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ARCHAEOLOGY – HERITAGE – MEDIATION – ARBITRATION

UNDERWATER CULTURAL HERITAGE MANAGEMENT & OFFSHORE RENEWABLES

BEST PRACTICE PROTOCOLS

September 2020

Version: A.2020

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DOCUMENT CONTROL

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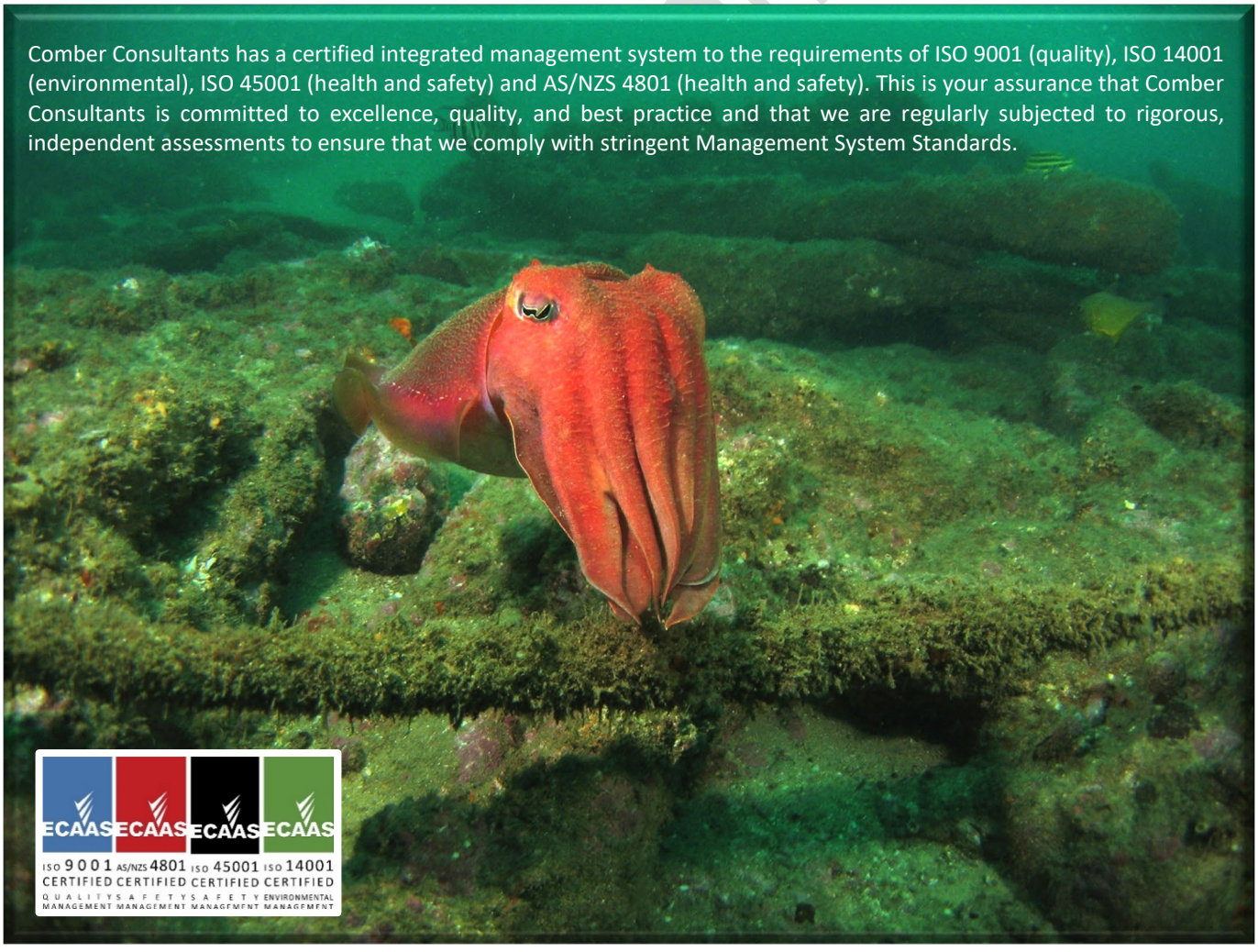
Cover Images:
Front cover: Windfarm turbines (credit: David Nutley)
Second page: Cuttlefish hovering over the *Centurion* shipwreck archaeological site, Sydney Harbour (credit: David Nutley)
Last page: Intertidal zone, Shellharbour, NSW (credit: David Nutley)



EXECUTIVE SUMMARY

This document details a best-practice approach to managing Underwater Cultural Heritage (UCH) across the emerging offshore renewable energy industry in Australia in accordance with the Commonwealth *Underwater Cultural Heritage Act 2018* (UCH Act).

As there are currently no available statutory Guidelines for the application of the UCH Act, this document is aimed at filling the gap. The approach outlined in this document is based on original research and analysis of the relevant Commonwealth, State and Territory legislations and international best practice documents. It reflects Comber Consultants' views and is aligned with the Company's policies.

The policies outlined in this document are specific to the planning process and aimed at ensuring the appropriate management of potential UCH values within the footprint of offshore renewables developments on the seabed or within the intertidal zone. This document is designed to inform the planning of all stages of the development process where UCH is a factor, including:

- Pre-development environmental and feasibility assessments
- Geophysical surveys and environmental sampling
- Construction, operation and maintenance of infrastructure and offshore facilities, and
- Decommission of infrastructure and offshore facilities.

Offshore renewable development is characterised by a complex planning process and long service lifetimes. Meanwhile, offshore construction as well as the operation and maintenance of offshore facilities are generally less flexible than their onshore counterparts. To ensure appropriate levels of UCH management throughout a project lifetime a four-stage flexible approach is developed to meet the legal requirements and fulfill the obligations to particular cultural groups (Table 1).

Planning Stages		Stages of UCH Management
Pre-approval	Feasibility and Scoping	1. UCH Constraints Analysis
	Environmental Surveys	2. UCH Impact Assessment
		3. Archaeological Programme (if required)
Post-approval	Early Works	
	Construction, Operation, Maintenance and Decommission	4. UCH Management Plan

Table 1: Four-stage flexible approach to meet legal requirements and fulfill the obligations to particular cultural groups

Early assessment of UCH prior to any disturbance activities is critical to guaranteeing a timely introduction of appropriate management and mitigation measures to meet the legal obligations. Considering preservation *in situ* as the first option can contribute to avoiding considerable costs associated with intrusive archaeological investigations and salvage programmes. Community consultation plays a crucial part in certain aspects of UCH management an appropriate consultation should be undertaken to ensure and promote stakeholder participation in determining heritage outcomes.

Public awareness of the results of investigations and the significance of UCH should be promoted. While in offshore renewables industry UCH is usually regarded as a constraint, when appropriately managed, underwater archaeological discoveries can present an outstanding opportunity to elevate a project's public image.

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1.0 INTRODUCTION

1.1 Outline

This document details a best-practice approach to managing Underwater Cultural Heritage (UCH) across the emerging offshore renewable energy industry in Australia.

This document details the process for managing resources that may represent material evidence for past humans and their environment as preserved in Australian waters and can therefore be defined as UCH. UCH items are protected under the Commonwealth *Underwater Cultural Heritage Act* 2018 and the State and Territorial legislations and harming them can be considered a Federal offence. The application of the approach outlined in this document is therefore encouraged to appropriately manage UCH and fulfill all legal obligations pertinent to UCH.

This protocol has been prepared in accordance with the Commonwealth *Underwater Cultural Heritage Act 2019*, the UNESCO *Convention on the Protection of the Underwater Cultural Heritage 2001* and the relevant State legislations. The UCH Act was introduced on 01 July 2019 in place of the Commonwealth *Historic Shipwrecks Act 1976.* There are currently no available statutory Guidelines for the application of the UCH Act.

This best practice protocol is specific to the planning process and aimed at ensuring the appropriate management of potential UCH values within the footprint of offshore renewables developments on the seabed or within the intertidal zone. It is designed to inform the planning of all stages of the development process where UCH is a factor, including:

- Pre-development environmental and feasibility assessments
- Geophysical surveys and environmental sampling
- Construction, operation and maintenance of infrastructure and offshore facilities, and
- Decommission of infrastructure and offshore facilities.

This document considers, and is consistent with, the existing statutory and non-statutory regimes for reporting on responsibilities for relics, and other legal regimes in each of the Commonwealth States, on land, within territorial waters and outside territorial waters.

1.2 Limitations

This is a non-statutory document based on original research and analysis of the relevant legislation and international best practice documents. It reflects Comber Consultants' views and is aligned with Comber Consultants' policies.

2.0 LEGISLATION

2.1 Commonwealth

The Underwater Cultural Heritage Act 2018

The Commonwealth *Underwater Cultural Heritage Act 2018* (UCH Act) was introduced on 01 July 2019. It replaced the Commonwealth *Historic Shipwrecks Act 1976* in managing historic shipwreck sites within Australian State Waters and Commonwealth Waters (including the Australian Territorial Sea). The UCH Act broadens protection to sunken aircraft as well as other forms of underwater cultural heritage, including submerged Pleistocene and Holocene human landscapes containing inundated Aboriginal and Torres Strait Islander sites.

Under the definitions in the UCH Act, underwater cultural heritage is any trace of human existence that:

a) has a cultural, historical, or archaeological character; and
b) is located under water.

Under the UCH Act, a 'trace of human existence' includes sites, structures, buildings, artefacts, and human and animal remains together with their archaeological and natural context.

The UCH Act ensures the protection of all UCH located in open waters below the low water mark and extends its regulatory provisions to all persons and vessels up to the outer limits of the Australian Contiguous Zone. For Australian entities, the Act extends beyond that boundary and binds them to ensure the protection of UCH in international waters.

The UCH Act and the UNESCO 2001 Convention

The UCH Act is aligned with the UNESCO *Convention for the Protection of the Underwater Cultural Heritage 2001*. That convention serves as the basis for the Act and is referred to within the *Underwater Cultural Heritage Rules 2018*, the main guiding instrument under the UCH Act.

In 2010 the Australian Government, States and the Northern Territory signed the Australian Underwater Cultural Heritage Intergovernmental Agreement that would enable the Australian Government to decide to ratify the UNESCO 2001 Convention, should it so choose.

Ratification of the UNESCO 2001 *Convention on the Protection of the Underwater Cultural Heritage* would give Australia an international basis for protecting underwater cultural heritage, between 24 nautical miles and our 200 nautical mile extended Economic Zone (EEZ) limit, from unauthorised actions by foreign persons or vessels.

Ratification would also enable Australia to participate in the global community's response to illegal salvaging, looting and trafficking of underwater cultural heritage and give Australia a greater say in the day to day protection of our heritage outside of Australian waters.

Australia is yet to ratify the 2001 Convention.

The Underwater Cultural Heritage Rules 2018

The Rules of the UCH Act require that the Commonwealth Minister must have regard to the following criteria in making a declaration, under subsection 17(1), 18(1) or 19(1) of the Act that an article is of heritage significance. The criteria are as follows:

a) The significance of the article in the course, evolution or pattern of history
b) The significance of the article in relation to its potential to yield information contributing to an understanding of history, technological accomplishments or social developments
c) The significance of the article in its potential to yield information about the composition and history of cultural remains and associated natural phenomena through examination of physical, chemical or biological processes
d) The significance of the article in representing or contributing to technical or creative accomplishments during a particular period
e) The significance of the article through its association with a community in contemporary Australia for social, cultural or spiritual reasons
f) The significance of the article for its potential to contribute to public education
g) The significance of the article in possessing rare, endangered or uncommon aspects of history
h) The significance of the article in demonstrating the characteristics of a class of cultural articles.

These criteria must be taken into account in assessing the significance of any UCH identified as being within the footprint of an offshore renewables development

The Protection of Movable Heritage Act 1986 and

Regulations 2018

The Commonwealth *Protection of Movable Cultural Heritage Act 1986* ensures objects that have cultural significance remain in Australia. The Act also provides for the return to the country of origin of foreign cultural property which has been illegally imported into Australia. Items of movable cultural heritage may include artworks and historical, archaeological, numismatic, philatelic, science or technology objects. Australia's *Protection of Movable Cultural Heritage Act 1986* is supported by legislation which was updated in December 2018. The *Protection of Movable Cultural Heritage Regulations 2018* were revised to implement some of the recommendations and principles of the *Review of the Protection of Movable Cultural Heritage Act* and represent the main guiding instrument under the Act. Part 1 and Part 2 of the Regulations deal with the appropriate management of objects of Australian Aboriginal and Torres Strait Islander Heritage (Part 1) and Archaeological objects (Part 2).

2.2 States and Territories

Since 1973 the Australian States and Territories have introduced their own items of legislation that ensure the protection of UCH within State Waters and inland waterways. In the case of State Waters, State legislation protection often overlaps with the Commonwealth UCH Act. In this case the UCH Act is administered through the relevant State and Territory Delegates who have certain responsibilities for the day-to-day administration of the Act (Table 2).

These responsibilities include:

- s.19 power to provisionally declare protected underwater cultural heritage
- s.23 power to grant permits
- s.25 power to vary permits
- s.26 power to suspend or revoke permits
- s.38 power to ascertain the location of protected underwater cultural heritage
- s.39 power to give directions in respect of the possession, custody or control of protected underwater cultural heritage
- s.58 power to approve a form for the purposes of a provision of the Act

The relevant legislation of each Australian State/Territory pertinent to UCH is detailed in Table 3 below. Links to all Acts and regulations are provided in Section 2.

Table 2: UCH Act Commonwealth, State and Territory Delegates

State/Territory	UCH Act State Delegates
Commonwealth	**Assistant Secretary, Heritage Branch**, Department of Agriculture, Water and Environment
New South Wales	**Executive Director, Heritage NSW**, NSW Department of Premier and Cabinet
Victoria	**Executive Director, Heritage Victoria**, Department of Environment, Land, Water & Planning
Queensland	**Manager, Heritage Branch**, Arts and Heritage, Department of Environment and Science
Tasmania	**Director, Heritage Tasmania**, Natural and Cultural Heritage Division, Department of Primary Industry, Parks, Water and the Environment
South Australia	**Manager, Heritage South Australia**, Department for Environment and Water.
Western Australia	**Manager, Development and Incentives State Heritage**, Department of Planning, Lands and Heritage
Northern Territory	**Director, Heritage Branch**, Department of Tourism and Culture

Table 3: Agencies responsible for Aboriginal and non-Aboriginal UCH under State and Territory legislation.

State/Territory	Legislation	State Agency responsible for UCH
New South Wales	*Heritage Act 1977*	Heritage NSW
	National Parks and Wildlife Act 1974 (Aboriginal heritage)	
Victoria	*Heritage Act 1995*	Heritage Victoria

	Heritage (Underwater Cultural Heritage) Regulations 2017	
	Aboriginal Heritage Act 2006	Aboriginal Victoria
Queensland	*Queensland Heritage Act 1992*	Heritage Branch
	Aboriginal Cultural Heritage Act 2003	Department of Aboriginal and Torres Strait Islander Partnerships
Tasmania	*Historic Cultural Heritage Act (1995)*	Heritage Tasmania
	Aboriginal Heritage Act 1975	Aboriginal Heritage Tasmania
South Australia	*Heritage Places Act 1993*	Heritage South Australia
	Historic Shipwrecks Act 1981	
	Aboriginal Heritage Act 1988	Aboriginal Affairs and Reconciliation
Western Australia	*Maritime Archaeology Act 1973*	WA Museum
	Aboriginal Heritage Act 1972	Department of Planning, Lands and Heritage
Northern Territory	*Heritage Act 2011*	Heritage Branch
	Aboriginal Sacred Sites Act 1989 *Aboriginal Cultural Heritage Act 2003*	Aboriginal Areas Protection Authority

2.3 International Legal and Best Practice Documents

The UNESCO Convention for the Protection of the Underwater Cultural Heritage 2001 and Annex

The UNESCO *Convention on the Protection of the Underwater Cultural Heritage* (The UNESCO Convention), adopted in 2001, is intended to enable States to better protect their submerged cultural heritage. The UNESCO Convention consists of a *Main Text* and an *Annex*. The main text sets out the basic principles for the protection of UCH; a detailed State cooperation system and widely recognised practical rules for the treatment and research of UCH. The *Annex* to the 2001 *Convention* contains detailed practical guidelines entitled *Rules concerning activities directed at underwater cultural heritage*. The 36 Rules of the Annex present a directly applicable operation scheme for underwater interventions. Over the years, they have become a global reference document in the field of underwater archaeology, setting out regulations for the responsible management of such cultural heritage.

Manual for Activities directed at Underwater Cultural Heritage – Guidelines to the Annex of the UNESCO 2001 Convention

The Manual for Activities directed at Underwater Cultural Heritage is designed to assist specialists and decision-makers understand the rules of the contained in the Annex of the 2001 Convention.

The ICOMOS Sofia Charter 1996

The International Council of Monuments and Sites (ICOMOS) *Charter on the Protection and Management of the Underwater Cultural Heritage* 1996, also known as *The Sofia Charter*, formed the basis for the Annex to the UNESCO *Convention*. It focuses on the specific attributes and circumstances of cultural heritage under water and should be understood as a supplement to the ICOMOS *Charter for the Protection and Management of Archaeological Heritage*, 1990. Article 1 of the Charter outlines the fundamental principles in the protection and management of underwater cultural heritage including, but not limited to:

- The preservation of underwater cultural heritage *in situ* should be considered as a *first option*
- Non-destructive techniques, non-intrusive survey and sampling should be encouraged in preference to excavation
- Investigation must not adversely impact the underwater cultural heritage more than is necessary for the mitigatory or research objectives of the project
- Investigation must avoid unnecessary disturbance of human remains or venerated sites
- Investigation must be accompanied by adequate documentation

3.0 THE UNDERWATER CULTURAL HERITAGE OF AUSTRALIA

Australia's UCH is rich and diverse, comprising evidence for at least 60,000 years of human existence. At present there are over 8,000 identified UCH items in Australia comprising historic shipwrecks, sunken aircraft and submerged Indigenous sites located in Australian waters. More and more UCH items are discovered and investigated each year, representing some of the most valuable and irreplaceable physical evidence of our past.

The nature of the offshore marine environment predetermines a lower baseline of archaeological knowledge and higher levels of unassessed risk to cultural heritage at sea than on land. The Australian Commonwealth and State Governments are determined to protect UCH and have therefore developed an array of legal instruments pertinent to enforcing UCH protection and preventing unmitigated impacts to UCH in Australian waters and beyond.

The following sections deal with the defining UCH within its legal and locational context. The main types of UCH that may be encountered during offshore renewables development are discussed in the last section of this chapter.

3.1 Definitions

According to the definitions under the Commonwealth UCH Act, *underwater cultural heritage* is any trace of human existence that:

a) has a cultural, historical, or archaeological character; and

b) is located under water

Under the UCH Act, the definition of *a trace of human existence* includes:

a) sites, structures, buildings, artefacts and human and animal remains, together with their archaeological and natural context

b) vessels, aircraft and other vehicles or any part thereof, together with their archaeological and natural context

c) articles associated with vessels, aircraft, or other vehicles, together with their archaeological and natural context

Subject to varying international legal obligations, via the UCH Act the Australian Commonwealth places a prohibition on damaging protected UCH sites and items. These regulatory provisions apply to all persons and vessels up to the outer limits of the Australian Contiguous Zone. For Australian entities however, these provisions extend beyond the Contiguous Zone, into the High Seas and in the Area (see next section for further clarifications).

3.2 Maritime Zones and Boundaries

On 5 October 1994 Australia ratified The United Nations *Convention on the Law of the Sea* (UNCLOS). UNCLOS is the international agreement that establishes the rights and duties of nations in relation to the seas and oceans.

International Law permits coastal States to claim maritime zones extending from their coastlines. As a result, coastal States have certain rights and obligations over the ocean, seabed, subsoil and air space adjacent to their territory. The extent of each zone, and the rights and obligations of States therein, are governed principally by UNCLOS. The Australian context employs maritime zones that are both reflective of Australia's federal structure and maritime zones which may be claimed under international law (Figure 1, Figure 2 and Figure 3).

The maritime zones under UNCLOS are measured from a point along the coast referred to as the territorial sea baseline. The baseline follows the low water mark along the coast except where otherwise allowed under the rules of UNCLOS, including:

- **Straight baselines** - which are a system of straight lines joining specified or discrete points on the low-water line, usually known as straight baseline end points. These may be used in localities where the coastline is deeply indented and cut into, or where there is a fringe of islands along the coast in its immediate vicinity; and
- **Bay or river closing lines** - which are straight lines drawn between the respective low-water marks of the natural entrance points of bays or rivers.

The main maritime zones of relevance to the regulation of UCH, moving seaward from the territorial sea baseline, are:

- **Coastal Waters (CW)** - being waters over which each State and the Northern Territory has primary jurisdiction, except for the remains of vessels (historic shipwrecks), in waters to 3 nautical miles seaward of the territorial sea baseline. 'Coastal waters' also includes waters on the landward side of the baseline that are not within the limits of a State or Territory. 'Coastal waters' are not prescribed by international law. Instead, they are a mechanism that reflects the 'Offshore Constitutional Settlement' in 1983 between the Commonwealth and States
- **Territorial Sea (TS)** - within which a coastal State exercises full sovereignty, subject only to the right of innocent passage by foreign ships. The territorial sea extends out to 12 nautical miles from the territorial sea baseline
- **Contiguous Zone (CZ)** - within which Australia may exercise control necessary to prevent and punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea. Article 303, in permitting the application of Article 33 of UNCLOS, also allows Australia to enforce laws to prevent the unauthorised removal of archaeological and historical objects within the contiguous zone. The contiguous zone extends from the outer limits of the territorial sea to 24 nautical miles from the territorial sea baseline. Its area overlaps with the first 12 nautical miles of both the exclusive zone and the continental shelf
- **Exclusive Economic Zone (EEZ)** - within which a coastal State has sovereign rights and jurisdiction, including with respect to exploring and exploiting, conserving and managing natural resources. The EEZ extends from the outer limits of the territorial sea out to 200 nautical miles from the territorial sea baseline. Sovereign rights within the EEZ extend to both the water column and the seabed and subsoil. To the extent that the EEZ covers the seabed and subsoil, in most places it is co-extensive with the continental shelf
- **Continental Shelf (CS)** - within which the coastal State exercises sovereign rights over natural resources. The continental shelf comprises the seabed and subsoil of the submarine area which forms a natural prolongation to a coastal State's land territory. The continental shelf extends as far out to 200 nautical miles from the territorial sea baseline, and may extend up to 350 nautical miles where the physical features permit. In this regard, the water column above may constitute the high seas;
- **The High Seas** - which comprises the water column of the sea that is beyond national jurisdiction (i.e. that is not included in the territorial sea, the EEZ, or the archipelagic waters of an archipelagic State; and
- **The Area** - which comprises the seabed and ocean floor and subsoil beyond national jurisdiction. The Area is part of the 'common heritage of mankind' and no State can claim or exercise sovereignty over any part of the Area or its resources in accordance with Part XI of UNCLOS.

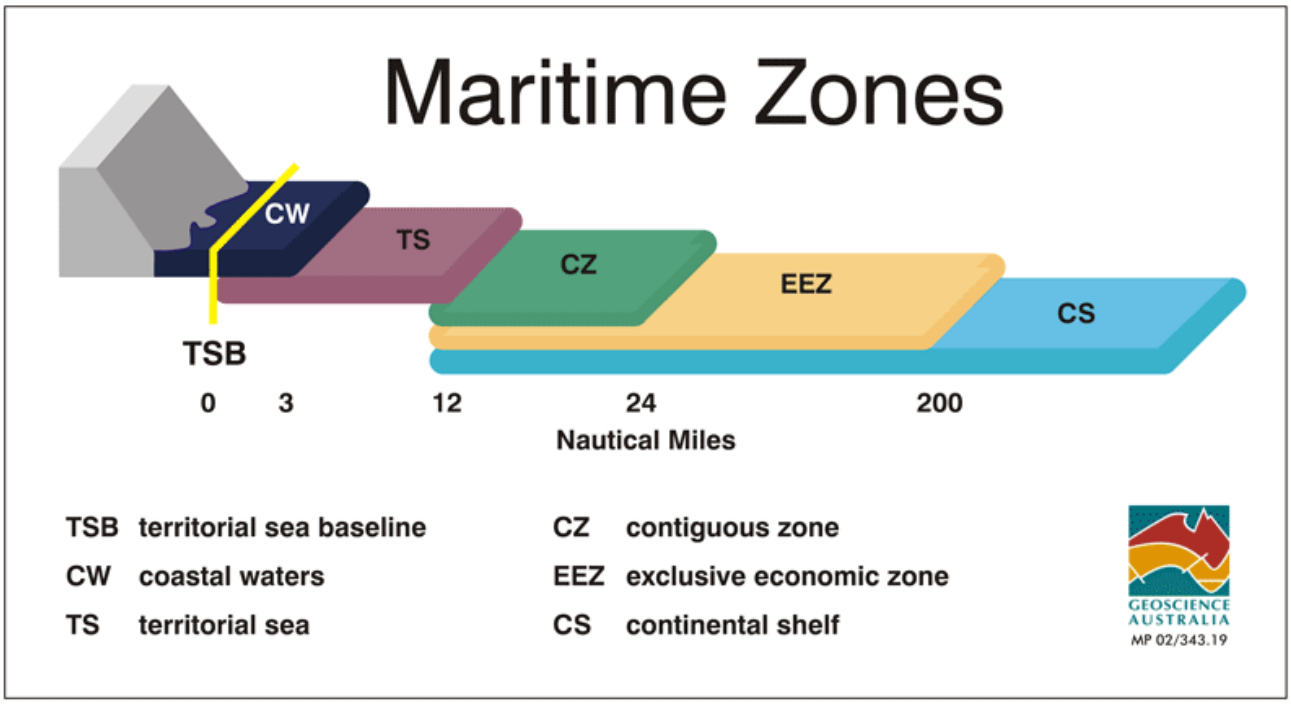

Figure 1: Australia's Maritime Zones (credit: Geoscience Australia; https://www.ga.gov.au/scientific-topics/marine/jurisdiction/maritime-boundary-definitions)

Offshore renewables development within the Australian Maritime Zones and Boundaries is most likely to be undertaken on the Continental Shelf (CS) in Australian Coastal Waters (CW), Territorial Seas (TS) and Contiguous Zone (CZ), however certain types of development may be undertaken in the Exclusive Economic Zone (EEZ).

All persons and vessels are liable for the preservation of UCH within the CS, CW, TS and CZ while Australian entities are liable also in the EEZ and beyond. Potential impacts to UCH as a result of offshore renewables should therefore be considered and assessed in the earliest stages of planning and in well in advance of development.

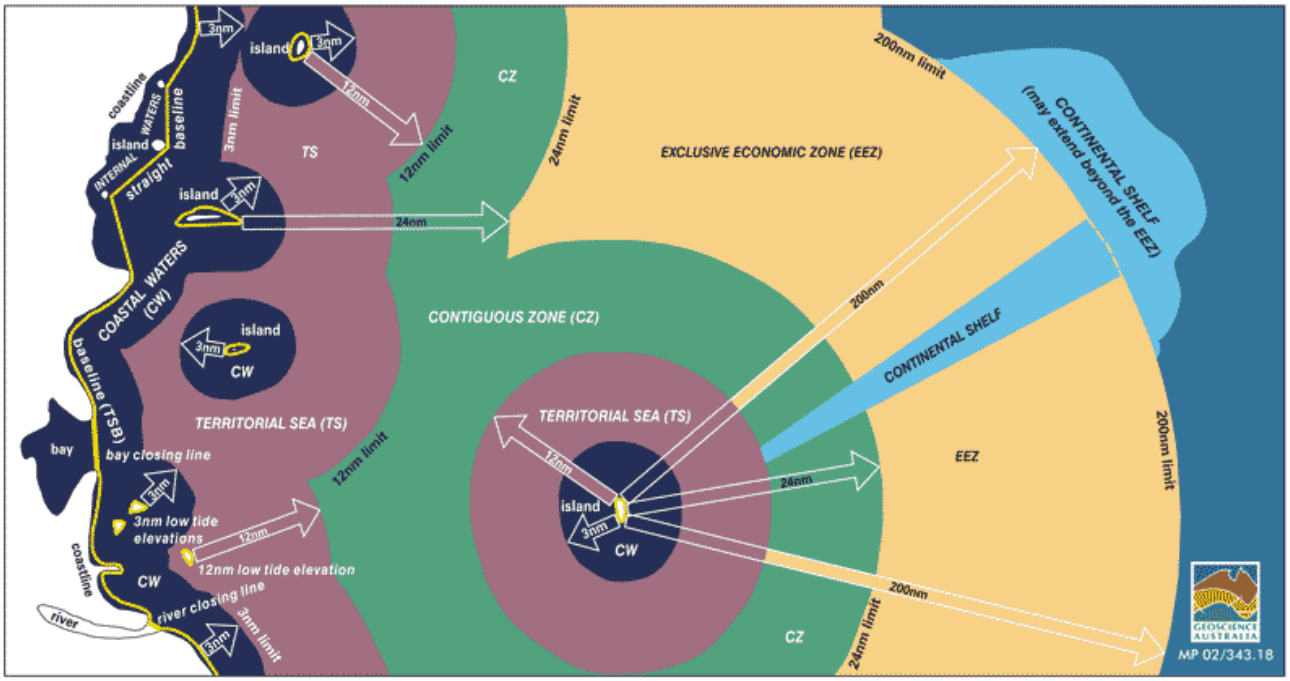

Figure 2: Relationship of maritime features, zones and boundaries (credit: Geoscience Australia; https://www.ga.gov.au/scientific-topics/marine/jurisdiction/maritime-boundary-definitions)

Figure 3: Australia's Exclusive Economic Zone EEZ (credit: Geoscience Australia; https://www.ga.gov.au/scientific-topics/marine/jurisdiction/maritime-boundary-definitions)

3.3 Categories of UCH

For the purposes of UCH management for the offshore renewables industry UCH can be divided in several categories based on type, age and cultural attribution. As follows:

Submerged prehistoric landscapes - Aboriginal and Torres Strait Islander UCH

During the Last Glacial Maximum, Earth's expanding icecaps captured ever increasing quantities of water and as a result global sea levels dropped. For over 9 thousand years between 25-16,000 years ago, global sea levels were approximately 130 m lower than the present day, exposing vast areas of present-day Australian shelf and converting it to *terra firma*. This landmass is referred to by scientists as the *Shelf of Sahul* (Figure 4).

For 9,000 years the Shelf of Sahul was inhabited by Indigenous Australians who utilised the land creating a rich human landscape defined by a number of creation stories and potentially thousands of now submerged archaeological sites.

Underwater archaeologists in Australia have been undertaking works for identifying such sites since the 1990s and several surveys have already been

undertaken in places like Sydney Harbour and along the New South Wales coast. Recently, a submerged Pleistocene artefact site was discovered by maritime archaeologists from Flinders University, SA on the Australian shelf, off the coast of Western Australia (Benjamin et al. 2020).

At this stage of research, only very limited archaeological data on underwater archaeology of Aboriginal and Torres Strait Islander cultures is readily available. Although there are also no comprehensive predictive models for the locations of submerged Pleistocene archaeological sites on the Australian shelf some key indicators include:

- **Peat beds** – these form in wetland environments and have been shown to have a strong *in situ* preservative role for organic and lithic artefacts where lakes and wetlands have expanded after initial occupation. Any offshore peat beds are indictors of the potential for pre-inundation human occupation sites to have survived in the submerged landscape.
- **Other *in situ* vegetation** - such as tree stumps: Examples of such vegetation have been found offshore of Warren Beach in Western Australia and in Sydney Harbour. These sites have not been investigated to confirm association with Aboriginal occupation but should be considered in any projects that may disturb such evidence.
- **Stone fish traps**
- **Former low-lying flood plains** that may have been subject to rapid inundation
- **Evidence in core samples** of pre-inundation soil horizons
- **Other pre-inundation landscape features** – e.g., river valleys, wetlands, lakes, etc.

Submerged Aboriginal and Torres Strait Islander UCH may include artefacts and archaeological sites such as, but not limited to, *rock shelters*, *artefact scatters, singular artefacts,* and others.

When located within, the 3nm limit of State waters, such sites may be automatically protected by the relevant State legislation (see Table 1, Section 2.2 above). It is therefore strongly advisable that projects proceed with utmost caution and employ strict management protocols to ensure that the protection of Aboriginal and Torres Strait Islander UCH values is guaranteed.

Any potential Aboriginal sites or artefacts located outside of the 3nm limit of State waters should be reported to the appointed State or Territory Delegate for the Commonwealth UCH Act or, if there is any doubt as to the jurisdiction, directly to the Commonwealth Delegate, (being the Assistant Secretary, Heritage Branch, Department of Agriculture, Water and Environment). If confirmed to be evidence of Aboriginal occupation, such sites or objects may be protected under the provisions of the UCH Act.

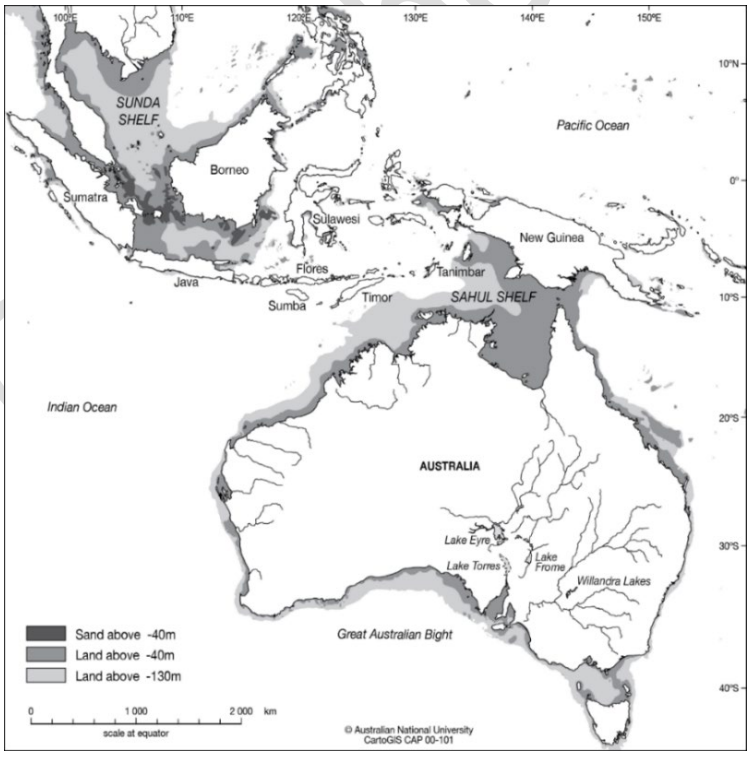

Figure 4: Shelf of Sahul during the Last Glaciation (credit: Australian National University, CartoGIS)

Shipwrecks

A *shipwreck* can be defined as precedent in which a ship was accidentally or deliberately sunk, ran aground, or became otherwise destroyed or permanently incapacitated within a body of water, or on its coast. In terms of UCH management in the offshore renewables industry, a *shipwreck* means the identifiable remains of a historic ship that has been involved in such an precedent and has been located in any of the Australian Maritime Zones or Boundaries including the Intertidal Zone for more than 75 years prior to the date of its discovery.

Figure 5: Example of a historic wooden shipwreck underwater, SS *Royal Shepherd,* Sydney Harbour (credit: David Nutley)

Figure 6: Example of a historic shipwreck in the intertidal zone, barque *Ethel*, South Australia (credit: David Nutley)

Sunken aircraft and other vehicles

Much like shipwrecks, for the purposes of UCH management for the offshore renewables industry, *sunken aircraft* can be defined as the identifiable remains of any historical aircraft that have been located in any of the Australian Maritime Zones and Boundaries including the Intertidal Zone for more than 75 years prior to the date of discovery.

Apart from *shipwrecks* and *sunken aircraft*, the remains of various *other vehicles* can be found underwater and represent UCH items. An example of such vehicles representing significant UCH are the remains of eight Australian Defence Force amphibious landing vehicles (LVTs) which were lost in Stockton Bight, NSW in 1954 as a result of poor weather (Figure 8).

Figure 7: Example of sunken WWII military airplane (stock credit: Milos Prelevic)

Figure 8: Diver examines the encrusted wreck of an army LVT in 33 m of water in Stockton Bight (credit: The Newcastle Herald, 28/03/2014)

Human remains

Respect for human remains as part of UCH management is a contemporary issue and public responses have indicated that human remains should be distinguished from other articles discovered in an underwater archaeological context.

Contemporary UCH management practice emphasises the need to respect human remains found in archaeological contexts. The UCH Act 2018 aligns Australia with International best practice in relation to respect for human remains. The definitions under the Act clearly state that *the remains of humans or animals that appear to have been on board the vessel, aircraft or other vehicle* are to be understood as *articles associated with vessel, aircraft or other vehicle.* Human remains are therefore protected under the UCH Act 2018.

Shipwrecks and military aircraft may contain the remains of personnel who were killed in action. The Commonwealth Office of War Graves has confirmed that these sites cannot be designated as official war graves. The Commonwealth *War Graves Act 1980* requires that service personnel who died at sea must be commemorated through officially erected memorials on land.

Historical ordnance

For the purposes of this document *historical ordnance* represents any item associated with military and naval ordnance, older than 75 years, found on the seabed or in the intertidal zone. In offshore development, per standard practice, it is likely that, where ordnance is concerned, specific rules may have been put in place in order to maintain safe conduct of operations. Any such rules must take precedence over UCH management considerations. Historic ordnance may, however, also be of archaeological interest and should be assessed and reported once safety rules have been satisfied.

Other UCH items

This final category encompasses all other items that could be assessed as UCH and would be associated with one or more of the categories above, but do not represent them on their own. Examples for such items include isolated anchors (Figure 9), historical cannon jettisoned from sailing ships or lost overboard, and other small and personal items discovered on the seabed or in the intertidal zone.

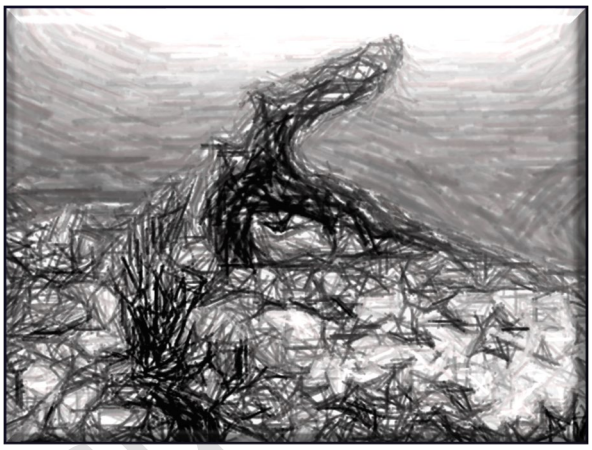

Figure 9: Anchor from the historic shipwreck *Edward Lombe*, Sydney Harbour (credit: David Nutley)

4.0 IDENTIFYING UCH IN OFFSHORE DEVELOPMENT

Within an offshore renewables development project, *anomalies of underwater archaeological interest* that have the potential to represent *underwater archaeological items* assessed as UCH, can be identified in multiple ways on multiple locations and on multiple instances on the seabed, either offshore or in the inter-tidal zone. Such anomalies and items may be identified during remote sensing and geophysical surveys, by remote operated vehicles (ROVs), via visual identification by divers, or through encountering anchors, or any other seabed equipment. All anomalies of underwater archaeological interest and underwater archaeological items must be assessed by a suitably qualified and experienced archaeologist/UCH consultant.

4.1 Definitions

Anomalies of archaeological interest

An 'anomaly' represents a visual or digital (i.e. geophysical) signature that has the potential to be an underwater archaeological item. While further investigation may reveal that an anomaly is not anthropogenic (i.e. of human origin), or that it is too recent to be an underwater archaeological item, until this has been confirmed, an anomaly must be regarded with the same caution as an underwater archaeological item.

Underwater archaeological items

Anomalies may indicate that an underwater archaeological item is present in a given area of contact. In this context an underwater archaeological item represents an object or site of archaeological and heritage significance (together with its archaeological and natural context) that has the potential to represent UCH as defined by the UCH Act. While all personnel involved in offshore renewables development projects may be able to identify and designate anomalies of archaeological interest, their assessment and determination as underwater archaeological items and UCH can only be undertaken by a suitably qualified and experienced archaeologist.

4.2 Geophysical survey

Acoustic, magnetometric and geoelectrical surveys are vital parts of any offshore exploration programme. These methods are also widely utilised in shallow and deep-water archaeology. The information acquired through these methods is compatible with both engineering proposes and UCH management needs and can be utilised very successfully for UCH identification purposes.

In terms of UCH management, data from the main categories of geophysical instruments can reveal the following general types of information.

Instrument	Type of UCH	Potential Information
Side-scan sonar	Aboriginal and Torres Strait Islander UCH	Acoustic imagery of seabed anomalies associated with potential submerged prehistoric landscape features
	Shipwrecks and Aircraft Wrecks	Acoustic imagery of seabed anomalies associated with potential shipwrecks, aircraft wrecks or parts thereof (e.g. fragments of vessels, airplanes and vehicles, anchors, ballast piles etc)
	Ordnance and others	Acoustic imagery of seabed anomalies associated with single items and historical ordnance (single anchors, naval mines, torpedoes, jettisoned and disposed ordnance etc.)
Multibeam echosounder	Aboriginal and Torres Strait Islander UCH	Seabed topographical anomalies associated with potential submerged prehistoric landscape features
	Shipwrecks and Aircraft Wrecks	Seabed topographical anomalies representing exposed shipwrecks, aircraft wrecks or parts thereof that may be assessed as UCH

Low frequency profilers	Aboriginal and Torres Strait Islander UCH	Sub-bottom stratigraphic features and anomalies associated with potential relic submerged landscape features
Magnetometers and gradiometers	Shipwrecks, aircraft wrecks and other	Magnetic anomalies associated with potential shipwrecks, aircraft wrecks and vehicles, or parts thereof (e.g. fragments of vessels, airplanes, single anchors, ballast piles etc), or historical ordnance

Table 4: Geophysical survey technologies and application potential

In most cases combinations of overlapping geophysical data are required to positively identify anomalies of archaeological interest as such. While some of these and/or most can already be identified and designated as anomalies of archaeological interest by the hydrographic survey teams, a full review of all geophysical data by a suitably qualified and experienced archaeologist or archaeological geophysicist is required in order to confirm that potential anomalies of archaeological interest within a data package has been assessed to standard and all anomalies of archaeological interest marked. Further assessment and specialist review is then usually required in order to confirm whether anomalies of archaeological interest represent underwater archaeological items and UCH.

Regardless how precise and hi-resolution, geophysical surveys are usually insufficient to identify all underwater archaeological items within a given search perimeter. While the geophysical instruments used in offshore survey are designed for large scale investigations and are great for identifying sizeable anomalies of archaeological interest such as landscape features, whole shipwrecks etc., underwater archaeological items can be of much smaller size (Aboriginal and Torres Strait Islander stone tools, ship's anchors, historical personal items from shipwrecks). Such items can be virtually undetectable via geophysical survey but can be revealed through other methods.

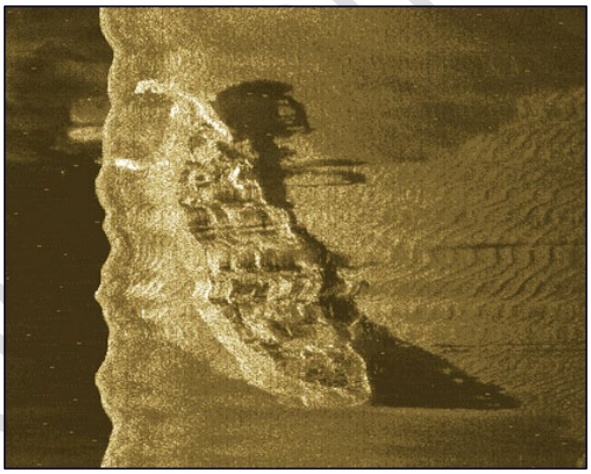

Figure 10: Example of a side scan sonar signature of a trawler shipwreck (credit: Wikimedia Commons)

4.3 Benthic and geotechnical survey

Benthic and geotechnical surveys represent an intrusive method for acquiring information on seabed environment and composition. In many cases, the equipment used for retrieving benthic grabs and geotechnical cores may encounter underwater archaeological items that may prove to constitute UCH on assessment. Furthermore, geotechnical cores may penetrate through the Holocene seabed deposits on the Australian shelf and retrieve information on Pleistocene ones. The latter deposits may represent relics of dry lands inhabited by past Aboriginal and Torres Islander people and may contain cultural items such as small tools and lithics that would constitute UCH. Such deposits may also bear information on Pleistocene environment pertinent to archaeology and may prove significant on assessment.

It is therefore strongly recommended that any results from benthic and geotechnical investigations during an offshore renewables development be provided for assessment to a suitably qualified and experienced archaeologist.

4.4 Visual surveys

Visual surveys and inspections via remote operated vehicles (ROV) and by commercial divers are a standard part of offshore development and underwater construction. In many cases these are undertaken to inspect underwater anomalies that may represent impediments/obstacles/constraints to

engineering and construction. As in some cases such anomalies may also be of archaeological interest, a suitably qualified and experienced archaeologist is recommended to be involved in these inspections. Should any underwater archaeological items be revealed, photographic and video materials pertinent to these inspections would represent a record of UCH and should also be provided to the project archaeologist for assessment and inclusion in the project's UCH management records.

Figure 11: Iron ballast *pigs* marking the site of the *Dunbar* historic shipwreck (1857), a NSW State Heritage listed archaeological site. Shipwreck sites where most of the wrecked ship's hull structure has deteriorated and disappeared can be undetectable for geophysical instruments. Such sites may be identified by visual inspections or by being accidentally snagged by seabed equipment and pulled out on deck. (credit: Photograph of ballast - David Nutley; Inset photograph of diver by Colin Browne)

4.5 Seabed disturbance by construction, maintenance and decommission of facilities

Offshore construction, maintenance and decommission of offshore renewables facilities and infrastructure involve a high number of activities representing seabed disturbance, such as but not limited to anchoring, excavation, grab sampling, pile driving, removal of obstacles etc.

Any concealed and therefore unassessed underwater archaeological items beneath the seabed within the project footprint that come in contact with the relevant equipment are likely to be revealed and, in some cases, even accidentally recovered on deck (e.g. this is often the case with historical anchors). In such cases a suitably qualified and experienced archaeologist must be contacted immediately to inspect and assess these items. Any pertinent information should be provided to the project archaeologist for inclusion in the relevant project's UCH management records.

5.0 KEY UCH CONSIDERATIONS IN OFFSHORE DEVELOPMENT

Awareness of potential UCH constraints and a flexible approach to UCH management are vital for ensuring a smooth workflow during the life of an offshore renewables project. In terms of UCH management outcomes, considering preservation *in situ* as the first option can contribute to avoiding considerable costs associated with intrusive archaeological investigations and salvage programmes.

Community consultation plays a crucial part in certain aspects of UCH management. Whether Aboriginal and Torres Strait Islander UCH items are identified, or WWI or WWII shipwrecks are uncovered, the relevant stakeholders should be engaged, and an appropriate community consultation undertaken in order to ensure and promote stakeholder participation in determining heritage outcomes.

While in offshore renewables industry UCH is usually regarded as a constraint, when appropriately managed, underwater archaeological discoveries can present an outstanding opportunity to elevate a project's public image.

5.1 Appropriate levels of assessment and management

Appropriate UCH assessment and management should be among the key priorities throughout the life of an offshore renewables development project. With regard to the richness and diversity of Australian UCH and considering the current Commonwealth, State and International best practice standards pertinent to UCH, an *ad hoc* approach to assessing and managing UCH is not advisable.

The Commonwealth legislative philosophy for the protection and management of UCH involves the introduction of protection over all traces of human existence located underwater. This means that any item of human origin revealed on the seabed at any time during an offshore development has the potential to represent significant UCH. Under the UCH Act, damaging such UCH can be considered a Federal crime. UCH management in offshore development therefore contains a very high risk of unpredictable delays as unexpected UCH finds are made on the seabed and subsequently assessed and managed via the relevant heritage impact approval pathways.

Adequate UCH management throughout a project lifetime can minimise delays and contribute to a smoother workflow. This can be achieved via a systematic and log-term approach aimed at ensuring that a project is sufficiently prepared to meet the legislative requirements in view of UCH constraints. While in some cases the introduction of 'safety net' measures such as *Unexpected Finds Protocols* may be reasonable, adequate or even necessary (see 6.3 below), these can rarely function in isolation and the adoption of overarching long-term UCH management strategies is strongly advised.

A best practice approach for appropriate level of UCH assessment in offshore renewables development is detailed in Chapter 6.

5.2 Preservation *in situ* as the first option

According to the Rules contained within the Annex to the 2001 UNESCO Convention, preservation *in situ* should always be considered as the *first option* in the approach to the management of UCH. This is reflected within the UCH Act. Within the Annex to the UNESCO Convention, the justification of considering *in situ* preservation as the first option is related as follows:

In situ preservation is the first option, because

- The site of a historic event is authentic
- Context defines significance
- Heritage is finite, and
- Many sites cannot be preserved *in situ*

Nevertheless, according to the Annex, 'first option' is not to be regarded the same as 'only option'. Partial or total archaeological excavation and subsequent controlled removal or salvage of UCH items may be warranted or even encouraged under certain circumstances.

Such outcomes can be preferable for several reasons, should the significance of UCH items be appropriately assessed and clearly understood. The reasons may be

external, such as development projects for which many UCH sites need to make way.
A salvage/removal outcome however, is very unlikely to be warranted for sites whose existence or significance is unknown or only vaguely understood until development is well underway. The need for appropriate levels of assessment and management is thus further emphasised.

5.3 Community consultation

While under the UCH Act 2018 there is currently no legal obligation for community consultation pertinent to the management of UCH, according to the UNESCO 2001 Convention and the ICOMOS 1996 Sofia Charter, co-operation with local communities and groups is to be encouraged. Furthermore, co-operation with individuals and groups that are particularly associated and concerned with specific aspects of UCH is strongly recommended. It is desirable that any intrusive archaeological works (such as archaeological excavation and salvage), should such be undertaken, proceed with the consent and endorsement of all interested public members, communities and groups.

An offshore renewables development project should aim to involve communities and interest groups in UCH management to the extent that such involvement is appropriate, reasonable and compatible with best practice. Certain UCH items that may be revealed and/or impacted by offshore development may be of exceptional cultural significance and heritage value to certain community members and groups such as, but not limited to:

- Indigenous Stakeholders (Aboriginal and Torres Strait Islander individuals, communities and community organisations)
- Shipwreck and aircraft survivors' and victims' descendants and relatives, including associations of the latter both in Australia and abroad
- War veterans, veteran groups and associations, both in Australia and abroad

This is particularly accentuated in cases where Aboriginal and Torres Strait Islander heritage values are identified, or when shipwrecks and aircraft wrecks are revealed that represent loss of life at sea and contain human remains. Consultation with the relevant community members and stakeholder groups should be undertaken as soon as practicable when evidence is revealed that may represent UCH items of significance and value to these members and groups.

5.4 UCH as a PR opportunity

The public loves underwater archaeology.

People have always been fascinated by the Ocean and its stories of peril, survival, mysteries, and hidden treasures. In the modern day and age, determined by advancing technologies and expanding maritime activities, news for spectacular underwater archaeological discoveries circulate the Globe each year. In recent years, many of these are being uncovered, studied, and published as a result of offshore development projects, particularly in the Baltic and North Seas. Documentary films exploring these discoveries attract a lot of public attention.

Besides the fact that international best practice places a particular emphasis on dissemination and public interpretation as part of UCH management in the offshore industries (see next Chapter), when managed appropriately, UCH discoveries made in the course of offshore renewables development can present outstanding opportunities to elevate a project's or company's public profile and gain wider approval.

6.0 APPROACHES

Offshore renewable development is characterised by a complex planning process and long operational lifetimes. Meanwhile, offshore construction as well as the operation and maintenance of offshore facilities are generally less flexible than their onshore counterparts. Encountering unexpected or unassessed UCH may therefore cause considerable delays and budget strains to an offshore renewables development should UCH issues be tackled on an *ad hoc* basis.

Early assessment of UCH prior to any disturbance activities is critical to guaranteeing a timely introduction of appropriate management and mitigation measures to meet the legal obligations. Potential impacts on the UCH must be assessed prior to consent and wherever possible mitigated either in advance of development, or via conditions requiring the implementation of an archaeological programme and/or management plan.

Results from UCH assessments and archaeological programmes should be made available to the public and appropriate interpretation strategies should be developed as soon as practicable on the completion of the relevant studies to ensure that an intergenerational equity is maintained.

6.1 Early engagement

Due to the nature of the offshore renewables industry, UCH impact mitigation and management is set out to be an ongoing process that needs to be guided by appropriate strategies to ensure smooth operation in the long run. Ensuring that a suitably qualified and experienced UCH consultant/project archaeologist is engaged as early as practicable in the project timeline is the first step to successful UCH management. Ideally an UCH consultant would be already involved at the early planning stages of the project (feasibility analysis and scoping) and would remain involved (either permanently or on an on-call basis) for the full life of the project.

6.2 Consultant briefs

An adequate consultant brief is critical to make sure that the UCH management process starts off on the right track and is within scope from the very beginning. As a minimum, an UCH consultant brief should include the following key details:

- Name of project and principle contractor
- Project area boundaries, defined by co-ordinates
- Indicative scope
- Summary of proposed assets and their locations
- Summary of pre-construction investigations planned
- Summary of proposed construction methods
- Projected timelines.

6.3 Mitigation and management process

Offshore construction costs are considerably higher than their onshore counterparts. Published statistical research shows that offshore windfarm developments usually entail more than double capital investment costs compared to onshore ones, including a marked increase for all other costs except for the wind turbines (Maienza et al., 2018).

In consequence to the above, any exploration, construction and maintenance activities for the offshore renewables industry are bound to be correspondingly less flexible than onshore ones. These flexibility constraints create a higher risk of unplanned delays and unexpected costs associated with unassessed UCH. However, these can be successfully compensated via a pre-emptive and flexible approach to UCH management.

The following sections detail the main stages of UCH management that should be undertaken along the life of offshore renewables projects in Australian waters with regard to current legal requirements.

Planning Stages		Stages of UCH Management
Pre-approval	Feasibility and Scoping	1. UCH Constraints Analysis
	Environmental Surveys	2. UCH Impact Assessment
		3. Archaeological Programme (if required)
Post-approval	Early Works	
	Construction, Operation, Maintenance and Decommission	4. UCH Management Plan

Table 5: Stages of planning and UCH Management

UCH Constraints Analysis and/or Desktop UCH Assessment

Australia's vast coastline predetermines extensive maritime boundaries and a seabed area of immense extent. While the latter is still not fully explored and charted, a number UCH works have already been undertaken along the most populated coastlines and some knowledge on the types and distribution of UCH in some areas of Australian waters is readily available that can inform the early planning stages of an offshore renewables proposal.

An *UCH Constraints Analysis* or *Desktop UCH Assessment* is a basic document that details the relevant legal requirements pertinent to potential UCH to the project area in regards of its geographical and administrative location, summarises the state of art on archaeological knowledge of the project area and identifies the general directions for further managing potential UCH constraints ahead of an offshore renewables project.

Typically, an *UCH Constraints Analysis* would contain the following information:

- Legislative background and review of statutory controls
- Preliminary background research and relevant heritage register searches
- Mapping of known UCH features identified through the heritage searches
- Archaeological analysis of accessible legacy geophysical survey data from earlier surveys
- Mapping of additional UCH features identified through data analysis
- Risk analysis and detailed summary of identified heritage constraints
- Mitigation and management recommendations

This kind of document would normally be prepared early on within the project timeline and would inform the feasibility analysis and scoping stages of early planning. Due to its desktop character, the scope of such a document would be too limited to inform an UCH significance and impact assessment within the project area which would be required for the approvals applications.

UCH Impact Assessment

Construction works for offshore renewables development are usually preceded by early remote sensing and reconnaissance surveys undertaken to inform the project design and layout of assets prior to seeking building approvals. While these can have varying scope and coverage, the data they produce usually constitutes the most comprehensive all-around information on the project area acquired in a project's lifetime that is also utilised to inform the relevant environmental assessments. As discussed in Section 4, remote sensing and other exploratory survey works also have the potential to reveal extensive information on UCH within the project footprint. The data acquired during such works should therefore be utilised as the basis to inform an UCH impact and significance assessment.

An *UCH Impact Assessment* would be the main UCH assessment document dealing with potential and identified UCH within a project footprint, as part of the overall *Environmental Impact Statement*. This would be the main supporting document when seeking approvals to commence seabed disturbance works for offshore renewables development.

Normally an *UCH Impact Statement* would contain:

- Detailed review of statutory controls
- Detailed review of environmental background (in regard to Archaeology)
- Detailed review of historical and cultural background
- Archaeological analysis of project specific geophysical and benthic data
- Review and detailed analysis of any identified UCH
- Informed predictions on potential UCH resources

- Significance assessment of identified UCH against the criteria detailed in the *Underwater Cultural Heritage Rules 2018*
- Impact assessment, and
- Mitigation and management recommendations

While sufficient to inform the initial environmental and UCH impact assessments required for the relevant approvals, in most cases exploratory remote sensing and benthic survey data is considered of low resolution for the purposes of UCH management throughout a project lifetime. This data usually covers a relatively small percentage of the overall project area and is therefore insufficient to inform an exhaustive UCH management document covering all potential UCH constraints within a project area as large portions of the seabed remain unsurveyed.

Exploratory remote sensing and benthic survey data is also usually insufficient to inform the final engineering and construction designs for an offshore renewables development and further small scale and site-specific works are required prior to construction works. This creates an opportunity to collect more data that can be utilised for UCH management purposes and usually provides sufficient information to devise long term UCH management strategies. These are usually detailed in an *UCH Management Plan* which would form the main strategic document to guide ongoing UCH impact mitigation and management throughout the construction process and the full project lifetime including decommission.
In isolated cases, t
he introduction of an *Archaeological Programme* comprising various sets of archaeological activities may also be required prior or concurrent with the project early works.

Archaeological Programme
In the unlikely event that extensive UCH is identified within a project footprint and potential impacts to this UCH are deemed unavoidable, the undertaking of a detailed programme of archaeological investigation may be required ahead of, or concurrent with, seabed disturbance works. A detailed *Archaeological Programme* may include various sets of activities tailored to the needs of the project in fulfilling the relevant legal requirements. These would be aimed at acquiring as much information on the UCH under threat as practicable and identifying immediate courses of action, thus fulfilling the project's legal obligations in terms of UCH impact mitigation.

An archaeological programme may consist of various combinations of archaeological activities such as, but not limited to:

- Detailed archaeological remote sensing and visual surveys
- Digital recording and non-destructive investigations of UCH *in situ* (e.g. ROV-based videography, photography, photogrammetry, 3D laser scanning)
- Consultation with community groups if Aboriginal or Torres Strait Islander heritage or any other cultural/community groups with a specific interest in the identified site/s
- Environmental sampling of UCH items and their immediate surroundings (including analysis of samples)
- Archaeological excavation (including extraction, analysis and conservation of archaeological material)
- Controlled salvage

Archaeological excavation and salvage are destructive processes that constitute total UCH impact. It must be noted that under the UCH Act and in accordance with the international best practice protocols, preservation *in situ* via total avoidance is the preferred UCH management outcome. Therefore, all efforts should be made not to reach a scenario where intrusive archaeological activities such as archaeological excavation and salvage are required.
An archaeological investigation programme is usually sanctioned by the relevant Commonwealth, State and/or Territorial stakeholders under a separate application and approval process which can vary subject to the project area location. An *Archaeological Programme* is usually finalised by preparing an exhaustive report of all archaeological activities undertaken which is then deposited with the relevant authorities and stakeholders.

UCH Management Plan
An *UCH Management Plan* is the overarching document summarising all UCH information accumulated in the assessments process. Based on this information, an *UCH Management Plan* devises the most appropriate long-term approaches and strategies pertinent to UCH management within the project footprint for the project lifetime.
Usually such a document comprises the following key components:

- Summary of statutory controls
- Summary of relevant heritage features and significance
- Summary of potential impacts

- Detailed mitigation and management strategies and policies including archaeological watching briefs and unexpected finds protocols
- Notification and reporting procedures.

In the usual case, a *UCH Management Plan* is characterised by adaptive management approach and should undergo cyclical review at appropriate time intervals.

6.4 Dissemination, public interpretation, scientific publication

According to the 1996 ICOMOS Sofia Charter, public awareness of the results of investigations and the significance of UCH should be promoted. This can be achieved through popular presentation in a range of media, including TV, newspapers and online media. Furthermore, collaboration with museums and research institutions is to be encouraged and provision for visits, research, and reporting by collaborating institutions should be made in advance of investigation. Syntheses and reporting of the results must be made available as soon as possible and deposited in the relevant public records.

Dissemination and public interpretation of UCH is an integral part of UCH management and should therefore be among the priorities of offshore renewables planning. Provisions for dissemination of any UCH discoveries and results of UCH-related archaeological investigations within the project lifetime should be made in advance and appropriate resources for dissemination should be foreseen when budgeting for UCH management in the offshore renewables industry.

In some cases, where highly significant UCH items are revealed and investigated within a project footprint, the setting up of an UCH *Interpretation Strategy*, guiding site-specific UCH *Interpretation Plans* may be an additional UCH management requirement for the lifetime of the project.

Just as on land, development-led archaeology in maritime and offshore projects presents challenges, but also enormous opportunities for archaeological research. Scientific publication on all significant UCH discoveries made during offshore renewables development is strongly encouraged.

7.0 CONCLUSIONS

This non-statutory document has been prepared in accordance with the Commonwealth *Underwater Cultural Heritage Act 2018* the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* 2001 and the relevant State and Territory legislations. As there are currently no available statutory Guidelines for the application of the UCH Act, this document is aimed at filling the gap.

The approaches outlined in this document based on original research and analysis of the relevant Commonwealth legislation and international best practice documents. It reflects Comber Consultants' views and is aligned with the Company's policies.

The policies outlined in this document are specific to the planning process and aimed at ensuring the appropriate management of potential UCH values within the footprint of offshore renewables developments on the seabed or within the intertidal zone.

This document is designed to inform the planning of all stages of the development process where UCH is a factor, including:

- Pre-development environmental and feasibility assessments
- Geophysical surveys and environmental sampling
- Construction, operation and maintenance of infrastructure and offshore facilities, and
- Decommission of infrastructure and offshore facilities.

Offshore renewable development is characterised by a complex planning process and long service lifetimes. Meanwhile, offshore construction as well as the operation and maintenance of offshore facilities are generally less flexible than their onshore counterparts. To ensure appropriate levels of UCH management throughout a project lifetime the four-stage flexible approach described in Table 4, Section 6.3 above, is developed in conjunction with the pre-approval and post- approval planning stages to meet legal requirements and fulfill ethical obligations to particular cultural groups, i.e.:

1) UCH Constraints Analysis

2) UCH Impact Assessment

3) Archaeological Programme (if required), and,

4) an UCH Management Plan.

Early assessment of UCH prior to any disturbance activities is critical to guarantee a timely introduction of appropriate UCH management and impact mitigation measures to meet the legal obligations. Three key considerations are:

- **Considering preservation *in situ*:** Considering preservation *in situ* as the first option can contribute to avoiding considerable costs associated with intrusive archaeological investigations and salvage programmes.

- **Community consultation:** Community consultation plays a crucial part in certain aspects of UCH management an appropriate consultation should be undertaken to ensure and promote stakeholder participation in determining heritage outcomes.

- **Promoting public awareness:** Promoting public awareness of the results of investigations and the significance of UCH should be promoted. While in offshore renewables industry UCH is usually regarded as a constraint, when appropriately managed, underwater archaeological discoveries can present an outstanding opportunity to elevate a project's public image.

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