

Technical Report D

# Heritage Assessment (Historic Shipwrecks)

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# **Offshore Artificial Reefs Project**

## ***Submerged Cultural Heritage Impact Assessment:***

### ***Desktop Review***

**December 2008**

**Newcastle, Sydney, Wollongong,  
NSW**

**Offshore Artificial Reefs Project**

***Submerged Cultural Heritage***

***Impact Assessment:***

*Desktop Review*

*Prepared for:*

**Cardno Ecology Lab**

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## Abbreviations

AHS	Australian Hydrographic Service
AR	Artificial Reef
GPS	Global Positioning System
HA	(State) <i>Heritage Act 1976</i>
HIA	Heritage Impact Assessment
HMAS	Her (or His) Majesty's Australian Ship
HO	Heritage Office
HSA	(Commonwealth) <i>Historic Shipwrecks Act 1977</i>
Km	Kilometre
LAT	Lowest Astronomical Tide
M	Metre
Nm	Nautical mile.

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## Executive Summary

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This report presents the findings of a desktop review of the potential impacts on submerged cultural heritage associated with the installation of offshore Artificial Reef (AR) units in locations off Newcastle, Sydney and Wollongong, NSW. Utilising information from Government databases, published and unpublished sources, a list of historically documented shipwrecks which may be affected by the proposed seabed development was drawn up.

The desktop review found that there are no known shipwrecks or other submerged cultural heritage within close proximity (< 0.25 nm) of the proposed locations of the AR units. Furthermore, it was assessed that the likelihood of hitherto undiscovered / unreported wrecks to occur in close proximity of the proposed locations of the AR units is as follows:

- Wollongong – almost impossible;
- Newcastle – unlikely
- Sydney – possible.

Nonetheless, due to age of the submerged cultural heritage (shipwrecks) identified in the study, the Commonwealth *Historic Shipwrecks Act 1976* and/or NSW *Heritage Act 1977* affords high levels of protection from intentional adverse impacts.

Based on the findings of the study the following recommendations are presented:

### Recommendation 1

*To complete the submerged cultural heritage impact assessment, a qualified maritime archaeologist should review the findings of the marine geophysical survey for the purposes of identifying cultural material.*

The report to be produced from the review will list anomalies that may be of cultural heritage significance. The report will most likely recommend in the first instance that any cultural anomalies be avoided. If this is not feasible, a visual diver inspection would be required to ascertain the nature, significance and legal status of the anomaly. Arising from the findings of the inspection, appropriate mitigation measures will be made which will seek to avoid or minimise the impacts to the cultural heritage significance of any site(s).

### Recommendation 2

*Information on any uncharted shipwreck discovered during the marine geophysical survey should be provided as soon as practical to appropriate regulatory authority in accordance to Section 17 of the Commonwealth Historic Shipwrecks Act 1976.*

## **1.0 INTRODUCTION**

### **1.1 Background**

The NSW Department of Primary Industries (DPI) with funding from the Recreational Fishing Trust, are proposing to install offshore Artificial Reefs (AR) at three selected locations along the NSW coastline; one each off Newcastle, Sydney and Wollongong.

Cosmos Archaeology Pty Ltd has been commissioned by Cardno Ecology Lab to undertake a maritime Heritage Impact Assessment (HIA) for each proposed reef location. This report is a desktop or baseline review, which will form the basis of the Heritage Impact Assessment. The next phase of the HIA will be the review of remote sensing data collected from the proposed artificial reef locations for the potential cultural anomalies, followed up with diving inspections, if required.

### **1.2 Proposed Development**

The proposed offshore AR project will involve the installation of four 12 m tall reef structures at each proposed site; being off Newcastle, Sydney and Port Kembla. Each structure is expected to weigh approximately 35 tonnes and will anchor itself to the seabed under the structures own weight. The initial phase of the AR project will cover an estimated 0.5 km<sup>2</sup> to 1km<sup>2</sup> area of the seabed at each site, with the potential in the future to expand.

### **1.3 The Study Areas**

There are three individual study areas for this maritime HIA ; Newcastle, Sydney and Wollongong. The proposed AR in the Newcastle area is approximately 5 km ENE off Lakes Entrance. The proposed AR site in the Sydney area is approximately 1.5 km SE from South Head at the entrance to Sydney Harbour; and the location of the Wollongong AR is approximately 5 km NE of the entrance into Lake Illawarra.

For the purposes of this assessment, the study area for each of the proposed sites comprises the seabed within a 0.25 nm radius around the proposed positions of each AR unit. The coordinates for the proposed location of each AR unit is presented in the table below (Table 1).

Potential Site	Potential AR unit deployment locations	Latitude (S)	Longitude (E)
a) Newcastle	Newcastle North (NN)	33°03.543' S	151°43.227' E
	Newcastle East (NE)	33°03.703' S	151°43.424' E
	Newcastle South (NS)	33°03.866' S	151°43.230' E
	Newcastle West (NW)	33°03.706' S	151°43.038' E
b) Sydney	Sydney North (SN)	33°50.368' S	151°17.735' E
	Sydney East (SE)	33°50.529' S	151°17.929' E
	Sydney South (SS)	33°50.692' S	151°17.733' E
	Sydney West (SW)	33°50.532' S	151°17.535' E
c) Wollongong	Wollongong North (WN)	34°31.037' S	150°55.308' E
	Wollongong East (WE)	34°31.200' S	150°55.500' E
	Wollongong South (WS)	34°31.361' S	150°55.308' E
	Wollongong West (WW)	34°31.199' S	150°55.110' E

**Table 1: Proposed location of each Artificial Reef (AR) Structure** (adapted from Appendix C of Ecology Lab Feb 2008)

## 1.4 Scope of Study

This study will assess the potential for the presence of submerged cultural heritage (namely shipwrecks, but also plane wrecks, dumped material etc.) within the immediate locality of the each of the proposed AR units.

The study does not assess:

- Aboriginal cultural heritage, or;
- Any future proposed enlargement of the ARs.

## 1.5 Objectives of Study

The objectives of the study are to:

- Undertake a detailed desktop search of known and potential shipwrecks and other forms of cultural heritage that may be in the designated locations;
- Present an assessment of the expected condition of wrecks located within each designated area based on size, hull type, age, seabed type and other environmental conditions, and;

- Present recommendations which will include preferred locations as a result of the research findings.

## 1.6 Conduct of the Study

The study was conducted in the following manner:

**A.** *Identification of the variety, frequency, extent and condition of the submerged cultural heritage within the study area.*

As the study areas are located off the coast of central NSW, the overwhelming majority of cultural heritage on the seabed are shipwrecks, most of which have been accidentally created. Sites whose positions are known within an acceptable degree of accuracy are presented in **Section 3.2**. Those sites which could only be located within a wide geographical area are listed in **Section 3.3**.

The sources accessed to obtain this information are listed and described in **Section 2.1**. A discussion on the quality of the spatial information for individual wrecks according to the source is presented in **Section 2.2**. As site specific information is not available for most of the wrecks, general statements on the predicted condition of the sites are presented in **Section 2.3**. **Section 2.4** sets out the criteria and nomenclature for assessing the likelihood of submerged cultural sites to be in the vicinity of the proposed locations of the AR units.

**B.** *Legislative compliance requirements*

A review of relevant legislation, both Commonwealth and State, is required to determine what, if any, approvals are required with respect to the protection of the cultural heritage values of the identified submerged cultural heritage sites. A discussion on each relevant Act is presented in sub-sections in **Section 4.0**.

**C.** *Mitigation Strategy*

The recommended measures to reduce or negate the impact of the proposed development on the submerged cultural heritage are presented in **Section 5.0**.

## 2.0 STUDY APPROACH

### 2.1 Sources Consulted

A number of different sources were consulted for this study, they are as follows:

#### ***NSW Historic Shipwrecks Database (Maritime Heritage Online)***

This database is maintained by the NSW Heritage Office and contains upwards of 2,000 wrecks.<sup>1</sup> This database has been built up around historical accounts of the loss of vessels, mainly through the systematic examination of newspapers from the 1790s to the present day. The database has been augmented by other sources such as archival information from the Australian Hydrographic Office (see below). This source formed the basis of the study.

#### ***Shipwreck Atlas of NSW***

Published by the NSW Heritage Office, the Atlas is a graphic and abbreviated version of the NSW Historic Shipwrecks Database.<sup>2</sup> Last printed in 1995, the information in the Atlas is not as up to date as the Database but does graphically depict the location of wrecks known at the time of publication.

#### ***Australian Hydrographic Office***

A list of wrecks and their positions, plotted on a 1966 edition (printed 1987) of navigation chart AUS 808, given to the Heritage Office, NSW, by the then Australian Hydrographic Office in 1990. This information has been incorporated into the NSW Historic Shipwreck Database (see above).

#### ***Australian Hydrographic Service***

The Australian Hydrographic Service (AHS) has presented on its web site a list of scuttled wrecks off the Australian coast. The AHS also provides the location of other material that has been dumped by the Royal Australian Navy in Australian waters; this includes the dumping of ammunition, spoil dumping grounds, non-dangerous materials (such as pallets and vehicles) as well as chemicals dump sites.<sup>3</sup> This is provided in the interests of public safety, and particularly for mariners to help prevent accidental discovery of dumped hazardous substances. The spreadsheet of wreck sites, hazardous material dump sites and dredge (and other) spoil sites, provided on the website was obtained from the Australian Department of the Environment and Water Resources website on Coastal and Marine Pollution.<sup>4</sup>

#### ***John Riley, diver and iron shipwreck expert.***

Mr. Riley has dived on many of the deep water wrecks off the Sydney coast and is considered an expert on steam ship technology. Through his own personal efforts he has located many of these vessels lost off the NSW coastline. Mr Riley has compiled a database of vessels that he has both dived on and recorded, or knows the location of that have yet been registered on the NSW Shipwrecks Database. This resource aids in

<sup>1</sup> Heritage Office, NSW (2007) *Maritime Heritage Online*, NSW (<http://maritime.heritage.nsw.gov.au/public/welcome.cfm>)

<sup>2</sup> Heritage Office, NSW (1995) *Shipwreck Atlas of NSW*

<sup>3</sup> Australian Hydrographic Service (2007) *Sea Dumping in Australia* (<http://www.hydro.gov.au/n2m/dumping/dumping.htm>)

<sup>4</sup> Department of the Environment and Water Resources, (2007) *Coastal and Marine Pollution*. (<http://www.environment.gov.au/coasts/pollution/dumping/index.html>)

including and excluding shipwrecks that may be within each of the study areas. His 1988 report on shipwrecks in NSW is based on his own research and is unpublished.<sup>5</sup>

## 2.2 General Statements on Site Locations

Few of the sites (all shipwrecks) presented in this study have accurate positions. This is because most of the shipwrecks identified in the study have not been located (or more precisely, their location is not known by the relevant Government authorities) and therefore, only broad areas within which they can be expected to be found can be presented with any confidence. The size of the area within which a given wreck may be located depends on the quality of the data available – ‘sunk 2 nm east of South Head’ as opposed to ‘left Sydney for New Caledonia and never seen again’. With such information a determination can only be made as to the likelihood or probability of a given wreck being within close proximity to any of the proposed locations of the AR units.

As for the wrecks which have been located, designating accurate positions was not always possible either as, in most cases, it is not known how their positions were recorded, i.e. GPS versus compass versus sextant. This applies to wrecks so marked on recently published charts, as such information is usually transferred from older charts without verification.

A summary of the expected accuracy of wreck positions from the sources consulted is as follows :

### ***NSW Historic Shipwrecks Database (Maritime Heritage Online)***

Most of the shipwrecks obtained from this source have not been found (or more accurately, if they have been found they have not been reported to the NSW Heritage Office). Some wrecks that have been found have a latitude and longitude position but the accuracy of that position could not be determined as the method used in obtaining the position is not known, and in rare cases the datum used has not been defined.

### ***Shipwreck Atlas of NSW***

The positions for known wreck sites marked on the Shipwreck Atlas of NSW are not meant to be accurate but are intended to give a general location.<sup>6</sup>

### ***Hydrographic Office***

The positions given for the wrecks from this source appear to have been obtained prior to the introduction of GPS and have been rounded off to the nearest 10" to 12". This information was indirectly obtained through the use of the NSW Historic Shipwrecks Database.

### ***Australian Hydrographic Service***

It is unclear where the Australian Hydrographic Service obtained the positions of the wrecks and dumping grounds around the three study areas. When mapped for investigation purposes, each site was given a 0.5 nm buffer to take into consideration any inaccuracy in the recording, and/or the datum used. Even with this buffer it was determined there were no dumping sites, including vessels, ammunition, chemical, or miscellaneous material, within close proximity to any of the study areas.

<sup>5</sup> Riley, J. 1988 *Shipwrecks of NSW*. Unpublished manuscript.

<sup>6</sup> Nutley, David, Senior Maritime Archaeologist, Heritage Office. pers. comm. 23/3/98

## 2.3 General Statements on Site Formation Processes and Site 'Detectability'

Assessing the condition, or more precisely, the structural integrity of the shipwrecks in this study is of relevance because this can provide an indication of the nature and scale of the obstacle that could affect the installation of the ARs. Shipwreck condition also relates to its 'detectability'. A number of factors influence the condition of shipwrecks, the primary ones being; the materials used in the construction of the vessel, the bottom type upon which the wreck rests on, the depth of the wreck and its age.

With regards to detecting wreck sites, the three most common remote sensing techniques that could be applied would be a magnetometer, a side scan sonar or a multi-beam sonar. The side scan sonar would be more useful in detecting high profile wreck sites while the magnetometer is best employed in searching for sites, with a high ferrous content, which are partially buried or resting on a rocky bottom. Multi-beam sonar data needs to be examined with care. Firstly the multi-beam sonar survey needs to have been carried out with sufficient resolution so as to pick up the at times subtle, signs of a shipwreck. Secondly the data collected is 'cleaned' by the operators, removing eccentric points which are thought to be computing errors, floating weed or fish. Sometimes these 'errors' may again be the subtle signs of a shipwreck. For the optimum use of multi-beam sonar data for the identification of submerged cultural sites, the operators need to be briefed beforehand as to what they should be looking for.

Generally speaking, the deeper and 'younger' the wreck, the better preserved it would be. Also a wreck resting on sandy bottom would be better preserved than if it was resting on a rocky bottom. In conjunction with these factors, the method and type of construction of the vessel is the most important variable when it comes to assessing the condition of a wreck. The shipwrecks presented in this report have been subdivided into categories based on their construction, they are:

### ***Iron/steel hulled wrecks***

If resting on a sandy bottom, it could be expected that the hull integrity of the wreck would be relatively well intact. The hull along midships may have collapsed but the stern and bow sections may still be upright, or heeled to one side. The engine components, if any, would be largely intact and *in situ*. Such vessels on a rocky bottom would be relatively disarticulated, though the components of the vessel would still be present. Iron/steel wrecks on either bottom type can be detected using a magnetometer. Locating such a wreck site on a rocky bottom with a side scan sonar or multi-beam sonar would be difficult but the opposite is true with such wrecks on a sandy seabed.

### ***Wooden hulled wrecks with engines***

In most cases the hulls of such wrecks would have disappeared. In situations however where the wreck rests on a sandy bottom sections of the hull may have been preserved under the sand. The engine components of such wrecks would be visible. A magnetometer can detect such wrecks on either bottom type. Such wrecks on a rocky bottom would be difficult to detect with a side scan sonar or multi-beam sonar but the opposite is true with such wrecks on a sandy seabed.

**Large tonnage (> 100 ton) wooden hulled wrecks (sail)**

In most cases the hulls of such wrecks would have disappeared. However, in situations where the wreck rests on a sandy bottom, significant sections of the hull may have been preserved under the sand. There would be enough ferrous material present, anchors, chain, winches etc. for such wreck sites to be detected using a magnetometer. The identification of such wrecks site using side scan sonar or multi-beam sonar would be difficult as it could appear as scattered dumped debris, unless the cargo the vessel was carrying was non - perishable, in which case a linear mound may be visible.

**Small tonnage (< 100 ton) wooden hulled wrecks (sail)**

The same as for large tonnage vessels except that the size of the target and the amount of ferrous material present would be considerably less. It would be difficult to detect using a magnetometer and may be mistaken for dumped material debris from side scan sonar or multi-beam sonar imaging.

**2.4 Assessing the Likelihood for the Presence of Sites**

Given that the majority of shipwrecks identified in this assessment have not been located, a measure or assessment of the possibility of they being present within close proximity (< 0.25 nm) of the proposed locations of the individual AR units is required. The table below provides a guide as to the likelihood of any given historically documented shipwreck being in close proximity to a proposed AR unit position (Table 2). The level of historical information available on the wrecking event largely dictates the chance or risk of a wreck being possibly impacted by the installation of an AR unit.

<b>Qualitative Description</b>	<b>Order of probability</b>	<b>Example</b>
Certain	1 (0.999)	Site is known and positioned with a GPS
Almost certain	0.2 – 0.9	Site is known but method of position fixing is unknown
Highly probable	0.1	Vessel lost within 0.1 nm of a AR unit position – i.e. 'Lost 1.5 nm due east of The Gap'.
Possible	0.01	Vessel lost within 1 nm of a AR unit position.
Unlikely	$1 \times 10^{-4}$	Vessel lost within 3 nm of a AR unit position.
Highly improbable	$1 \times 10^{-5}$	Vessel lost between 3 to 5 nm of a AR unit position.
Almost impossible	$1 \times 10^{-6}$	'Vessel left Sydney for New Caledonia and never seen again'

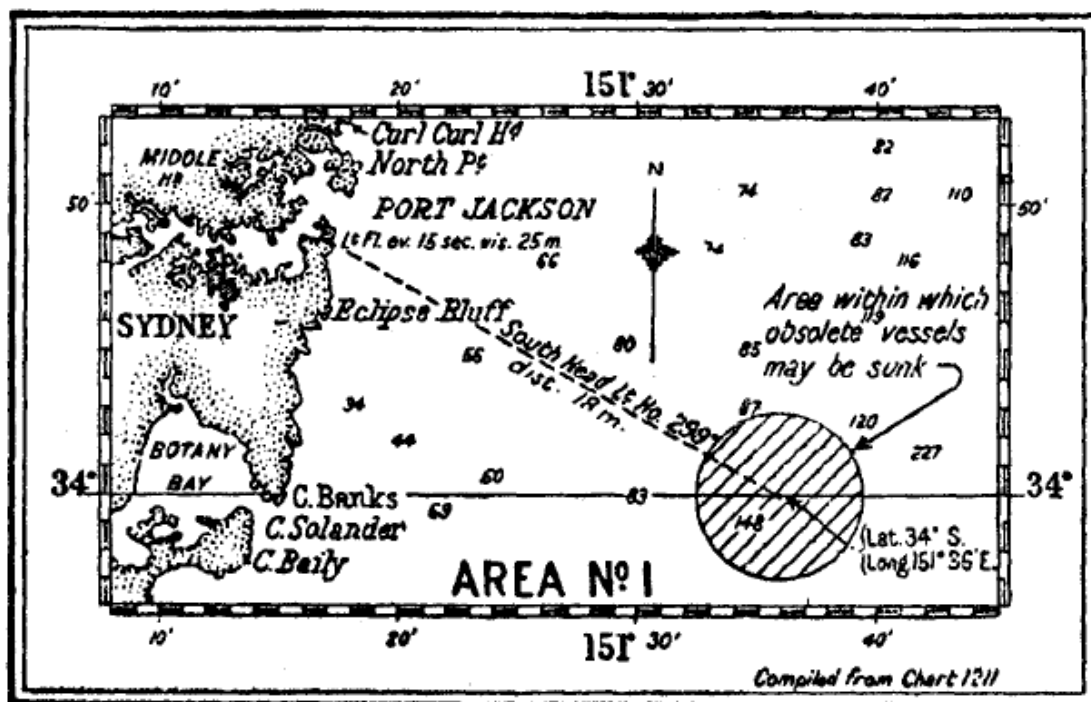
**Table 2: Likelihood guide for the occurrence of submerged cultural sites within close proximity (< 0.25 nm) of the proposed locations of the AR units.**

### 3.0 THE INVESTIGATION

#### 3.1 Cultural Behaviour Within The Study Areas

From the time of the establishment of Sydney in 1788, vessels have traversed the central coast of NSW, that is, the waters north and south of the entrance to Port Jackson. Initially, the volume of traffic was small and limited, maintaining communication with the Hawkesbury and Illawarra region as well as British colonial possessions in South and East Asia. As the colony of New South Wales developed throughout the 19<sup>th</sup> century, vessel traffic increased substantially. A well travelled sea route was the coal run between Sydney and Newcastle and Sydney to the South Coast and Melbourne.

To the south east of Sydney is a formal vessel disposal area that has been in use for most of the 20<sup>th</sup> century (Figure 1). Though a considerable distance from the proposed Sydney AR site, vessels being towed to the disposal grounds passed over the area. It is well documented that vessels and other material were deposited outside the designated zone.



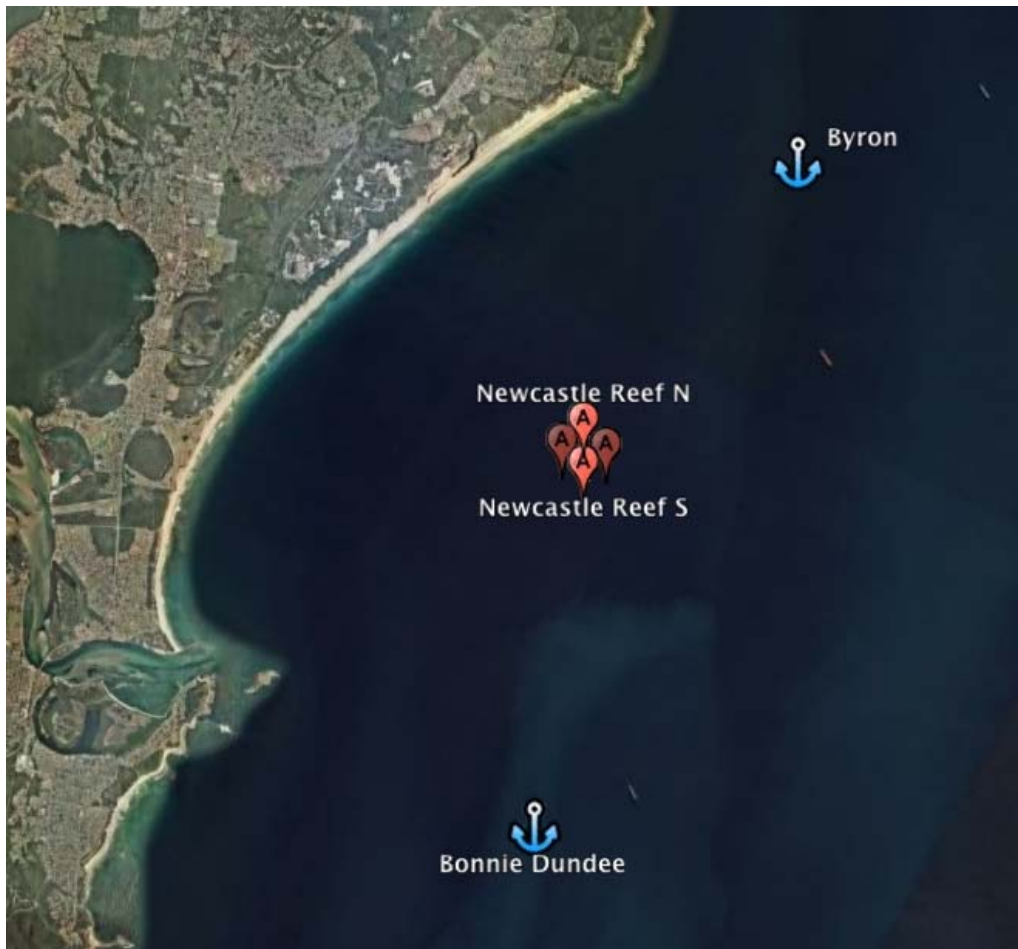
Outside the 100 fathom line within a circular area 5 miles in diameter with centre in latitude 34° 0' S., longitude 151° 36' E., with South Head Lighthouse bearing 200° distant 18 miles.

**Figure 1 Sydney Disposal Area** (Source: Department of the Environment <http://www.environment.gov.au/coasts/pollution/dumping/history/pubs/area-1.pdf>)

## 3.2 Known Submerged Cultural Sites Within The Study Areas

### 3.2.1 Newcastle

There are two known shipwreck sites located within 2.5 nm of the Newcastle study area. These are *Bonnie Dundee*, located to the south of the study area, and the *Byron*, located to the north-northeast of the study area (Figure 2 and Table 3). Both of these wrecks are considered to be well outside of the study area for this assessment.



**Figure 2** The wrecks *Bonnie Dundee* and *Byron* in relation to the Newcastle AR location (©2007 Google™)

Name	Date Lost	Latitude	Longitude	Source	Approximately distance to Study area (nm)
<i>Bonnie Dundee</i>	1879	Not stated		HO wreck dbase	2.5
<i>Byron</i>	1896	Not stated		HO wreck dbase	2.5

**Table 3** Known submerged cultural sites close to the Newcastle AR location

### 3.2.2 Sydney

There are two known shipwrecks located within 0.5 nm of the proposed AR off Sydney. Approximately 0.4 nm WNW from the proposed location of the northern unit is the wreck of the *Royal Shepherd*; and approximately 0.48 nm southeast from the proposed locality of the southern structure is the wreck of the *Dunbar* (Figure 3 and Table 4).

The wrecks of the *Dunbar* and of the *Royal Shepherd* are protected under both the *Historic Shipwrecks Act 1976* and the *NSW Heritage Act 1977*, and the wreck of the *Dunbar* is also listed as a State Significant site by the Heritage Branch, NSW Department of Planning.

The *Dunbar* was wrecked in 1857 on the rocks south of South Head when the ship missed the opening into Port Jackson due to thick fog. The wrecking event occurred on the rocky cliffs where the *Dunbar* struck, with the ship breaking up almost immediately in only 11 m of water. Material from the *Dunbar* would have floated and spread during the wrecking event, as well as afterwards during high activity wave and current action over the site. The extent to which material from the *Dunbar*, or the debris from the wreck has spread cannot be known for certain, however, it can be predicted to have been within the immediate area of the initial incident and scattered further along the cliff line.

The *Royal Shepherd* sank in 1890 after a collision with the collier *Hesketh*, approximately 1 km east of South Head. The vessel sank almost immediately and lies at a depth of 27 m. As the shipwreck is located in relatively shallow water, it is expected that debris from the wreck would have spread away from the wreck site to the NW, pushed along by the prevailing SE swells/surge.



**Figure 3** The wrecks *Dunbar* and *Royal Shepherd* in relation to the Sydney AR location (©2007 Google™)

Name	Date Lost	Latitude	Longitude	Source	Approximately distance to Study area (nm)
<i>Dunbar</i>	1857	33.85013	151.2858	HO wreck dbase	0.4
<i>Royal Shepherd</i>	1890	33.83728	151.2869	HO wreck dbase	0.4

**Table 4 Known submerged cultural sites close to the Sydney AR location**

### 3.2.3 Wollongong

There are no identified shipwrecks in the vicinity of the proposed location of the AR south of Wollongong. The closest known shipwreck is the wreck of the *Franz*, a wooden schooner wrecked in a gale at Windang, approximately 2.5 nm southwest from the proposed reef site (Figure 4 and Table 5). The shipwreck site is not considered in this assessment.



**Figure 4 The wreck Franz in relation to the Wollongong AR location**

Name	Date Lost	Latitude	Longitude	Source	Approximately distance to Study area (nm)
Franz	1879	34.53334	150.8736	HO wreck dbase	2.5

**Table 5 Known submerged cultural sites close to the Wollongong AR location**

### 3.3 Potential Submerged Cultural Sites Within The Study Areas

In addition to the location of known shipwrecks, there are a number of shipwrecks that have yet to be found in the general locality of the three proposed AR locations.

#### 3.3.1 Newcastle

There are five shipwrecks identified as being “lost off Newcastle, Redhead point, Nine Mile Beach” that have not been located (Table 6). Four were driven ashore and wrecked in the surf along Nine Mile Beach and one was lost out to sea.

The *Fido*, was a wooden barquentine wrecked a day after leaving Newcastle in May 1898. The vessel was presumed foundered at sea in a storm, with only debris from the vessel washing up on Nine Mile Beach. There were no survivors or other eyewitnesses that could describe the wrecking event or location where it sunk<sup>7</sup>. A low mound of coke and coal would probably be the most recognisable feature of the wreck of the *Fido*.

Of the remaining four shipwrecks that ran ashore, three were due to adverse weather conditions; including the *Gertrude*<sup>8</sup> (1864), *Grecian*<sup>9</sup> (1864) and the *James*<sup>10</sup> (1864). The fifth vessel, the *Illalong*, was wrecked ashore in heavy fog<sup>11</sup>.

Name	Wrecking Event	Hull Type	Engines	Tonnage	Cargo	Source	Probability within the study area
<i>Fido</i>	Presumed foundered at sea in 1898 off Nine Mile Beach, Newcastle	Wood	No	114	Coal and Coke, 710 t	HO wreck dbase	Unlikely
<i>Gertrude</i>	Driven ashore in gale on Nine Mile Beach, Red Head, Newcastle in 1864	Wood	No	117	General Coastal Cargo	HO wreck dbase	Almost impossible
<i>Grecian</i>	Driven ashore in gale on to Nine Mile Beach, Red head, Newcastle in 1864	Wood	No	209	Ballast	HO wreck dbase	Almost impossible
<i>Illalong</i>	Ran ashore in fog on to Nine Mile Beach, Newcastle in 1848	Wood	Yes	236	General Coastal Cargo	HO wreck dbase	Almost impossible
<i>James</i>	Driven ashore in gale on Nine Mile Beach, Red Head, Newcastle in 1864	Wood	No	114	Coal	HO wreck dbase	Almost impossible

**Table 6 Potential submerged cultural sites close to the Newcastle AR location**

<sup>7</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=1439

<sup>8</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=1359

<sup>9</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=1392

<sup>10</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=1183

<sup>11</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=1314

### 3.3.2 Sydney

There are 15 vessels that have wrecked around Sydney Heads, five of which were lost between, or within, 1.4 nm of Sydney Heads (Table 7). Those reported to have been wrecked between Sydney Heads includes *Pomme de Terre*, which collided with another vessel and sank<sup>12</sup> and the *Ranger* that capsized<sup>13</sup>. The *Peterborough* was wrecked on South Reef at South Head<sup>14</sup>; the *Snowy's* engine exploded 0.5 nm off Sydney Heads<sup>15</sup>, and the *Sisters* sprang a leak in a gale and sunk 1.4 nm east of Sydney Heads<sup>16</sup>. The remainder of the vessels have been described as lost "off Sydney Heads".

With the exception of the *Inca* and the HMAS *Kookaburra*, the vessels lost in this area were of a relatively small size. Only two vessels had engines, the wooden hulled *Snowy* and the iron hulled *Hornet*. The remaining wrecks are of small wooden hulled sailing vessels. Such wrecks would have lost their vessel shape quite quickly in the relatively shallow open ocean environment. Their remains would be mostly buried, with non-perishable cargo and large fittings such as winches/capstains and anchors protruding from the seabed. Such remains would appear as scattered debris on a side scan sonar image.

### 3.3.1 Wollongong

There are no reported shipwrecks that are believed to have been lost off Perkins Beach, Lake Illawarra, Windang Island, North of Port Kembla or South of the immediate Wollongong area. It can therefore be stated that it is almost impossible for any hitherto undiscovered/unreported shipwreck to be within close proximity of the proposed locations of the AR units.

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<sup>12</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=694

<sup>13</sup> NSW Maritime Heritage Database Maritime Heritage Online, ID=591

<sup>14</sup> NSW Maritime Heritage Database Maritime Heritage Online ID=819

<sup>15</sup> NSW Maritime Heritage Database Maritime Heritage Online ID=568

<sup>16</sup> NSW Maritime Heritage Database Maritime Heritage Online ID=563

Name	Wrecking Event	Hull Type	Engines	Tons	Cargo	Source	Probability within the study area
<i>Albion</i>	Unknown, believed to be wrecked off Sydney Heads in 1864	Wood	No	83	?	HO wreck dbase	Unlikely
<i>Governor Bourke</i>	Capsized off Sydney Heads (no specific reason recorded) in 1837	Wood	No	49	?	HO wreck dbase	Unlikely
<i>Hornet</i>	Sprung a leak in a gale on approach to Sydney Heads in 1915	Iron	Yes	55	Coke	HO wreck dbase	Unlikely
<i>Inca</i>	Dismasted at sea - towed and later burned off Sydney Heads in 1926	Wood	No	1014	Nil	HO wreck dbase	Unlikely
<i>Kookaburra H.M.A.S.</i>	Sank in Sydney Dumping Ground in 1971 - stern was lost at sea en-route out of Sydney	Iron	Yes	533 (Total)	Nil	HO wreck dbase	Highly improbable
<i>Mary Ann</i>	Wrecked in a squall - possibly at Sydney Heads in 1867	Wood	No	15	Timber Shingles	HO wreck dbase	Unlikely
<i>Mary Jane</i>	Left port in 1853 and was lost without trace off Sydney Heads	Wood	No	28	?	HO wreck dbase	Highly improbable
<i>Peterborough</i>	Reported lost at Sydney Heads, possibly on South Reef in 1905	?	?	?	?	HO wreck dbase	Unlikely
<i>Pomme de Terre</i>	Collided with another vessel between Sydney Heads in 1887	Wood	No	72	General	HO wreck dbase	Unlikely
<i>Ranger</i>	Capsized between Sydney Heads (no specific reason recorded) in 1842	Wood	No	11	?	HO wreck dbase	Unlikely
<i>Sacramento</i>	Foundered off Sydney Heads in 1871	Wood	No	28	Coal and general	HO wreck dbase	Unlikely
<i>Sisters</i>	Sprung a leak in a gale and sank 1.4 nm east of Sydney Heads 1860	Wood	No	44	Coal	HO wreck dbase	Possible
<i>Snowy</i>	Engine exploded 0.5 m off Sydney Heads in 1940	Wood	Yes	?	?	HO wreck dbase	Possible
<i>Venture</i>	Collided with another vessel 2-3 nm off Sydney Heads 1904	Wood	No	14	Ballast	HO wreck dbase	Unlikely
<i>Victory</i>	Wrecked off Sydney Heads, causes unknown, in 1866	Wood	No	17	Marine shells	HO wreck dbase	Unlikely

**Table 7 Potential submerged cultural sites close to the Sydney AR location**

## 4.0 RELEVANT LEGISLATION

### 4.1 Commonwealth *Historic Shipwrecks Act 1976*

The *Historic Shipwrecks Act 1976* protects historic wrecks and relics in Commonwealth waters, extending from below the low water mark. For the purposes of this study, any shipwrecks within the footprint of any proposed AR unit would be under the jurisdiction of this Act.

Under Section 4 of the Act, all shipwrecks 75 years of age and older are declared historic and afforded automatic protection. At the time of writing, vessels wrecked before 1933 are protected under the Act. Other shipwrecks can be declared historic and granted this protection on an individual basis according to their particular merits - such as the M24 Japanese submarine.

Under Section 13 of the Act, it is an offence to damage, interfere, remove or destroy an historic shipwreck or artefacts associated with it. A permit can be issued under special circumstances, with conditions, to carry out a specified action that would otherwise be prohibited under Section 13.

For shipwrecks under threat, a protected zone can be declared that can prohibit certain activities within a specified radius around the wreck. The SS *Duckenfield* and the M24 Japanese Submarine are located within declared protected zones.

Under Section 17 of the Act persons discovering a shipwreck are legally obligated to notify the appropriate authorities of the discovery “..as soon as practicable...”

Though this is a Commonwealth Act administered by the Department of the Environment and Water Resources, the Heritage Office, NSW Department of Planning, is the delegated authority for this State. The Heritage Office has maritime archaeologists on-staff and has the authority to issue permits under the Act.

### 4.2 NSW *Heritage Act 1977 (amended 1999)*

The NSW *Heritage Act 1977* is the primary piece of State legislation affording protection to all items of environmental heritage (natural and cultural) in New South Wales. “Items of environmental heritage” include *places, buildings, works, relics, moveable objects* and *precincts* identified as significant based on *historical, scientific, cultural, social, archaeological, architectural, natural* or *aesthetic* values. The Act defines a ‘relic’ as:

*"any deposit, object or material evidence relating to the settlement of the area that comprises NSW, not being an aboriginal settlement, and which is fifty or more years old."*

Sections 139 to 145 of the Act prevent the excavation or disturbance of land for the purpose of discovering, exposing or moving a relic, except by a qualified archaeologist to whom an excavation permit has been issued by the NSW Heritage Council / Heritage Branch, NSW Department of Planning. In cases where relics, or the potential for relics, are identified, the following procedures are required to be followed in order to

comply with the *Heritage Act 1977*:

- The proponent will be required to apply for an archaeological excavation permit (S140) under Section 139 of the *Heritage Act 1977* if the proposed development design cannot be modified to avoid disturbance of relics;
- This application would be submitted to the NSW Heritage Council Office accompanied by an archaeological assessment report that describes relics present and the impact of the development on the relics;
- In order to consider the permit application, the Heritage Council requires the applicant to supply a separate document known as a *Research Design & Excavation Methodology*, which is essentially an archaeological scope of work.

The NSW Heritage Office has issued exceptions to the above procedure, the most applicable to this study being;

- (a) where an archaeological assessment has been prepared in accordance with Guidelines published by the Heritage Council of NSW which indicates that any relics in the land are unlikely to have State or local heritage significance; or
- (b) where the excavation or disturbance of land will have a minor impact on archaeological relics; or
- (c) where the excavation or disturbance of land involves only the removal of unstratified fill which has been deposited on the land.<sup>17</sup>

The developer in this case must write to the Director of the Heritage Office and describe the proposed excavation or disturbance of land and set out why it satisfies the above criteria. If the Director of the Heritage Office is satisfied that the proposed development meets the criteria, the applicant will be notified.

For the purposes of this Act, the State of NSW includes the seabed and the water column up to 3 nm from the coast. The NSW *Heritage Act 1977* therefore, within 3 nm of the NSW coast, can protect shipwrecks, though the Commonwealth *Historic Shipwrecks Act 1976* may take precedence in some matters. Shipwrecks currently under the jurisdiction of the *NSW Heritage Act* are identified in the Historic Shipwrecks Register, maintained by the NSW Heritage Council.

Part 3C of the Act contains provisions for the protection of shipwrecks over 75 years old. This section is included in the Act to provide a link to and consistency with the (Commonwealth) *Historic Shipwrecks Act 1976*. In NSW the 'relics' provision takes precedence over Part 3C when it comes to determining the legal and protected status of a wreck and associated artefacts.

There are also provisions within the Act, which allow for the declaration of an emergency Interim Heritage Order. The *M24* Japanese submarine wreck is currently the subject of an Interim Heritage Order.

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<sup>17</sup> NSW Heritage Council, April 2004 *Heritage Act 1977* Notice Of Order Under Section 139(4)

### 4.3 Relevant comparisons between the *Historic Shipwrecks Act 1976* and *Heritage Act 1977 (amended 1999)*

At first glance it would appear that both Acts are largely compatible in that archaeological/cultural sites are automatically protected after a stated number of years. They differ markedly however on two key points :

- 1) What type of sites are protected, and;
- 2) The automatic rolling dates for when sites become protected.

The Commonwealth *HSA 1976* only protects artefacts associated with shipwrecks. The Commonwealth at present is reviewing the Act with the aim of making it conform to the UNESCO *Convention on the Protection of Underwater Cultural Heritage 2001*.<sup>18</sup> The Convention recognises all forms of underwater cultural heritage as worthy of being protected from development and/or looting. The (NSW) *HA 1977* already has provisions which mirror the Convention as it affords protection to all forms of non-Aboriginal material culture.

As mentioned, both Acts have a mechanism which automatically protects cultural heritage after a period of time has elapsed. The *HSA 1976* grants automatic protection to shipwrecks that were wrecked over 75 years ago. At the time of writing wrecks earlier than 1933 are protected. Next year it will be 1934. The *HA 1977* protects cultural heritage if it was created more than 50 years ago – that is, 1958. There is a critical distinction between the two Acts. The *HSA 1976* protects shipwrecks from the date of the shipwreck occurring, while the *HA 1977* protects cultural heritage from the time an object or objects were created. The above discussion is summarised in Table 8 below:

Act	Shipwrecks	Aircraft	Other
<b>Up to 3 nm from coast</b>			
(NSW) <i>HA 1977</i>	Protected if <u>made</u> over 50 years ago	Protected if <u>made</u> over 50 years ago	Protected if <u>made</u> over 50 years ago
(Cwlth) <i>HSA 1976</i>	Protected if <u>wrecked</u> over 75 years ago	Not protected	Not protected
<b>Beyond 3 nm from coast</b>			
(NSW) <i>HA 1977</i>	Not protected	Not protected	Not protected
(Cwlth) <i>HSA 1976</i>	Protected if <u>wrecked</u> over 75 years ago	Not protected	Not protected

**Table 8: Comparison between (Cwlth) *HSA Act 1976* and (NSW) *HA Act 1977*.**

<sup>18</sup> UNESCO *Convention on the Protection of Underwater Cultural Heritage 2001* (<http://unesdoc.unesco.org/images/0012/001260/126065e.pdf>)

## 5.0 CONCLUSION

### 5.1 Summary of Key Findings

The key findings of the desktop review for the underwater cultural heritage impact assessment for the installation of Artificial Reefs off Newcastle, Sydney and Wollongong are as follows:

- There are no known shipwrecks, or other submerged cultural heritage, within close proximity (< 0.25 nm) of the proposed locations of the AR units;
- It is unlikely that any hitherto undiscovered/unreported wrecks are in close proximity of the proposed locations of the AR units in the Newcastle study area;
- It is possible that hitherto undiscovered/unreported wrecks are in close proximity of the proposed locations of the AR units in the Sydney study area;
- It is almost impossible that any hitherto undiscovered/unreported wrecks are in close proximity of the proposed locations of the AR units in the Wollongong study area;
- The identified submerged cultural heritage (shipwrecks) identified in this study are protected by the Commonwealth *Historic Shipwrecks Act 1976* and/or NSW *Heritage Act 1977*;

## **5.2 Recommendations**

Based on the findings of the study the following recommendations are presented:

### **Recommendation 1**

*To complete the submerged cultural heritage impact assessment, a qualified maritime archaeologist, should review the findings of the marine geophysical survey for the purposes of identifying cultural material.*

A report is to be produced which lists anomalies that may be of cultural heritage significance. The report will most likely recommend in the first instance that any cultural anomalies be avoided. If this is not feasible, a visual diver inspection would be required to ascertain the nature, significance and legal status of the anomaly. Arising from the findings of the inspection appropriate mitigation measures will be made which will seek to avoid or minimise the impacts to the cultural heritage significance of any site(s).

### **Recommendation 2**

*Information on any uncharted shipwreck discovered during the marine geophysical survey should be provided as soon as practical to appropriate regulatory authority in accordance to Section 17 of the Commonwealth Historic Shipwrecks Act 1976.*

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### Personal communications

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