuse water recovered from the CO_2 stream.

Refer to Figure 1 showing indicative location of proposed new equipment at the Ichthys LNG onshore facilities.

The new CCS infrastructure will involve installation and non-operational commissioning of the equipment. Once commissioned, the equipment will remain in place and preserved until the CCS storage and transport options have been finalised and environmental approvals are obtained to operate.

Specialised pipeline materials are likely to be delivered to East Arm and transported to site via road or may be brought in over the MOF.

During the initial site preparation and site civil works at Ichthys LNG, the in-plant CO_2 pipeline will be installed in a corridor trench.

The PIG launcher will be installed following site preparation works, to be located at the start of the pipeline. It will remain in situ in preparation for connection to a viable CCS project.

Commissioning and future operation of the CCS export pipeline is subject to a separate approval.

Approvals and timelines management

Ichthys LNG upgrades and new infrastructure

Ichthys LNG upgrades and new infrastructure required within the Ichthys LNG onshore facility will be referred under the Northern Territory Environment Protection Act 2019 and Commonwealth EPBC Act.

INPEX is currently preparing the referrals to support these activities. The Ichthys LNG upgrades and new infrastructure referral is planned to be submitted in Q4 2024.

MOF maintenance dredging

Maintenance dredging was assessed as part of the larger Ichthys Project Commonwealth approval under the EPBC Act, as such EPBC 2008/4208 Condition 10 of the Ichthys LNG Project applies. In contrast, in the Northern Territory, any dredging activity needs to be referred to the Minister for consideration under the Northern Territory Environment Protection Act 2019. INPEX is currently undertaking sediment transport modelling to understand the potential impacts associated with maintenance dredging at the MOF, to assist in determining the appropriate management and monitoring required. The outputs of modelling, management and monitoring for the activity will be presented in the subsequent referral application and MOF Maintenance Dredging and Spoil Disposal Management Plan (MOF Maintenance DSDMP) developed for the campaign. The MOF Maintenance dredging referral is planned to be submitted in Q1 2025.

Indicative timeline

The earliest the proposed works could commence at Ichthys LNG is in Quarter 3 2026. Works will progressively occur at Ichthys LNG until completed; provisionally estimated to be sometime in either Quarter 4 2029 or Quarter 1 2030.

Working with the local community

At INPEX, we believe effective community engagement is essential to forging trusted and strong relationships within the communities in which we operate. We engage and work closely with stakeholders and ensure information is readily available to the community, as well as providing mechanisms for feedback and response.

Further information and feedback

INPEX welcomes your feedback on the proposed maintenance dredging activities. To provide feedback or to request additional information, please see the 'Comments and enquiries' section below. All communications will be logged, assessed and acknowledged with a response.

How is your feedback used?

Feedback received will be used to inform relevant Northern Territory Government approval applications required for the onshore facilities upgrades and the management framework of the project. A summary of the feedback received from stakeholders and how INPEX has addressed this feedback will be provided to the Northern Territory Environment Protection Authority.

Comments and enquiries

If you would like to provide comment or seek further information, or if you do not wish to receive future communications about the maintenance dredging activities, please contact:

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Ichthys LNG is a joint venture between INPEX group companies (the Operator with a 67.82% interest), major partner TotalEnergies (a 26% interest), Australian subsidiaries of CPC Corporation Taiwan (participating interest: 2.625%), Osaka Gas (participating interest: 1.2%), Kansai Electric Power (participating interest: 1.2%), JERA (participating interest: 0.735%) and Toho Gas (participating interest: 0.42%).

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