Cultural Heritage Assessment Report
Tiwi Islands H2 Project

Provaris Energy Ltd & EcOz Pty Ltd

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Earthsea Pty Ltd

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Cultural Heritage Assessment Report
Tiwi Islands H2 Project
(Final Report)

30 June 2022

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Earthsea would like to acknowledge the assistance of the NT Heritage Branch (Department of Tourism, Sport and Culture) with their assistance in supplying heritage information to support this Project.

Earthsea would also like to acknowledge the assistance of the Tiwi Land Council and Tiwi Enterprises in facilitating field teams. Similarly, Earthsea wishes to extend sincere gratitude to Tiwi Land and Sea Ranger's James Desantis and Clinton Rioli for actively participating in the surveys and openly sharing information to assist in the management of culturally significant features.

1 INTRODUCTION

Earthsea Pty Ltd (Earthsea) has been engaged by EcOz Environmental Consultants, on behalf of Provaris Energy Ltd, to undertake a Cultural Heritage Assessment (CHA) of their proposed Tiwi H2 Green Hydrogen Export Project (the Project), located on Melville Island in the Northern Territory. The Project Area is wholly located within the traditional lands of the Munupi clan and comprises the following terrestrial components:

- Solar Precinct – Renewable power generation from an onshore solar farm using 2,640 ha of plantations.
- Transmission Line Corridor – High voltage transmission line connecting the Solar Precinct to the Hydrogen Production Precinct, requiring clearance of discrete areas of native vegetation within a 30 km by 50 m corridor.
- Hydrogen Production Precinct – Comprised of an electrolyser facility, sub-station and battery facility which will be located within the Pirlangimpi Township Lease, to be as close as possible to the ship loading point and Hydrogen Export Precinct. This area requires clearance of 40 ha of native vegetation.
- Hydrogen Export Precinct – Comprising a compression facility, desalination facility, loading arms and berth for storage and marine transportation of the green hydrogen to market. This area will be located within the existing 32 ha Port Melville lease.

This Project intends to predominantly use already-developed land within forestry plantations and at Port Melville. Many of Project Areas within native vegetation zones were noted to have been selectively logged for timber at some time in the past.

The Project is being referred to the NT Environmental Protection Authority (NT EPA) for consideration under section 48 of the *Environmental Protection Act*. This CHA report provides additional information pertaining to Aboriginal and historic heritage values to support EcOz's Referral submission for the Project.

An archaeological field assessment, coupled with a desktop study, was used to inform this CHA report of any potential risks to archaeological resources and areas of cultural heritage significance within the proposed Project Areas outlined above. Archaeologist Tom Taverner undertook the field assessment between 17 and 21 May 2022, with the participation of two Tiwi Ranger site custodians.

1.1 SCOPE OF THE STUDY

As noted above, the Project is being referred to the NT Environmental Protection Authority (NT EPA) for consideration under section 48 of the *Environmental Protection Act*. The culture and heritage values included in this report have been based on those outlined in NT EPA guidelines document 'Referring a proposal to the EPA' (NTEPA 2021) and those protected by the *NT Heritage Act 2011*.

This study and CHA report centred on assessing the significance and potential impacts to archaeological sites of Aboriginal origin, historical features associated with the post-contact to modern period and areas which have intangible cultural heritage values. Sacred Sites, mandated as sites of significance in the Aboriginal Tradition by the Commonwealth *Aboriginal Land Rights (Northern Territory) Act 1976* (ALRA) and Northern

Territory Aboriginal Sacred Sites Act 1989, will be assessed in full by the Aboriginal Areas Protection Authority (AAPA) through an Authority Certificate process prior to development.

In brief, the following objectives were used to complete this CHA:

1. Identify archaeological, cultural heritage features and other areas of cultural significance within or proximal to the Project Areas.
2. Identify and describe any archaeological research gaps relevant to the Project.
3. Identify any archaeological or cultural heritage constraints, potential impacts, and risks within the proposed Project Areas.
4. Consult with the relevant stakeholders throughout the Project, including Traditional Owner site custodians and Northern Territory Government Heritage Branch.[1]
5. Detail the Cultural and scientific significance of each feature identified.
6. Develop recommendations to minimise harm to Aboriginal and historic cultural heritage features and other areas of cultural significance.

1.2 PROJECT LOCATION AND LAND TENURE

The Project Area is located on the north-western end of Melville Island, within the Munupi Landowning Group area. The Project falls primarily within Tiwi Aboriginal Land Trust (NT Portion 1644) with the Hydrogen Production Precinct also including part of the Townsite of Pirlangimpi (Lot 377). This CHA report encompasses all terrestrial Project components outlined in Section 1 above and Figure 1 below.

[1] Principally to establish the location of previously recorded archaeological sites of Aboriginal or historical origin.

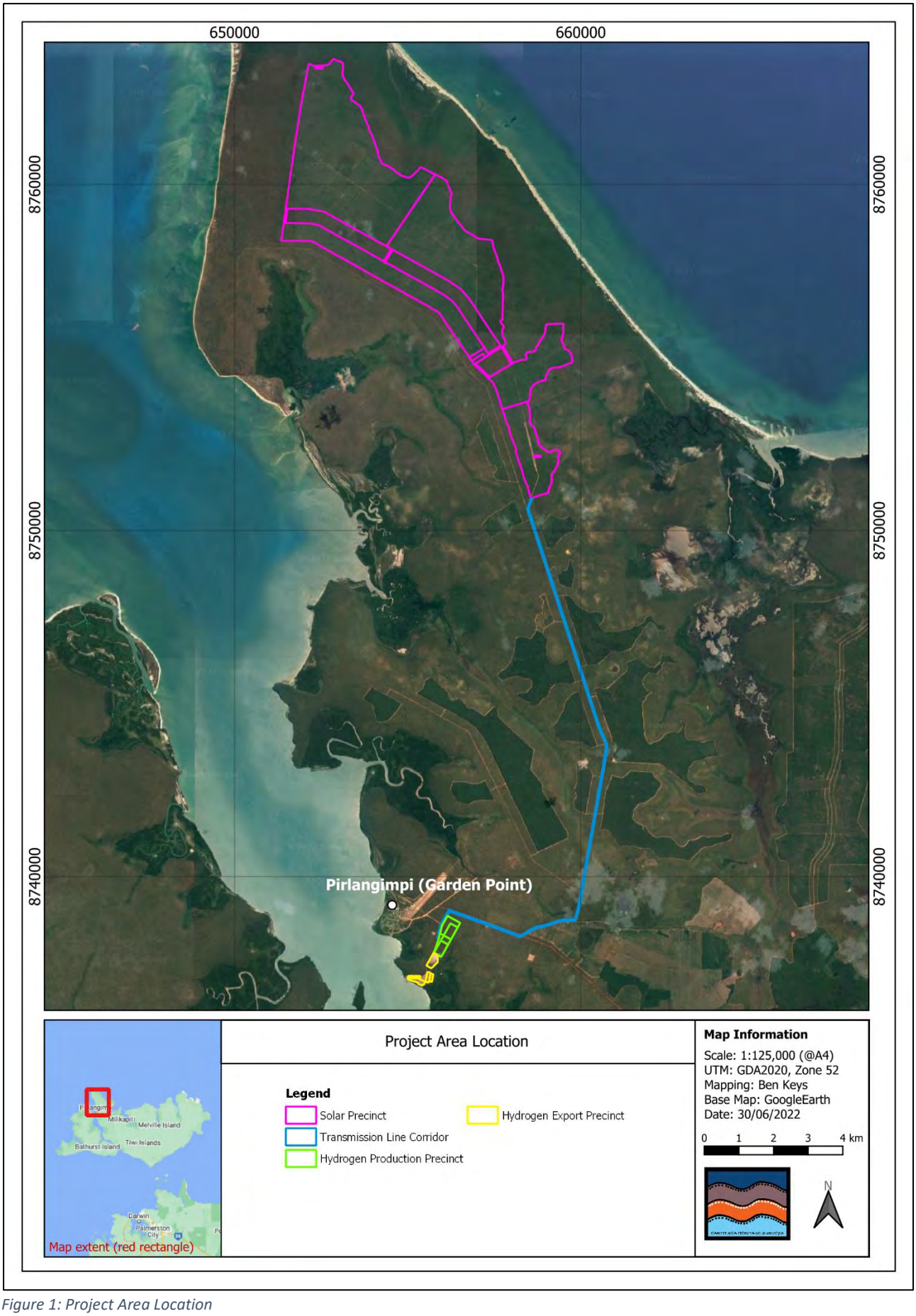

Figure 1: Project Area Location

1.3 CONSULTATION

Provaris Energy Ltd has an Indigenous engagement and participation approach to developing the Tiwi Islands H2 Project. This has included regular consultation with the Tiwi Land Council and the participation of Munupi Traditional Owners as cultural monitors and the Tiwi Land and Sea Rangers for field surveys during both the ecological and cultural heritage assessments for the Project. The site custodians nominated by the Tiwi Land Council, with the assistance of Tiwi Resources, for the cultural heritage survey team included the following people:

- **James DeSantis** (Tiwi Land and Sea Ranger)
- **Clinton Rioli** (Tiwi Land and Sea Ranger)

During the field assessment, both James and Quinton assisted in the identification of cultural heritage features, assessments of significance and provided advice regarding the appropriate management these features under the governance of Traditional Law and knowledge.

1.4 THE AUTHORS

Heritage Project Manager: Ben Keys

Ben holds a Bachelor of Archaeology with Honours from Flinders University, South Australia. He has extensive experience in cultural heritage management and community consultation, coupled with the management of largescale developments such as mining and civil construction projects in the Northern Territory. Ben also has a professional background in land access management and aspects of environmental management, including compliance. He has been a co-author of several published academic archaeological journal articles and has been invited to speak at mining industry conferences in the Northern Territory.

Field Archaeologist: Tom Taverner

Tom holds a Bachelor of Science (Botany) and Graduate Diploma of Arts (specialising in Archaeology) from the Australian National University. Tom has more the 10 years' experience as a professional archaeologist which has included heritage assessment surveys, sites recording, artefact identification and analysist, excavations, project supervision and extensive community consultation with Aboriginal Parties. Tom's work has encompassed Aboriginal cultural heritage and archaeological investigation of early colonial era historic sites.

Archaeologist: Richard Woolfe

Richard holds a Bachelor of Archaeology from the University of New England, a Grad Dip in GIS and Geomatics from Charles Darwin University and a Masters in Heritage Management and GIS from the University of New England. Richard has 19 years' experience in cultural heritage management consultancy in the Northern Territory and Queensland. Richard also has extensive experience in community consultation with Aboriginal groups and the wider community. Richard conducted the 2002-2003 review of the NT Heritage Conservation Act 1991 and co-drafted the original instructions for the *NT Heritage Act 2011*.

2 LEGISLATIVE CONTEXT

2.1 STATUTORY CONSIDERATIONS

Northern Australia has a rich Indigenous cultural environment which includes a long history of human occupation and land use spanning at least at least 65,000 years (Clarkson et al. 2017) and a recent past of that includes contact with European explorers from the 1600s, Macassan trepangers from the 1700s, coupled with British Government outposts, settlers, miners and pastoralists from the 1820s onwards.

The significance of this material and cultural record varies substantially, depending upon one or a combination of its aesthetic, historic, scientific, social or spiritual values for past, present or future generations (Australia ICOMOS Burra Charter 2013). Through time, these values can change or be impacted upon by both natural mechanisms and human intervention. To ensure impacts to the potential cultural heritage values of a place or object are understood, protected or managed accordingly, in addition to Law, a range of Territory and Commonwealth legislation exists.

Legislation has occurred at the state, territory, and national level. This is the result of the evolution of the Australian constitutional framework, particularly the inclusion of new themes, such as Aboriginality, heritage and the environment into an existing regulatory framework. The result of this developmental change is that the Commonwealth retains responsibility for Indigenous issues, while the States and Territories retain control of land use and development approvals. Therefore, both Commonwealth and the Northern Territory Acts may apply in particular circumstances within the Northern Territory.

The following Sections are provided so that there is a robust understanding of the legislative framework which may pertain to heritage matters within the Project Areas.

2.1.1 Commonwealth Legislation:

Aboriginal Land Rights (Northern Territory) Act 1976 **(ALRA).** This Act changed Aboriginal reserves within the Northern Territory to freehold title held in trust. The ALRA mandated the formation of Land Councils to act in the interests of Northern Territory Aboriginal people in the areas of land, access to lands, employment and the development of businesses. The Tiwi Land Council is the statutory authority responsible under the ALRA for the whole of the Tiwi Aboriginal Land Trust.

The ALRA also defined Sacred Sites as 'sites that are sacred, or otherwise significant, in the Aboriginal Tradition'. The ALRA protected these sites from damage, whether accidental or intentional. Tiwi Land Council assists in the protection of sacred sites and areas of significance both on land and in the sea.

The *NT Aboriginal Sacred Sites Act 1989* uses the above definition of sacred in its purpose of protecting these sites outside of Land Trust lands. On Crown Lands or leaseholds, the general process is for the AAPA to conduct the Sacred Site surveys with the relevant Site Custodians, then issue an Authority Certificate under the *NT Aboriginal Sacred Sites Act 1989*.

The Provaris Energy Ltd proposed Tiwi H2 Green Hydrogen Export Project falls wholly within the Tiwi Aboriginal Land Trust. Sacred site matters for the proposed Project Areas are being managed directly between Provaris Energy Ltd and the Tiwi Land Council. No information regarding the location of sacred sites was provided to the Consultants at the time of writing.

Native Title Act 1993 **(NTA).** Native Title is "the communal, group or individual rights and interests of Aboriginal people and Torres Strait Islander people in relation to land and waters, possessed under traditional law and custom, by which those people have a connection with an area which is recognised under Australian law" (s 223 NTA) (National Native Title Tribunal 2016). The NTA establishes the processes to determine where native title exists, how future acts impacting upon native title land may be undertaken, and to provide compensation where future acts extinguish or are inconsistent with the existence or exercise of native title. The NTA gives Indigenous Australians who hold native title rights and interests (including native title claims) the right to access and use traditional lands, be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land.

As noted above, the proposed Project Areas fall wholly within the Tiwi Aboriginal Land Trust. As such, Native Title under the NTA does not apply to these areas.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984**.** This Act is intended as a last resort defence for significant sites, meaning that the Act is meant to provide emergency protection for Aboriginal and Torres Strait Islander heritage sites when all other avenues have been exhausted. Generally, an Aboriginal person or group of persons, must apply to the Minister to have protective covenants placed over an area or site (DAWE 2022). The power to provide such protection resides in Section 51 of the Constitution giving the Commonwealth powers on Aboriginal issues. Therefore, this Act may override all State and Territory cultural heritage acts.

To the knowledge of the Consultants, there are no known applications under this Act for any areas or features within proposed Project Areas.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) commenced on 16 July 2000 with heritage amendments coming into effect on 1 January 2004. The EPBC provides for a National Heritage List of natural, historic and Indigenous places that are of outstanding significance to the nation. The EPBC also provides for a Commonwealth List that includes natural, historic and Indigenous places of significance that are owned or controlled by the Commonwealth. Ownership or control of these places allows the Commonwealth to protect or manage these places according to the significance of the place.

The Australian Government Department of the Environment (the Department) administers the EPBC Act, including administration of the heritage lists and providing support to the Australian Heritage Council established under the *Australian Heritage Council Act 2003*. The Department maintains the Australian Heritage Database which includes places on both Commonwealth lists, all places on state registers and other places included in the former Register of the National Estate established in 1976.

2.1.2 Northern Territory Legislation:

Aboriginal Sacred Sites Act 1989**.** The *NT Aboriginal Sacred Sites Act 1989* was enacted to complement the ALRA. Like the ALRA, the *Aboriginal Sacred Sites Act* protects sites that are 'sacred and otherwise of significance in the Aboriginal Tradition'. Sacred Sites are protected whether the location of the sites are known or not by any person or company seeking to do work on lands.

The *Aboriginal Sacred Sites Act* is administered by the Aboriginal Areas Protection Authority (AAPA). AAPA can issue an Authority Certificate indemnifying any proponent for an area upon application and payment of a fee. The Authority Certificate will contain conditions limiting or preventing works in and around registered and recorded Sacred Sites. The Authority Certificate will contain maps outlining any restricted work areas in the area of application.

Sacred site matters for the proposed Project Areas are being managed directly by Provaris Energy Ltd. The Consultant have been advised that Provaris Energy Ltd have applied to the AAPA for an Authority Certificate which covers the proposed Project Areas.

***Heritage Act 2011*.** The *NT Heritage Act* came into effect on 1 October 2012. The *Heritage Act* provides protection for the same classes of places as the previous *NT Heritage Conservation Act 1991*, with some changes. As under the previous Act, members of the community can nominate areas, places, sites, buildings, shipwrecks and heritage objects to the register. If the Minister agrees that these features are of special significance to the heritage of the NT, the place is added to the register and receives statutory protection. The *Heritage Act* allows for processes to approve works and maintenance for a heritage place.

The *Heritage Act* provides a 'blanket' or 'presumptive' protection for Aboriginal and Macassan archaeological places and objects until a decision by the Chief Executive of the Department of Tourism and Culture (or their delegate for smaller sites) is made to either permanently protect these places or permit their disturbance or destruction. This decision-making process is triggered by an *Application to Carry Out Work on a Heritage Place or Object*. A permit will generally only be issued if consultation with the relevant Traditional Owners or Custodians of the sites or their representatives has occurred. There are penalties for accidental or deliberate destruction of these sites.

2.2 REGULATORY ORGANISATIONS

Tiwi Land Council (TLC). The TLC is an independent statutory authority of the Commonwealth responsible under the ALRA, with the authority and capacity to direct and administer the Tiwi Aboriginal Land Trust. This authority also provides the legal power to help Aboriginal people negotiate with governments and private companies over projects on their land.

The TLC also assists Aboriginal peoples on the Twi Islands to manage their traditional lands and seas, including the protection of sites of significance in the Aboriginal Tradition and issuing permits to enter, fish and perform other activities on Aboriginal land.

The Consultants have been advised that Provaris Energy Ltd have consulted extensively with the TLC regarding the proposed Project, including the avoidance of culturally significant sites.

Northern Land Council (NLC). The NLC is also the Native Title Representative Body for the northern region – including the Tiwi Islands. This includes land that does not fall under ALRA, such as crown land or other lands in towns, national parks, and land vested in the Northern Territory Land Corporation, pastoral leases and some offshore areas.

Aboriginal Areas Protection Authority (AAPA). The AAPA is an independent statutory authority established under the *Northern Territory Aboriginal Sacred Sites Act 1989*. The Authority is responsible for the protection of Aboriginal sacred sites on land and sea across the Northern Territory. The AAPA seeks to implement a practical balance between sacred site protection and economic development.

Heritage Branch, NT Department of Families, Housing and Communities. Heritage Branch is the regulatory authority responsible for administering most sections of the NT *Heritage Act 2011*. Heritage Branch is also responsible for administering the *NT Heritage Register*, the *NT Archaeological Database* and providing logistical support for the NT Heritage Council.

3 HERITAGE ASSESSMENT STRATEGY

This study employed a heritage assessment strategy to assess the likelihood of finding archaeological and/or heritage sites within the Project Areas. The heritage assessment strategy identified representative parts of the Project Areas to survey through a desktop study and an assessment of previous land disturbance, which was further refined in the field through site custodian consultation.

Survey areas were developed through assessing the likelihood and types of sites occurring within a given land unit. If, for example, no cultural heritage features were located during the survey of a given land unit and consultation with Site Custodians also supported this notion, the methodology was then extrapolated to suggest there is a very low risk of impacting sites protected under the *Heritage Act 2011*. These low-risk areas were excluded from the field surveys.

The Project Areas were surveyed during May 2022, ensuring that all representative land units and high-risk[2] environments within the proposal footprint were adequately assessed.

3.1 DESKTOP ASSESSMENT

The desktop assessment section of this CHA, aimed to identify areas likely to hold Aboriginal archaeological sites or historical features, which could then assist the field surveys in prioritising key risk areas. This assessment included mapping and assessment of existing site databases, previous heritage studies, historical mapping, Land Systems, surface geology and hydrology. The results of this desktop assessment are summarised in Table 1 below. Previous land disturbance factors are presented in Section 3.2 below.

Table 1: Summary of Physical Environment factors predicting Aboriginal archaeological site distribution

Desktop Assessment Type	Data Summary	Conclusions
Existing Regulatory Site Databases (see search results within Appendix 1)	A search of all regulatory heritage databases resulted in the identification of one heritage feature (i.e. Fort Dundas) that lay proximal or within the Project Areas. Fort Dundas (1824-29) is listed as the earliest British site in the NT. Fort Dundas is located proximal to the proposed H2 Export Precinct. The extent of the recorded site area is not provided in any of the database results. Whilst there was an absence Aboriginal sites listed on the databases, regional search results from the NT Archaeological Database show a strong association between archaeological features and riparian and coastal zones and outcropping	Beyond the Fort Dundas complex, the existing Regulatory site databases are limited. The absence of recorded Aboriginal archaeological sites likely relates to the absence of comprehensive studies rather than porosity of sites.

[2] *High-risk environments* are those which have a high potential for containing cultural heritage features. These environments are identified following comprehensive background research and consultation.

Desktop Assessment Type	Data Summary	Conclusions
	geological units with raw material suitable for the manufacture of stone artefact.	
Previous Archaeological Studies and Historical Mapping	All previous archaeological studies within the Project Area appear to have solely centred on recording the Fort Dundas site complex (e.g. Crosby 1978, De La Rue 2006, Fredericksen 2000 and Woolfe 2001). The archaeological studies note that the Fort Dundas complex comprises of an extensive complex of building remains, rubble, grave sites, rubbish dumps and earthworks. Archaeological site mapping of Fort Dundas by Crosby (1978) shows a high level of consistency with the 1827 British settlement plans (see Appendix 2). In the absence of local Aboriginal heritage studies, Earthsea drew on their wider regional studies to identify potential site distribution patterns.	Historic site mapping of Fort Dundas shows it extends across all land units to the north of the H2 Export Precinct. Part of the site mapped by Crosby (1978) lay within the H2 Export Precinct, however satellite imagery suggests this area was likely destroyed by the construction of Port Melville. The areas between the existing Port Melville stockpile pad and accommodation precinct do not appear to have been thoroughly surveyed in the past, although few features were noted in this area on the 1827 British site plans. The consultant's previous findings across the Top End, including Melville Island, have demonstrated the following general patterns in the archaeological record that relate to the Project Areas: • Surface lithic artefact scatters generally occur on or near rock outcrops and adjacent to watercourses/riparian land units. • Lithics are most frequently manufactured from the most common raw materials in the local region. • Cultural features are most likely to occur in areas less than 200 metres from watercourses/riparian land units. • Culturally Modified Trees (CMT) are generally restricted to ironwood (*Erythrophleum chlorostachyum*) trees, with CMT densities increasing in areas close to occupation areas and/or tracks and roads. • There is generally a paucity of Aboriginal archaeological sites located in areas where there is an absence of outcropping stone or water resources. • Areas subject to previous significant land clearing and disturbance, such as the current Tiwi Planation areas, are unlikely to retain archaeological features, particularly CMTs.
Land Systems	Land System data is often a very useful tool in analysing the potential for archaeological materials in a Project Area. The Desktop	Individual Land Units within Land Systems were identified as having archaeological potential and were define from mapping in most

Desktop Assessment Type	Data Summary	Conclusions
	Study for this project found that there was insufficient information available to draw robust conclusions based on Land Systems vs previously recorded archaeological features (including regionally), other than Land Systems with the highest potential for heritage features included coastal, mangrove and riparian zones.	instances. Individual land Units and Landforms were sometime better identified in the field for survey.
Surface Geology	The Project Areas are encompassed by three dominant geological units. All largely contained sandy and silty sediments, with minimal rock suitable for the manufacture of stone artefacts. No large outcrops of rock suitable for rock shelters were noted. Elevation across the Project Areas was noted as generally low-lying rises and depressions comprised of unconsolidated soils with some weathered rocks indicated around Port Melville.	Based on previous regional archaeological studies, there is limited potential for lithic artefacts across all Project Areas given the absence rock suitable for the manufacture of stone artefacts.
Hydrology	Seven water crossings were noted within the Transmission Line Corridor along Pitjimirra Road with the largest being Blue Water Creek. The remaining watercourses were first order unnamed, seasonal drainage lines and wetlands. No watercourses were noted within the Solar Precinct, Hydrogen Production Precinct or Hydrogen Export Precinct. A soak or spring was noted to the east of the current Port Melville facility.	Past archaeological studies across the Top End show a strong correlation between water resources and Aboriginal archaeological site distribution. There is likely a higher potential for archaeological features within the land units surrounding larger watercourse such as Blue Water Creek. Ephemeral watercourse and drainage areas tended to have lower densities of sites and/or background scatters of isolated artefacts.

3.2 Previous Land Disturbance Factors

Land disturbance factors in the Project Area have made significant changes to the pre-contact environment. The following section provides a brief overview of the general land disturbance factors, coupled with known impacts within the proposed Project Areas.

1. Invasive species such as horses, water buffalo and weeds can disturb watercourses, change fire regimes, and induce erosion in native environments. These factors impact on archaeological sites in several ways:

    a. Introduced animals (including buffalo) change the landscape by physical impact including wallows, pads, rooting and destabilisation of creek banks. This in turn promotes erosion and redisposition of sediment along creek lines. These impact on archaeological sites by either erosion or aggrading of artefact horizons making dating and accurate recording of sites difficult.

b. The introduction of weeds, in particular grasses (Mission Grass, Gamba Grass and Guinea Grass) can significantly alter the intensity of fire regimes and can sometimes change the composition of native vegetation (It is noted that Gamba Grass has now been eradicated from the Tiwi Islands). The increased intensity of fire regimes can directly impact archaeological features such as CMTs, Tiwi Pukumani poles and historic features. These vegetation impacts can also further degrade the soil stability within riparian zones, with similar impacts to those noted above.

2. Enthusiasts and Collectors: Collectors, amateur 'archaeologists' and enthusiasts have sought out to selectively 'collect' components of the archaeological record throughout much of Australia. This has destroyed or skewed the remaining archaeological record in many instances, with items such as stone axes, grindstones, sacred items, and other tools being removed. In this instance, it is possible that Fort Dundas may have also been impacted by collectors and enthusiasts in the past.

3. Road construction and maintenance: Some roads within Melville Island have been rerouted, upgraded, and maintained for more than 100 years. This disturbance tends to destroy or distort the archaeology in road and track corridors (i.e. gravel extraction from quarries then laid on road surfaces often contain artefacts from the extraction point).

4. Plantation and Forestry: Melville Island has been subject to a long history of forestry harvesting (est. 1897) and plantation development since the 1950s. These activities are likely to have destroyed or significantly impacted the preservation of archaeological features within their footprints.

Table 2 below, provides a summary of the previous land disturbance factors which were identified within each Project Area.

Table 2: Previous Land Disturbance Factors within Project Areas

Project Area	Land Use/Disturbance	Archaeological Record Impact
1. Solar precinct:	Current timber plantation areas. Significant disturbance to all vegetation and high levels of ground surface disturbance within the plantation areas.	Likely to have significantly impacted or destroyed the archaeological record within the plantation areas.
2. Transmission Line (50m ROW)	Field observations suggest at least ~30% of remnant vegetation adjacent to existing Putjamirra Rd has been selectively logged.	Likely to have moderately impacted the archaeological record through the removal, clearing or damage to CMTs, should they have existed within these areas.
3. Hydrogen Production Precinct	Field observations suggest at least ~30% of remnant vegetation has been selectively logged. A number of tracks and historic workings were noted within this area. The current Pirlangimpi rubbish dump is located within Electrolyser Area 2 and HV Sub-Station.	Likely to have moderately impacted the archaeological record through the removal, clearing or damage to CMTs, should they have existed within these areas. Also, some impacts have occurred to the ground surface which may have impacted lithic and shell scatters and isolated finds.
	Current Port Melville accommodation precinct, with some remnant vegetation to the south. Significant disturbance to all vegetation and high levels of ground surface disturbance within the current	Likely to have significantly impacted or destroyed the archaeological record within the Port Melville accommodation areas.

Project Area	Land Use/Disturbance	Archaeological Record Impact
	accommodation footprint. A number of tracks and historic workings were noted within this area.	
4. Hydrogen Export Precinct	Current Port Melville stockpile area and some remnant vegetation. Significant disturbance to all vegetation and high levels of ground surface disturbance within the stockpile pad footprint.	Likely to have significantly impacted or destroyed the archaeological record within the Port Melville stockpile pad area.

3.3 HERITAGE SURVEY ASSESSMENT AREAS

The heritage assessment surveys employed a pedestrian sampling methodology of the proposed Project Areas, based on the above-mentioned desktop modelling and extent of previous land disturbance.

As outlined in Figure 2 below, 16 areas were identified as having cultural risks. These areas represented approximately 40% of the Project Areas which had not been subject to significant previous land disturbance. Areas which were excluded from the pedestrian surveys included all Tiwi Planation lots and low risk land units away from watercourses. A drive-by of these excluded areas was also undertaken with Site Custodians to assess their archaeological potential.

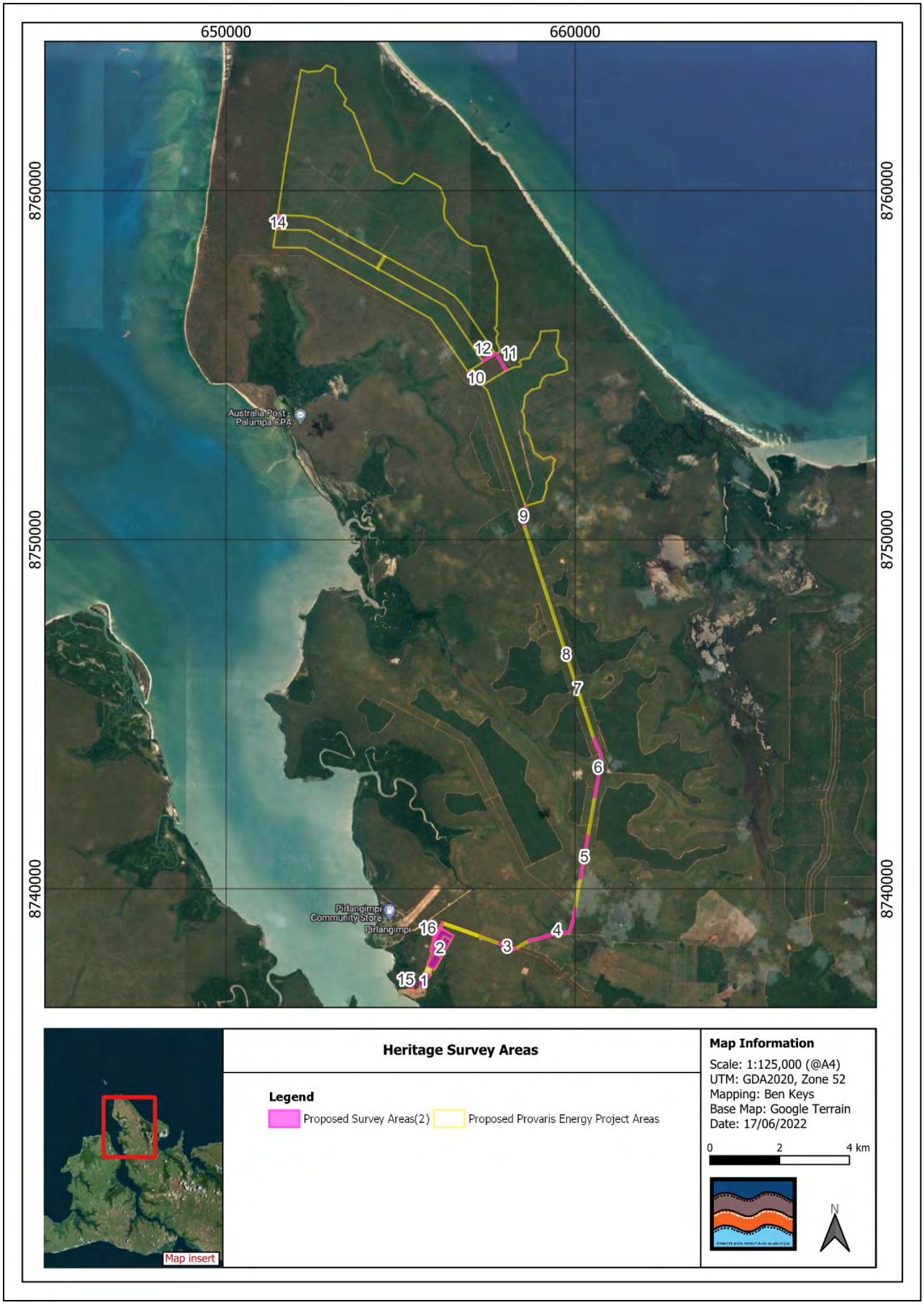

Figure 2: Location of Heritage Survey Assessment Areas

4 HERITAGE SURVEY METHODOLOGY

4.1 CULTURAL HERITAGE SITE DEFINITION

Assessment of the cultural heritage resources within the Project Areas was approached holistically to include an understanding of both cultural and archaeological contexts where possible.

Culturally, the Tiwi have a wide distribution of sites including Dreamings, campsites, ceremony places, burials, resource areas and travel routes across their traditional lands. The knowledge, location and extent of these features is governed by Traditional Law however the site custodian representatives accompanying the surveys reinforced the importance of including this information where possible to ensure its appropriate management.

Notwithstanding this, sacred sites and other sites with intangible cultural significance will be captured during the AAPA Authority Certificate process. The Authority Certificate should be used as the principal documents guiding construction works around these features.

From an archaeological perspective, *the NT Heritage Act 2011* (Division 2, p. 7) defines archaeological features relevant to this study as follows:

6 Meaning of *archaeological place* and *Aboriginal or Macassan archaeological place*

(1) An ***archaeological place*** is a place that:

(a) relates to the past human occupation of the Territory; and

(b) has been modified by the activity of the occupiers.

(2) An ***Aboriginal or Macassan archaeological place*** is a place that:

(a) relates to the past human occupation of the Territory by Aboriginal or Macassan people; and

(b) has been modified by the activity of those people.

7 Meaning of *object*

(1) An ***object*** is a natural or manufactured object that is moveable.

(2) An ***object*** includes an archaeological object but does not include a place.

8 Meaning of *archaeological object* and *Aboriginal or Macassan archaeological object*

(1) An ***archaeological object*** is a relic that:

(a) relates to the past human occupation of the Territory; and

(b) is in an archaeological place.

(2) An ***Aboriginal or Macassan archaeological object*** is a relic that:

(a) relates to the past human occupation of the Territory by Aboriginal or Macassan people; and

(b) is:

(i) in an Aboriginal or Macassan archaeological place; or

(ii) stored in a place in accordance with Aboriginal tradition, including, for example, in an Aboriginal keeping place.

9 Meaning of *relic*

(1) A ***relic*** is:

(a) an artefact or thing given shape by a person; or

(b) human or animal skeletal remains; or

(c) something else prescribed by regulation.

(2) An artefact or thing can be of any material.

Examples for subsection (2)

1 A secret or ceremonial object.

2 A log or bark coffin.

3 Human remains.

4 Rock or wood carvings or engravings.

5 Stone tools.

(3) However, an artefact or thing made for sale is not a relic.

(4) In addition, a thing prescribed by regulation is not a relic.

For recording archaeological features and sites, according to McDonald (2005, p. 172), a contiguous landscape approach, where multiple features are present, is current best-practice and represents a progression which recognises archaeological and cultural landscapes as an appropriate management scale. Where there are high densities of cultural materials, according to McDonald (2005, p. 172), there is no choice but to define management units beyond the level of the isolated artefacts and sites. This CHA report interprets this approach as meaning that artefacts, sites, continuous scatters and site complexes are related over the landscape, however definitions of each of these categories are necessary to provide an adequate management system for the archaeology of a survey area.

Following this approach, this CHA report uses the following definitions of site type relevant to the Project Areas:

1. **Lithic or stone artefact scatters** containing flaked, ground stone artefacts and possibly hearthstones. Contact sites of Aboriginal origin may also include metals or flaked ceramics used for cutting. Artefact scatters may occur as surface scatters of material or as stratified deposits where there have been repeated occupations. Some lithic scatters are called camp sites which are high density lithic scatters with hearths and sometimes grindstones. Therefore, camping is the implied activity indicated by the archaeological record in these places.
2. **Site complexes** are groups of sites in similar landscapes where the cultural materials are effectively continuous. Bird and Hallam (2006, p. 11) described these as integrated cultural landscapes with which have local variations in artefact densities with artefact distributions being effectively continuous.
3. **Culturally modified trees (CMT)** typically result from a sectional removal of bark (and sometimes timber) from a tree trunk or limb. CMTs range from small (15cm x 5cm) lenticular apertures such as those resulting from sugarbag procurement, to large canoe CMTs which can present a scar several meters in length.
4. **Burial** practices differ considerably throughout cultural groups in Northern Australia, and skeletal material can vary from highly fragmented bones to large burial complexes containing many individuals.
5. **Historic/Contact sites** include sites of primarily Aboriginal cultural origin that include 'modern' materials to manufacture flaked artefacts. Sites that include foreign materials, such as glass, ceramics or metal that exhibit modification by Aboriginal people are regarded as *contact sites.*

4.2 IDENTIFYING STONE ARTEFACTS

A requirement for successful Aboriginal archaeological heritage assessment involves the accurate identification of archaeological materials. Since the identification of stone artefacts is basic to the accurate recognition and measurement of the archaeological record, it is imperative that people undertaking

archaeological surveys be able to differentiate between natural objects and artefacts. Principles of artefact identification employed in this survey follow those recommended by Hiscock (1984), Holdaway and Stern (2004) and Andrefsky (1998).

In summary, each time sufficient force is placed on the surface of an isotropic rock, it will fracture into two pieces. The fragment that has been struck contains the ring-crack, where fracture was initiated, and is called the flake. The flake is usually the smaller of the two pieces of stone. The larger fragment, from which the flake has been removed, is called the core. On both the flake and the core the surface that is struck is called the platform. Flakes are identified by the distinctive surface created when they are removed from the core. The classification of artefacts in this survey was based on identifiable characteristics outlined by Hiscock (1984). For an object to be classed as a flaked artefact, it needed to possess one or more of the following characteristics:

1. A positive or negative ring crack;
2. A distinct positive or negative bulb of percussion;
3. A definite eraillure scar in an appropriate position beneath a platform;
4. Remnants of flake scars (dorsal scars and ridges).

These characteristics indicate the application of an external force to a core. Artefact morphologies will be described by using the four types of artefacts as defined by Hiscock (1984, pp. 128-129):

1. Flake: Flakes exhibit a set of characteristics that indicate they have been struck from a core. The most indicative characteristics are ring-cracks, which show where the hammer hit the core. The ventral surface may also be deformed in particular ways, for example a bulb or eraillure scar.

2. Core: A piece of stone with one or more negative flake scars, but no positive flake scars.

3. Retouched Flake: A flake that has had flakes removed from it, identified by flake scars on or deriving from the ventral surface.

4. Flaked Piece: This is a chipped artefact which cannot be classified as a flake, core, or retouched flake. This category is used only when an artefact was definitely chipped but could not be placed in another group.

4.3 Defining Site Boundaries

It is necessary to define site boundaries for the description of heritage places and the mitigation of impacts on these places. Boundaries of sites are often based on geographic features, such as rock shelters and shell middens, which are defined by easy to distinguish geographic features. Other sites, such as stone artefact scatters, groups of CMTs, culturally significant areas are more difficult to define.

The extent and location of culturally significant landscape features was guided by the site custodians during the field assessment.

4.4 SITE RECORDING AND SURVEY METHODOLOGY

The survey employed a pedestrian sampling methodology of the Project Areas outlined in Section 3.3 above, which centred on targeting all accessible watercourses, swamp margins, high densities of ironwood trees and area surrounding the Fort Dundas complex.

The employed survey methodology aimed to identify archaeological features and key cultural heritage risk areas which have the potential to contain archaeological features, to minimise impacts on these values for the construction and operation of the Project.

Using the methodological approaches outlined above, the following protocols were adopted to adequately record sites and artefacts:

1. The proposed Project Areas were mapped using a GIS, which had an accuracy of 3-5 m in open terrain. Previous Fort Dundas mapping, geology and hydrology layers were added to the GIS to indicate areas likely to hold cultural sites/archaeological materials.
2. Consultation with Site Custodians was also used to further refine target areas.
3. The proposed survey areas were uploaded to an Android Tablet with GIS.
4. The sample areas were transacted at approx. 10–20 metre separation by the field team consisting of the people outlined in above.
5. All sites, heritage features and isolated artefacts were recorded using a set of standard recording forms linked to the mobile GIS.
6. The location of all sites was recorded using datum GDA2020. The Tablet had an accuracy of 3-5 metres in open canopy terrain.
7. The tracks of all transects were recorded using the tracking feature on the Tablet, with land characteristics and images recorded.
8. Artefacts and historical features were photographed during the survey recording.

The following characteristics were recorded of each site and isolated artefact:

1. Location using the UTM coordinate system MGA2020 on Datum GDA2020.
2. Environment: basic details of land unit, geomorphology, vegetation etc.
3. Site boundaries are recorded for each site using the mobile GIS software. Boundaries, such as the Fort Dundas complex, beyond the limits of the survey areas not recorded unless they were readily identifiable.
4. Site contents: basic details of types of artefacts, raw materials etc.
5. Ethnographic origin: Aboriginal, European historical, etc.
6. Cultural and archaeological significance.
7. Disturbance factors, such as clearing, animal activity, erosion or road works.
8. Site visibility: estimate of how much of the ground surface was visible on site and in the surrounding area.
9. Site and artefact images. Images of artefacts in larger sites are a representative sample.

The results of this survey, along with a map of transects completed are presented in the next section.

4.5 HERITAGE ASSESSMENT CONSTRAINTS

Ground surface visibility coupled with the density of vegetation in places was noted during the 2022 heritage assessment. Ground surface visibility across all Project Areas was consistently below 25%.

The consultant assessed that this low visibility likely only impacted an adequate assessment of areas which had higher potential for fallen CMTs (see Section 5.1.2) and the detailed recording of features within the Fort Dundas complex (see Section 5.1.3).

5 HERITAGE ASSESSMENT RESULTS

5.1 SURVEY RESULTS

The following discussions outline the results of the field investigations undertaken between 17 and 21 May 2022, along with general descriptions of the anthropological and archaeological sites identified during the survey. Site location maps are provided in Appendix 2 and representative site images are presented in Appendix 3.

A clearance survey of the whole Project Area was not considered necessary given the site predictive modelling identified key risk land units which were further refined during the surveys.

5.1.1 Aboriginal Cultural Heritage Features

As presented in Table 3 below (see also Figure 3), the results of the survey included the recording of six cultural heritage features. These features consisted of three isolated stone artefacts and one CMT (scar tree), one contemporary bark removal tree and one watercourse of cultural significance to the Site Custodians.

Table 3: Aboriginal Heritage Features

ID	Feature	Site size	Proximity to Project Area
PE-22 IA01	Isolated flaked stone artefact. Material = silcrete.	<1m^2	240m west of the Project Area, adjacent to Solar Precinct
PE-22 AS01	CMT, sugar bag scar (likely metal axe). Tree species = Ironwood	5m diameter	Within the Transmission Line Corridor (Main) 6A.
PE-22 IA02	Possible isolated flaked stone artefact. Material = ironstone.	<1m^2	Within the proposed accommodation area and existing Port Melville accommodation camp.
PE-22 IA03	Possible isolated broken flaked stone artefact (2 parts). Material = silcrete.	<1m^2	Within the proposed accommodation area and existing Port Melville accommodation camp.
PE-22 CF01	Culturally scarred tree (modern full girth bark sheet removal [likely or bark painting basket]).	5m diameter	2m northwest of the proposed Transmission Line Corridor (Main) 6A and Putjamirra Rd.
PE-22 CF02	Watercourse and swimming hole.	180m (l) x 50m (w)	Traversed by the proposed Transmission Line Corridor (Main) 6A.

This figure has been removed to respect and protect the cultural sensitivities of the area following consultation with Site Custodians.

Figure 3: Aboriginal cultural heritage feature locations

Site types and distribution patterns were analogous to those identified in other areas across the Top End of Australia and the consultants understanding of past land use patterns within the monsoon tropics. There was a clear correlation between archaeological features and their proximity to watercourses and densities of ironwood trees. Conversely, there was a distinct absence of archaeological materials across land units without the aforementioned features.

The isolated artefact (PE-22 IA01) was located within an erosional area beside the existing Putjamirra Rd and likely reflects a very low background scatter of isolated artefacts across the wider area given its raised position and proximity to water. The isolated artefacts (PE-22 IA02 & PE-22 IA03) located at the existing Port Melville accommodation area had distinct attributes of flaked artefacts including retouching, striking platforms and bulbs of percussion. Notwithstanding this, it could not be discounted that these artefact attributes had resulted from machines during the construction of the camp. No outcrops of rock with raw materials suitable for the manufacture of stone artefacts was noted within the Project Areas.

The sugar bag CMT (PE-22 AS01) was located in area of higher ironwood densities, with the scar showing distinct steel axe cut marks. The contemporary bark removal tree (PE-22 CF01) was noted by the Site Custodians as being used for basket weaving of bark paintings. As such, this tree was recorded as having cultural significance to the Site Custodians.

The watercourse feature (PE-22 CF02) traversed by the proposed Transmission Line Corridor is of high cultural significance and continues to be heavily used by local people. The swimming hole just to the west of the culvert and beside the existing track is frequented by people, especially children. This waterhole is fed by a creek running through the proposed corridor.

5.1.2 Aboriginal Cultural Heritage Risk Areas

During the survey, two Aboriginal Cultural Heritage Risk Areas (CHRA) were identified (i.e. PE-22 CHRA-01 and PE-22 CHRA-02, see Figure 4 below). Both CHRAs were identified as risk areas by the consultant and Site Custodians given their higher potential of containing unrecorded CMTs, coupled with poor ground surface visibility and high vegetation density. The density of vegetation and poor ground surface restricted the survey team's ability to fully assess the residual cultural heritage risks within these areas. The areas'assessed risk of potentially containing unrecorded CMTs was driven by the following factors:

- The land units had an abundance of old ironwood trees with hollows suited to bee habitation and was nearby to forests dominated by *Grevillia sp*., renowned as a food source for the bees.
- The areas lie proximal to large drainage zones.
- An existing sugar bag CMT (PE-22 AS01) was located within PE-22 CHRA-01 and a contemporary bark tree (PE-22 CF01) was located within PE-22 CHRA-02.
- The areas lie adjacent to a historically well utilised access track.

The assessment indicated these CHRA strips of ironwood trees extended east-west well beyond the proposed transmission line corridor. PE-22 CHRA-02 was bound to the south by an existing Tiwi Plantation area.

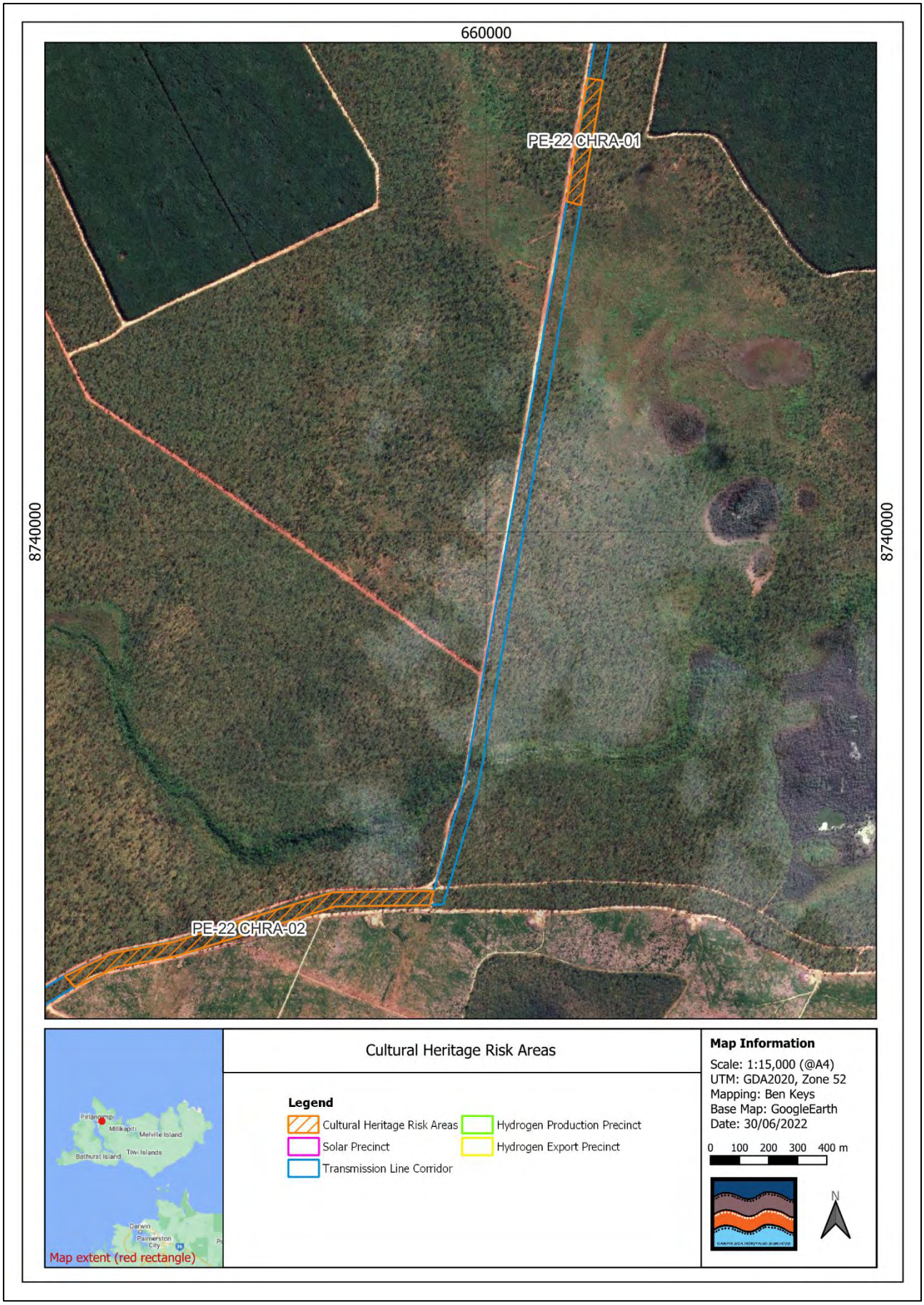

Figure 4: Cultural Heritage Risk Areas

5.1.3 Historic Heritage Features

The eastern extent of the Fort Dundas site complex was the only historical feature recorded during the heritage assessment.

Fort Dundas was a British military fort and settlement from 1824 to 1829 and represents the oldest British settlement in the Northern Territory. The site is primarily situated to the northwest of the proposed Project's Hydrogen Export Precinct.

Approximately 120 soldiers, sailors, marines, and convicts landed in September 1824, on a promontory they named Point Barlow after their first commandant. A defensive fortification approximately 80 metres long and 60 metres wide was quickly constructed, with it's remains located 550m to the north of the proposed Hydrogen Export Precinct. 9lb naval guns were originally situated in the fort bastions. The colonists built a number of other buildings including housing for the officers and soldiers, a convict barracks, a hospital, a magazine, a church, commissariat store, a Governor's residence, a number of free settlers' houses and various other supporting structures. Diseases ravaged the settlement and added several graves to the settlement's eastern extent, near the potential remains of the church.

Based on the 1827 site plan and related sources, a number of other features were noted extending to the east of the main fort settlement, which included tracks, food gardens and a brush fence built across the point in an attempt to keep the Melville Islanders out of the settlement area.

Much of the fort complex and associated surrounds has been archaeologically mapped and recorded to varying degrees in the past (e.g. Crosby 1978, De La Rue 2006, Fredericksen 2000 and Woolfe 2001). Some key featured mapped by Crosby's (1978) were reinspected in 2022 to assist with georectification of existing maps (see Figure 5). The results indicate a high degree of spatial accuracy between Crosby's (1978) mapped features and those recorded in 2022. Similarly, the 1827 site plan was georeferenced using natural and known site features. The 1827 site plan showed a strong correlation with Crosby's (1978) mapping (see Appendix 2), but some scaling distortions were noted in the eastern portion of the site.

As presented in Table 4 below, five additional site features were recorded during the 2022 heritage assessment, with two of these (i.e. PE-22 HF-01 and PE-22 HF-05) falling within the proposed Project Area boundary. PE-22 HF-01 and PE-22 HF-05 were recorded as potential features of Dundas Fort complex given their attributes were consistent with those previously recorded elsewhere by Crosby (1978). These shallow earth depressions and associated soil and rock piles were noted by Crosby (1978) as potential rubbish dumps, but this interpretation could not be reassessed during the 2022 surveys due to poor ground surface visibility.

Site features PE-22 HF-02 and PE-22 HF-03(a &b) were observed as stone lines, which Crosby (1978) recorded as potential natural outcrop. Whilst, ground visibility was poor during the 2022 inspections, the consultant's interpretation suggests these stone lines are more likely anthropogenic in nature as the orientation and form appeared to be geomorphically/geologically inconsistent with the surrounding land units. It is possible these features relate to the rock lines/fence lines drawn on the 1827 map leading to feature C74 (Crosby 1978, p. 16).

The proposed Project Area avoids all previously recorded features mapped by Crosby (1978), with C74 likely destroyed by Port Melville stockpile pad construction sometime in the past.

Table 4: Fort Dundas Site Features

Site ID	Feature Description	Approx. distance to existing TPC Woodchip Lease Area or access road	Distance to proposed Provaris Energy Ltd infrastructure.	Easting	Northing
PE-22 HF-01	Earth depression with associated soil/rock pile	15 m	15 m north of the proposed desalination plant	655294	8737143
PE-22 HF-02	Tessellated rock feature - eastern end of outcrop recorded by Crosby 1978	45 m	45 m south of proposed accommodation precinct	655643	8737285
PE-22 HF-03a	Line of rocks, noted by Crosby's (1978) as outcrop but appears to be inconsistent with geology. 1827 site plan notes a line through similar area between features.	Adjacent to existing port access road	Adjacent to existing port access road	655537	8737288
PE-22 HF-03b		Adjacent to existing port access road	Adjacent to existing port access road	655559	8737287
PE-22 HF-04	Small rock lined infilled hole.	60 m	115 m to proposed desalination plant	655436	8737219
PE-22 HF-05	Earth depression with associated soil/rock pile	90 m	Within proposed accommodation precinct	655642	8737387
C62	Crosby 1978. Remains of free-standing walls	130 m	100 m to proposed desalination plant	655360	8737267
C63	Crosby 1978. Potential rubbish pit	75 m	100 m to proposed desalination plant	655431	8737241
C64	Identification tag for Crosby 1978, Site 64. Fence or enclosure	100 m	150 m to proposed desalination plant & 160 m to proposed accommodation	655445	8737293
C65	Crosby 1978. Potential rubbish pit	136 m	150 m to proposed desalination plant & 190m to proposed accommodation	655405	8737316
C66	Crosby 1978. Grave (possible)	55m	150 m to proposed desalination plant & 170m to proposed accommodation	655484	8737256
C67	Crosby 1978. Grave (possible)	42m	155 m to proposed desalination plant &	655477	8737240

Site ID	Feature Description	Approx. distance to existing TPC Woodchip Lease Area or access road	Distance to proposed Provaris Energy Ltd infrastructure.	Easting	Northing
			175 m to proposed accommodation		
C68	Crosby 1978. Grave (possible)	40m	145 m to proposed desalination plant & 180m to proposed accommodation	655494	8737237
C70	Crosby 1978. Convicts barracks	50m	125 m to proposed desalination plant	655134	8737206
C71	Crosby 1978. Sawpit (potential)	90m	100 m to proposed desalination plant	655318	8737227
C72	Crosby 1978. Potential rubbish pit	25m	80 m to proposed desalination plant	655436	8737165
C73	Crosby 1978. Potential rubbish pit	20m	70 m to proposed desalination plant	655430	8737155

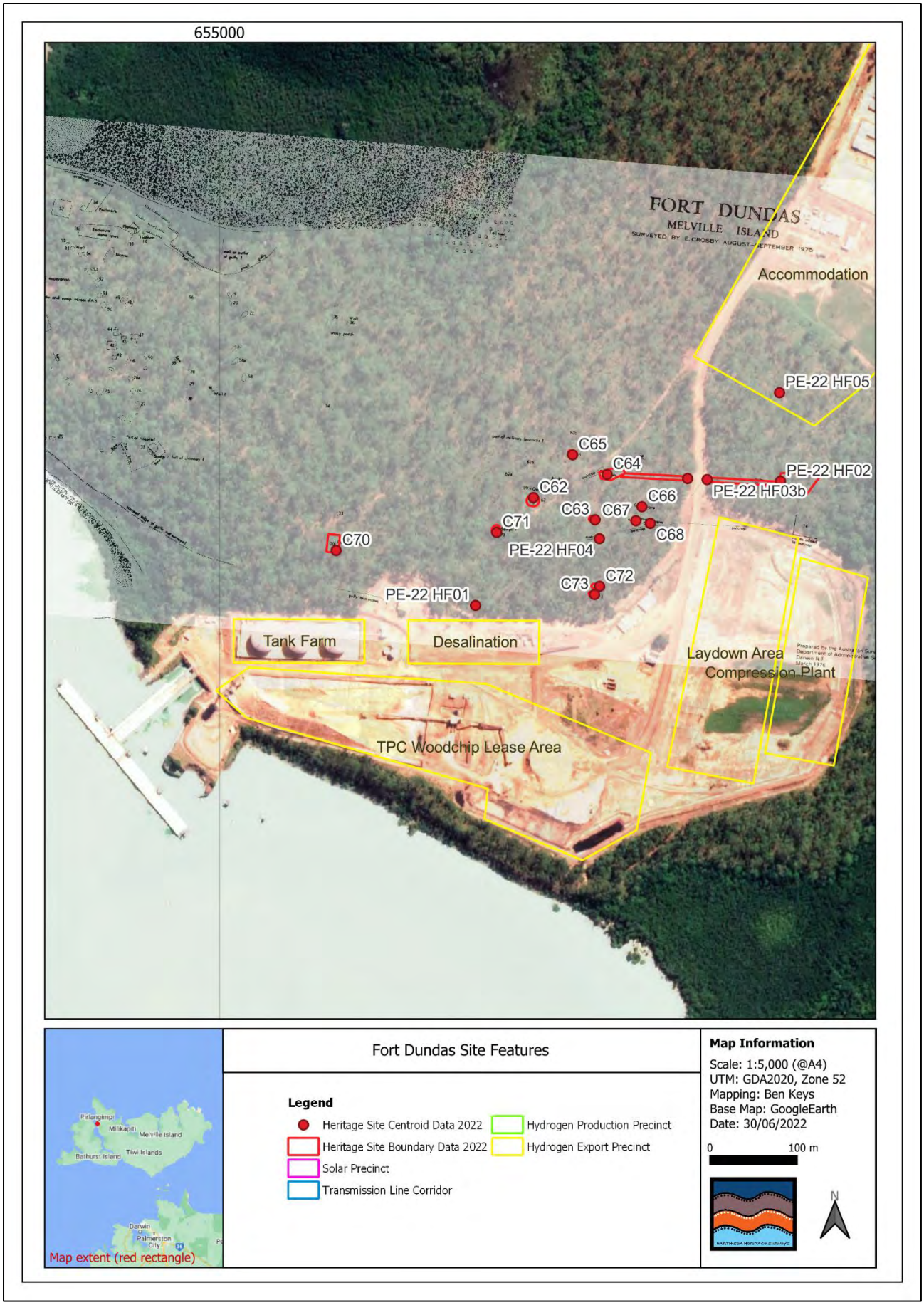

Figure 5: Fort Dundas site features

6 CULTURAL HERITAGE SIGNIFICANCE ASSESSMENT

The significance assessments provided in this section were undertaken on recorded sites in accordance with the accepted guidelines and principles described below.

6.1 SIGNIFICANCE ASSESSMENT GUIDELINES

Cultural heritage management in Australia is underpinned by legislation, coupled with the ethics and principles established by heritage management practice. In addition to statutory law, several guidelines have been developed to support the protection and management of Indigenous heritage places on Commonwealth land. These include but are not limited to:

- Ask First, A guide to respecting Indigenous heritage places and values (2002).
- Engage Early, Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (2016).
- Practice Notes for the Australian ICOMOS Burra Charter 2013 (hereafter referred to as the "Burra Charter").

Legislative basis for the protection and conservation of Indigenous archaeological places and objects within the study is discussed in Section 2.

The cultural heritage values of sites and objects recorded during the survey followed key Indigenous heritage management and significance assessment principles from the Burra Charter Practice Note, 'The Burra Charter and Indigenous Cultural Heritage Management, 2013' (see also The Burra Charter and Archaeological Practice, 2013). These are summarised below for reference:

Place	*Includes locations that embody spiritual value (such as Dreaming places, sacred landscapes and stone arrangements), social and historical value (such as massacre sites), as well as scientific value (such as archaeological sites). In fact, one place may be all of these things or may embody all of these values at the same time.*
Cultural Significance	Is very broadly defined to *include 'aesthetic, historical, scientific, social or spiritual value for past, present or future generations'. This definition captures places of cultural significance to Indigenous cultures. It also includes places that provide a physical location that is integral to the existence, observation and practice of intangible heritage. The Burra Charter definition of cultural significance encompasses all forms of spirituality, regardless of the culture from which it emanates. Similarly, aesthetic value is not limited to a 'western' perception of aesthetics.*
Knowledge and expertise of Indigenous peoples	*It is critical that assessments of cultural significance for Indigenous heritage places reflect the views and input of the relevant Indigenous knowledge-holders.*
Precise Assessments	*Practitioners must define the location and form of a place, and the values that it embodies, with sufficient clarity to inform an assessment or the development of policy.*

Changing Values	*Assessments of significance need to be responsive to the dynamic nature of Indigenous cultures.*
Defining Site Boundaries	*Assessments of significance that concentrate on the visual characteristics of a place and use those characteristics to establish a 'boundary' for the place, may fail to appreciate its broader cultural or spiritual setting.* *Importantly, heritage practitioners must not inappropriately privilege tangible places and objects over the intangible aspects of heritage.*
Maintenance, preservation, restoration, reconstruction and appropriate 'change' can be culture dependent	*Practitioners may identify conservation needs and responses that are at odds with those identified by the traditional owners of a place, with the potential for misunderstanding and conflict.*

These principles outlined in the Burra Charter are generally those by which most cultural heritage practices in Australia are determined, including the assessment of significance of individual heritage places and objects.

In summary, cultural heritage landscapes, places, sites and objects can be significant in a number of ways:

1. Significant to a group or many groups of people due to their connection to the past.
2. Significant to a specific group of people because they have religious or spiritual significance to those people (Sacred Sites, Dreaming Sites or Story Places for example),
3. Significant to a group or many groups due to the relationship of place in the wider context of an ecological and cultural landscape.
4. Significant because of their research potential: their importance of the site in answering questions about past and in some instance's current human behaviour.
5. Significant due to their representativeness or uniqueness: sites or places that are rare or unique and are therefore conserved as a representative example.

Following the assessment of significance, the future conservation of a heritage place is decided by weighing up the level of assigned significance against the practicality of conserving the place. In terms of Indigenous site, these decisions should be made in direct consultation with Traditional Owners and guided by their views and input. To assess the practicality of conserving a heritage site, regulatory mechanisms are usually used to assess the condition of the place (whether it will survive for much longer) and the economic implications of deciding to apply permanent heritage protection.

6.2 Assessment Principles of Scientific and Research Significance

Scientific and research significance, including archaeological significance, is determined by assessing the ability of an object, site or area to add to the scientific knowledge of history or pre-history. This scientific knowledge for example, may include the ability of an object, site or area to provide an insight into past social patterns (e.g. trade and exchange networks), technologies, substance patterns, timings of occupation, and/or paleoenvironmental conditions.

Accordingly, in general the more information an object, site or area can add to understanding the past, the higher its scientific significance. Notwithstanding this, some sites or objects may also have higher levels of scientific significance due to their aesthetics, rarity and representativeness rather than an ability to inform greater details about the past. Areas or sites so judged are often recorded in detail or conserved *in situ* because they may add to our understanding of the past. It also may involve conserving a place until all practical

scientific observations can be made, for example, in the salvage of artefact scatters before a development commences.

Outside of research significance, cultural sites such as CMTs, stone artefact scatters and camp sites can also have an educational role in helping non-Indigenous people understand some aspects of traditional Aboriginal lifeways.

6.3 Significance of Cultural Heritage Features within the Survey Area

In general, the recording of the archaeological features was relatively brief but aimed to capture sufficient information to understand and assess the archaeological and cultural significance of the features within the footprint areas. Information recorded for each feature included: locational data, brief site descriptions, artefact sample counts, geomorphic and environmental contexts, condition, site custodian comments and a photographic record. This information has been used to provide a significance rating for each archaeological site. Individual site significance assessments are presented in Table 5**Error! Reference source not found.**. The site custodians were generally not comfortable with expressing cultural significance levels without further Traditional Owner consultation.

Table 5: Site Significance Assessments

ID	Feature	Cultural Significance	Archaeological Significance
PE-22 IA01	Isolated flaked stone artefact. Material = silcrete.	Not Recorded	*Low Significance* Despite being rare on the Melville Island, isolated artefacts such as flakes can provide limited archaeological information.
PE-22 AS01	CMT, sugar bag scar (likely metal axe). Tree species = Ironwood	Not Recorded	*Low Significance* A single CMT can provide limited archaeological information.
PE-22 IA02	Possible isolated flaked stone artefact. Material = ironstone.	Not Recorded	*Low Significance* Despite being rare on the Melville Island, isolated artefacts such as flakes can provide limited archaeological information.
PE-22 IA03	Possible isolated broken flaked stone artefact (2 parts). Material = silcrete.	Not Recorded	*Low Significance* Despite being rare on the Melville Island, isolated artefacts such as flakes can provide limited archaeological information.
PE-22 CF01	Culturally scarred tree (modern full girth bark sheet removal [likely or bark painting basket]).	Not Recorded	NA – not an archaeological site
PE-22 CF02	Watercourse and swimming hole.	High cultural significance	NA – not an archaeological site
Fort Dundas	Fort Dundas complex, including surrounds	Not Recorded	*High archaeological significance* given it represents the first British settlement within the Northern Territory. Individual site features need to be assessed with improved ground surface visibility before significance assessments can be developed.

7 RECOMMENDATIONS

This report makes recommendations on the cultural heritage features recorded in this study according to its significance to Site Custodians, its archaeological significance, the risk of impacts during construction of the Provaris Energy Ltd proposed Tiwi H2 Export Project and the condition of the site at the time of survey.

7.1 GENERAL RECOMMENDATIONS

This report makes the following general recommendations:

1. Provaris Energy Ltd should develop and implement a Cultural Heritage Management Plan (CHMP) in consultation with Traditional Owners for the Project, prior to commencement of any ground disturbing activities. This plan should include, but not be limited to:

    a. An outline of the Project Areas to which the CHMP applies.

    b. A summary of the cultural heritage features identified in this report, AAPA Authority Certificates (including Conditions) and any other relevant features identified by Provaris Energy Ltd during consultation with Traditional Owners.

    c. Measures to protect and manage individual heritage places, during and post construction phases of the Project.
        i. Ensuring site management strategies consider best industry practice, drawing on the archaeological and cultural values of each feature.

    d. Measures to manage and report inadvertent discoveries of cultural heritage finds, such as:
        i. Discovery of Aboriginal archaeological sites and objects.
        ii. Discovery of important historic features.
        iii. Discovery of human remains.

    e. Defined responsibilities for the protection and monitoring of cultural heritage features, including for areas that have been identified as Cultural Heritage Risk Areas and any other areas identified by Provaris Energy Ltd during consultation with Traditional Owners.

    f. Traditional Owner liaison/consultation requirements regarding cultural heritage management and reporting of incidents.

    g. Protocols for Tiwi People to access any areas immediately outside the Project Area during the construction phase of the Project, and the right to access cultural heritage features and areas of significance within the Project Area post construction (within the constraints of Occupational Health & Safety risks of the Project).

    h. A process for the management and availability of Cultural Heritage information (taking into consideration the confidentiality of culturally sensitive areas and any cultural protocols).

    i. Processes for Breach Investigation & Dispute Resolution, including timeframes for responses.

j. Outline the requirements for additional cultural heritage assessments of any new development areas or Project Areas realignments prior to ground disturbance.

k. A review schedule for the Cultural Heritage Management Plan.

2. Provaris Energy Ltd should aim to avoid impacts to heritage places, protected by the *NT Heritage Act* where practicable. These features include the Fort Dundas site complex, isolated stone artefacts (PE-22 IA01, PE-22 IA02, PE-22 IA03) and the CMT (PE-22 AS0).
   a. Where impacts to heritage places are unavoidable, Provaris Energy Ltd should seek for an approval to carry out work on a heritage place or object (a work approval) under s 72 of the *Heritage Act* and in accordance with the conditions set out in the CHMP.
   b. All site mitigation works should be undertaken well in advance of construction activities.

3. Provaris Energy Ltd should implement workforce training and inductions, which include:
   a. Cultural awareness.
   b. Cultural heritage protection.
   c. Protocols for the management of Aboriginal and historical archaeological sites.
   d. Identification of Aboriginal and historical archaeological sites.
   e. Personnel responsibilities.

4. Provaris Energy Ltd should ensure Traditional Owners/Site Custodians are engaged in heritage management decision making.

5. To minimise potential impacts to Sacred Sites, it is recommended that Provaris Energy Ltd apply for a Sacred Sites Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act 1989 (NT)* prior to construction activities.
   a. The location of Restricted Works Areas and their conditions should be made available to all authorised personnel to ensure compliance with the Certificate.
   b. The Consultants have been advised that Provaris Energy Ltd have applied to the AAPA for an Authority Certificate covering their Project Areas.

7.2 SPECIFIC RECOMMENDATIONS

The following section outlines the site-specific recommendations for the management of the cultural heritage resources within the Project Areas:

1. **Cultural Heritage Risk Areas.**

   Provaris Energy Ltd should undertake clearance surveys of all Cultural Heritage Risk Areas with improved ground surface visibility, outlined in Section 5.1.2 above, to ensure each area has been adequately inspected prior to construction.
   a. Clearance surveys should be undertaken well in advance of the construction phase to allow for appropriate mitigation strategies to be implemented.

2. **Fort Dundas.**

   In is recommended that Provaris Energy Ltd undertake a baseline assessment of the eastern Fort Dundas site extents with improved ground surface visibility. It is suggested that this assessment be

restricted to recording areas within a suitable distance of existing Port Melville disturbance footprint and the proposed Tiwi H2 Export Project areas within the Port Melville area. This assessment should include the baseline recording and photographs of each associated feature outlined in Crosby's (1978) report and any additional finds.

3. **Fort Dundas feature (PE-22 HF05)**.

   PE-22 HF05 lies to the south of the proposed accommodation site. This feature may be associated with the Fort Dundas complex but was constrained by poor ground visibility. It is recommended that Provaris Energy Ltd avoid this area if possible or further survey with better ground visibility before construction.

4. **Contemporary scar tree (PE-22 CF01)**.

   PE-22 CF01 which has had the bark removed for basket making, lies just outside the Transmission Line Corridor and should be avoided. Site Custodians have recommended a 5-10m buffer on the feature. It is recommended that this feature be bunted/flagged off during the construction phase of the Project.

5. **CMT/Scar Tree (PE-22 AS01)**.

   CMT *PE-22 AS01* is an archaeological site protected under the *NT Heritage Act*. It is recommended that a minimum 10m radius buffer be used to avoid this feature. It is recommended that this feature be bunted/flagged off during the construction phase of the Project.

6. **Creek crossing area (PE-22 CF02**)

   PE-22 CF02 is of high cultural significance to the Site Custodians and Traditional Owners. It is recommended that a buffer of 75m be placed on each side of the creek for the tower construction. Provaris Energy Ltd should implement construction methods to ensure the following outcomes:

   a. Minimal disturbance to the creek line and surrounding areas.
   b. Minimal disturbance to existing vehicle track crossing of this creek where possible.
   c. Avoid impacts on the water inflow to, and landform of the swimming hole.
   d. Recreational use of this area should also be avoided by Provaris Energy Ltd and contractors unless invited by senior Traditional Owners.

7. **Isolated Artefacts (PE-22 IA02 and PE-22 IA03)**

   It is recommended that the two isolated artefacts (*PE-22 IA02* and *PE-22 IA03*) located within the proposed accommodation precinct should be permitted and relocated to safe storage area outside the proposed Project Areas, prior to the commencement of construction.

8 REFERENCES

Crosby, E (Ed.) 1978 *Survey and excavation at Fort Dundas, Melville Island, Northern Territory, 1978,* Australian Society for Historical, Archaeology, Sydney.

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Woolfe, R 2001 *Fort Dundas: First Settlement In Northern Australia*, Final report for SES440, Charles Darwin University, Darwin.

De La Rue, C 2006, '"...for the good of His Majesty's Service", The Archaeology of Fort Dundas, 1824-1829', MA Thesis, Faculty of Law Business and Arts, Charles Darwin University, Darwin.

APPENDIX 1: HERITAGE REGISTER SEARCHES

Table 6 below provides an outline of the search results for the Northern Territory Government and Commonwealth heritage registers.

Table 6: Heritage register search results

NORTHERN TERRITORY REGISTER SEARCHES	Sites Within Project Area	
	Yes	**No**
1. **NT Archaeological Database** ***Additional information****:* Fort Dundas (1824-1827) is recorded on the NT archaeological database as a historic object/place (Site ID: 4975-0001). The site is noted to include both surface and buried archaeological deposits of glass metal stone. Part of the site recorded by Crosby (1978) lay within the H2 Export Precinct, however satellite imagery suggests this area was likely destroyed by the construction of Port Melville. No other sites are registered on the NT Archaeological Database within the proposed Project Areas.	☑	☐
2. NT Heritage Register ***Additional information****:* Fort Dundas was not initially recommended for the Register on 01/OCT/13. A second nomination for Registration was accepted on 08/MAR/19. The Heritage Council has yet to make a final decision on this nomination.	☑	☐
COMMONWEALTH REGISTER SEARCHES		
1. National Heritage List ***Additional information****:* A search of the National Heritage List noted no sites within or adjacent to the proposed Project Areas.	☐	☑
2. Commonwealth Heritage List ***Additional information****:* A search of the Commonwealth Heritage List noted no sites within or adjacent to the proposed Project Areas.	☐	☑
3. Register of the National Estate (Non-statutory archive) Fort Dundas is listed on the Register of the National Estate. Whilst the known and surviving Fort Dundas extents fall outside the proposed Project Area, it is possible some unidentified features associated with the site may lie within the proposed H2 Export Precinct.	☑	☐

1. Fort Dundas (ID 18163) Fort Dundas was the first attempted European occupation of the Tiwi Islands and the Top End, and the first of three failed British trading posts established in northern Australia between 1824-49.		

APPENDIX 2: HERITAGE ASSESSMENT MAPPING

These figures have been removed to respect and protect the cultural sensitivities of the area following consultation with Site Custodians.

Figure 6: Crosby 1975 mapping (Crosby 1978) overlying British 1827 Site Plan

APPENDIX 3: REPRESENTATIVE SITE IMAGES