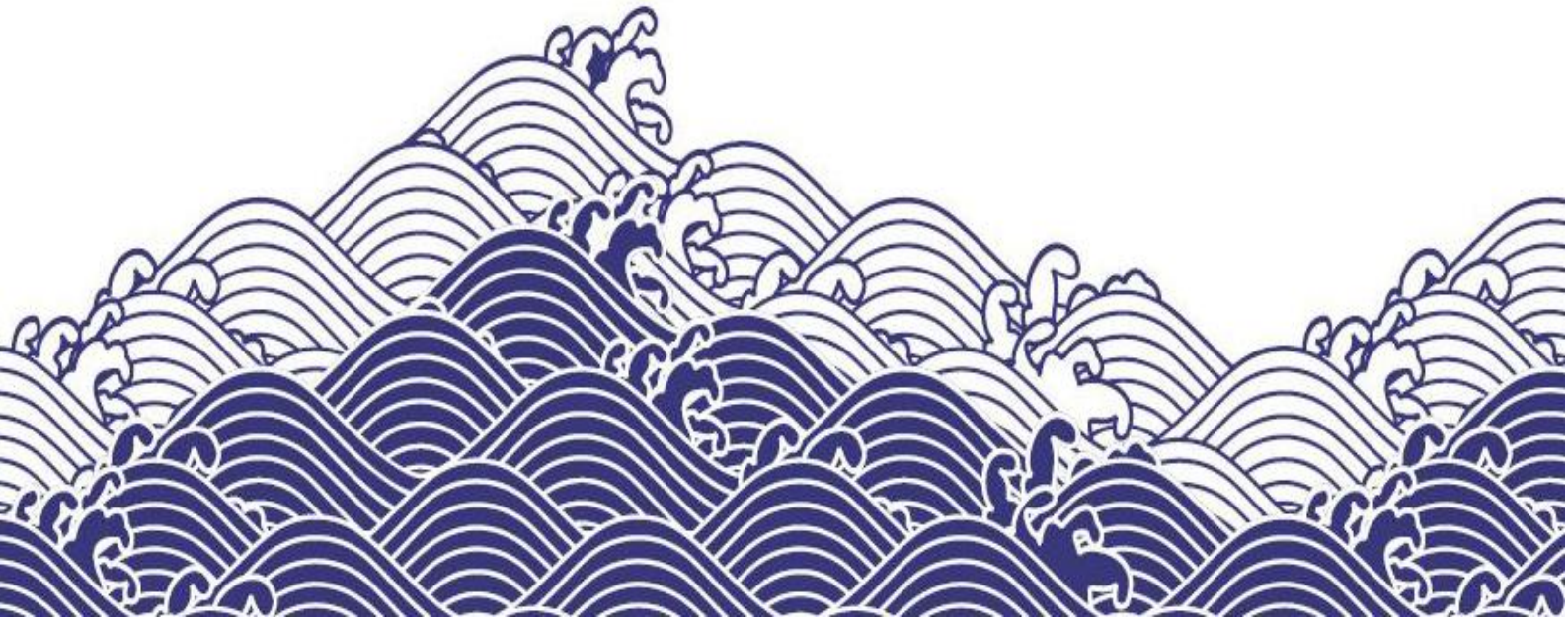
# Ichthys LNG AGRU Upgrade and CCS Preparedness Project – Supplementary Information Report



**RECORD OF AMENDMENT**

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# 1 INTRODUCTION

## 1.1 Background

INPEX Australia is:

- actively working to decarbonise its existing assets within Australia, including the Ichthys LNG facility located on Middle Arm, Northern Territory (NT); and
- investing in low-carbon business solutions such as the proposed Bonaparte Carbon Capture and Storage (CCS) Project which would provide an opportunity for existing and future industrial emitters (including Ichthys) to reduce $CO_2$ emissions and thereby would contribute to the decarbonisation of society more broadly.

To support the above two business activities INPEX has been preparing a number of approval applications, including referrals required under the Northern Territory *Environment Protection Act 2019* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The first referrals relating to the Ichthys LNG AGRU Upgrade and CCS Preparedness Project, were submitted to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) and the Northern Territory Environment Protection Authority (NT EPA) on 11 September 2025. Subsequent referrals relating to the Bonaparte CCS Project are planned to be submitted in Quarter 4, 2025.

Following submission of the Ichthys LNG AGRU Upgrade and CCS Preparedness Project referral, INPEX received a request from the NT EPA to provide additional information to support the Northern Territory referral application.

## 1.2 Purpose

This Ichthys LNG AGRU Upgrade and CCS Preparedness Project: Supplementary Information Report (this report) contains the additional information required to support the referral for the Ichthys LNG AGRU Upgrade and CCS Preparedness Project.

For ease of reference Table 1-1 outlines the specific information requested by the NT EPA and where this has been presented within this report.

**Table 1-1: Additional information request concordance table**

| Requested additional information | Section within this report |
|---|---|
| Provide a detailed description of INPEX's overall strategic plan regarding this referral and associated projects and activities. Additional information is required on the nature and scale of associated projects and activities. | Section 2 provides an overview of all proposed INPEX operated projects. |
| Justify why associated activities and projects are not considered as part of this referral and assessment of the project and associated activities cannot be completed under one referral. | Section 3 includes the justification as to why the Ichthys LNG AGRU Upgrade and CCS Preparedness Project and Ichthys CCS Project (collectively referred to as the Ichthys projects) are able to be considered as a staged/split referral.<br>Section 4 includes the justification as to why the Ichthys projects are not considered to be part of the Bonaparte CCS Project. |

| Requested additional information | Section within this report |
|---|---|
| Clearly identify the timing of the associated activities and projects such as the Ichthys CCS Project and Bonaparte CCS project. This may be represented similar to figure 2-1 of the referral report. | Section 2.3 provides a summary of the execution schedules for the associated Ichthys projects and the Bonaparte CCS Project. |
| Clearly identify the locations of the other associated activities and projects, using figures / maps to support this. | A pictorial overview of all proposed INPEX operated projects is shown in Figure 2-5.<br>The location of Ichthys LNG AGRU Upgrade and CCS Preparedness Project activities are shown in Figure 2-1 and Figure 2-2.<br>The proposed location of Ichthys CCS Project activities are shown in Figure 2-3 and Figure 2-4.<br>The proposed location of Bonaparte CCS Project activities within the Northern Territory are shown in Figure 2-7 and Figure 2-8. |
| Identify the proposed timing of regulatory approvals relevant to the associated activities and projects that INPEX considers do not form part of this referral. | The a list of key legislation and approvals applicable to both the Ichthys projects and the Bonaparte CCS Project is provided in Section 2.1.2, Section 2.2.1 and Section 2.4. |

# 2 OVERVIEW OF PROPOSED INPEX PROJECTS

The following sections provide an overview of all INPEX proposed projects either referred or proposed to be referred to the NT EPA under the *Environment Protection Act 2019* and the DCCEEW under the *Environment Protection and Biodiversity Conservation Act 1999*. A summary of these is presented in Table 2-1.

**Table 2-1: Overview summary of proposed INPEX projects**

| Referral | Joint venture | Operator | Summary | Approval strategy |
|---|---|---|---|---|
| Ichthys LNG AGRU Upgrade & CCS Preparedness Project (Referral 1) | Ichthys LNG Pty Ltd (an incorporated joint venture) | INPEX Operations Australia Pty Ltd | Installation of new infrastructure within the Ichthys LNG facility required to support decarbonisation ambitions. Necessary upgrades to the existing acid gas removal units (AGRUs). Refer to Section 2.1. | Staged/split referral. Refer to Section 2.1.2. |
| Ichthys CCS Project (Referral 2) | Ichthys LNG Pty Ltd (an incorporated joint venture) | INPEX Operations Australia Pty Ltd | Installation of a $CO_2$ pipeline and connecting pipeline tie-in stations on Middle Arm to facilitate connection to a future $CO_2$ storage project (either the Bonaparte CCS Project or the Bayu-Undan CCS Project), subject to commercial agreements. Operation of Ichthys CCS enabling infrastructure and upgraded AGRU within the Ichthys LNG facility and on Middle Arm, as applicable. Refer to Section 2.1. | Staged/split referral. Refer to Section 2.1.2. |
| Bonaparte CCS Project (Referral 3) | Bonaparte CCS Assessment Joint Venture | INPEX Operations Australia Pty Ltd | Installation of $CO_2$ onshore inlet station, allowing for the receiving and gathering of $CO_2$ streams from third-party customers, which would then be transported via a $CO_2$ pipeline and sequestered at an offshore storage location located in the Commonwealth waters of the Bonaparte Gulf. Refer to Section 2.2. | Referred as a stand-alone Project. Refer to Section 2.2.1. |

## 2.1 Ichthys projects

INPEX is actively working to decarbonise its activities. In context of the Ichthys LNG facility this is partly achieved through integration of a CCES and renewable power into the existing facility systems, with the aim of reducing the current $CO_2$ footprint of the facility.

The Ichthys related projects and associated referrals consist of the following:

- Ichthys LNG AGRU Upgrade and CCS Preparedness Project
- Ichthys Carbon Capture and Storage Project.

These projects are both being executed by INPEX on behalf of Ichthys LNG Pty Ltd (an unincorporated joint venture). The delegated operator for the projects is INPEX Operations Australia Pty Ltd.

The scope and activities covered by each of the referrals are described in Table 2-2 and Table 2-3. The location of the works associated with the Ichthys LNG AGRU Upgrade and CCS Preparedness Project (Referral 1) is shown in Figure 2-1 and Figure 2-2. The location of the works associated with the Ichthys CCS Project (Referral 2) is shown in Figure 2-3 and Figure 2-4. The execution schedules and the relevant legislation/required approvals governing the projects is described in Section 2.3 and Section 2.4 respectively.

**Table 2-2: Scope of the Ichthys project/s referrals**

| Referral/ Project | Scope covered within the referral |
|---|---|
| Ichthys LNG AGRU Upgrade & CCS Preparedness Project<br>(Referral 1) | • Activities to support decarbonisation of the Ichthys LNG facility:<br>- Construction and cold commissioning of a $CO_2$ compression and export system (CCES; compression, dehydration modules and auxiliary infrastructure) within the Ichthys LNG facility boundaries.<br>- Construction of a $CO_2$ pipeline within the Ichthys LNG facility boundaries.<br>- Construction and cold commissioning of supplementary power infrastructure and cabling within the Ichthys LNG facility boundary to allow for future import of green power sourced from a third-party.<br>• Activities required to support Ichthys LNG facility routine operations:<br>- Upgrades to existing AGRUs to allow for the introduction of Plover gas as approved under the Ichthys LNG Project (EPBC 2008/4208). |
| Ichthys CCS Project<br>(Referral 2) | • Activities required to support Ichthys LNG facility decarbonisation:<br>- Construction of 12 km $CO_2$ export pipeline on Middle Arm. The $CO_2$ export pipeline comprised of two sections, with one section designed to provide flow of $CO_2$ in either direction to accommodate the two storage options being considered.<br>- Commissioning of entire $CO_2$ pipeline (pipeline components within the Ichthys LNG facility and on Middle Arm peninsula).<br>- Construction and commissioning of two pipeline tie-in stations on Middle Arm Peninsula (in proximity to the existing Darwin LNG facility and proposed Bonaparte CCS Project inlet station).<br>- Hot commissioning of Ichthys LNG facility CCES assets.<br>- Operations of all Ichthys CCS enabling infrastructure (located on both Middle Arm peninsula and within the Ichthys LNG facility).<br>- Construction, commissioning and operations of a supplementary power intake sub-station and cabling on Middle Arm<br>- Hot commissioning and operations of supplementary power infrastructure and cabling within the Ichthys LNG facility.<br>• Activities required to support Ichthys LNG facility routine operations:<br>- Hot commissioning of and operations of upgraded AGRUs.<br>- Suspension of use of redundant acid gas incinerators once CCES assets are ready for use and a final storage location is available. |

**Table 2-3: Matrix showing the scope split between the Ichthys project/s referrals**

| | | Project infrastructure | Project activities | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Construction and installation | Pre-commissioning | Cold commissioning* | Hot commissioning* | Operations | Decommissioning |
| Referral 1 | Ichthys LNG AGRU Upgrade & CCS Preparedness Project | **Ichthys LNG facility infrastructure** | | | | | | |
| | | Acid gas removal units (upgraded) | ✓ | ✓ | ✓ | × | × | × |
| | | $CO_2$ compression and export system | ✓ | ✓ | ✓ | × | × | × |
| | | Supplementary power infrastructure | ✓ | ✓ | ✓ | × | × | × |
| | | $CO_2$ pipeline | ✓ | × | × | × | × | × |
| Referral 2 | Ichthys CCS Project | **Middle Arm infrastructure** | | | | | | |
| | | Ichthys CCS pipeline | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Ichthys CCS pipeline (Darwin LNG link) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Ichthys CCS pipeline tie-in station | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Darwin LNG pipeline tie-in station | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Supplementary power intake substation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Power and communications infrastructure | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | **Ichthys LNG facility infrastructure** | | | | | | |
| | | Acid gas removal units (upgraded) | × | × | × | ✓ | ✓ | ✓ |
| | | $CO_2$ compression and export system | × | × | × | ✓ | ✓ | ✓ |
| | | Supplementary power infrastructure | × | × | × | ✓ | ✓ | ✓ |
| | | $CO_2$ pipeline | × | ✓ | ✓ | ✓ | ✓ | ✓ |

* Cold commissioning includes all activities which could be completed prior to the introduction of process fluids or $CO_2$, while hot commissioning is the is the operational testing when these are introduced to a system for the first time to test and validate functionality and performance under operating conditions.


**Figure 2-1: Proposed Ichthys LNG AGRU Upgrade and CCS Preparedness Project – Project area**


**Figure 2-2: Proposed Ichthys LNG AGRU Upgrade and CCS Preparedness Project – Project footprint**


**Figure 2-3: Proposed Ichthys CCS Project – Project area and footprint**

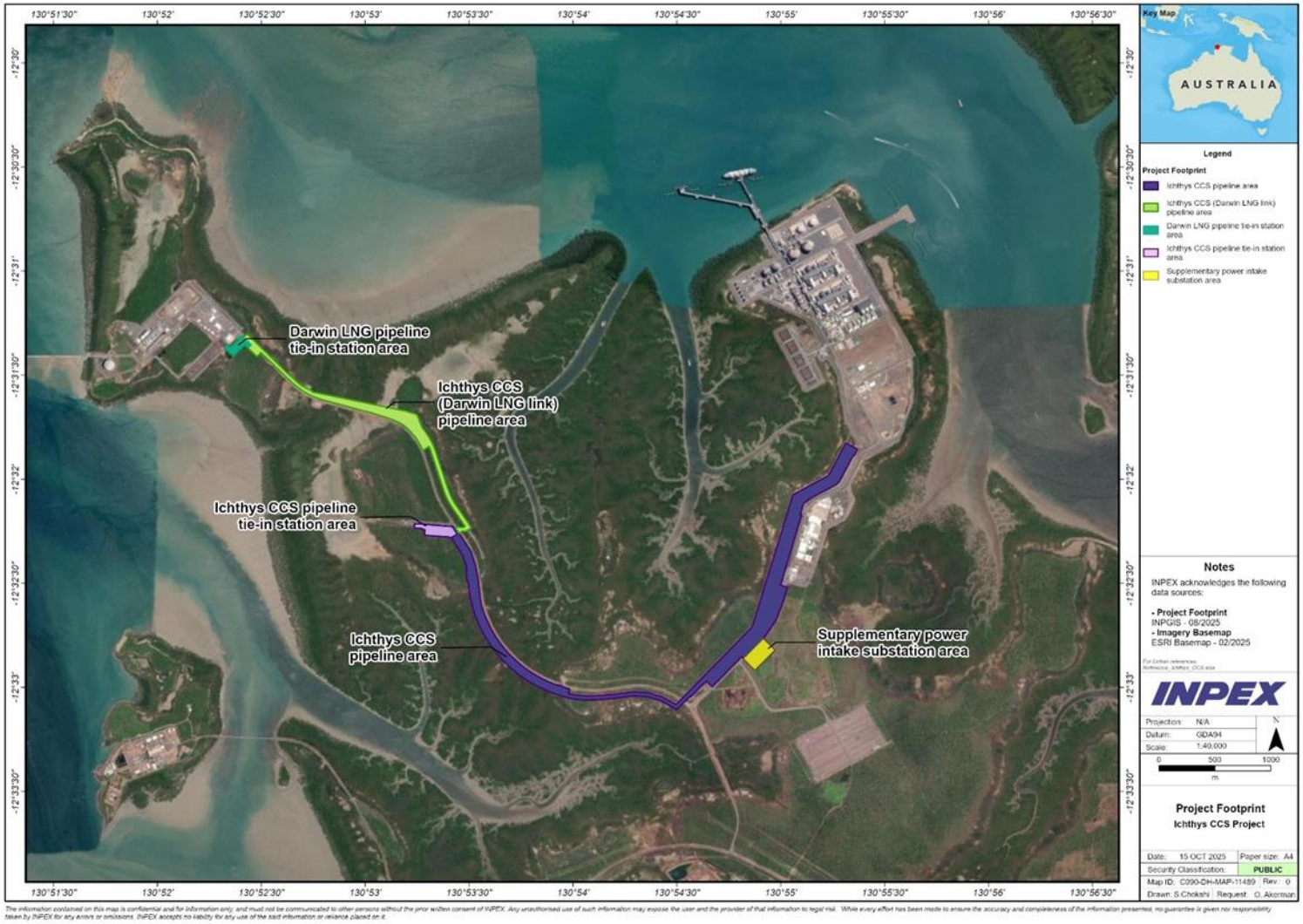


**Figure 2-4: Proposed Ichthys CCS Project – defined areas of the Project footprint**

### 2.1.1 Interface with other proposed $CO_2$ storage projects

As previously noted, the Ichthys CCS Project proposes to construct a buried onshore $CO_2$ pipeline system between the Ichthys LNG facility and the inlet to a potential $CO_2$ sequestration project. The pipeline system would extend from the Ichthys LNG facility boundary on Bladin Point to the Darwin LNG facility on Wickham Point. The pipeline system would comprise two pipeline sections both of which would interface with pipeline tie-in stations located on Middle Arm.

The pipeline section between the Ichthys LNG facility and a pipeline tie-in station located in area of the Ichthys gas export pipeline beach valve, is designed to export $CO_2$ in a single direction. This section of the pipeline is referred to as the Ichthys CCS pipeline. The area where the proposed Ichthys CCS pipeline would be located and the interfacing pipeline tie-in station (referred to as the Ichthys CCS pipeline tie-in station) is shown on Figure 2-4. This infrastructure would allow the Ichthys LNG facility to export $CO_2$ to interfacing Bonaparte CCS Project infrastructure (i.e. an onshore inlet station) for sequestration within a storage formation located in the Joseph Bonaparte Gulf.

The pipeline section between the Ichthys CCS pipeline tie-in station and a pipeline tie-in station located adjacent to the Darwin LNG facility, is designed to direct the flow of $CO_2$ in either direction. This section of the pipeline is referred to as the Ichthys CCS (Darwin LNG link) pipeline. The area where the proposed Ichthys CCS (Darwin LNG link) pipeline would be located and the interfacing pipeline tie-in station (referred to as the Darwin LNG pipeline tie-in station) is shown on Figure 2-4. The Ichthys CCS (Darwin LNG link) pipeline and the pipeline tie-in station would allow for either of the following:

- the Ichthys LNG facility to export $CO_2$ to future interfacing Bayu-Undan CCS infrastructure, for sequestration in a geological formation located in offshore waters of Timor Leste; or
- the Darwin LNG facility to export $CO_2$, via the Ichthys CCS pipeline inlet station to interfacing Bonaparte CCS Project infrastructure.

The ultimate $CO_2$ storage solution for reservoir $CO_2$ generated at the Ichthys LNG facility is yet to be finalised and would be subject to future commercial agreements with relevant owners of such projects.

Figure 2-5 shows the interface with proposed $CO_2$ storage projects within the vicinity of the Ichthys LNG facility. The INPEX proposed Bonaparte CCS Project is further described in more detail in Section 2.1.1, with a summary of the Bayu-Undan CCS Project provided in the following section.

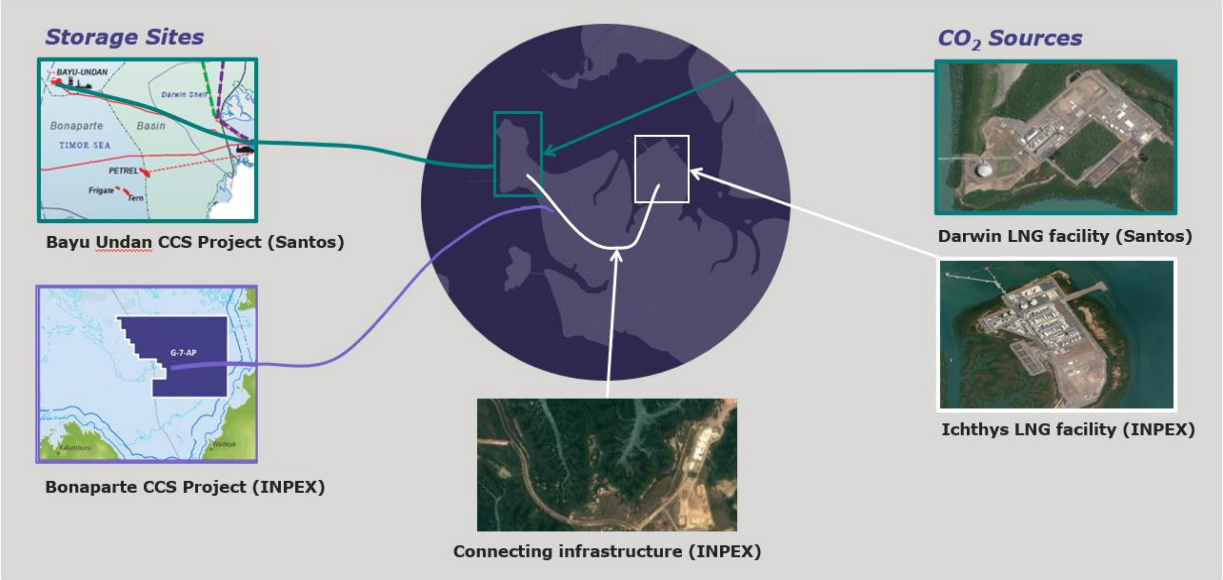


**Figure 2-5: Interfaces with proposed $CO_2$ storage projects**

### Bayu-Undan CCS Project

The Bayu-Undan CCS Project targets the capture of up to 10 Mtpa of $CO_2$ at a Darwin hub - initially from the Darwin LNG facility (DLNG), with potential future expansion to a proximal third party. Captured $CO_2$ would be transported to and stored in the offshore Bayu-Undan reservoir (in Timor Leste waters).

The project would require modifications to the existing Darwin LNG facility, which is proposed as the foundation for a $CO_2$ processing hub. It would also require the repurposing of the Bayu-Undan to Darwin gas export pipeline, the offshore processing facility and the facility wells for reinjection of processed $CO_2$.

The project would be subject to regulatory approvals under the Northern Territory, Commonwealth and Timor-Leste regulatory regimes to facilitate the transboundary movement and sequestration of $CO_2$. INPEX understands that Santos is working closely with the Timor-Leste Government to reach the agreements and regulatory framework required for the project.

The timing of when the Bayu-Undan CCS Project would be ready for first injection is yet to be announced.

## 2.1.2 Approval strategy

The Ichthys related project scopes of works are addressed within two separate referrals and are considered to be split/staged referrals. The timing of the referral submissions and assumed method of assessment[1] for each of the projects is summarised in Table 2-2.

Note, Table 2-2 reflects the assumed level of assessment carried by INPEX for scheduling/planning purposes. When determining the method of assessment, INPEX considered the following:

[1] The Regulation 5 of the Environment Protection Regulations 2020 outline the four methods of assessment that could be required for a referred action: assessment by referral information, assessment by supplementary environmental report, assessment by environmental impact statement and assessment by inquiry.

- Whether there is sufficient information to inform an assessment of the potential risks/impacts of the proposed activities (i.e. are further additional studies/surveys required to inform these).
- The nature and scale of the potential risks/impacts associated with proposed activities.
- The current level of uncertainty in being able to quantify potential risks/impacts.
- Benchmarking against similar projects/activities, previously considered by the NT EPA.

INPEX acknowledges that the determination of the method of assessment for each of the Ichthys project referrals is subject to a final decision by the NT EPA.

Justification as to why INPEX believes a split/staged approach to obtaining approvals for the associated Ichthys projects is appropriate, is provided in Section 3, with justification as to why INPEX considers the Bonaparte CCS Project and the Ichthys project scopes as separate projects, and not a single larger action is provided in Section 4.

**Table 2-4: Timing of referral submissions to the NT EPA and assumed method of assessment**

| Referral/Project | Referral submission timing | INPEX target primary approval obtained by date | Assumed method of assessment | Rational |
|---|---|---|---|---|
| Ichthys LNG AGRU Upgrade and CCS Preparedness Project<br>(Referral 1) | Submitted September 2025 | Q1 2026 | Assessment by referral information | • The scope is limited to construction and cold-commissioning activities within the Ichthys LNG facility boundaries.<br>• Proposed activities would not result in significant impacts to any identified NT EPA environmental factors and values.<br>• Potential risks/impacts associated with the proposed activities are well understood.<br>• Sufficient information has been included within the referral to provide a high-level of confidence that any potential risks/impacts can be managed appropriately. |
| Ichthys CCS Project<br>(Referral 2) | Q4 2025 | Q1 2027 | Assessment by supplementary environment report | • The scope includes construction, commissioning and operation of infrastructure on the broader Middle Arm peninsula; and the hot-commissioning and operation of infrastructure within the Ichthys LNG facility and on Middle Arm peninsula.<br>• Aspects of the design of the infrastructure on Middle Arm is required to be informed by future additional studies.<br>• INPEX does not believe project activities would result in significant impacts on NT EPA environmental factors and values; however, due to information gaps there is a level of uncertainty. As such, INPEX acknowledges that further definition of some of the potential risks/impacts is required.<br>• Future studies/surveys have been identified to inform a more detailed assessment of the potential risk/impacts, to provide confidence to the community and the NT EPA that potential impacts/risks are manageable and project activities would not result in significant impacts. |

## 2.2 Bonaparte CCS Project

INPEX is actively investing in the proposed Bonaparte CCS Project which through the proposed development of a large-scale multi-user CCS facility would offer a mechanism to third parties to reduce their $CO_2$ footprint.

The Bonaparte CCS Project is being executed by INPEX on behalf of the Bonaparte CCS Assessment Joint Venture. The delegated operator for the project is INPEX Operations Australia Pty Ltd.

The Bonaparte CCS Project is proposing to develop infrastructure to receive, transport and sequester $CO_2$ within a geological storage formation located approximately 2,000 m below the seabed.

The proposed infrastructure for sequestration would be located approximately 250 km west of Darwin in the Joseph Bonaparte Gulf. The transport infrastructure would be comprised of a $CO_2$ pipeline and control cable extending between the Joseph Bonaparte Gulf and the Middle Arm peninsula in Darwin where the onshore inlet station (to receive and gather $CO_2$ streams) is proposed to be developed.

Third-party $CO_2$ sources are intended to be received from potential customers in the region through commercial agreements, including reservoir $CO_2$ from Ichthys LNG facility.

Figure 2-6 shows an indicative image of the potential interface between the proposed Ichthys CCS Project (refer to Section 2.1) infrastructure on Middle Arm, and the proposed Bonaparte CCS Project infrastructure.

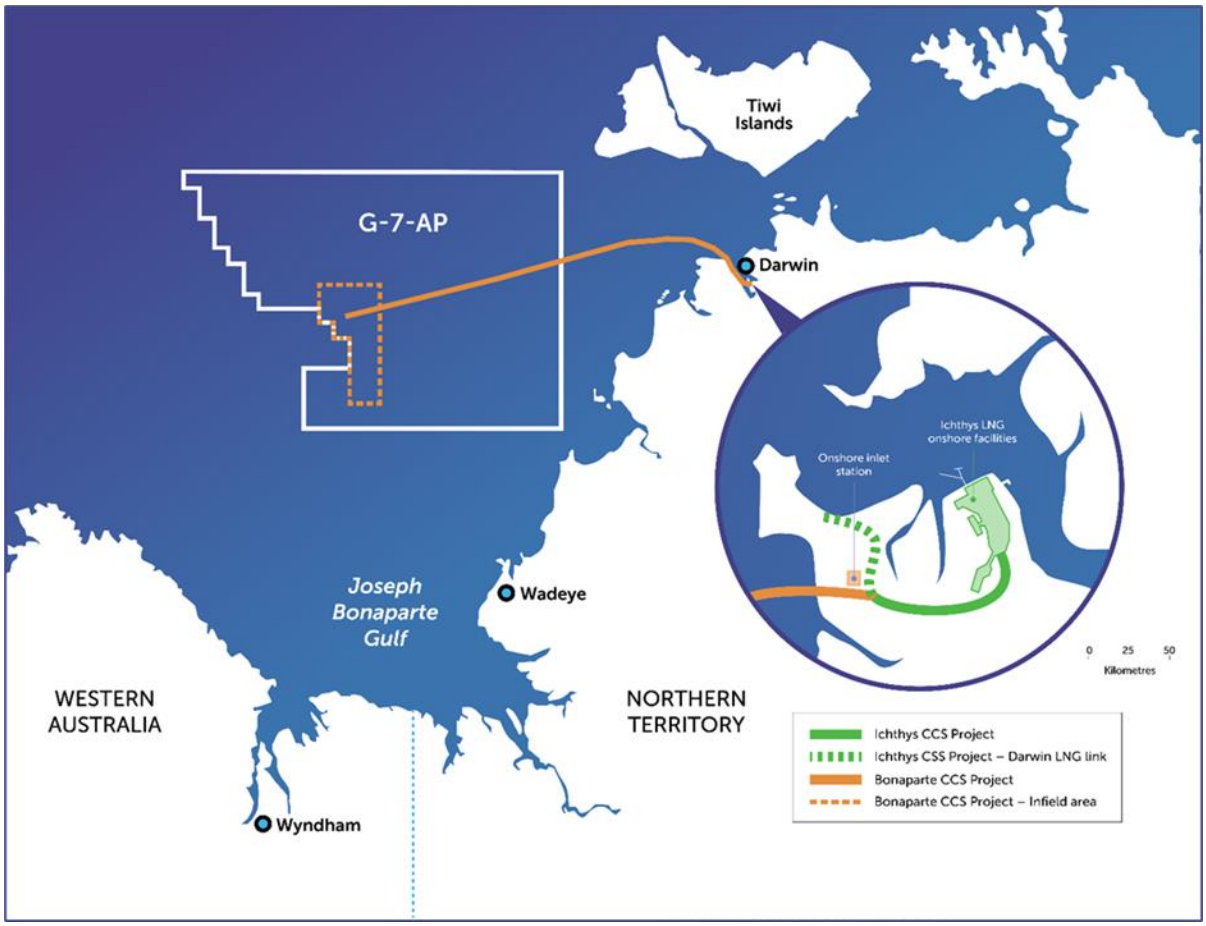


**Figure 2-6: Indicative interface between the proposed Ichthys CCS Project infrastructure and the proposed Bonaparte CCS Project**

The proposed infrastructure and activities associated with the Bonaparte CSS Project within the Northern Territory are described in Table 2-5, with the location of these is shown in Figure 2-7 and Figure 2-8.

**Table 2-5: Scope of the Bonaparte CCS Project referral**

| Referral/ Project | Scope covered within the referral |
|---|---|
| Bonaparte CCS Project<br>(Referral 3)<br>Northern Territory scope only | • Construction, commissioning and operations of an onshore inlet station (which gathers and receives $CO_2$ from third-party sources) on Middle Arm peninsula. The onshore inlet station would include facilities and equipment to filter, and fiscally meter the $CO_2$ stream, including monitoring of key $CO_2$ stream components.<br>• Construction, commissioning and operations of a $CO_2$ transport pipeline and subsea power and fibre optic (SPFO) cable(s) extending from the onshore inlet station located on Middle Arm out to the Northern Territory/Commonwealth border. Activities supporting the construction and commissioning of the $CO_2$ transport pipeline and SPFO cable(s) include:<br>- geophysical and geotechnical surveys of the $CO_2$ transport pipeline and subsea infrastructure.<br>- Pre-lay and post-lay surveys of the $CO_2$ transport pipeline, subsea infrastructure and onshore infrastructure.<br>- shore crossing trench and shore-pull preparation for $CO_2$ transport pipeline and cables<br>- dredging (trenching) within Darwin Harbour and spoil disposal activities at existing spoil grounds in the Beagle Gulf<br>- pre-lay span rectification, foundation installation and cable crossings<br>- pipelay<br>- rock armouring of pipeline within Darwin Harbour<br>- SPFO cable(s) installation<br>- flooding, cleaning and gauging and testing - mechanical completion of $CO_2$ transport pipeline<br>- pre-commissioning including dewatering, drying (mono ethylene glycol (MEG) and air discharges) and preservation with nitrogen of the $CO_2$ transport pipeline<br>- commissioning<br>- $CO_2$ transport pipeline first fill with $CO_2$.<br>- start-up operations.<br>• Operations, including transport of $CO_2$ and measurement, monitoring and verification (MMV) and inspection, maintenance and repair (IMR) of the $CO_2$ transport pipeline, cables and onshore station infrastructure. |

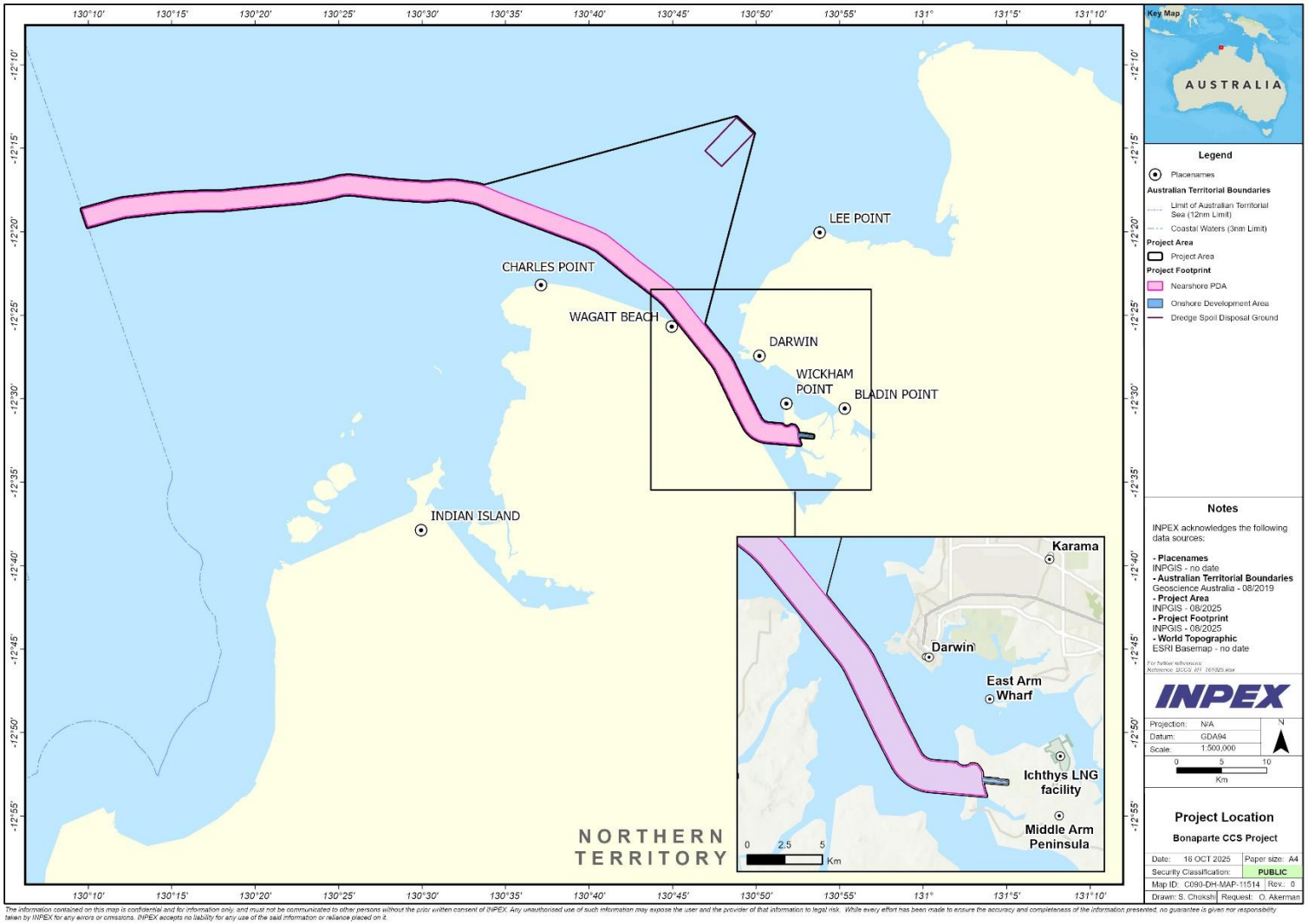


**Figure 2-7: Proposed location of Bonaparte CCS Project within the Northern Territory – Project area**


**Figure 2-8: Proposed Bonaparte CCS Project – Onshore development area**

### 2.2.1 Approval strategy

The proposed Bonaparte CCS Project is being referred to the NT EPA as a stand-alone project.

The timing of the Bonaparte CCS Project referral submission and assumed method of assessment is summarised in Table 2-6.

Note, Table 2-6 reflects the assumed method of assessment carried by INPEX for scheduling/planning purposes. When determining the method of assessment that should be carried for the Bonaparte CCS Project, INPEX considered the following:

- Whether there is sufficient information to inform an assessment of the potential risks/impacts of proposed activities (i.e. are further additional studies/surveys required to inform these)
- The nature and scale of the potential risks/impacts associated with proposed activities.
- The current level of uncertainty in being able to quantify potential risks/impacts.
- Benchmarking against similar projects/activities, previously considered by the NT EPA.

INPEX acknowledges, that the determination of the method of assessment for the Bonaparte CCS Project is subject to a final decision by the NT EPA.

Justification as to why INPEX considers the Bonaparte CCS Project and the Ichthys project scopes as separate projects, and not a single larger action is provided in Section 4.

The execution schedules, and relevant legislation and required approvals governing the projects is described in Section 2.3 and Section 2.4 respectively.

**Table 2-6: Timing of referral submission to the NT EPA and assumed level of assessment**

| Referral/Project | Referral submission timing | INPEX target primary approval obtained date | Assumed method of assessment | Rational |
|---|---|---|---|---|
| Bonaparte CCS Project | Q4 2025 | H2 2027 | Supplementary Environment Report/<br>Environmental Impact Statement | • The scope of the referral within the Northern Territory, includes the construction, commissioning and operations of the Northern Territory components of the project.<br>• Aspects of the design of the infrastructure on Middle Arm and the proposed pipeline route within Darwin Harbour and Northern Territory waters, is required to be informed by future additional studies.<br>• INPEX does not believe project activities would result in significant impacts on NT EPA environmental factors and values; however, due to information gaps there is a level of uncertainty. As such, INPEX acknowledges that further definition of some of the potential risks/impacts is required. Future studies/surveys have been identified to inform a more detailed assessment of the potential risk/impacts, to provide confidence to the community and the NT EPA that potential impacts/risks are manageable and project activities would not result in significant impacts. |

## 2.3 INPEX project indicative execution schedules

High-level indicative execution schedules for each of the proposed INPEX projects described in Section 2.1 and Section 2.2 are presented in Figure 2-9, these are subject to receipt of all relevant regulatory and project approvals being obtained.

The overarching strategic schedule for the successful execution of the Ichthys projects is premised on the ability to integrate with a CCS project in early 2031. The schedule aims to minimise the gap between the ability to export Ichthys LNG generated $CO_2$ by this time, and the availability of CCS project to integrate with.

Both the Bayu-Undan and Bonaparte CCS projects are considered. However, due to the uncertainty of the international agreements required to be in place for the Bayu-Undan CCS Project to proceed, the Bonaparte CCS Project is used for the planning basis.

Schedule considerations for integration with a $CO_2$ storage project:

- The indicative execution schedule associated with CCS preparedness activities (i.e. activities described within Referral 1) considers seasonal/key activity constraints and the timing of the availability of a $CO_2$ storage project.
  - The execution schedule for activities required within the Ichthys LNG facility has a 51-month execution schedule, in comparison to the Bonaparte CCS Project which has a much shorter duration of 37 months. To ensure the Ichthys LNG facility CCES infrastructure and $CO_2$ pipeline is available for integration with the Bonaparte CCS Project, works within the Ichthys LNG facility need to commence much earlier.
  - In the early stages of the project certain activities (e.g. civil construction) are constrained to being undertaken within a limited number of sequential dry seasons to maintain the overall execution schedule.
  - The schedule is required to integrate with planned Ichthys LNG facility shutdowns for certain activities including critical tie-ins/vessel modifications.
- The indicative execution schedule associated with Ichthys project activities required on Middle Arm and the overall operations of the Ichthys CCS integrated system (i.e. activities described in Referral 2), is broadly aligned with the projected timing for obtaining approvals for the Bonaparte CCS Project.
  - The execution of the works on Middle Arm required to connect Ichthys LNG facility infrastructure to a storage project is premised on a third-party $CO_2$ storage project having obtained relevant primary approvals and a commercial agreement to receive and store $CO_2$ being in place.

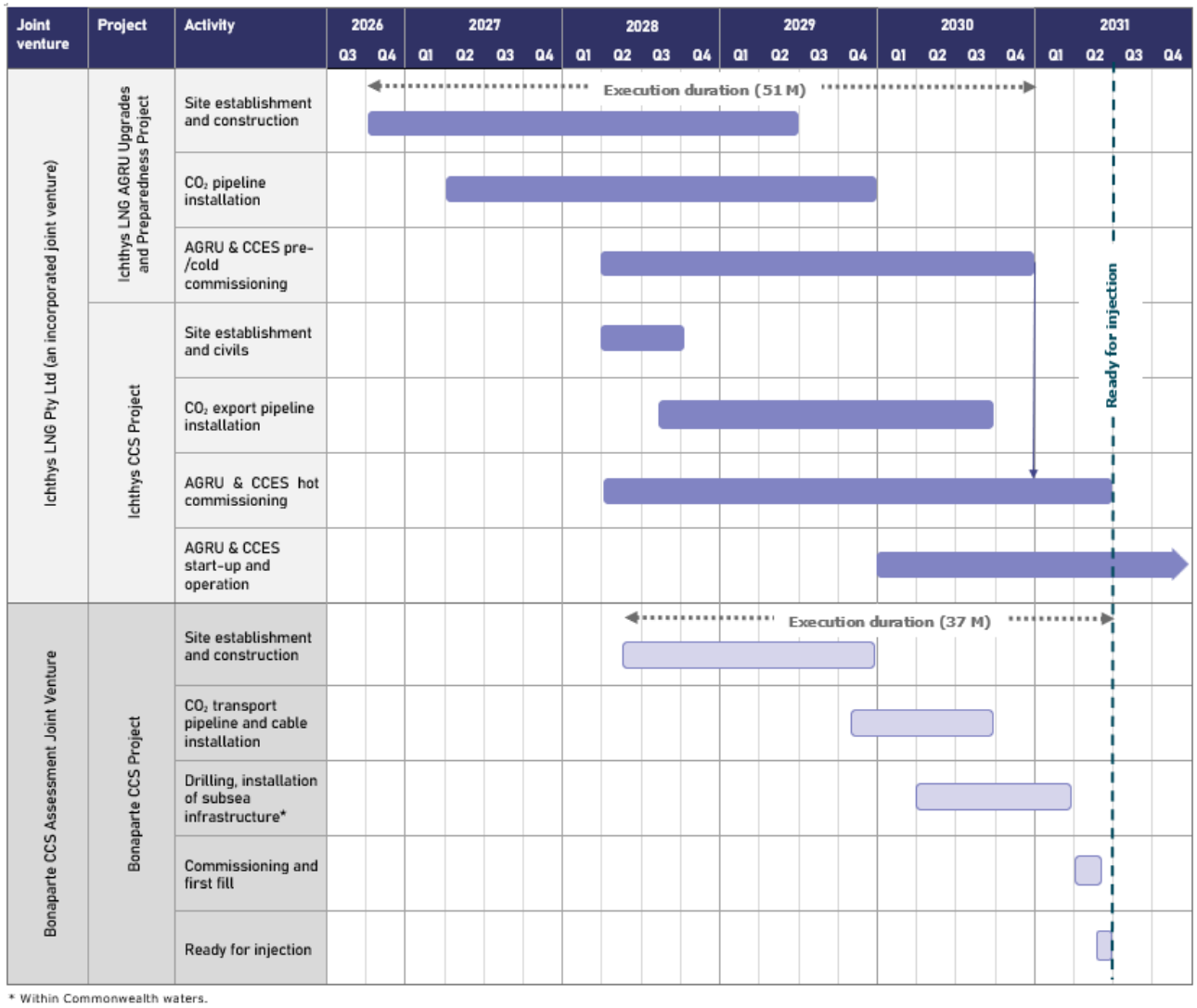


**Figure 2-9: INPEX projects indicative execution schedules**

## 2.4 Relevant key legislation and required approvals

A summary of the key Commonwealth and Northern Territory legislation and approvals required under these, as applicable to the individual scopes of the proposed INPEX projects, is presented in Table 2-7.

**Table 2-7: Relevant key legislation and approvals**

| | Legislation | Legislation requirements | Ichthys projects | | Bonaparte CCS Project |
|---|---|---|---|---|---|
| | | | Ichthys LNG AGRU Upgrade and CCS Preparedness Project | Ichthys CCS Project | |
| Commonwealth | *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) | The Act provides for the protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places. Matters of National Environmental Significance (MNES) are protected under Part 3 of the Act and projects require approval under the Act if they are likely to result in a significant impact on MNES. | ✓ See note 1 | ✓ See note 2 | ✓ See note 2 |
| | *Environment Protection (Sea Dumping) Act 1981* | The Act regulates the disposal of $CO_2$ via carbon capture and sequestration at sea and implements the London Protocol permitting requirements in Australian waters. A sea dumping permit is a permit that is required for the placement of controlled material (as defined in the Sea Dumping Act) in Australian waters, including the injection of $CO_2$ streams into sub-seabed geological formation. A sea dumping permit will be required for the Project to load and store $CO_2$ in the sub-seabed geological formation, including a Long-Term Management Plan. | × | × | ✓ |
| | *Offshore Petroleum and Greenhouse Gas Storage Act 2006* | The OPGGS Act and its regulations provide a framework for all offshore petroleum exploration, production, recovery, and environmental matters for offshore GHG activities within Commonwealth waters (between 3 and 200 nm from shore).<br>The OPGGS Act is supported by regulations and directions that cover safety, diving, integrity, petroleum resource management and environmental management.<br>Under the Act, a GHG injection licence is required where a titleholder seeks to inject or store (on a permanent basis or otherwise) a substance into the seabed or subsoil of an offshore area. | × | × | ✓ |
| Northern Territory | *Environment Protection Act 2019* | The Act aims to promote ecological sustainable development, manage significant disturbances through an environmental approval process, provide for broader community involvement and recognise the importance of participation of Aboriginal people and communities in environmental decisions. Under the Act, the NT EPA regulates the environment impact assessment process to identify potential environmental impacts of development proposals. | ✓ See note 3 | ✓ See note 4 | ✓ See note 4 |
| | *Waste Management Pollution Control Act 1998* | The Act provides for the protection, and where practicable the restoration and enhancement of the quality of, the Territory environment.<br>Specifically, by preventing pollution, reducing the likelihood of pollution occurring, effectively responding to pollution, avoiding and reducing the generation of waste, increasing the re-use and recycling of waste, and effectively managing waste disposal. It also to encourages ecologically sustainable development and facilitates the implementation of national environment protection measures. | ✓ | ✓ | ✓ |
| | *Energy Pipelines Act 1981*‡ | The Act regulates the construction, operation, and maintenance of pipelines used for conveying hydrocarbons for energy production. The Act outlines requirements for permits, licenses, and registration, as well as standards for construction, operation, and maintenance. | × See note 5 | ✓ See note 6 | ✓ See note 6 |
| | *Petroleum (Submerged Lands) Act 1981*‡ | The Act regulates petroleum exploration and production in the submerged lands of the NT. The Act outlines the process for obtaining permits and licences for petroleum exploration and production in submerged lands as well as specifying the rights and obligations of permit and licence holders, including the conditions for exploration, retention leases, and production licences.<br>The Act details the application, granting, and renewal processes relevant to the Project, and sets standards for environmental protection and safety during petroleum operations, including provisions for managing environmental impacts. | × | × | ✓ See note 7 |
| | *Northern Territory Aboriginal Sacred Sites Act 1989* | The Act provides protection from unauthorised entry or damage to all sacred sites in the Northern Territory. Under the Act those wishing to undertake works on land or sea are required to obtain an Authority Certificate. | ✓ | ✓ | ✓ |

| Legislation | Legislation requirements | Ichthys projects | | Bonaparte CCS Project |
|---|---|---|---|---|
| | | Ichthys LNG AGRU Upgrade and CCS Preparedness Project | Ichthys CCS Project | |
| | Authority Certificates are a legal document that protects sacred sites from damage by setting out the conditions for carrying out specific works on an area of land and/or sea. | | | |
| *Heritage Act 2011* | The Act provides for the conservation of the Northern Territory's cultural and natural heritage. All Aboriginal or Macassan archaeological places or objects are automatically declared heritage places or objects under the Act. Other places or objects can be nominated, and if accepted, can be declared heritage places or objects under the Act.<br>A works approval is required to carry out work on a heritage place or object. | ✓ | ✓ | ✓ |
| *Water Act 1992* | The Act Provides for the investigation, allocation, use, control, protection, management and administration of water resources, including extraction of ground water, wastewater management and water pollution. Under the Act waste discharge licences are required where an activity could affect a declared beneficial use of a water resource. | ✓ | ✓ | ✓ |
| *Planning Act 1999* | The following permits may be required for the Project:<br>• Land clearing permit - required for any native vegetation clearing in the Northern Territory on zoned and unzoned land more than one hectare in aggregate land (including any area already cleared of native vegetation).<br>• Development permit (planning permit) – required if a building type or land use requires consent under the Northern Territory Planning Scheme 2020. | ✓ | ✓ | ✓ See note 7 |

Note 1; Whilst INPEX does not believe the action is a controlled action* under the EPBC Act, it was referred to the Commonwealth for transparency reasons.

Note 2: Whilst INPEX does not believe the action is a controlled action under the EPBC Act based on the outcomes of a preliminary assessment, the project will be referred to the Commonwealth due to the current level of uncertainty in defining certain risks/impacts and the reliance on additional studies/investigations to better inform these.

Note 3: Whilst INPEX does not believe the action will result in significant impacts on NT EPA defined factors and objectives†, it was referred to the NT EPA for transparency reasons.

Note 4: Whilst INPEX does not believe the action is likely to result in significant impacts to NT EPA defined factors and objectives based on the outcomes of a preliminary assessment, this project will be referred to the NT EPA due to the current level of uncertainty in defining certain risks/impacts and the reliance on additional studies/investigations to better inform these.

Note 5: The Department of Mines and Energy have advised that the $CO_2$ pipeline internal to the Ichthys LNG facility is not subject to a pipeline licence; however, this section of pipeline would be meet the required standards for pipelines under the Act.

Note 6: The Department of Mines and Energy have advised that the Act is being amended to include regulation of $CO_2$ pipelines, and relevant requirements under the Act (including obtaining pipeline licences, consents to construct, etc.) would apply.

Note 7: The Department of Mines and Energy have advised the Act is being emended to include the regulation of $CO_2$ pipelines, and pipeline licences, environment plan under the Act would apply.

Note 8: Only relevant to activities within the Northern Territory where the *Planning Act 1999* applies.

# 3 ICHTHYS PROJECTS – STAGED/SPLIT REFERRAL JUSTIFICATION

INPEX considers submission of the two separate referrals covering the Ichthys project scopes would not prevent the assessment of potential significant impacts such that all relevant impacts could not be assessed/considered by the NT EPA. Justification for Ichthys project split/staged referrals:

- Nature and scale of impacts/risks:
  - The nature and scale of potential risks/impacts associated with activities described within the Ichthys LNG AGRU Upgrade and CCS Preparedness Project Referral (Referral 1) would not result in significant impacts to NT EPA factors or values:
    - Activities within the referral are limited to construction and cold-commissioning within a pre-disturbed area of the existing Ichthys LNG facility.
    - Any potential risks/impacts associated with such activities are well understood and manageable.
    - Activities would not result in irreversible impacts to the environment if the Ichthys CCS Project (Referral 2) was not sanctioned (i.e. all within a pre-disturbed area, no clearing of native vegetation is required, etc).
  - The Ichthys CCS Project referral (Referral 2) incorporates the construction and installation of infrastructure on Middle Arm and the commissioning and operations of an integrated system (both Middle Arm and Ichthys LNG facility assets). This ensures that all activities (either due to their nature or scale) with the potential to have a significant impact on NT EPA values and objectives are incorporated into a single referral.
- Execution schedule (Refer to Section 2.3):
  - To maintain an overall execution schedule which aligns with the timing of an available CCS project to integrate with, the activities described in the Ichthys LNG AGRU Upgrade and CCS Preparedness Project Referral (Referral 1) are required to commence earlier than the activities in Referral 2 (site establishment in Q4 2026, early civil construction in 2027) to accommodate for seasonal (dry season) and operational (planned shutdown) constraints.
  - The execution of the works on Middle Arm required to connect Ichthys LNG facility infrastructure to a $CO_2$ storage project (Referral 2) is premised on a third-party $CO_2$ storage project having obtained relevant primary approvals and a commercial agreement for receipt of and storage of $CO_2$ being in place.
- Regulator ability to influence the design:
  - The Ichthys LNG AGRU Upgrade and CCS Preparedness Project Referral (Referral 1) provides sufficient contextual information of the operations of the integrated Ichthys LNG facility CCES and $CO_2$ pipeline, such that if required design/operating limitations of the proposed infrastructure can be conditioned by the regulator at this early stage.
  - Should operational aspects addressed within the Ichthys CCS Project Referral require amendment to the design and ultimately construction covered under the Ichthys LNG AGRU Upgrade and CCS Preparedness Project Referral; these can be absorbed within the time frame alleviating risk of a non-complaint design / operation of new equipment.

# 4 BONAPARTE CCS PROJECT & ICHTHYS PROJECTS – NOT CONSIDERED A SINGLE "LARGER ACTION" JUSTIFICATION

INPEX considers the Bonaparte CCS Project and the Ichthys project scopes as separate projects, and not a single larger action. Justification as to why these do not constitute a single larger action is a follows:

- Project objectives, purposes and scopes:
  - The projects have different objectives and purposes:
    - The Bonaparte CCS Project (Referral 3) is proposing to develop a large-scale multi-user CCS facility whereby third-party $CO_2$ sources are intended to be received from potential customers in the region through commercial agreements, including reservoir $CO_2$ from Ichthys LNG facility.
    - The Ichthys projects (Referrals 1 and 2) are proposing to develop and operate infrastructure which would allow the Ichthys LNG facility to capture $CO_2$ and connect to a $CO_2$ storage project to contribute to the decarbonisation of the facility. Both the Bonaparte CCS Project and the Bayu-Undan CCS Project are being considered as potential suitable storage solutions.
  - Any third-party customers proposing to integrate with the Bonaparte CCS Project would be required to obtain separate approvals to install the necessary infrastructure to connect to Bonaparte CCS Project infrastructure (i.e. onshore inlet station).
- Project business arrangements:
  - Each of the projects is funded by separate joint ventures:
    - Bonaparte CCS Project (Referral 3) is funded by the Bonaparte CCS Assessment Joint Venture consisting of INPEX Browse E&P Pty Ltd, TotalEnergies CCS Australia Pty Ltd and Woodside Energy Ltd
    - Ichthys projects (Referrals 1 and 2) are funded by the Ichthys LNG Pty Ltd (an incorporated joint venture) consisting of INPEX group companies, TotalEnergies, and the Australian subsidiaries of CPC Corporation Taiwan, Osaka Gas, Kansai Electric Power, JERA and Toho Gas.
  - INPEX Operations Australia Pty Ltd (acting as the agent) is the delegated Operator for both projects.
  - The projects would be constructed via separate engineering, procurement and construction (EPC) contracting arrangements.
  - Any future business arrangements between the respective project joint ventures would be subject to commercial arrangements. The Ichthys joint venture is unlikely to be the sole customer for the Bonaparte CCS Project and the Ichthys joint venture is also considering the Bayu-Undan CCS Project as a potential storage solution i.e. the commercial arrangements are not exclusive.
- Execution schedules:
  - The execution schedule for activities required within the Ichthys LNG facility (Referral 1) has a 51-month execution schedule, in comparison to the Bonaparte CCS Project which has a much shorter duration of 37 months. To ensure the Ichthys LNG facility CCES infrastructure and $CO_2$ pipeline is available

for integration with the Bonaparte CCS Project, works within the Ichthys LNG facility need to commence much earlier.

  - The execution of the works on Middle Arm required to connect Ichthys LNG facility infrastructure to a $CO_2$ storage project (Referral 2) is premised on a third-party CCS project having obtained relevant primary approvals and an established commercial agreement/arrangement being in place, allowing connection to the interfacing infrastructure.

- Potential risks and impacts:
  - Irreversible environmental impacts if either projects were not to proceed:
    - The execution of works on Middle Arm required to connect Ichthys LNG facility infrastructure to a $CO_2$ storage project (Referral 2), is premised on a third-party $CO_2$ storage project having obtained relevant primary approvals and a commercial agreement being in place allowing connection to the interfacing infrastructure. Given this, no irreversible impacts to the environment would occur.
    - The Bonaparte CCS Project would not proceed without commercial agreements being in place with potential customers to ensure the viability of the project. Given this, no irreversible impacts to the environment would occur.
  - Cumulative impacts:
    - The Bonaparte CCS Project (Referral 3) and the Ichthys CCS Project (Referral 2), consider the potential cumulative impacts of their activities and other activities on Middle Arm.