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The Protection of the
Underwater Cultural Heritage

UNIT 6

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Significance Assessment



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Cover photo: Each fragment of shipwreck remains may contain significant historical or archaeological potential.

A systematic significance assessment will often reveal their true value. © Christopher J. Underwood

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UNIT 6

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UNIT 6

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Significance Assessment

Core Knowledge of the Unit

This unit introduces the concept of significance in the management of underwater cultural heritage. Students are provided with an understanding of the importance of significance assessments and the role they play in the management process.

Upon completion of the Significance Assessment unit, students will:

- Know what significance in underwater cultural heritage management means
- Have a basic understanding of how to assess the significance of underwater cultural heritage sites
- Understand the difficulties and sensibilities in adding value to underwater cultural heritage sites
- Understand why significance assessment is needed
- Understand the intrinsic value of underwater cultural heritage
- Understand the significance of change
- Have a basic understanding of Cultural Impact Assessments (CIA), Archaeological Impact Assessments (AIA) and Conservation Management Plans (CMP)

Introduction to the Unit

The UNESCO Convention on the Protection of the Underwater Cultural Heritage (Paris 2001) broadly defines the heritage resource as, '... all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years ...'. This in itself is a clear statement on significance. The realities and limitations of managing underwater cultural heritage, however, means that some heritage sites must still be treated as more significant than others. As a result, a closer examination of the concept of significance is required.

What is Significance?

A simple internet search can provide us with many descriptions on what significance and other words related to significance mean.

- **Significance:** *the quality of being significant or important or valued or meaningful or of consequence.*
- **Importance:** *the quality of being recognised as important and worthy of note.*
- **Meaningfulness:** *the quality of having great value, importance or significance.*
- **Consequence:** *having important effects, values or influence.*

Source: www.thefreedictionary.com

Although we can easily find a definition of what significance means, it is less clear how it should be interpreted in the context of cultural heritage. To understand cultural significance we need to look at the Burra Charter (1999). The Burra Charter provides guidance for the conservation, preservation and management of places of cultural significance and is based on the knowledge and experience of the members of the International Council on Monuments (ICOMOS) in Australia. According to the Burra Charter, cultural significance refers to the aesthetic, historic, scientific (including archaeological), social or spiritual value for past, present or future generations. Cultural significance is embodied in the heritage place (or site) itself, its fabric, setting, use, associations, meanings, records, related places and objects.

1 Significance Assessment

Ultimately cultural heritage depends on the importance (or significance) that a society places on them and it is this value that has always been the reason underlying heritage conservation. It is self-evident that no society makes an effort to conserve what it does not value.

It is necessary to gain a detailed understanding of the nature and extent of the significance that a heritage place has to a society in order to protect, preserve and conserve the values of that place. This requires an assessment, which if not undertaken could potentially lead to decisions being made that diminish or destroy important aspects of the site. The process of determining the values of a heritage place is known as the assessment of cultural significance.

The assessment of cultural significance has two interrelated and interdependent elements. The first element is the determination of that which makes a place significant and, therefore, the type (or types) of significance that it manifests. The second is the determination of the degree of significance that this heritage place has for society.

Cultural significance relates to value, but exactly what kind of value can be difficult to define, especially when it is used in this context. Value can be considered in terms of not only the economic value of a site, but also its aesthetic and historical values and its overall uniqueness or relevance. Value also refers to an ethical quality; the significance by virtue of material and inner standards that a society often accords to certain objects, places and stories associated with its ancestral past.

Although it depends greatly on who is using the definition of significance and for what purpose, it ideally should be a balanced combination of all the values mentioned above.

A site can yield a lot of information about the past. However, when a site is not visible or when the techniques that are available for use are not yet good enough to retrieve the data and consequently the information, the site might have less significance for understanding the past at this moment in time. Alternatively, a site with a high social significance (e.g. because it is highly visible in the landscape) might be considered to have great significance, although its intrinsic value to understand the past is not very high.

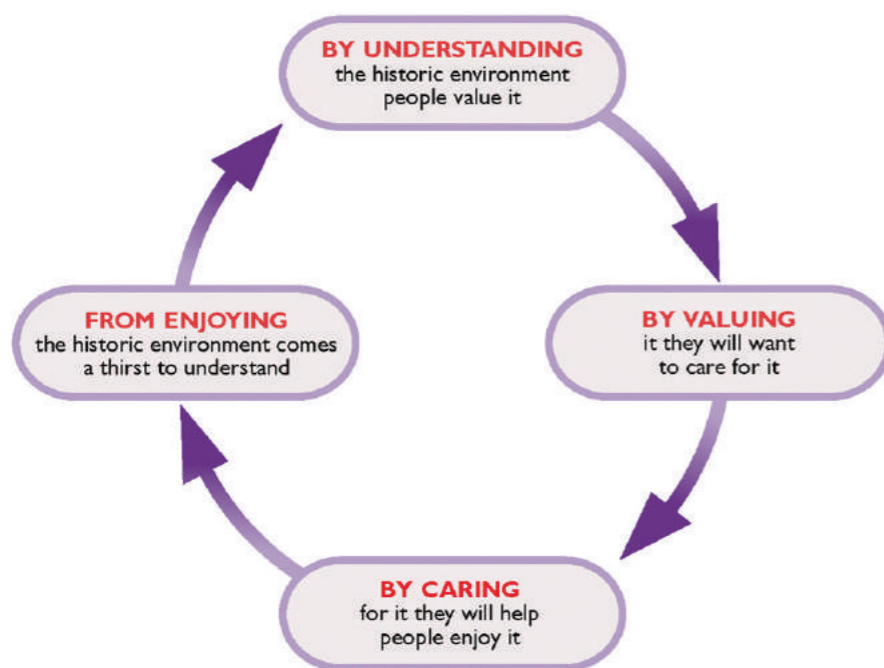
The significance of a site can also be modified or added to. Its importance can be increased by communicating the significance to more people through the media or archaeological publications.

English Heritage has coined this process the 'Heritage Cycle'. They believe that if people understand the history of heritage places, they value them; by valuing the heritage places they will want to care for them; by caring for heritage places, people will enjoy them and through this enjoyment comes a thirst to understand more.

This process of creating value and significance happens every day. Archaeologists are not the only stakeholders to play an integral role. Heritage managers need to also be aware that through their daily management of underwater cultural heritage, sites that are included (and listed or protected) become more important and, therefore, increase their intrinsic value.

Suggested Reading

- Bazelmans, J.G.A. 2006. *Value and Values in Archaeology and Archaeological Heritage Management*.
- *A Revolution in the Archaeological System*. Heeringen, R.M. Van and Lauwerier R.C.G.M. (eds.). *Proceedings of the National Service for Archaeological Heritage in the Netherlands*, Vol. 46, pp.13-25.
- English Heritage. 2008. *SHAPE 2008: A Strategic Framework for Historic Environment Activities & Programmes in English Heritage*.



The Heritage Cycle developed by English Heritage. © English Heritage

2 Difficulties and Sensibilities in Adding Value to Cultural Heritage

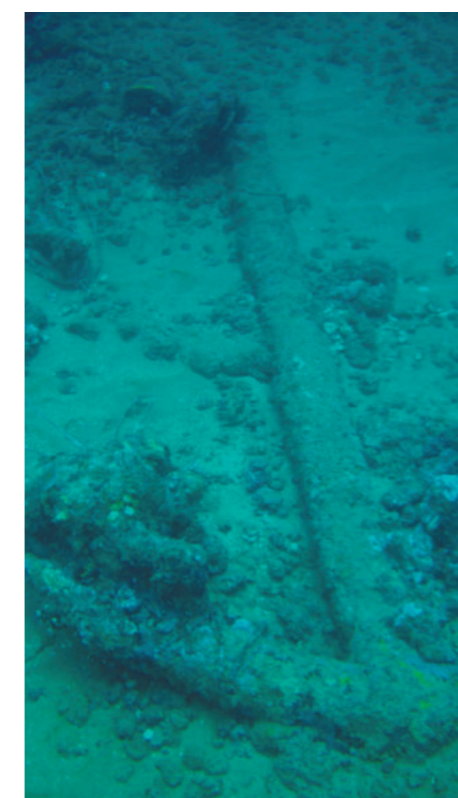
Assessing sites and defining the significance can be highly subjective and may also raise many questions from other groups. It is, therefore, important to be transparent and involve the crucial stakeholders in the process.

Often the value or significance of a site is determined by comparing it against others. To do this both a site's quality (how significant a site is) and its quantity (how many other sites of this type exist) have to be considered. But what if the number of sites that have been evaluated is just a very small percentage of the total and each one is so different that they cannot be compared with each other? Is it still possible for significance to be assessed?

For underwater archaeology this scenario presents a very real problem. Most countries do not have more than a few hundred weighted (valued) underwater sites. This implicitly means that most sites that are weighted against these few and will be regarded as being of high value due to, for example, its uniqueness. When the quantity becomes better understood through the process of inventory, it is possible to compare the values of sites and prioritize on the basis of scientific quality.

Cultural, Political and Other Social Differences

The historical significance of a European East Indiaman, for example, might be considered high in Europe or Australia (where they are rarely found), but less significant in the former colonies where they are more abundant. The same applies for Chinese shipwrecks that have travelled all over Asia and beyond. Their significance for China is obvious and embraced accordingly, however, it is more difficult to weigh their significance for the coastal state in which they are located. This issue is especially interesting in the field of 'shared heritage' because it touches on the heart of the concept of mutuality. Can we determine whether the significance of a site is the same for both countries? Are the sites assessed on the basis of the same concepts of significance?



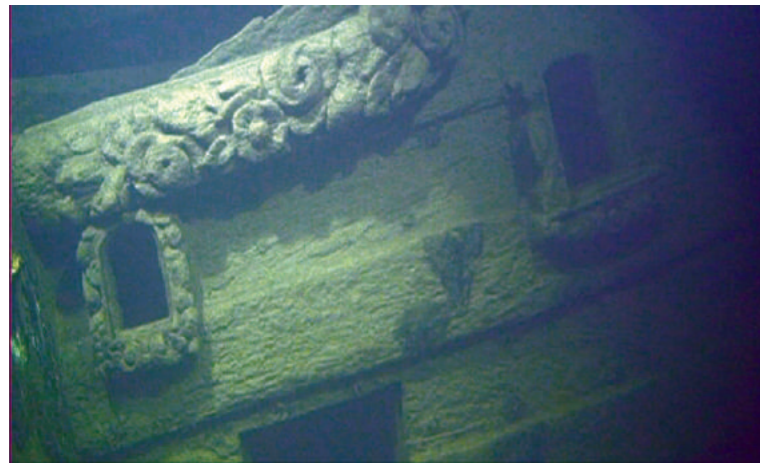
FAR LEFT: This anchor belongs to a seventeenth century Dutch Admiralty ship, *The Utrecht*, which sank just off the coast of Brazil. Although highly salvaged, it is still considered to be of high archaeological importance, due to the fact that still little is known about the construction of Dutch ships active in the tropics using a three layered shell planking. © A. Lima

LEFT: This sea plane, a Catalina PBYS was found just off the coast of Biak, Indonesia. It may either be a Dutch plane from the Royal Netherlands East Indies Army (KNIL) or one from the United States. Its origin will help determine its value for either country. © Ministry of Maritime Affairs and Fisheries

The quality and quantity of a site's significance is usually measured against other known sites in the area. This can be different in various parts in the world, for example, shipwrecks in the Baltic Sea (between Sweden, Poland, Germany, Denmark, the Baltic States, Russia and Finland) can be preserved in such a state that they can hardly be referred to as wrecks, but more as virtually complete sunken ships. This state of preservation is rare and it is clear to all that these wrecks are very well-preserved. In the Netherlands, well-preserved shipwrecks are those that can be completely reconstructed, in other words; if at least half of the ship (starboard or portside) is preserved. In the tropical seas, like those in most of the Asian countries, the state of preservation is much lower due to a variety of factors including warmer waters, the coarse sediment, lower sedimentation rates and the enormous impact of biological deterioration (See Unit 9: *In Situ Protection*). Therefore, shipwrecks such as the *Avondster* (Galle Bay) and the Quanzhou ship (Houzhou) may be referred to as being very well-preserved; a large part of the *Avondster's* wooden hull is still present as well as the starboard side until the first deck, while the Quanzhou ship is preserved to the waterline.

The memory value of a wreck is very different depending on your perspective. Something which is of local historical value might not be of very much significance on a national or international level and vice versa. The collective memory will usually be less on a wider scale; in villages (local) people, tradition, land and memory are very much connected to each other, while on a national and international scale, the binding factors are less. It also reduces further depending on the age of the site being assessed. The collective memory of the Second World War is still great, so wrecks from this period such as HMS *Vampire* (1942) that sank off Batticaloa, Sri Lanka, retain a high value. This memory value is lessened when medieval or Ming dynasty shipwrecks, such as the Royal Nanhai wreck (1490) are considered.

The aesthetic value of a heritage place is a difficult and highly subjective value to ascertain. How can we determine what, for example, is beautiful? As a result, the aesthetic value has to be considered in a practical sense. Sites can be assessed according to how suitable they are for exhibition viewing purposes or whether they could even be used as an underwater heritage trail. Factors to take into consideration might include water visibility and how often a site is visited by recreational divers, etc.



ABOVE RIGHT: If a shipwreck is considered to be well-preserved it may also depend on where it is located. Sunken ships in the Baltic, such as this Dutch seventeenth century flute ship in Swedish water, are almost in perfect condition. © Ghostwreck-Project

RIGHT: The seventeenth century wreck of the Dutch East Indiaman *Avondster* is less well-preserved than the ships in the Baltic, but in comparison to many other wrecks in tropical waters, it is extremely well-preserved. © Maritime Archaeology Unit, Sri Lanka



WEEKENDER

The second destruction of the HMS Aboukir

HERITAGE MATTERS
DR EDWARD HARRIS

'Underwater Cultural Heritage encompasses all traces of human existence that lie or were lying under water and have a cultural or historical character. Recognising the urgent need to preserve and protect such heritage, UNESCO elaborated in 2001 the Convention on the Protection of the Underwater Cultural Heritage. — UNESCO website 2011

The continuing global recession and the sharp increase in the value of precious and semi-precious metals represents a worldwide threat to heritage sites, both on land and under the seas and oceans. The looting of archaeological sites on land will undoubtedly continue apace, as rich and poor alike take part in the finding and marketing of artefacts, particularly from prehistoric contexts in areas such as South America and West Africa. The poor take part by looting for a few pennies for their survival bank, the rich by buying illicit works of art, banking on such objects as inflation-proof in times when the real banks pay practically no interest on deposits, yet lend your money out at high rates. Due to the high price of gold and silver, antiquities and precious objects, such as family silver and heirlooms, stand to be stolen and melted down to satisfy the lust for a quite buck. With 'send us your gold and silver and we'll send you cash' operations proliferating, Bermuda may not be immune from the latest criminal assaults on objects of cultural heritage.

Under the sea, the race to find and ransack the next shipwreck with bulion of some sort or another aboard appears also to be on the increase, as unfortunately, contrary to the behest of UNESCO, anything goes in the free-for-all underwater world of 'international waters', the emphasis being on short term cash returns versus the long term preservation and economic value for tourism use of cultural finds from under the sea.

Salvage of shipwrecks for less valuable metals, such as copper and bronze, seems also to be a returning fashion, much as it was in Bermuda in earlier decades when there was at least one outfit here that purchased such 'scrap' materials for shipping overseas. That is perhaps why bronze propellers are now missing from historic and picturesque shipwrecks in local waters, to say nothing of 'disappeared' port-holes and other features of metal on those carcasses of the misfortunes of others.

Nearer to Britain, where we sent hundreds of our young men in the two World Wars, some of whom died on the soils of The Netherlands or nearby, Dutch salvage operators are enacting the second destruction of HMS *Aboukir*, the war grave site (many would say, sacred) of over 500 men, including William Edmund Smith, the first Bermudian to give his life in the First World War.

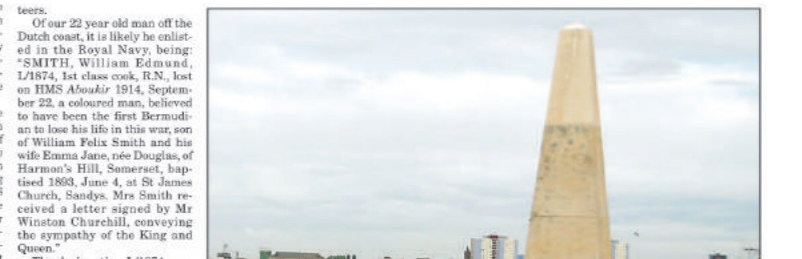
War graves on land are considered to be sacred territory and the Commonwealth War Graves Commission and respective governments place great emphasis on the maintenance and preservation of such sites in honour of those who gave their lives for our future freedoms. Underwater sites, being under cover (not to say underwater) as it were, are perhaps less well monitored, as exemplified by the ripping apart of HMS *Aboukir* in recent months, for the extraction of industrial metals.

The sacredness of the site in the sands off the Dutch coast relates to the first few weeks of the Great War (1914–18), the start of which for the British Commonwealth began on fourth of that month in the late summer of 1914, as immortalised in the title and content of Barbara Tuchman's classic book, *The Guns of August*, being a history of the first month of the conflict.

When the guns fell silent four years later at the eleventh hour of the eleventh day of the eleventh month in 1918 (commemorated as Remembrance Day, 11 November annually), some 35 million people were dead or wounded, including some six million allied troops of which 80 were Bermudians of the Bermuda Volunteer Rifle Corps, the Bermuda Militia Artillery and other services; nearly all the Bermudians were volun-



HMS *Aboukir*, a Cressy Class cruiser, launched in 1900, pictured about 1905.



The HMS *Aboukir* Monument on the shore of the English Channel at Southsea, near Portsmouth.



A commemorative card for a member of the losing side, perhaps William Smith's mother received one.

teers. Of our 22 year old man off the Dutch coast, it is likely he enlisted in the Royal Navy, being: 'SMITH, William Edmund, L/1874, 1st class cook, R.N., lost on HMS *Aboukir* 1914, September 22, a coloured man, believed to have been the first Bermudian to lose his life in this war, son of William Felix Smith and his wife Emma Jane, née Douglas, of Harman's Hill, Somerset, baptised 1863, June 4, at St James Church, Sandys. Mrs Smith received a letter signed by Mr Winston Churchill, conveying the sympathy of the King and Queen. The designation L/1874 may indicate that William Smith may have enrolled here first in one of the local forces before the War. Termed the 'Live Bait Squadron' because of their age, HMS *Aboukir*, HMS *Cressy*, and HMS *Hogue* of the Seventh Cruiser Squadron were on patrol in the early morning of Tuesday, 22 September 1914, when U-9, a German submarine commanded by Lt Otto Weddigen fired a torpedo at *Aboukir*, which sank in 20 minutes with the loss of 527 men, including the Bermudian Smith. Stopping to pick up survivors (thinking the *Aboukir* struck a mine), the *Cressy* and *Hogue* were then sent to the bottom as well, in all, 1459 men were lost in the 90-minute attack. While it is no consolation, the fact is that the 'incident established the U-boat as a major weapon in the conduct of naval warfare'. A number of naval associations have lodged objections to the desecration of these war sites by the Dutch salvage companies. Archaeologists, such as one Andy Brockman, are also firing salvos across Dutch bows: 'In case you have not seen today's Times (27 September 2011), the violation of the three ships has been condemned by the Ministry of Defence, and the Dutch cultural agency. On a practical level, the ships



The commemorative card for the winning side, featuring the commander of the Kaiser's submarine U-9.

Ships from the First and Second World War still raise strong memories, therefore their 'memory value' is very high. This article from the Royal Gazette, (22 October 2011) deals with the destruction of three First World War wrecks for their scrap metal value. © Royal Gazette

It is not usual to determine a site in terms of its economic value, at least in terms of measuring the dollar value of material, such as ceramics, from the site. This is because archaeologists would like to have a clear distinction between the archaeological and historical significance and the economic value. Archaeologists will often rate a site on significance according to specific research questions and other factors, such as how representative it is. In cultural heritage management, however, economy is an important factor. The economic value does not have to be expressed in the value of the objects from a site, it could also be expressed, for example, in the value it has for tourism. From this perspective, it could be a very powerful tool to use when addressing crucial stakeholders, such as politicians. For management reasons it might be useful to complete a cost benefit analysis which makes clear that in some way an economic value is going to be assessed. This will influence the choice that has to be made in infrastructure (or development) projects to remove (e.g. by excavations) or to protect sites *in situ*.

In practice, the assessment of sites on the basis of values (such as archaeological importance) and its political or economic value will overlap and influence each other; something of high archaeological value will usually have a high political and economic value and vice versa.



A site that has been salvaged for its economic value is the eighteenth Century Dutch East India Company ship, the Geldermalsen, found in Indonesian waters. Its cargo of mainly porcelain was sold at Christie's in 1986 for approximately 15 million Euros. © RCE

Suggested Reading

- Allen Consulting Group. 2005. Valuing the Priceless: The Value of Historic Heritage in Australia. *Research Report 2*. Heritage Chairs and Officials of Australia and New Zealand. Sydney, November 2005.
- Finney, S. 2002. The Economics of Shipwreck Management: How do we Measure the Non-use Value of a Historic Shipwreck? *Bulletin of the Australasian Institute for Maritime Archaeology*. No. 26, pp. 1-6.
- Gribble, J. 2006. The Sad Case of the SS Maori. *Heritage at Risk*. Special Edition. Grenier, R. Nutley, D. and Cochran, I (eds.). ICOMOS, pp. 41-44.
- Johnston, P. F. 2006 Shipwreck: Threatened in Paradise. *Heritage at Risk*. Special Edition. Grenier, R. Nutley, D. and Cochran, I (eds.). ICOMOS, pp. 88-90.
- Maerr, G. 2007. *Values and Benefits of Heritage*. A Research Review, HLF Policy and Research Department, June 2007.
- Samuels, K. L. 2008. Value and Significance in Archaeology. *Archaeological Dialogues*. No. 15, pp. 71-97.
- Smith, H. D. and Couper, A. 2003. The Management of the Underwater Cultural Heritage. *Journal of Cultural Heritage*. No. 4, pp. 25-33.

3 Different Kinds of Heritage

Another aspect that has to be taken into consideration is the fact that there is not just one cultural heritage. Over recent decades, heritage has been increasingly divided into sub-categories, such as World Heritage, Mutual Heritage, Intangible Heritage, Underwater Cultural Heritage, Vernacular Heritage, and so on. The significance of sites can be specified within these different heritage sub-categories. In addition, international, national, regional and local settings for heritage can also be distinguished. All these categories, sub-categories and settings are important to consider before determining the value of the place.

Suggested Reading

- Palmer, R (ed.). 2008. The Rural Vernacular Habitat, a Heritage on our Landscape. *Futuropa: For a New Vision of Landscape and Territory*. No.1/2008. Council of Europe.

4 Why is it Necessary to Assess Significance?

Limited resources means that not everything can be researched. Budgets, staff and time have to be carefully utilized and it is necessary to know what the known resources of cultural heritage are, so that sites can be assessed and prioritized. Significance also has to be measured in order to facilitate this prioritization process. Determining the significance of a site can be highly subjective, but by developing standards and using widely accepted methods, this process can be made as objective as possible or at least comparable. A transparent approach also opens up the process for discussion and improvement.

Underwater cultural heritage management, like all heritage management, is driven mainly by significance. Although it is just one step, it affects and dominates all choices that are made in the management process. Virtually all management decisions depend on the assessment of significance, as it is the determining factor for what is nominated for the register. It helps determine the kinds of research questions that are being asked and leads to choices about what is preserved (*in situ*) and what is destroyed for research programmes (excavations to gain information) and development projects. Overall, significance determines how sites are categorized, how they are managed, how impacts are mitigated and the choice of whether a site is considered heritage at all.

Interestingly in archaeology, significance is used for more than just assessing the value of a site; it is also an analytical tool for making interpretations of the past on a larger scale, such as reconstructing past societies or as a way to question our archaeological modes of enquiry. In short, significance allows us to reflect and question why material heritage is studied in the first place. In determining the significance of sites it is always necessary to reflect on the work that has been done, so that we can compare one site to another and consider if a study has any significance for the understanding of the past.

5 Different Methods of Assessing Significance

As has been illustrated, there are several ways to describe significance in relation to cultural heritage. Several articles have been published on the philosophy and the methods used to assess the significance of maritime archaeological sites. Many of these articles provide a strong foundation from which to base the development of local significance assessments.

There are two major aspects of significance to be distinguished; the intrinsic value and its relation to managing change.

The intrinsic value of a site is considered to be a large variety of values that cover the significance for scientific (or academic), cultural, social, economic, educative, amenity, community and personal use.

The significance in relation to managing change relates to understanding how changes arise and what the implications are in altering the intrinsic value considerations. In order to judge this, there are well established conservation principles for heritage management. The issue here is how the significance of change is predicted, judged and managed once a key understanding of the intrinsic values are established (see *Additional Information 1*).

Suggested Reading

- Staniforth, M. 2001. Assessing the Significance of Twentieth Century Underwater Cultural Heritage. *Conference Proceedings: 20th Century Heritage: Our Recent Cultural Legacy*. D. S. Jones. (ed.). The University of Adelaide and the ICOMOS Secretariat, pp. 145-149.
- Westerdahl, C. 1994. Maritime Cultures and Ship Types: Brief Comments on the Significance of Maritime Archaeology. *The International Journal of Nautical Archaeology*. 23.4, pp. 265-270.

ADDITIONAL INFORMATION

1 Several criteria can be used to determine the intrinsic value of a site. The Australian Antarctic Data Centre provides additional information and insight on each of these. See www.aad.gov.au

5.1 Intrinsic Value

This aspect of significance needs to cover a wide range of values in terms of scientific/academic, cultural, social, economic, educative, amenity, community and personal use. All or any such values can also be seen in terms of importance, sensitivity and potential.

Importance can be seen as reflecting the scale at which values operate. These are often considered in terms of international, national, regional and local, but may actually be more culturally determined or of practical output (e.g. degree of social or educative engagement).

Sensitivity is a different aspect of importance and can be seen as having more to do with not only how strongly values are felt, but also how vulnerable they are to being lost or altered physically. Here, it is important to consider how easily detrimental consequences may arise if the heritage becomes devalued or overlooked. The number of people affected may increase the level of sensitivity regardless of the importance of the heritage

Potential is an important issue primarily because so little is known about most sites, that much of the assessment of the criteria used for determining significance, such as the physical state of a site, nature of the artefacts, and the importance of a site, usually remains incomplete. There is always more that can be done to reveal further intrinsic value and gain more public benefit.

Several criteria can be used to determine the intrinsic value of a site:

1. **The potential to yield important information about the past** which is not available through other means. It displays archaeological significance, including scientific or research significance.
2. **Historical significance:** It has to be considered whether a place has significant heritage value because of its special association with the life or works of a person (or group of persons), for its importance or events in cultural history or for its association with people, events, places and themes. Historically significant objects range from those associated with famous people and important events, to objects of daily life used by more ordinary people. They include objects that are typical of particular activities, industries or ways of living. Historically significant objects may be mass produced, unique, precious or handmade.
3. **Scientific, research or technical significance:** It has to be considered whether a place is representative of the period in terms of scientific, research or technical significance. A site or an object may have research significance if it has major potential for further scientific examination or study. Archaeological artefacts and collections may have research significance if they are provenanced and were recovered from a documented context or if they represent aspects of history that are not well reflected in other sources.
4. **Aesthetic significance:** A site may have significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group. This is particularly evident for underwater cultural heritage sites which can be considered places of great visual beauty by divers.
5. **Social or spiritual significance.** A site may have outstanding heritage value to a nation because of its strong association with a particular community or cultural group for social, cultural or spiritual reasons. Shipwrecks can also be grave sites of special memorial significance.
6. **Experience Significance:** The visibility of a site within a landscape and its strong association to memory value can create a unique mood or character that enhances a site's significance.

7. **Economic Significance:** A site can be of economic significance either in the present day or future. This significance can be both a blessing and a curse. A blessing because it often has a higher significance in the eyes of crucial stakeholders (such as politicians) and is, therefore, more likely to be preserved, and a curse because a shipwreck with a cargo of high economic value is much more likely to be looted.

Not all of these criteria are always used. The most common in cultural heritage are historical significance, archaeological (scientific) significance and experiential significance.

Additional comparative criteria are then used to evaluate the degree of significance further:

1. **Provenance:** derived from the French *provenir*, 'to come from'. Provenance refers to the origin or the source of something, or the history of the ownership or location of an object or site. The primary purpose of provenance is to confirm the time, place and, if appropriate, the person responsible for the creation, production or discovery of the object or site. Comparative techniques, such as expert opinions, written and verbal records and the results of various kinds of scientific tests, are often used to help establish provenance.

Provenance also refers to the chain of ownership and context of use, of an object or site. Knowing this history enables a more precise assessment. Provenance is central to establishing historic and scientific significance. An object or site may be significant because its provenance; a documented history of its existence, ownership and use, gives it a context in society at large or in the natural world, or in the more personal world of a known individual. Provenance has very particular meaning in some collection areas. Archaeological material should ideally be provenanced to a particular site and to an exact stratum and location within that site. Archaeological material removed from a site without having had its provenance recorded has little value unless it has other significance, such as aesthetic. Even then, an object whose archaeological provenance is unknown is diminished in value in the same way as an artwork of doubtful provenance.

2. **Representativeness:** something that serves as an example or type for others of the same classification. One could give a high significance to a shipwreck and protect it because it serves as an example for a typical kind of ship.

3. **Rarity/uniqueness:** something that is rare or scarce. Being the only one of its kind, without an equal or equivalent; unparalleled. Rarity usually scores high in significance. One could debate whether this is correct or not, but since the amount of assessed sites (and specifically shipwrecks) is still relatively small, rarity/uniqueness is a category where most sites will score highly.

3. **Condition:** completeness or intactness and integrity. An object may be significant because it is unusually complete or sound, original condition. Objects with these characteristics are said to have integrity. Changes and adaptations made in the working life of an object or site do not necessarily diminish significance, and in fact, are also recognised as an integral part of itself and its history. This can be measured when, for example, the range of materials being preserved is examined. When the amount of structure of a shipwreck that remains is considered, if, for example, the inventory is preserved, cargo, personal belongings, etc., we have to assess on what is well-preserved, and what is not can be subjective. What is well-preserved? Is it when it still looks like a ship with the mast still standing, such as those wrecks that are found in the Baltic Sea? Or is it well-preserved if it is possible to reconstruct the whole ship, even though the wreck itself is completely scattered on the seabed?

4. **Interpretive potential:** archaeological objects, collections and sites may be significant for their capacity to interpret and demonstrate aspects of experience, historical themes, people and activities. In the hands of a skilled museum worker, most objects have potential to tell their story and their significance

is best described in reference to one or more of the primary criteria. However, there are some circumstances where interpretive potential is a major attribute of an object or collection, or may indeed be the only criterion for which the object is significant. To some extent, interpretive potential represents the value or utility the object has for a museum as a focus for interpretive and educational programmes. It may also be significant for its links to particular themes, histories or ways of seeing the collection. Some objects may have very limited significance under the primary criteria, but they still may have some degree of significance for museums because of their ability to interpret and illustrate particular themes, people or ideas. This is the case for many humble, unprovenanced social history objects, where the object stands for or is used as a link to, wider themes or issues. Interpretive potential can be particularly important where certain aspects of history and experience are not well represented in museum collections. Some people's lives are not materially rich or well expressed in the material culture record. In museums, their lives or experience may be interpreted through generic objects that have interpretive potential, but are otherwise of limited significance.

5.2 Managing Change

This aspect of significance is all to do with understanding how changes arise and what are the implications in altering or affecting the intrinsic value considerations. In order to judge this there are well established conservation principles for heritage management. Here, the issue is how the significance of change is predicted, judged and managed once the key understanding of intrinsic values are established. This issue embraces consideration of 'types of change' which can be considered in terms of the dynamics, process, outcomes and significance of change. These can again be considered in terms of magnitude of change, alteration of value, risks and opportunities, sustainability, significance of effects, regulation and management, and indicators and monitoring.

5.2.1 Types of Change

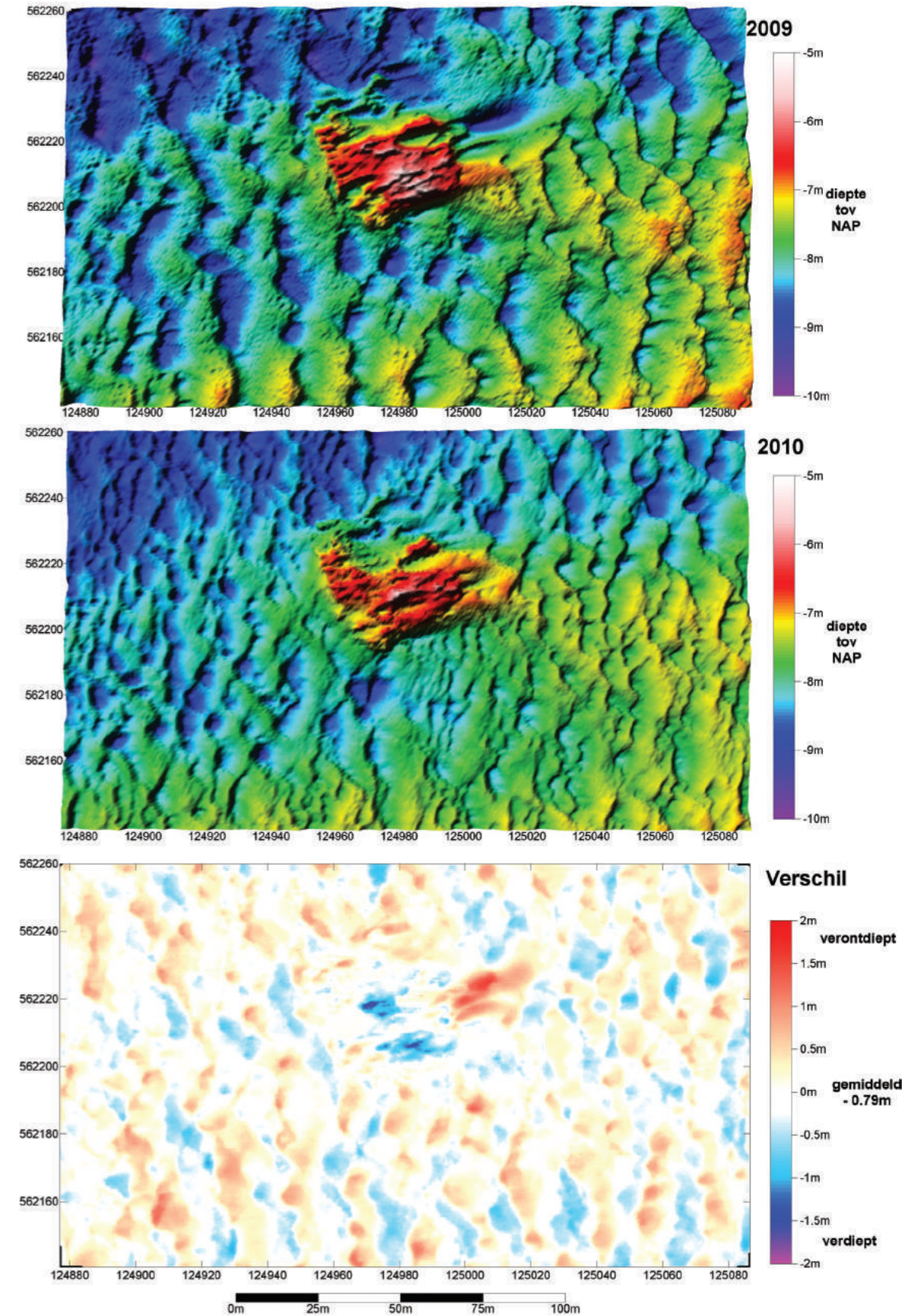
Dynamics of change: can be seen as being changes that are beneficial, neutral or adverse and permanent or temporary in nature. This may also embrace whether changes are reversible or irreversible.

Process of change: can be considered in terms of sources of change. Activities, processes and physical alterations to the environment can all give rise to a range of ways in which effects can occur. These effects may be direct, indirect, synergistic (i.e. how different factors interact to create a different kind of change) or cumulative.

Outcomes of change: can be seen in terms of what intrinsic values are altered and from which outcomes may affect physical materials, settings, surroundings and perceptual, cultural and socio-economic issues (education, amenity and economic aspects).



This wreck has been destroyed by dredging. It is a form of sudden change to the environment which can be mitigated. See Unit 5: Desk-based Assessment. © RCE



The physical changes on a site can be monitored with multibeam recording. Here two recordings from different years (2009 and 2010) done on the BZN 10 wreck in the Netherlands. The lowest picture are the differences in depth between the two years. (c) RWS/RCE/Periplus Archeomare

Significance of change: cannot be determined without understanding both the intrinsic values and the types of change which may occur, including uncertainties that may exist, such as:

The magnitude of change: is best thought of in terms of how far the intrinsic values of heritage may be altered and in particular how the special attributes that give it its value may either be enhanced or diminished. This will include how much both physical and perceptual aspects will be altered by the various ways that changes arise. There is also a distinction to be made between how much change will happen, where it is starting from and where it will end up (see limits of acceptable change).

Risk and opportunity prediction: is normally considered in terms of weighing up the seriousness of a hazard against the likelihood of it occurring. A similar concept can be applied to change in cultural heritage, where either the intrinsic values of a place or asset are not fully understood, or the magnitude of change cannot easily be predicted. The change may be either beneficial or adverse, so the uncertainty may be expressed either as a risk or an opportunity.

Uncertainty and predictability: are related considerations, as uncertainty is a simple acknowledgement that not everything is known to the level that is desirable. Predictability reflects a more quantitative approach to defining levels of uncertainty, usually based on the sampling parameters of studies undertaken to characterize the nature of the heritage asset (e.g. by non-intrusive survey or physical evaluation) and/or the scale of changes likely to occur. In the case of underwater cultural heritage these might, for example, include a prediction of increased levels of damage to a shipwreck as a result of more frequent visitation by recreational divers.

Significance of effects: is a balance between the importance of the cultural heritage in question and how much it will be changed for better or worse. Thresholds of significance are highly variable, but can be related to how far the effects of change support and enhance or are contrary to, specific cultural heritage objectives, policies or standards. This also encompasses external changes that may be contained in a variety of international, national, regional and local conventions, laws, policies, and programmes, codes of practice, design briefs, etc., which help to define standards against which significance can be judged.

Sustainability of change: seeks to weigh up the balance between the social, economic and environmental needs of society, which extend beyond the limits of how significance is measured in relation to heritage or environmental assessments. The way in which cultural heritage significance is judged may alter when these values are weighed up against other non-heritage environmental, social or economic needs.

Limits of acceptable change: there are various ways of looking at this, but often policies and legislation will indicate that significant change (as determined from considerations such as those outlined above) goes beyond a threshold of what is acceptable. In the public realm this may be defined by legislation and policy, but for some situations ethics, professional standards or technical considerations may define the limits of acceptable change. Public and legal opinion may also set the boundaries of what is acceptable and what is not.

Regulation and management: is a highly relevant topic related to significance both because regulatory bodies do much to define standards (e.g. significant criteria) and because they will often help define what is or is not acceptable. By doing so, they ensure the application of measures to avoid, reduce, offset or reverse negative effects and promote beneficial ones.

Indicators and monitoring: are further aspects of considering the significance of change because the actual changes that happen as a result of implementation, very often differ from what was expected. This is especially true in archaeology where unexpected new discoveries are often made that alter the parameters under which the original assessment was created. Monitoring is, therefore, not only a means of checking if assessments were right, but also modifying actions to account for new conditions. Indicators can be useful as a way to collect broad data on particular points of critical interest that enable us to construct a broad picture. Monitoring in its fullest sense also means collating information in such a way that it can aid us to make better judgements of significance in the first place.

As has been illustrated, significance can mean a range of things and is in many ways subjective. When it has to be assessed, several different values have to be taken into account and weighed against each other. As a result it is crucial that when making an assessment, we do so in a structured and consistent manner.

5.3 Archaeological Impact Assessments (AIA) and Conservation Management Plans (CMP)

Resource management and understanding change has been explained in some detail, but to this point the topic of significance has been addressed in something of a vacuum; significance has been discussed as an important value, mainly for its own right. It is imperative, therefore, that we now apply the assessment of significance directly to 'real world' practical management scenarios. Resource managers rarely have the luxury of investigating underwater cultural heritage sites purely for archaeological or academic purposes. Site values are typically determined in response to the direct potential impacts they face from commercial development projects. Defining significance plays a major pragmatic role in two critical resource management tools: the Archaeological Impact Assessment and the Conservation Management Plan.

Impact assessments are designed:

- To ensure that environmental and other considerations are explicitly addressed and incorporated into the development decision making process
- To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposals
- To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions
- To promote development that is sustainable and optimizes resource use and management opportunities

5.3.1 Impact Assessments

Definition: A particular type of evaluation that aims to determine whether, and to what extent, a programme causes changes in the desired direction among a target population or in an environment (Rossi and Freeman 1993). All assessments should be conducted in accordance with internationally agreed measures and activities.

Impact assessments are often designed to mitigate a wide range of adverse environmental and other impacts that can result from large and medium scale development projects.

All impact assessments, whether these are environmental (EIA), archaeological (AIA) or cultural (CIA), are executed in either the manner specified below or in a way that is fundamentally the same. See *Additional Information 2*.



Suggested Reading

- Dunkley, M. 2008. *Hazardous, Bracklesham Bay, West Sussex, Conservation Statement & Management Plan*. English Heritage.
- Manders, M. 2004. *Safeguarding a Site: The Master Management Plan*. *MoSS Newsletter*, 3/2004, pp. 16-19.
- Rogers, P. 2007. *Guidelines for Reporting on a Cultural Impact Assessment*.
- Smith, T. and Nutley, D. 1998. *SS Lady Darling (1864-1880)*. Conservation Plan, Heritage Office NSW.
- Smith, T. 2007. *Wreck of the Japanese Type 'A' Midget Submarine M24. Preliminary Archaeological Survey Report*. Heritage Office NSW. Department of Planning. Underwater Cultural Heritage Programme.
- Steinberg, D. 2001. *The Historic Shipwreck Australian: A Plan of Management*. *MAGNT Research Report*, No. 9.
- Ward, S. 2006. *HMS Colossos Site Management Plan*.

ADDITIONAL INFORMATION

2 A brief outline of the sections required in an Archaeological Impact Assessment report was adapted from: Cameron, E. and Van den Bergh, J. 2003. *The CHIA System in Hong Kong 1997-2003 and Beyond*. Paper presented at 4th Annual KAPI Conference, Manila, Philippines, 23-25 October 2003.

A detailed overview of Archaeological Impact Assessment guidelines can also be found at: www.for.gov.bc.ca/archaeology/docs/impact_assessment_guidelines/preface.htm (Accessed Feb 2012.)

5.3.2 Environmental Impact Assessments (EIA)

Definition: studies undertaken in order to assess the effect on a specified environment when a new factor is introduced, which may upset the current ecological balance.

EIA guidelines: the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made. General Environmental Assessment guidelines are provided by the Asian Development Bank.

Principles of EIA best practice: a process of identifying, predicting, evaluating and communicating the probable effects of a current or proposed development policy or action, on the cultural life, institutions and resources of communities. The findings and conclusions are then integrated into the planning and decision making process, with a view to mitigating adverse

impacts and enhancing positive outcomes. (See International Association for Impact Assessment: www.iaia.org).

The International Finance Corporation Performance Standard 8 is also a useful document that aims to protect irreplaceable cultural heritage and to guide clients on preserving cultural heritage in the course of their business operations. (See International Finance Corporation Performance Standard 8 on Cultural Heritage: www.ifc.org).

5.3.3 Archaeological Impact Assessments (AIA)

Definition: a process where a trained professional looks at an archaeological site and develops plans to determine what impact the proposed development will have on it.

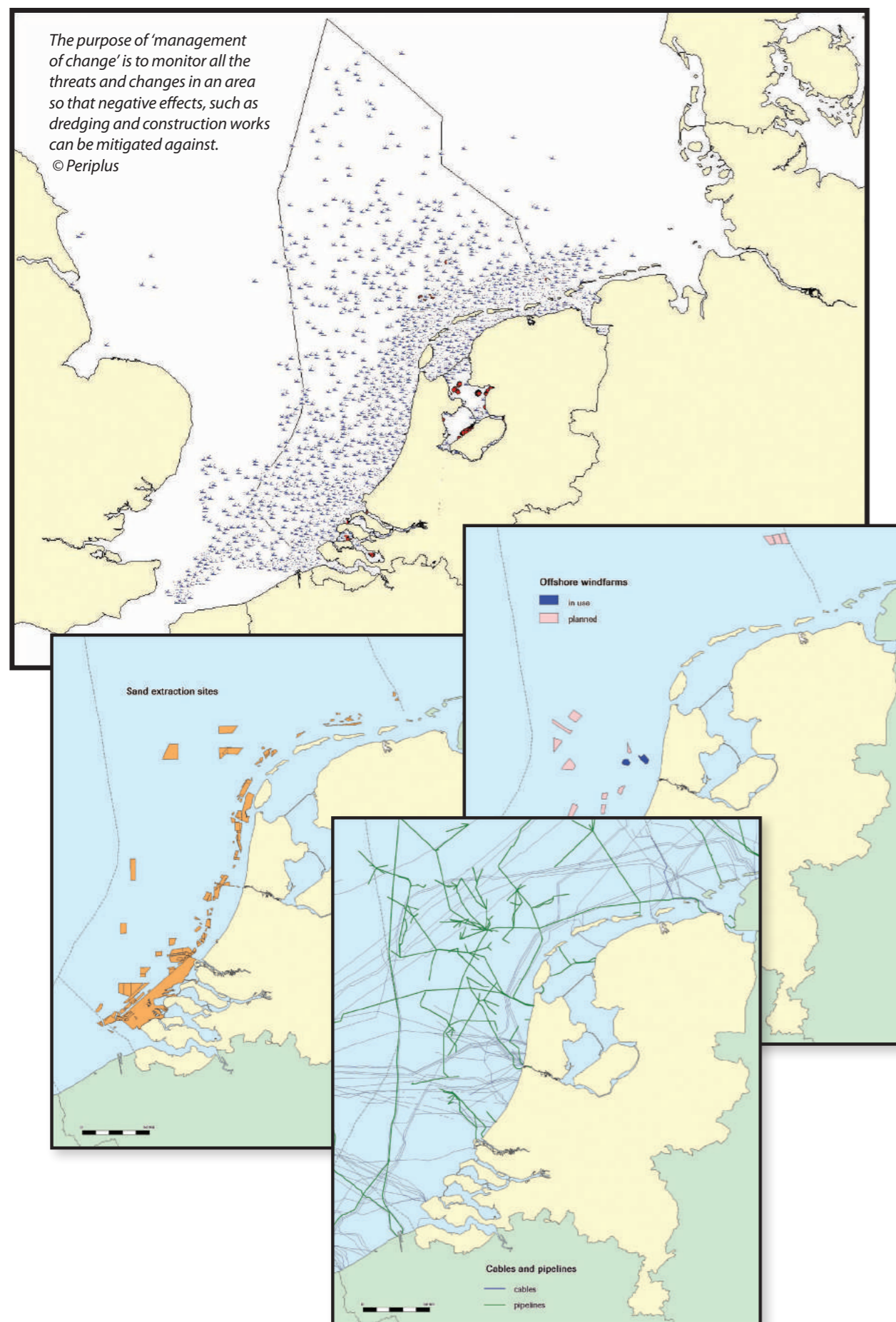
Archaeological impact assessment studies are initiated in response to development proposals that will potentially disturb or alter archaeological sites. The role of the assessment is not to prohibit or impede land use and development, but rather to assist a government agency and/or private sector in making decisions that will ensure effective management of archaeological resources, as well as optimal land use.

A brief outline of the sections required in an archaeological impact assessment report is as follows:

1. The identification of all known heritage sites or areas with potential for underwater cultural heritage. This can include such things as shipwrecks and submerged cultural landscapes, which are shown to contain archaeological potential during a baseline review. The review will determine the need for appropriate field surveys. An archaeological survey will consist of field scans, survey, and excavations and a desk-based survey of written, photographic and map documentation on all identified and potential archaeological sites.
2. The identification of the impacts associated with the project and how (or if) they will affect the identified heritage sites. These include both direct impacts, which can damage or destroy heritage sites, as well as indirect impacts, such as a change in the environmental setting of a shipwreck site.
3. The presentation of mitigation recommendations designed to remove or at least minimize any identified impacts to acceptable levels. These can include changing alignments to avoid archaeological sites or the implementation of a rescue excavation, if avoidance is not possible. This should also include a schedule for the implementation of the mitigation measures.
4. Archaeological impact assessment studies should be required where potential conflicts have been identified between archaeological sites and a proposed development. Sites need to be located and recorded and site significance evaluated, in order to assess the nature and extent of expected impacts. The assessment includes mitigation recommendations to manage the expected impact of development on the site.

These mitigation recommendations may include:

- *Avoiding the site*
- *Recovering archaeological site information prior to land altering activities*
- *Monitoring for additional archaeological site information during development activities*



Assessments may require a heritage inspection permit issued by the relevant authority. Permitted archaeological impact assessments are used to identify site locations, evaluate site significance and determine the magnitude of development related impact when sites cannot be avoided.

The relevant authority would review the application and permit deliverables, such as a report, manage consultation with local and indigenous communities and provide management directions for the sites.

If the site is found to be highly significant and development cannot avoid disturbing these values, systematic data recovery excavations may be required to retrieve information that will be destroyed as part of the development. These studies may answer general questions such as the age of the site, the type and nature of the site. Detailed systematic data recovery can be expensive, but is relatively rare, as most developments have the flexibility to minimize disturbance to archaeological sites by avoiding them.

If development activities that disturb the seabed, such as wind farms, building bridges or marinas, laying subsea oil or gas pipelines, need to be conducted within the boundaries of a recorded archaeological site. The development may need to be moved or a site alteration permit may be required. These permits may be issued by the relevant authority. Permit applications may be prepared by a qualified professional archaeologist on behalf of the developer (such as the assessment undertaken by the University of Southampton for the BritNed project – a pipeline being laid between Britain and the Netherlands), and are designed to minimize and mitigate impacts to the archaeological site.

Screening

Screening should be based on a development proposal and so needs to be undertaken during the early part of the planning stage. This will help to determine whether a development proposal should be subject to an impact assessment and if so, what level of detail is necessary to determine which proposals may cause potentially significant effects.

Scoping

Scoping is used to identify both the issues and impacts that are likely to be important and to establish terms of reference for an impact assessment. Qualified, experienced and competent staff within government agencies are required to undertake both screening and scoping.

Submission

Usually an impact assessment should be undertaken by an independent consultant or expert, although an alternative is for a government agency to take responsibility for it. Regardless of who undertakes the impact assessment, the resulting submission should be evaluated by qualified staff from a government agency. In the event of a conflict of interest, one solution can be to have an independent evaluation of the report.

Consultation

Where a project may affect cultural heritage, the expert (or the government agency) should consult with affected communities and other stakeholders within the country who use, or have used within living memory, the cultural heritage for cultural purposes. This will help identify significant cultural heritage and to incorporate into decision-making process the views of the affected communities. Consultation will also involve the relevant national or local regulatory agencies that are entrusted with the protection of cultural heritage.

Consideration

Ultimately one party, usually a Minister on behalf of a government, has to consider the impact assessment. During this part of the process, the Minister should be guided by expert evaluation from within government agencies. Finally, the decision can be finalized and the result announced.

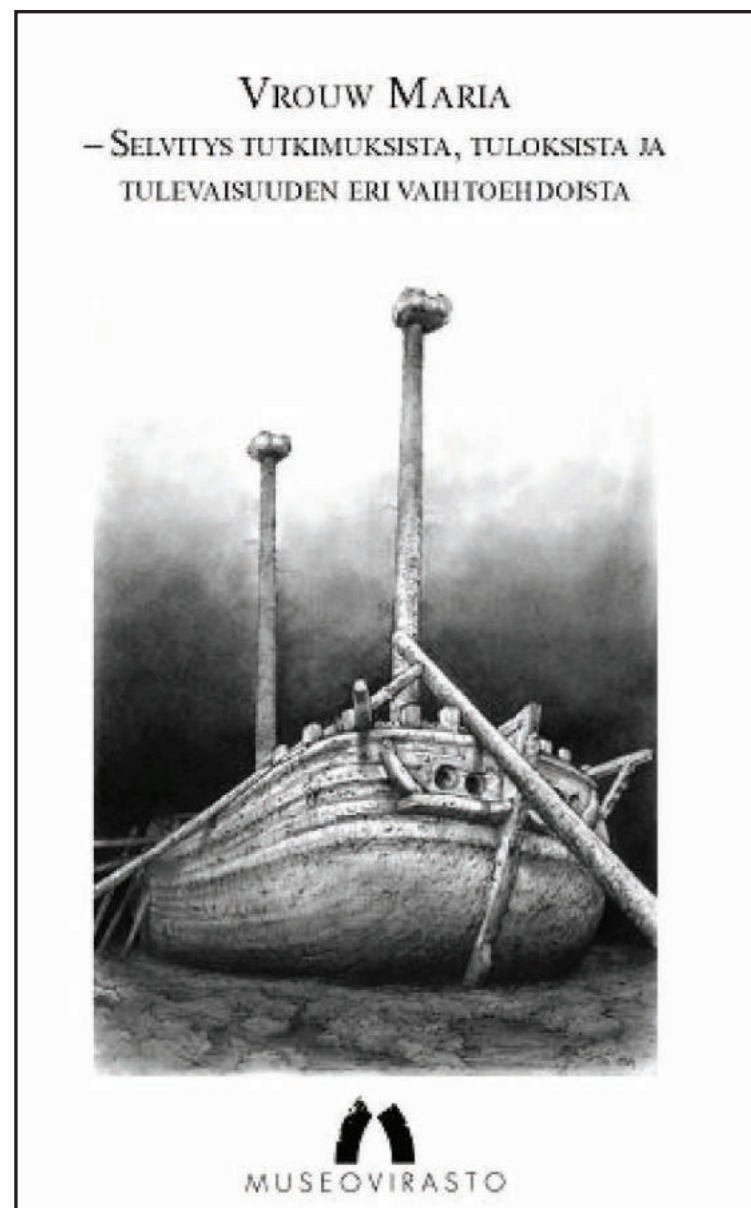
For more information on assessing sites see Unit 5: *Desk-based Assessment*.

5.4 Management Plans for Underwater Cultural Heritage

A management plan is a tool that structures the work that has to be or has been undertaken at a site. If well structured, all sites utilizing a management plan can be compared and used for planning time and budget. Due to the fact that maritime history and archaeology, especially regarding shipwrecks, has an international setting, trials are being undertaken to structure the way individuals observe, assess and overall manage, archaeological sites world wide. In the future it might be possible to compare assessed sites from Sri Lanka with those from Indonesia and European countries. In that way, information gathered will be available and of use by all researchers and policy-makers regardless of where they are from.

5.4.1 MoSS Management Plan

A management plan developed within the MoSS project (Monitoring, Safeguarding and Visualizing North European Shipwreck Sites: www.mossproject.com) has been executed in several EU countries and is available in English. The plan has been especially designed for sites underwater and is a dynamic document that requires updating each time something changes on the site. This design, for example, has been used by the Maritime Archaeological Unit of Sri Lanka.



Management plan of the Vrouw Maria wreck in Finland, as it was developed within the MoSS Project. © MoSS Project

The MoSS-project management plan is based on the following principles:

1. The format has to be the same in all countries working on the MoSS project and all countries should be able to use it.
2. A management plan should be made for all kinds of shipwreck sites.
3. A management plan can be based on very little information.
4. The management plan is not a static document; it should develop over the years.
5. All subjects should be clear to everyone and what to put in each section of the plan should be self-evident.
6. Wrecks should be described in the same way.
7. The importance of the wreck for maritime archaeology should be stated.
8. All types of research can be incorporated.
9. The management plan should be accessible and understandable for different kinds of professionals.
10. Each part of the management plan should be able to be used as an independent document.
11. It is unlikely that everybody who needs to obtain information from the management plan will read the complete document. It is therefore important that the format should be designed in such a way that there is a general summary and index which will aid simple navigation through the plan.

The format used for the MoSS developed Master Management Plan consists of the following chapters:

Management Plan of [Name] Shipwreck Site

- | | |
|-----------------------------------|--|
| 0.0 Administrative details | 3.0 Cultural valuation of shipwreck |
| 1.0 Introduction | 3.1 Experience aspects |
| 1.1 Previous studies | 3.2 Physical quality |
| 1.2 Historical context | 3.3 Quality of archaeological information |
| 2.0 Assessment of the site | 3.4 Conclusion |
| 2.1 Description of research | 4.0 Site management agenda |
| 2.2 working procedure | |
| 2.3 Research results | |
| 2.4 Risk assessment | |

Date of re-evaluation by different professionals. Interested parties, such as scientists and policy makers should be able to gain access to at least parts of the management plan. It is, therefore, very important that everybody understands each other, as miscommunication can be disastrous for maritime heritage.

Unit Summary

It is necessary to understand in detail the nature and extent of the significance that a heritage place has in society, in order to protect, preserve and conserve the values of that place. What is of value and what is not, may and often will, differ from person to person, or country to country. In order to determine significance for heritage management purposes, it is important to establish criteria, specifically designed to help heritage managers examine all of the factors that need to be taken into consideration. The intrinsic archaeological significance and the significance of change are important in this respect. Working with cultural impact assessment forms or management plans can help to further standardize assessments of archaeological significance. A summary of criteria covered in this unit are outlined below.

Value and Significance: A Summary Table

Is there enough of a wreck here to be significant?

Provenance
Representativeness
Rarity/uniqueness
Condition/completeness
Interpretive potential
Capacity to inform us about the past

Does this wreck have intrinsic significance (intrinsic value)?

Potential to yield important information
Associated with important events or people
Distinctive characteristics of a period
Representativeness
Social or spiritual significance
Significance in experience aspects
Economic value in the present time and future

What are the implications of change to this value?

Dynamics of change
Beneficial/ neutral/adverse
Permanent/temporary
Process of change
Sources (causes)
Direct/indirect
Synergistic/cumulative
Outcomes of change
Physical fabric
Setting and surroundings
Perceptual and cultural issues
Socio-economic aspects

Suggested Timetable

15 mins	Introduction
75 mins	Assessing Underwater Cultural Heritage Significance I - Introduction - Significance Assessments - Difficulties and Sensibilities of Adding Value to Cultural Heritage
	Break
90 mins	Assessing Underwater Cultural Heritage Significance II - Different Kinds of Cultural Heritage - Why is it Necessary to Assess Significance? - Different Methods of Assessing Significance
30 mins	Concluding Remarks and Closure

Teaching Suggestions

Throughout this unit students are introduced to the concept of significance in the management of underwater cultural heritage. The unit provides students with an understanding of the importance of significance assessments and the role they play in the management process. Some topics covered require more detailed guidance and explanation by the trainer than others. A few topics that may require additional teaching time or illustrated examples are listed below.

2 Difficulties and Sensibilities in Adding Value to Cultural Heritage

When covering this topic it may be useful for trainers to illustrate the teaching material using heritage examples from both within and outside the region. Ideally, these examples should demonstrate how value is added to cultural heritage on land (built heritage and archaeology).

5 Different Methods of Assessing Significance

When covering this topic it is crucial that trainers highlight two fundamental aspects; that there is an intrinsic significance that determines the initial value of a site and there is the significance of change that determines the stability of the site and the value it will keep over time.

5.3 Archaeological Impact Assessments (AIA) and Conservation Management Plans (CMP)

Management plans and Archaeological and Cultural Impact Assessments are some of the most complex topics presented in this unit. Additional time and guidance should be provided by the trainers to ensure that students have a solid understanding of each.

Practical Session

It is important that the students are provided with the practical task of applying significance assessment to at least one chosen area. Trainers should select two underwater archaeological sites and provide data and information regarding both for the students to consider. Students should be briefed to undertake a significance assessment based on several criteria explored in the unit and determine the overall significance of the site.

Alternatively students can be invited to bring data and information from a site in their own country to undertake a significance assessment. The advantage of this is that the results may be used and can serve as a blue print for how to do significance assessments in the student's own country. Be sure to brief students well in advance so that they have enough time to gather the relevant information required to complete a thorough assessment, prior to the start of the course.

It is recommended that students have one hour to interpret the information using the knowledge gained during the training. The conclusions of the practical assessment can be discussed in a plenary session.

Suggested Reading: Full List

- Allen Consulting Group. 2005. Valuing the Priceless: The Value of Historic Heritage in Australia. *Research Report 2*. Heritage Chairs and Officials of Australia and New Zealand, Sydney, November 2005.
- Asian Development Bank. 2003. *Environmental Assessment Guidelines*. Asian Development Bank.
- Bazelmans, J.G.A. 2006. Value and Values in Archaeology and Archaeological Heritage Management. *A Revolution in the Archaeological System*. Heeringen, R.M. Van and Lauwerier R.C.G.M. (eds.). Proceedings of the National Service for Archaeological Heritage in the Netherlands. Vol 46, pp.13-25.
- Cameron, E. and Van Den Bergh, J. 2003. The CHIA System in Hong Kong 1997-2003 and Beyond. *Fourth Annual KAPI Conference*. Manila, Philippines, 23-25 October 2003.
- Delgado, J. P. et al. 1986. Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places. *U.S. National Park Service Bulletin*. No. 20. National Park Service.
- Dunkley, M. 2008. *Hazardous, Bracklesham Bay, West Sussex, Conservation Statement & Management Plan*. English Heritage.
- English Heritage. 2008. *SHAPE 2008: A Strategic Framework for Historic Environment Activities & Programmes in English Heritage*.
- European Communities. 1999. *Guidelines for Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*.
- European Communities. 2001. *Guidance on Environmental Impact Assessments. EIS Review*.
- Finney, S. 2002. The Economics of Shipwreck Management: How do we Measure the Non-use Value of a Historic Shipwreck? *Bulletin of the Australasian Institute for Maritime Archaeology*. No. 26, pp. 1-6.
- Grenier, R., Nutley, D. and Cochran, I. (eds.). 2006. *Underwater Heritage at Risk: Managing Natural and Human Impacts*. ICOMOS.
- Gribble, J. 2006. The Sad Case of the *SS Maori*. *Heritage at Risk*, Special Edition. Grenier, R. Nutley, D. and Cochran, I. (eds.). ICOMOS, pp. 41-44.
- IAIA .1999. *Principles of Environmental Impact Assessment Best Practice*. International Association for Impact Assessment and Institute of Environmental Assessment IAIA.
- ICOMOS. 2000. *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance*. Australia. ICOMOS Incorporated.
- International Finance Corporation. 2006. *Performance Standard 8 Cultural Heritage*. International Finance Corporation, pp. 32-34.
- Jeffrey, W. 2007. War Graves, Munitions Dumps, and Pleasure Grounds: a Post-Colonial Perspective of Chuuk Lagoon's submerged World War II sites. PhD Dissertation James Cook University.
- Johnston, P. F. 2006 Shipwreck: Threatened in Paradise. *Heritage at Risk*, Special Edition. Grenier, R. Nutley, D. and Cochran, I (eds.). ICOMOS, pp. 88-90.
- Maerr, G. 2007. Values and Benefits of Heritage. *A Research Review, HLF Policy and Research Department*.
- Manders, M. 2004. Safeguarding a Site: The Master Management Plan. *MoSS Newsletter*, 3/2004, pp. 16-19.
- Palmer, R (ed.). 2008. The Rural Vernacular Habitat, a Heritage on our Landscape. *Futuropa: For a New Vision of Landscape and Territory*. No.1/2008. Council of Europe.
- Prott, L. V. (ed.). 2006. *Finishing the Interrupted Voyage: Papers of the UNESCO Asia-Pacific Workshop on the 2001 Convention on the Protection of the Underwater Cultural Heritage*. Leicester, Institute of Art and Law.
- Rogers, P. 2007. Guidelines for Reporting on a Cultural Impact Assessment.

- Samuels, K. L. 2008. Value and Significance in Archaeology. *Archaeological Dialogues*. 15 (1), pp. 71-97.
- Smith, T. and Nutley, D. 1998. *SS Lady Darling (1864-1880)*. Conservation Plan, Heritage Office NSW.
- Smith, H. D. and Couper, A. 2003. The Management of the Underwater Cultural Heritage. *Journal of Cultural Heritage*. No. 4, pp. 25-33.
- Smith, T. 2007. Wreck of the Japanese Type 'A' Midget Submarine M24. *Preliminary Archaeological Survey Report*. Heritage Office NSW. Department of Planning. Underwater Cultural Heritage Programme.
- Stanisforth, M. 2001. Assessing the Significance of Twentieth Century Underwater Cultural Heritage. Conference Proceedings: *20th Century Heritage: Our Recent Cultural Legacy*. David S. Jones. (ed.). The University of Adelaide and the ICOMOS Secretariat, pp. 145-149
- Steinberg, D. 2001. The Historic Shipwreck Australian: A Plan of Management. *MAGNT Research Report*. No. 9.
- Sundaresh A.S. Guar and Nair, R.R. 1997. Our Threatened Archaeological Heritage: a Case Study from the Tamil Nadu Coast. *Current Science* 73. No.7, pp. 593-598.
- Sundaresh A.S. Guar and Sila Tripathi. 2004. Stone Anchors (Composite Type) from the Saurashtra Coast, India: an Indicator of Ancient Ports and Sea Routes. *Bulletin of the Australasian Institute for Maritime Archaeology*. No. 28, pp. 125-132.
- Sundaresh A.S. Guar and Vora K.H. 2007. Ancient Technology of Jetties and Anchoring Points Along the West Coast of India. *Current Science* 93. No.7, pp. 987-991.
- Tripathi, S., Sundaresh A.S. Guar and Vora, K.H. 2004. Shipwreck archaeology of Goa: Evidence of Maritime Contacts with Other Countries. *Current Science* 86. No.9. 1238-1245.
- Ward, S. 2006. HMS *Colossus* Site Management Plan.
- Westerdahl, C. 1994. Maritime Cultures and Ship Types: Brief Comments on the Significance of Maritime Archaeology. *The International Journal of Nautical Archaeology*. 23.4, pp. 265-270.

Other Related Websites

- International Association for Impact Assessment: www.iaia.org
- Australian Antarctic Data Centre: www.aad.gov.au
- European Commission: ec.europa.eu/environment/pubs/studies.htm
- MoSS Project: www.mossproject.com
- National Disaster Management Authority (Pakistan): www.ndma.gov.pk
- Planning and Archaeology in North West Europe: www.planarch.org