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CULTURAL HERITAGE MANAGEMENT PLAN

Darwin Pipeline Duplication Project

August 2024

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GLOSSARY AND ABBREVIATIONS

AAPA	Aboriginal Areas Protection Authority
Aboriginal or First Nations object	A physical manifestation of past Aboriginal/First Nations activity. Typical examples include stone artefacts, grinding grooves, evidence of the occupation of Aboriginal rock shelters, midden shell, hearths, stone arrangements, and other landscape features which derive from past Aboriginal activity
Aboriginal or First Nations site	The location where a person in the present day can observe one or more Aboriginal/First Nations objects. The boundaries of a site are limited to the extent of the observed evidence. A 'site' does not include the inferred extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal/First Nations activity beyond visible Aboriginal/First Nations objects. Such use of the term risks defining all of Australia as a single 'site'
AFANT	Amateur Fisherman's Association of Northern Territory
CA	Cosmos Archaeology
CEMP	Construction Environmental Management Plan (Onshore or Offshore)
CEO	Chief Executive Officer
CHMP	Cultural Heritage Management Plan. Describes this document which is a requirement of the Environment Approval for the project. A CHMP both manages impacts to First Nations cultural and maritime heritage within approved disturbance areas
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEPWS	Department of Environment, Parks and Water Security
DITT	Department of Industry, Tourism and Trade
DLNGP	Darwin Liquefied Natural Gas Plant
DP	Dynamically positioned
DPD	Darwin Pipeline Duplication
DPD Project Area	An area including 1 km either side of the DPD corridor
DPD corridor	The pipeline route where impacts from the laying of the pipeline will occur (100 m wide corridor)
DTFHC	Department of Territory Families, Housing and Communities
ECNT	Environment Centre Northern Territory
FNUFP	First Nations Unexpected Finds Protocol
GEP	Gas Export Pipeline

GPS	Global Positioning System
HSE	Health, Safety and Environment
KP	Kilometres along proposed pipeline route
LGM	Last Glacial Maximum
MAHA	Maritime Archaeological Heritage Assessment
MAUFP	Maritime Archaeology Unexpected Finds Protocol
MBES	Multi-beam echosounder
Minister	The Minister responsible for administering the <i>Environment Protection Act 2019</i> , currently the Northern Territory Minister for the Environment
NLC	Northern Land Council
NM	Nautical Miles
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
NT Sacred Sites Act	<i>Northern Territory Aboriginal Sacred Sites Act 1989</i>
OPEP	Barossa DPD (NT Waters) Oil Pollution Emergency Plan
OPGGSER	Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations
PPUCH	Project Protocol for Protection of Underwater Cultural Heritage
ROV	Remote Operated Vehicle
RWA	Restricted Work Area
Santos	Santos Australia Pty Ltd
SR	Santos Representative
SER	Supplementary Environmental Report. This is the document that includes all environmental factors, including heritage, which is used by the government to determine the merits of a particular project
TLC	Tiwi Land Council
TSB	Territorial Sea Baseline. The TSB generally corresponds with the low water line along the coast, measured to the level of Lowest Astronomical Tide. However, in some cases, straight baselines have been established in areas where the coastline is deeply indented and cut into, or where there is a fringe of islands along the coast in its immediate vicinity. The Territorial Sea Baseline in the region of the current study area incorporates straight baselines that connect the mainland to the Tiwi Islands. As such, the Beagle Gulf forms part of the coastal waters of the NT
Trot	An anti-submarine defence boom net moorings, usually a concrete block
UFP	Unexpected Finds Protocol
USAT	United States Army Transport
USS	United States Ship

UXO	Unexploded ordnance
WPDRG	Wickham Point Deed Reference Group
WWII	World War II

1 INTRODUCTION

1.1 PREAMBLE

This *Cultural Heritage Management Plan* (CHMP) provides management measures for cultural heritage in relation to the Darwin Pipeline Duplication (DPD, the project), which is part of the larger Barossa Gas Project. The project will be constructed and operated by Santos NA Barossa Pty Ltd (Santos).

The project comprises the installation, operation, and decommissioning of 123 kilometres (km) of gas pipeline, comprising 100 km in Northern Territory (NT) waters and on land and 23 km in Commonwealth waters. This CHMP Project area applies to the Project Area shown on **Figure 1-1**.

Environmental Approval EPBC 2022/09372 was received for the project from the Commonwealth Minister for Climate Change, Energy, the Environment and Water on 15 March, 2024 under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Environmental Approval EP2022/022-001 for the project in NT waters under the *Environmental Protection Act 2019 (NT)* (NT EP Act) was received from the NT Minister for Climate Change, Environment and Water Security on December 22, 2023.

This CHMP has been prepared by Dr Jodie Benton, OzArk Environment & Heritage Director and Principal Archaeologist, in accordance with Environmental Approval Condition 4-1. Over the past twenty years Dr Benton has been involved in the preparation and implementation of over 100 heritage management plans.

1.2 PROJECT OVERVIEW

The project comprises construction, commissioning, operation, and decommissioning of the DPD Project pipeline, referred to in the Environmental Approval as ‘the action’. This ‘action’ is for a section of the Barossa gas pipeline that will transport gas from the Timor Sea to the existing Darwin Liquefied Natural Gas Plant (DLNGP). The approved action includes pipeline installation of 100 km in NT waters and on land and 23 km in Commonwealth Waters, pre-lay trenching along sections of the pipeline route, including disposal of trench spoil in a spoil disposal area, and a shore crossing at the DLNGP located at Wickham Point, Middle Arm in the Greater Darwin Area. Construction of the pipeline will include:

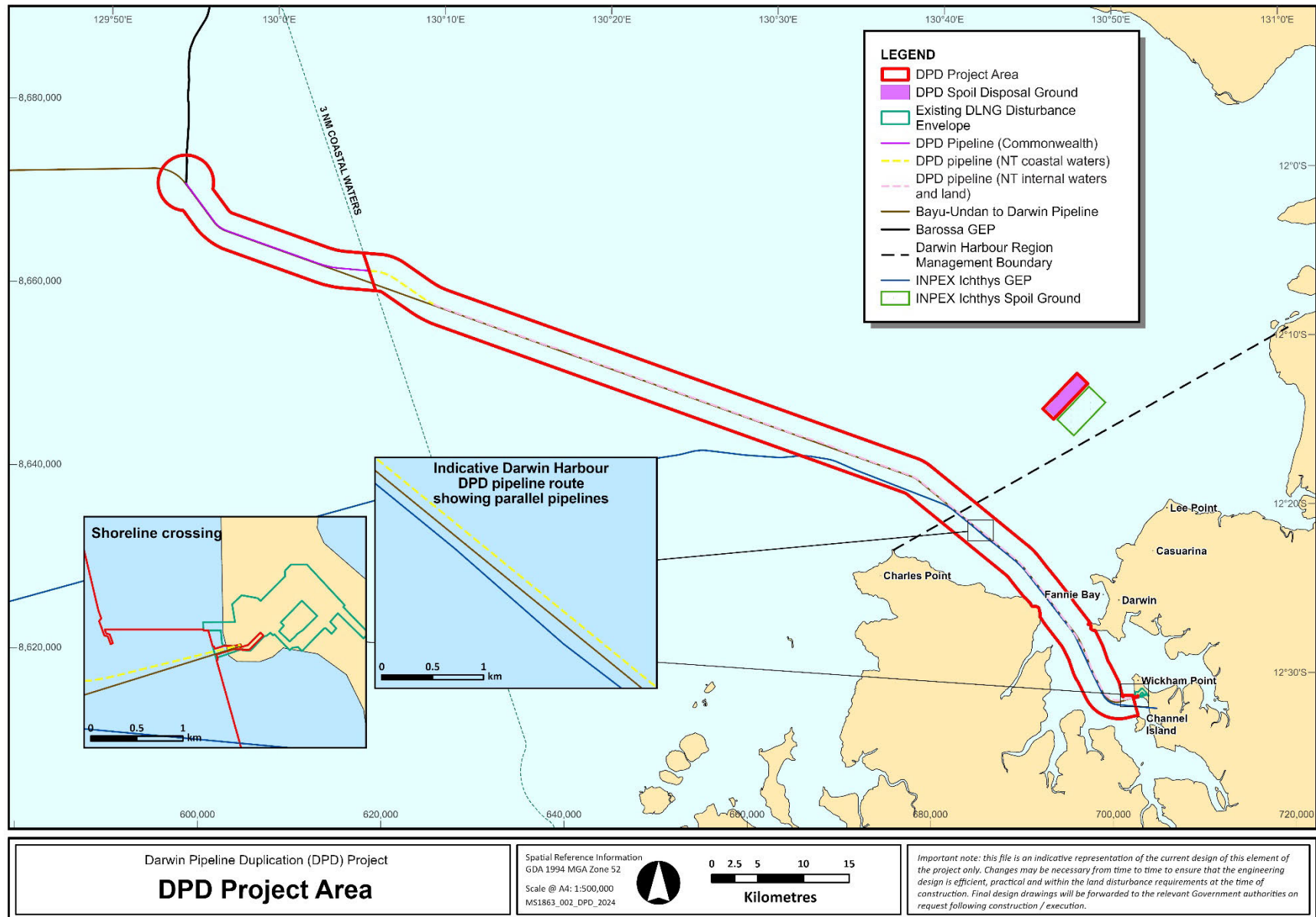
- Pipe laying within a pipeline route corridor, with a nominal disturbance footprint width of 50 metres (m)
- Pre-lay trenching within designated zones along the pipeline route with a disturbance footprint of up to 90 m width
- Onshore trenching for approximately 200 m within the DLNGP disturbance footprint

-
- The disposal of up to 500,000 m³ of spoil to go to a 6.25 km² disposal area outside Darwin Harbour
 - Placement of no more than 500,000 tonnes of rock during backfill and stabilisation of the pipeline
 - Anchoring of construction vessels within a 900 m corridor on either side of the anchoring corridor.

The DPD Project Area includes all the above activities which comprise the approved development.

The approved development footprint and layout of the project is shown on **Figure 1-1**.

Figure 1-1: DPD Project Area.



1.3 PURPOSE

This CHMP provides a description of the cultural heritage management strategies, procedures, controls, and monitoring programs to be implemented within the DPD Project Area for the construction and operation of the project. It will be used by all project employees, contractors, sub-contractors, and visitors actively participating in the work as the first point of reference for cultural heritage related issues.

This CHMP supports the Construction Environmental Management Plans (CEMPs) for the project in NT waters and land, of which there are Onshore CEMP (BAS-210 0025), Offshore CEMP (BAS-210 0024) and Coastal Waters versions. This CHMP also supports the Environmental Plan (EP) for the project construction in Commonwealth waters (BAA-200 0074).

This CHMP addresses the relevant requirements of the NT EP Act Environmental Approval (EP2022/22-001). The Environmental Approval conditions relevant to this CHMP are provided in **Section 2**.

1.4 OBJECTIVES

The primary objective of this CHMP, as per Section 3 of the Environment Approval (EP2022/22-001), is to ensure that First Nations cultural and maritime heritage (including shipwrecks) are protected.

This CHMP has been developed to satisfy this objective, as well as the relevant conditions of the Environmental Approval (EP2022/22-001) and to ensure that cultural heritage within the DPD Project Area is managed in accordance with all relevant legislation and in consultation with relevant First Nations parties and other agencies and stakeholders.

The role of this CHMP is to set out controls and protocols for the management of cultural heritage sites/places and to prevent unapproved harm to any identified and/or unidentified cultural heritage sites and values within the DPD Project Area.

This CHMP:

1. Outlines the obligations of project personnel to protect cultural heritage sites
2. Presents a process for ongoing First Nations community and stakeholder consultation
3. Details the management procedures for heritage within the DPD Project Area
4. Details reporting requirements and further heritage assessment requirements
5. Provides for continuous improvement through auditing and plan modification.

The way this CHMP addresses the statutory requirements of the Environmental Approval (EP2022/22-001) is detailed in **Section 2**.

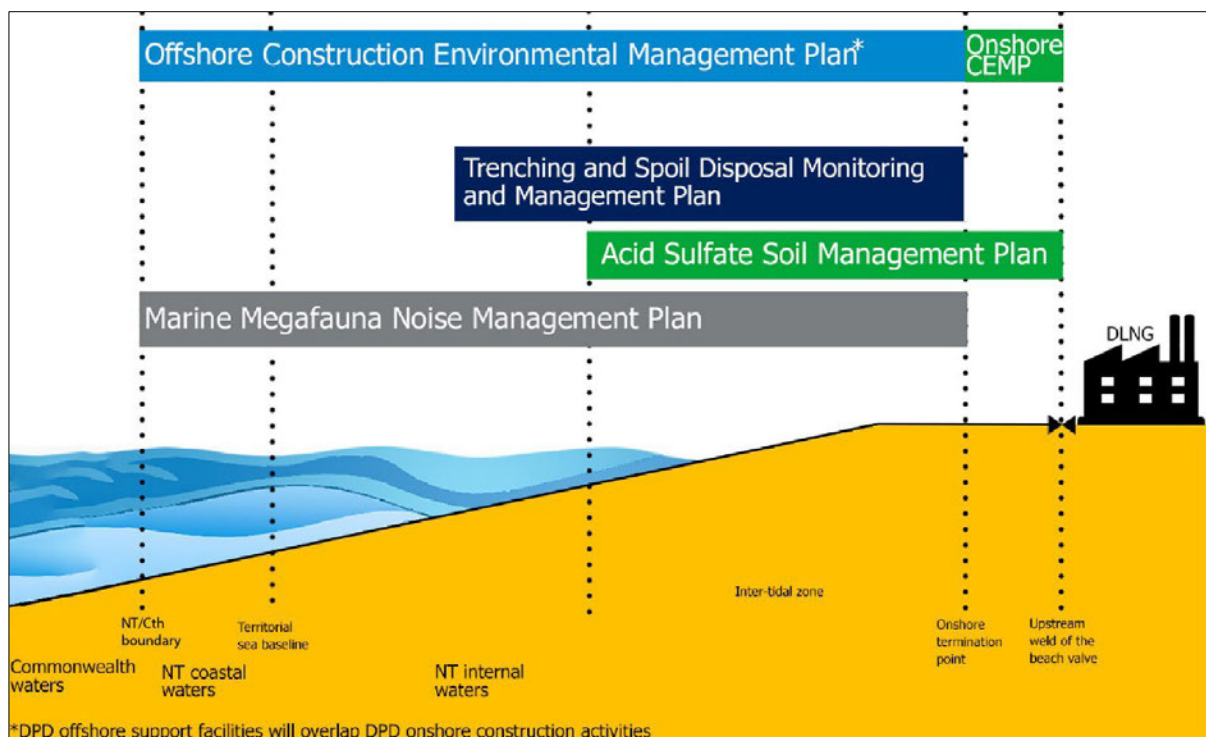
1.5 ENVIRONMENTAL MANAGEMENT DOCUMENTATION

Santos has developed both an Onshore CEMP (BAS-210 0025) and an Offshore CEMP (BAS-210 0024) for the project, which are the overarching documents for environmental management of the DPD Project construction in the NT jurisdiction. There is also a Coastal Waters CEMP that has been specifically developed for acceptance of the project in NT coastal waters, under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. The Onshore, Offshore and Coastal Waters CEMPs include several plans and strategies that have been put in place to manage environmental impacts that may arise from the construction of the project, including this CHMP.

Santos will carry out the project in accordance with the Supplementary Environmental Report (SER) (Santos 2023), the CEMPs and in accordance with the Environmental Approval (EP2022/22-001) outlined in **Table 2-1** and detailed throughout this CHMP.

To assist in understanding the interaction of various jurisdictions and specific project plans, **Figure 1-2** is useful.

Figure 1-2: DPD Project Area in relation to jurisdictions and plans.



2 REGULATORY REQUIREMENTS OF THIS CHMP

2.1 NORTHERN TERRITORY ENVIRONMENTAL APPROVAL CONDITIONS

The Environmental Approval EP2022/22-001 under the NT EP Act stipulates the requirements related to this CHMP. These are summarised in **Table 2-1**, together with reference to where they are addressed in the CHMP and shown in **Appendix 1**.

Table 2-1: Cultural heritage-related conditions, Northern Territory approval.

EP2022/011-001	Condition	Description	Section/s addressed
Condition 2 Management Plans	2-1	The approval holder must implement and comply with the following plans: (4) Cultural heritage management plan, as required by Condition 4	This CHMP
Condition 3 Culture and Heritage	3-1	The approval holder must ensure the action achieves the following environmental outcomes: (1) protect Aboriginal cultural values (2) protect maritime heritage, including shipwrecks.	This CHMP
Condition 4 Cultural Heritage Management Plan	4-1	To support achieving the environmental outcomes required by Condition 3-1, a CHMP must be prepared by a suitably qualified and experienced person.	Section 1.1
	4-2	The CHMP must be prepared in consultation with the Northern and Tiwi Land Councils.	Section 3.2
	4-3	The CHMP must be submitted to the Minister at least 10 days prior to commencement of trenching activity	Santos will comply with this condition
	4-4	The CHMP must include measures to provide for: (1) cultural heritage induction procedures for site personnel (2) an internal heritage clearance process prior to trenching and pipe laying activities (3) further archaeological survey and assessment if warranted by alignment changes (4) procedures for anchoring and the establishment of anchor exclusion zones (5) procedures to mitigate risks to unexpected maritime heritage objects, including a stop work protocol, developed in consultation with, and to the satisfaction of, the Heritage Branch of DTFHC (6) measures for ongoing consultation and engagement on cultural heritage values with stakeholders (7) the requirement to update the CHMP if stakeholder engagement identifies additional information about cultural heritage values that warrants additional measures to be implemented to achieve the environmental outcomes required by Condition 3-1 (8) detail of how compliance would be monitored and reported and how the outcomes of investigative and/or	Section 5.2 Section 5.5.1 Section 5.5.2 Section 5.5.3 Section 5.5.4 Section 3.2.1 Section 5.5.5 Section 5.6, Section 6

EP2022/011-001	Condition	Description	Section/s addressed
		adaptive management actions would be notified to the relevant government authorities.	
General Conditions Section 9 Revision of plans	9-1	The approval holder may review and revise any management plan required by Condition 2 and must provide the following to the Minister within 10 business days prior to any amendment(s) being implemented: <ul style="list-style-type: none"> (1) the revised plan(s) (2) a tabulated summary of the amendment(s) with document references (3) reasons for the amendment(s) (4) an assessment of environmental risks and potential impacts associated with the amendment(s) 	Section 7.2
Section 12 Environment Performance reporting	12-1	The approval holder must: <ul style="list-style-type: none"> (1) within six months of the completion of commissioning 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 (2) submit the report to the Minister within 30 days of its completion 	Section 7.3
	12-2	The report required by condition 12-1(1) must: <ul style="list-style-type: none"> (1) provide all monitoring data and reportable incidents required by the conditions of this approval (2) N/A (3) include an assessment of the effectiveness of monitoring, management and contingency measures implemented to comply with the requirements of condition 5-1(1) and 5-1(2) (4) N/A (5) be endorsed by the approval holder or a person delegated to sign on the approval holder's behalf (6) include a statement as to whether the approval holder has complied with the conditions of this approval (7) identify all non-compliances and describe corrective and preventative actions taken 	Section 7.3

2.2 COMMONWEALTH APPROVAL COMMITMENTS

The EPBC Act approval (2022/09372) stipulates commitments that will be captured in a separate document, being the Project Protocol for Protection of Underwater Cultural Heritage (PPUCH). These commitments are summarised below in **Table 2-2**.

Table 2-2: Cultural Heritage related conditions, Commonwealth approval.

EP2022/011-001	Condition	Description	Section/s addressed
Part A – Avoidance, mitigation and compensation conditions	1	To avoid and mitigate harm to protected matters, the approval holder must not undertake the Action outside the project area.	Addressed in the PPUCH
Part A – Avoidance, mitigation and compensation conditions Action Management Plans	3)a) i)	To avoid and mitigate impacts on any underwater cultural heritage in the environment of Commonwealth marine areas, the approval holder must: a) Submit a Protocol for Protecting Underwater Cultural Heritage (PPUCH) within the Commonwealth marine area to the department for the Minister's approval which must include: i) Details of how any underwater cultural heritage present within the Commonwealth marine area will be avoided.	Addressed in the PPUCH
Action Management Plans	3)a) ii)	ii) Detailed impact control and management measures (if required) to ensure no harm to any underwater cultural heritage present within the Commonwealth marine area.	Addressed in the PPUCH and the The First Nations UFP
	3)a) iii)	iii) A commitment to engage a suitably qualified underwater archaeologist to advise on any items of potential underwater cultural heritage identified during construction and any related activities impacting the sea floor (if required).	Addressed in the PPUCH The maritime archaeology UFP The First Nations UFP
	3)a) iv)	iv) Detailed procedures and reporting to be implemented if underwater cultural heritage is discovered, including a commitment to notify the department within 21 calendar days of identifying any underwater cultural heritage of clear archaeological character identified by a suitably qualified underwater archaeologist.	Addressed in the PPUCH
	3)a) v)	v) Details of the process to be followed where any variations are required to be made to the PPUCH, including a requirement for any revised PPUCH to be submitted to the department for the Minister's approval, unless taking the action in accordance with the revised PPUCH would not be likely to have a new or increased impact.	Addressed in the PPUCH
	3) b)	b) Not commence the action unless the Minister has approved the PPUCH in writing.	Addressed in the PPUCH
	3) c)	c) Implement the PPUCH prior to the commencement of any activities involving impact to the sea floor.	Addressed in the PPUCH

2.3 OTHER COMMITMENTS

Several commitments were made in the SER prepared for the project. These are summarised in **Table 2-3**.

Table 2-3: Other recommendations.

Type of requirement	Reference	Section/s addressed
Involvement of Larrakia Sea Rangers in environment monitoring for the project	SER 11.3.5	Section 3.2.1 and 3.2.4
Ensure that conditions of the AAPA certificates as well as requirements of the <i>NT Aboriginal Sacred Sites Act 1989</i> and the <i>Heritage Act (2011)</i> are made known to contractors	SER 11.3.5	Section 5.2.2
If Trot 17 (an anti-submarine defence mooring trot) cannot be avoided, further identification and management measures will be required in consultation with NT Heritage Branch. This includes intervention and relocation of Trot 17, followed by a documented survey of its new location. NB: This remains a contingency action only, as it has been more recently identified (post SER) that the pipelay <u>should not impact</u> Trot 17 as it is discontinuous and not apparent in the trenching corridor.	SER 11.3.4 as amended by Cosmos Archaeology (2023).	Section 5.3
No anchoring zones to be established around identified anomalies and known cultural heritage sites within the DPD anchoring corridor, including preparation of an Anchoring Management Plan (MA 18)	Offshore CEMP (BAS-210 0024)	Sections 5.3 and 5.5.3
Ensure no hydrocarbon spills effect cultural heritage	Offshore CEMP (BAS-210 0024) and OPEP (BAS-210 0026)	Please see the CEMP

3 CONSULTATION

3.1 CONSULTATION WITH GOVERNMENT STAKEHOLDERS

This CHMP has been prepared as required by the DPD Project Environmental Approval (EP2022/22-001) under the NT EP Act and was provided to the NT Minister of Environment, Climate Change and Water Security on 17 May 2024 (being earlier than the 10 business days before the start of DPD Project trenching as required under EP2022/22-001).

Consultation between Santos, its maritime archaeological consultant, and the Heritage Branch of the Department of Territory Families, Housing and Communities (DTFHC) on DPD Project maritime heritage requirements has occurred from November 2021 onwards, including the issuance of a maritime archaeology scope of works by the Heritage Branch and provision of maritime heritage study reports and Maritime Archaeology Unexpected Finds Protocol (MAUFP) to the Heritage Branch (**Appendix 2**). The MAUFP appended to this CHMP (**Appendix 4**), prepared by a qualified maritime archaeologist, represents the procedures to mitigate risks to unexpected maritime heritage objects, including a stop work protocol, as required under Condition 4-4 (5) of Environmental Approval EP2022/11-001. As required under the same condition, the Heritage Branch has reviewed the MAUFP, and on 14 May 2024 confirmed that it considered it fit for purpose.

As a condition (condition 3) of DPD Project Environmental Approval (2022/09372) under the EPBC Act, Santos has submitted a Protocol for Protecting Underwater Cultural Heritage (PPUCH) (BAS-210 0265) within the Commonwealth marine area for approval by the Commonwealth Minister for Climate Change, Energy, the Environment and Water (DCCEEW). The PPUCH was approved on... and is a separate document to this CHMP but is consistent with the requirements as applicable within this CHMP and include the MAUFP and the First Nations Unexpected Finds Protocol (FNUFP) as attached in **Appendices 4** and **5**. Santos has engaged with DCCEEW – Heritage Division on the requirements of the PPUCH between January and March 2024 leading to the PPUCH condition in the Environmental Approval (2022/09372) provided on 15 March 2024.

Consultation with Government departments and independent statutory authorities with First Nations functions is included in the section below.

3.2 FIRST NATIONS STAKEHOLDER CONSULTATION

3.2.1 Santos consultation

Santos has undertaken stakeholder engagement on the DPD Project with the following First Nations stakeholders:

- The Wickham Point Deed Reference Group (WPDRG) – a liaison committee between Santos and Larrakia family group members as outlined on the Wickham Point Deed
 - The Aboriginal Areas Protection Authority
 - The Northern Land Council
 - The Tiwi Land Council
 - Larrakia Nation, including the Larrakia Sea Rangers
 - Larrakia Development Corporation
 - National Indigenous Australians Association (NIAA)
 - Tiwi Island clan groups (refer **Figure 3-1** for locations):
 - Jikilaruwu clan
 - Malawu clan
 - Mantiyupwu clan
 - Marrikawuyanga clan
 - Munupi clan
 - Wulirankuwu clan
 - Wurankuwu clan
 - Yimpinari clan
 - First Nations Consultative Committees and clan groups from NT coastal regions (refer **Table 3-1** for further detail):
 - Agalda clan
 - Daly River/ Port Keats Consultative Committee
 - Murrumujuk clan
 - Mulyurrud Consultative Committee
 - Rak Badjalarr Consultative Committee
 - Wulna clan
 - Larrakia (Larrakia family group members) reached through Darwin consultation sessions.
- Santos has also provided an opportunity for engagement on the DPD Project to the following First Nations stakeholders:
- Gwalwa Darraniki
 - Aboriginal Sea Company
 - Indigenous Land and Sea Council
 - Kenbi Rangers
 - North Australian Indigenous Land and Sea Management Alliance.

Figure 3-1: Tiwi Islander clan group distribution (after the Tiwi Land Council website - <https://www.tiwilandcouncil.com/>).

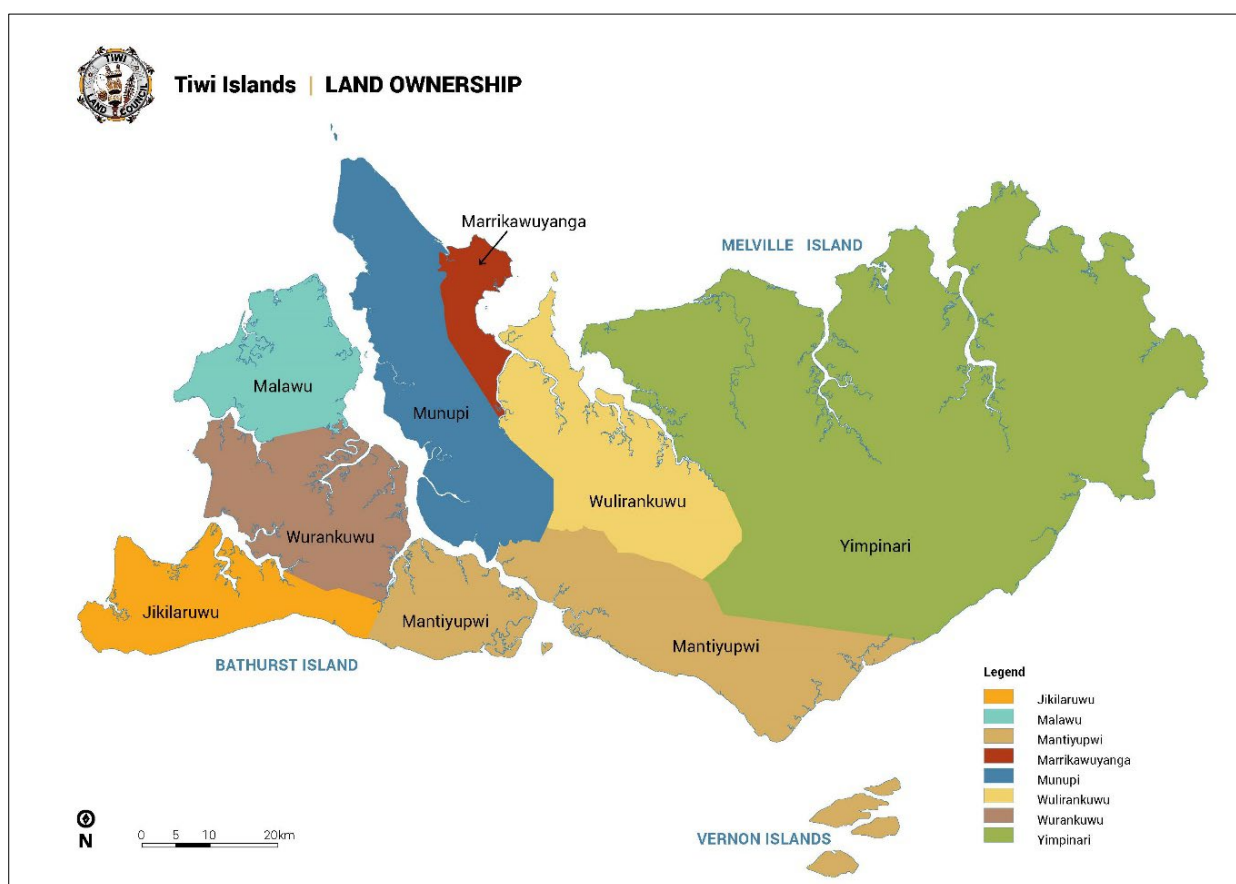


Table 3-1: Description of First Nations Consultative Committees and clan groups from NT coastal regions.

First Nations Consultative Committees / clan groups	Description
Agalda clan	The Algada clan estate is located over the western parts of the Cobourg Peninsula, including coastal areas and adjacent sea country.
Daly River/ Port Keats Consultative Committee	Represents the Yek Yedere, Rak Kinmu, Yek Nangu, Yek Maninh, Kura Thipma and Kuy clans. The named clan estates are located on the coastal areas of the Port Keats/ Daly River Aboriginal Land Trust and adjacent sea country.
Murrumujuk clan	The Murrumujuk clan estate is located on the beach area at Gunn Point.
Mulyurrud Consultative Committee	Mulyurrud Consultative Committee - represents Mangalarra and Mandilarri clan estates located on Croker Island and adjacent sea country, and the Ildugidj clan estate located on the mainland coastline (south from Croker Island).
Rak Badjalarr Consultative Committee	Rak Badjalarr Consultative Committee - represents the Kenbi, Emmiyangal, Mendheyangal, Kiyuk, Wadigany, Murranungu, Malak Malak and Marriamu clans. The named clan estates are located over the coastal areas from the Cox Peninsula south to the area of the Daly River and adjacent sea country.
Wulna clan	Wulna clan - the Wulna clan estate is located on coastal areas and adjacent sea country from the Gunn Point area in the west and extending east from the Adelaide River.

A summary of Santos’ First Nations stakeholder engagement on the DPD Project is provided in **Appendix 3 – Table 1**.

Engagement with First Nations stakeholders on the DPD Project includes formal consultation processes under the NT EP Act, the EPBC Act and the *Offshore Petroleum and Greenhouse Gas*

Storage (Environment) Regulations 2023. The information provided as part of the stakeholder engagements has included updates on DPD Project planning and approval processes, information on DPD Project activities, environmental impacts/risks of the DPD Project, and proposed environmental and cultural management measures.

Specific engagement on this Cultural Heritage Management Plan is included in **Section 3.2.3**.

Feedback from First Nations stakeholders relevant to the management of cultural heritage during the implementation of the DPD Project has included the following:

- A desire for the natural environment, including habitats and marine life, to be protected during the DPD Project activities. Feedback from individuals from consultative committees, the WPDRG and Tiwi Island clan groups highlighted the cultural connections of First Nations people with the natural environment. This includes connections through practices of hunting, gathering, fishing, and storytelling, and spiritual connections to tangible and intangible values of the environment including natural features, places, and marine fauna
- Request for a First Nations cultural heritage study to be undertaken and a Cultural Heritage Management Plan to be developed, inclusive of cultural awareness training
- Requests to be notified of any accidental hydrocarbon spill incidents from DPD Project activities
- Advice on additional First Nations stakeholders that Santos should engage with
- A desire for First Nations Ranger groups to be involved in DPD Project environmental monitoring and hydrocarbon spill response activities
- A desire for First Nations people to be provided opportunities for involvement in DPD Project activities, for example as cultural monitors
- Requests for Larrakia involvement in inductions and management measures for the protection of Darwin Harbour sacred sites.

DPD Project engagement with First Nations custodians has also been undertaken by the Aboriginal Areas Protection Authority (AAPA) through the AAPA Authority Certificate process, specifically in relation to DPD Project activities near sacred sites. This consultation has resulted in the conditions included in Authority Certificates C2022-098 and C2024-034 to assist in protecting sacred sites, including the requirement of two Restricted Works Areas (C2022-098 RWA1, and C2024-034 RWA1) to be applied to sacred sites overlapping or in close proximity to the DPD Project area (refer **Sections 4.2.1** and **5.4.1**).

After receiving the Authority Certificate C2022-098, Santos engaged the WPDRG on the certificate requirements over a number of consultation sessions (February 2023 to March 2024) and further feedback and suggested control measures were provided by the liaison committee. The following cultural heritage initiatives were agreed upon, and are discussed further in this CHMP under 'heritage management measures' (**Section 5**):

1. Buoys to be deployed to demarcate the AAPA C2022-098 RWA1. These will be deployed to mark the closest edge of the C2022-098 RWA1 to DPD Project pipeline route
2. Project vessels to have the C2022-098 RWA1 coordinates, as part of no-go zones, in their navigation systems
3. Inductions on sacred sites requirements, including the C2022-098 RWA1, will be delivered to all personnel and contractors working on the project which may be delivered online or through Project meetings
4. Santos to provide opportunities for senior Larrakia representatives to deliver inductions/cultural awareness training to the Santos DPD Project team
5. Santos to provide opportunities for relevant First Nations representatives to observe DPD Project operations near the AAPA C2022-098 RWA1.

3.2.2 Ethnographic study

Additional to the stakeholder engagement undertaken by Santos as noted above, Santos engaged an independent anthropologist, Dr Brendan Corrigan, from ABMC Consulting, to conduct an ethnographic study of First Nations spiritual and cultural values relevant to the DPD Project area (construction corridor and spoil ground). This study, conducted between December 2023 and March 2024, involved field trips to conduct formal and informal interviews with Larrakia, Tiwi Island, and Belyuen group people (AMBC 2024). A brief summary of the spiritual and cultural values from the Corrigan report relevant to cultural heritage management, has been provided in **Section 4.2.2**.

3.2.3 CHMP consultation

In accordance with Condition 4-2 of Environmental Approval EP2022/22-001, the Northern Land Council (NLC) and Tiwi Land Council (TLC) have been and continue to be given the opportunity to be involved in the preparation of this CHMP. Santos will continue to meet with the NLC and the TLC, on a regular basis, providing updates on the Barossa Project, including the DPD Project and the implementation of the CHMP.

Additional to engagement with the NLC and TLC, Santos has engaged with the WPDRG on the contents of the CHMP during its development, including the proposed control measures outlined in **Section 5**. The CHMP content has also been presented at Larrakia family group member consultation sessions, advertised by Larrakia Nation, held in Darwin on 23 April 2024.

A log of consultation undertaken to date on this CHMP is provided in **Appendix 3 – Table 2**.

3.2.4 Ongoing consultation

To ensure ongoing consultation and involvement with the First Nations community, and to ensure any relevant cultural issues are incorporated into updates of this CHMP as required, Santos will undertake the following:

1. Provide First Nations stakeholders the opportunity to participate in developing and delivering cultural awareness presentations (**Section 5.2.2**)
2. Provide opportunities for cultural monitors for the DPD Project, including opportunities for observation of activities near the sacred site identified in AAPA C2022-098 RWA 1 and AAPA C2024-034 RWA1
3. Involve the First Nations Sea Rangers in the ongoing environmental monitoring aspects of the construction and operation of the DPD Project
4. Provide ongoing DPD Project updates to First Nations stakeholder groups through the following means:
 - Santos quarterly updates through email mailing lists
 - Hardcopy material and verbal updates provided through Santos' Darwin Mall shopfront
 - Quarterly WPDRG meetings
 - Regular meetings with First Nations organisations, including NLC, TLC, and Larrakia Nation.
5. Notify the First Nations stakeholders of any discoveries of Aboriginal/ First Nations objects (**Section 5.5.4.2**) or of any significant changes to the project that may have implications for Aboriginal heritage management
6. Notify First Nations groups of hydrocarbon spill incidents as per the DPD Project (NT Waters) Oil Pollution Emergency Plan (BAS-210 0026).

3.2.5 Dispute/issue resolution

Issues raised by First Nations stakeholders in conversations whether by telephone or in person during ongoing consultation will be documented in writing by Santos and responded to in a timely fashion.

3.2.6 Access to First Nations sites

Santos will provide access for First Nations stakeholders to First Nations sites within the DPD Project Area, subject to reasonable safety and security measures. These measures may include the avoidance of hazardous areas and the availability of site personnel to enable safe access to relevant areas.

Any request to visit the site is to be made to Santos at least two weeks before the proposed visit to allow for adequate response time.

3.3 OTHER STAKEHOLDER CONSULTATION

Several other groups in the community have demonstrated interest in the cultural heritage management in respect of the DPD Project. The groups include:

- The Environment Centre Northern Territory (ECNT)
- The Amateur Fisherman's Association of Northern Territory (AFANT)
- Two private individuals.

Santos has committed to keeping these stakeholders up to date throughout the DPD Project, as per their Stakeholder Engagement Plan, Appendix 13 of the SER (Santos 2023). Santos will ensure that information will only be disclosed when culturally appropriate to do so.

4 CULTURAL HERITAGE VALUES

4.1 MARITIME HERITAGE

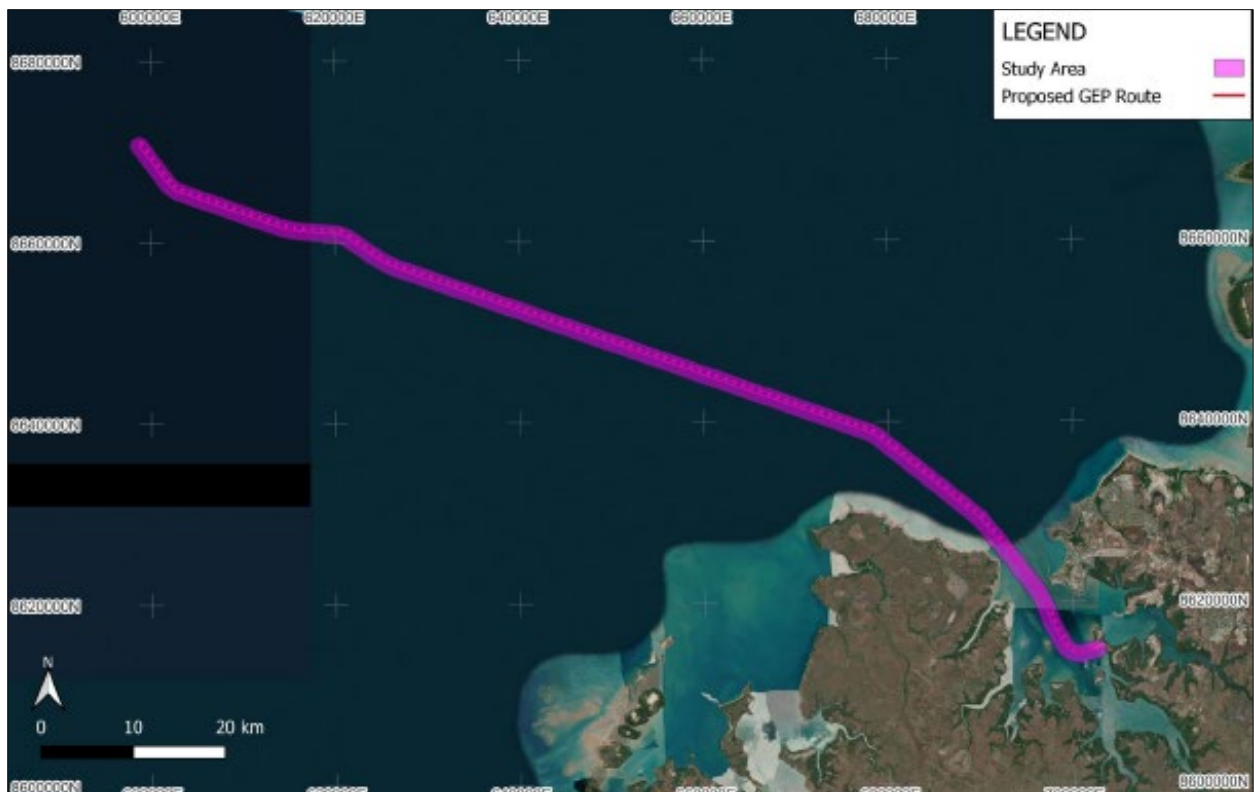
The maritime heritage values relevant to the DPD Project, in both State and Commonwealth waters, have been assessed in a Maritime Archaeological Heritage Assessment (MAHA) carried out by Cosmos Archaeology (CA) in 2022 (CA 2022). The DPD Project Area width for the CA 2022 assessment was 1 km either side of the proposed pipeline centreline (**Figure 4-1**). Within the DPD Project Area is the pipeline impact footprint that is 50 m either side of the DPD pipeline (the DPD corridor).

In 2023, CA were requested to review their findings by Santos considering minor alignment changes. Subsequently, CA assessed an additional area between KP 91.5 and the pipeline terminus at the DLNGP, as the DPD Project Area at this section is 1.8 km wide to allow for anchoring (CA 2023a).

After geophysical survey was completed to identify potential unexploded ordnance (UXO) within the anchoring corridor, CA published an additional report which included updates to three of six previous recommendations (CA 2023b).

The following is a direct summary of the results presented in the CA 2022, 2023a and 2023b reports.

Figure 4-1: Maritime archaeological study area (Source: CA 2022: Figure 1).



4.1.1 Brief historical review

The CA 2022 assessment included review of historical sources, databases, and geophysical information including data from a Fugro survey. The following points describe a brief chronological historical timeline.

- In terms of First Nations use of the DPD Project Area, research indicated that Larrakia and Tiwi people conducted maritime travel and subsistence activities in coastal environments
- Macassan trepang fishing and trade also occurred from the 18th to early 20th centuries
- British exploration began in the early 19th century, after which a range of colonial shipping, including government, commercial cargo, and passenger transport was active
- Fishing and pearling industry trade and transport, and recreational shipping also occurred from the establishment of colonial settlement in Darwin in the 1860s to the present
- In the 1870s and 1880s, three subsea telegraph cables were laid
- Quarantine and leper station transport and service supply were established in Middle Arm throughout the late 19th to early 20th centuries
- The DPD Project Area saw significant military action during World War II (WWII), including air and sea combat between Allied and Japanese forces, resulting in the sinking of numerous ships and aircraft within Beagle Gulf and Darwin Harbour
- Areas near and adjacent to the DPD Project Area have been designated as live-fire ranges, and the pipeline route enters a gazetted air-to-air range, though it is unknown if live fire exercises have been undertaken.

4.1.2 Maritime heritage assessment results

4.1.2.1 *The DPD Project Area*

The assessment undertaken by CA has identified the following items of maritime heritage within the DPD Project Area:

- Seventeen located shipwrecks (**Table 4-1, Figure 4-2**)
- Six items of maritime infrastructure (**Figure 4-3**)
- Five UXO, four of which are located with shipwrecks (**Table 4-2, Figure 4-4**).

There are no known aircraft wrecks or sea dumping sites within the DPD Project Area, however, 29 unlocated ships are known to have wrecked within the vicinity of the DPD Project Area. Any of these could possibly be wrecked within the DPD Project Area. There are 25 known, but unlocated, aircraft wrecks in Beagle Gulf and Darwin Harbour that could potentially occur within the DPD Project Area based on historical accounts of the wreck event and general wreck location.

Additionally, side scan sonar data and Multi-beam echosounder (MBES) data from a marine geophysical survey were reviewed, as well as 1 m resolution MBES data collected between 2011 and 2015 and published by Geosciences Australia, covering the entirety of Darwin Harbour.

As a result of this, 42 sonar and magnetometer contacts were identified as being possibly cultural and hence of potential cultural heritage significance. These anomalies could be natural features, remains of anti-submarine defences, 19th century telegraph cables, shipwrecks, possible aircraft wreckage, debris fields, or isolated instances of debris and/or discard. These occurrences increase with proximity to Darwin Harbour. Of these, 16 are located within 50 m of the DPD Project Area and were hence the subject of ROV surveys by CA, that identified these as ‘trots’, see **Figure 4-5**. The boom net was designed by the British Admiralty and consisted of high tensile wire rope mesh floating nets supported by a series of trots consisting of cylindrical buoys that were anchored to the seabed via concrete mooring clumps. Chains were documented during the ROV survey to cross the DPD Project Area.

This assessment revealed that three such Trots (16, 17, and 18) are present within 50 m of the DPD Project Area. Trot 17 directly crosses the path of the DPD corridor, while elements of Trot 16 are 37 m away, and those related to Trot 18 are 25–32 m away. As a result, recommendations were made in both CA 2022 and 2023 that efforts should be made to realign the pipeline to avoid Trot 17, but that if this was not feasible, then the item could be relocated, and the new location recorded in consultation with NT DTFHC.

After this, more detailed ROV footage determined that there was a break in Trot 17 along the alignment of the DPD corridor and that there would therefore be no requirement to either relocate Trot 17, or realign the pipeline¹, a conclusion that was arrived at in consultation with CA and was also documented in the 2023 geophysical survey report (CA 2023b).

Table 4-1: List of the 17 wrecks in the DPD Project Area (Santos 2023 SER).

Name	Type	Year	Wreck event	Approx. distance of DPD corridor to Exclusion Zone
USAT Mauna Loa	Steel single screw steamship, passenger cargo vessel commissioned as a United States Army transport during World War II. 5436 tons, 125 m in length	1942	Sunk by enemy action during first Japanese air raid on Darwin Harbour on 19 February 1942	15 m
I-124	Steel Imperial Japanese Navy I-121 Class minelaying submarine – 1470 tons, 85.2 m in length	1942	Sunk during counterattack by Allied forces on 20 January 1942.	100 m
USAT Meigs	Steel single screw steamship, former cargo vessel commissioned as a United States Army transport during World War II. 12568 tons, 131.3 m in length	1942	Sunk by enemy action during first Japanese air raid on Darwin Harbour on 19 February 1942	270 m

¹ Email May 23, 2023, Santos to NT DTFHC Re Recommendation 1 of CA 2023.

Name	Type	Year	Wreck event	Approx. distance of DPD corridor to Exclusion Zone
Mandorah Queen	Steel and aluminium motor vessel passenger ferry – 22 m in length	1974	Wrecked in Cyclone Tracy	690 m
NR Diemen	Motor vessel prawn trawler – 124 tons, 20.4 m in length	1974	Wrecked in Cyclone Tracy	700 m
Yu Han 22	Timber Taiwanese fishing motor vessel – 25 m in length	1975	Partially burned and scuttled	730 m
Song Saigon	Steel Vietnamese refugee motor vessel – 200 tons, 38 m in length	1982	Scuttled to form an artificial reef	755 m
Medkhanun 3	Steel Thai fishing motor vessel – 25 m in length	2007	Scuttled to form an artificial reef	850 m
John Holland Barge	Steel work barge – 18 m long by 12 m wide	1982	Scuttled to form an artificial reef	930 m
Ham Luong	Steel Vietnamese refugee motor vessel – 15 m in length	1983	Scuttled to form an artificial reef	1,140 m
Darwin Princess	Steel motor vessel passenger ferry – 22.8 m in length	1974	Wrecked in Cyclone Tracy	1,300 m
Buffalo Amphibian	Steel LVT Buffalo amphibious tracked landing craft – 16.5 tons, 7.95 m in length	1960s	Foundered whilst being used as support vessel for Mandorah Ferry	1,380 m
Barge – Unknown No. 1	Steel barge; likely WWII era	Not known	Not known	1,700 m
Darwin Harbour Unidentified Wreck 2	Timber hulled vessel – 30 m in length, carrying 10 tons of steel cargo	Not known	Not known	2,000 m
Mandorah Unidentified Wreck 1	Timber hulled motor vessel	Not known	Not known	2,000 m
Mandorah Unidentified Wreck 2	Timber hulled motor vessel	Not known	Not known	2,000 m
USS Peary	Steel twin screw steamship, United States Navy Clemson class destroyer. 1190 tons, 95.8 m in length	1942	Sunk by enemy action during first Japanese air raid on Darwin Harbour on 19 February 1942	2,000 m

*Orange highlighted wrecks have protection under: Underwater Cultural Heritage Act 2018; Heritage Act 2011 – 100 m radius (under Heritage Act 2011); and United States of America Sunken Military Craft Act 2004

*Green highlighted wrecks have protection under: Underwater Cultural Heritage Act 2018 – 800 m radius

*No highlight wrecks have no legislative protection.

Table 4-2: List of the five UXO locations in the DPD Project Area (Santos 2023 SER).

Shipwreck or other	UXO Type	Approx. distance of DPD corridor to Exclusion Zone
USAT Mauna Loa	.303 calibre and .45 calibre am-munition and 3" mortar	15 m
I-124	5.5" artillery shells and 21" torpedos	100 m
USAT Meigs	.303 calibre ammunition and possible depth charges or land mines	270 m
USS Peary	3 and 4" artillery shells	2,000 m
Dumping	Mechanical time fuses and fuse cones	175 m

*Orange highlighted wrecks have protection under: Underwater Cultural Heritage Act 2018; Heritage Act 2011 – 100 m radius (under Heritage Act 2011); and United States of America Sunken Military Craft Act 2004

*Green highlighted wrecks have protection under: Underwater Cultural Heritage Act 2018 – 800 m radius

*No highlight wrecks have no legislative protection

Figure 4-2: Location of known shipwrecks in the DPD Project Area (Santos 2023: SER, Figure 11-5).

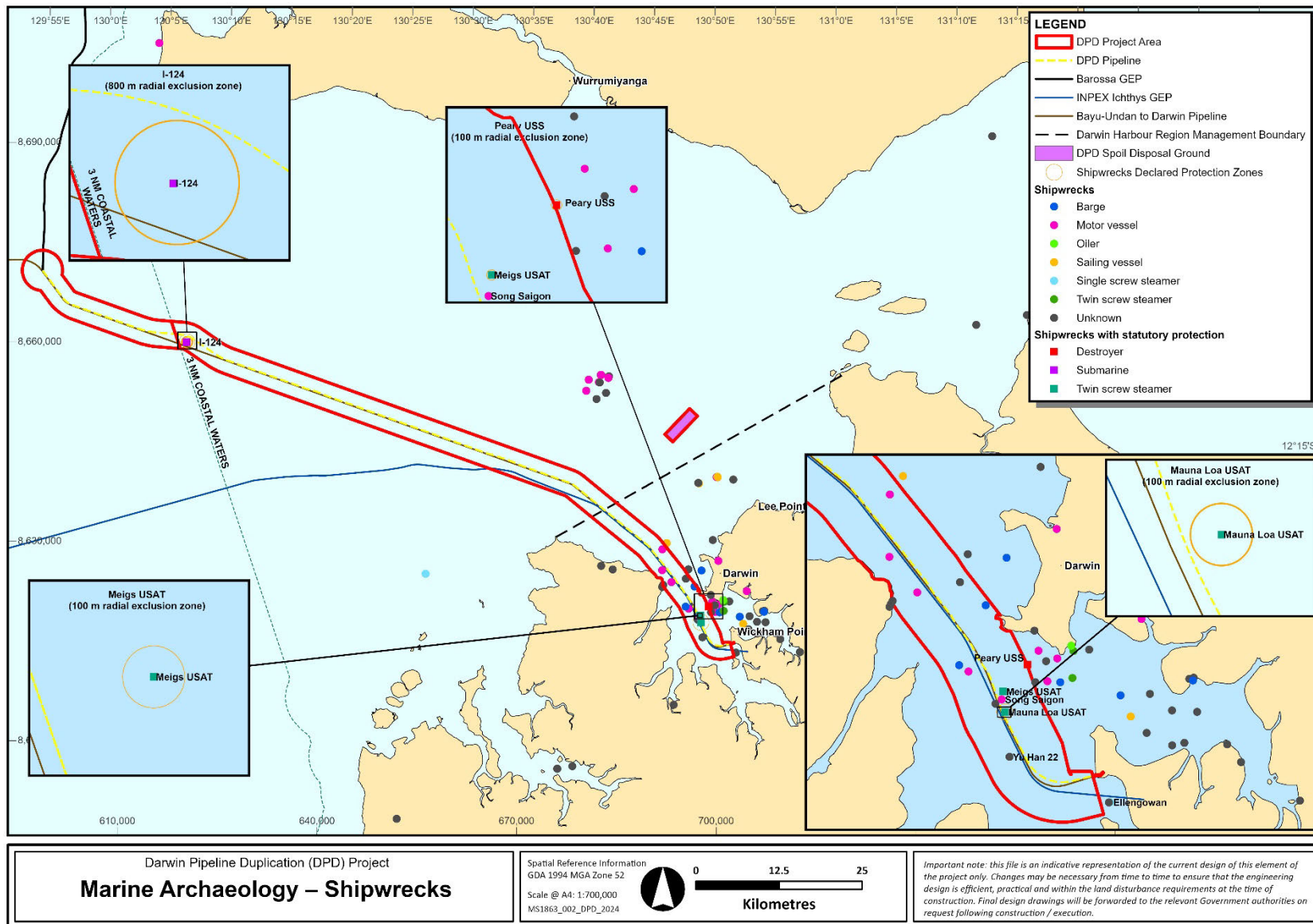


Figure 4-3: Location of historical maritime infrastructure in the DPD Project Area (Santos 2023: SER, Figure 11-6).

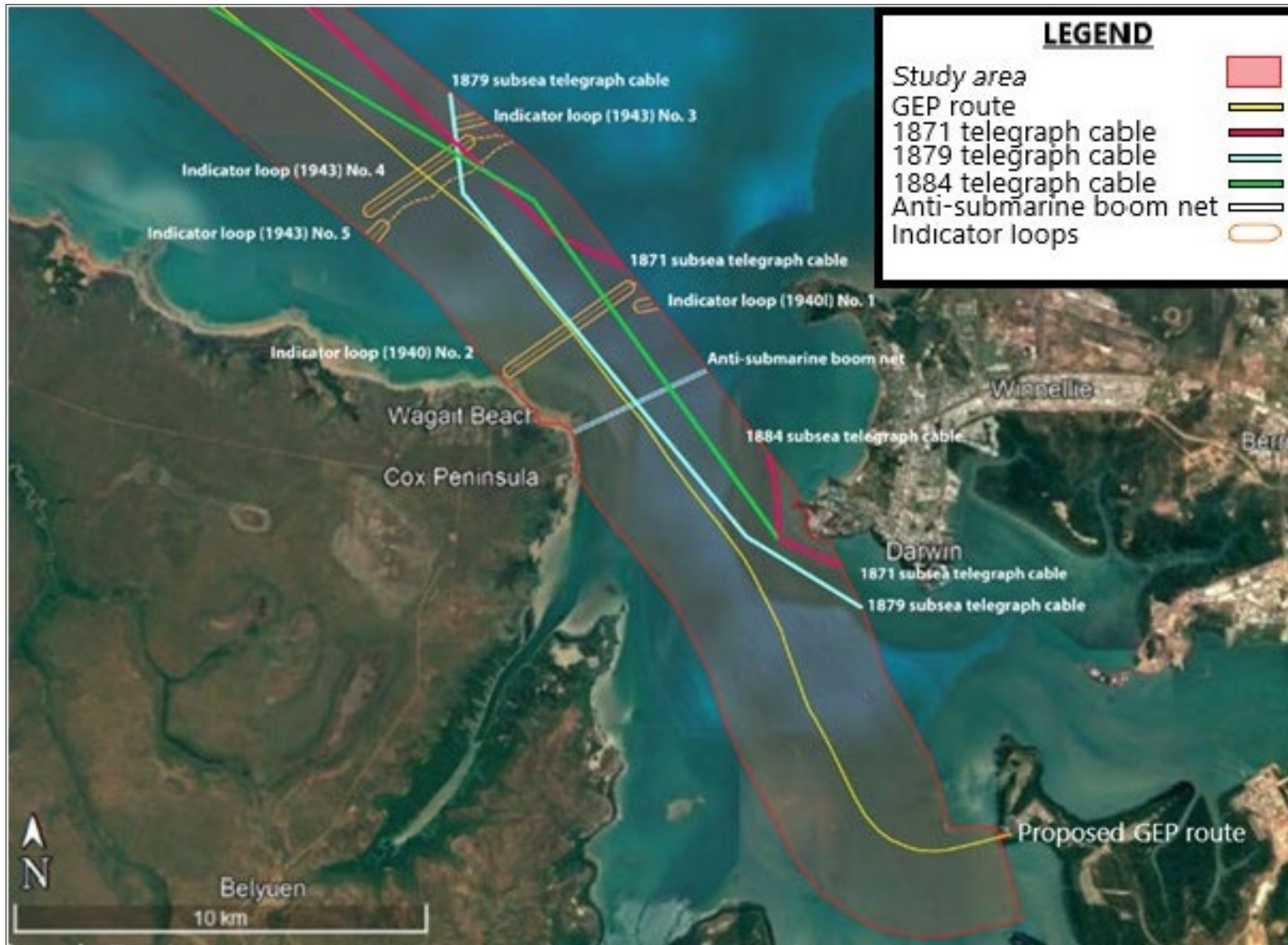


Figure 4-4: Location of unexploded ordinances in the DPD Project Area (Santos 2023: SER, Figure 11-6).

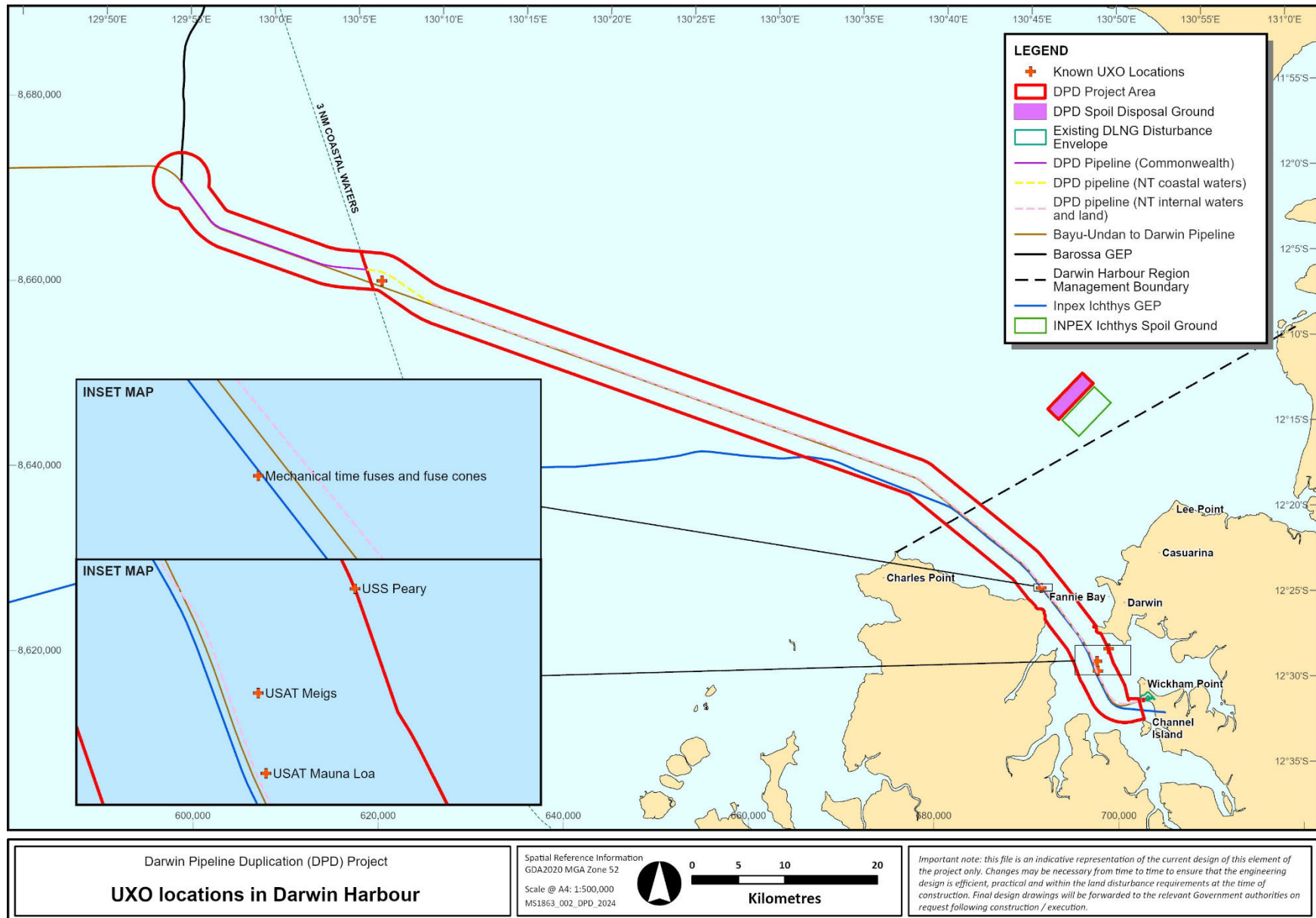
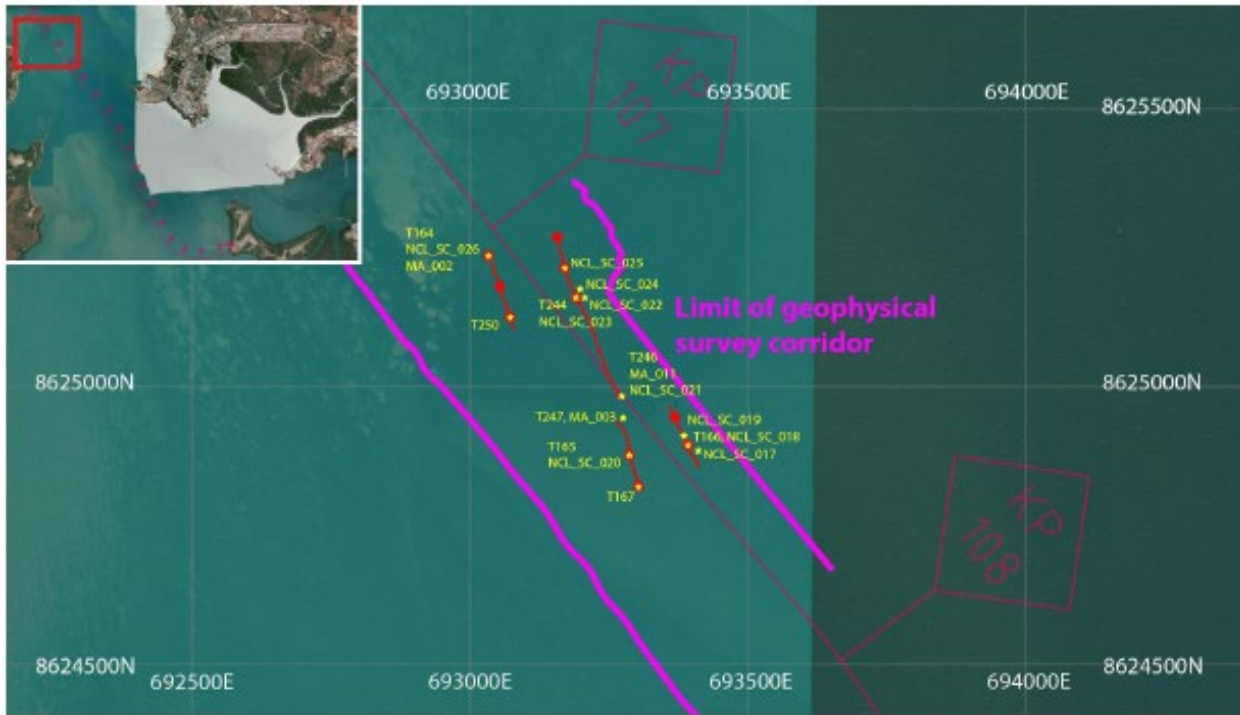


Figure 4-5: Location of anti-submarine net trots identified from ROV surveys (CA 2022: Figure 71)



*Circles represent mooring blocks/anchors, lines indicate chains in between blocks, stars represent geophysical survey anomalies, with IDs.

4.1.2.2 Anchoring corridor

The assessment of the anchor corridor did not have the benefit of the Fugro geophysical survey data, hence assessment relied on the MBES from Geoscience Australia. The following was identified:

- Eight shipwrecks:
 - Two are the *USAT Mauna Loa* and *USAT Meigs*, both of which are protected under the *NT Heritage Act 2011* and may be protected under the *US Sunken Military Craft Act 2004*
 - The other six are not protected under statutory regulations.
- No aircraft wrecks were identified.

The data from Geoscience Australia revealed 135 geophysical targets in the gap between the Fugro data corridor and the anchoring corridor boundary, located as follows:

- 90 targets are between KP 107 and 108, which was the known location of the WWII anti-submarine boom net moorings. Most of these are likely to be cement mooring blocks
- 45 targets have been identified as debris, being isolated discard or possible cable remains, scatter along the length of the anchoring corridor.

On 28 July 2023, Santos informed CA that additional geophysical surveys had been conducted to identify potential UXO within a section of the anchoring corridor in Darwin Harbour (CA 2023b).

The DPD Pipeline route had also changed slightly, resulting in one section of trenching being removed from the design. This resulted in the following findings:

- The 2023 assessment concluded that although no new targets were identified, as the realignment remained in the area of previous assessment, the proximity of some ‘targets’ to the proposed alignment had altered. Despite this, the distance of targets from the proposed works was assessed as sufficient to avoid impacts (CA 2023b)
- The 2023 assessment regarding the additional survey data in sections of the anchor corridor, CA mainly relied on the interpretation by the UXO consultant. An anchor placement exclusion zone of 5 m radius around all potential UXO or potential heritage items is instigated as a result.

4.1.3 Legislative protection - maritime heritage

The remains of any vessels, and their contents and fittings, are automatically protected under the *Cwlth Underwater Cultural Heritage Act 2018*. Any remains within the coastal waters’ boundary (three nautical miles [nm]) are also protected under the *NT Heritage Act 2011*, and United States military shipwrecks and aircraft wrecks are protected under the *US Sunken Military Craft Act 2004*.

4.2 FIRST NATIONS HERITAGE

The Darwin region was traditionally occupied by the Larrakia people, whose country runs from Cox Peninsula in the west to Gunn Point in the north, Adelaide River in the east and down to the Manton Dam area southwards (Larrakia Nation 2023). The waters of Darwin Harbour, Bynoe Harbour, Shoal Bay, Adam Bay, and parts of Beagle Gulf also form part of Larrakia country (CA 2022).

The Larrakia people maintain an innate connection to the land and sea in the region. Cultural, spiritual and heritage sites of significance are located throughout the region where traditional harvesting remains an important practice.

Offshore from Darwin Harbour, the waters around the Tiwi Islands (including Bathurst Island, Melville Island, and the Vernon Island) similarly hold a spiritual connection, and as a source of food and wellbeing, for the Tiwi people (Tiwi Land Council 2021 as referenced in Santos 2023a).

Cultural heritage and sacred sites in the Northern Territory are protected by the *Heritage Act 2011* and the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT Sacred Sites Act).

4.2.1 Sacred sites

There are many sacred sites within Darwin Harbour and the surrounding waters. In coastal and sea areas, sacred sites may include features which lie both above and below the water.

The AAPA, an independent statutory authority established under the NT Sacred Sites Act, is responsible for overseeing the protection of Aboriginal sacred sites on land and sea across the NT. AAPA protects Aboriginal sacred sites through:

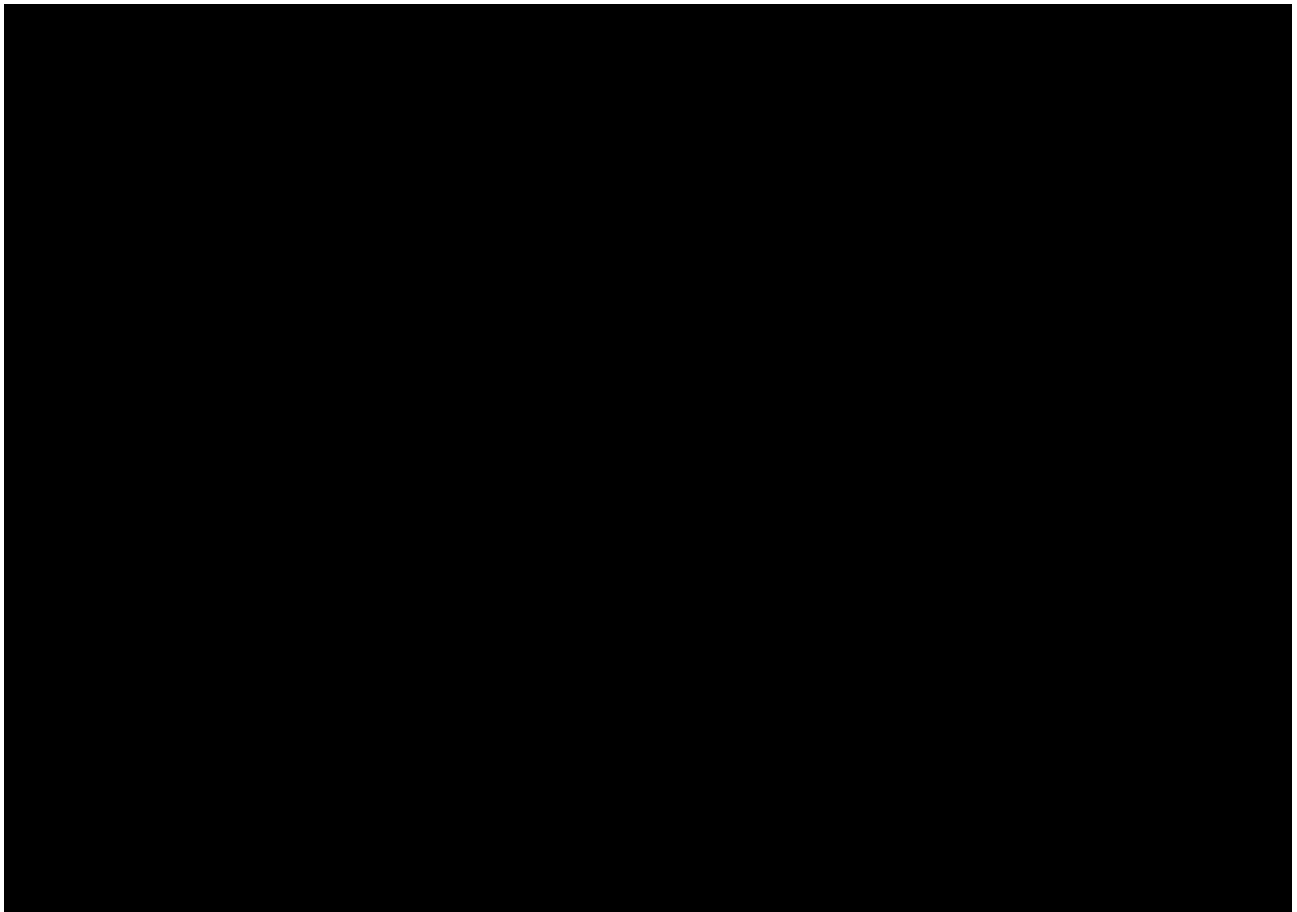
- Sacred site avoidance surveys and the issuing of Authority Certificates for any proposed development
- The provision of information to the public about existing sacred sites data through abstracts of Authority records and access to the Registers maintained by the Authority
- The registration of Aboriginal sacred sites (AAPA 2022).

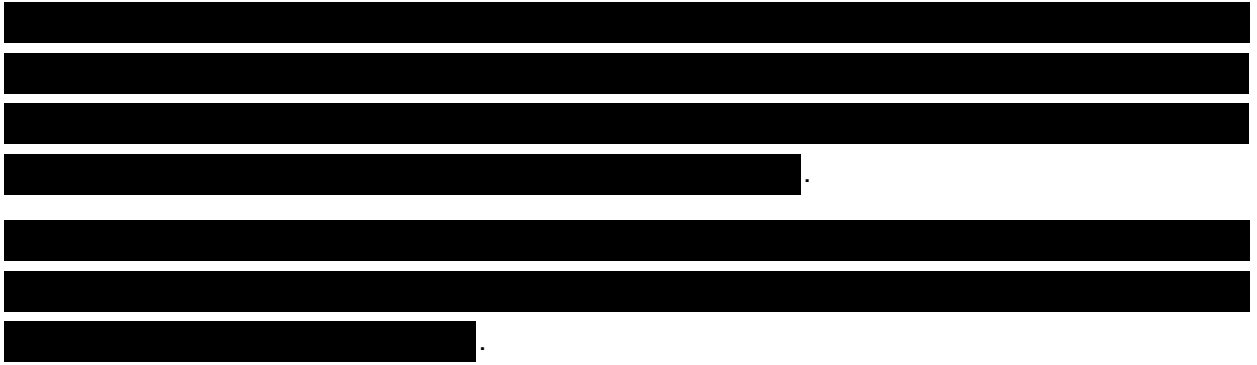
For the DPD Project, AAPA issued an Authority Certificate (C2022-098) on 23 December 2022 with a second certificate issued on 22 May 2024 for a small additional area beyond that covered by C2022-098.

4.2.1.1 AAPA Certificate 2022/098

Figure 4-6 shows the subject area covered by AAPA certificate C2022-098. The Subject Land area represents a mostly 1 km buffer either side of the pipeline route where disturbance from vessel anchoring could occur and additional areas representing the spoil disposal ground and the onshore Project area within the DLNG facility disturbance footprint.

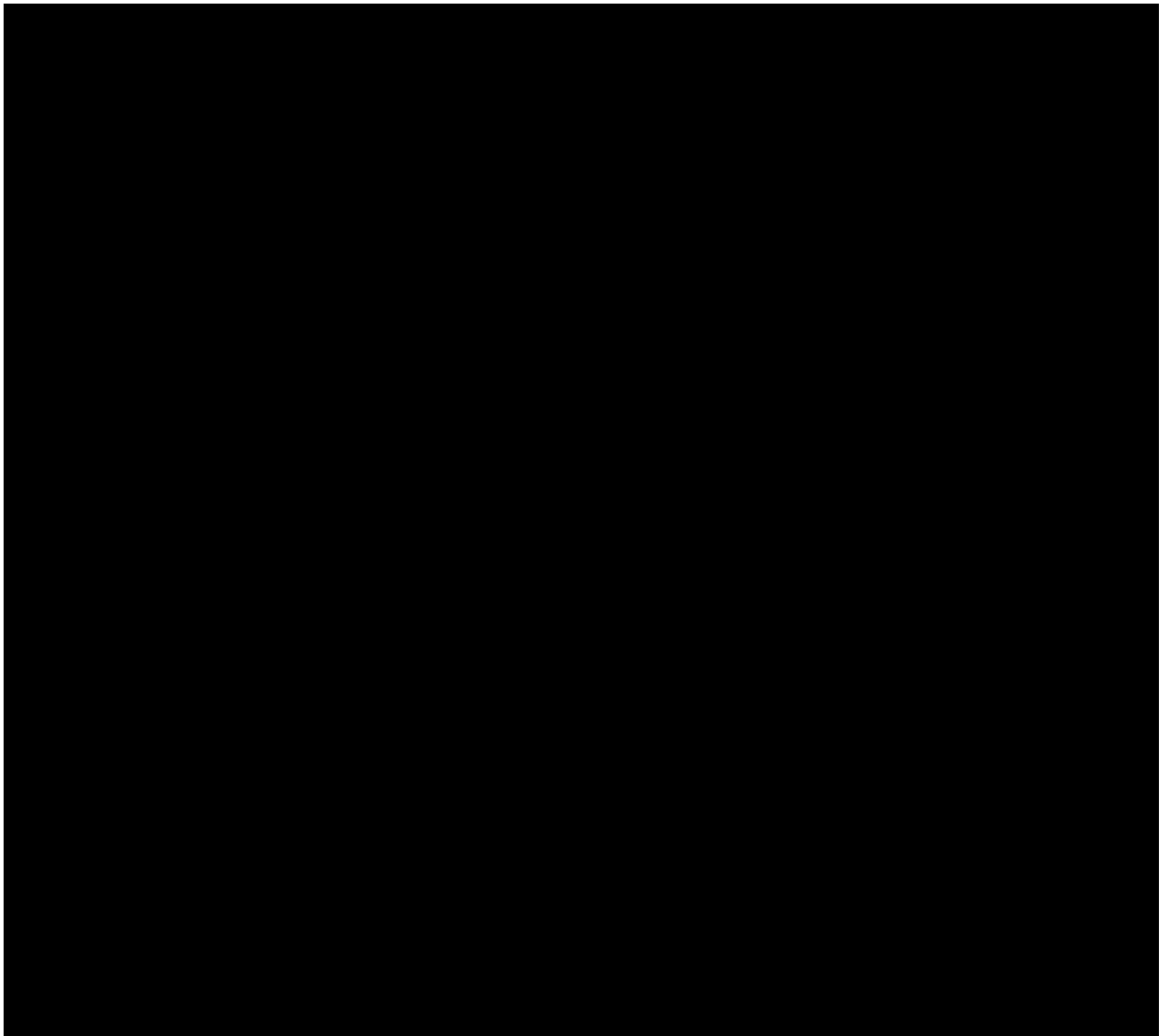
Figure 4-6: Subject land covered by AAPA Certificate C2022/098.





AAPA certificate C2022/098 includes a number of conditions, including provisions relevant to C2022-098 RWA1. These have been incorporated into the heritage management measures detailed in **Section 5**.

Figure 4-7: Sacred sites near the DPD Project - AAPA Certificate C2022/098.



4.2.1.2 AAPA Certificate 2024/034

[REDACTED]

AAPA certificate C2024-034 includes several conditions, including provisions relevant to C2024-034 RWA1. These will be presented in the recommendations of this report, **Section 5**.

Figure 4-8: Area covered by AAPA Certificate C2024/034

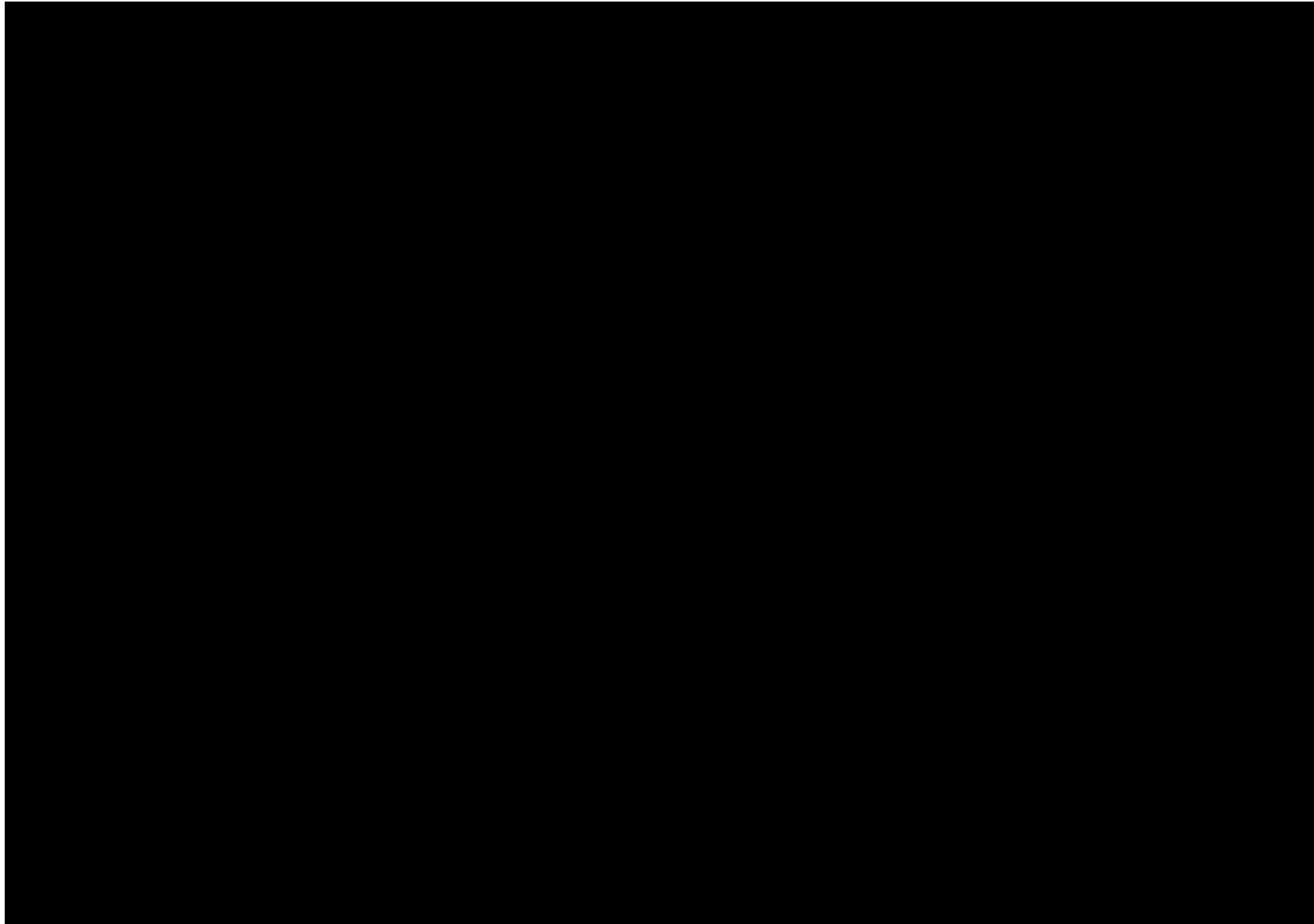


Figure 4-9: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 1 blow up)

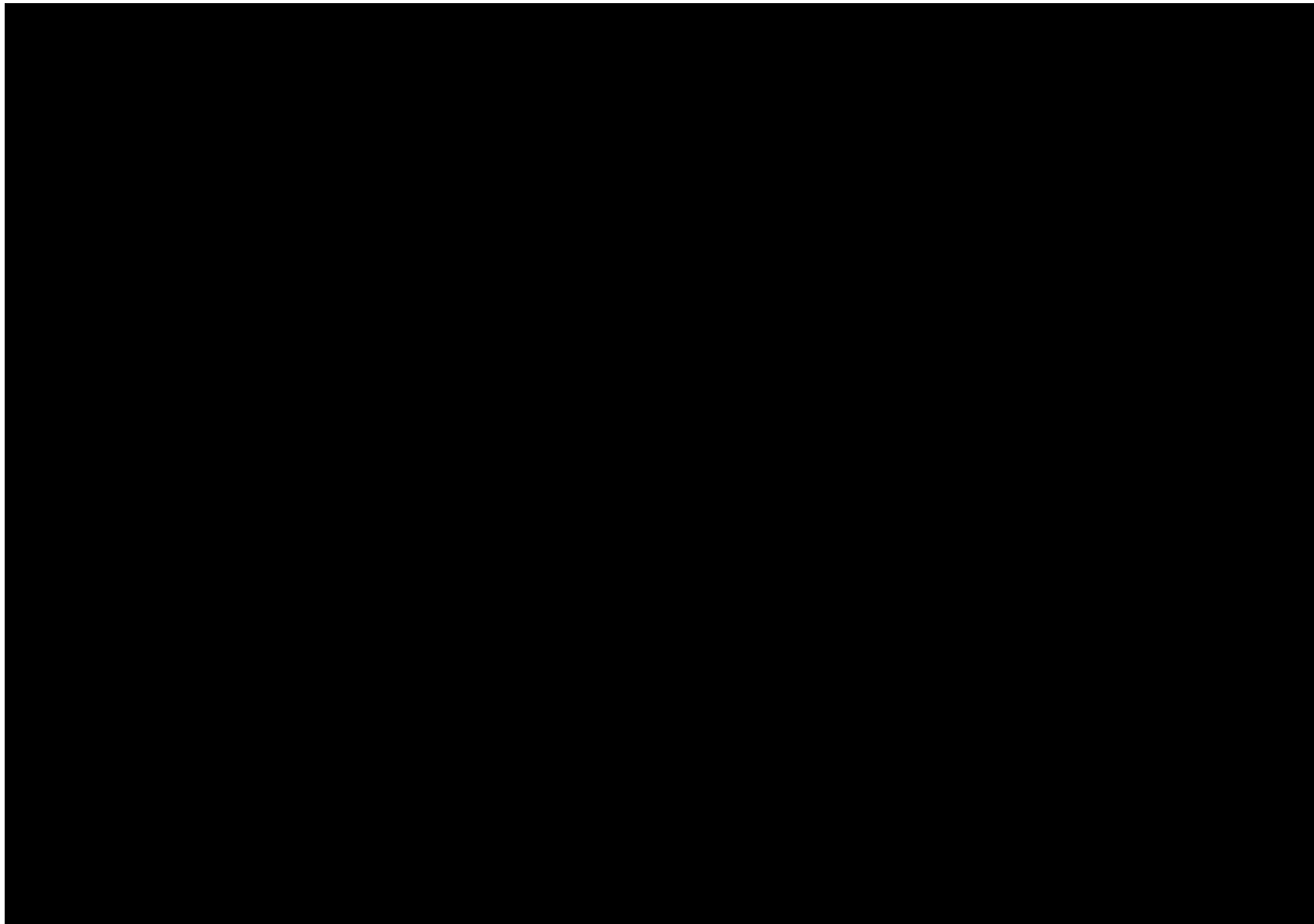


Figure 4-10: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 2 blow up)

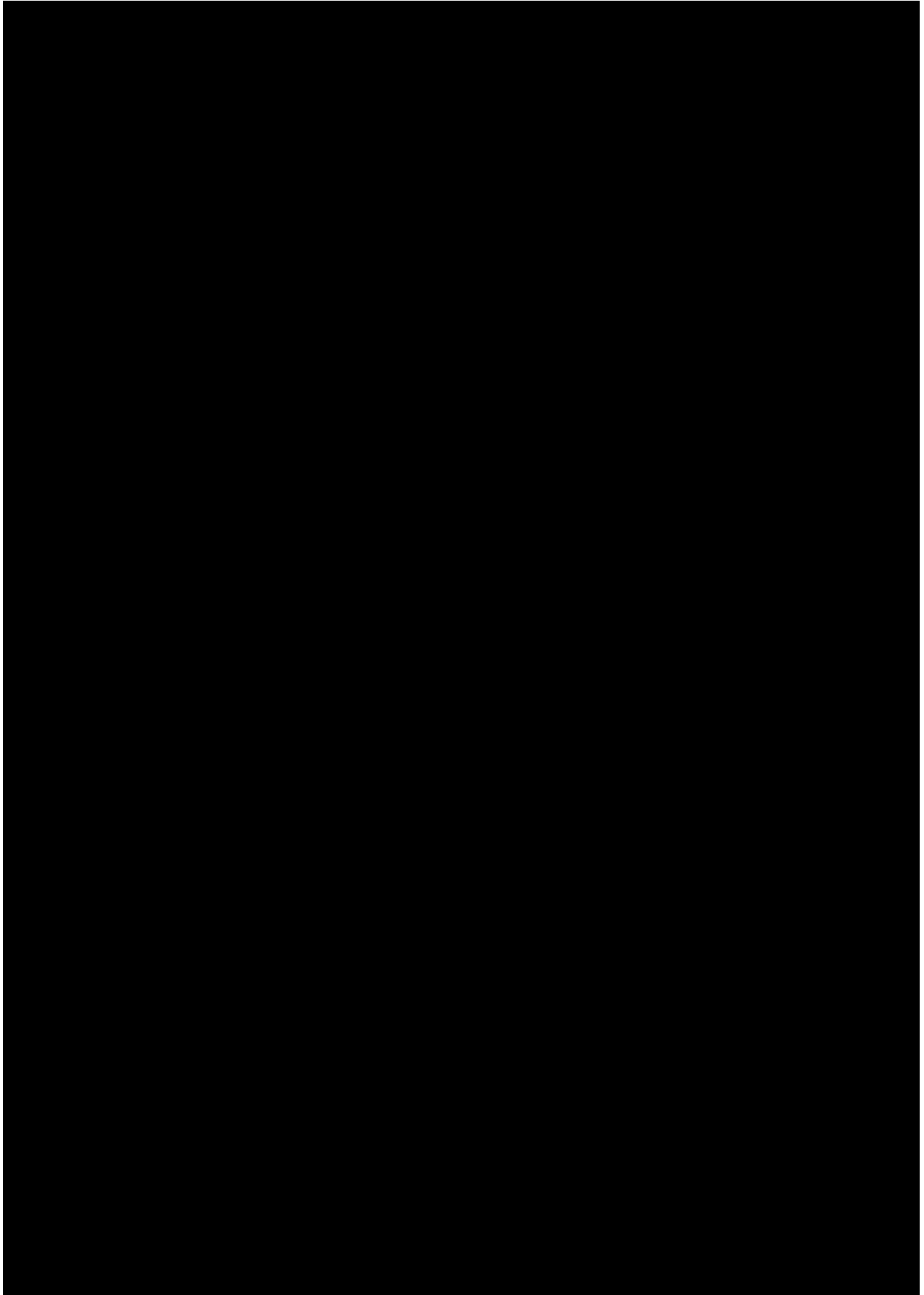
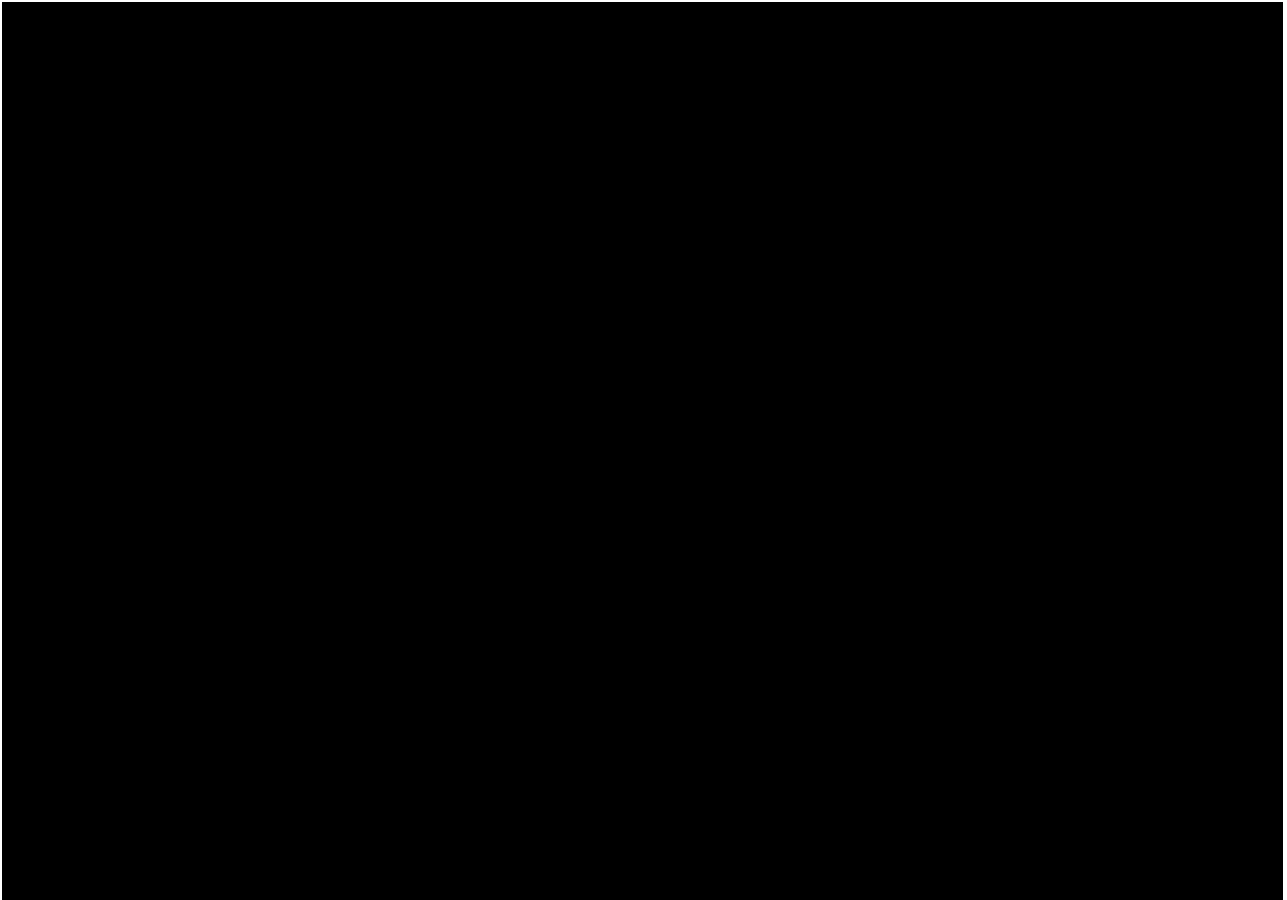


Figure 4-11: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 3 blow up)

4.2.2 Cultural values

The results of the ethnographic study of First Nations spiritual and cultural values relevant to the DPD Project area (ABMC Consulting 2024) are summarised below, specifically in terms of some common findings relevant to the management of cultural heritage:

- DPD Project personnel should be made aware of the presence and importance of sacred sites and Dreamings. Reference was made to sacred sites/Dreamings associated with stingray, spotted ray, manta ray, turtle, dugongs, dolphins, and shellfish, and sacred sites/Dreamings [REDACTED]
- Need for protection of marine life, including turtles, crocodiles, dugongs, dolphins, whales, shellfish, crabs, microbiota, seagrasses, and mudflats. Specific reference to the Irrawaddy Dolphin within Darwin Harbour (now referred to in scientific literature as the Snubfin Dolphin).
- A suggestion that cultural monitors be engaged to assist and provide advice on the protection and maintenance of the cultural and spiritual places and activities throughout the DPD construction process and that a discussion on this topic be held with the WPDRG in the first instance.

4.2.3 First Nations archaeological sites

The First Nations archaeological values relevant to the DPD Project have been assessed in a desktop First Nations Archaeological Assessment undertaken by OzArk Environment & Heritage in 2024 (OzArk 2024). The following is a summary of the results and recommendations presented in that document.

4.2.3.1 *Submerged landscape*

The desktop First Nations archaeological assessment for the submerged DPD corridor was based on a detailed geomorphological assessment (Santos 2024). This study focussed on the likelihood for deposits associated with the Last Glacial Maximum (LGM) to be impacted by the DPD Project. Only one location where potential sediments associated with the LGM were indicated was in the vicinity of KP36.4 to 37.9, where they are assessed likely to be at a depth of approximately 18 m below the sea floor. At this depth, no activities related to the construction of the DPD Project will have any direct or indirect impact on these potential sediments.

4.2.3.2 *Terrestrial landscape*

While OzArk 2024 has described the plentiful archaeological record across Wickham Point, the assessment also confirmed that no intact First Nations sites are likely within the DPD terrestrial impact footprint. The area has undergone a significant amount of prior archaeological survey and assessment and First Nations sites in its vicinity underwent archaeological test and salvage excavation. Subsequently, the land has been completely modified via construction of the DLNGP facility and the existing pipelines. The DPD pipeline is proposed to enter the DLNGP within the disturbance boundary established for the plant in 2006. **Figure 4-12** shows the 2006 disturbance zone that has been cleared under permit in red dash, and the location where the pipeline will enter the facility within this boundary in the area shown by the yellow rectangle.

One First Nations site, site MA15, a midden, is located just outside the DPD terrestrial impact footprint **Figure 4-12**. It will require the implementation of management measures to ensure it is avoided by inadvertent project impacts.

Figure 4-12: Boundary of land cleared of First Nations cultural heritage for the DLNGP.



5 HERITAGE MANAGEMENT MEASURES

5.1 OBLIGATION TO PROTECT FIRST NATIONS CULTURAL AND MARITIME HERITAGE

5.1.1 Obligation to avoid harm

All employees, contractors, sub-contractors, and visitors actively participating in the work to the project have an obligation to avoid harming or disturbing cultural heritage.

The definition of harm or disturbance used in this CHMP stems from definitions in several relevant Acts:

- Part 3, Division 2 of the *Underwater Cultural Heritage Act 2018* provides for the regulation of activities relating to protected underwater cultural heritage. Specifically, any conduct that has or is likely to have an adverse impact on protected underwater cultural heritage is prohibited unless carried out in accordance with a permit granted under the Act. Conduct is considered to have an adverse impact on protected cultural heritage if it:
 - (a) directly or indirectly physically disturbs or otherwise damages the protected underwater cultural heritage; or
 - (b) causes the removal of the protected underwater cultural heritage from waters or from its archaeological context.
- The *NT Aboriginal Sacred Sites Act 1989* protects sites that are 'sacred to Aboriginals or [are] otherwise of significance according to Aboriginal Tradition'. Part IV outlines penalties for the desecration of sacred sites, and for entering or carrying out work on sacred sites without an Authority Certificate.
- The *NT Heritage Act 2011* established the Heritage Council and the Heritage Register, protects significant heritage places, and objects, and sets penalties for accidental or deliberate destruction, amongst other offences.

5.1.2 Obligation to protect

All personnel, contractors, and subcontractors having responsibility for land management, construction, or operation inside the DPD Project Area have an obligation to protect cultural heritage within their area of work responsibility.

Protection means having accurate information on the location of known cultural heritage sites, places or restricted work areas on all applicable plans and undertaking active measures to avoid harm to cultural heritage. This may include a need to modify work plans to safeguard cultural heritage such as changing design to avoid harm to known cultural heritage.

Implementation of a the MAUFP and the FNUFP (collectively called Unexpected Finds Protocols [UFPs]) will be in place for all project activities (**Section 5.5.4**).

5.1.3 Obligation to implement management measures

All employees, contractors, and sub-contractors of the project have a responsibility to ensure that the appropriate cultural heritage management measures have been implemented prior to construction activities commencing.

5.2 INDUCTIONS

Santos recognises that training and awareness is an important aspect of the DPD Project, as well as being a requirement of the Environment Approval and a commitment of the SER.

All employees, contractors, sub-contractors, and visitors actively participating in the work on the project will be made aware of the obligation to minimise direct impacts to First Nations cultural and maritime heritage through a cultural heritage component to a general site induction prior to them commencing work on the project. The induction will include notifying workers of any cultural heritage features in proximity to their work areas, as well as exclusion / no-go zones and restricted work areas.

It is understood that the general First Nations cultural and maritime heritage induction for contractors may be delivered online as e-learning modules, or in person as part of toolbox talks and general project briefings or similar.

A record will be kept of all personnel who have completed the general site induction.

5.2.1 Maritime archaeological heritage induction

A specific maritime heritage induction will be prepared containing the following points and shall be given to key personnel who have the potential to influence the detection of maritime archaeological heritage:

1. That items of significant maritime heritage are present within and adjacent to the DPD Project Area
2. The legislative protection of maritime heritage
3. That no-anchoring zones are to be established around protected shipwreck locations, anti-submarine net moorings and unverified anomalies
4. Protocols to be followed for unexpected maritime archaeological finds, which will be set out in the MAUFP.

5.2.2 First Nations cultural heritage induction / awareness training

The First Nations heritage induction will include the following points expressed in plain language:

1. The project is located on Larrakia Country within Darwin Harbour and Tiwi country in Commonwealth waters
2. The legislative protection afforded First Nations heritage

3. The location of sacred sites outside the approved DPD Project Area that must be avoided
4. The location of the two AAPA RWAs and what actions are required to ensure it is respected
5. Protocols to be followed for unanticipated finds or skeletal remains, which will be set out in the FNUFP and will be given to key personnel who have the potential to influence the detection of First Nations archaeological heritage.

5.3 MEASURES TO PROTECT KNOWN MARITIME ARCHAEOLOGICAL SITES

The following management measures have been devised to ensure that maritime archaeological sites are managed in accordance with the Project Approval and best practice.

CA 2022/2023 concluded that so long as management recommendations of the report were adhered to, pipeline activities for the DPD Project would avoid all identified maritime heritage, other than anti-submarine defence mooring trot, Trot 17. Later review indicated Trot 17 will be avoided. Two additional anomalies were then identified (CA 2023b). These anomalies have now been visually inspected and found to be not heritage related. There are no further requirements in relation to these items.

The required management measures are as follows:

1. It has been determined that the DPD corridor will not impact the WWII anti-submarine net mooring Trot 17, as there is a visible break in the Trot cable at the location of the pipeline. Further, the development design sees the pipe laid directly on the seabed, with no associated trenching, hence the potential impacts to the chain of Trot 17, if present, would be negligible (CA 2023a). Due to the low likelihood of negative impacts no further management is required
2. If potential cultural anomalies and objects identified in the maritime archaeological assessment are likely to be impacted, Santos are required to undertake further detailed heritage impact assessment by a qualified maritime archaeologist
3. Ensure that anchoring does not occur in sensitive locations. This includes no-anchoring zones around protected shipwreck locations, the anti-submarine net moorings, and unverified geophysical anomalies within the anchoring corridor (see **Section 5.5.3**)
4. If additional remote sensing data is collected for the DPD Project, it should be reviewed by a qualified maritime archaeologist
5. Undertake additional assessment if the proposed alignment of the pipeline changes.

5.4 MEASURES TO PROTECT KNOWN FIRST NATIONS SITES

The following management measures have been devised to ensure that First Nations cultural heritage is managed in accordance with the Project Approval and best practice.

Assessment in respect of First Nations heritage for this project has concluded that no First Nations cultural heritage is expected to be impacted by the DPD Project, so long as the management measures outlined here are implemented within the DPD Project Area.

5.4.1 AAPA certificate C2022/098 requirements

[REDACTED]
[REDACTED]
[REDACTED]. To ensure this site is protected, the following measures apply:

1. Santos to ensure that the conditions of Certificate C2022/098 are included with any tendering packages to contractors
2. Santos to ensure that any agent, contractor, or employee is aware of the conditions of this Certificate and the obligations of all persons (who enter on, or carry out works or use land on which there is a sacred site) under Part IV of the NT Sacred Sites Act
3. That this certificate will lapse if not actioned (via work commencement) within two years of the date issue (being December 2022)
4. [REDACTED]:
 - a. No work shall take place
 - b. No damage shall occur.
5. To ensure no inadvertent damage, C2022-098 RWA1 is to be delimited by buoys ahead of seabed disturbance activities in its vicinity
6. All project vessels will have the coordinates of C2022-098 RWA1 loaded into their navigation systems
7. Senior Larrakia representative(s), chosen by the WPDRG, will be given the opportunity to be on board a project vessel to observe operations in the vicinity of the C2022-098 RWA1.

[REDACTED]
[REDACTED] The following avoidance measures should be adhered to:

1. Santos to ensure that no anchoring occurs in sensitive locations and that anchoring remains within the prescribed anchoring corridor
2. Should a deviation from planned anchoring be required, additional consideration will need to be given to the location of these sites to ensure they are not adversely impacted.

5.4.2 AAPA certificate C2024/034 requirements

[REDACTED]. To ensure this site is protected, the following measures apply, as outlined in the AAPA certificate:

1. Santos to ensure that any agent, contractor, or employee is aware of the conditions of this Certificate and the obligations of all persons (who enter on, or carry out works or use land on which there is a sacred site) under Part IV of the NT Sacred Sites Act
2. [REDACTED]
 - a. The only works permitted are those described in the Proposed Works / Use section of AAPA Certificate C2024-098
 - b. Nominated First Nations custodians must be given reasonable prior notice and the opportunity to be present during any works
 - c. [REDACTED]
 - d. [REDACTED].

5.5 GENERAL HERITAGE MANAGEMENT MEASURES TO REDUCE RISK OF IMPACT

5.5.1 Internal heritage clearance process

5.5.1.1 *Submerged pipeline*

The DPD corridor will be surveyed using Remote Operated Vehicles (ROVs) or vessel mounted survey systems, as the depth and currents on the sea floor create an environment that poses a disproportionate safety risk for divers. Ahead of any construction activities, a vessel is deployed to undertake a final seabed survey to identify in detail the characteristics of the seafloor, to ensure that the installation of the pipeline can be undertaken in a streamlined fashion. The construction activities for the submerged DPD pipeline can be divided in four main scopes, each with their own survey requirements relevant to nature of the seabed environment and the type of activity:

- Pre-trenching survey
- Trenching operations
- Darwin Harbour pipelay barge operations
- DP Pipelay Vessel Operations

Pre-Trenching Survey

Prior to any trenching operations, an in-survey will be conducted using a hull mounted MBES system. The survey will cover the full work area and exceed the design width on both sides to assure undisturbed seafloor/ground surface coverage.

If any objects of interest are identified during the pre-trenching phase, Company has an underwater drone available in Darwin Harbour that can be deployed in few days' notice to obtain imagery.

Trenching Operations

During trenching, regular MBES progress surveys will be conducted. As these surveys are focussing on a disturbed seabed, the chances of encountering anything of interest is negligible.

Darwin Harbour Pipelay Barge Operations

The Darwin Harbour DPD pipeline route will be surveyed prior to pipelay commencement using the Nearshore Pipelay Barge. The pre-lay will be undertaken using a sonar (side scan or ROV sonar) and MBES mounted on a pole or ROV.

During pipelay operations, touch-down monitoring will take place using ROV. In case the ROV encounters any station keeping and visibility issues due to the strong currents in Darwin Harbour, it will be attempted to undertake the touch-down monitoring using a pole mounted MBES.

Dynamic Positioning Pipelay Vessel Operations

The Offshore section of the DPD pipeline route will be surveyed prior to pipelay commencement using the Dynamically Positioned (DP) Pipelay Vessel. The pre-lay will be undertaken using a sonar (side scan or ROV sonar) and MBES mounted on a pole or ROV.

During pipelay operations, touch-down monitoring will take place using ROV. Santos is expecting similar conditions as during the Barossa GEP installation and is therefore not expecting any issues with ROV station keeping.

Data review

It is noted that conditions for the ROV survey can be variable, with extremely high visibility at times and very low visibility from ocean currents and turbulence at others. The conditions will impact on the ability to observe the sea floor and detect potential heritage objects (**Appendix 4 and 5**).

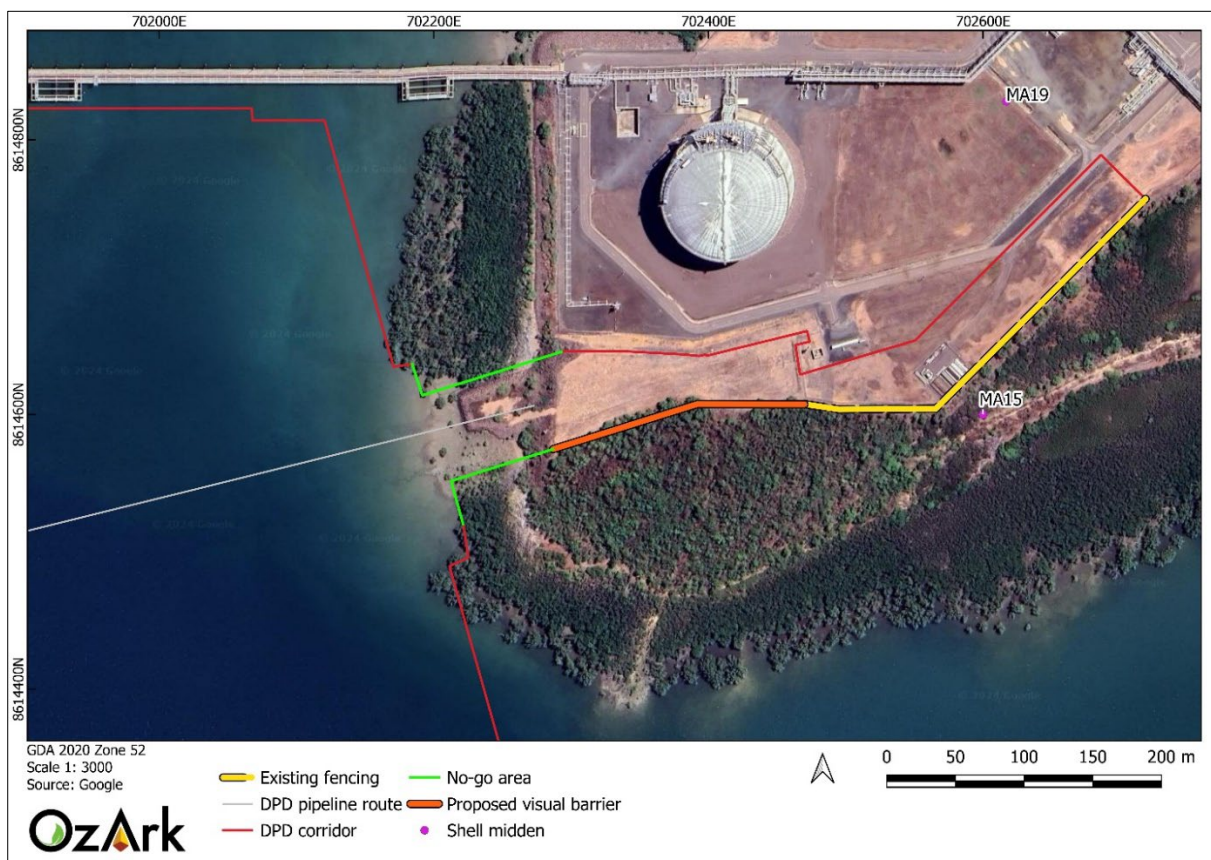
5.5.1.2 *Terrestrial pipeline*

The DPD Project boundary at the point of landfall at the DLNGP is within a completely cleared and disturbed area, impacted by the original construction of the plant. So long as all project activities remain within this boundary, there should be no impacts to First Nations archaeological material.

To ensure that no inadvertent impacts occur beyond this cleared and disturbed corridor, Santos will ensure that:

1. Prior to construction, the impact footprint will be clearly delineated, as shown in **Figure 5-1** and described below.
 - a. The southeastern portion is already fenced as it is within the DLNGP facility
 - b. The central southern section will require a high visibility barrier
 - c. The area at landfall is subject to tidal waters and fencing is not an appropriate exclusion method. These areas should be delineated on maps and discussed in inductions to ensure contractors understand these are no-go zones.
2. Heritage protection signage will be displayed on the fencing noting these as a 'no-go' areas
3. The location of these no-go areas will be mapped and presented in the Onshore CEMP (BAS-210 0025) induction for all relevant personnel
4. The project will ensure that this exclusion signage remains intact throughout the construction period.

Figure 5-1: Location of temporary fencing to be installed prior to construction works commencing on land.



5.5.2 Additional heritage assessment


Should the alignment of the pipeline, the extent of the anchoring corridor, or the location of any ancillary work areas such as spoil disposal areas change, then further assessment for both maritime and First Nations heritage will be required.

The approved footprint for the project is shown on **Figure 1-1**, directly from the Environmental Approval (EP2022/11-001).

5.5.3 Anchoring procedures and anchoring exclusions

An anchored pipelay vessel will be required to lay the inshore sections of the pipeline from the DLNGP shore crossing to Kilometre Point (KP) 91 (i.e. 91km from the offshore end of the pipeline at KP0). An anchoring corridor has been assessed for the project, extending 900 m either side of the pipeline. A deepwater Dynamically Positioned (DP) pipelay vessel (non-anchored) will be used to continue the pipelay operation to the offshore end of the pipeline at KP0.

Due to the presence of an array of maritime archaeological features as well as an Aboriginal sacred site, Santos will ensure that anchoring does not occur in sensitive areas. The vessel master's will be made aware of sensitive areas and other areas where anchoring is prohibited. This awareness will be provided through a combination of contractual documentation, anchor layout drawings (where applicable), charts onboard the vessels highlighting anchoring and other exclusion zones, project briefings and inductions, tool box talks and general project updates to vessel crews to ensure all vessel masters are aware of anchoring prohibitive areas. This will specifically include:

1. Establishment of 'no-anchoring zones' around any identified anomalies and known maritime cultural heritage sites within the DPD Project anchoring corridor. CA 2023 (4. Annex A: updated target table) provides a table of anomalies or known maritime cultural heritage to be avoided by the creation of 'no-anchoring zones'
2. The AAPA permit conditions requires that C2022-098 RWA1 shown on **Figure 4-7**,  No works may take place in this area and no anchoring is to occur.

5.5.4 Unexpected finds protocol

5.5.4.1 *Maritime heritage*

A MAUFP has been prepared by Cosmos Archaeology (2022a). It is appended to this CHMP as **Appendix 4**. This protocol should be followed in the event of any possible discovery of a maritime heritage item and includes the following:

1. Unexpected finds, stop work triggers and notification procedures
2. Object recognition images and descriptions

3. Recording and reporting methods and procedures
4. Artefact collection and retention policies
5. A maritime heritage induction for contractors.

Section 5.5.1.1 of this CHMP includes a summary of the process for potentially identifying submerged items of maritime archaeological heritage.

5.5.4.2 *First Nations heritage*

A FNUFP has been prepared by OzArk (2024a). It is appended to this CHMP as **Appendix 5**. This protocol should be followed in the event of any possible discovery of potential First Nations heritage items and includes the following:

1. Unexpected finds, stop work triggers and notification procedures
2. Object recognition images and descriptions
3. Recording and reporting methods and procedures
4. Artefact collection and retention policies
5. A First Nations cultural heritage induction for contractors.

Section 5.5.1.1 of this CHMP includes a summary of the process for potentially identifying submerged items of First Nations heritage.

Should an item of First Nations heritage be identified, the WPDRG, NLC, and TLC will be informed as soon as practical.

5.5.5 **Additional heritage information**

If, at any time throughout project construction, additional heritage information regarding either maritime or First Nations cultural heritage comes to light, it will be reviewed, and the following points evaluated by the appropriately qualified individuals listed below (Table 5-1):

1. Is the information provided directly applicable to the approved DPD Project Area, i.e. is the heritage item / value at risk of harm from construction?
2. If the answer is 'yes', the following steps are to occur:
 - a. Ascertain from the informant as much information as possible about the nature of heritage item/value and its precise location
 - b. Assess the likelihood of direct or indirect impact to the item/value from the approved works
 - c. If existing heritage management procedures in this CHMP and covered in the UFPs are not sufficient to manage this object/value, then updates to this CHMP will be required to ensure that specific management measures can be devised to

ensure that impact to the newly identified heritage object/value is avoided or minimised. If the CHMP is updated, it will be submitted to DCCEEW for the Minister's approval.

Table 5-1: Contact archaeologists

Unexpected Finds Protocol	Underwater Archaeologist/s	Contact Details
Maritime UCH UFP (Attachment 1)	Dr Silvano Jung (in place of Connor McBrian) https://www.ellengowanenterprises.com/	
First Nations UCH UFP (Attachment 2)	Dr Jodie Benton https://ozarkehm.com.au/heritage/	
	Dr Silvano Jung (in addition to Dr Jodie Benton) https://www.ellengowanenterprises.com/	

5.6 INCIDENT RESPONSE - HERITAGE

All personnel will be informed through inductions and daily operational meetings of their duty to report Health, Safety and Environment (HSE) incidents and hazards. This includes impacts and hazards to cultural heritage. Reported HSE incidents and hazards will be shared during daily operational meetings and will be documented in the incident management systems as appropriate. HSE incidents will be investigated and reported in accordance with the Santos Incident Reporting and Investigation Procedure (SMS-HSS-OS07-PD01) and contractor procedures.

The Environmental Approval (EP2022/22-001), the EPBC Act approval (2022/09372) and the *Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023* set out the requirements for the reporting of any environmental incidents, taken to include heritage related impact incidences in both Northern Territory and Commonwealth waters.

All incidents will be included in performance reporting as required under Environmental Approval (EP2022/22-001), the EPBC Act approval (2022/09372) and the *Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023*.

The following measures are to be actioned if there is an unintentional impact to maritime archaeological or First Nations heritage items or sacred sites from the construction of the project. These include:

1. The person who becomes aware of incident will contact their supervisor and the onsite Santos Representative (SR) immediately
2. The onsite SR will record the disturbance using photos/imagery where applicable
3. The incident will be logged on the Contractor and Santos incident management systems
4. As per Environmental Approval (EP2022/22-001) and Division 5, Part 10, Section 255 of the *Environment Protection Regulations 2020* the incident will be reported to the Chief Executive Officer (CEO) of the Department of Environment, Parks and Water Security (DEPWS) providing the following:
 - time, date, nature, duration, and location of the incident
 - the circumstances in which the incident occurred (including the cause of the incident, if known)
 - the action taken or proposed to be taken to deal with the incident and any resulting environmental harm, if known.

This information should be provided orally to the CEO, or nominated person, and then by giving the CEO a written notice containing the required information within 24 hours after the oral notice is given.

These details will also be provided to the Department of Industry, Tourism and Trade (DITT) (as the department regulating petroleum activities in NT), the Heritage Branch of the DTFHC and to the WPDRG within 24 hours of the incident occurring.

5. As per the DPD Project's Environmental Approval under the EPBC Act (EPBC 2022/09372), notification must also be made to the DCCEEW. Santos must email the DCCEEW within two business days of becoming aware of any incident and/or potential non-compliance and/or actual non-compliance with details of:
 - Any condition or commitment made in a plan which has been or may have been breached
 - A short description of the incident and/or potential non-compliance and/or actual non-compliance
 - The location (including co-ordinates), date and time of the incident and/or potential non-compliance and/or actual non-compliance.

Within 12 business days of becoming aware of any incident and/or potential non-compliance and/or actual non-compliance, Santos must notify the DCCEEW in writing further details of that incident and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a plan, including:

- Any corrective action or investigation which the approval holder has already taken
- The potential impacts of the incident and/or non-compliance
- The method and timing of any corrective action that will be undertaken by the approval holder.

6. For incidents in Commonwealth waters or in NT coastal waters the requirements of the Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGSER) apply. Any reportable incidents under the OPGGSER, defined as “for an activity, means an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage”, that occurs within NT coastal waters, will be reported to NOPSEMA (for Commonwealth waters) or DITT (for NT coastal waters) in accordance with Section 47(2) of the OPGGSER:
- A verbal notification as soon as practicable, and in any case not later than two hours after the first occurrence of a reportable incident, or if the incident was not detected at the time of the first occurrence, at the time of becoming aware of the reportable incident
 - A written record of the notification as soon as practicable after the verbal notification
 - A written report, as soon as practicable, and in any case not later than 3 days after the first occurrence of the reportable incident.

The initial verbal and subsequent written notification must contain:

- All material facts and circumstances concerning the reportable incident that Santos knows or can find out by reasonable search or enquiry
- Any action taken to avoid or mitigate any adverse environmental impacts of the reportable incident
- The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the reportable incident.

The written report must contain all of the above as well as:

- The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.

6 RECORD KEEPING, AUDITING AND REPORTING REQUIREMENTS

Compliance requirements for the CHMP are outlined in Condition 4-4 (8) of the Environmental Approval (2022/22-001). The following sections describe how these conditions will be met.

6.1 HERITAGE RECORDS

Copies of all heritage records will be kept by Santos. These will include:

1. This CHMP
2. The MAUFP and FNUFP
3. A copy of the Environmental Approval EP2022/22-001
4. Maps showing heritage site locations
5. Heritage reports that have been produced for the project
6. All triggers to UFPs.

6.2 STATUTORY REPORTING REQUIREMENTS

6.2.1 Discovery of archaeological material

6.2.1.1 *NT Heritage Act 2011*

Under Section 114 of the *NT Heritage Act 2011*, it is an offence to discover an Aboriginal or Macassan place or object and not report it as soon as practicable after the discovery. The report to the CEO of DTFHC is to include in writing:

1. A description of the place or object
2. Its location
3. The person's name and address
4. If known, the name and address of the owner / occupier of the place or location where the object was found.

6.2.1.2 *Underwater Cultural Heritage Act 2018 (Cth)*

If an article of underwater cultural heritage is discovered in Australian that appears to be of an archaeological character, the *Underwater Cultural Heritage Act 2018* (Part 3, Div 2, s.40) requires that notification of the discovery be given within 21 days of discovery. Notifications are made to the DCCEE's [Australasian Underwater Cultural Heritage Database](#). The Act requires that the notification include a description of the article and a description of the place where the article is located.

6.3 CHMP PERFORMANCE MEASURES

Santos will manage DPD Project risks to cultural heritage and ensure compliance with this CHMP through the following:

1. Ensuring accountabilities are assigned for the implementation of this CHMP
2. Ensuring that Santos and contractor personnel engaged in works are aware of the legislative requirement to protect cultural heritage places / objects and the requirements of this CHMP as relevant to their role
3. Ensure that all relevant staff (i.e. vessel navigation crew, land-based construction crew) have access to the mapping of restricted work areas or no-go zones and understand any signage in relation to these
4. That all discoveries of potential and actual cultural heritage are appropriately managed as per the UFPs and this CHMP
5. Cultural heritage management commitments will be included in the DPD Project assurance activities
6. That any incidents or non-compliances are reported as per this CHMP and statutory requirements and corrective actions are implemented.

6.3.1 Compliance monitoring / action

Measures to check adherence to cultural heritage management measures included in this CHMP include:

1. The onsite SR (or their representative) will undertake routine inspections of the work site or vessel navigation to ensure that exclusions zones are adhered to, either as spatial avoidance via GPS on water, or physical avoidance via temporary fencing on land
2. A record of the induction of all individuals will be kept demonstrating that all staff and contractors have received cultural heritage inductions as appropriate for their role
3. If an incident occurs, it will be managed as per **Section 5.6**, and would trigger an investigation into potential CHMP non-compliance.
4. Performance reporting will occur, as defined under Environmental Approval (EP2022/22-001), the EPBC Act approval (2022/09372) and the *Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023*.
5. An independent audit of compliance with conditions of EPBC Act approval (EPBC 2022/09372) is conducted at three years after the commencement of the activity and at any other time at the direction of the Minister responsible for administering the EPBC Act (Minster for Climate Change, Energy, the Environment and Water)

If any of performance measures described in **Section 6.3** are not met, Santos will immediately:

1. Take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur

2. Consider all reasonable and feasible options for remediation (where relevant).

6.3.2 Reporting of CHMP non-compliance

As per Condition 12-1 of Environmental Approval 2022/22-001 Santos will obtain a report from an independent qualified person, within six months of the completion of commissioning carried out under the approval, on the compliance with the conditions of Environmental Approval 2022/22-001, which includes the condition relating to this CHMP. This includes an assessment as to whether the Project has protected First Nations cultural values and maritime heritage, including shipwrecks. The report will be provided to the NT Minister for Climate Change, the Environment and Water Security within 30 days of its completion.

Where non-compliance is associated with an incident, reporting will occur, as per **Section 5.6**.

7 REVIEW AND IMPROVEMENT

7.1 IMPROVEMENT OF PERFORMANCE

The protection of known maritime archaeological and First Nations cultural sites and following the correct procedure for new discoveries is at the core of this CHMP. In **Section 6.3** several performance measures are outlined to measure how this CHMP is implemented. The performance measures will be reviewed at least on an annual basis to ensure that the CHMP remains 'fit for purpose'. Follow-up inspections will be undertaken to assess the effectiveness of any additional mitigation measures to ensure improvement of performance.

CHMP non-conformances will be addressed and resolved by a systematic corrective action process as outlined in Santos' Management System. Santos' incident and action tracking management system (HSE Toolbox) will be used to track corrective actions in the following instances:

- Where there has been or potentially been a reportable incident
- Where there has been a non-compliance with this CHMP
- Where any corrective action requires notification to an external regulatory or statutory body
- Where there are corrective actions related to this CHMP from formal audits (independent audit, external regulator audit etc.).

At all times Santos will seek to improve the performance of this CHMP to ensure that maritime and First Nations cultural heritage is conserved and appropriately managed. Santos will respond to improvements to this CHMP identified through independent audit process, community complaints, and stakeholder (internal and external) suggestions.

The adaptive management procedure is outlined in **Table 7-1**.

Table 7-1 – Adaptive management table.

Element	Description	Action
1	Objectives	See performance measures Section 6.3
2	Process model	The major threat to compliance with the CHMP is causing harm to a known maritime or First Nations cultural heritage site or the incorrect management of new discoveries
3	Plan	All workers will be aware of the legislative requirements to protect First Nations cultural heritage sites and to be aware of the correct procedure for the discovery of new First Nations objects. All known areas with cultural heritage sites / places, or restricted work areas, to be marked on all appropriate plans, in vessel navigation systems and with physical barriers where appropriate to ensure that their location is known and that there will be no inadvertent harm to the sites. If any of the performance measures fail, it may be necessary to revise this Plan in consultation with the First Nations community and to the satisfaction of the Heritage Branch of the DTFHC.
4	Implement feedback	This CHMP will be reviewed at least annually to ensure that it remains 'fit for purpose'. This review will monitor the management effectiveness of the CHMP.

Element	Description	Action
		The CHMP may also require review and possible revision following community complaints, community suggestions, additional cultural heritage information brought to light or from internal or external audits.

7.2 CHMP REVIEW

The CHMP will be reviewed following a change in relevant legislation, or modification to Environmental Approval containing conditions relevant to First Nations cultural heritage or if new information regarding maritime or First Nations cultural heritage within the Project area comes to hand. This will include a review of performance and consideration of ongoing consultation. This will ensure the adequacy of the CHMP and allow for opportunities for adaptive management and continual improvement.

If a review of this CHMP is determined to be required, the review of the CHMP will be undertaken by a suitably qualified person.

Changes will be made to the CHMP in the following circumstances:

1. Where new maritime or First Nations sites are discovered via the UFPs which require specific management approaches proportionate to their cultural significance and which are not otherwise covered in this CHMP
2. Where approved modifications to the Project introduce new potential impacts to maritime and First Nations cultural heritage which are not generally covered by this CHMP
3. Where approved modifications to the Project change or remove previously understood impacts on or proximity of works to maritime or First Nations heritage where mitigation or management was proposed in this CHMP but is no longer required.

Ongoing consultation will be undertaken as per Environmental Approval 2022/11-001 conditions and in accordance with **Section 3.2**. Matters raised in consultation relevant to the circumstances above will be addressed in a revision of the CHMP when required.

Once revised, this CHMP will be provided to the Minister at least 10 business days prior to any amendments being implemented, as per Condition 9-1 of the Environment Approval 2022/22-001.

Information to be provided includes:

1. The revised plan
2. A tabulated summary of the amendment(s) with document references
3. Reasons for the amendment(s)
4. An assessment of environmental risks and potential impacts associated with the amendment(s).

7.3 INDEPENDENT ENVIRONMENTAL AUDIT

As per Condition 12-1 of the Environmental Approval (EP2022/22-001), an independent audit will occur within six months of the completion of commissioning carried out under this approval.

In relation to heritage, this audit will:

1. Be conducted by a suitably qualified, experienced, and independent team of experts
2. Assess whether the environmental performance of the project and compliance with the relevant requirements in this CHMP, amongst other environmental plans, has been achieved
3. This report is to be submitted to the Minister within 30 days of its completion.

The report required by condition 12-1(1) must:

1. Provide any monitoring data and reportable incidents required by the conditions of this approval
2. Include an assessment of the effectiveness of the management measures implemented
3. Be endorsed by the approval holder or a person delegated to sign on the approval holder's behalf
4. Include a statement as to whether the approval holder has complied with the conditions of this approval
5. Identify all CHMP non-compliances and describe corrective and preventative actions taken.

8 ACCOUNTABILITIES

Roles and responsibilities for Santos personnel and contractors are outlined in **Table 8-1**.

Table 8-1: Accountabilities.

Role	Accountabilities for this document
Office-based Personnel	
Santos Barossa Pipeline Delivery Manager	<ul style="list-style-type: none"> • Confirm that the activity is undertaken in accordance with this CHMP. • Provide sufficient resources to implement the management controls in this CHMP • Confirm Contractor personnel attend cultural heritage inductions upon commencing work on the campaign.
Santos Environment Manager	<ul style="list-style-type: none"> • Liaise with Regulatory authorities on cultural heritage requirements • Review CHMP • Ensure sufficient resources in place for the development/ review and assurance activities relating to this CHMP • Develop a program to implement and monitor compliance with CHMP and associated regulatory approval commitments. • Ensure incident notification process is in place and investigations completed to identify root causes • Review and submit environmental performance reports and external environmental incident notification reports.
Santos Barossa Installation Engineer	<ul style="list-style-type: none"> • Confirm the DPD Project campaign is undertaken in accordance with the CHMP • Communicate any changes to the activity that may affect cultural heritage risk • Coordinate resources required to enable the commitments in this CHMP to be maintained • Confirm the reporting of incidents meets both external and Santos' incident reporting requirements • Liaise with Santos Environmental Advisor on incidents and what constitutes a reportable incident • Track and close out of any corrective actions raised from audits relevant to this CHMP.
Santos Environmental Advisor/s	<ul style="list-style-type: none"> • Coordinate the development of this CHMP with CHMP authors/ contributors • Liaise with Regulatory authorities on cultural heritage requirements • Assist in the development of cultural heritage induction material • Coordinate environmental monitoring programs and First Nations involvement. • Coordinate Santos assurance activities relevant to this CHMP • Prepare/ coordinate Santos and third-party environmental performance reports • Advise on environmental incident reporting requirements, including what constitutes a reportable incident • Ensure reporting of cultural heritage incidents meets Santos and statutory requirements.
Santos Consultation and Community Engagement Advisor/s	<ul style="list-style-type: none"> • Coordinate consultation program for the DPD activity. • Coordinate engagement with First Nations cultural monitors • Coordinate First Nations input into training and inductions • Manage and report on consultation received in relation to the activity and the CHMP • Undertake ongoing engagement with stakeholders, including First Nations for the duration of the activity.
Site offshore-based personnel	
Santos Senior Client Site Representative/s	<ul style="list-style-type: none"> • Confirm contractors undertake the activity in a manner consistent with the CHMP • Undertake inspections against CHMP requirements • Confirm the management measures detailed in this CHMP are implemented • Record and report all incidents and cultural heritage finds (UFP) as per CHMP requirements • Advise the Santos Barossa Pipeline Delivery Manager of any changes in activities that may lead to nonconformance with the CHMP.
All project personnel	<ul style="list-style-type: none"> • Act in a culturally responsible manner

Role	Accountabilities for this document
	<ul style="list-style-type: none">• Undertake work in accordance with this CHMP• Comply with this CHMP and all regulatory requirements as applicable to assigned role.• Report any near misses or incidents immediately to supervisors• Attend cultural heritage training and inductions and HSE meetings.

REFERENCES

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- Santos 2023a *Darwin Pipeline Duplication Project: Preliminary Documentation Report*. October 2023.

APPENDIX 1: ENVIRONMENTAL APPROVAL CONDITIONS RELEVANT TO HERITAGE

2 Management plans

- 2-1 The approval holder must implement and comply with the following plans:
- (1) Onshore construction environmental management plan¹;
 - (2) Offshore construction environmental management plan²;
 - (3) Marine megafauna noise management plan³;
 - (4) Cultural heritage management plan (**CHMP**), as required by condition 4; and
 - (5) Trenching management plan (**TMP**)⁴, updated as required by condition 6.

Culture and heritage

3 Environmental outcomes

- 3-1 The approval holder must ensure the action achieves the following environmental outcomes:
- (1) protect Aboriginal cultural values; and
 - (2) protect maritime heritage, including shipwrecks.

4 Cultural heritage management plan

- 4-1 To support achieving the environmental outcomes required by condition 3-1 a **CHMP** must be prepared by a **suitably qualified and experienced person**.
- 4-2 The **CHMP** must be prepared in consultation with the Northern and Tiwi Land Councils.
- 4-3 The **CHMP** must be submitted to the **Minister** at least 10 days prior to commencement of **trenching activity**.
- 4-4 The **CHMP** must include measures to provide for:
- (1) cultural heritage induction procedures for site personnel;
 - (2) an internal heritage clearance process prior to trenching and pipe laying activities;
 - (3) further archaeological survey and assessment if warranted by alignment changes;
 - (4) procedures for anchoring and the establishment of anchor exclusion zones;
 - (5) procedures to mitigate risks to unexpected maritime heritage objects, including a stop work protocol, developed in consultation with, and to the satisfaction of, the Heritage Branch of **DTFHC**;
 - (6) measures for ongoing consultation and engagement on cultural heritage values with stakeholders;
 - (7) the requirement to update the **CHMP** if stakeholder engagement identifies additional information about cultural heritage values that warrants additional measures to be implemented to achieve the environmental outcomes required by condition 3-1; and
 - (8) detail of how compliance would be monitored and reported and how the outcomes of investigative and/or adaptive management actions would be notified to the relevant government authorities.

General conditions

9 Revision of plans

- 9-1 The approval holder may review and revise any management plan required by Condition 2 and must provide the following to the **Minister** within 10 business days prior to any amendment(s) being implemented;
- (1) the revised plan(s)
 - (2) a tabulated summary of the amendment(s) with document references;
 - (3) reasons for the amendment(s);
 - (4) an assessment of environmental risks and potential impacts associated with the amendment(s); and
 - (5) if the **TMP** is updated, a written review and endorsement from an **independent qualified person** that the **TMP addresses** conditions 3-1 and 5.
- 9-2 The approval holder must implement the action to comply with the latest revision of management plans required by condition 2.

12 Environmental performance reporting

- 12-1 The approval holder must:
- (1) within six months of the completion of commissioning 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 the report to the **Minister** within 30 days of its completion.
- 12-2 The report required by condition 12-1(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 conditions has been achieved;
 - (3) include an assessment of the effectiveness of monitoring, management and contingency measures implemented to comply with the requirements of condition 5-1(1) and 5-1(2);
 - (4) include a comparison of the predicted impacts of the action, including **trenching activity** and **spoil disposal**, and the actual impacts of the action as verified by environmental monitoring data compared with baseline survey data;
 - (5) be endorsed by the approval holder or a person delegated to sign on the approval holder's behalf;
 - (6) include a statement as to whether the approval holder has complied with the conditions of this approval; and
 - (7) identify all non-compliances and describe corrective and preventative actions taken.

APPENDIX 2: GOVERNMENT STAKEHOLDER CONSULTATION RECORDS

Appendix 2 Table 1: Heritage Branch DTFHC consultation relevant to the CHMP

Date	Organisation	Comment	Method
9 Nov 2021	Heritage Branch DTFHC	Meeting to discuss proposed DPD Project. Meeting followed email and phone engagement conducted in August and October 2021 on Santos' intention to divert the proposed pipeline route around I-124 submarine wreck site. The Heritage Branch will prepare scope of works for Santos to engage a contractor to conduct a desk-top assessment of its current pipeline route information.	Meeting
20 Dec 2022	Heritage Branch DTFHC	Update on completed archaeological survey work in NT Waters and proposed process for further surveys in Darwin Harbour.	Meeting
17 March 2023	Heritage Branch DTFHC	Provision of Barossa maritime heritage assessment reports (including DPD Project maritime heritage assessment) and maritime unexpected finds protocol/ induction.	Email
12 May 2023	Heritage Branch DTFHC	Provision of tech note as addendum to DPD Project maritime heritage assessment, assessing minor pipeline route change	Email
23 May 2023	Heritage Branch DTFHC	Update on Santos' proposed approach to dealing with WWII anti-submarine net mooring ('Trot 17'), in consultation with maritime archaeologist, and update on proposed unexploded ordinance survey.	Email
12 March 2024	Heritage Branch DTFHC	Meeting to provide update on the underwater cultural heritage work completed for the DPD Project including unexploded ordinance survey data review tech note and preparation of a Cultural Heritage Management Plan (CHMP)	Meeting
14 May 2024	Heritage Branch DTFHC	Confirmation that Heritage Branch satisfied that the maritime unexpected finds protocol is fit for purpose, as required under DPD Project NT EP Act approval condition. Santos advised Heritage Branch will receive CHMP on 17 May together with First Nations and Maritime Unexpected Finds Protocols	Email

Both the First Nations and Maritime Unexpected Finds Protocol were provided to Heritage Branch DTFHC on 17 May 2024 by email.

APPENDIX 3: FIRST NATIONS COMMUNITY CONSULTATION

Appendix 3 Table 1: Summary of DPD Project engagement with First Nations stakeholders.

First Nations stakeholder group	Summary of DPD Project engagement
Wickham Point Deed Reference Group (WPDRG)	<p>The DPD Project has been discussed as a regular agenda item at WPDRG quarterly meetings from Q4 2021 onwards. This includes information on the Project approval processes under the NT EP Act, EPBC Act and the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, information on key DPD Project activities, impacts/risks and control measures and consultation on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters).</p> <p>The DPD AAPA Authority Certificate (C2022-098) sacred site requirements, and additional control measures, have been discussed across meetings held between February 2023 and March 2024.</p> <p>This CHMP has also been discussed with the WPDRG and control measures requested by the WPDRG have been included within this plan (refer Table 2 below).</p>
Aboriginal Areas Protection Authority (AAPA)	<p>Santos has engaged with AAPA throughout the DPD Project approvals processes under the NT EP Act/EPBC Act from Q4 2021 onwards. This includes meetings to discuss the progress of Authority Certificate applications associated with Authority Certificate C2022-098 (received December 2022) and a second certificate (Authority Certificate C2024-034) received 22 May 2024).</p> <p>AAPA was also provided an opportunity to provide formal feedback on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters) in November/December 2023 under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations.</p>
Northern Land Council (NLC)	<p>Santos has met regularly with the NLC on the Barossa Project, including a discussion of the DPD Project and consultation arrangements, from Q4 2021 onwards.</p> <p>The NLC was provided an opportunity to provide formal feedback on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters) in November/December 2023 under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations.</p> <p>As required under Environment Approval (2022/011-001), Santos has notified the NLC of the development of this CHMP and invited the NLC to provide feedback (refer Table 2 below).</p>
Tiwi Land Council (TLC)	<p>Santos has met regularly with the TLC on the Barossa Project, including a discussion of the DPD Project and consultation arrangements, from Q4 2021 onwards.</p> <p>The TLC was provided an opportunity to provide formal feedback on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters) in November/December 2023 under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations.</p> <p>As required under Environment Approval (2022/011-001), Santos has notified the TLC of the development of this CHMP and invited the TLC to provide feedback (refer Table 2 below).</p>
Larrakia Nation, including Larrakia Sea Rangers	<p>Initial discussions on the DPD Project and potential for Larrakia Ranger involvement were held in Q2 2022.</p> <p>Subsequently, Santos' environmental contractors have engaged Larrakia Rangers to support environmental monitoring work for the DPD Project commencing in May 2024. The Larrakia Sea Rangers were engaged to provide support to the boat based pre-trenching marine fauna surveys and the ongoing bot based water quality monitoring scope in places to support DPD trenching activities.</p> <p>Larrakia Nation was provided an opportunity to provide formal feedback on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters) in November/December 2023 under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations.</p> <p>Larrakia Nation has assisted Santos with coordination and advertising of consultation sessions with Larrakia family group members, resulting in consultation sessions organised on 19 December 2023 and 23 April 2024.</p>
Larrakia Development Corporation (LDC)	<p>Santos contacted LDC during November/December 2023 to determine whether it would like to provide feedback on DPD Project through the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, as required for the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters), however no feedback has been received.</p>

First Nations stakeholder group	Summary of DPD Project engagement
National Indigenous Australians Association (NIAA)	<p>NIAA provided a written response on Santos' DPD Project EPBC Act referral to DCCEEW, during the EPBC Act public submission period in November 2022.</p> <p>Santos met with NIAA representatives on 26 September 2023 to provide an update on the status of the EPBC Act Preliminary Documentation report including an overview of Santos consultation to date with First Nations persons and associations, Santos' approach for ongoing consultation and commitment to developing a Cultural Heritage Management Plan.</p> <p>NIAA was provided an opportunity to provide formal feedback on the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters) in November/December 2023 under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, however no feedback was received.</p>
Gwalwa Daraniki Association (GDA)	<p>Santos contacted GDA during November/December 2023 to determine if it would like to provide feedback on DPD Project through the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, as required for the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters). No feedback has been received.</p>
Belyuen Community	<p>Members of Belyuen Community have been engaged through Santos' consultation on the DPD Project with the Rak Badjalarr Consultative Committee.</p> <p>Members have also been engaged by ABMC Consulting (2024) as part of a First Nations spiritual and cultural values study.</p> <p>In accordance with Authority Certificate C2024-034 Belyuen Community members have been notified of works conducted within Restricted Works Area 1 on that certificate.</p>
Aboriginal Sea Company (ASC)	<p>Santos contacted ASC during November/December 2023 to determine if it would like to provide feedback on DPD Project through the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, as required for the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters). No feedback has been received.</p>
Kenbi Rangers	<p>Santos contacted Kenbi Rangers during November/December 2023 to determine if it would like to provide feedback on DPD Project through the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, as required for the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters). No feedback has been received.</p> <p>Kenbi Rangers have been contacted with regard to the installation and maintenance of water quality logger within Restricted Works Area 1 (Authority Certificate C2024-034) and with respect to opportunities to support Santos' environmental monitoring program for the DPD Project.</p>
North Australian Indigenous Land and Sea Management Alliance (NAILSMA)	<p>Santos contacted NAILSMA during November/December 2023 to determine if it would like to provide feedback on DPD Project through the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environmental) Regulations, as required for the DPD Project Environment Plan (Commonwealth waters) and DPD Project Construction Environment Management Plan (NT waters). No feedback has been received.</p>
Tiwi Island clan groups	<p>Consultation on the DPD Project with Tiwi Island clan groups has been conducted as per below:</p> <ul style="list-style-type: none"> • On 5 December 2023 with the Marrikawuyanga, Yimpinari and Wulirankuwu Clans at Milikapati (Social and Sports Club). • On 6 December 2023 with the Jikilaruwu and Mantiyupwu Clans at Wurrumiyanga (Nguu Club). • On 7 December 2023 with the Wurankuwu and Malawu Clans at Wurrumiyanga (Mantiyupwi Meeting Room) • On 30 January 2024 with the Marrikawuyanga, Yimpinari and Wulirankuwu Clans at Milikapati (Sports and Recreation Centre). • On 31 January 2024 with the Jikilaruwu and Mantiyupwu Clans at Wurrumiyanga (Mantiyupki Motel). • On 1 February 2024 with the Wurankuwu and Malawu Clans at Wurrumiyanga (Mantiyupki Motel). • On 2 February 2024 with the Munupi Clan at Pirlangimpi (Sports and Social Club). • On 5 March 2024 with the Marrikawuyanga, Yimpinari and Wulirankuwu Clans at Milikapati (Sports and Recreation Centre).

First Nations stakeholder group	Summary of DPD Project engagement
	<ul style="list-style-type: none"> • On 6 March 2024 with the Jikilaruwu and Mantiyupwu Clans at Wurrumiyanga (Mantiyupwi Motel) • On 7 March 2024 with the Wurankuwu and Malawu Clans at Pirlangimpi (Sports and Social Club). • On 8 April 2024 with the Munupi Clan at Pirlangimpi (Sports and Social Club). • On 9 April 2024 with the Marrikawuyanga, Yimpinari and Wulirankuwu Clans at Milikapati (Social and Sports Club). • On 10 April 2024 with the Jikilaruwu and Mantiyupwu Clans at Wurrumiyanga (Mantiyupwi Motel) • On 17 May 2024 with the Manupi Clan at Pirlangimpi (Sports and Social Club). • On 14 December 2023 with Tiwi Islands people (Mantiyupwi and Murrumujuk clans) with interest in the Vernon Islands) • On 29 January 2024 Santos also held a consultation session in Darwin for any Darwin-based Tiwi Peoples <p>The following information was presented by Santos and discussed during the sessions:</p> <ul style="list-style-type: none"> • An overview of Santos the company and the Barossa Project • DPD Project activities, environmental impacts/risk and control measures as outlined within DPD Project Environment Plan (Commonwealth waters) and the DPD Offshore Construction Environmental Management Plan (NT waters) • The Commonwealth and NT Government regulations applicable to these plans, regulatory consultation processes and privacy provisions • Follow up answers to questions previously raised. • The sessions were conducted in person and visual aids, maps, videos and animations were used to present information.
First Nations Consultative Committees and clan groups from NT coastal regions	<p>Consultation on the DPD Project with First Nations Consultative Committees and clan groups from NT coastal regions has been conducted as per below:</p> <ul style="list-style-type: none"> • A consultation session with the Rak Badjalarr Consultative Committee was held at Crab Claw Island Resort on 15 November 2023 • Consultation sessions with the Agalda clan were held at the Kakadu Crocodile Hotel, Jabiru on 21, 22 and 23 November 2023 • A consultation session with the Mulyurrud Consultative Committee was held at the Kakadu Crocodile Hotel, Jabiru on 23 November 2023 • A consultation session with the Daly River / Port Keats Consultative Committee was held at the Club Tropical Resort, Lee Point on 1 December 2023 • A consultation session with the Wulna clan was held at Windows on the Wetlands, Arnhem Highway on 13 December 2023 • A consultation session with the Murrumujuk Consultative Committee was held at Novotel Darwin Airport Hotel on 14 December 2023 <p>The following information was presented by Santos and discussed during the sessions:</p> <ul style="list-style-type: none"> • An overview of Santos the company and the Barossa Project • DPD Project activities, environmental impacts/risk and control measures as outlined within DPD Project Environment Plan (Commonwealth waters) and the DPD Offshore Construction Environmental Management Plan (NT waters) • The Commonwealth and NT Government regulations applicable to these plans, regulatory consultation processes and privacy provisions <p>The sessions were conducted in person and visual aids, maps, videos and animations were used to present information.</p>
Larrakia family group members	<p>Two DPD Project consultation sessions for Larrakia family group members, assisted by Larrakia Nation, were organised on 19 December 2023, but were not attended. Two additional Larrakia family consultation sessions were organised on 23 April 2024 in Darwin and were attended by Larrakia family group members. These included an update on the Barossa Project, DPD Project activities in Darwin Harbour and an overview of this Cultural Heritage Management Plan (Refer Table 2 below).</p> <p>On 12 June 2024, Santos held two consultation sessions in Darwin to close-out consultation on DPD activities within the DPD Commonwealth EP and DPD Coastal Waters CEMP with Larrakia people.</p>

Appendix 3 Table 2: First Nations community stakeholder consultation on this CHMP.

Date	Organisation	Engagement	Comment
8 March 2024	Northern Land Council	Letter containing CHMP provisions inviting input on the CHMP by 15 March	
14 March 2024	Northern Land Council	Letter providing invitation for NLC to participate in a workshop/page-turn of the draft CHMP in late March. A response to invitation was requested by 19 March.	
19 April 2024	Northern Land Council	Follow up email from Santos inviting NLC to the proposed "workshop/page turn" the Darwin Pipeline Duplication (DPD) – Cultural Heritage Management Plan (CHMP).	
20 April 2024	Northern Land Council	Email from NLC advising of interim CEO and explaining that letters were not responded to due to change in personnel. NLC advised new contact person details for DPD Project and the CHMP.	
23 April 2024	Northern Land Council	Email from Santos inviting NLC to propose dates for meeting to discuss CHMP.	
2 May 2024	Northern Land Council	Email from NLC on 2 May 2024 inviting meeting between Santos and NLC (including participation from anthropology branch and cultural heritage specialists) late w/c 6 May 2024.	
3 May 2024	Northern Land Council	Letter from NLC to Santos provided on 3 May 2024. Letter requesting formal agreement between Santos and NLC including setting out the following: <ul style="list-style-type: none"> • Selection of suitably qualified and experienced person • Terms of Reference • Engagement and consultation with Traditional Owners • Survey, fieldwork and audits • Preparation of CHMP recommendations, management conditions and contingency plans; and • Intellectual property and data ownership agreement 	
8 March 2024	Tiwi Land Council	Letter containing CHMP provisions inviting input on the CHMP by 15 March	
8 March 2024 (letter sent by email 14 March 2024)	Tiwi Land Council	Letter providing invitation for TLC to participate in a workshop/page-turn of the draft CHMP in late March. A response to invitation was requested by 19 March.	
10 May 2024	Northern Land Council and Tiwi Land Council	<ul style="list-style-type: none"> • An overview of the Draft CHMP was presented by the suitably qualified and experienced person who prepared the CHMP. • A series of questions were raised by the TLC and NLC regarding the content of, and the approach to the development of CHMP. These questions were addressed by Santos and the suitably qualified and experienced person who prepared the CHMP. • The offer of ongoing consultation with the NLC and TLC on the CHMP was made by Santos as part of the measures for ongoing consultation and engagement on cultural heritage values that the approval holder is obliged to include in the CHMP as a condition to the approval. 	

Date	Organisation	Engagement	Comment
		<ul style="list-style-type: none"> NLC and TLC requested the draft Unexpected Find Procedure and other appendices. These were subsequently provided to both TLC and NLC. NLC asked further questions on 15 May 2024 to better understand the CHMP and indicated that they will provide further feedback. This will be considered as part of Santos' ongoing consultation on cultural heritage values following submission of the CHMP. 	
21 Feb 2023	Wickham Point Deed Reference Group	Santos presentation of AAPA certificate (C2022-098) requirements including restricted works area. Discussion was held regarding potential management measures in the vicinity of the sacred site/restricted works area and for Larrakia cultural induction and use of Larrakia Rangers.	
17 May 2023	Wickham Point Deed Reference Group	Santos presented plan for implementation of measures raised during 21 February meeting.	Santos committed to return with a plan to adopt measures raised by WPDRG.
3 October 2023	Wickham Point Deed Reference Group	Presentation on proposed CHMP structure including commitment to include previously agreed measures in relation to activities near sacred site	Measures agreed for work in vicinity of sacred site / restricted works area (RWA) (including demarcation of RWA using buoys and cultural monitors to observe work in vicinity of sacred sites) and for Project Larrakia cultural heritage induction and use of Larrakia Ranger group.
7 March 2024	Wickham Point Deed Reference Group	Santos presentation on CHMP including overview of contents and progress update.	No specific comment requiring inclusion in CHMP
23 April 2024	Larrakia family member session	Santos presentation on CHMP including overview of contents.	No specific comment requiring inclusion in CHMP

APPENDIX 4: MARITIME ARCHAEOLOGY UNEXPECTED FINDS PROTOCOL



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Santos (Barossa) Offshore Development



Unexpected Finds Protocol

Santos Doc No. BAS-210 0051

Timor Sea, Tiwi Islands, Beagle Gulf, and Darwin Harbour
Northern Territory

November 2022

**Santos (Barossa)
Offshore Development
Unexpected Finds Protocol**

Prepared for:

Santos Ltd

By:

Connor McBrian

Milly Bendell

November 2022

Cosmos Archaeology Job Number J21_22c

Cover image: Target MA_007, unidentified debris, recording during June 2022 ROV survey in Darwin Harbour.

Revision	Description	Date	Originator	Reviewer	Approver
V0	Preliminary draft	18/8/2022	CM	MB, CC	CC
V1	Draft	20/09/2022	CM	CC	CC
V2	Client comments addressed	19/10/2022	CM	CC	CC
V3	Final, last comments addressed	19/11/2022	CM	CC	CC

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Abbreviations

CA	Cosmos Archaeology Pty Ltd
GEP	gas export pipeline
KP	Kilometres along proposed pipeline route
MHA	maritime archaeological heritage assessment
MBES	multi-beam echosounder
NT	Northern Territory
ROV	remotely operated underwater vehicle
SSS	side scan sonar
UCH	underwater cultural heritage
UCHA	<i>Cwth Underwater Cultural Heritage Act 2018</i>
UXO	unexploded ordnance
UTM	Universal Transverse Mercator coordinate system
WWII	World War II

1 INTRODUCTION

This Unexpected Find Protocol will be used to assist Santos in identifying and managing unexpected cultural heritage that may be encountered during the installation of the Barossa Development.

This document has been prepared in compliance of the recommendations outlined in the *Santos (Barossa) Gas Export Pipeline - Additional and Nearshore Barossa GEP Stage (Beagle Gulf and Darwin Harbour) Maritime Heritage Assessment*, the *Santos (Barossa) Gas Export Pipeline - Original Barossa GEP Stage (Timor Sea and Tiwi Islands) Maritime Heritage Assessment*, and the *Santos (Barossa) Gas Export Pipeline Maritime Heritage Assessment – Original Barossa GEP Stage (Infield)*.

Both reports recommended:

Prior to the commencement of the construction phase an Unexpected Maritime Archaeological Finds Protocol should be prepared by a suitably qualified maritime archaeologist.

This protocol has been informed by the findings of the maritime heritage assessments prepared for this project¹ and includes:

- *Unexpected finds, stop work triggers and notification procedures*
- *Recording and reporting methods and procedures*
- *Artefact collection and retention policies.*
- *Heritage induction for contractors*

Based on the proposed works and plans, it is understood that the Barossa subsea installation activities will impact the seabed. Santos has advised that the infrastructure, apart from well drilling, will be laid directly on the seabed. It is understood that some trenching, anchoring and application of rock armour and/or mattresses will be required as part of proposed works in the Darwin Harbour area.

Appropriate contractors involved in the construction phase of the project should familiarise themselves with the documents in Section 2, particularly with identifying archaeological objects and follow appropriate procedures in the event objects of underwater cultural heritage are encountered. Appropriate contractors designated by Santos may include, but are not limited to:

1. Santos client representative
2. Vessel masters on vessels with potential to impact heritage sites and objects
3. ROV supervisors
4. Allseas Site representatives on subcontract vessels

¹ **Cosmos Archaeology, 2022a**, *Santos (Barossa) Gas Export Pipeline Maritime Heritage Assessment – Original Barossa GEP Stage (Timor Sea and Tiwi Islands)*, report prepared for Santos Ltd.; **Cosmos Archaeology, 2022b**, *Santos (Barossa) Gas Export Pipeline – Maritime Heritage Assessment – Additional and Nearshore Barossa GEP Stage (Beagle Gulf and Darwin Harbour)*, report prepared for Santos Ltd.; **Cosmos Archaeology, 2022d**, *Santos (Barossa) Offshore Development Maritime Heritage Assessment – Infield Infrastructure*, report prepared for Santos Ltd.

It is important for these objects, if recovered from the marine environment, to be kept wet and in a suitable environment until a maritime archaeologist or conservator is notified and advice can be given.

The advice provided in this protocol does not include specific mitigation measures and management recommendations for underwater cultural heritage, identified in the maritime heritage assessments, or for uninspected geophysical anomalies. This protocol does not cover procedures for dealing with unexploded ordnance (UXO) retrieval or disposal, apart from a cultural heritage standpoint. All safety procedures and policies regarding UXO should be implemented and followed prior to assessment for cultural heritage significance.

2 UNEXPECTED FINDS PROTOCOL

Failure to follow the Unexpected Finds Protocol and associated procedures may result in a breach of the Commonwealth *Underwater Cultural Heritage Act 2018*, the Northern Territory *Heritage Act 2011*, and/or the United States *Sunken Military Craft Act 2004*. Significant penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage objects.

The protocol in summary is as follows:

- Upon discovery of a potential archaeological object, the Santos Client Representative is to be notified – See *Unexpected finds stop work triggers and notification protocols* flowchart (Section 2.1, Figure 1);
- The Santos Client Representative will then determine whether it is a possible object or significant archaeological deposit using the *Object Recognition Sheet* (Section 2.2);
- If the object is assessed as a possible heritage object, work is to cease in the vicinity of the discovery of the object's find location and the project maritime archaeologist is to be immediately contacted, following the steps in *Recording Methods and Procedures* (Section 2.3).
- Cultural objects encountered on the seafloor, for example, during ROV survey, should be left and recorded in situ, unless they are under imminent threat of destruction. The guidelines for whether an object is to be retained for conservation or put back in the water near where it was found is presented in *Artefact Collection and Curation Policies* (Section 2.4).

The most critical and immediate determination the maritime archaeologist will need to make is whether the heritage object is part of a wreck site (plane or ship) or part of a debris field. A wreck will most likely be highly significant and will take an indeterminate amount of time to investigate and mitigate. Dumped debris is typically much less significant, and works are likely to continue without long delay.

NOTE: This is not an induction on the identification of UXO or the actions to be taken when UXO is found.

2.1 Unexpected finds, stop work triggers and notification protocols

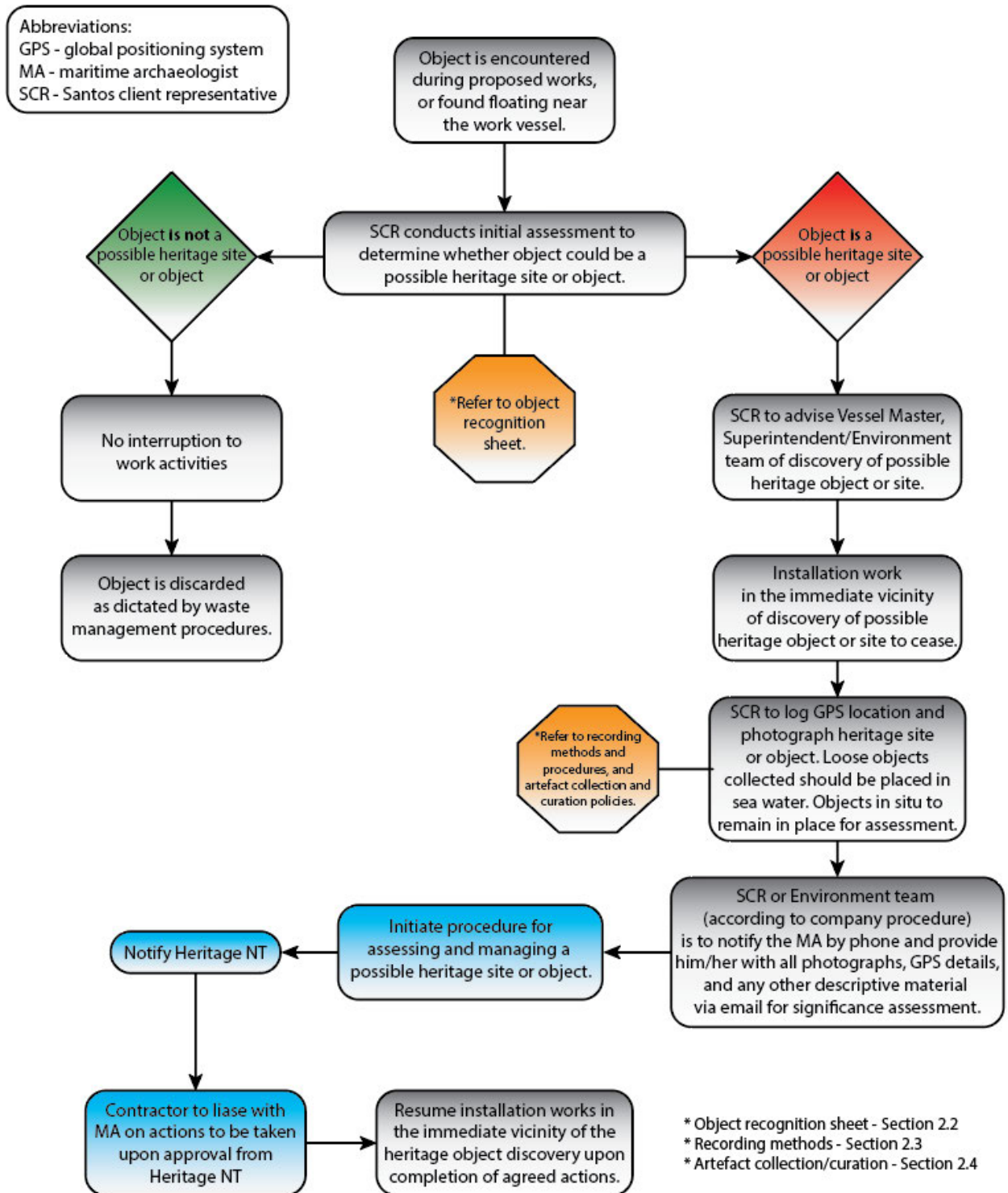


Figure 1: Flow chart detailing the heritage response process upon encountering unexpected finds.

SANTOS (BAROSSA) OFFSHORE DEVELOPMENT – ACTIONS SHEET


Type of find	Action	Possible archaeologist response
Timber objects – planks, beams, worked and shaped timbers (likely shipwreck related)	<ul style="list-style-type: none"> Contractor <u>[designated representative of contractor or Santos] to contact archaeologist when find has been made.*</u> Work can continue unless archaeologist advises otherwise. Contractor to take photographs, with scales and labels (when practical and possible), of the feature. Contractor to take measurements of the feature as directed by the archaeologist. Contractor to provide general location of the find. Timber artefacts to be kept wet until examined by archaeologist 	<ul style="list-style-type: none"> Contractor may be asked to avoid impact or proceed Once archaeologist is satisfied that sufficient information has been provided work can continue. Contractor may be asked to retain object for further examination.
Metal objects – ferrous, copper (likely shipwreck related), aluminium (likely aircraft wreck related) NOT aluminium cans or modern rubbish	<ul style="list-style-type: none"> Contractor to contact archaeologist when find has been made.* If object is suspected to be UXO (see below) Work can continue unless archaeologist advises otherwise. Contractor to take photographs, with scales and labels (when practical and possible), of the feature. Contractor to take measurements of the feature as directed by the archaeologist. Contractor to describe location of the find. Metal artefacts to be kept wet until examined by archaeologist 	<ul style="list-style-type: none"> Contractor may be asked to avoid impact or proceed Once archaeologist is satisfied that sufficient information has been provided work can continue. Contractor may be asked to retain object for further examination.
Objects considered to be other potential heritage objects (See Section 2.2 - Object Recognition Sheet.)	<ul style="list-style-type: none"> Contractor to contact archaeologist when find has been made.* Work can continue unless archaeologist advises otherwise. Contractor to take photographs, with scales and labels (when practical and possible), of the feature. Contractor to take measurements of the feature as directed by the archaeologist. Contractor to describe location of the find. Metal, timber, ceramic, and glass artefacts to be kept wet until examined by archaeologist 	<ul style="list-style-type: none"> Contractor may be asked to avoid impact or proceed Once archaeologist is satisfied that sufficient information has been provided work can continue. Contractor may be asked to retain object for further examination.
Unexploded Ordnance	<ul style="list-style-type: none"> Contractor to ensure safety and contact qualified UXO specialist. Once safety established, contractor to contact archaeologist. Contractor to take photographs, with scales and labels (when practical and possible), of the feature. Contractor to take measurements of the feature as directed by the archaeologist. Contractor to describe location of find. 	<ul style="list-style-type: none"> Once archaeologist is satisfied that sufficient information has been provided work can continue.
An object or structure that has not been mentioned in the Object Recognition Sheet (Section 2)	<ul style="list-style-type: none"> Contractor to stop work around the find and contact archaeologist.* Contractor to take photographs, with scales and labels (when practical and possible), of the feature. Contractor to take measurements of the feature as directed by the archaeologist. Contractor to describe the location of the find. 	<ul style="list-style-type: none"> Contractor may be asked to leave these remains in place until an archaeologist visits the site.

* [REDACTED]

[REDACTED]

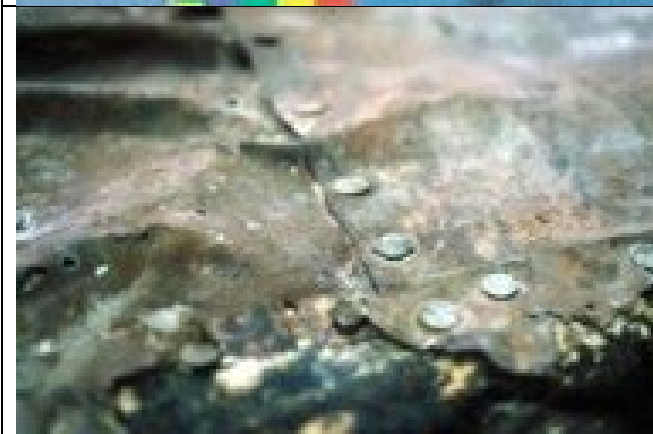
[REDACTED]

2.2 Object Recognition Sheet

Potential significant object (Notify archaeologist)	Description	Image
Timbers	<p>Wooden timbers that are worked, cut, or shaped (squared). These may have copper alloy or iron nails or other fastenings. Timbers could be part of a ship – keel, frames, planks etc.</p> <p>Timber when buried even in the tropics can survive indefinitely. Trenching and even ploughing caused by dragging anchors could expose such objects.</p>	

Copper alloy

Objects such as Muntz metal or brass. Used for a host of marine applications from corrosion resistant fastenings and anti-fouling (sheathing on hull). May be associated with a 19th century shipwreck.



Aluminium

Frames, sheets, manifolds, air intakes etc... have been found in Darwin Harbour to be almost exclusively associated with WWII aircraft



Ferrous objects

Objects including marine concretions. Many ferrous objects recovered during previous works in Darwin Harbour appear to be associated with WWII.

Some objects can be identified as being produced during the 1930s and 1940s by the makers name and patent numbers on the objects themselves.



Ferrous chain and hooks

Some objects in this category found during previous works in Darwin Harbour were of recent manufacture. Others, however, were identified by patent number as being from WWII.

It has been observed during ROV surveys that the mooring trots for the WWII anti-submarine boom nets were connected by heavy grade chain. During ROV survey, it was noted that some lengths of chain were broken and displaced. Broken links and lengths of these chains may be present across the proposed GEP route.



Anchors

Anchors recovered during previous works in Darwin Harbour were mostly associated with pearl farming.

One anchor was identified during ROV surveys for the Barossa GEP. This was a large ship's anchor that had been repurposed for use as a mooring for the anti-sub net. Other anchors associated with flying boats, shipwrecks, or discard may be present.



Tyres

While most tyres are likely to be recent, often repurposed as fenders, there is the possibility for aircraft and truck parts from WWII to have been discarded in the area.



Concrete moorings

Concrete moorings were extensively used throughout Darwin Harbour during WWII, including those used to anchor the anti-submarine boom nets. ROV surveys identified numerous mooring trots still extant within the vicinity of the proposed GEP route. However, some moorings that would have originally been in the area were not found. These may have been moved and could be within the proposed works.



UXO

Unexploded ordnance can be heritage objects. However, safety in handling and dealing with explosives always takes immediate priority.

If UXO is identified, the maritime archaeologist is to be notified only after all designated procedures for dealing with UXO have been implemented.

The normal notification procedures apply, though the object should not be retained.



Engines and other machinery

Engines and other machinery have been found throughout Darwin Harbour during previous works. ROV surveys conducted for the Barossa GEP identified the possible remains of a winch or bollard within the vicinity of the proposed GEP route.

Many of those found during previous works were identified to be WWII vintage.



Glass bottles

Square, round, clear, brown, dark green (black) glass bottles. Can range in size from small pharmaceutical to champagne bottles. Some bottle may still be sealed with corks, ring seal or screw tops.



Ceramic



Ceramic bowls, plates and containers could be recovered intact as a complete object or as fragments. Ceramics can be several colours and display patterns or motifs. Makers marks are usually visible on the base.






Unknown

No immediate diagnostic features to help identify the type of object. Can be entirely encrusted with marine growth or surfaces highly degraded. For example, iron concretions, possible corroded machine parts, broken timber objects and unidentified material(s) that indicate they have been modified by humans.



Objects where no Notification required	Description	Image
Plastics	All types from packing strips to bottles.	
Asbestos and fibreglass		

Branches	All fresh tree branches and other non-cultural floral remains.	
Stubbies and other recent bottles	If in doubt as to how old a bottle is, please retain.	
Modern appliances and tools		

<p>Aluminium cans</p>		 A photograph showing several crushed aluminium cans and other debris on a light-colored surface. A yellow ruler is placed horizontally at the bottom of the items. A white label with handwritten text is visible: "PLS 02 + PLS 07 18 APR 12 MISC CANS + CONTEMPORARY DEBRIS". A small color calibration chart is also present.
<p>Buoys and fenders</p>		 A photograph of several colorful buoys and fenders. The items include a red one, a yellow one, a green one, a blue one, and a dark purple one, all arranged on a white background.
<p>Poly rope</p>		 A photograph of a man in a red polo shirt and maroon pants sitting in a large pile of tangled poly rope and fishing gear. The rope is in various colors, including blue, green, and yellow.

Flexible steel wire rope



Pearl panels and crab pots



2.3 Recording methods and procedures

If an object is found that may be of heritage value, it is important that a detailed recording is taken to provide good information to the maritime archaeologist to make an accurate assessment of the object's cultural heritage significance. With vague and unclear information, it is more likely that the maritime archaeologist will make a cautious decision and assess the object as significant and/or part of a wreck site until such time as it is examined in detail.

The following list details the information required to help the maritime archaeologists identify unexpected finds:

- **Unique Identifying number** (this number is to appear in any photographs of the object)
- **Date and time of recovery**
- **Location of find** (to be expressed as general area description and GDA94, MGA zone 52 coordinates)
- **Description** (Include broad dimensions, such as width, length, depth, and diameter where relevant, as well as a description of the material)
- **Photographs** (All photos **must**, when possible and practical, have a scale and ID number – see Figure 2)



Figure 2: photograph of artefact recovered during excavation works. Note ID tag with unique number and scale in photo.

2.4 Artefact collection and curation policies

It is possible that during installation of the Barossa Development infrastructure archaeological objects may be encountered because of the proposed works. Anchoring, trenching, and installation of the subsea infrastructure may dislocate objects which may then float to the surface. Objects may also be observed during ROV inspection.

Objects that are encountered on the seabed might need to be collected and assessed by a maritime archaeologist to determine their significance. If archaeological objects are recovered from the seafloor/marine environment, they are to be stored in containers with salt water and covered from sunlight where possible (Figure 1). If the object(s) are too large to be stored in containers (i.e. timber planking), they are to be kept wet by spraying down with salt water at intervals so the object does not dry out. These large objects also need to be covered and stored out of direct sunlight.



Figure 3: Small objects should be kept in tubs filled with seawater and labelled. Large objects should be wrapped in hessian and kept wet.

Objects encountered during works and recovered from site, should be appropriately tagged with date, time, and approximate area where the object was located. The object's significance will then be assessed by the project maritime archaeologist to determine if it is to be conserved or relocated (see Section 2.3 and Table 2). This assessment will be made by the maritime archaeologist.

Relocation means the object/objects will be returned to their approximate find location and similar environment from where they were encountered.

Table 1 Artefact conservation and curation policies

Action	Criteria	Example
--------	----------	---------

<i>Conserve</i>	Rare artefacts associated with WWII or pre-WWII Darwin and Northern Territory history that would be a significant archaeological deposit or object encountered during works and/or damaged further during installation works.	For example, 19 th century shipwreck or WWII aircraft wreck, Macassan or Aboriginal cultural heritage
<i>Relocate</i>	Artefacts in good condition relating to a shipwreck.	May include timber elements (planking or frames) and copper sheathing, fastenings, and fittings.
	Artefacts in good condition relating to an aircraft wreck.	May include aluminium frames, fuselage, engine components or armaments* *In case of UXO, follow appropriate safety and reporting guidelines before examining for cultural heritage significance.
	Examples of common artefacts in good condition associated with historical activities in Darwin and the Northern Territory.	Diagnostic fragments of bottle glass, ceramics, WWII associated artefacts, and pre-WWII artefacts.
	Structural elements associated with WWII anti-submarine nets, submarine cables and other historic maritime infrastructure.	Concrete mooring blocks, anti-sub net mooring chain, 19 th century telegraph cables.
<i>Discard</i>	Modern materials, not culturally significant or rare.	Poly-rope, aluminium cans, fenders, Styrofoam, plastics, fibreglass, modern appliances, asbestos, etc...

2.5 Induction sign on form

All Santos and contractor staff designated likely to encounter unexpected cultural heritage, nominated for induction on this unexpected finds protocol shall initial and sign this form as a record of their understanding of the requirements.

Unexpected Finds Protocol – INDUCTION

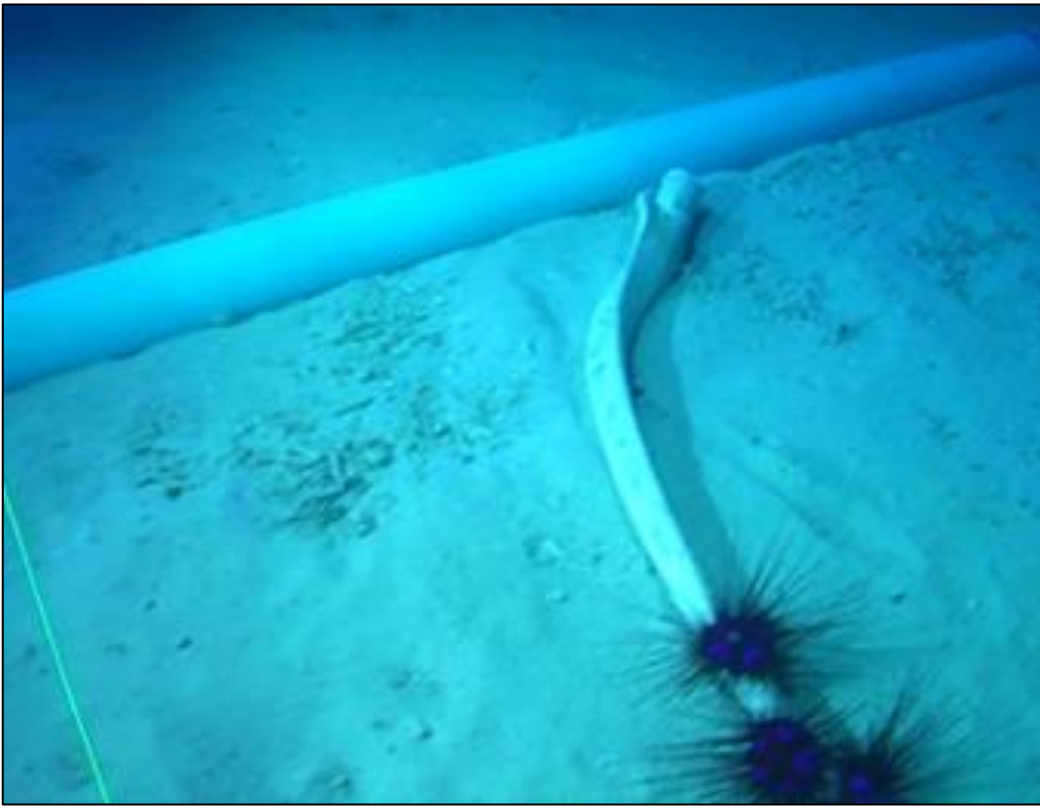
Point	Description	Initial
A	Any trenching and anchoring undertaken for this project may expose/disturb/recover cultural objects which may have cultural heritage significance.	
B	A thorough review of heritage databases identified seventeen located shipwrecks, six instances of maritime infrastructure, and five instances of UXO within the nearshore study area. There are no located shipwrecks or maritime infrastructure within the vicinity of the offshore alignment, and there are no located aircraft wrecks or sea dumping sites within the vicinity of the alignment.	
C	There are twenty-nine unlocated ships recorded to have wrecked in the Timor Sea, Beagle Gulf, and Darwin Harbour that could be located in the footprint of proposed development.	
D	There are twenty-five known, but unlocated, aircraft wrecks in Beagle Gulf and Darwin Harbour, and seventeen in the Timor Sea that could potentially occur within the vicinity of the alignment based on historical accounts of the wreck event and general wreck location.	
E	The remains of these vessels, and their contents and fittings, are automatically protected under the Cwlth <i>Underwater Cultural Heritage Act 2018</i> and/or the Northern Territory are protected under the NT <i>Heritage Act 2011</i> , and United States military shipwrecks and aircraft wrecks are protected under the US <i>Sunken Military Craft Act 2004</i> .	
F	A total of sixty-seven sonar contacts or magnetic anomalies were identified by CA as being potentially cultural. These anomalies could be natural features, debris fields or isolated instances of debris and/or discard.	
	Side scan sonar data, multi-beam echosounder bathymetry data, and magnetometer survey data showed no clear evidence of the presence of a previously unidentified shipwreck or aircraft wreck within either the offshore or nearshore vicinity of the alignments was identified.	
	Multiple geophysical anomalies within 50 m of the GEP route were identified during geophysical survey data review. Sixteen of these targets were inspected by ROV survey in Darwin Harbour. Targets inspected included WWII anti-submarine infrastructure, possible cables, buoy moorings, a possible ship's winch or bollard, and several instances of unidentified metallic debris.	
G	Submerged heritage objects can quickly degrade if removed from the water. Therefore, it is important to ensure that any potential heritage objects are kept wet until advice can be sought from the project's maritime archaeologist and/or conservator.	
H	The actions to take upon finding underwater cultural heritage objects are described in <i>Santos (Barossa) Offshore Development – Actions sheet</i> (Section 2.1), a copy of which is kept by your Santos Client Representative.	
I	You have read through <i>Santos (Barossa) Offshore Development – Object Recognition Sheet</i> (Section 2.2), or your Santos Client Representative has informed you of what type of underwater cultural heritage objects may be found.	
J	You have read through <i>Santos (Barossa) Offshore Development – Recording Methods and Procedures</i> (Section 2.3) and <i>Artefact Collection and Curation Policies</i> (Section 2.4), or your Santos Client Representative has informed you of the actions that are to be taken if underwater cultural heritage objects are found.	
K	In summary – if you uncover objects of timber, aluminium, ferrous objects or copper alloy, tyres, engines, bottles, ceramics, or other unusual objects let your Santos Client Representative know. Your Santos Client Representative will contact the maritime archaeologist for advice on how to proceed.	
L	If in doubt about whether what you have found may be underwater cultural heritage objects, let your Santos Client Representative know and your Santos Client Representative will contact the maritime archaeologist.	

Name: _____

Date: _____

Sign: _____

APPENDIX 5: FIRST NATIONS UNEXPECTED FINDS PROTOCOL



FIRST NATIONS CULTURAL HERITAGE UNEXPECTED FINDS PROTOCOL

DARWIN PIPELINE DUPLICATION

JUNE 2024

Report prepared by
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for Santos

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DOCUMENT CONTROL

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Client		
Document Description	First Nations Cultural Heritage Unexpected Finds Protocol. Darwin Pipeline Duplication.	
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ABBREVIATIONS

A	Archaeologist
AAPA	Aboriginal Areas Protection Authority
BP	Years Before Present
CCS	Carbon Capture and Storage
CHMP	Cultural Heritage Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DLNGP	Darwin Liquefied Natural Gas Plant
DPD	Darwin Pipeline Duplication
DPD Project Area	An area including 1 km either side of the DPD corridor
DPD corridor	The pipeline route where impacts from the laying of the pipeline will occur (100 m wide corridor)
GEP	Gas Export Pipeline
GPS	Global Positioning System
KP	Kilometres along proposed pipeline route
LGM	Last Glacial Maximum
MBES	Multi-beam Echo Sounder
NT	Northern Territory
ROV	Remotely Operated Vehicle
RWA	Restricted Works Area
SCR	Santos Client Representative
UFP	Unexpected Finds Protocol
WPDRG	Wickham Point Deed Reference Group

1 INTRODUCTION

OzArk Environment & Heritage (OzArk) has been engaged by Santos (the proponent) to prepare a First Nations unexpected finds protocol (UFP) for the Darwin Pipeline Duplication (DPD). This UFP will be used to assist Santos in identifying and managing unexpected First Nations cultural heritage that may be encountered during the installation of the DPD, which is a major component of the Santos Barossa Gas Project.

A Cultural Heritage Management Plan (CHMP) has been prepared for the DPD (OzArk 2024a) that will ensure project construction is managed through clear recommendations to avoid cultural heritage sites, including Aboriginal sites. This First Nations UFP is part of the CHMP, referenced in Section 5.5.4 of that document. This First Nations UFP, together with a Maritime unexpected finds protocol, have also been appended to the CHMP as Appendix 5.

1.1 DPD PROJECT AREA

The DPD Project will extend the Barossa Gas Export Pipeline to the Santos-operated Darwin Liquefied Natural Gas Plant (DLNGP) facility and allow for the repurposing of the existing Bayu-Undan to Darwin pipeline to facilitate carbon capture and storage (CCS) options. It will effectively be a 'duplication' of a portion of the Bayu-Undan to Darwin pipeline to allow gas from the Barossa field to be transported to and processed at the existing DLNGP.

The project includes approximately 100 kilometres (km) in Northern Territory (NT) waters and 23 km in Commonwealth Waters, a spoil disposal area, and a shore crossing near Wickham Point, Middle Arm in the Greater Darwin Area. Construction of the pipeline will include:

- Pipe laying corridor, with a disturbance footprint of 50 metres (m)
- Trenched pipe laying corridor sections will have a disturbance footprint of 90 m
- Onshore trenching for 200 m
- Trenching of up to 500,000 m³ of spoil to go to a 6.25 km² disposal area outside Darwin Harbour
- Placement of no more than 500,000 tonnes of rock during backfill and stabilisation of the pipeline and
- Anchoring of construction vessels within a 900 m corridor on either side of the pipeline (anchoring corridor).

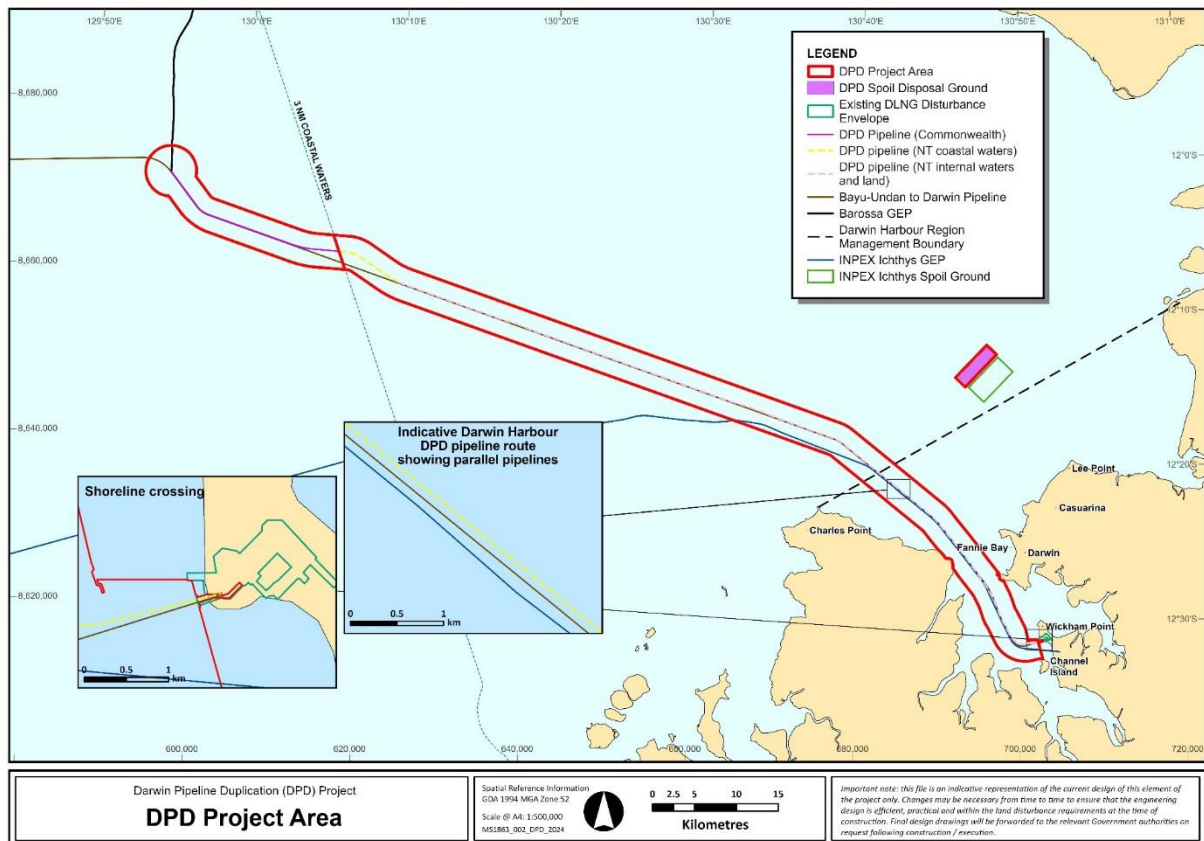
The approved development footprint and layout of the project is shown on **Figure 1-1**.

1.2 PROJECT IMPACTS

The primary work elements of the DPD Project that could have an impact on underwater or terrestrial cultural heritage include:

1. Installation of temporary or permanent infrastructure on the seabed along the DPD corridor and on the land within the existing DLNG disturbance footprint
2. Trenching activities
3. Potential disturbance of the seabed from pipeline initiation and vessel anchoring for the DPD.

Figure 1-1: The DPD Project Area.



1.3 HERITAGE ASSESSMENT BACKGROUND

1.3.1 Sacred Sites

There are many sacred sites within Darwin Harbour and the surrounding waters. In coastal and sea areas, sacred sites may include features which lie both above and below the water.

The Aboriginal Areas Protection Authority (AAPA), an independent statutory authority established under the NT Sacred Sites Act, is responsible for overseeing the protection of Aboriginal sacred sites on land and sea across the NT.

For the DPD project, AAPA issued an Authority Certificate (C2022-098) on 23 December 2022. A second certificate a second was issued on 22 May 2024 for a small additional area beyond that covered by C2022-098.

1.3.1.1 AAPA Certificate 2022/098

Figure 1-2 shows the subject area covered by AAPA certificate 2022/098. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. As a result, AAPA have designed a Restricted Works Area—RWA1—to ensure that vessel traffic and anchoring is excluded from this area.

AAPA certificate C2022/098 includes a number of conditions, including provisions relevant to C2022/098 RWA1. These have been incorporated into the CHMP for the DPD Project.

Figure 1-2: Subject land covered by AAPA Certificate C2022/098.

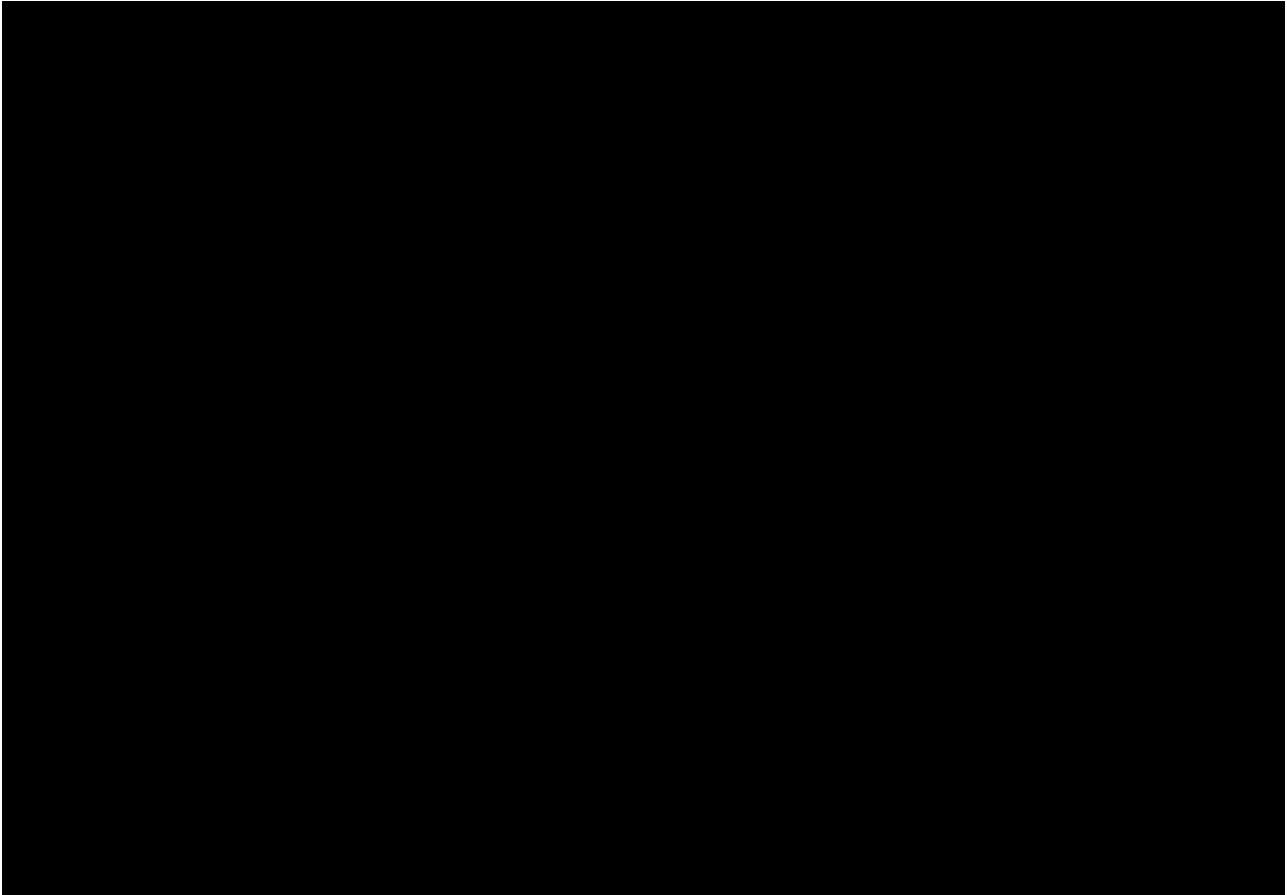
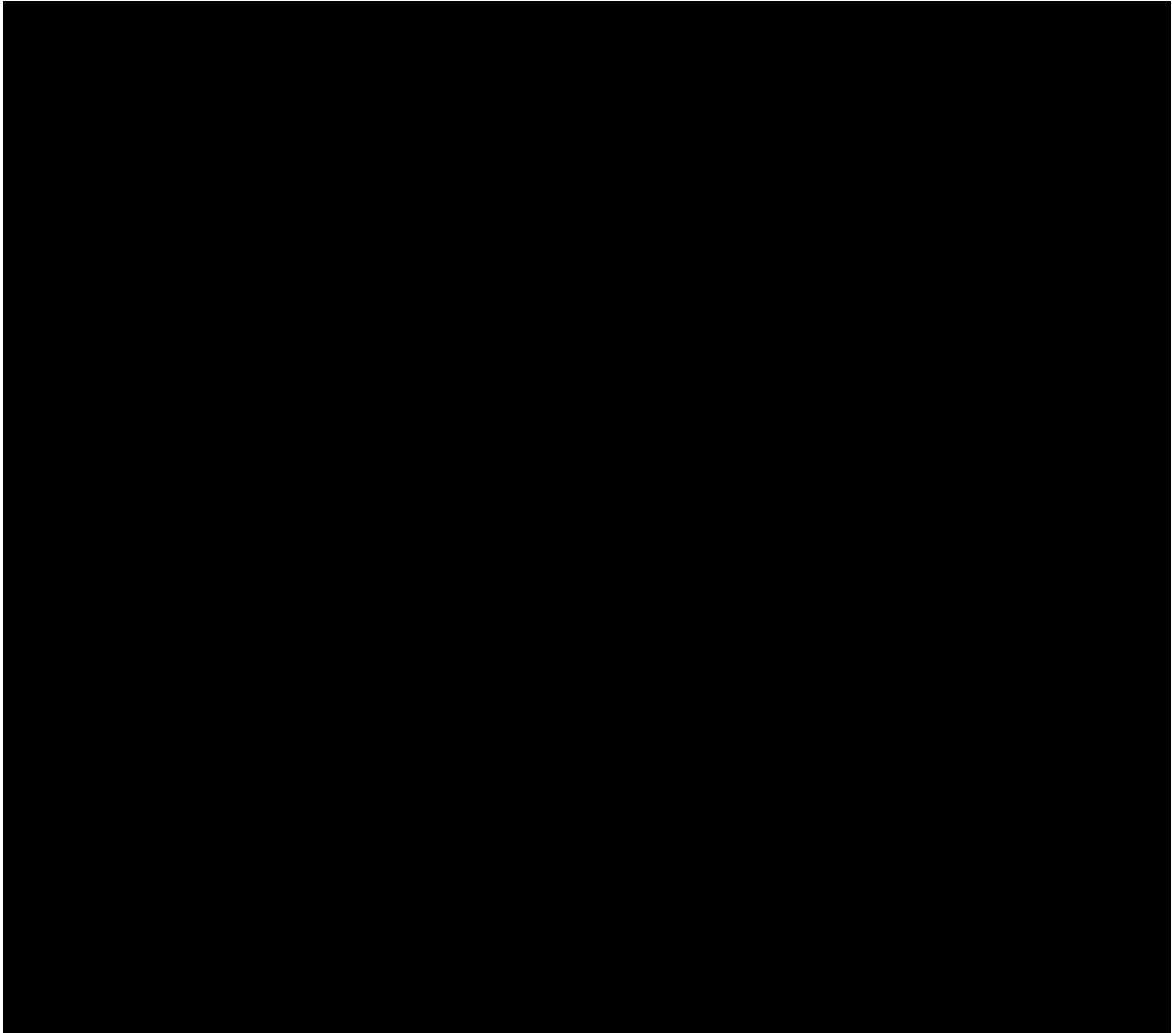


Figure 1-3: Sacred sites near the DPD project - AAPA Certificate C2022/098.



1.3.1.2 AAPA Certificate 2024/034

[Redacted text block consisting of six horizontal black bars of varying lengths.]

AAPA certificate C2024-034 includes several conditions, including provisions relevant to C2024-034 RWA1. These have been incorporated into the CHMP for the DPD Project.

Figure 1-4: Area covered by AAPA Certificate C2024/034

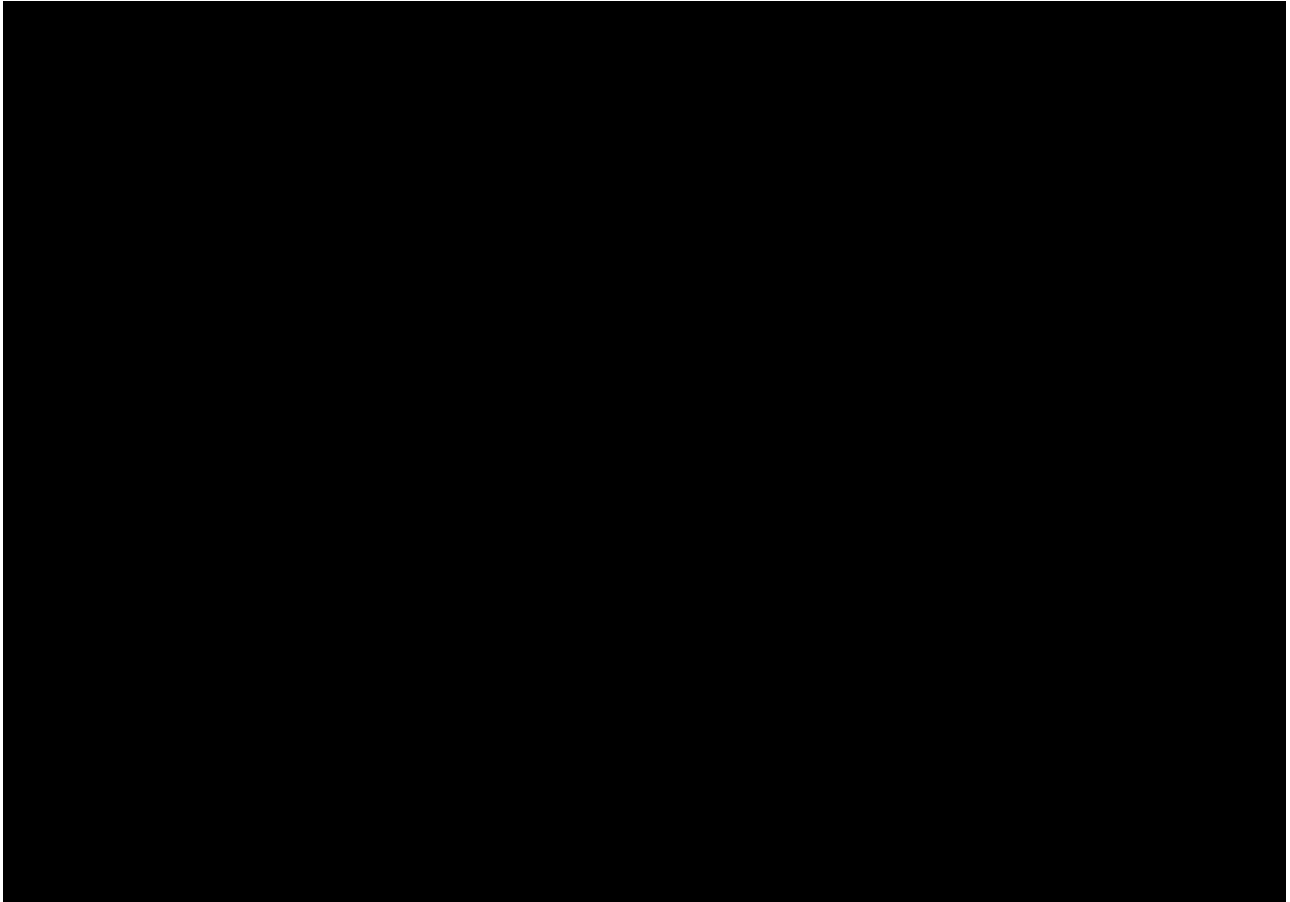


Figure 1-5: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 1 blow up)

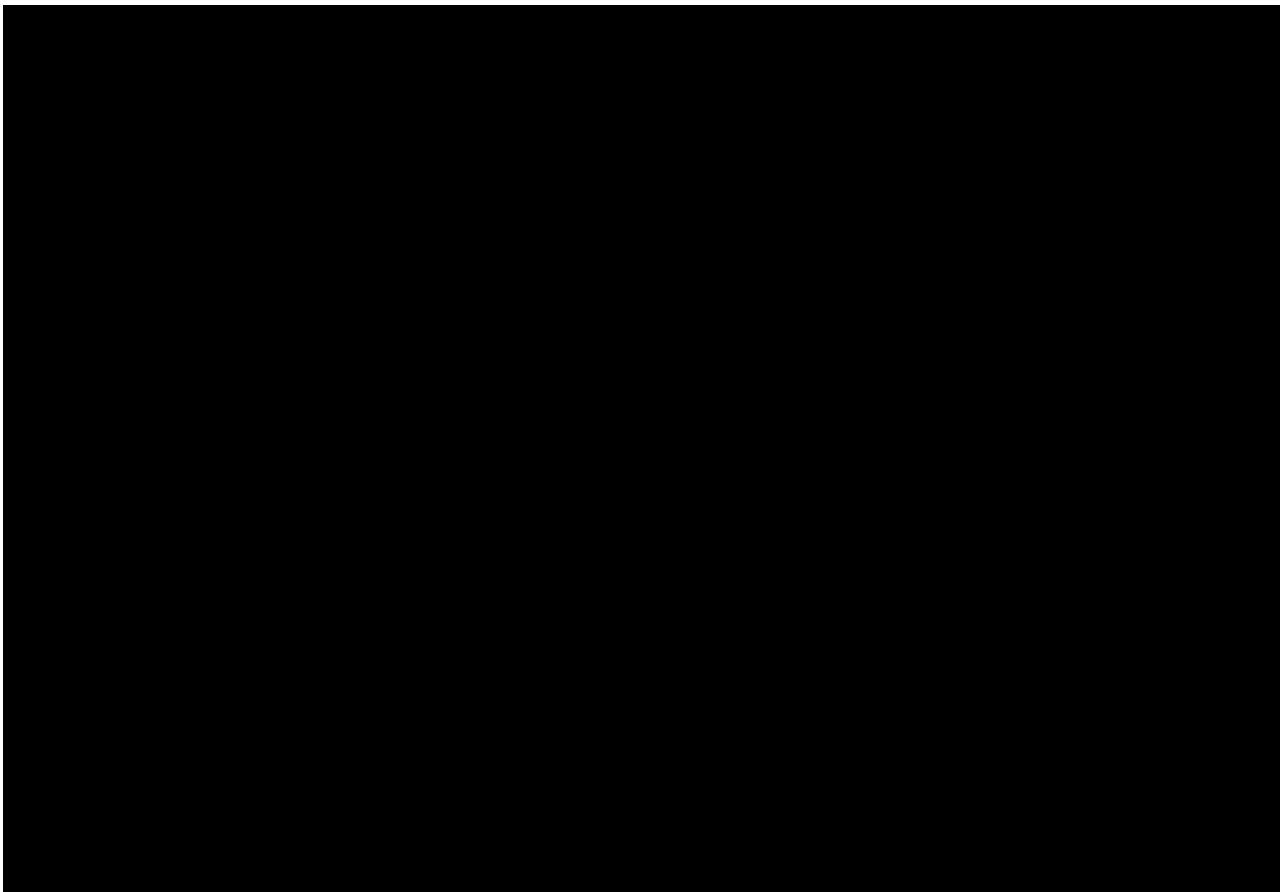


Figure 1-6: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 2 blow up)

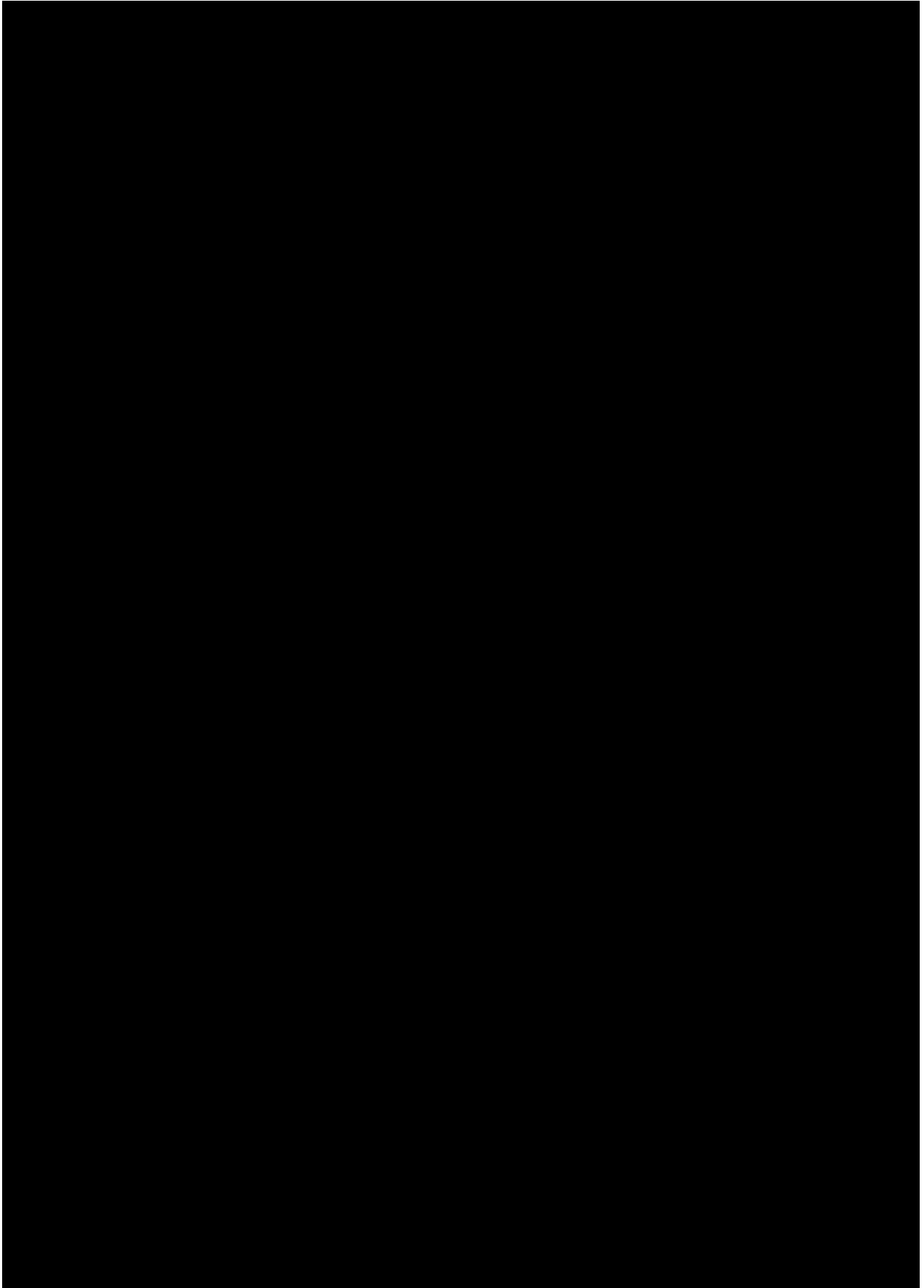
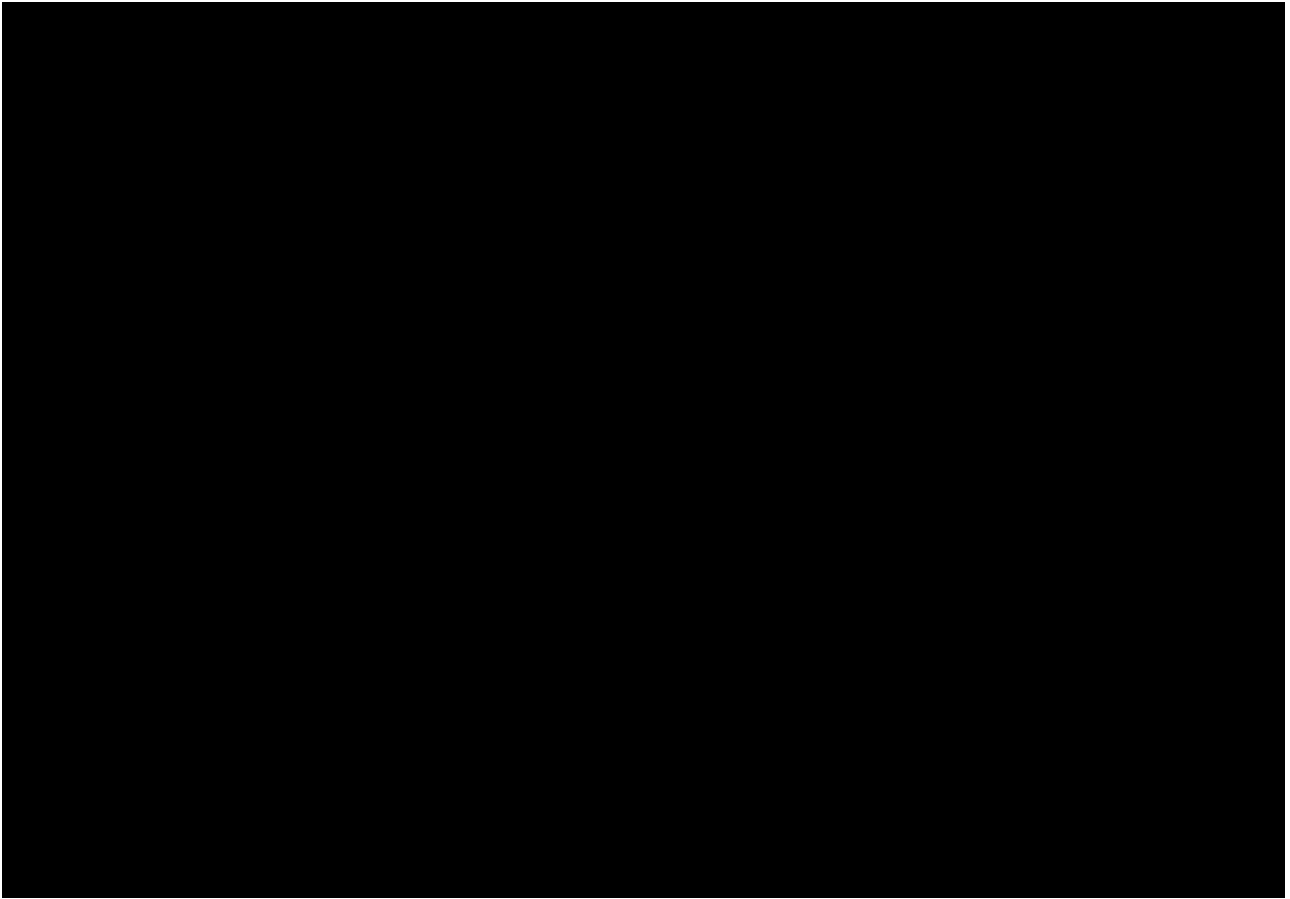


Figure 1-7: Sacred sites near the Project – AAPA Certificate C2024/034 (Map 3 blow up)

1.3.2 First Nations archaeology

The Aboriginal archaeological values relevant to the DPD project have been assessed in an Archaeological Assessment undertaken by OzArk Environment & Heritage in 2024 (OzArk 2024). The following is a summary of the results and recommendations presented in that document.

1.3.2.1 *Submerged landscape*

Aboriginal archaeological assessment for the submerged DPD corridor was based on a detailed geomorphological assessment (Santos 2024). This study focussed on the likelihood for deposits associated with the Last Glacial Maximum (LGM) to be impacted by the DPD project. Only one location where potential sediments associated with the LGM were indicated was in the vicinity of KP36.4 to 37.9, where they are assessed likely to be at a depth of approximately 18 m below the sea floor. At this depth, no activities related to the construction of the DPD project will have any direct or indirect impact on these potential sediments.

1.3.2.2 *Terrestrial landscape*

While OzArk 2024 has described the significant archaeological record across Wickham Point, the assessment also confirmed that no intact Aboriginal sites are likely within the DPD terrestrial impact footprint. The area has undergone a significant amount of prior archaeological survey and

assessment and Aboriginal sites in its vicinity underwent archaeological test and salvage excavation. Subsequently, the land has been completely modified via construction of the DLNG facility and the existing pipelines. The DPD pipeline is proposed to enter the DLNGP within the disturbance boundary established for the plant in 2006.

One Aboriginal site, site MA15, a midden, is located just outside the DPD terrestrial impact footprint. The footprint is currently fenced at the location of the MA15 to ensure it is avoided by inadvertent project impacts.

2 RELEVANT LEGISLATION

2.1 NORTHERN TERRITORY LEGISLATION

In the NT, First Nations heritage is protected under two pieces of legislation: the *Northern Territory Aboriginal Sacred Sites Act 1989* and the *Heritage Act 2011*.

The *Heritage Act 2011* is designed to protect natural and cultural heritage places and objects through listing on a register and sets out criteria for the assessment of heritage places. It also includes a blanket protection for all First Nation and Macassan sites. The Act allows for the making of declarations, the granting of heritage permits, some restrictions on activities, and establishes penalties for the improper use of heritage places.

Sitting alongside the *Heritage Act 2011* is the *Northern Territory Aboriginal Sacred Sites Act 1989*. The *Northern Territory Aboriginal Sacred Sites Act 1989* is administered by the Aboriginal Areas Protection Authority, an independent statutory authority, and places power in the hands of First Nations people rather than a Minister, unlike the *Heritage Act 2011*.

Sites protected under the *Northern Territory Aboriginal Sacred Sites Act 1989* fall under the definition of a sacred site:

... a site that is sacred to Aboriginals or otherwise of significance to Aboriginal tradition, and includes any land that, under the law of the Northern Territory, is declared to be of sacred or of significance according to Aboriginal tradition

Section 3 Aboriginal Land Rights (Northern Territory) Act 1976.

An Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act 1989* indicates on what parts of an application area proposed works may or may not occur, and in accordance with the wishes, or agreement, of the Traditional Owners, sets out conditions, if any, under which the works may proceed. The Authority Certificate process recognises archaeological places and objects because it includes all sites that are of significance under the body of traditions, observances, customs, and beliefs of First Nations people, whether these places are tangible or intangible.

As presented above, Authority Certificate for DPD Project (C2022-098) has been issued and its conditions are included in the CHMP for the project. Any additional conditions for further AAPA certificates will also be adhered to.

2.2 COMMONWEALTH LEGISLATION

Santos's First Nations UFP has been created to meet the requirements of the *Underwater Cultural Heritage Act 2018* (Cth).

According to the *Underwater Cultural Heritage Act 2018* (Cth):

an article of underwater cultural heritage means 'a trace of human existence that: (a) has a cultural, historical or archaeological character; and (b) is located under water'. Traces of human existence includes sites, structures, buildings, artefacts and human and animal remains, together with their archaeological and natural context.

Protection of this heritage is not automatic under the *Underwater Cultural Heritage Act 2018* but may be declared to be protected if the Minister is satisfied that an object/feature is of *heritage significance*.

If an article of underwater cultural heritage is discovered that appears to be of an archaeological character, the *Underwater Cultural Heritage Act 2018* requires that notification of the discovery be given within 21 days of discovery. Notifications are made to the Department of Climate Change, Energy, the Environment and Water's (DCCEEW) *Australasian Underwater Cultural Heritage Database*. The Act requires that the notification include a description of the article and a description of the place where the article is located.

Failure to follow the Unexpected Finds Protocol and associated procedures may result in a breach of the *Underwater Cultural Heritage Act 2018*. Significant penalties exist for breaches of the *Underwater Cultural Heritage Act 2018* because of actions that relate to unauthorised impacts on protected heritage objects.

2.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

The DPD project within Commonwealth waters was approved under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on March 15, 2024 (approval EPBC 2022/09372). Approval conditions relating to heritage are detailed in Annexure A, 3) a) – c) of that document. The relevant conditions have been incorporated into the CHMP for the project and into both this First Nations UFP and the Maritime Heritage UFP.

3 UNEXPECTED FINDS PROTOCOL

Failure to follow the Unexpected Finds Protocol and associated procedures may result in a breach of the Commonwealth *Underwater Cultural Heritage Act 2018*, the EPBC Act project approval, the Northern Territory *Heritage Act 2011*, and/or the *Northern Territory Aboriginal Sacred Sites Act 1989*. Significant penalties exist for breaches of the listed legislation because of actions that relate to unauthorised impacts on heritage objects.

This protocol has been separated into two main elements, being the submerged and terrestrial pipeline elements, as outlined in **Sections 3.1** and **3.2** below. The submerged pipeline activities detailed in **Section 3.1** vary according to the approach needed for different pipeline sections or different specific activities. In general, they can be phased into activities that occur pre-trenching or pre-pipelay and those that occur during trenching or pipelay.

3.1 SUBMERGED PIPELINE – METHODOLOGIES FOR DATA CAPTURE

The DPD corridor will be surveyed using Remote Operated Vehicles (ROVs) or vessel mounted survey systems, as the depth and currents on the sea floor create an environment that poses a disproportionate safety risk for divers. Ahead of any construction activities, a vessel is deployed to undertake a final seabed survey to identify in detail the characteristics of the seafloor, to ensure that the installation of the pipeline can be undertaken in a streamlined fashion. The construction activities for the submerged DPD pipeline can be divided in four main scopes, each with their own survey requirements relevant to nature of the seabed environment and the type of activity:

- Pre-trenching survey
- Trenching operations
- Darwin Harbour pipelay barge operations
- DP Pipelay Vessel Operations.

It is relevant to note there that the approach to this UFP is slightly different to that of the Barossa Gas Export Pipeline (GEP), due to the different activities involved in the pipelaying, particularly within Darwin Harbour, and as explained below.

3.1.1 Pre-Trenching Survey

Prior to any trenching operations, an in-survey will be conducted using a hull mounted Multi-beam Echo Sounder (MBES) system. The survey will cover the full work area and exceed the design width on both sides to assure undisturbed seafloor/ground surface coverage.

To support the implementation of the UFP in the identification of both actual and potential unexpected finds during the pre-trenching survey, the Contractor is required to closely review the MBES for any potential First Nations Cultural Heritage. This review takes place during the online data review (unprocessed data) and offline data review (processed data).

If any objects of interest are identified during the pre-trenching phase, Santos has an underwater drone available in Darwin Harbour that can be deployed with few days' notice to obtain imagery.

3.1.2 Trenching Operations

During trenching, regular MBES progress surveys will be conducted. As these surveys are focussing on a disturbed seabed, the chances of encountering anything of interest is negligible.

3.1.3 Darwin Harbour Pipelay Barge Operations

The Darwin Harbour DPD pipeline route, between approximately KP90 and the DLNGP, will be surveyed prior to pipelay commencement using the Nearshore Pipelay Barge. The pre-lay will be undertaken using a sonar (side scan or ROV sonar) and MBES mounted on a pole or ROV.

During pipelay operations, touch-down monitoring will take place using ROV. In case the ROV encounters any station keeping and visibility issues due to the strong currents in Darwin Harbour, it will be attempted to undertake the touch-down monitoring using a pole mounted MBES.

3.1.4 DP Pipelay Vessel Operations

The offshore section of the DPD pipeline route, between KP0 and KP90, will be surveyed prior to pipelay commencement using the Dynamically Positioned (DP) Pipelay Vessel. The pre-lay will be undertaken using a sonar (side scan or ROV sonar) and MBES mounted on a pole or ROV.

During pipelay operations, touch-down monitoring will take place using ROV. Santos is expecting similar conditions as during the Barossa GEP Pipeline Installation and is therefore not expecting any issues with ROV station keeping.

3.1.5 Data review

The surveys described above comprise many elements. Where video and sonar footage of the seafloor is obtained, this can be observed in real time by at least two operators who are highly experienced in observing the sea floor and who can stop the ROV at any anomalies. If stopped in real time, the ROV can be directed to take additional imagery and can add a scale bar if thought necessary. Where only MBES data is obtained, the data will require processing first, which removes the opportunity to redirect the ROV/vessel in real time.

Footage where objects of interest are flagged during the survey run can also be reviewed a second time after the ROV flyover (known as an offline review), which is another opportunity for any anomalies to be noted by an operator.

It is noted that conditions for the ROV survey can be variable, with extremely high visibility at times and very low visibility from ocean currents and turbulence at other times. The conditions will impact on the ability to observe the sea floor and detect potential heritage objects.

3.2 TERRESTRIAL PIPELINE – METHODOLOGY FOR DATA CAPTURE

The DPD project boundary at the point of landfall at the DLNGP is within a completely cleared and disturbed area, impacted by the original construction of the plant. The CHMP includes all relevant management measures to ensure that there are no impacts to identified Aboriginal archaeological material adjacent to the impact footprint. There are no identified archaeological sites within the footprint.

Works in this area will be undertaken using excavators. The approach to this work will offer little to no opportunity for potential archaeological material to be visualised, except by the machine operators. In the unlikely case that archaeological material is sighted, works will cease as per the UFP outlined on **Figure 3-2**.

3.3 PROTOCOL

For the purposes of this protocol it is relevant to be aware that there will not be continuous Santos presence during the trenching surveys, pre-lay surveys, and touch down surveys described in Sections **3.1.1**, **3.1.2**, **3.1.3**, and **3.1.4**. Although a Santos Client Representative (SCR) will not be present continuously, an SCR will be always on call. Any data around potential finds will be transmitted for review by the SCR. This initial notification should include:

1. Copies of data/video footage indicating the presence or potential presence of an unexpected find at the highest available resolution
2. The coordinates of the unexpected or potential unexpected find (northing, easting, and water depth)
3. Any observations the contractor can make on the physical characteristics of the unexpected find which could support the identification of the unexpected find by others.

Where needed, this information will be provided to the Archaeologist (A) for further review. If the find is deemed to be of potential First Nations cultural heritage, the SCR will provide the data to a First Nations representative.

The following protocol has been split into two phases based on the ability for the project to respond to unexpected finds.

3.3.1 In-surveys and pre-lay surveys (Phase 1)

This component of the protocol relates to potential heritage items identified during the underwater pre-trenching and pre-lay surveys as variously described in **Sections 3.1.1**, **3.1.2**, **3.1.3**, and **3.1.4** and is relevant to the submerged pipeline component of the DPD Project.

The protocol actions are summarised below and shown on **Figure 3-1**:

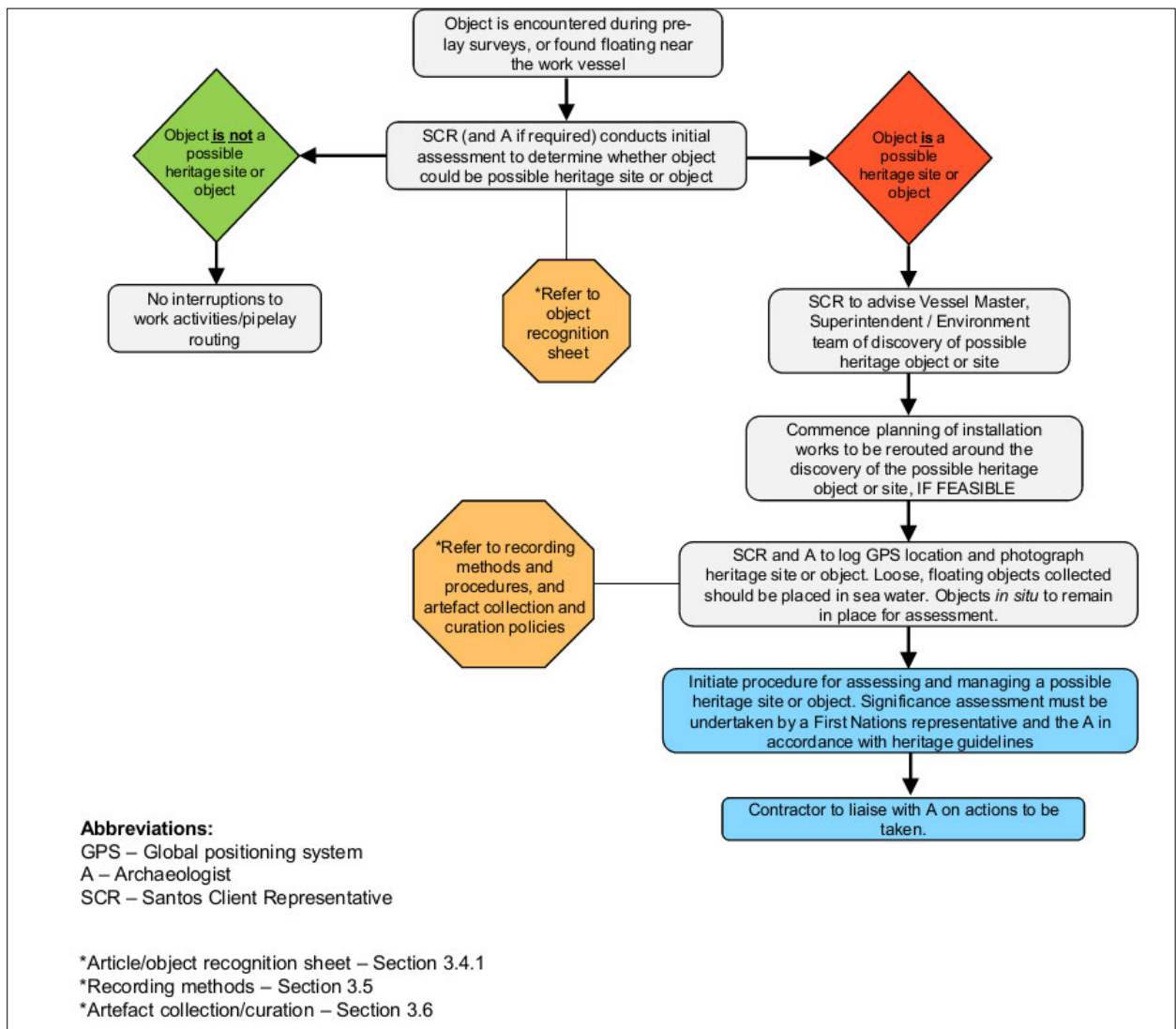
- Upon observing an object that the operatives believe could be a potential archaeological object (“an article that appears to be underwater cultural heritage”), the SCR is to be

notified. This could occur during any of surveys described in Sections **3.1.1**, **3.1.2**, **3.1.3**, and **3.1.4**

- See unexpected finds notification protocols flowchart (**Figure 3-1**).
- The SCR will then use imagery available to determine whether the object is a possible First Nations object or significant archaeological deposit using the Object Recognition Sheet (**Figure 3-3**). If required, the SCR will involve the A to better enable an accurate determination of the what the object is
- If the object is assessed as a likely cultural heritage object and it is likely to be impacted by the pipelay construction activities, a possible route deviation or sidestep within the pre-lay corridor will be assessed and the new route/lateral deviation shall be surveyed, if not yet covered. Given the limitations within Darwin Harbour, it is unlikely that re-routing in this section will be possible. Steps in the Recording Methods and Procedures (**Section 3.5**) should be followed. If rerouting the pipeline is not practical/possible then options to recover the likely cultural heritage object should be discussed and agreed as per the Artefact Collection and Curation Policies (**Section 3.6**)
- If the object cannot be positively identified from the imagery available, further investigation of the object may be required if requested by the by the SCR and A. This may take the form of additional ROV deployment to obtain better quality imagery, to enable a positive identification. Steps in the Recording Methods and Procedures (**Section 3.5**) should be followed.

Possible cultural heritage objects encountered on the seafloor during ROV survey should be left and recorded in situ, unless they are under imminent threat of destruction, or if their identification as a cultural heritage object cannot be confirmed from imagery generated by ROVs.

Figure 3-1: Flow chart detailing the Phase 1 heritage response process upon encountering unexpected potential heritage finds during the in-survey and pre-trench and pre-lay surveys.



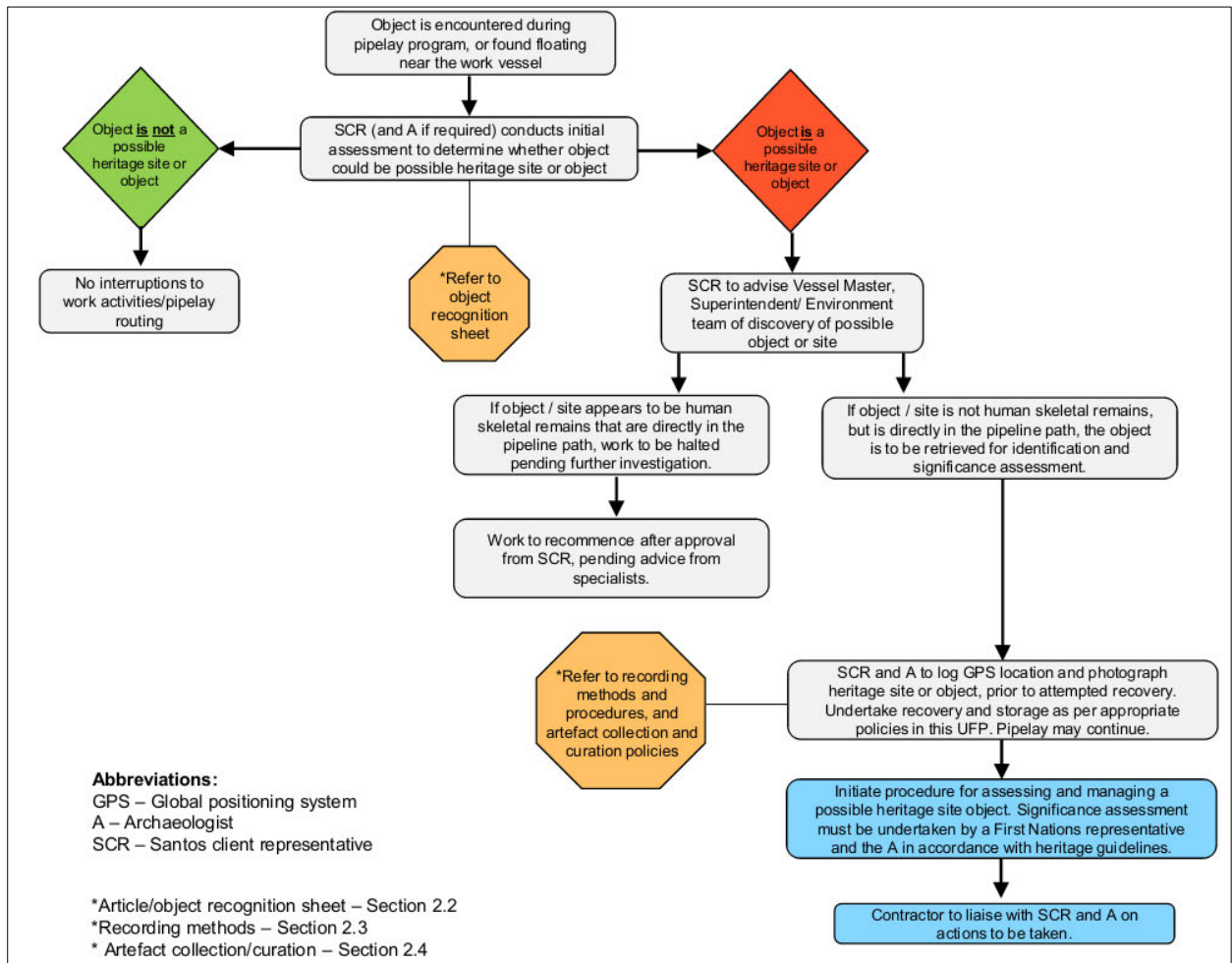
3.3.2 Construction or pipelay phase (Phase 2)

The protocol specifically for potential heritage items identified during trenching or pipelay phases is summarised below. Phase 2 refers to both the maritime and terrestrial components of the DPD Project and the procedure is shown on **Figure 3-2**:

- Upon observing an object that the operatives, including the SCR, believe could be a potential archaeological object (“an article that appears to be underwater cultural heritage”), the SCR is to be notified. If required, the SCR will involve the A to better enable an accurate determination of the what the object is.
 - See unexpected finds notification protocols flowchart (**Figure 3-2**).
- The SCR and A will then use available imagery to determine whether the object is a possible First Nations object or significant archaeological deposit using the Object Recognition Sheet (**Figure 3-3**) and their collective experience
- If the object is assessed as:

- Likely to be human remains, and these remains are located directly in the path of the pipeline, then works in the immediate area (within 10 m) must be halted pending the results of appropriate further investigation
- Likely to be a cultural heritage object that is directly in the path of the pipeline, then the following steps should be undertaken:
 - Log the GPS location and photograph the heritage site or object while in situ as per steps in Recording Methods and Procedures (**Section 3.5**)
 - If the pipeline cannot be locally rerouted around the object in a timely manner, then attempt to recover the object and manage as per artefact collection and curation policies (**Section 3.6**)
 - Once recovered, SCR, A, and First Nations representative to assess, confirm or not the identification of the object as cultural heritage and undertake a significance assessment for identified heritage.
- Likely to be a cultural heritage object that is not directly in the path of the pipeline, then the following steps should be undertaken:
 - Log the GPS location and photograph the heritage site or object while in situ as per steps in Recording Methods and Procedures (**Section 3.5**)
 - Leave object *in situ*.
- Construction work may continue, although further actions may be requested by the SCR, A, and a First Nations representative after the positive identification of the object as First Nations cultural heritage and the significance assessment results
- Construction work cannot be performed within 10 m of the potential cultural heritage object until approved by the SCR and A, if the potential cultural heritage object is detected prior to work encroaching within this distance.

Figure 3-2: Flow chart detailing the Phase 2 heritage response process upon encountering unexpected heritage finds during the pipeline laying program.



* The contact archaeologist is:

Dr Jodie Benton¹, OzArk Environment & Heritage

████████████████████

████████████████████

Additional specialist support as needed will be provided by

Dr Silvano Jung²

Other specialists may also be called upon should the nature of a find require it, i.e. a physical anthropologist should bone that cannot be identified be discovered etc.

¹ Experience summary present in Appendix 1




² Experience summary present in Appendix 1

3.4 FIRST NATIONS OBJECTS



The preservation of First Nations archaeological / cultural objects underneath the sea or on land will be variable. It is anticipated that wood, reed, and feather objects from the more distant past are not likely to have survived. The objects that are more likely to be preserved are those made from stone, larger wooden objects, especially if from the more recent past, and in some rare cases, bone. **Figure 3-3** provides some images of such objects, primarily from terrestrial environments, but there are also some examples from the literature as to how these objects may appear in a submerged context.



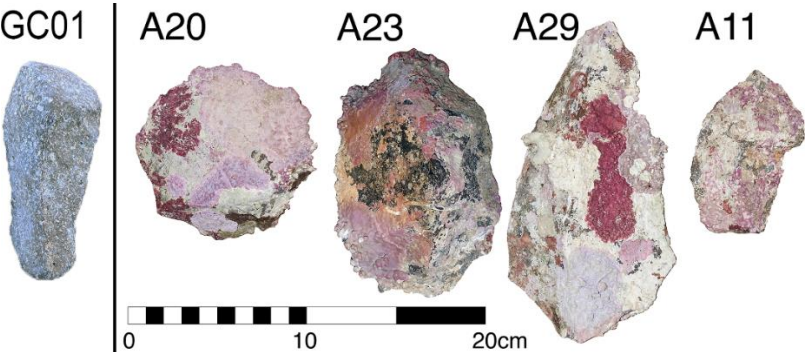
It is of note here that the most commonly found Aboriginal artefact in a terrestrial context is the small stone flake. These can be very small, less than 1 centimetre (cm) in size, or much larger, but most often are less than 10 cm in size. Images of a range of these finds are shown on **Figure 3-3**. Due to the size of these artefacts, these objects, if present, may not be visible unless clearly differentiated from the background sediments/soils. For example, if a particular location is scattered with natural stone, an artefact may not be distinguishable from this background scatter. In the maritime environment, only stone objects that can be clearly identified as different from the surrounding material or that exhibit some characteristic likely to be anthropogenic are capable of being identified through review of the ROV imagery. As noted in **Section 1.3.2.1**, such objects are considered unlikely.




Figure 3-3: First Nations object recognition sheet.



Potential object	Description	Image
Stone Objects		
Grinding dishes	Grinding dishes are created for the grinding of plant material and sometimes ochre. They are usually made from sandstone or quartzite. They can be found complete.	
Grinding dishes	As above. Fragmentary example of whole grinding dish.	
Grinding dishes	As above. Example of grinding dishes and top stone from a museum collection. Image from: Australian Museum	




Potential object	Description	Image
<p>Flaked stone artefacts</p>	<p>Many varieties of stone may be used to create stone tools. The images here show the waste flakes from the manufacture of Aboriginal stone tools. These objects comprise the most commonly recorded archaeological evidence of First Nations occupation of the landscape. They can be very small or much larger, depending on the point in the tool-making process they are derived from.</p>	
<p>Flaked stone artefacts</p>	<p>As above. Further examples.</p>	
<p>Flaked stone artefacts</p>	<p>As above. Detailed view of a flaked stone artefact. 1 cm scale.</p>	


Potential object	Description	Image
Flaked stone artefacts	As above. Detailed view of a flaked stone artefact. 1 cm scale.	
Ground edge hatchet heads	Stone hatchet heads were manufactured from suitable stone, with a 'blank' being created through flaking and then an edge ground using a softer stone.	

Potential object	Description	Image
Ground edge adzes	<p>Stone adzes were manufactured from suitable stone, with a 'blank' being created through flaking and then an edge ground using a softer stone.</p>	
Stone artefacts	<p>This image shows stone artefacts as they may appear in a submerged context.</p> <p>Image from: https://deephistoryofseacountry.com/</p>	
Stone artefacts	<p>As above. Discolouration that could occur on stone artefacts because of their submersion.</p> <p>Image from: Benjamin 2020</p>	

Potential object	Description	Image
<p>Stone artefacts</p>	<p>As above. Discolouration that could occur on stone artefacts because of their submersion. In some instances, this could help an artefact stand out against its background deposit but could alternatively mask it.</p> <p>Image from: Benjamin 2023</p>	
<p>Stone artefacts</p>	<p>Stone artefacts from a submerged context.</p> <p>Image from: Cheong 2023</p>	
Shell		
<p>Shell</p>	<p>Significant concentrations of shell, particularly if associated with charcoal and/or stone tools, may be part of a midden.</p>	

Potential object	Description	Image
Charcoal		
Charcoal	Concentrations of charcoal may be a hearth. There are also several natural explanations for charcoal concentrations.	
Large wooden items		
Canoes	<p>"Fish-tail" bark canoes [the two to the front] and "dug-out" canoe in the distance, Apsley Strait. Melville Island in the background.</p> <p>Image from: Basedow 1911</p>	

Potential object	Description	Image
Canoes	<p>Na-riyarrku. Sewn bark canoe. Example of a Yolgnu coastal seawater craft.</p> <p>Image from: Andrew Frolows / ANMM Collection 00004853</p>	
Canoes	<p><i>Rra-kalwanyimara</i>. Macassan style dug-out canoe and associated objects.</p> <p>Image from: David Payne / ANMM Collection 00001826</p>	
Bone		
Bone	<p>Bones of a sea mammal on the sea floor.</p> <p>Such animal remains DO NOT constitute First Nations heritage but are provided here as an example of the types of non-human bone that may be encountered on the sea floor.</p> <p>Image from: Steve Sande, https://www.quora.com/What-happens-to-large-quantities-of-bones-under-the-ocean-and-in-the-ground</p>	

Potential object	Description	Image
Bone	<p>Human bones from approximately 8,000 years before present in the Mediterranean at a depth of 10 m below sea level.</p> <p>Image from: Faerman 2008</p>	

3.5 RECORDING METHODS AND PROCEDURES

If an object is found that may be First Nations cultural heritage, it is important that a detailed recording is taken and provided to the SCR and A to support identification of the object. If the object is assessed as of First Nations origin, the First Nations representatives will be involved in an assessment of the object's cultural heritage significance.

The following list details the information that should be recorded:

- Unique identifying number (this number is to appear in any photographs of the article/object). It is understood that unique identifier is likely to be the coordinates at which the object is located
- Date and time of observation
- Location of find (to be expressed as general area description and GDA94, MGA zone 52 coordinates). May also be unique identifier
- Description (include broad dimensions, such as width, length, depth, and diameter where relevant, as well as a description of the material)
- Photographs (all photos must, when possible and practical, have a scale and ID number).

Confidentiality: Cultural heritage information must be kept confidential unless authorised by the Manager Cultural Heritage, Aboriginal Engagement and Access.

Cultural heritage information includes but is not limited to:

- Location details of cultural heritage sites
- Images of cultural heritage

- Details of Aboriginal traditions.

3.6 ARTEFACT COLLECTION AND CURATION POLICIES

It is possible that during Phase 2 pipeline installation of the DPD, archaeological articles/objects may be encountered that are under immediate threat from pipeline laying activities. Further, installation of the subsea infrastructure may dislocate articles/objects which may then float to the surface.

- Objects that are encountered on the seabed might need to be collected and assessed by an A to determine their significance, if the subsea infrastructure cannot be routed around the article/object and if the item is in immediate danger of being impacted
- Objects that are encountered on land might need to be collected and assessed by an A to determine their significance, as the pipeline cannot be routed around the article/object and if the item is in immediate danger of being impacted. If practical, the NT Heritage Branch and the Wickham Point Deed Reference Group (WPDRG) must be contacted to determine an appropriate collection procedure
- Collection of objects should only occur under the direction of the SCR and A
- If archaeological objects are recovered from the seafloor/marine environment, at the request of the A, they are to be stored in containers with salt water and covered from sunlight where possible. If the object(s) are too large to be stored in containers, they are to be kept wet by spraying down with salt water at intervals, so the object does not dry out. These large objects also need to be covered and stored out of direct sunlight
- Objects encountered during works and recovered from site should be appropriately tagged with date, time, and GPS location where the object was located. The object's significance will then be assessed by the First Nations representatives and A to determine the most appropriate management, being either:
 - Conservation
 - Relocation, or
 - Discard.
- Relocation means the object(s) will be returned to their approximate find location and similar environment from where they were encountered.

4 INDUCTIONS – UNEXPECTED FINDS PROTOCOL

All new workers who have the potential to interact with cultural heritage finds, such as ROV operators, operators reviewing sonar or camera footage data (in real time or processed data), and applicable vessel captains, as well as the terrestrial construction crew at the DLNGP plant, must complete a cultural heritage induction prior to commencing work.

4.1 INDUCTION SIGN-ON FORM

All Santos and contractor staff likely to encounter unexpected cultural heritage and nominated for induction on this UFP shall initial and sign this form as a record of their understanding of the requirements.

Point	Information	Initials
A	Any anchoring undertaken for this project may expose/disturb/recover cultural objects which may have cultural heritage significance.	
B	Submerged cultural heritage objects can quickly degrade if removed from the water. Therefore, it is important to ensure that any potential cultural heritage objects are managed as per this induction until express approval has been sought from the Santos Client Representative and Archaeologist.	
C	The actions to take upon finding underwater cultural heritage objects are described within this induction. More detail can be found in the Maritime UFP and First Nations UFP a copy of which is kept by your Santos Client Representative.	
D	You have read through this induction and are aware of what objects may be of cultural heritage value and what type of underwater cultural heritage objects may be found.	
E	You have read through this induction and are aware that the Santos Client Representative must be advised if any potential or actual cultural heritage object is discovered and that work in the area must cease until advised otherwise by the Santos Client Representative and Archaeologist.	

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APPENDIX 1: EXPERIENCE SUMMARIES

Dr Jodie Benton

Dr Jodie Benton is both a Director and Principal Consulting Archaeologist of OzArk Environment & Heritage. She has over 35 years' experience, having spent many years managing archaeological projects abroad and in Australia, as well as lecturing at the University of Sydney and the University of New England.

Dr Benton's PhD research work was primarily focussed on the excavation and interpretation of human burials. This included developing techniques for appropriate data capture during the excavation of comingled burial sites in the United Arab Emirates, as well the interpretation of these sites in relation to the culture and society that produced them. She has worked on archaeological sites in Jordan, Italy, Turkey and the United Arab Emirates, although the bulk of her career has been spent in the Australian context.

For the past 25 years Dr Benton has worked in Australian cultural heritage management, primarily development driven environmental impact assessments in NSW, although also working in other states on occasion. The heritage components of this work have enabled Jodie to develop a broad network of Aboriginal community contacts, a thorough understanding of heritage protection legislation and to refine appropriate methodologies for Aboriginal and historic heritage assessments and community consultation. She has worked with a variety of developers including both private and government organisations. Her work includes archaeological survey and excavation, as well as the preparation of management documents to assist developers to ensure that their project related impacts remain in line with the conditions of their approval.

Throughout 2023 Dr Benton was involved in the Barossa Gas Export Pipeline (BGEP). This work has given her a good understanding of the gas export project, experience in talking with First Nations people of the Tiwi Islands about the project and cultural values more generally, as well as exposure to a range of expert reports regarding the geomorphology of the sea floor in the area, archaeological predictions in relation to the sea floor in the Darwin area, and relevant management protocols.

Dr Silvano Jung

Dr Silvano Jung completed a Master of Letters (M.Litt) degree at the University of New England, specialising in the technical analysis of stone artefact assemblages from several rockshelter sites in Cape York Peninsula, Queensland. Since completing his M.Litt, he established Ellengowan Enterprises, an archaeological consultancy business, in 2001. His work in this capacity has seen the production of over 100 consultancy reports, the majority of which reported on the results of archaeological survey and salvage excavations for numerous clients in the Northern Territory, Queensland and Western Australia in the oil/gas, mining, telecommunications industries, as well

as NT Government and private ventures. His latest work has been on the location of archaeological sites on the proposed Pumped Hydro Scheme at Mt Rawdon, and Vena Energy's solar farm at Wandoan, Queensland, for Archaeo Cultural Heritage Services. Previous work specifically with Santos has been at Tanumbirini Station via InGauge Well Design and Engineering in 2023 and in 2020, at Santos' EP136 – Beetaloo Sub-Basin via Aecom. Ellengowan Enterprises is Darwin based and offers stone tool technological interpretative support to Dr Jodie Benton's role in monitoring the DPD project's impacts, if any, on submerged indigenous cultural heritage sites along the proposed pipeline route.

Dr Jung's experience of working in Darwin Harbour began with the first maritime archaeological assessment of a reported shipwreck in Northern Territory waters: SS *Ellengowan* (1866-1888) in 1991. The site was verified, making it the oldest located shipwreck in Darwin Harbour. As part of his duties as a maritime archaeologist at the Museum and Art Gallery of the Northern Territory (MAGNT), Silvano was responsible for researching, developing and uploading data to the Northern Territory shipwreck database, which later became part of the Australasian Underwater Cultural Heritage Database (AUCHD) for the Federal Government's Department for Climate Change, Energy, The Environment and Water (DCCEEW). Jung's work at the museum also involved the compilation of data for the proposed Beagle Gulf Marine Park. Following on from the work at the museum, Silvano undertook a Master of Arts programme through the then Northern Territory University (NTU - now Charles Darwin University CDU) examining the sunken WWII Catalina flying boat wreck sites in Darwin Harbour's East Arm. That study was the first research of its kind on submerged aircraft wrecks as a new class of underwater cultural heritage in Australasia. Silvano is still a keen scuba diver and a current member of the Darwin Sub Aqua Club (DSAC).