'Showing it off'

The Potential for the use of Underwater Heritage Parks to Present In-situ Underwater Cultural Heritage in the Netherlands

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I first started to recognize underwater heritage parks when visiting Suomenlinna in Helsinki. I heard about the Kronprins Gustav Adolf Underwater Park that day and was surprised that such a fascinating recreational opportunity was relatively unknown to friends of mine who had resided in Helsinki most of their lives. Shortly afterwards, I read about the Museum of Underwater Art that was set to open in Townsville in 2020. This was a huge project that was regularly making national news in Australia and generating much excitement for local stakeholders. This got me thinking about the usefulness of such an approach to present *in-situ* underwater cultural heritage in both a recreationally enjoyable and educational format. I was also surprised to discover that these underwater heritage parks had a long history and had been utilised in many countries with significant underwater heritage management programs all over the world. That is with one notable exception, the Netherlands.

Chapter 1: General introduction

1.1 Introduction

Underwater heritage and archaeological parks, museums, trails and reserves are often utilised to present *in-situ* underwater cultural heritage (UCH) to the public. While the terminology employed in these endeavours varies by project and location, the general phrase, "underwater heritage park", provides the most accurate general description of their functional purpose. The use of, "underwater museum", in the context of heritage management implies that underwater heritage parks commit to storage, research, conservation, interpretation and public outreach, most of which cannot truly be achieved independently by an underwater heritage park. Furthermore, the use of "archaeological" negates the various types of tangible and intangible experiences with cultural heritage that these endeavours can provide. Intangible experiences could include the opportunity to interpret maritime cultural landscapes or communicate oral histories like at the Museum of Underwater Art (MoUA) in Townsville, Australia. Martijn Manders (2017, 169) has delineated between underwater heritage parks and trails by legal status and structure. However, as a general term referring to both concepts, "park" is preferred over "trail" or "reserve" for its non-linear indication and its welcoming tone, regardless of the legal status that has been obtained by the project.

Underwater heritage parks can provide a framework for public access to various types of UCH. For members of the public, access through underwater heritage parks amalgamates the thrill of sports diving and underwater discovery with the educational pleasure of encountering and learning about cultural heritage. This gives heritage management a platform to educate the public through interpretive material and face-to-face encounters, where they can reinforce the importance of UCH within the public's consciousness. Della Scott-Ireton (2007, 20) recognizes that this is the best way to ensure the long-term sustainability of cultural heritage resources. Consequently, underwater heritage parks are often used to present *in-situ* UCH to the public. The approach has garnered popularity in Australia, Finland, Sweden, the US, Canada, and the UK. However, underwater heritage parks are not being used to present *in-situ* UCH anywhere within the Netherlands. This warrants the questions; Are underwater heritage parks an effective tool for heritage

management? Furthermore, how and where could underwater heritage parks be used to provide sustainable public access to *in-situ* underwater cultural heritage in the Netherlands? The answer to this question is significant due to recent developments towards heritage management within the Netherlands.

1.2 Significance

This thesis draws significance from the Dutch government's decision to encourage the ratification of the Faro Convention (Council of Europe 2005). This document recognises the rights of all individuals to participate in cultural heritage and promotes the sustainable use of cultural heritage resources. A phrase used by the document is *'democratic participation'* in the cultural heritage process, which best emphasises the conventions focus on public and community orientated inclusion (Council of Europe 2005, Article 12). The convention explicitly states:

'The parties of this convention agree to:

a) *Recognise that rights relating to cultural heritage are inherent in the right to participate in cultural life, as defined in the Universal Declaration of Human Rights;*
b) *Recognise individual and collective responsibility towards cultural heritage;*
c) *Emphasise that the conservation of cultural heritage and its sustainable use have a human development and quality of life as their goal'* (Council of Europe 2005, Articles 1 A-C)

These notions are further cemented in Article 12 A-D of the convention, which states:

'The parties undertake to:

Encourage everyone to participate in:

a) *- the process of identification, study, interpretation, protection, conservation and presentation of the cultural heritage'*
- *Public reflection and debate on the opportunities and challenges which the cultural heritage represents;*

b) *Take into consideration the value attached to each heritage community to the cultural heritage with which it identifies;*

c) *Recognise the role of voluntary organisations both as partners in activities and as constructive critics of cultural heritage policies;*

d) *Take steps to improve access to the heritage, especially among young people and the disadvantaged, in order to raise awareness about its value, the need to maintain and preserve it, and the benefits which may be derived from it'* (Council of Europe 2005, Article 12 A-D)

Not only does this refer to activities directed towards terrestrial sites, but also for submerged cultural heritage. Consequently, ratification of this treaty will underscore the necessity to provide not only access to UCH but methods of actively engaging with the public. Article 5B highlights how signatories have a responsibility to: '*Enhance the value of the cultural heritage through its identification, study, interpretation, protection, conservation and presentation'*. This thesis will demonstrate how the use of underwater heritage parks can assist the Cultural Heritage Agency of the Netherlands in sustainably fulfilling these obligations.

The use of underwater heritage parks is yet to be employed within the Netherlands. The need to provide some kind of framework for *in-situ* UCH access can be reflected when looking at the Dutch blue economy, referring to the sectors of the economy that relate to the maritime sphere. The blue economy of the Netherlands is relatively stable; however, the largest contributor is the coastal tourism sector, which has experienced consistent growth since 2015 (European Commission 2019, 156). Furthermore, activities directed at tourism consist of a significant portion of the Netherland's GDP, with an overall strategy in the country now trending towards destination dispersal to relieve pressure from major tourism centres (OECD 2020, 241). As maritime-related tourism increases, so will the pressure on the Netherland's UCH. This is also partly due to the increasing accessibility of diving to the general public. The Netherland's premier diving organisation, Nederlandse Onderwatersport Bond, is associated with around 300 diving clubs across the country and approximately 20,000 members (onderwatersport.org, accessed 25 June 2020). Furthermore, UNESCO highlights that the global diving community is growing by around 12-14% each year (UNESCO 2013a, 7). Alongside more divers comes the risk of significant damage to UCH

through the removal of *in-situ* cultural heritage, accidental damage from diver contact, bubbles created by scuba equipment, and severe destruction through anchor deployment (Edney 2018, 66). Consequently, there is a necessity to utilise strategies that provide sustainable access to UCH. This thesis will determine if the use of underwater heritage parks can accomplish this.

1.3 Methodology

This thesis will employ a comparative approach to the global use of underwater heritage parks. Through analysing qualitative information within the literature that relates to different management plans and public engagement strategies, the thesis aims to determine what practices have been successful in the initiation of these projects. This refers to not only success in terms of visitor numbers, but through protecting UCH, providing the public with meaningful engagement with it and involving communities and stakeholder groups in activities pertaining to UCH and its management.

, the thesis will use the information acquired from analysing various underwater heritage parks to assess the feasibility of establishing an underwater heritage park within the Netherlands. To determine suitable locations to implement an underwater heritage park, this thesis will analyse the maritime stepping stones (MaSS) (mass.cultureelerfgoed.nl, accessed 27 June 2020) database. MaSS is a geographic database of UCH that is open for public use. Alongside MaSS, this thesis will develop a framework based on Kevin O'Brien and colleagues' (2011, 87) and Charles Ehler and Fanny Douvere's (2009, 58-59) risk matrices for activities directed at the conservation of *in-situ* UCH. Through the modification of these matrices to the various practical conditions of the Netherlands, this will create a method of analysis to assess the suitability of sites within the country in regards to both practicalities for visitors and compatibility with other activities related to maritime spatial planning. However, it is first necessary to establish the theoretical, legal and historic background of underwater heritage parks.

1.4 Background: The theoretical and legal framework of underwater heritage parks

Mortimer Wheeler (1956, 234) was amongst the first archaeologists to recognise the obligation that they share to present their finds to the public, he stated: *'it is the duty of the archaeologist, as of the scientist, to reach and present their finds to the public, and to mould his words in the common clay of its forthright understanding'*. This is an attitude that could be considered ahead of its time in an era where esoteric language was prominent within academic discourse (Richardson and Almansa-Sánchez 2015, 194-195). The sentiment was later echoed by John Fritz and Fred Plog (1970, 412), who stated: *'unless archaeologists find ways to make their research increasingly relevant to the modern world, the modern world will find itself increasingly capable of getting along without archaeologists'*. Contemporaneously, it has been firmly established that archaeology is inherently an activity conducted within the public interest. This means that archaeologists have a shared responsibility to enable public access to cultural heritage where possible, and these responsibilities are no different when regarding UCH.

Michael McCarthy is one of the pioneers of using underwater heritage parks as a method to present *in-situ* UCH to the public. He established the first underwater heritage park in Australia at Rottnest Island in 1981. In regards to this initiative, he stated that heritage professionals must be prepared to: '*Show it [underwater cultural heritage] to all walks of life, to professional people, labourers, school children, politicians, the unemployed and the handicapped'* (McCarthy 1983, 381)*. This highlighted a need to not only provide access to UCH for the diving community but also to the broadest possible cross-section of society. However, due to the inability of museums to conserve large quantities of finds, the costs associated with excavation, and the fact that UCH *ex-situ* loses much of its original context, conservation *in-situ* is often the most sustainable method of long-term resource management (Manders 2008, 34-38). The nuances of *in-situ* preservation are outside the scope of this thesis, but as a consequence of the widespread use of preservation *in-situ*, there emerged a need to revisit McCarthy's idea of the world's aquatic environments being an *'underwater display case'* for cultural heritage (McCarthy 1981). This was codified in the 2001 UNESCO Convention, which states: *'public access to in-situ underwater cultural heritage shall be promoted except where such access is incompatible with protection and management'* (UNESCO 2001, Rule 7). This indicates that access to *in-situ* heritage should be provided, where possible, in a sustainable manner. Sustainability has best been defined by Gro Harlem Brundtland (1987, 3.27) as: *'to meet the needs of the present without*

compromising the ability of future generations to meet their own needs '. Consequently, sustainable access would be access that is provided without causing unnecessary damage to the resource. This is difficult to enact due to the inherent potential for destruction that human interaction with cultural heritage poses.

Once on sight, members of the public are often un-monitored and may feel that they are not restricted to the same codes of behaviour expected by a museum. Either accidentally or wantonly, this can lead to the destruction of UCH. These problems have been further exacerbated by a media landscape that presents the UCH as a commodity to be sold within auction houses, rather than something to be valued and cherished by society (Benjamin and Gatley 2018). Due to the difficulties of accessing heritage underwater, there is a necessity to make these seemingly invisible sites, not only visible but cared for in the consciousness of the public. This has also become codified in the UNESCO Convention, which states: *'Each state party shall take all practicable measures to raise public awareness regarding the value and significance of underwater cultural heritage and the importance of protecting it under this convention'* (UNESCO 2001, Article 20). Accomplishing this task necessitates creativity on behalf of heritage management. Across much of the world, the solution to these problems has been to create underwater heritage parks that provide public access to UCH within a structured management framework.

1.5 Background: History and development of underwater heritage parks

The concept of harnessing UCH to create underwater heritage parks is by no means a recent development. However, in the past underwater heritage parks were divided by two separate, but intrinsically linked concepts. These are the underwater trail and the underwater museum. While the terminology used has tended to be interchangeable, the key difference is within the use of interpretive material. In the 1980s, interpretative material was placed underwater at the Ustica Maritime Trail, effectively making this the world's first underwater museum (Alves 2008, 81). The concept was later expanded on by Portuguese archaeologist, Francisco Alves (2008, 84), who chose to install interpretive material and anchoring stations at the Océan shipwreck in 1991. The Océan site was the first stand-alone shipwreck to be managed in such a way. The success of Ustica Maritime Trail and Océan

caused subsequent underwater museums to be established throughout the 1990s and 2000s, particularly within Israel, Italy, Finland, and China (Alves 2008, 81-83; Tikkanen and Alvik 2019, 110; Xiurun 2011). The scale of these projects varies greatly. In China, mega projects such as the Baiheliang Underwater Museum utilise submerged viewing platforms to enable visitors to go beneath the surface to access Tang Dynasty hydrological inscriptions (Xiurun 2011). However, the majority of concepts remain simplistic in their design and execution. Most follow the direction of the Ustica Maritime Trail and merely aim to enhance the visitor's experience with UCH by providing anchoring stations to protect the site and interpretive material to educate the public. Such endeavours embody the concept of the ecomuseum, which emerged from new museology as a way to challenge the traditional perception of museums as fixed, terrestrial, indoor structures (Poulet 1994, 71).

Underwater heritage trails have a slightly longer history than underwater museums. The Florida Keys Shipwreck Trail is likely the first of its kind and was established in 1979. The concept remains similar to the underwater museum but connects a variety of individual UCH resources to create a greater attraction. John Jameson and Scott-Ireton (2007, 12) recognise that this approach enables heritage managers to combine resources to create interpretive narratives of wider geographical areas, a concept that will be elaborated upon in the subsequent chapter. In turn, this enhances the value of individual sites in the mind of the public. While heritage trails did not initially deliver on-site education, now the tendency is to do so. According to Jameson and Scott-Ireton (2007, 12), a successful underwater heritage trail delivers not only conservation and recreational use but also education. Consequently, underwater heritage trails and museums have merged into a similar concept, best referred to as the underwater heritage park. Manders (2017, 169) has referred to concepts like this as: *'potentially a multi-million dollar business'*, which highlights the possibilities for collaboration with the tourism sector. This has never come to fruition within the Netherlands, although across much of the world underwater heritage parks have been managed in close collaboration with private enterprises.

Globally, the funding for cultural heritage has been waning. Nathan Schlanger and Kenneth Aitchison (2010, 113-114) identify that neoliberal political trends have put greater pressure on archaeologists to prove the inherent value that cultural heritage can contribute towards society. In response to such trends, the conservation, monitoring, and research of UCH can

strive for solvency. This can be accomplished through collaboration with volunteers or the tourism industry. Underwater heritage parks can provide a platform for such collaborations. In recent years, private initiatives have been at the forefront of successfully capturing the public's imagination. Many of these installations are the work of Jason deCaires Taylor, an artist and diver who utilises the medium of sculpture to address social and environmental issues. Taylor's installations provide another example of concepts from new museology and critical developments in heritage studies, which seek to challenge the traditional authority of heritage discourse and utilise the museum as an agent for social change (Hafner *et al* 2007; Smith 2006; McCarthy 2011, 1041). Taylor has successfully installed underwater attractions at, Cancun, Mexico (2007); Lanzarote, Spain (2017); and Townsville, Australia (2020). The latter of these projects has aimed to not only financially invigorate an impoverished community but to empower Indigenous Australians and incorporate them into the narratives being told by the museum. This will be elaborated upon in Chapter Three. Another stakeholder-led project is the Porkkala Wreck Park. This provides an example of a grass-roots response to protect UCH emerging from within Finland's diving community. This approach has been commended by Sallamaria Tikkanen and Laura Seesmeri (2019, 98) as: *'a private initiative in the spirit of this [Faro] convention'*. This project will also be discussed further in Chapter Four of this thesis. Both of these initiatives are reflective of the goals of public archaeology, to use heritage to improve livelihoods and benefit society as a whole. The Townsville project accomplishes this through community authorship of cultural heritage, and the Porkkala Wreck Park does so through public stewardship of the resource. Within the context of the ratification of the Faro Convention (Council of Europe 2005), it is necessary to assess the Netherland's UCH to determine if similar projects could be initiated within the country.

1.6 Thesis overview

This thesis aims to assess the usefulness of underwater heritage parks and determine: Are underwater heritage parks an effective tool of heritage management and how and where could underwater heritage parks be used to provide sustainable public access to *in-situ* underwater cultural heritage in the Netherlands? Through an analysis of case studies and literature, the subsequent chapter of this thesis will assess the challenges and opportunities

that underwater heritage parks can create from a heritage management perspective, and assess whether or not they are an effective tool for heritage management. If the challenges created by underwater heritage parks can largely be mitigated and underwater heritage parks can provide useful heritage management framework, then a similar analysis is also required for the nearby residents of an underwater heritage park. These communities are also likely to encounter various benefits and challenges through such a project. Chapter Three will employ literature research and an analysis of the case study of MoUA in Townsville, Australia to determine the benefits that underwater heritage parks can bring to adjacent communities, and whether the challenges of heritage tourism can be mitigated.

 If the use of underwater heritage parks can be an effective tool for heritage management and have a positive impact on local resident then their use within the Netherlands should be considered. However, providing public access to UCH inherently increases the potential for damage and loss to these resources. This highlights the need to determine what strategies can be effective to mitigate the potential for loss and provide sustainable diver access to UCH resources. Chapter Four will assess the case studies of underwater heritage management in Croatia, the Dalarö Dive Park (the Dalarö model), the Porkkala Wreck Park (the Träskö Project), and the Kronprins Gustav Adolf Underwater Park. All of which take unique approaches to the provision of public access to UCH for the diving community. While divers are an important stakeholder in UCH management, it is also essential to engage with the non-diving public to change negative attitudes towards UCH. The inherent difficulties of taking the non-diving public underwater prompt the need to assess how underwater heritage parks can provide an effective way to present UCH to the non-diving public. The penultimate chapter of this thesis will answer this by analysing the effectiveness of methods that have been used to present UCH to the non-diving public.

If underwater heritage parks are an effective tool for management, a positive force for local residents, and can deliver protection of UCH and public engagement with a non-diving audience, then they would be an effective way to present *in-situ* UCH in the Netherlands. This necessitates the need to create a framework to assess the suitability of UCH sites for such a purpose. Through developing a model based on O'Brien and colleagues' (2011, 87; Ehler and Douvere 2009, 58-59) matrices of activities that can contradict maritime cultural heritage conservation, suitable regions within the Netherlands can be identified. These

regions can then be further explored for the practical application of an underwater heritage park in relation to other aspects of maritime spatial planning. This will constitute the final chapter of this thesis and should identify locations and potential stakeholders for the use of underwater heritage parks within the Netherlands.

Primary Research Question: Are underwater heritage parks an effective tool for heritage management? How and where could underwater heritage parks be used to provide sustainable public access to *in-situ* underwater cultural heritage in the Netherlands?

Sub-Questions:

- What challenges and opportunities can underwater heritage parks create from a heritage management perspective? Can the challenges be mitigated to make them an effective tool for heritage management?
- What benefits can underwater heritage parks bring to nearby residents? Can the negative impacts of heritage tourism be mitigated?
- How do underwater heritage parks provide sustainable diver access to underwater cultural heritage?
- How can underwater heritage parks create effective methods of engagement with the non-diving public?
- What locations are suitable to create underwater heritage parks that provide sustainable public access to *in-situ* underwater cultural heritage in the Netherlands?

Chapter 2: What challenges and opportunities can underwater heritage parks create from a heritage management perspective and can the challenges be mitigated to make them an effective tool for heritage management?

2.1 Introduction

Heritage management needs to ensure the sustainability and protection of heritage resources that are deemed to have inherent significance for archaeological, scientific, economic, aesthetic, experiential, and social purposes (UNESCO 2013b, 84). Heritage management also needs to communicate these values to the public, guide education on the nature of the resource and, where possible, provide public access (UNESCO 2001). Underwater heritage parks have been used as a heritage management tool to accomplish these tasks in relation to *in-situ* underwater cultural heritage (UCH) around the world. However, the use of underwater heritage parks as a tool for heritage management creates inherent challenges. Providing diver access to cultural heritage resources can significantly increase the potential for divers to cause damage to the resource. It also creates the challenge of presenting underwater heritage to a non-diving audience and providing education underwater. Finally, increased commercialisation of cultural heritage resources can risk a harmful Disneyfication of the cultural heritage experience. The term, "Disneyfication", being a reference to the negative commercial practices that impact the authenticity of Disney amusement parks. However, underwater heritage parks also provide opportunities to engage with divers as a stakeholder, bring solvency to heritage management, create a deeper level of protection, and provide public education through access. This chapter will analyse the challenges and opportunities created by underwater heritage parks and assess whether the challenges created through this management approach can be mitigated. This will determine whether underwater heritage parks can be an effective tool for heritage management.

2.2 Challenges for heritage management created by underwater heritage parks

Underwater heritage parks can create a number of challenges for heritage management. Increasing the number of divers accessing *in-situ* cultural heritage can increase the potential to cause damage to the resource through both accidental and wanton means such as the removal of *in-situ* objects, diver contact, bubbles from scuba equipment and anchoring. This can cause a loss of authenticity and aesthetic value to UCH sites. Furthermore, underwater heritage parks face the inherent difficulty of presenting submerged cultural heritage to a non-diving audience. These are important stakeholders to engage with to change negative attitudes towards UCH in the public consciousness. Going beneath the surface provides another challenge, the effect of nitrogen narcosis. This can significantly impact the ability of divers to retain information, which may negate the usefulness of providing on-site education. Finally, underwater heritage parks risk a harmful Disneyfication of cultural heritage. When large sums of money are involved in the cultural heritage process, there is always a concern that inauthentic and dishonest practices will emerge to further attract the tourist dollar.

2.2.1 Increased potential to cause damage to cultural heritage

Although divers are an important stakeholder in UCH management, they have a tremendous potential to inflict damage upon cultural resources. This can be enacted through both accidental and wanton means. The study of UCH is fortunate in its unique place within the public's imagination; however, this has led to controversial and problematic attitudes towards UCH (Benjamin and Gately 2018, 30). Activities such as looting and souvenir collection remain a consistent issue for the preservation of submerged sites. This can affect site equilibrium and can cause mechanical damage and a loss of archaeological context and provenance. Overtime, souvenir collection can also significantly diminish the recreational value of a site (Edney 2018, 66). Many members of the diving community still see the UCH as merely discarded economic assets or collector's items, although through education these attitudes can change (Scott-Ireton 2007, 20). Nevertheless, even conscientious divers have the potential to destroy *in-situ* cultural heritage through accidental means. Accidental diver contact can be enough to cause severe mechanical damage to sensitive cultural heritage.

Joanne Edney (2018, 228-231) found that this can occur quite frequently, even with well-trained divers. Bubbles created by divers using closed-circuit scuba equipment can also accelerate corrosion processes and deteriorate sensitive *in-situ* cultural heritage. Furthermore, anchoring at a site for the purpose of recreational diving can cause severe damage to UCH through physical destruction; although underwater heritage parks can deploy anchoring buoys to largely prevent this (Edney 2018, 66). All of these actions can cause mechanical damage, a loss of situational context and provenance and work to diminish the recreational appeal of a site. Without protective measures and careful site selection, an underwater heritage park could result in significant losses to cultural heritage resources. However, there are physical, legislative and psychological ways to protect UCH from this kind of damage. These will be discussed later in this chapter. Furthermore, Chapter Four will demonstrate how these physical, legislative and psychological methods can be incorporated into broader protective and admissive management frameworks through underwater heritage parks. Nevertheless, education may be the best way to change public attitudes towards UCH.

2.2.2 Difficulty of reaching non-diving members of the public

Divers are generally considered to be the primary stakeholder in regards to UCH management. However, Julie Satchell (2008, 111) and Massimiliano Secci (2011, 121) both recognise that engagement with the non-diving public is equally as important to changing public perspectives and ensuring the long-term protection of UCH. McCarthy (1981, 381) reflected this sentiment in the statement that heritage managers have an obligation to: '*show it to all walks of* life'. Current methods of public engagement such as historical recreations, museum exhibits, books, magazines, and television documentaries can engage with the non-diving community. However, face-to-face encounters with cultural heritage are often sought after by members of the public (Hargrove 2002, 10-11). Furthermore, cultural heritage taken out of its *in-situ* context loses much of its authenticity and meaning. For underwater heritage parks, this creates a challenging situation as they must either take the public beneath the surface or re-construct sites conceptually to provide non-diver access. Existing underwater heritage parks have used a variety of methods to accomplish this, including remote-operated vehicle (ROV) and glass-bottom boat tours, snorkelling and kayaking, interpretive material and walking trails, infrastructure that takes the public beneath the surface, providing virtual access, and collaboration with museums and

information centres. Chapter Five of this thesis will fully assess the effectiveness of these strategies and how they can best be employed by underwater heritage parks. However, education in a terrestrial environment for the non-diving audience faces different challenges to education targeted towards divers on-site.

2.2.3 Effects of nitrogen narcosis on providing education underwater

While underwater heritage parks use plaques and other educational material to engage with divers, the effectiveness of such activities while divers are submerged may be questionable. Due to nitrogen narcosis, more commonly known as "the martini effect", the cognitive abilities of submerged divers are hindered through the consumption of compressed gases. This is often said to emulate similar effects to alcohol consumption, but is usually negligible at depths less than 30m (Hobbs and Kneller 2009; Kirkland *et al* 2020). Hobbs and Kneller (2009, 80) conducted a study of divers' cognitive abilities under the influence of nitrogen narcosis. The research found that at a maximum depth studied of 37-40m the effects of nitrogen narcosis were able to significantly reduce the level of information processing in test subjects. However, recognition memory whilst underwater remained largely unaffected and at shallower depths the impact was negligible (Hobbs and Kneller 2009, 80). Consequently, the ability to provide meaningful education underwater may be hindered dramatically by nitrogen narcosis in deeper waters. Nevertheless, educational material can still serve to enhance the diving experience at these depths by highlighting its value and deciphering what the diver encounters. Warning signs are also likely to be comprehended by divers. Furthermore, educational material can be employed on land in the form of information boards near the underwater heritage park in question. This can provide extensive information and guide behaviour before divers reach the water. Regardless, underwater heritage parks are likely best suited to shallower depths of less than 30m, where interpretive material can have the maximum intended impact and diver decision making is optimal.

2.2.4 The risk of the Disneyfication of cultural heritage

Another challenge created by underwater heritage parks is the Disneyfication of both the cultural heritage experience and the management of *in-situ* sites. David Harris (2005, 50) best defines Disneyfication as: *'characteristic forms of organisation involved in running a global leisure business that have been much imitated and applied by other leisure business.*

This can be seen as transferring cultural capital into economic capital'. These characteristic forms of organisation involve excessive ticket prices, constant up-selling, and the inclusion of large corporate sponsorships that guide interpretation (Harris 2005, 51-52). Such practices undermine the ethos of cultural heritage as a shared public resource. Furthermore, the obsession with profitability often characterised by Disney amusement parks spurns inauthentic histories, and a reliance on cultural nostalgia to sell admission (Harriss 2005, 51-52). This has been the fear over multi-million dollar infrastructure projects like the proposed, Alexandria Museum Project, which aims to take the non-diving public underwater to interact with UCH (Manders 2008, 37). These practices not only commercialise cultural heritage to an excessive extent but also create disingenuous environments and cause *in-situ* heritage to lose much of its authenticity and context. Authenticity and context are essential to meaningful encounters with cultural heritage, and Cheryl Hargrove (2002, 10-11) highlights that it is deeply sought after in the public's interactions with cultural sites.

2.3 Opportunities for heritage management created through underwater heritage parks

Although underwater heritage parks create challenges for heritage management, they can also provide many opportunities. Here these opportunities will be discussed and case studies will be utilised, where relevant, to provide examples of how underwater heritage parks have capitalised on these possibilities. Underwater heritage parks can create avenues to collaborate with divers as a stakeholder group, which enhances the level of public involvement in cultural heritage. This can create advocates for cultural heritage and volunteers to conduct monitoring actions. The Iona II Dive Trail provides a case study of how this can be accomplished (Cooper and Knott 2016). Enhanced public involvement can also be achieved through collaborations with local businesses. Such collaborations can bring solvency to cultural heritage management through monitoring actions and the education and protection these businesses can provide. Underwater heritage parks can also protect *in-situ* cultural heritage through physical, legal and psychological means. Finally, underwater heritage parks can provide a valuable space for public education. Through education, heritage management can change diver attitudes in the long-term and reinforce the value of

the resource through interpretive narratives. This enables sustainable heritage management. The Victoria Shipwreck Trail provides a case study for educational opportunities and re-enforcing the value of UCH through interpretive narratives.

2.3.1 Collaborating with divers as a stakeholder

Activities such as looting and souvenir collection remain a consistent issue for the preservation of UCH. This has the potential to negatively affect the relationship between heritage management professionals and the diving community. However, heritage management can utilise the existing body of interest towards UCH within the diving community for constructive purposes. David Nutley (1987, 29-33) believed that collaborative approaches that seek to recruit divers for the protection of underwater sites find better results than punitive measures. Manders and Underwood (2012, 6) also recognised that community-level protection by stakeholders that have a shared understanding of their heritage and history may be the most effective way to protect UCH. Underwater heritage parks create a space where this understanding can be communicated and heritage can be enjoyed. Enabling sports divers to recreationally use UCH ensures that when sites come under threat, so does the hobby of the diver. This allows the community to be an integral force in ensuring the protection of cultural heritage on a legal and political level. Divers are also important to the support of activities concerning evidence of human existence underwater. If conscripted as an ally, sports divers can serve as the *'eyes and ears'* of heritage management (Manders and Underwood 2012, 5-6). This not only allows divers to be crucial in discovering and reporting new sites, but it can enable them to be conscripted to assist with monitoring activities. Underwater heritage parks can provide a framework for such monitoring activities and may even be impossible without collaboration with the diving community.

Keith Muckelroy (1980, 186) was amongst the first to recognise the potential of divers as integral to the protection of UCH. He noted that ostracising the public from activities regarding the protection and investigation of submerged sites risks losing the public's interest. In turn, this dissipates any political pressure to assure the preservation of such sites at a governmental level (Muckelroy 1980, 186). Funding and support for the preservation of cultural heritage come directly from the public's belief in the value of such activities. Consequently, heritage management must build positive relationships with the sports diving

community. When united with a common interest in the protection and preservation of UCH, the sports diving community can provide the representation necessary to apply the pressure required to encourage the political establishment into action. This is evidenced by the experience in the Netherlands, Australia and the United Kingdom. In all these nations, the sports diving community were pivotal in encouraging the development of heritage management programs and heritage protection legislation regarding UCH (Anderson *et al* 2006, 139-140; Cooper and Knott 2016, 5-8; Maarleveld and Manders 2006, 129).

Globally, the protection of cultural heritage consistently faces issues of funding (Schlanger and Aitchison 2010). This is problematic for UCH, where the cost of trained divers, vessel-hire, and other equipment can be exceedingly prohibiting. Even regular monitoring actions can incur high costs. Consequently, heritage managers are forced to make difficult decisions based on the resources allocated to them. This may sometimes include undertaking the decision to de-select sites that would otherwise have warranted protective action, had funding been available. One of the best ways to offset these costs is through working closely with the diving community. Programs like the Nautical Archaeological Society's Adopt a Wreck scheme aim to foster a sense of stewardship over UCH sites. Through the program, diving clubs and other associations voluntarily monitor allocated wrecks. This is achieved by taking photographs at specified points and by reporting any evidence of unlicensed disturbances. This scheme helps to conduct monitoring actions across some 120 sites across the UK (nauticalarchaeologysociety.org/adopt-a-wreck, accessed 21 April 2020). Through these strategies, the public builds stewardship and community pride of their cultural heritage, which creates the best layer of sustainable long-term protection. This enables heritage managers to use what resources they have more efficiently, enabling greater and more expansive site protection. The program has also inspired other similar initiatives that have used the framework of underwater heritage parks to encourage diver participation in monitoring actions, such as the Iona II Dive Trail (Cooper and Knott 2016).

A case study for collaborating with divers as a stakeholder: The Iona II Dive Trail

Situated near Lundy Island, England, the Iona II Dive Trail represents an innovative initiative in the presentation of UCH. The Iona II shipwreck is the remains of a paddle steamer purchased as a Confederate blockade runner for the American Civil War in 1864. However, the ship was sunk near Lundy Island during a storm in January of 1864 (Cooper and Knott

2016, 9-12). Since its discovery in 1976, the site has been the subject of numerous archaeological investigations. The Iona II Dive Trail initiative was commissioned to facilitate responsible, licensed access to the site. It aimed to create a community-orientated program with divers as active participants. Cooper and Knott (2016, 9-12) saw under heritage parks as a model for diver involvement in the monitoring of UCH.

Monitoring UCH is an expensive but necessary undertaking. Sites need to be regularly inspected for indicators of biological, physical, and chemical agents of destruction. The Iona II Dive Trail aimed to utilise the diving community to conduct these monitoring actions. Wessex Archaeology designed four themed underwater guides for the general public. This included an overview of the history, two specialised guides on marine life and shipbuilding, and one guide orientated towards a participatory monitoring scheme. The monitoring scheme originally displayed a series of 26 points throughout the site where divers are encouraged to take photographs. This was later revised to just 12 points as divers had difficulty taking all 26 photographs in the one dive (*see* Figure 1; Cooper and Knott 2016, 15-18). These are all identifiable features of the wreck that enable archaeologists to check sediment level and structural collapse on the site. Photos taken by divers could then be uploaded to a public Flickr account, which allows heritage managers to observe the condition of the site without having to undertake any action underwater. The project also chose to opt for online resources that would have longevity, connecting the websites to established government platforms. Furthermore, interpretive material and guides are available for download online in a PDF format, eliminating the need for large-scale printing, and re-issuing (Cooper and Knott 2016, 15-18). This ensures that the project can be sustainably maintained with limited effort on behalf of heritage management bodies. These types of monitoring collaborations bring solvency to heritage management and can also be possible with private commercial enterprises.
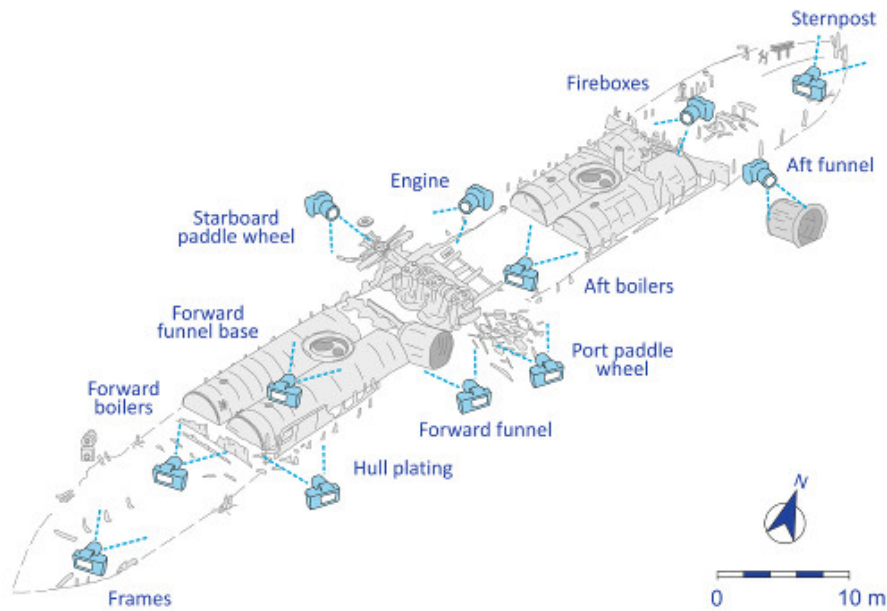
Figure 1. Iona II Dive Trail: Public monitoring scheme.

From: Cooper and Knott (2016, 18)

2.3.2 Bringing solvency to activities directed at underwater cultural heritage

Scott-Ireton and Jenifer McKinnon (2015, 166) recognise a reluctance on the part of archaeologists to acknowledge the financial aspects of activities directed at UCH. This may be due to the ethical consensus within archaeology to outright reject the commercialisation of cultural heritage. This eliminates any risk of Disneyfication. Consequently, according to Scott-Ireton and McKinnon (2015, 161), studies that analyse the financial contributions of UCH are nascent. However, bringing solvency to the management of UCH can provide economic sustainability for activities directed at the protection of sites. In a financial climate where long-term trends show that funding for activities directed at cultural heritage is decreasing, heritage managers must explore avenues of protecting heritage resources with limited available funding (Schlanger and Aitchison 2010; Richardson and Almansa-Sánchez 2015, 202). While cultural heritage should carry no economic value as a commodity sold within auction houses, it is perfectly acceptable to recognise the contribution of cultural heritage sites to relevant stakeholder groups within the tourism sector (UNESCO 2013b, 36; Manders *et al* 2012, 8). Underwater heritage parks provide management with the opportunity to collaborate with not only members of the diving community, but also

tourism operators. Through such collaborations, heritage resources become packaged into a product suitable for commercial consumption. If given a prominent role in the creation of such commercialised heritage packages, heritage managers can ensure the propagation of positive attitudes to UCH onto the wider public. This can mitigate the risk of Disneyfication. Heritage management can also vet prospective businesses before they become involved in the presentation of cultural heritage. This happened at the Dalarö Dive Park, where tourism operators were invited to apply for stewardship positions (O'Brien *et al* 2011, 48-54). This approach shows that when instilled with cultural heritage values, commercial operators can successfully become educational officers, advocates, and guardians for cultural heritage (O'Brien *et al* 2011, 48-54). Furthermore, much like partnerships with diving communities, tourism operators can also conduct monitoring actions and on-site maintenance. Two case studies of private involvement with cultural heritage can be found in Chapter Four of this thesis; these are the experience with UCH management in Croatia and the Dalarö Dive Park. Both utilise the private sector to create avenues for greater site protection.

2.3.3 Creating avenues for greater site protection

Underwater heritage parks can provide a deeper level of protection to UCH, whilst simultaneously enabling public access. This can be achieved through physical, legal or psychological means. In Croatia, this has been achieved physically, through the use of cages that restrict human interference with heritage resources (Mesić 2008). However, less prohibitive options are also possible. Selvaggio and colleagues (2009) have used underwater surveillance equipment such as cameras to monitor UCH at Cala Gadir Underwater Archaeological Site in Italy. They report that the installation of cameras has been a cost-effective psychological theft deterrent and promoted responsible on-site behaviour. Furthermore, the cameras are broadcast online which provides access to the non-diving public (Selvaggio *et al* 2009, 418). Even without the use of security equipment, underwater heritage parks can protect through creating a legislative framework for conservation. With the help of the diving community, an underwater heritage park can lobby for the creation of a protective legal zone. This has happened at the Porkkala Wreck Park in Finland, where a diving club has lobbied for the creation of a recognised zone to protect nearby shipwreck sites (Luoto 2018). Such a zone can create rules that ensure anchoring at designated buoys only or dictate speed limits around the protected area (Tikkanen 2019, 110-111). This can ensure that the activities of not only diving members of the public, but also other users of

the maritime environment are mindful of protective needs of UCH. A legislative framework could also potentially ban bottom-impact fishing equipment, ensuring the safety of heritage resources within an underwater heritage park. This could also ensure the protection of *in-situ* cultural heritage sites that are not possible for the public to access. However, the best level of protection comes from public awareness of the value of the resource.

Irena Rossi (2012, 301) claims that the use of signs that remind patrons that sites are legally protected and interference with them is a crime has worked as a powerful deterrent. Furthermore, Lorne Murdock and John Stewart (1995, 881) stated that at Fathom Five Marine Parks the simple presence of monitoring boards was enough to ensure an overall improvement in diver behaviour. Such actions create a sense of public ownership and increase the value of cultural heritage through the endowment effect. Consequently, through showing that cultural heritage resources are not abandoned, underwater heritage parks can show the public that these resources are valued and cared for. This works to provide a layer of protection from human interference in its own right. Members of the public who coincidentally encounter the site may immediately recognise symbols of cultural heritage protection like the Blue Shield logo. This may cause them to associate UCH with historical conservation efforts and not abandoned financial resources. Chapter Four of this thesis will provide case studies of UCH sites in Croatia, the Dalarö Dive Park, the Porkkala Wreck Park and the Kronprins Gustav Adolf Underwater Park. At these locations, physical, legal, and psychological methods of site protection have been used within the context of providing either protective or admissive access to the diving public. However, the best level of protection may come from education.

2.3.4 Providing education through public access

As previously discussed, divers can be both a constructive and destructive force when engaging in activities that involve UCH. Consequently, enabling UCH to become increasingly patronised furthers the pressure on the resource. Nutley (1987, 29-33) recognised that the best way to mitigate the potential for deliberate damage, vandalism, and looting is through education. Unfortunately, sensationalist information, commonly propagated by the media, frequently depicts UCH as nothing more than a financial resource. John Benjamin and Iain Gately (2018) demonstrated that the prevalent attitude towards UCH is that nothing more than financial value is to be gained from activities directed towards it. This is problematic for

heritage management and highlights the need to use methods of public outreach to instil positive behaviour and attitudes towards UCH.

Jameson and Scott-Ireton (2007, 1-2) claim that the most important role of educators and interpreters of cultural heritage is ensuring that the public comprehends cultural heritage values. The researchers highlight that public interpretation is the most important activity that occurs at cultural heritage sites like underwater heritage parks. To Jameson and Scott-Ireton (2007, 12), this process of interpretation can deliver all of the requirements of conservation, education, and stewardship. With terrestrial museums, glass cases and juxtapositioning indicate the intrinsic value of cultural heritage to the public. However, in the case of *in-situ* UCH, the public is given no such indication of the importance of a site (Scott-Ireton 2007, 20). Amongst the many benefits of underwater heritage parks is the ability to communicate the inherent value and importance of submerged sites to the public. A component of most education strategies is the production and distribution of literature in the form of interpretive panels, brochures, maps, and websites that provide site managers with the opportunity to communicate with the public. This allows heritage management to indicate that submerged sites are not abandoned financial resources. Furthermore, interpretive material can provide deeper levels of education and outreach at submerged sites. This informs the public from the viewpoint of cultural heritage management and reinforces the value of UCH.

Jameson and Scott-Ireton (2007, 12) highlighted another effective way to reinforce the value of UCH, this is through the use of interpretive narratives. Interpretive narratives enable heritage management to structure a compelling story around the site in question. Underwater heritage parks provide a framework for this. Sites that may otherwise be considered low priority can be identified and incorporated into a wider regional, national, or global story. Through these narratives, heritage management can reinforce the greater archaeological, historical, scientific, social, aesthetic, experiential and economic significance of the site to the public. Scott-Ireton (2007, 20) states that the purpose of public interpretation of shipwrecks is to: *'foster their value as fixed points or inalienable objects in the public consciousness'*. This is a vital part of the heritage management process, as only once the public consciousness has changed to perceive UCH as intrinsically valuable to society at large, can the conservation and preservation of these resources become possible.

The Victoria Shipwreck Trail in Australia aimed to accomplish this. It shows an effective use of public education and interpretive narratives to enhance the value of the state of Victoria's UCH.

A case study for providing education through public access: The Victoria Shipwreck Trail

Australia makes intensive use of underwater heritage parks to display *in-situ* UCH, with at least 8% of Australia's shipwrecks being presented to the public in this format (Smith 2003:124). The Victoria Shipwreck Trail reflects the benefits of creating a broad framework for heritage management. The trail is set along a 300km stretch of historically challenging coastline from Port Fairy to the South Australian border. Rather than allowing sites that may be considered less interesting to fall out of the public consciousness, the Victoria Shipwreck Trail incorporates 50 known shipwreck sites into a broader regional narrative. Each shipwreck is presented as a valuable piece in the puzzle of a wider story of the state of Victoria and its maritime history (Souter 2006, 166-168). Through the creation of such an interpretive narrative, the value of all sites is re-enforced within the public consciousness. Heritage Victoria has also published a broad variety of educational interpretive material to accompany the trail and much of it is available online to ensure widespread and free access. These pamphlets for each of the accessible wrecks include detailed site drawings, sketches of artefacts, photographs, and a description of the historical overview of the wreck and its place within the broader history of the region as well as a page on the importance of protecting UCH (*see* Figure 2). The scheme has also included heritage trail signs which can be found terrestrially and enjoyed by all members of the public, as well as concrete and glass plinths which can be found underwater and serve to educate divers on-site(Souter 2006, 166-168).

Figure 2. Pamphlets and educational material for the Victoria Shipwreck Trail

From: David Akroyd, 2020.

2.4 Conclusion

Table 1. Opportunities, challenges and mitigation strategies for heritage management

Opportunities	Challenges	Mitigation strategies
Providing a deeper level of UCH protection.	The potential for damage caused by the removal of *in-situ* cultural heritage, diver wear, scuba equipment and anchoring.	• Physical, legal and psychological methods of protection. • Anchoring buoys. • Education that changes public attitudes towards UCH.
Creating spaces and opportunities to engage with divers as stakeholders.	Reaching the non-diving public.	• ROV and glass-bottom boat tours. • Snorkelling and kayaking. • Interpretive material and walking trails. • Infrastructure that

		takes the public beneath the surface. • Virtual access. • Collaboration with museums and information centres.
Provide education which enhances the value of UCH within the public consciousness.	Difficulties of providing education underwater due to the effects of nitrogen narcosis.	Not a serious issue for sites under 30m depth. Sites deeper than 30m should have educational material on the shore and warning signs on-site.
Bringing solvency to UCH management.	The risk of the harmful Disneyfication of cultural heritage management.	Ensure heritage management is involved in the creation of commercialised heritage packages.

The use of underwater heritage parks to present *in-situ* UCH creates challenges for heritage management. Human interaction with cultural heritage can be an inherently destructive force when managed incorrectly. Wanton destruction such as the removal of artefacts from their *in-situ* context and accidental destruction through diver contact, scuba equipment and anchoring can cause damage to cultural heritage resources. However, this can be mitigated through physical, legal and psychological methods of protection. Providing education underwater can also be a challenging endeavour. At depths that exceed 30m, it may be futile to do more than provide basic warnings and explanations. However, at depths under 30m, information is largely retained by divers. Furthermore, reaching a non-diving audience is essential to changing public attitudes towards UCH. This can be problematic with *in-situ* underwater sites. However, ROV and glass-bottom boat tours, snorkelling and kayaking, interpretive material and walking trails, infrastructure that takes the public beneath the surface, providing virtual access, and collaboration with museums and information centres have all been used to accomplish this. Underwater heritage parks also risk a harmful Disneyfication of the cultural heritage experience. If overly commercialised, this can have the negative effects of creating inauthentic histories and using nostalgia to encourage admission. This negates the philosophy of cultural heritage as a shared public resource and can also cause sites to lose much of their authenticity and context. To mitigate this issue,

cultural heritage managers need to be involved in the creation of commercialised heritage packages.

The use of underwater heritage parks also provides a variety of management opportunities. Close collaboration with the diving community can create a block that advocates on behalf of cultural heritage conservation in the political arena. Furthermore, it can create allies that can assist with the monitoring and observation of UCH. Programs like the Iona II shipwreck monitoring trail use divers for citizen science. This can be an effective way to check the condition of a wide range of sites without having to conduct expensive monitoring operations. Similar activities can be conducted in collaboration with commercial tourism operators. These kinds of collaborations can bring solvency to the heritage management experience and create educational officers, guardians, and advocates for UCH. They can also provide opportunities for heritage professionals to be involved in the commercial presentation of cultural heritage to the public. Underwater heritage parks can also provide a deeper level of protection from public interference. This can be achieved through prohibitive measures like cages or surveillance equipment such as security cameras. However, professionals in charge of heritage resources regularly report that presenting cultural heritage in a manner that reflects care and ownership can actively change the behaviour of those who interact with it. The best way to ensure the public cares for cultural heritage, which in-turn provides long-term protection, is through education. The use of underwater heritage parks creates a framework for broader educational narratives. Rather than communicating the story of one site, an underwater heritage park can create interpretive narratives that re-enforce the value of all UCH throughout a wider geographical context. This has been used at the Victoria Shipwreck Trail, where individual sites are collaborated to communicate the collective story of Victoria's maritime heritage.

Many of the challenges posed by underwater heritage parks can be mitigated through either the opportunities they create or through other means. Consequently, if these issues are accounted for in the creation of an underwater heritage park, then the parks can be an effective tool for heritage management. However, the impacts that underwater heritage parks may have upon nearby residents also need to be considered to avoid disenfranchisement with cultural heritage developments.

Chapter 3: What benefits can underwater heritage parks bring to nearby residents and can the negative impacts of heritage tourism be mitigated?

3.1 Introduction

Cultural heritage can bring a variety of benefits to society as a whole, regardless of whether it is terrestrial or underwater. The study of the societal benefits of cultural heritage is an element of the broad field of public archaeology. Some studies in public archaeology aim to also analyse the societal, environmental and economic impacts of activities directed at the public use of cultural heritage (Richardson and Almansa-Sánchez 2015, 194-195). Through an extensive case study of Jason deCaires Taylor's Museum of Underwater Art (MoUA), this chapter will analyse what the broader societal, environmental and economic benefits of an underwater heritage park can be. While not presenting *in-situ* underwater cultural heritage (UCH), MoUA addresses Indigenous Australian heritage and environmental issues through the medium of sculpture. Consequently, the societal impacts of its activities are still relevant to the broader use of heritage to benefit society as a whole. However, underwater heritage parks such as MoUA also create a challenge for communities through the negative impacts of heritage tourism. This includes the entrapping nature of heritage tourism and the loss of authenticity to both living spaces and heritage resources. All of these issues need to be mitigated if residents are to see benefits from heritage tourism. Finally, this chapter will relate these prospective benefits and challenges to the possibilities of using underwater heritage parks to present *in-situ* UCH within the Netherlands.

3.2 A Case study of community opportunities: The Museum of Underwater Art, Australia

The Museum of Underwater Art (MoUA) is the latest iteration of underwater museums from the artist, Jason deCaires Taylor and is set to open on the Great Barrier Reef near Townsville, Australia in 2020. Taylor uses the medium of sculpture to address historical, social and environmental issues and his underwater museums at Lanzarote, Cancun, and

Grenada have created successful tourist attractions. The MoUA museum at Townsville will use the medium of sculpture to specifically engage with Indigenous heritage, historic injustices and societal issues, as well as themes of environmental stewardship and climate change. While not providing access to *in-situ* UCH, MoUA still utilises art to communicate cultural heritage issues. Furthermore, the scale of the project has also led to the publication of economic impact assessments and public engagement strategies that are readily accessible (Lynch 2017; MOUA 2019). This is important because Scott-Ireton and McKinnon (2015, 161) note a lack of studies that highlight the societal, environmental and economic impacts of underwater heritage parks. This section will analyse the broader societal opportunities created by MoUA for community authorship and public engagement with cultural heritage. It will also analyse the environmental stewardship created by the project and the economic benefits to the broader Townsville region. This includes the creation of employment and entrepreneurial opportunities.

3.2.1 Societal benefits of MoUA

Palm Island is situated 63km north of Townsville, Queensland, a central region of the Great Barrier Reef. The surrounding archipelago is home to the Manbarra language speaking community. However, the Bwgcolman people of Palm Island are descendants of a variety of Indigenous groups who were deported from mainland Queensland throughout the 19th and early 20th-century. Many of the earliest deportees were survivors of the Kalkadoon Wars, a series of colonial conflicts between European settlers and Indigenous people in the 1860s (Watson 2010, 18). The Island was officially designated as: *'a penitentiary for troublesome cases'*, but Watson (2010, 18-19) states that most people were sent to Palm Island for trivial reasons. This includes documented explanations, such as: *'causing trouble'*, *'for their own protection'*, *'for the good of other aborigines'* to non-crimes of a political nature such as adherence to communism. Whilst most Australians remain oblivious to this history, Watson (2010, 19) claims that amongst Indigenous Australians in Queensland the island has long held a reputation as: *'Australia's version of Alcatraz'*. Consequently, the history and heritage of the Indigenous people of Palm Island displays some of the worst atrocities of colonialism. MoUA has made a commitment to address this story through its art installations.

Consultation with representatives of the Wulgurukaba, Nywaigi and Manbarra Traditional Owners and Bwgcolman historical people has been ongoing since the initiation of the

project in 2017. MoUA has expressed its intention to work with these stakeholder groups to achieve common goals. Indigenous community groups have been consulted on not only the location of the sculptures but their designs and the narratives that they wish to express (MoUA 2019, 5). MoUA has acted in a way that reflects this mission statement. In 2018, they established the Community Advisory Committee on Palm Island to ensure close cooperation with local stakeholders. Furthermore, at the start of 2019, MoUA hired Wulgurukabara Traditional Owner, Duane Fraser, as its art director (MoUA 2019, 5). This created full representation and creative control for the local community and gave residents a leading voice in the direction of the MoUA project. Consequently, this allowed the Bwgcolman community to express contemporary issues and cultural heritage through the medium of sculpture. Amongst the completed installations has been the "Reef Guardians", modelled on local school-aged children (*see* Figure 3). These sculptures have been constructed with the aim to communicate the empowering ideal of future generations as the leaders of a new era of stewardship over the Great Barrier Reef (moua.com.au/locations/great-barrier-reef, accessed 4 March 2020). Suzie Thomas (2017, 24) and Emma Waterton and Laura-Jane Smith (2010, 10-13) warn against community heritage practices that may be tokenistic or fail to address local narratives. However, the MoUA project has provided a way for Traditional Owners to author their heritage and communicate narratives from their perspective. This form of community authorship is an empowering practise that can have a positive impact on the lives of individuals. This is evidenced by Rachael Kiddey and John Schofield's (2011) homelessness project in Bristol, where community authorship re-shaped local narratives and saw participants make positive lifestyle changes.

Figure 3. Reef Guardians and Coral Greenhouse sculptures

Images from: moua.com.au, accessed 4 March 2020

3.2.3 Environmental benefits of MoUA

MoUA has engaged in a lengthy process of consultation with a wide variety of stakeholders, totalling some 120 actions with over 4000 individuals and groups. This has included not only the local Indigenous communities, but universities, scientists, and government departments (MoUA 2019, 19). The project aims to have a positive impact on the environmental conditions of the local reef system and the Great Barrier Reef as a whole. The first phase of the project has focussed on addressing environmental issues. This is reflected in the meaning associated with the "Coral Greenhouse" sculpture, which expresses the notion of humanity as a guardian of marine environments (*see* Figure 3). As a more direct form of environmental action, MoUA has aimed to provide high profile research sites, where surveys and equipment experiments can be conducted. This has been encouraged by James Cook University, the Australian Institute of Maritime Science, Reef Ecologic, and Reef Check (MoUA 2019, 6). Furthermore, the project promotes citizen science in a similar vein to the Iona II Dive Trail (Cooper and Knott 2016). Visitors are encouraged to monitor marine life and environmental conditions surrounding the sculptures. This is conducted in the framework of the Great Barrier Reef Maritime Authority's Eye on the Reef monitoring program. The program enables people with little or no scientific experience to conduct rapid monitoring surveys, which can provide valuable information on local conditions for professionals (gbrmpa.gov.au/our-work/eye-on-the-reef, accessed 5 April 2020). This is of great importance to the area, as coral cover in the region is only moderate and currently deteriorating due to the effects of coral bleaching (MoUA 2019, 1). Akin to heritage conservation, conscripting the public as an ally of environmental conservation efforts, rather than a hindrance, may also be vital to environmental sustainability.

3.2.4 Economic benefits of MoUA

Townsville is a region that has suffered significantly from the decline in Australia's mining industry (Lynch 2017, 1). The area is a prominent holiday destination for tourists aiming to see the Great Barrier Reef, which is a UNESCO World Heritage Site renowned for its universal natural value. Unfortunately, the degradation of the Great Barrier Reef has also led to a sharp decline in the tourism industry. Consequently, the region has suffered a prolonged period of slow growth, high unemployment, and a decline in wealth and prosperity (Lynch 2017, 1). The issues experienced in Townsville are further exacerbated on Palm Island, where the Indigenous Bwgcolman community suffer from even higher levels of

unemployment, chronic alcohol and drug usage, high rates of domestic abuse, and an overall life expectancy considerably lower than the national average (Palm Island Select Committee 2005, 7; Queensland Health 2019). All of Palm Island's residents are considered to be in the top quintile of most disadvantaged individuals in Australia (Lynch 2017, 9). Furthermore, out of a population of an estimated of 2602 individuals in 2016, the region supports merely 613 employment opportunities (Lynch 2017, 12). The Bwgcolman residents of Palm Island suffer from poor employment prospects in their home communities and often have to travel further afield to find work. Often they face widespread workplace discrimination outside of their home communities (Palm Island Select Committee 2005, 7-8). This also dissipates the coherence of the community and compromises its sense of place.

MoUA believes that an underwater museum situated in this region could contribute towards remedying these issues. Lynch (2017, 21) has predicted that once fully established, the museum will reinvigorate the tourism sector by attracting a total of 50,000 new visitors to the Townsville region per year. This represents less than a 5% increase in Townsville's current visitor numbers (Lynch 2017, 23). This possible visitor expenditure should be considerable to the local economy, contributing around $22,551,440.00 (AUD) *per annum* (*see* Table 2; Lynch 2017, 18-19). Accompanying this figure is the prediction of a further 119 employment opportunities as a direct effect from increased expenditure, with a flow-on industrial effect of a further 31 jobs, and a flow-on consumption effect of 32 jobs. This equates to a potential 182 new employment opportunities across Townsville (Lynch 2017, 21). Much of these jobs will be situated on Palm Island, where employment opportunities are lacking. The museum has undoubtedly selected a site where the installation will have a positive impact on the regional economic situation.

Table 2. Estimated expenditure from MoUA visitors (Lynch 2017, 18-19)			
Visitor Type	Estimated Expenditure Per Person (AUD)	Estimated Number of Visitors *per annum*	Total (AUD)
Domestic day trip	$164.00	25,000 (50%)	$4,100,000.00
Domestic overnight	$689.50	22,400 (44.8%)	$15,444,800.00
International visitors	$1156.40	2,600 (5.25%)	$3,006,640.00

| Total | NA | 50,000 (100%) | $22,551,440.00 |

MoUA installations themselves remain free to visitors from all walks of life (MoUA 2019, 19). This is a particularly effective way to promote custodianship by residents. Although, keeping the sites free still enables avenues of private sector involvement through charter expeditions. MoUA has already announced its collaboration with five commercial dive operators, which highlights the possibilities for private sector involvement (MoUA 2019, 17). However, private operators may also be able to expand on sight visitation. At Museo Atlantico, Lanzarote activities directed at tourism are also conducted by private dive and charter companies. Private tour operators can provide first time diving experiences to the general public, and offer a variety of services to enable inexperienced divers to view the sites. Dive College Lanzarote specialises in providing these charter trips to Museo Atlantico and they offer trial dives in shallow waters. This enables visitors to determine whether or not they can handle the experience of diving in a safe environment (divecollegelanzarote.com/en/start-diving/try-dive, accessed 4 March 2020). They also provide a Museo Atlantico for beginner's package. This specialist package involves both a trial dive to learn basic diving skills and a tour of the Museo Atlantico site. This requires no previous diving experience (divecollegelanzarote.com/en/museo-atlantico/beginner, accessed 4 March 2020). Diving tends to be an expensive hobby and courses often involve commitments lasting several days. Equipment can also be prohibitively expensive. By providing non-experienced divers with the opportunity to engage with the museum, Taylor's exhibitions can reach a wider audience of casual and first-time divers. Models similar to this that promote cooperation with the private sector in underwater heritage tourism have been initiated in Croatia and Sweden and will be the subject of discussion in Chapter Four. However, all of these economic benefits stem from an increase in heritage tourism. Heritage tourism can also negatively impact communities and this must be recognised and mitigated.

3.3 Heritage tourism and its impact on communities

The definition of heritage tourism has been a source of contention (Du Cross and McKercher 2012:6). However, the most relevant definition to the use of underwater heritage parks may

come from, Greg Richards (1996, 24), who defines heritage tourism as: *'The movement of persons to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs'*. Heritage tourism satisfies a deep cultural need to actively interact with remnants of the past (Richards 1996:24). To provide individuals with the ability to satiate this need, sites of cultural importance should be open to the public when possible. This brings a multitude of economic benefits to nearby residents. The direct benefits of MoUA have been previously discussed, but heritage tourism could provide benefits to nearby communities that have not been anticipated by the project. Attracting tourists can strengthen community bonds with the outside world and become a step towards modernization, self-reliance and economic freedom. Heritage tourism also has the potential to create jobs and businesses, increase tax revenues, diversify local economies, create partnership opportunities, preserve traditions and culture, generate investment in historic sources, build community pride, and increase the awareness sites and their significance to the world (Griffin *et al* 2013:7; OECD 2009:22). However, these positive effects can only be achieved when using a framework that ensures the challenges of entrapment, institutional conflict, and a loss of authenticity can be mitigated (Alberts and Hazen 2010, 69-71; Shepherd 2012, 28).

3.3.1 Challenges to communities created through excessive heritage tourism

While heritage tourism can bring financial contributions to communities, it can also create significant social challenges. Tourists and residents often have conflicting world views. Hans Magnus Enzensberger (1996, 113) saw the modern tourist as being motivated by notions of purity and seeking places in the world that are untouched by the corrupting influences of modern society. Robert Shepherd (2012, 22) contended that tourists feel disenfranchised with an imagined lack of culture in their home communities. They seek to engage with a society that they perceive as both possessing a cultural identity and being closer to nature, which the tourist believes bestows the locals with, *'an inherent trait of goodness'* (Shepherd 2012, 22). Shepherd (2012, 28) also highlighted that this attitude results in a situation where host societies become entrapped as tourist attractions within their own living spaces. This can cause a cultural degeneration amongst the local population, which can contribute towards increased rates of violent crime, drug and alcohol abuse and sexual solicitation in regions that have suffered from heritage tourism (Shepherd 2012, 28). This can also lead to institutional conflicts.

Through analyses of case studies in the Philippines, Laos, Italy and Spain, Peter Gould (2017:5-6), recognized that institutional conflicts frequently jeopardized the sustainability of heritage tourism projects. Such conflicts were often found to be the result of poor communication between stakeholders, or over assertiveness on behalf of heritage management or the tourism industry. Gould (2017, 5-6) found that If not also working towards mutually beneficial goals, the tourism industry, cultural heritage managers, residents, and other stakeholders can be locked into a competition over the heritage resource in question. If not resolved, power-dynamics such as this can lead to feelings of distrust and eventually conflict between stakeholders (Du Cross and McKercher 2012, 12).

Developing heritage tourism and the infrastructure required to support it can also have devastating impacts on sites and communities. Tourists have the potential to be a destructive force, particularly when strategies to ensure the sustainable use of a resource have not been implemented. Damage, such as graffiti, the removal of *in-situ* artefacts, and harmful physical interaction with sensitive structures consistently creates problems for heritage management. However, excessive tourism can not only cause direct damage to heritage resources but can challenge the authenticity of living spaces through excessive patronage. This can ruin the living spaces of the communities in question. Consequently, the authenticity of both the cultural heritage and living environments is an asset that is irreplaceable and should be maintained whenever possible (Alberts and Hazen 2010, 69-70; WHC 2008, 96). This is especially pertinent in regards to *in-situ* cultural heritage, which is a non-renewable resource.

3.3.2 Mitigating the negative impacts of heritage tourism

Heritage tourism can be an entrapping process and cause a loss of authenticity for heritage sites and communities, but these challenges can be mitigated. Close collaboration with communities and ensuring their consent is maintained constantly throughout the heritage tourism process can largely negate entrapment and the breakdown of relations between residents and other stakeholders. Margaret Kruk and colleagues (2007, 33) argue that the sustainability of heritage tourism can also be achieved by respecting the socio-cultural authenticity of host communities, helping to conserve their heritage and promoting intercultural understanding and tolerance. However, to avoid institutional conflict between these factions, the residential stakeholders of any cultural asset must be actively involved in

the experience as well as able to see direct benefits from enabling the public to enjoy their cultural heritage and public spaces. Furthermore, tourism developers and heritage management need to operate with the consent of communities at all stages of a project to ensure positive relationships are maintained (Hawkins 2007, 302-306).

Researchers have had some success using techniques that limit the potential for tourists to cause harm to communities and heritage sites. A study by John Crompton and colleagues (2007) has found that satisfying and high-quality experiences can improve the behavioural intentions of attendees at festivals. Therefore, through strategies that bare a similarity to the aforementioned endowment principal, Mohammed Alazaizeh and colleagues (2016, 364), found that the best way to reduce poor behaviour amongst heritage tourists was by meeting expectations and providing high-quality experiences. This can be achieved through strategies that assess engagement with tourists such as surveying and interviewing. Furthermore, ensuring promotional material does not inflate tourists' expectations is likely to promote positive on-sight behaviour. Another method to ensure sustainability is by employing a competitiveness cluster strategy (Hawkins 2007, 298-301). This involves allocating various sites within a region into clusters. This enables each cluster to pool resources and save costs on interpretive materials. The strategy also allows managers to promote lesser frequented sites over heavily frequented ones. This enables management to distribute the flow of tourists across other sites within a cluster, to avoid burdening one site with excessive tourism. An underwater heritage park provides a platform for the creation of such a strategy. This strategy may also be most effective if used in tandem with an interpretive narrative strategy that re-enforces the value of sites across a broader area by amalgamating them into a wider regional narrative.

3.4 Relating the societal, environmental and economic benefits and the challenges of heritage tourism to the Netherlands

While an underwater heritage park may contribute to regional tourism within an area of the Netherlands, such activities might not provide the same economic benefits as MoUA will in Townsville. The blue economy of the Netherlands is relatively small in comparison to Australia. However, the tourism sector in the Netherlands experiences consistent growth annually (OECD 2020, 241). Furthermore, *in-situ* UCH sites can bring a significant amount of

tourism revenue. The SS Yolanga shipwreck site in Queensland is estimated to contribute around $1,000,000 (AUD) *per annum* to the Queensland economy in tours alone (Edney 2006, 207). Even lesser frequented attractions can contribute to the local economy through tourism expenditure. The HMS Coronation near Plymouth, England is estimated to have brought in £53,900 (GBP) in diver expenditure in 2012 (Beattie-Edwards 2013, 41). However, to avoid harmful heritage practices there is an ethical consensus that cultural decisions should never be based solely on economic incentives. Elisabeth Ruijgrok (2006, 206) claimed that: *'the economic value of cultural heritage is the welfare that it brings to society'*. An underwater heritage park can create employment and commercial opportunities for local people. However, it can also bring benefits through collaboration with local residents.

MoUA has stimulated societal benefits through its collaboration with the Indigenous Bwgcolman community of Palm Island. They have provided a platform to help shape and author Indigenous heritage. This highlights the value that cultural heritage can have to the well being of communities when stakeholder groups are involved in the decision making processes. Using underwater heritage parks as a way to present *in-situ* cultural heritage in the Netherlands is a less expressive heritage practice than MoUA's artistic installations. However, including local people as stakeholders in cultural heritage projects can work to build community identity and well-being (Waterton and Smith 2010; Kiddey and Schofield, 2011). UCH often involves the heritage of shipwrecks and a significant part of shipwreck archaeology is in its representation of the wrecking event (Muckelroy 1978, 267-268). The response to such events by the inhabitance of an associated wrecking area may be intertwined into family and oral histories of a region that are yet to be expressed. A community-led underwater heritage park project in the Netherlands could work to highlight such narratives and create meaningful involvement in the authorship of cultural heritage with residents. To accomplish this, active local stakeholders such as regional historical societies should be identified and included in the creation of underwater heritage parks.

MoUA has also worked alongside a variety of stakeholders concerned with the environmental sustainability of the Great Barrier Reef. They have promoted citizen science at their locations and provided a space for training and environmental monitoring. Such an approach could be incorporated into an underwater heritage park in the Netherlands. The

Natura 2000 project aims to promote environmental biodiversity across the European Union. In the Netherlands, some 19% of coastal waters are included in the Natura 2000 system (Netherlands Ministry for Water and the Environment 2015, 50). Furthermore, the Wadden Sea, partially in the Netherlands, is a UNESCO World Heritage Site of significant ecological value comparable to the Great Barrier Reef. This designation also aims to promote species biodiversity. João Barreiros and Ana Garcia's (2017, 8) study of underwater archaeological parks in the Azores has shown that underwater heritage parks can have a positive impact on species biodiversity as they can provide habitats and a protective zone for marine life. The use of underwater heritage parks in tandem with the Natura 2000 project could promote citizen science in the same vein as the Eye on the Reef program. However, these benefits can only be achieved when access to UCH is provided sustainably.

Excess tourism has been a problem for the Netherlands and current management trends within the country promote destination dispersal away from major centres (OECD 2020, 241). An underwater heritage park could assist this strategy by attracting prospective visitors away from over-burdened areas. However, this could also burden smaller communities. The negative impacts of heritage tourism are internationally applicable. They can cause communities to feel entrapped and patronised by tourists, and a loss of authenticity to heritage sites and living spaces anywhere within the world. However, the negative impacts can also be mitigated through the same means. This includes working alongside and with the consent of communities, ensuring positive and honest tourism experiences with cultural heritage, and utilising competitiveness cluster strategies that relieve the pressure on living spaces and UCH resources.

3.5 Conclusions

Table 3. Opportunities, challenges and mitigation strategies for nearby residents

Opportunities Created by Underwater Heritage Parks	The Negative Impact's of Heritage Tourism	Mitigation Strategy
Economic Benefits • Tourism revenue. • Employment opportunities.	Excessive patronage of either a cultural heritage site or living space, this causes a loss of authenticity.	• Work with ongoing consent of stakeholders. • Use a competitiveness cluster strategy.

• Opportunities for entrepreneurs.		• Create interpretive narratives to enhance the value of UCH.
Social Benefits: • Ability to be involved in cultural heritage. • Unveil oral histories and engage with communities.	Local disenfranchisement with the heritage tourism experience and institutional conflicts.	Avoid institutional conflicts and disenfranchisement by working with the consent of local stakeholders at all stages of the process.
Environmental Benefits: • Working with stakeholders involved in environmental protection and provide a space for scientific research. • Heritage and biodiversity conservation complementary activities. • Opportunity to create an environmental monitoring scheme.	Tourist-caused destruction and poor behaviour.	Provide positive and honest experiences with cultural heritage.

Underwater heritage parks bring challenges and opportunities to nearby communities. The case study of MoUA shows a broad range of societal, environmental and economic opportunities. Societal benefits include the opportunity for expression and the ability to address social and historical issues through heritage. These societal benefits have been achieved through close cooperation with the local Bwgcolman Indigenous stakeholders. Environmentally, MoUA has created a space for research and citizen science monitoring actions on the Great Barrier Reef. This is achieved through close collaborations with stakeholders within the scientific community. Economically, MoUA is likely to create direct employment, bring money into the local economy, and create entrepreneurial opportunities for Palm Island and the wider Townsville area. However, the increase in heritage tourism might not only bring economic benefits but significant issues. Communities can become entrapped by the heritage tourism process, which may lead to broader societal complications. Excess tourism can also cause both cultural heritage sites and nearby living spaces to lose their sense of authenticity. Fortunately, these negative impacts can be

mitigated through working alongside and with the consent of communities throughout the heritage tourism process. Negative tourist behaviour can be changed by providing positive experiences with cultural heritage. Competitiveness cluster and interpretive narrative strategies can also be employed to limit the potential for one site or region to become excessively patronised and re-enforce the value of cultural heritage.

In the Netherlands, an underwater heritage park that presents *in-situ* UCH is unlikely to make the same economic contributions as MoUA, but it may still introduce revenue and create entrepreneurial opportunities. Regardless, the main value of cultural heritage is in the welfare it brings to communities, particularly through the ability to reinforce and build community identity and well-being. A community-led underwater heritage park in the Netherlands could consolidate community identity, shape regional narratives and perhaps unveil local histories. The environmental benefits of MoUA could also be replicated within the Netherlands. The Natura 2000 areas and the Wadden Sea UNESCO World Heritage Site both promote species biodiversity. Heritage conservation could be added as a complementary activity to these existing objectives. A species monitoring scheme, similar to the Eye on the Reef program could further assist biodiversity in these areas. An underwater heritage park could also mitigate heritage tourism through destination dispersal. Such goals could only be achieved if heritage tourism is managed in a sustainable manner. However, to achieve community sustainability with an underwater heritage park, heritage management also needs to provide sustainable access to the UCH resources in question.

Chapter 4: How do underwater heritage parks provide sustainable diver access to underwater cultural heritage?

4.1 Introduction

Public access is paramount to activities directed at cultural heritage, and divers consist of the primary stakeholder in activities directed at underwater cultural heritage (UCH). If conscripted as an ally, they can be invaluable as the *'eyes and ears'* of heritage managers (Manders 2008, 35-36). However, when physically sensitive objects such as shipwrecks are involved, then the potential for damage, theft, or destruction is high. As underwater heritage parks have been established around the world, each has introduced different methodologies to confront the challenge of allowing the public to access sensitive and culturally significant sites. These approaches can broadly be described as either protective or admissive. Protective management tends to utilise security equipment and/or guardianship schemes to enable public access. Both the experience of UCH management in Croatia and the Dalarö model in Sweden provide examples of this. Comparatively, admissive public access enables unrestricted access to underwater heritage parks. However, protection is created at a community level through strategies that create positive attitudes towards *in-situ* UCH within the local diving culture. The Porkkala Wreck Park and Kronprins Gustav Adolf Underwater Park, both in Finland, provide examples of this. Each of these approaches brings with it a series of strengths and weakness. The following case studies will analyse the benefits of these sites, and assess their suitability as models of providing sustainable public access.

4.2 Protective public access

Protective public access can involve collaboration with tourism operators and business leaders to provide public access with supervision and/or physical restrictions. In Croatia, UCH sites are managed in collaboration with private tour operators. These businesses are responsible for monitoring and maintaining UCH, which is protected by cages. This has allowed heritage management to offset some of the costs associated with the upkeep of

cages and the monitoring of *in-situ* UCH (Mesić 2008). Comparatively, Sweden's Dalarö model utilises the private sector to create trained professionals that accompany divers to sensitive sites, where visitation would otherwise be illegal by necessity (O'Brien *et al* 2011, 48-54). This creates something for the diving community that would otherwise be inaccessible and enables heritage management to be involved in the creation of commercialised heritage packages.

4.2.1 A case study of protective public access: Croatian underwater cultural heritage sites

Croatia is a maritime nation with a plethora of UCH sites, spanning from Roman amphorae to well-preserved shipwrecks. This became an issue for heritage management within the country. Croatian museums could not meet the demand for excavation and were unenthusiastic about large quantities of uniform finds. Furthermore, investigation of sites was difficult, with funds only enabling 3-4 surveys a year (Mesić 2008, 95). As a response to these issues, *in-situ* preservation was the best way to sustainably preserve UCH. Rather than opting for an approach that aimed to cover sites entirely from the public, heritage managers developed a strategy that involved providing access to divers as a part of a preservation plan.

To enable public access to submerged sites, while mitigating the potential for damage, authorities in Croatia opted for measures that provided physical protection from the public, whilst still enabling visibility of the resource. They determined that this should be achieved through a non-intrusive, removable and simple method. Consequently, they opted for the use of ribbed steel nets and steel cage structures. The strategy was allegedly cost-effective, at approximately 8000€ per 200m² of netting. The largest cage is found near the island of Pag, which covers a ship containing 650 amphorae and 1,200 loose pieces across 240m² (*see* Figure 4; Mesić 2008, 96). The cages are constructed off-site and designed to be assembled within the span of a few dives. Furthermore, each cage bears a plaque with basic information on the wreck in question and its designation as a protected site in the National Register of Cultural Heritage Act (*see* Figure 4). Rossi (2012, 301) states that this plaque provides an additional layer of protection. It is the last avenue of defence to inform potential looters of the illegality of interference with the site. However, this is just one side of the strategy that has been employed to provide access to UCH in Croatia. Such direct

methods of prohibiting public interference have enabled avenues for greater involvement with the private sector.

Commercial tourism operators can apply for permits from the Culture Ministry that allow them to run dive trips on UCH sites for 5-10 years (Mesić 2008, 97). Pešić (2011, 82-83) believes that this has created self-sustainability, as it enables sites to be accessed by the public while fostering a sense of stewardship amongst tourism agencies. Alongside the permits comes the responsibility to conduct monitoring actions and maintain the cages of dive sites that the business chooses to adopt stewardship over. Adhering to these responsibilities is within the interests of the dive operators as they draw their livelihoods from providing tourists access to the resource (Pešić 2011, 82-83). This creates a mutually beneficial situation, wherein heritage management can privatise the management of UCH, and commercial tourism operators can profit from the use of heritage resources. Over 60 dive centres have found this to be a long-term profitable operation, promoting employment opportunities across Croatia (Mesić 2008, 97). Another positive aspect of this approach is that through stewardship and prohibiting direct access for independent divers, even damage from poorly behaved divers can be prevented. However, there has been some criticism of Croatia's management practices.

Rossi (2014) found that the situation with Croatia's UCH management strategy had deteriorated since its original inception. She highlighted that many sites were rarely monitored or cared for, especially those that generated little public interest or were isolated from others. Cages had also fallen into disrepair, leading to eventual collapse and a need to replace entire structures (Rossi 2014, 47-54). When the cage finally loses its structural integrity this puts UCH at risk of physical damage. Rossi also noticed that the ecological impacts of placing iron cages on the seabed are yet to be fully explored, and recognised a potential safety issue with the limited space inside the cage. She claims that access to the inside of the cages should be reserved for trained professionals conducting maintenance work, but with the lack of overall cleanliness of the cages, the visibility from the exterior is often poor (Rossi 2014, 55-57). The costs of the program are also much higher than had originally been anticipated. The initial strategy had not anticipated the rapid chemical deterioration of the original cage material. The caged sites soon required improved corrosion-resistant cages that cost between 63,000-94,000€ to install due to the high cost of

the materials required. This figure also fails to factor in the ongoing cost and labour of the necessary cleaning and maintenance. Often this amount can be justified by the revenue raised from visitation, although this is not universally the experience (Rossi 2014, 58-60). This is also exacerbated by the fact that collaboration with diving centres has waned in recent years.

In 2014, just one organisation claimed a tender, leaving 6 sites with no ongoing maintenance or public visitation. Furthermore, some sites are not interesting enough for the public to generate any demand for visitation on their own (Rossi 2014, 58-60). Nevertheless, Rossi (2014, 57) still saw potential in the Croatian management experience. She proposes that cages could be replaced with underwater surveillance equipment and highlights the experience in Cala Gadir, Italy as an example (Selvaggio *et al* 2009: in Rossi 2014, 57). Furthermore, Rossi (2014, 60) recognised that as sites may be unable to generate interest as independent attractions, they may benefit from being placed into a wider framework of an underwater heritage park. She believes that in this format the sites could tell a broader regional history and connect to local museums either virtually or physically. This is reflective of using interpretive narratives to fortify the value of UCH within the public consciousness (*see* Chapter 2.3.4).
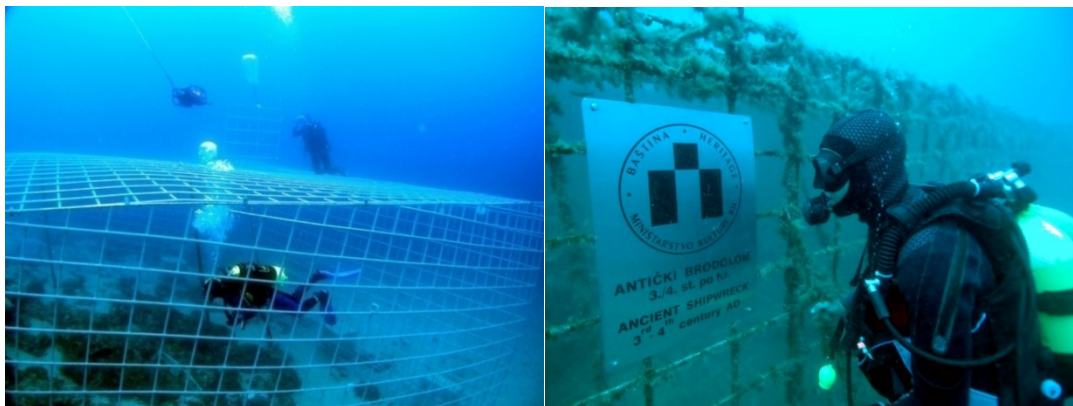
Figure 4. Cage protection at Pag and protective sign

Image from: unesco.org, accessed 28 June 2020

4.2.2 A case study of protective public access: The Dalarö Dive Park

The Dalarö Dive Park, southeast of the Stockholm archipelago, contains four well-preserved wooden shipwrecks from the 17th and 18th centuries. The Baltic Sea is famous for its lack of *Teredo navalis* (shipworm), which makes the region one of the best places for divers to see well-preserved wooden shipwrecks. The site has been a popular spot with sports divers for a long time and receives an estimated 1500-2000 diving visitors annually (O'Brien *et al* 2011, 48-49). O'Brien and colleagues (2011, 49) reported that the popularity of the site had caused significant issues. The shipwrecks had been impacted by looting and low-intensive destruction through diver wear. Consequently, authorities were forced to prohibit diving on many of the wrecks. As a solution to this problem, the National Maritime Museum developed the Dalarö model as a way to enable wreck-diving at sensitive sites. Permission to dive the sites is granted when divers are accompanied by recognised guides. The guides are selected as competent divers, who are given the relevant education on the cultural heritage of the region. O'Brien and colleagues (2011, 49) propose that not only does this protect shipwrecks from careless destruction, but provides an element of professionalism to the Dalarö Dive Park.

The project was tested in 2009 when a dive charter company was hired and experienced divers were invited to apply for permission to dive the sites. Eight divers were selected to test the methodology and provided with education and information on wreck-diving and the cultural heritage of the region. O'Brien and colleagues (2011, 50) state that after the survey the divers claimed to be *'very satisfied'* with the overall experience. They reported that they believe divers would be willing to pay extra for a culture-historical diving tour on a site that was otherwise prohibited from public access. The researchers claim that this opened the floor to collaboration with the private sector through creating the potential for more businesses to get involved, particularly with activities directed towards the international blue tourism market (O'Brien *et al* 2011, 50). As of 2020, Project Baltacar, an initiative between Finland, Estonia and Sweden that promotes wreck diving in the Baltic Sea, reports four commercial dive operators directing tours of the region through the Dalarö model (projectbaltacar.eu/destination-sweden, accessed 9 April 2020). This indicates that the project has been successful in the commercial sphere. The Dalarö model also aimed to provide access through remote-operated vehicle (ROV) experiences for the non-diving public (O'Brien *et al* 2011, 51). However, these services are not advertised on the websites

of the aforementioned tour operators (dykcharter.se, accessed 6 June 2020; fantasea.se, accessed 6 June 2020). This may indicate that ROV tours have been less successful as a commercial product.

O'Brien and colleagues (2011, 53-54) highlight that the commitment to work with local stakeholders is one of the elements of the Dalarö model. A marketing plan that was actively geared towards encouraging community involvement was one of the core principals of the project. Through community support of the project, the Dalarö model aimed to provide business opportunities for local entrepreneurs (O'Brien *et al* 2011, 54). This provides the region with the economic benefits associated with sustainable heritage tourism. The system also creates a situation where the condition of the wrecks is attached to the livelihoods of not only the individuals who operate charter companies and work as guides but to affiliated businesses and the community as a whole. This not only fosters a sense of community stewardship of cultural heritage but enables heritage management to delegate much of the responsibility and cost associated with regular monitoring actions to tourism companies, who will regardless spend many hours on-site conducting tours.

The Dalarö model displays an efficient use of cultural heritage resources. This allows heritage management to focus its efforts on high-risk sites. Furthermore, through the use of individuals as guides, the Dalarö model can educate through person-to-person contact with the general public. Such an approach is suited towards international tourism, as even divers with little appreciation of cultural heritage can have these philosophies instilled on them by the tour operator. It is also reflective of cultural heritage management having direct involvement in the creation of commercialised heritage packages. The Dalarö model also allows access to sites that otherwise would have to remain closed. This maximises the availability of cultural heritage resources to the public and appeases the diving community by providing experiences that would have otherwise been unsustainable.

4.3 Admissive public access

Comparative to protective site management, admissive site management allows unrestricted public use of underwater heritage parks. Through admissive strategies, underwater heritage parks tend to monitor and protect sites in close collaboration with the

diving community. A grass-roots initiative such as this has been taken by the Träskö Project in Finland, which enables unrestricted access to shipwrecks at the Porkkala Wreck Park under the stewardship of the Nousa Ry diving club (Luoto 2019). This has enabled monitoring actions and research to be conducted from within the diving community. Finally, the Kronprins Gustav Adolf Underwater Park near Helsinki enables unrestricted access to divers, despite the cultural and historic significance of the site (Tikkanen and Alvik 2019, 110-112). The success of this project may have been achieved through legislative protection, and the creation of a wider educational framework that fosters diver stewardship across the national diving community in Finland.

4.3.1 A Case cased study of admissive public access: The Porkkala Wreck Park (the Träskö Project)

The Porkkala Wreck Park, situated in Espoo, Finland, contains the remains of four historic wooden shipwrecks that sunk between the 16th and 19th centuries. In 2018, Markku Luoto and the Nousu Ry diving club initiated the Träskö Project as a way to facilitate enhanced public access and awareness of the UCH of the region. The Porkkala Wreck Park is also located in the Baltic Sea and the lack of *Teredo navalis* enables good wreck preservation. Due to the typology of the landscape, the sites are sheltered within an archipelago, enabling good water visibility. Furthermore, the depth of sites ranges from shallow (4-5m), to moderate (20-30m). Consequently, the park provides a variety of diving experiences for different skill levels. This keeps it interesting for more experienced divers, but accessible for the less experienced. Furthermore, wrecks that can be found at a depth of 4-5m provide opportunities for snorkelers to enjoy the site (Luoto 2018, 6). This allows the scope of accessibility to go beyond the traditional diving community.

The case of the Porkkala Wreck Park is unique as it shows a grass-roots response to two issues. These being what Luoto (2018, 3-4) perceived to be both a public demand for this type of experience in Finland and the need to protect the UCH of the Porkkala region. In this regard, the Träskö project has emerged as a solution to a problem. Luoto (2018, 3), claims that one of the main goals of the project was to protect shipwrecks from diver-wear. Extensive damage has occurred to the Tyrnnyrihykly site as a result of anchoring. This has impacted not only the enjoyability of the site for the public but the potential for further archaeological research. To mitigate this damage, the Träskö project aims to install

anchoring buoys on-site. Luoto (2018, 7) anticipated that this is the most expensive part of the installation. He states in his initial proposal that this will be largely self-funded by fundraising efforts through the club and donations. However, this does not mean that the Nousa Ry diving club operates with no oversight. All decisions and installations are made through Metsähallitus (Finnish Forest Administration), the Espoo municipality, and with the guidance of practising archaeologists (Luoto 2018, 10-14). This reflects a collaborative approach, which is led and initiated by the diving community, with the support and consultation of archaeologists and government bodies. This may raise concerns regarding liability for damage. Nousa Ry diving club explicitly states that they do not claim any responsibility for the conduct of divers on-site (Luoto 2018, 10). However, the Porkkala wrecks had already been popular diving spots that had suffered significantly from misuse. Formalizing the role of the diving club as a steward, and creating anchoring points and opportunities for public education and engagement may be the best scenario for the management of submerged sites that are already facing diver-stress with limited available resources.

The Träskö Project is staffed and operated entirely through volunteers, particularly from the Nousa Ry diving club, and the Finnish Maritime Archaeology Association. Through using the diving club as a main source of stewardship over the underwater heritage park, the project can source volunteer labour and maintain long-term commitments to the monitoring, upkeep and maintenance of the site. Luoto (2018, 4) states that a key inspiration for the initiative has been the Nautical Archaeological Society's Adopt a Wreck scheme, and Dive with a Purpose, a program that encourages experienced divers to volunteer with UCH conservation activities (divewithapurpose.org, accessed 9 April 2020). In the same vein, the Träskö Project promotes citizen science and community involvement in the management and conservation of UCH. Consequently, Tikkanen and Seesmeri (2019, 98), have referred to the project as: *'a private initiative in the spirit of this [Faro] convention'*.

Through enabling diving clubs to manage UCH sites, the Träskö project is reflective of an ideal situation for heritage management, where labour and monitoring actions are sourced by the community. Furthermore, the project has encouraged deeper research into the region's shipwrecks and a renewed interest in the history and archaeology of the sites. This has already led to a collaborative research project into the history of the Porkkala

shipwrecks and their virtual presentation with the University of Helsinki (researchportal.helsinki.fi/en/projects/porkkala-underwater-wreck-park-the-history-of-shipwrecks-and-thei, accessed 8 May 2020). This shows that the initiative has led to enhanced public involvement with not just heritage management, but in conducting archaeological research as well. This is reflective of Article 12A of the Faro Convention, which promotes public involvement in science and heritage management (Council of Europe 2005, Article 12A). The Träskö Project also reflects the English Heritage Cycle in action (*see* Figure 5; Thurley 2005, 26-27). Caring for, valuing, and enjoying the site has renewed interest in researching wrecks that would have otherwise remained unstudied. This has encouraged research that enhances understanding of the sites in question.
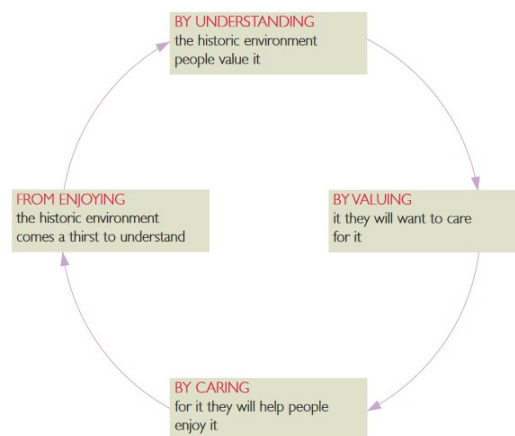
Figure 5. English Heritage Cycle

Image from: Thurley 2005, 26-27.

4.3.2 A Case study of admissive public access: Kronprins Gustav Adolf Underwater Park

The Kronprins Gustav Adolf was a Swedish ship of the line that sank off the coast of Helsinki during the Russo-Swedish war in 1788. In 1995, the ship was discovered by the Naval Research Institute and after research efforts, the Kronprins Gustav Adolf was designated as a suitable site for the creation of an underwater heritage park (Tikkanen and Alvik 2019, 91). In the year 2000, it became the first underwater heritage park in the Baltic Sea region. This involved: the installation of a buoy for safe anchoring without causing damage to the vessel, 12 informative panels to enhance the diving experience, and a guest book where divers can leave feedback to site managers (Tikkanen and Alvik 2019, 110). The Kronprins Gustav Adolf Underwater Park offers a *laissez-faire* approach to providing public access to UCH. Rather

than relying on methods of restricting accessibility, no specific permits or specialist guides are required to recreationally dive the site. However, one commercial tour operator still conducts tours of the Kronprins Gustav Adolf Underwater Park and is engaged with the monitoring of the site (Tikkanen and Alvik 2019, 110). Protection primarily comes from a series of necessary rules and safety precautions. The park becomes closed in wind speeds of over 6kmph and is also closed during the winter season. Vessels are also required to use the anchoring buoy. Furthermore, one individual must remain on board the moored vehicle at all times. Tikkanen and Alvik (2019, 110-111) claim that except for a few incidents this has proven to be a successful approach and the wreck has suffered minimum disturbance since its designation as an underwater heritage park.

The success of the Kronprins Gustav Adolf Underwater Park's *laissez-faire* management may lie in the framework of a variety of initiatives that have been employed in Finland to protect UCH. Shipwrecks over 100 years old are protected under the Antiquities Act in Finland. This provides submerged sites over 100 years old with blanket legal protection from disturbance. However, protection also lies in the efforts that have been made to cooperate with the diving community. The Helli Hylkyjamme Kampanja (Care for Our Wrecks Campaign) works to create positive diver attitudes towards UCH within the country. This is achieved through advertising campaigns and public awareness initiatives that aim to promote responsible wreck diving (*see* Figure 6). The campaign tries to instil a six-point ready philosophy on the public, this includes: wrecks have stories, wrecks are burial sites, wrecks are biological reefs, care for yourself, family and friends while diving, share your experiences, and wrecks have a future (sukeltaja.fi/content/fi/11501/56708/Hylkysukellus.html, accessed 6 May 2020). Such initiatives aim to create a diving culture that actively promotes a shared responsibility amongst divers to preserve UCH for future generations. Furthermore, amongst such a framework divers are encouraged to report discoveries and disturbances to the necessary authorities. The majority of visitors to the Kronprins Gustav Adolf Underwater Park have come from Finland, and those that have visited from overseas tend to do so through dive tour operators in Helsinki (Tikkanen and Alvik 2019, 111-112). Consequently, under such circumstances successfully fostering a positive sports diving culture may provide adequate protection for UCH sites that are accessed primarily by the local diving community.

Figure 6. *Helli Hylkyjamme Kampanja* **material**

(Translation: I am a wreck… But not abandoned! Photograph, do not grab)
image from: sukeltaja.fi, accessed 6 May 2020

4.4 Conclusion

Table 4. Protective and admissive access

	Protective access	Admissive access
Strategies:	• Physical (cages) and psychological (cameras and signs) methods of protection. • Restricted access unless accompanied by a steward. • Stewardship schemes for private tour operators in which they conduct monitoring activities. • Heritage management's involvement in commercialised heritage packages.	• Legal (speed limits) and psychological (interpretive material) methods of protection. • Protection through education and building a positive local diving culture. • Open access. • Stewardship and monitoring from the diving community.
Audience:	International/domestic visitors.	Primarily suited to domestic visitors.
Collaboration with:	Private tour operators.	Community stakeholders like dive clubs and private tour operators.

Underwater heritage parks provide sustainable access to UCH through protective and admissive management strategies. Protective management restricts access to cultural heritage either physically or legally. In Croatia, cages have been used to prevent damage to UCH resources caused by divers. These cages are managed with the assistance of local commercial tour operators who bear the responsibilities of stewardship and maintenance. However, this approach has been over-used and is ineffective at protecting sites that fail to generate significant public interest. Another example of protective management, Sweden's Dalarö model, creates guardians for cultural heritage by training tourism operators to become tour guides. The project has taken a hands-on approach with local entrepreneurs and it has enabled access to sites that would otherwise have remained closed to the diving community. Comparatively, unrestricted access to UCH is provided through admissive management strategies. Finland's Porkkala Wreck Park achieves this through a grass-roots guardianship program with the nearby Nousa Ry diving club. Akin to the Adopt a Wreck scheme, this creates community stewardship of cultural heritage. Such an approach is reflective of the aims of the Faro Convention (Council of Europe 2005) and reflects the English Heritage Cycle (Thurley 2005, 26-27) in action. The Kronprins Gustav Adolf Underwater Park also enables unrestricted access to *in-situ* UCH. While there are on-sight rules and regulations, unrestricted access to divers has been successful. This may be attributed to comprehensive legal protection of cultural heritage and initiatives like the Helli Hylkyjamme Kampanja that have been utilised to encourage positive diver behaviour in Finland.

Protective and admissive management styles are best utilised depending on the variables of the underwater heritage park in question. At regions where UCH resources may garner significant international tourism, protective management could be the best option. The Croatian management style may be effective to protect high-profile sites. However, unless the interest of sites perceived to be less interesting is re-enforced within the framework of an interpretive narrative, these sites will suffer from neglect. The Dalarö model provides a better example of protective management. It also allows heritage management to be involved in the creation of commercialised heritage packages. Comparatively, admissive management is used extensively in Finland and reflects the results of building a positive diving culture. This enabled a *laissez-faire* management style at the Kronprins Gustav Adolf Underwater Park and collaborative community management at the Porkkala Wreck Park.

However, as the success of these underwater heritage parks lies in long-term initiatives that build a positive diving culture, admissive approaches are probably unsuccessful at protecting sites that could expect international tourism. Providing sustainable access to the diving community is essential to a successful underwater heritage park, but heritage management also has an ethical obligation to create engagement with the non-diving public.

Chapter 5: How can underwater heritage parks create effective methods of engagement with the non-diving public?

5.1 Introduction

Due to the invisibility of submerged sites to most people, archaeologists have consistently faced difficulties demonstrating the importance of underwater cultural heritage (UCH) to the public. Consequently, making the invisible not only visible but cared for is a significant part of changing public perceptions towards the intrinsic value of UCH. This issue is exacerbated by a media landscape that actively glorifies shipwreck looting and the commodification of cultural heritage, rather than promoting the importance of UCH sites as a shared public resource (Benjamin and Gatley 2018). Furthermore, diving is a hobby that has been widely criticised for being male-dominated and exclusionary of the less able-bodied (UNESCO 2014, 42; Ransley 2005; McCarthy 1983, 381-382). Consequently, merely providing access for divers is not engaging with the widest possible audience, and fails to show UCH off to people of *'all walks of life'* (McCarthy 1983, 381). Sustainable interaction with cultural heritage provides a multitude of benefits as it increases the awareness of the resource and its perceived value amongst the public. In turn, this enhances the opportunities for education and research (Thurley 2005, 26-27). Creating avenues for non-diving public access can be expensive and may rely on convenient water clarity and site positioning. However, underwater heritage parks around the world have successfully utilised ingenuity and technology to present UCH sites to the non-diving public. Remote-operated vehicles (ROV) and glass-bottom boats, as well as alternative activities like snorkelling, kayaking and walking trails, have broadened the demographics of public engagement with UCH. Furthermore, online and virtual resources, museums, information centres, and infrastructure projects have all been used by underwater heritage parks to provide spaces of interaction for the non-diving public. An example of this is Fathom Five Marine Parks in Canada. This provides a case study of an underwater heritage park utilising a multi-faceted approach to engage with the widest possible audience. This can only be accomplished through various methods of engagement with the non-diving public.

5.2 Methods of engagement with the non-diving public

Engaging with the non-diving public is also essential to UCH management. This can be an inherently difficult task, and using the right methodology to present *in-situ* UCH to the public at an underwater heritage park is often determined by site depth and water clarity. Underwater heritage parks have used ROV and glass-bottom boats, snorkelling and kayaking, interpretive walking trails, infrastructure to take the public underwater, virtual methods of access and collaboration with museums and information centres to accomplish this. Each of these will be discussed in detail and their effectiveness at reaching a non-diving audience assessed.

5.2.1 Remote-operated vehicle (ROV) and glass-bottom boat tours

ROV tours enable members of the public to view submerged sites through the lens of a camera attached to a submersible vehicle. The vehicle's camera projects an image of the site onboard the vessel, which enables a tour group to see the heritage resource through the screen. ROV tour operators enable the public to view sites that could even be strictly inaccessible to divers due to depth or fragility of the resource. Although sometimes having less success as standalone tours run by operators (*see* Chapter 4.2.2), ROV tours are still a promising method of presenting *in-situ* sites in deeper waters when combined with other activities. The Lake Champlain Maritime Museum's "Shipwrecks!" program in the United States hosts shipwreck tours using an ROV once weekly in July and August (Cohn and Dennis 2011, 1075). This enables access to sites by interested parties of all walks of life through the framework of a traditional museum. Such a method also provides the museum with opportunities for face-to-face public outreach and education, creating a mutually beneficial situation (Cohn and Dennis 2011, 1076).

Similar to ROV tours, glass-bottom boats enable the public to see UCH sites through a visible glass window whilst taking a leisurely cruise. Whereas ROV tours can provide access to sites found deep beneath the surface, glass-bottom boats can provide the same experience in shallower and clearer waters. The advantage that glass-bottom boats have over ROV tours is that they enable direct access to the resource for the non-diving public. This is important as face-to-face contact with cultural heritage sites enhances the public's perception of authenticity, which is sought after in people's experiences interacting with cultural heritage

(Hargrove 2002, 10-11). Tour operators use these vessels to view UCH sites at the Underwater Archaeological Park of Baia, Italy and Fathom Five Marine Parks. At these locations, shallow and clear waters of up to 13m depth allow visitors to view sunken cities or shipwrecks through the glass viewing deck. Both ROV and glass-bottom boat tours make UCH accessible to a wider audience than divers. Furthermore, they can be operated through the framework of traditional museums, or create local businesses and employment opportunities. Such opportunities can enhance the involvement of private enterprises in the safeguarding and monitoring of cultural heritage sites.

5.2.2 Snorkelling and kayaking

Promoting access and providing interpretive material aimed at snorkelers and kayakers can be an effective way to make underwater heritage parks more accessible. Kayaking and snorkelling are more widely practised than scuba diving. Equipment is also far more affordable and almost no technical training or expertise is required to participate, except for general water safety practices. However, to provide kayakers or snorkelers with direct visibility to heritage resources, underwater heritage parks need to be situated in shallow waters. At some locations this is possible. The Museum of Underwater Art's exhibitions on Palm Island, Australia are accessible to snorkelers due to the shallow depths and clear waters they are situated in (MoUA 2019, 18). However, submerged sites like shipwrecks are rarely accessible at these depths. Wrecks that sink under such conditions are often dismantled by subsequent salvage activity that occurs after the wrecking event (Muckelroy 1978, 158). However, shipwreck graveyards provide an opportunity to form underwater heritage parks that can engage the non-diving public. Such sites are often situated in shallow waters and could be the result of the licensed and organised discard of unwanted vessels. With the use of interpretive material and the implementation of safety guidelines, shipwreck graveyards provide aesthetically interesting heritage resources for underwater heritage parks. South Australia's Garden Island Ship's Graveyard Maritime Heritage Trail is one such example. The trail consists of around 25 ships deliberately scuppered between 1909 and 1945, providing a broad array of resources to present the state's maritime cultural heritage (Hartell and Richards 2001, 3). Many of these vessels are visible from the water surface and accessible to snorkelers, kayakers, divers, and walkers along the shore-front. This enables a broader cross-section of the public to gain enjoyment from *in-situ* cultural

heritage. This also provides a valuable opportunity to impart the importance of UCH on a non-diving audience.

5.2.3 Interpretive material and walking trails

While not able to provide direct access to UCH, land-based interpretive material and walking trails provide an opportunity for heritage managers to raise awareness of submerged sites and instil the importance of shared cultural heritage onto the public. At its simplest, this could involve the implementation of one or more signs that provide information about the submerged site and incorporate it into the wider narrative of the region's heritage. This works to raise local awareness of the resource and may rally support for conservational activities. One comprehensive example is the Victorian Historic Shipwreck Trail in Australia. The project installed interpretive material alongside the Great Ocean Road Highway, enabling drivers to learn about the state's maritime heritage at rest stops (Strachan 1995, 26). This incorporates the road's natural aesthetic qualities into the maritime cultural landscape of the region. Furthermore, Australian initiatives have included hiking-orientated elements into underwater heritage parks (Strachan 1995, 33-34). At the Wreck Beach walking trail, walkers follow an educational path that leads to the *in-situ* anchors of the Fiji and Marie Gabrielle shipwrecks (*see* Figure 5*;* Heritage Victoria 2013, 8). While not always providing direct access to cultural heritage sites, initiatives such as this do create public awareness and provide educational opportunities. The use of walking trails in the framework of underwater heritage parks also reflects a conceptual approach to maritime landscapes. Direct access to the resource is not required to highlight its existence and significance, and the aesthetic qualities of the marine landscape can compensate for direct interaction with the resource.

The Maritime Heritage Trail in the Cayman Islands provides another example of interpretive material and walking trails used to present maritime heritage. The project aimed to combine heritage, education and recreational tourism. It provides a land-based tour around 36 stops marked by signs at significant maritime sites. Visitors can learn about maritime architecture, shipbuilding, hurricane caves, forts, turtle fishing, anchorages, explorers, activities and shipwrecks pertaining to the Cayman Islands (Leshikar-Denton 2005, 24). A set of criteria for selecting sites appropriate to the walking trail was developed. This included requirements, such as the sites needed to comprise of multiple maritime themes, they should not

compromise sensitive cultural heritage, the sites had to provide a safe and entertaining activity at each location, the sites had to highlight interesting visual features, and they had to possess safe and publicly accessible viewing areas (Leshikar-Denton 2005, 24). The scope of the program also encouraged travel across the coastlines of all three of the Cayman Islands. This aimed to enhance local economies by encouraging public visitation. Through an increase in tourism revenue relating to the trail, the program could enhance community stewardship of the resource (Leshikar-Denton 2005, 24). This approach is also reflective of the aforementioned competitiveness clusters strategy, which mitigates the negative impacts of excess heritage tourism by distributing it throughout many related sites across a broader region (*see* Chapter 3.2.2; Hawkins 2007, 298-301).

Figure 5. Wreck Beach walking trail

Image from: visitvictoria.com, accessed 14 May 2020

5.2.4 Infrastructure to take the public beneath the surface

One of the most sophisticated methods to present UCH to the non-diving public has been utilised at the Baiheliang Underwater Museum in China. The museum provides access to centuries-old hydrological inscriptions that record water levels over 1200 years. These inscriptions have become submerged due to dam construction in the area. The decision was made to build a museum around the heritage sites *in-situ*, rather than excavate and curate the materials, which would have negated much of their scientific value. The Baiheliang Underwater Museum has now become a source of national pride and has created awareness of ancient Chinese scientific achievement within the country (Xiurun 2011, 30-31). Unfortunately, projects such as this are expensive and take many years to complete. The Baiheliang Underwater Museum cost as much as $28,000,000 (USD) and construction lasted from 2002 to 2009 (Xiurun 2011, 1). A similar proposal, the Alexandria Museum

Project, has aimed to provide public access to the ruins of the old city of Alexandria, Egypt, but it has remained in the planning stage since 1996. The effects of pollution in the harbour limiting visibility, as well as budgetary and political issues, have meant this museum is yet to come to fruition (El-Rayis *et al* 2003; Badry 2016). This highlights one of the key issues with large infrastructure projects such as this. Although underwater museum structures may enable anyone to visit the resource in the same way they may visit a museum, the costs can far exceed the allocated budgets for heritage resource management in most nations. The construction and planning process can also take many years and requires significant feats of engineering. Consequently, this approach has only been used to provide access to sites of national or global significance. Furthermore, Manders (2008, 37) recognises that sites displayed in such a manner risk a harmful Disneyfication of the heritage experience (*see* Chapter 2.2.4).

Figure 6. Observation tower in Japan

Image from: visitkochijapan.com/en/see-and-do/10031, accessed 20 May 2020.

There are more attainable methods of taking the non-diving public beneath the surface, in the form of observation towers. These structures were a popular way to present marine life to the public across Japan during the late 1960s and 1970s (Japan Information Service 1969). Eight of these towers have been constructed across the country, with seven built as vertical cylindrical shell structures. One example is the Ashizuri observation tower, which is an attraction in the framework of the Ashizuri-Uwakai National Park on the island of Shikoku. The observation tower is one facet in a wider ecological reserve, which is accompanied by a nearby maritime ecology centre (env.go.jp, accessed 13 May 2020).

These structures are relatively simple in design and are consequently more financially accessible than projects like the Baiheliang Underwater Museum. Similar buildings are yet to be used to display *in-situ* UCH but have the potential to be incorporated into the framework of an underwater heritage park. This would enable the non-diving public to gain firsthand personal encounters with UCH without the necessity of entering the water.

5.2.5 Providing virtual access

Online resources are valuable tools to enable citizen science and provide avenues of communication between divers and heritage managers, but they can also be used to facilitate accessibility and awareness of UCH resources. Florida's Museums of the Sea website went online in 2009 and displays photographs, videos, and information brochures about 12 of the Florida Underwater Archaeological Preserve's shipwrecks (museumsinthesea.com, accessed 14 May 2020). Unfortunately, few online endeavours manage to stimulate significant public interest on their own accord (Manders 2008, 39). To ensure longevity, heritage managers often find it pertinent to attach websites to a nationally-held host (Cooper and Knott 2016, 16-17; Manders 2008, 39). However, there still remains enormous potential in virtual experiences to showcase UCH. The Bermuda 100 project allows visitors to explore 3D models of shipwreck sites around Bermuda. It aims to provide virtual tours for interested parties and educational opportunities for students (bermuda100.ucsd.edu, accessed 20 March 2020). Furthermore, Bruno and colleagues (2018) presented a 3D reconstruction of a maritime landscape in Southern Italy to an audience of school-aged students. Male and female students reported positive experiences with the technology as well as high levels of learnability (Bruno *et al* 2018, 97-100). If utilised as an exhibit within a museum or information centre, such interactive experiences have the potential to allow UCH to be preserved *in-situ*, whilst simultaneously educating the public and providing interactive access to the resource.

5.2.6 Collaboration with museums and information centres

Close collaboration between underwater heritage parks and traditional museums or local information centres can create valuable spaces for public interaction with cultural heritage. Furthermore, they tell broader narratives than can be expressed by the objects themselves (Manders 2008, 37). In the past, museums such as Sweden's Vasa Museum had extracted entire shipwrecks and re-constructed the ship and all its elements within the confines of a

terrestrial structure. This provides access to a wide audience and as a consequence, the Vasa Museum has become the most visited museum within the Nordic region (vasamuseet.se, accessed 10 May 2020). However, this does not leave the shipwrecks *in-situ*. This causes cultural heritage to lose much of its situational context and authenticity. Furthermore, the cost of initial excavation and ongoing maintenance is high, especially when copious quantities of wooden elements are involved (Manders 2017, 136-139).

 Often museums can create exhibitions around sites without the necessity to extract *in-situ* elements from the site in question. This involves the use of interactive displays, photographs, models and reconstructions. The Kronprins Gustav Adolf exhibit at the Finnish Maritime Museum in Kotka provides an example of this. The exhibit works to educate the public about the resource in question, and in turn, can promote the diving experiences on-site. This form of collaborative approach enables the inclusion of the museum as another stakeholder group that bears some level of responsibility for the site in question. However, in this situation, there is a significant distance from the Kronprins Gustav Adolf exhibit and the underwater heritage park, and it is unlikely that most shipwreck divers enhance their experience through visiting the exhibit in Kotka (*see* Figure 7). Comparatively, the Caesarea Underwater Archaeological Park is situated amongst a plethora of other educational and recreational activities. This includes a visitor centre which can deliver education and face-to-face interaction with divers (*see* Figure 8). This enables divers to receive a more intensive education about the resource as well as their responsibilities and behaviour as divers interacting with it before they undertake their dive. This point of personal interaction and face-to-face contact provides a deeper level of engagement with the diving community. The Caesarea Harbour also contains both submerged and terrestrial elements. This provides opportunities for the diving and non-diving public to interact with cultural heritage and reflects the benefits of using multi-faceted methods of public engagement.

Figure 7. Map reflecting distance between Maritime Museum of Finland, Kotka and Kronprins Gustav Adolf Underwater Park
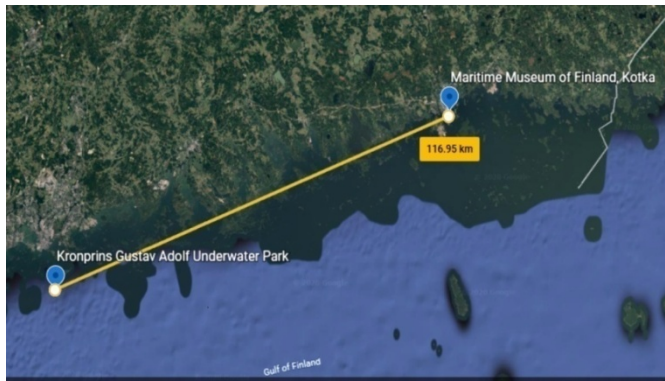
(Left) Image from: earth.google.com, accessed 28 June 2020.

Figure 8. Map of nearby educational and recreational activities available to patrons of Caesarea Harbour.

(Below) Image from: caesarea.com/en/home/tourism-and-leisure/harbor/general-info/caesarea-harbor-national-park-map, accessed 20 June 2020

5.3 A case study of a multi-faceted approach: Fathom Five Marine Parks

Canada's Fathom Five Marine Parks system may lead the way in using a multi-faceted approach to providing accessibility to underwater ecological and cultural heritage for both the diving and non-diving public. Established in 1987, the Fathom Five Marine Parks cover a conservation area of some 112km² in the Georgian Bay part of Lake Huron, Ontario. This includes 27 shipwreck sites but the region also has a diverse array of marine biodiversity (Burrows 2010, 1). The Fathom Five Marine Parks are not only a popular diving spot but also a major tourism destination for people of all walks of life. The park receives around 40,000 registered visitors per year, with only 3,500 divers (Burrows 2010, 18). This is because the Fathom Five Marine Parks utilise a broad variety of the aforementioned methods to provide access to a far wider cross-section of the public.

The shallow wreck positioning and overall good water visibility of the region have enabled access to shipwreck sites through scuba diving, snorkelling, hiking, and glass-bottom boat

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tours conducted by private tour operators (pc.gc.ca, accessed 20 March 2020). The combination of cultural and natural heritage makes it appealing to those with a broad range of interests, and many visitors use the park solely for camping trips. Consequently, visitors require no previous diving experience to engage with the region's heritage. In 2006, a visitor's centre was built in Tobermory. This serves as a focal point for educational activities directed at the public and uses both elements recovered from shipwrecks and a variety of multimedia platforms to interpret cultural heritage. A leading example is the Fathom Five 3D exhibit, which utilises 3D filmography to virtually take the public beneath the surface to experience the ecological and cultural heritage of the marine park (pc.gc.ca, accessed 20 March 2020). As a consequence of the diverse range of activities directed at individuals with little or no diving experience, the Fathom Five Marine Parks are popular as a destination for school-aged children. This has created opportunities for initiatives such as the Parks Canada Xplorers program, which is a booklet of activities that can be undertaken at Parks Canada locations and logged in a diary (pc.gc.ca, accessed 20 March 2020). Such activities provide engagement with those who cannot dive and also advertise other sites managed by Parks Canada. This enables people to learn about the opportunities that are available to interact with ecological and cultural heritage within the country.

Maximum accessibility can provide avenues to enable public education and wide enjoyment of shared heritage resources; however, this may bring pressures that threaten the sustainability of submerged sites. Despite positive overall hull and associated wreckage preservation, the Fathom Five wrecks were found to have suffered considerably from disturbance caused by divers up until 1995. Estimates of around 10,000 divers were using the Fathom Five Marine Parks each year, with every diver performing an average of 4 dives per visit. Graffiti, Abrasion and removal of *in-situ* objects had threatened the integrity of all monitored shipwrecks (Murdock and Stewart 1995, 868-869). To counteract this issue, a monitoring strategy was devised to ensure ongoing physical assessment of the wrecks. Murdock and Stewart (1995, 881) found that sample boards, monitoring devices, and the presence of assessors showed the diving community that such sites were of importance, and only one artefact involved in the study was removed during the process of monitoring. However, all levels of interaction have the potential to cause damage, and even the most conscientious and well-trained divers can still harm non-renewable cultural resources. From 2007, all divers were required to register with the Visitor Centre or with local dive shops in

Tobermory before their dive at Fathom Five Marine Parks (Burrows 2010, 21). This helps ward off malicious actors and enables a point of contact between park management and divers. It may also have contributed to a decline in overall diver usage. In 2010, only 3500 divers used the Fathom Five Marine Parks. This reflects a wider decline since 2005 of around 600 divers a year (Burrows 2010, 1, 17). However, with the implementation and support of a variety of methods to provide public access to non-divers, the Fathom Five Marine Parks have compensated for the decrease in diving visitors. The parks maintain the highest amount of overall visitors since its establishment, with at least 40,000 visitors coming to interact with UCH through glass-bottom boat tours, virtual experiences, the visitor centre, snorkelling, camping, or hiking.

5.4 Conclusions

Table 5. Environmental conditions and non-diver engagement strategies	
Environmental conditions	Strategy
Shallow Depth and Clearer Waters	• Glass-bottom boats
	• Snorkelling and kayaking
	• Infrastructure to take the public beneath the surface
	• ROV tours
	• Interpretive material and walking trails
	• Virtual access
	• Museums and information centres
Deeper and Less Visible Water	• ROV tours
	• Interpretive material and walking trails
	• Virtual access
	• Museums and information centres

Underwater heritage parks utilise a plethora of methodologies to engage with the non-diving public. Low site-depth and good water visibility can provide the widest possible range of non-diving activities at submerged sites. Activities, such as glass-bottom boat tours, snorkelling, and kayaking can provide firsthand access to *in-situ* cultural heritage. Such experiences with cultural heritage are often sought after by the public for their perceived authenticity. However, UCH sites are rarely so conveniently located. Shipwrecks that sink in

shallower waters are often subject to secondary salvaging processes over the years. While still subject to these processes, shipwreck graveyards such as, Garden Island in South Australia, can be found in shallower waters. Such locations may provide aesthetically pleasing and culturally significant locations for underwater heritage parks. Shallower and clearer waters may also enable access through the construction of infrastructure that takes the public beneath the surface. Current uses of such sites to build large-scale museums that provide access to UCH are expensive and take many years to come to fruition. However, more affordable alternatives in the form of observation towers have been used to provide access to marine life in Japan. Such an approach could be used to present *in-situ* UCH in shallow and clear waters.

Deeper waters require more creative approaches to present *in-situ* sites. ROV tours held through the Lake Champlain Maritime Museum enjoy popularity and may provide avenues for collaboration with businesses to safeguard submerged sites. Although interactive websites have only gained limited success, virtual reality re-constructions and 3D films held in museums or information centres are a popular and engaging method of providing virtual access to sites. This shows that to present UCH in deeper waters to the public, closer collaboration with land-based initiatives may be essential. Such institutions can also provide underwater heritage parks with a space for public awareness, education and diver registration. Furthermore, interpretive material and walking trails can incorporate the terrestrial into the maritime cultural landscape of a region. This provides the public with conceptual interactions with cultural heritage and still creates avenues for public education and awareness. It also creates a framework for the use of competitiveness cluster strategies that can mitigate the harmful effects of excess tourism.

The Fathom Five Marine Parks shows that the best results can be achieved through a multi-faceted approach that enables access and education to the broadest possible audience. Through a wide range of activities directed at non-divers, the Fathom Five Marine Parks can provide sources of public engagement with people of all walks of life. This is pertinent when diver-stress becomes apparent on wrecks. Alternative activities have enabled the Fathom Five Marine Parks to maintain popularity and impart the significance of UCH on a non-diving audience. This approach still provides direct access to UCH but limits the potential for diver-stress to the resource. If strategies of non-diver engagement are successfully utilised,

underwater heritage parks can provide direct access to *in-situ* UCH for people of all walks of life. Consequently, underwater heritage parks can and should be used to impart the value of the Netherland's *in-situ* UCH on the public.

Chapter 6: Developing a framework for assessing site sustainability in the Netherlands: What locations are suitable to create underwater heritage parks that provide sustainable public access to *in-situ* underwater cultural heritage in the Netherlands?

6.1 Introduction

Underwater heritage parks can be a valuable tool for heritage managers for many reasons. In Chapter Two, it was established that they present underwater cultural heritage (UCH) to the public that may otherwise go unrecognised and provide a space for education and engagement. Furthermore, the use of underwater heritage parks can provide site protection and identifiable source communities to conduct monitoring actions and research on UCH sites. Chapter Three established that this may also bring benefits to local residents, including improvement of well-being through enhanced involvement with cultural heritage, environmental protection, and regional economic stimulation. When the negative effects of heritage tourism can be mitigated, this can be a positive force for local communities. In Chapter Four, it was determined that through protective and admissive management styles, underwater heritage parks can provide sustainable access to *in-situ* sites. They can also create initiatives in the spirit of the Faro Convention (Council of Europe 2005) that engage with divers as a key stakeholder in cultural heritage management. Chapter Five of this thesis established that underwater heritage parks can also engage with a non-diving audience through a variety of methods dependant on site depth and water clarity. This enables underwater heritage parks to show cultural heritage off to audiences of all walks of life, especially when a multi-faceted approach that provides something for everyone is taken. However, in the Netherlands, this approach is not currently being employed as a way to present *in-situ* UCH to the public.

While the Netherlands is not a renowned diving destination, the country has a consistently growing blue tourism economy and a thriving sports diving community (OECD 2020, 241; onderwatersport.org, accessed 25 June 2020). Furthermore, future ratification of the Faro

Convention (Council of Europe 2005) highlights the need to create avenues of public engagement with cultural heritage. Consequently, the inherent benefits of managing sites within the framework of underwater heritage parks reflect a need to assess cultural heritage sites for their suitability for such use. In this chapter, a framework has been developed to assess a sample of the UCH of the Netherlands for such a purpose. This involves utilising O'Brien and colleagues (2011, 87) matrices based on Ehler and Douvere's (2009, 58-59) activities that contradict cultural heritage conservation. However, this thesis has also identified factors that may complement cultural heritage conservation. These factors will be contrasted alongside a database of sites within the Netherlands to determine the suitability of broader geographical regions and individual sites for underwater heritage parks. Once areas with the potential for an underwater heritage park have been located, each site can be individually assessed for the challenges and opportunities that an underwater heritage park in that location can provide.

6.2 Methods

To identify suitable sites for an underwater heritage park within the Netherlands, it is first important to identify a suitable database of known UCH sites within the country. Two databases, Maritime Stepping Stones (MaSS) and Managing Cultural Heritage Underwater Geographic Information System (MACHU GIS) exist. Such sites can then be placed into broader geographical areas that can provide a space to link sites to enhance their value as a representation of the maritime heritage of a region. Sites located on the database then need to be contrasted with activities conducted within the area that could inherently contradict conservation and recreational activities. These are determined by O'Brien and colleagues' (2011, 87) matrices of activities based on Ehler and Douvere (2009, 58-59) (*see* Figure 9). Sites covered by *in-situ* preservation techniques or where there is a potential for human remains were also considered unsuitable. Finally, it is then important to identify factors that could assist or determine the nature of an underwater heritage park at each location. These were identified as environmental conservation areas, nearby dive clubs and museums, and site depth. Once these activities have been identified in relation to site locations plotted on the database, it is then possible to determine the management and

engagement opportunities that could be provided at an underwater heritage park in the Netherlands.

6.2.1 Database selection: Maritime Stepping Stones (MaSS)

There are estimated to be approximately 60,000 UCH sites within the Netherlands, but many more remain undiscovered and unreported (Manders 2017, 24). Geographic Information systems (GIS) provide the best way of visualising the extent of known resources that could be made accessible for public access through an underwater heritage park. In the Netherlands, two main systems are utilised, MACHU GIS and MaSS. In its latest iteration, the MACHU GIS currently records the most individual UCH sites. However, the MACHU GIS also contains sites of a sensitive nature and is not widely accessible for the general public (Mahaxay *et al* 2012, 16-19). A much smaller and more open database, MaSS contains information of around 80 known and *in-situ* sites within the Netherlands, but it is constantly growing (mass.cultureelerfgoed.nl, accessed 27 June 2020). The database also contains brief historical information on shipwrecks with unknown positions and sites that have been removed from their *in-situ* locations. These sites were excluded from the selection process due to them not providing opportunities for the public to engage with tangible cultural heritage. The MaSS system was also developed to create a platform for public engagement and raise awareness of UCH. This means that many of the sites that are plotted in the MaSS database are already within the public consciousness to some extent. Consequently, the public nature of this database and its manageable size provides an ideal assemblage of UCH sites to assess the nation-wide suitability of an underwater heritage park.

6.2.2 Activities that contradict cultural and historical conservation

Ehler and Douvere (2009, 58-59) devised a table that provides a tool of analysis to determine the suitability of submerged sites for cultural conservational purposes. This was subsequently modified by O'Brien and colleagues (2011, 87) to bear more relevance to assessing sites for their suitability as underwater heritage parks in the Nordic Region (*see* Figure 9). Ehler and Douvere (2009, 58-59) found five activities that strictly contradict the use of marine environments for heritage conservational purposes. These are commercial fishing, sand/gravel mining, military operations being conducted in the area and offshore infrastructures, such as cables, pipelines and wind farms. All of the aforementioned activities can pose a danger to the public and UCH, or human interference can damage the

surrounding ecological environment. Consequently, areas where such activities are being conducted are generally deemed unsuitable for an underwater heritage park, with some exceptions. Commercial fishing takes place across most of the Dutch territorial waters, and bottom impact equipment is only prohibited in some regions. As a result, finding sites in regions that have prohibited commercial fishing is unattainable. However, a small exclusion zone that could provide protection for sites in an underwater heritage park could be achieved through further consultation with relevant authorities. Consequently, this was not considered to be a disqualifying factor.
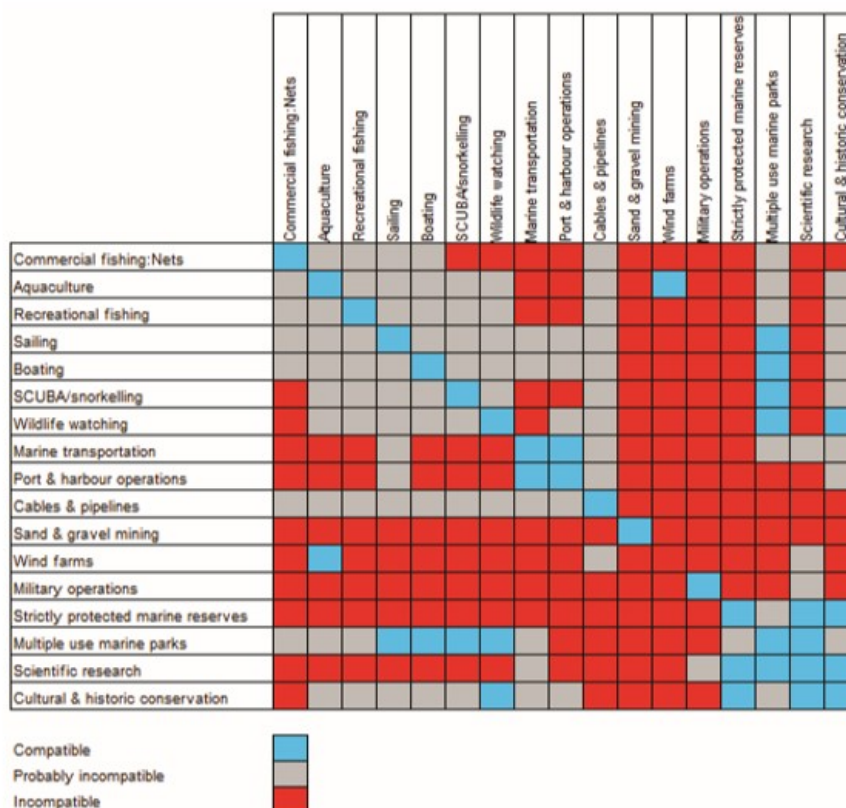
Figure 9. Matrices of compatible and incompatible maritime activities

Image from: Obrien *et al* 2011, 87; Ehler and Douvere 2009, 59.

The current protection status of sites is another important factor when determining site suitability. Sites that are physically protected may be covered by plastic sheets or sandbags that aim to prevent disturbance and decay. These sites are unlikely to provide much of an experience for the public and should remain undisturbed for future generations.

Furthermore, sites that have been declared war graves are considered to be unsuitable for public access. However, shipwrecks are often the sites of tragic incidents and sometimes there may be a possibility of human remains on-site (Edney 2006, 204). As a whole, museology has trended towards moving away from the display of human remains, particularly when they are the remains of individuals who have living descendants or where no specific educational gains can be made from their display. Therefore, locations that have been the site of fatal incidents within recent history may be inappropriate for use as an underwater heritage park and have been excluded from selection. However, the SS Kursk is a notable exception, due to the significant amount of diver interest and subsequent illegal salvage that has occurred on sight (Manders 2017, 94).

6.2.3 Factors that may support or determine the type of underwater heritage park

Alongside activities that may contradict the use of underwater heritage parks, there are some factors that may support or shape the type of underwater heritage park that can be created. These are protected nature reserves, nearby museums and diving clubs, and site depth. Ehler and Douvere (2009, 58) also recognised that protected nature reserves could complement UCH conservation. There are few strictly prohibited marine nature reserves within the Netherlands, and marine protected areas comprise only around 0.3% of total Dutch maritime space (World Wildlife Fund 2019, 17). However, Natura 2000 regions occupy some 19% of the Netherland's Exclusive Economic Zone (Netherlands Ministry for Water and the Environment 2015, 50). The primary goal of the Natura 2000 project is to conserve the biodiversity of Europe's flora and fauna. Such activities could be assisted by heritage conservation. This is due to Barreiros and Garcia's (2017) study that has found that activities directed at cultural and historical preservation can have a direct positive impact on regional biodiversity (*see* Chapter 3.4).

Nearby diving centres and clubs may also be conscripted as an ally to conduct activities needed in the management and creation of an underwater heritage park. Local divers are knowledgeable of the area and spend a significant amount of time underwater at their own cost. Initiatives like Adopt a Wreck (nauticalarchaeologysociety.org/adopt-a-wreck, accessed 21 April 2020) and the Träskö Project (Luoto 2018) show that enhanced involvement with the diving community can provide a layer of site protection and increase opportunities for research. Furthermore, museums and information centres can provide a space for

education in a terrestrial environment. This could enable an underwater heritage park to reach a wider audience than the diving community. The museums and information centres listed on the table have some relevance to maritime or regional cultural heritage (*see* Appendix). Site depth is another important factor when determining the suitability of UCH for public display. The depth of a site reflects the type of activities that can be conducted successfully by the non-diving public and the educational opportunities that can be offered on-site (*see* Chapter 5). At a depth of over 30m, the effectiveness of education can also be impacted by nitrogen narcosis. Consequently, warning signs should be placed at the site and educational information on the shore (*see* Chapter 2.2.3). Sites at a depth under 18m can be accessed by casual divers with only an Open Water Diver accreditation. Globally, this is the most common type of diving qualification (padi.com/courses/open-water-diver, accessed 10 May 2020). Therefore, sites shallower than 18m enable the widest diver outreach and provide maximum accessibility.

6.3 Results

UCH sites were placed into 24 broader geographical regions, which helped categorise the suitability of the surrounding area for an underwater heritage park (*see* Appendix). This simplified the process of assessing nearby activities that may contradict or assist in cultural heritage conservation and public access. The MaSS database contained 77 *in-situ* UCH sites. 54 were deemed initially suitable for an underwater heritage park; this can be seen in the Appendix of this thesis. This brought the number of prospective geographical regions down to 22. However, when the locations of nearby activities that conflict maritime heritage conservation were identified through the 2016-2021 Netherlands Water Plan (Netherlands Ministry for Water and the Environment 2015, 50), then this reduced the number of prospective regions to 18. Site depth was then determined either using the MACHU GIS system or with a bathymetric map (portal.emodnet-bathymetry.eu, accessed 6 June 2020). While this did not further exclude any sites, the MACHU GIS system gave a more accurate depiction of the condition of some of these UCH resources. This accompanied by an extensive literature analysis of the shipwrecks in the 18 remaining sites revealed that many were the locations of recent tragedies and may possess human remains, had previously been excavated, had few visible remnants or were covered by sediment. This allowed the

research to determine whether locations were "suitable" or "less suitable". "Less suitable" has been used over a more definitive phrasing as a closer analysis of sites on the MACHU GIS that do not appear on MaSS could reveal suitable UCH resources. Furthermore, the maritime spatial planning needs of the Netherlands are subject to change, and an area with military operations or infrastructure that contradicts cultural heritage conservation may also change in future. Out of the 24 broader geographic regions, eight possessed suitable locations for an underwater heritage park (*see* Table 6). This includes: Cuijk, Europoort, Grevelingen, Hellevoetsluis, IJsselmeer, Maasdriel, Oostvoornse Meer and the Wadden Sea (*see* Figure 10).

Table 6. Suitability of sites (summary of Appendix)

Region name	Number of suitable sites	Suitability	Comments on suitability
Callantsloog	0	Less suitable	Military operations conducted in the area.
Cuijk	1	Suitable	Close to urban centre containing Gebied-6000, a site of high archaeological interest.
Europoort	2	Suitable	Contains the SS Kursk, a site that has suffered from unauthorized salvage that may benefit from the protection provided by an underwater heritage park.
Grevelingen	1	Suitable	One small site, the Germaine, which is already being used by the diving community.
Hellevoetsluis	2	Suitable	Two sites in an urban centre with a rich maritime history.
IJsselmeer	6	Suitable	Several sites in shallow waters in a region with a rich maritime history.
Maasdriel	1	Suitable	One site accessible from the shore that could benefit from interpretive material.
Meinerswijk	1	Less suitable	Little remains of the site *in-situ.*
Noorderhaaks	2	Less suitable	Military operations conducted in the area.
North Sea (Holland)	3	Less suitable	Four nearby war graves, rough surrounding seas, sites located in deep waters, nearby wind farms and potential sand/gravel mining.
North Sea/ MSG Borkum Riffgrund	1	Less suitable	War grave nearby, rough surrounding seas, no nearby museums or diving clubs.
Oosterschelde	1	Less suitable	Cargo has been recovered and little of the hull structure remains *in-situ.*
Oostvoornse meer	5	Suitable	Many sites at varying depths in a popular dive location where training is frequently conducted.
Scheveningen	1	Less suitable	One shipwreck in the area, the site of a tragedy in 1882 that claimed 66 lives.
Stortemelk and Oost Vlieland	1	Less suitable	Only one existing shipwreck with few remnants.
Terschelling	2	Less suitable	HMS Lutine is too deep beneath sediment to

			provide diver access. Also, there are only a few tangible remains of Bloomkensdiep 2 and the Bantam (1613).
Texel, North Sea	3	Less suitable	Nearby military operations as well as potential sand/gravel mining.
Utrecht	2	Less suitable	Wrecks protected physically, or otherwise not openly exposed.
Vlakte van de Raan	0	Less suitable	Unknown protection status or details of site.
Voordelta	1	Less suitable	Majority of shipwrecks are remnants from a disaster that occurred in 1918, that claimed 9 lives.
Wadden Zee	13	Suitable	Rich cultural heritage resources in a significant maritime region with existing tourism infrastructure. Also a UNESCO World Heritage Site.
Walcheren	1	Less suitable	Military operations conducted nearby, half of the wrecks are protected physically.
Westerschelde and Saeftinghe	1	Less suitable	Only one suitable shipwreck in the area (Ritthem Shipwreck) with few visible *in-situ* remnants.
Woerden	0	Less suitable	All sites protected physically.

Each of the selected locations is unique and can provide different opportunities and challenges for both heritage management and stakeholders. Therefore, an analysis of the possibilities of an underwater heritage park at each site is necessary to conceptualise prospective underwater heritage parks in the Netherlands. At each location, it will be determined whether protective or admissive management strategies should be employed, and what strategies may be most effective at providing sustainable diver access. Furthermore, the environment of each site will be examined to establish what methods of engagement with the non-diving public could be employed to present *in-situ* UCH at each region. Local environments and histories can also give an insight into the background of each location and the nature of the underwater heritage park that can be developed here. This could include the theme of the underwater heritage park itself or the opportunities for environmental protection that are apparent at these sites.

Figure 10. Map of potential locations in the Netherlands with a close-up of Zeeland and South Holland.

Image from: earth.google.com, accessed 28 June 2020.

6.3.1 Cuijk

Figure 11. Map of UCH sites near Cuijk

Image from: earth.google.com, accessed 28 June 2020.

In the Meuse River, near Cuijk, are the remains of a submerged Roman quay, known to archaeologists as Gebied-6000 (*see* Figure 11). The site was discovered in 1989 during an excavation of a nearby Roman bridge. Much of the archaeological research on-site was conducted in collaboration with volunteers from the amateur archaeological group, Mergor in Masam (Seinen and Van Den Besselaar 2014, 330). Due to the rarity of such sites within the Netherlands, it could provide a unique opportunity for public access. Gebied-6000 consists of three core elements: foundation piles, layers of organic material, and rich artefact assemblages found within these layers (Seinen and Van Den Besselaar 2014, 332-339). Due to the loose, easily removable *in-situ* artefacts of the site, the use of a protective management strategy may be warranted to provide public access. This could involve a program similar to the Dalarö model, with the aforementioned amateur archaeological group, or local diving clubs providing site stewardship.

The site is also found within the shallow waters of the Meuse River. This provides

possibilities to engage with the non-diving public through infrastructure that takes the

public beneath the surface, glass-bottom boats or possibly snorkelling. The nearby Museum

Ceuclum already houses exhibits from the Roman period and could provide another

educational element of the underwater heritage park (museumceuclum.nl, accessed 10 May

2020). One of the key threats to the site is erosion, which is caused by canalization of the

River Meuse that started in the 1930s (Seinen and Van Den Besselaar 2014, 330).

Consequently, if Gebied-6000 were to be made an underwater heritage park, it could

benefit from a cooperative scheme following the experience with submerged sites in

Croatia, which requires guardians of the site to conduct monitoring actions to maintain their

role as stewards. Alternatively, a monitoring scheme could be constructed in the same vein

as the Iona II Dive Trail (Cooper and Knott 2016, 16-18). This could enable erosion to be

monitored without the necessity to conduct regular monitoring operations.

6.3.2 Europoort

Figure 12. Map of UCH sites near Europoort

Image from: earth.google.com, accessed 28 June 2020.

The approach to Europoort is one of the busiest commercial shipping districts in the world.

However, the seas around this region also contain two aesthetically interesting and

historically important shipwrecks (*see* Figure 12). The SS Zeearend (1916) is a steamer of

462 tons built by N.V. Werf De Noord, Alblasserdam in 1913. The ship was scuttled by a

German U-boat in 1916, but fortunately, no casualties were recorded. The approach to Europoort also contains the SS Kursk, a ship previously known as the Chrystal Wreck, before its identification in 2001. While this ship was the site of a disaster in 1912 that claimed 7 lives, the ship has been extensively damaged by illegal salvaging actions and contains a sensitive cargo of crystal wares (Manders 2017, 94). As a result, access to the site could be provided through a protective management framework such as that used by the Dalarö model. Creating a stakeholder charged with stewardship of the site, and preventing access to those not accompanied by the stakeholder, could end illegal salvaging activity. Simultaneously, this could appease the diving community by providing access to a site where diving would otherwise be strongly discouraged. Alternatively, sensitive material could be protected through security equipment such as protective cages or cameras. Sites in this region are far too deep to enable direct access to the non-diving public. This would highlight a need to cooperate with museums to create an educational space for non-divers. Such an exhibition could use virtual methods of site access, or provide access through ROV tours.

6.3.3 Grevelingen
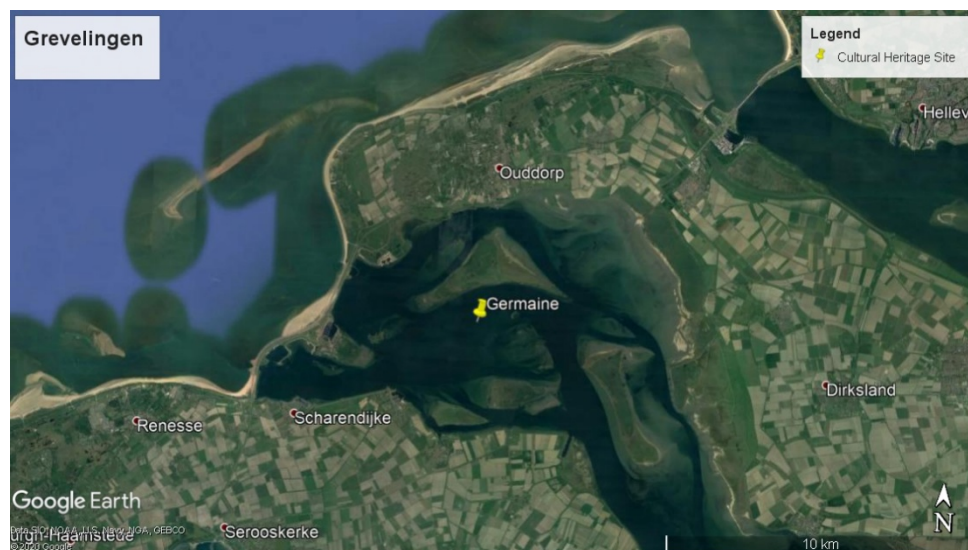
Figure 13 Map of UCH sites near Grevelingen

Image from: earth.google.com, accessed 28 June 2020.

As a closed-off section of the Rhine-Meuse Estuary, the Grevelingen is a saltwater lake situated on the border of South Holland and Zeeland. Here lies the engine and sections of the hull from a steamer known as the Germaine that sunk in 1903 (*see* Figure 13). The Grevelingen is a Natura 2000 area, and already a popular diving destination, with a mooring buoy on-site to provide diver access. Through providing educational material at the site, an underwater heritage park could enhance the value of the Germaine in the public's eye, and incorporate it into the broader heritage of the region. Furthermore, an underwater heritage park at Grevelingen could provide opportunities to engage with the area's existing dive community. This could be achieved through an admissive management framework, which would aim to work alongside divers, akin to the Porkkala Wreck Park. As only elements of the ship remain *in-situ*, non-diving access could be provided through virtual experiences or museum exhibits. Conceptual access could also be provided through interpretive material placed outside the lake.

6.3.4 Hellevoetsluis

Figure 14. Map of UCH sites near Hellevoetsluis

Image from: earth.google.com, accessed 28 June 2020.

In the Haringvliet, near Hellevoetsluis, are the remains of two shipwrecks believed to be the Lepelaar (1703) and the Delft (1657) (*see* Figure 14). The region is currently an estuarine

freshwater inlet, and part of the Natura 2000 system. Historically, the Haringvliet was an ecologically rich brackish water system, and only became a freshwater lake with the construction of the Haringvliet Dam in 1953. A proposal to partially restore the Haringvliet to its original ecosystem by removing some of the dam's sluices was made in 2018 (rijkswaterstaat.nl/water/projectenoverzicht/haringvliet-haringvlietsluizen-op-een-kier, accessed 28 June 2020). Consequently, an underwater heritage park in the Haringvliet, near Hellevoestluis, that uses admissive methods of public engagement could promote ecological biodiversity as well as cultural heritage conservation. An ecological monitoring scheme at the shipwreck sites that aims to observe biodiversity in the Haringvliet through citizen science could provide valuable on-going information on the transitional process. However, Hellevoetsluis' maritime cultural heritage also provides opportunities for private involvement in the management of UCH.

The town of Hellevoetsluis was once a major naval port connected to nearby Rotterdam. Consequently, the town's heritage is intrinsically linked to its maritime past and the potential for maritime heritage-themed tourism is already significant. This is reflected in various heritage attractions that highlight maritime heritage, including the historic shipbuilding site, Droogdock Jan Blanken, and harboured ships already transformed into museums, including Lichtschip 12, AMS Bernisse, and Ramtorenschip Buffel. Furthermore, during the so-called Glorious Revolution of 1688, William III of Orange's fleet departed from Hellevoetsluis. The two shipwrecks, the Lepelaar (1703) and Delft (1657) are built from within 15 and 31 years of this event respectively, showing the potential for this maritime park to have a 17th and 18th-century historical theme. With an already thriving industry around maritime heritage at Hellevoetsluis, protective measures of site management could provide a plethora of opportunities for local entrepreneurs to become involved in the protection and presentation of *in-situ* UCH. This could take the form of a scheme similar to the Dalarö model, where entrepreneurs become guardians of cultural heritage. To present cultural heritage sites at Hellevoetsluis to the non-diving public, an underwater heritage park could utilise the plethora of heritage-related attractions and businesses to create spaces for either a virtual or traditional exhibition or to conduct ROV tours. Furthermore, both sites sit at a maximum possible depth of less than 10m. If water clarity were to be maintained, then glass-bottom boats could provide a possible way for entrepreneurs to conduct tours of the shipwrecks. Walking trails and interpretive material could also be used

to highlight the shipwrecks and reinforce their significance in the minds of tourists and locals.

6.3.5 Maasdriel

Figure 15. Map of UCH sites near Maasdriel

Image from: earth.google.com, accessed 28 June 2020.

The remains of the Henrica Maria, a river barge built in 1898 by P&A Ruijtenberg, can be found at Maasdriel (*see* Figure 15). The Henrica Maria's purpose was to transport cargo alongside the associated river systems and it is not considered to be of high archaeological value (Seinen and Van Den Besselaar 2011, 4-6). The site is not entirely submerged and can already be accessed by members of the public who incidentally encounter it. While not necessarily the most suitable site for an underwater heritage park, the site could benefit from interpretive material, or inclusion into a walking trail, similar to the Wreck Beach trail in Victoria. This could highlight the ship's place in the maritime history of Maasdriel, raising awareness and providing protection from destruction.

6.3.6 IJsselmeer
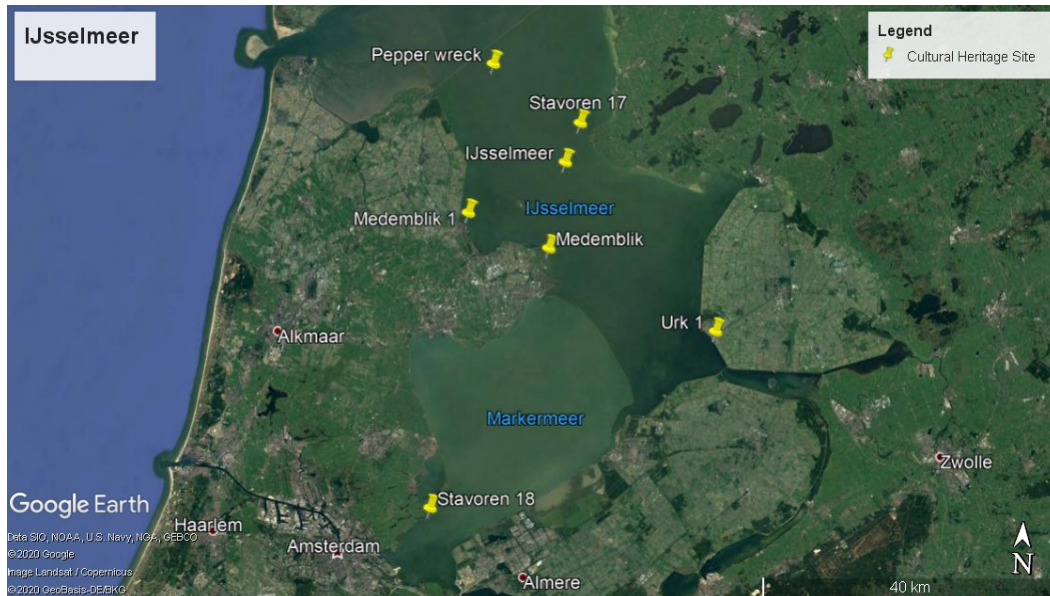
Figure 16. Map of UCH sites near IJsselmeer

Image from: earth.google.com, accessed 28 June 2020.

The IJsselmeer is a freshwater bay sealed by the artificial Afsluitdijk to the north. It is already an important region for cultural heritage in the Netherlands, as it contains a plethora of picturesque villages and museums, and is renowned archaeologically for the nearby Flevoland ship graveyard. The IJsselmeer is also intensively used for water-sports, with sailing, kite-surfing, fishing, and diving being popular. According to the MaSS system, there are seven shipwrecks in the IJsselmeer that could be suitable for inclusion into an underwater heritage park, with three carrying the designation of National Monuments (*see* Figure 16 and Appendix). The cultural heritage in the region also reflects a broad array of the Netherland's maritime history with a medieval wreck, Stavoren 17, an 18th-century vessel, Stavoren 18, and more modern constructions such as Urk 1 and the Pepper Wreck.

The IJsselmeer is a notoriously shallow water system, and most of these wrecks can be found at depths ranging from 3-7 meters. Consequently, snorkelling, glass-bottom boats and observation towers may be plausible ways for the non-diving public to see the IJsselmeer's UCH. There are also nearby museums that specifically focus on the region's maritime heritage, notably the Batavialand museum, which is also a central location for maritime archaeology as it serves as the national maritime depot (batavialand.nl, accessed 14 May

2020). Furthermore, The nearby polder area of Flevoland is a reclaimed section of land often referred to as a shipwreck graveyard, due to the 450 shipwrecks have been found beneath the soil near here (Maarleveld and Manders 2006, 128). Many of these locations are marked by signage, which already provides an interpretive element for the non-diving public to appreciate maritime heritage (*see* Figure 17). Further interpretive material could be provided at these locations, to create an informative walking trail that complements an underwater heritage park. Either protective or admissive methods of public access could be utilised on submerged sites at the IJsselmeer. However, due to the age and sensitivity of some of the older sites, a mix of protective and admissive methods may be ideal if all sites were to be incorporated into an underwater heritage park. This could include the use of protective equipment such as cages or security cameras. Alternatively, nearby diving clubs or tourism operators could take on a stewardship role to either present the site to members of the public or to conduct scientific monitoring actions on behalf of heritage management.

Figure 17. Flevoland shipwreck sign

Image from: Smit (2007, 334)

6.3.7 Oostvoornse Meer

Figure 18. Map of UCH sites near the Oostvoornse Meer

Image from: earth.google.com, accessed 28 June 2020.

The Oostvoornse Meer is a deep brackish-freshwater lake with at least five suitable UCH sites on the MaSS database; it also boasts good overall visibility (*see* Figure 18). The lake is also a popular diving spot, particularly for training activities. Incidentally, an underwater heritage park in the Oostvoornse Meer has previously been proposed, although the project never came to fruition (Manders 2017, 169). UCH sites in the Oostvoornse Meer are threatened by salination, which brings the woodborer *Teredo navalis* (shipworm), as well as negative human interference from the diving community (Opdebeeck 2012, 481). The sites can also be found at a variety of depths. Some well exceed 18m and even 30m, but the fact that the lake is already used as a training location makes it an ideal spot for an underwater heritage park. Such a park could work to educate divers on the importance of UCH as they undertake activities that allow them to dive at deeper depths across the Netherlands. It could include anchoring buoys, interpretive material, monitoring programs, and face-to-face education with trainers who are taught the importance of UCH conservation. These activities could be pivotal in imparting positive attitudes and behaviour on the next generation of sports divers, creating allies and advocates for cultural heritage amongst the diving community. These trainers could also be taught to conduct regular monitoring

actions, helping to combat the effects of *Teredo navalis*. Under the stewardship of existing organisations that conduct diver training, the Oostvoornse Meer could take either an admissive or protective approach to site management. Due to the depth of most sites in the Oostvoornse Meer, access for the non-diving public would need to be approached conceptually. Local museums could act as educational centres, using virtual methods of public interaction or conducting ROV tours on-site. Furthermore, some interpretive material has already been installed around the lake, but this could be built upon to create an Oostvoornse Meer walking trail that could raise public appreciation of the lake's UCH.

6.3.8 The Wadden Sea
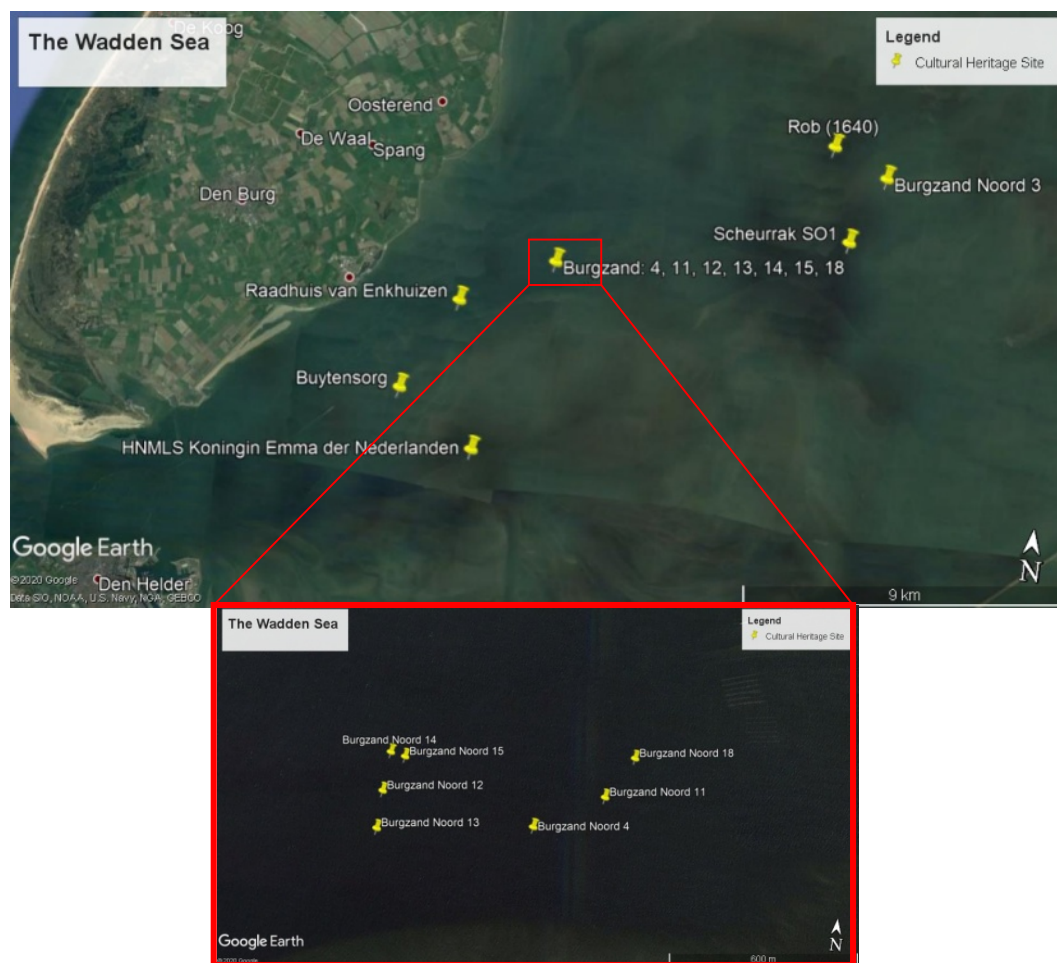
Figure 19. Map of UCH sites in the Wadden Sea with a close-up of Burgzand Noord Wrecks: 4, 11, 12, 13, 14, 15, 18

Image from: earth.google.com, accessed 28 June 2020.

The Wadden Sea is the world's largest uninterrupted system of intertidal sand and mudflats. The region is included as not only part of the Natura 2000 area, but also a UNESCO World Heritage Site. Consequently, the Wadden Sea experiences a significant amount of tourism, with 23.8 million overnight stays reported in the Dutch section in 2017 (Bjarnason *et al* 2017, 8). Although the region is mainly renowned for its ecological heritage and biodiversity, the Wadden Sea also contains a rich collection of UCH sites. Some 18 shipwrecks in the Wadden Sea appear on the MaSS database, with 9 of these sites designated as National Monuments (*see* Figure 19 and Appendix). However, 6 of the 18 sites are physically protected; leaving 12 shipwrecks with the possibility of inclusion into an underwater heritage park. These sites vary from 16th-century shipwrecks to modern steel ships. Consequently, Manders (2017, 169-172) has previously recognized the significant potential for an underwater heritage park in the region. If amalgamated into an underwater heritage park, these individual sites could tell a wider interpretive narrative of the extensive cultural heritage of the Wadden Sea region, possibly creating an underwater heritage park of international significance. The significant amount of tourism that the region receives indicates that protective or admissive methods of presentation could be suitable, depending on the sites selected for incorporation into the park. It also indicates strong opportunities for a stewardship scheme through collaboration with diving clubs and tour operators that can monitor sites and provide sustainable access to cultural heritage for the public.

The Wadden Sea also provides shallow waters, which can enable widespread access to UCH for divers with a variety of skill levels. None of the Wadden Sea shipwrecks are in water that exceeds 18 meters of depth. Some are even as shallow as five meters below the water surface. However, due to the poor visibility in the region, neither glass-bottom boats nor snorkelling would be suitable ways to see the region's *in-situ* heritage (Manders 2017, 171). However, the surrounding Wadden Sea islands contain a plethora of walking trails and nature parks, which could incorporate cultural heritage signage to create a conceptual understanding of the cultural maritime landscape. Furthermore, Manders (2017, 170-171) has recognized that Texel, with its many museums and existing tourism infrastructure, could serve as a land-based hub to an underwater heritage park in the region. Museums and information centres in Texel could host virtual experiences or exhibitions on the Wadden Sea UCH. The primary threat to UCH in the Wadden Sea comes from erosion, caused by shifting seafloors. This is a fast-acting process and in the year of 2004-2005, the seabed in a

test area of the Wadden Sea deepened as much as 53cm (Manders 2017, 73). An underwater archaeological park in the Wadden Sea could benefit from a monitoring program that tracks the impact of erosion on these sites and the movement of the seabed. Such a scheme, similar to that of the Iona II Dive Trail, could act as a warning mechanism to prevent loss to the Wadden Sea's UCH.

6.4 Conclusion

Utilising O'Brien and colleagues' (2011, 87; Ehler and Douvere 2009, 58-59) matrices of activities that contradict heritage conservation, and identifying factors like nearby museums, diving clubs, and water depth that may assist or shape the direction of an underwater heritage park, eight regions in the Netherlands have been identified as suitable for such a purpose. These are: Cuijk, Europoort, Grevelingen, Hellevoetsluis, IJsselmeer, Maasdriel, Oostvoornse Meer, Terschelling, and the Wadden Sea. The opportunities for underwater heritage parks in the Netherlands are significant. Cuijk could provide an underwater heritage park of national significance, with Gebied-6000 being one of the few underwater Roman sites in the country. Due to the loose-finds around the site, protective site management may need to be used here. However, shallow waters and nearby museums provide plenty of opportunities for engagement with a non-diving audience. Europoort also presents a sensitive site, where protective management methods would be favourable. The SS Kursk near Europoort has suffered from illegal salvaging activity, and creating a stewardship program akin to the Dalarö model could provide site protection from within the private sector. It could also provide sustainable access to a site where diving would otherwise be discouraged. At Grevelingen, a completely different approach can be taken. The remains of the Germaine are already a popular diving spot, but creating an underwater heritage park here could enhance the public's appreciation of the site by providing interpretive material and creating stewardship amongst local diving clubs. Conceptual access to the non-diving public could also accomplish this through interpretive material around the lake. Comparatively, Hellevoetsluis is a town that celebrates a rich maritime heritage, and there are several existing museums and established businesses that could conduct monitoring actions and become guardians on behalf of cultural heritage management. Furthermore, the possible reversal of the lake to its original salt-water state

could benefit from a species biodiversity monitoring scheme and the conservational protection that an underwater heritage park could provide.

There are also possibilities for public engagement with the Henrica Maria at Maasdriel. Although not a region where a significant underwater heritage park could be placed, the Henrica Maria is visible from the shore and could benefit from interpretive material and incorporation into a walking trail. Comparatively, the possibilities of an underwater heritage park at the IJsselmeer are highly significant. The shallow waters here may provide possibilities for non-diver public access through glass-bottom boats, snorkelling and kayaking, and infrastructure that takes the public beneath the surface. Furthermore, Batavialand and the nearby Flevoland shipwreck graveyard already provide engaging ways to reach the public conceptually. A mix of admissive and protective management strategies could be used here, to protect sensitive wrecks from public interference, while enabling access to less sensitive sites. The Oostvoornse Meer is another spot that already attracts a significant amount of interest from divers. Diver training is frequently conducted here, and it may be beneficial to turn the region into an underwater heritage park to impart positive attitudes towards UCH onto divers undertaking training. Interpretive material around the lake or collaboration with museums could also further this goal. Perhaps the region with the most potential for an underwater heritage park is the Wadden Sea. The region is already a UNESCO World Heritage Site, contains a rich assemblage of diverse UCH sites, and attracts a significant amount of tourism. Due to the existing tourism, either protective or admissive methods of site access could be utilised here depending on the vulnerability of sites where public access could be promoted. Furthermore, the region's walking trails provide opportunities for conceptual engagement with UCH through interpretive material and museums located in Texel. The Wadden Sea could also benefit from a participatory monitoring scheme, akin to the Iona II Dive Trail. Such underwater heritage parks could mitigate potential threats such as erosion or existing human interference and potentially bring significant economic, social, and environmental benefits to local residents. Nevertheless, as pressure on UCH resources increases, failure to provide sustainable access could have negative consequences for non-renewable cultural heritage resources.

Thesis summary and opportunities for further research

Thesis summary

Underwater heritage parks are a concept that allows heritage management to present *in-situ* underwater cultural heritage (UCH) to the public in an exciting and educational format. However, this approach is currently not used within the Netherlands. This thesis assessed whether underwater heritage parks are an effective tool for heritage management, and how and where they could be used within the Netherlands. To determine whether underwater heritage parks are an effective tool for heritage management, the challenges and opportunities they present were assessed. The use of underwater heritage parks to present *in-situ* UCH creates four main challenges for heritage management. Human interaction with cultural heritage can be an inherently destructive force when managed incorrectly. Wanton destruction through the removal of artefacts from their *in-situ* context and accidental destruction through diver contact can cause damage to cultural heritage resources. However, this can be mitigated through physical, legal and psychological methods of protection. Providing education underwater is another challenge. At depths that exceed 30m, it may even be futile to do more than provide basic warnings and explanations. However, at depths under 30m, information is largely retained by divers. Furthermore, reaching a non-diving audience is essential to changing public attitudes towards UCH. This can be problematic with *in-situ* underwater sites. However, remote-operated vehicles (ROV) and glass-bottom boat tours, snorkelling and kayaking, interpretive material and walking trails, infrastructure that takes the public beneath the surface, providing virtual access, and collaboration with museums and information centres have all been used to accomplish this. Underwater heritage parks also risk a harmful Disneyfication of the cultural heritage experience. If overly commercialised, this can have the negative effects of creating inauthentic histories and nostalgia to encourage admission. This negates the philosophy of cultural heritage as a shared public resource and can also cause sites to lose much of their authenticity and context. To mitigate this issue, cultural heritage managers need to be involved in the creation of commercialised heritage packages.

The use of underwater heritage parks also provides a variety of management opportunities. Close collaboration with the diving community can create a block that advocates on behalf of cultural heritage conservation in the political arena. Furthermore, it can create allies that can assist with the monitoring and observation of UCH. Programs like the Iona II shipwreck monitoring trail use divers for citizen science. This can be an effective way to check the condition of UCH sites without having to conduct expensive monitoring operations. Similar activities can be conducted in collaboration with commercial tourism operators. These kinds of collaborations can bring solvency to the heritage management experience and create educational officers, guardians, and advocates for cultural heritage. They can also provide opportunities for heritage professionals to be involved in the commercial presentation of cultural heritage to the public. Underwater heritage parks can also provide a deeper level of protection from public interference. This can be achieved through prohibitive measures like cages or surveillance methods such as security cameras. However, professionals in charge of heritage resources regularly report that presenting cultural heritage in a manner that reflects care and ownership can actively change the behaviour of those who interact with it. The best way to ensure the public cares for cultural heritage, which in-turn provides long-term protection, is through education. The use of underwater heritage parks creates a framework for broader educational narratives. Rather than communicating the story of one site, an underwater heritage park can create interpretive narratives that re-enforce the value of all UCH throughout a wider geographical context. This has been used at the Victoria Shipwreck Trail, where individual sites are collaborated to communicate the collective story of Victoria's maritime heritage.

Many of the challenges posed by underwater heritage parks can be mitigated through either the opportunities they create or through other means. Consequently, if these issues are accounted for in the creation of an underwater heritage park, then the parks can be an effective tool for heritage management. However, the impacts upon nearby residents should also be considered in the heritage management process to avoid disenfranchisement with cultural heritage development.

Underwater heritage parks bring both challenges and opportunities to nearby residents. The case study of the Museum of Underwater Art (MoUA) shows a broad range of societal, environmental and economic opportunities. Societal benefits include the opportunity for

expression and the ability to address social and historical issues through heritage. At MoUA, these societal benefits have been achieved through close cooperation with the local Bwgcolman Indigenous stakeholders. Environmentally, MoUA has created a space for research and citizen science monitoring actions on the Great Barrier Reef. This is achieved through close collaborations with stakeholders within the scientific community. Economically, MoUA is likely to create direct employment, bring money into the local economy, and create entrepreneurial opportunities for Palm Island and the wider Townsville area. However, the increase in heritage tourism will not only bring economic benefits, but it will likely also bring significant issues. Communities can become entrapped by the heritage tourism process, which may lead to broader societal complications. Excess tourism can also cause both cultural heritage sites and nearby living spaces to lose their sense of authenticity. Fortunately, these negative impacts can be mitigated by working alongside and with the consent of communities throughout the heritage tourism process. Furthermore, negative tourist behaviour can be changed by providing positive experiences with cultural heritage. Competitiveness cluster strategies can also be employed to limit the potential for one site or region to become excessively patronised.

In the Netherlands, an underwater heritage park that presents *in-situ* UCH might not make the same dramatic economic contributions as MoUA, but it may still introduce revenue and create local entrepreneurial opportunities. Regardless, the main value of cultural heritage is in the welfare it brings to communities, particularly through the ability to reinforce and build community identity and well-being. A community-led underwater heritage park in the Netherlands could consolidate community identity, shape regional narratives and unveil local histories. The environmental benefits created by MoUA could also be replicated within the Netherlands. The Natura 2000 area and the Wadden Sea UNESCO World Heritage Site both promote species biodiversity. Heritage conservation could be added as a complementary activity to these existing objectives. A species monitoring scheme, similar to the Eye on the Reef program, could further assist environmental conservation in these areas. Such goals could only be achieved if heritage tourism is managed sustainably. However, to achieve local community sustainability, heritage management also needs to provide sustainable access to the UCH in question.

Underwater heritage parks provide sustainable access to UCH through protective and admissive management strategies. Protective management restricts access to cultural heritage either physically or legally. In Croatia, cages prevent the damage to heritage resources caused by divers. These cages are managed with the assistance of local commercial tour operators who bear the responsibilities of stewardship and maintenance. This approach may have been over-used in Croatia, and it is ineffective at protecting sites that fail to generate significant public interest. Another example of protective management, Sweden's Dalarö model, creates guardians for cultural heritage by training tourism operators to become tour guides. The project has worked alongside entrepreneurs and enabled access to sites that would otherwise have remained closed to the diving community. Comparatively, unrestricted access to UCH is provided through admissive management strategies. Finland's Porkkala Wreck Park achieves this through a grass-roots guardianship program with the nearby Nousa Ry diving club. Akin to the Adopt a Wreck scheme, this creates community stewardship of cultural heritage, is reflective of the aims of the Faro Convention and provides a practical example of the English Heritage Cycle. The Kronprins Gustav Adolf also enables unrestricted access to *in-situ* UCH. While there are on-sight rules and regulations, unrestricted access to divers has been successful. This may be attributed to comprehensive legal protection of cultural heritage and initiatives like the Helli Hylkyjamme Kampanja (Care for Our Wrecks Campaign) that have been utilised to create positive diver behaviour in Finland.

Protective and admissive management styles are best utilised depending on the variables of the underwater heritage park in question. At regions where heritage resources may garner significant international tourism, protective management could be the best option. The Croatian management style may be effective to protect high-profile sites. However, unless the interest of sites perceived to be less interesting is re-enforced within the framework of an interpretive narrative, these sites will suffer from neglect. The Dalarö model provides a better example of protective management. It also allows heritage management to be involved in the creation of commercialised heritage packages, which avoids Disneyfication. Comparatively, admissive management is used in Finland and reflects the results of building a positive diving culture. This enables a *laissez-faire* management style at the Kronprins Gustav Adolf Underwater Heritage Park and collaborative community management at the Porkkala Wreck Park. However, as the success of these underwater heritage parks lies in

long-term initiatives that build a positive diving culture, admissive approaches are probably unsuccessful at protecting sites that could expect international tourism. Providing sustainable access to the diving community is essential to a successful underwater heritage park, but heritage management also has an ethical obligation to create engagement with the non-diving public.

Heritage management needs to engage with the non-diving audience to change attitudes towards cultural heritage within the broader public consciousness. Underwater heritage parks utilise a plethora of methodologies to achieve this. Low site-depth and good water visibility can provide the widest possible range of non-diving activities at submerged sites. Activities, such as glass-bottom boat tours, snorkelling, and kayaking can provide firsthand access to *in-situ* UCH. Such firsthand experiences with cultural heritage are often sought after by the public for their perceived authenticity. However, UCH sites are rarely so conveniently located. Shipwrecks that sink in shallower waters are often subject to secondary salvaging processes over the years. While still subject to these processes, shipwreck graveyards such as, Garden Island in South Australia, can be found in shallower waters. Such locations may provide aesthetically pleasing and culturally significant locations for an underwater heritage park. Shallower and clearer waters may also enable access through the construction of infrastructure that takes the public beneath the surface. Current uses of such sites to build large-scale museums that provide access to UCH are expensive and take many years to come to fruition. However, more affordable alternatives in the form of observation towers have been used to provide access to marine life in Japan. This could also provide access to *in-situ* UCH in shallow and clear waters.

Deeper waters require creative approaches to present *in-situ* sites. ROV tours held through the Lake Champlain Maritime Museum enjoy popularity and may provide avenues for collaboration with businesses to safeguard submerged sites. Although interactive websites have only gained limited success, virtual reality re-constructions and 3D films held in museums or information centres are a popular and engaging method of providing virtual access to sites. This shows that to present UCH sites in deeper waters to the public, closer collaboration with land-based initiatives may be essential. Such institutions can also provide underwater heritage parks with a space for public awareness, education and diver registration. Furthermore, interpretive material and walking trails can incorporate the

terrestrial into the maritime cultural landscape of a region. This provides the public with conceptual interactions with UCH and still creates avenues for public education and awareness. It also creates a framework for the use of competitiveness cluster strategies that can mitigate the harmful effects of excess tourism.

The Fathom Five Marine Parks shows that the best results can be achieved through a multi-faceted approach that enables access and education to the broadest possible audience. Through a wide range of activities directed at non-divers, the Fathom Five Marine Parks can provide public engagement with people of all walks of life. This is pertinent when diver-stress becomes apparent on wrecks. Alternative activities have enabled the Fathom Five Marine Parks to maintain popularity and impart the significance of UCH on a non-diving audience. This approach still provides direct access to UCH sites but limits the potential for diver-stress to the resource. If strategies of non-diver engagement are successfully utilised, underwater heritage parks can provide direct access to *in-situ* UCH for not only divers but people of all walks of life. Consequently, underwater heritage parks can and should be used to impart the value of the Netherland's *in-situ* UCH on the public.

Utilising O'Brien and colleagues' (2011, 87; Ehler and Douvere 2009, 59-59) matrices of activities that contradict heritage conservation, and identifying factors like nearby museums, diving clubs, and water depth that may assist or shape the direction of an underwater heritage park, eight regions in the Netherlands have been identified as suitable for such a purpose. These are: Cuijk, Europoort, Grevelingen, Hellevoetsluis, IJsselmeer, Maasdriel, Oostvoornse Meer, and the Wadden Sea. The opportunities for underwater heritage parks in the Netherlands are significant. Cuijk could provide an underwater heritage park of national importance with Gebied-6000 being one of the few underwater Roman sites in the country. Due to the loose-finds around the site, protective site management may need to be used here. However, shallow waters and nearby museums provide plenty of opportunities for engagement with a non-diving audience. Europoort also presents a sensitive site, where protective management methods would be favourable. The SS Kursk near Europoort has suffered from illegal salvaging activity, and creating a stewardship program akin to the Dalarö model could provide site protection from within the diving community. It could also provide sustainable access to a site where diving would otherwise be discouraged. At Grevelingen, a completely different approach can be taken.

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Wadden Sea could also benefit from a participatory monitoring scheme, akin to the Iona II Dive Trail. Such underwater heritage parks could mitigate potential threats such as erosion or existing human interference and potentially bring significant economic, social, and environmental benefits to local residents. Nevertheless, as pressure on UCH resources increases, failure to provide sustainable access could have negative consequences for non-renewable cultural heritage.

Opportunities for further research

Further research could find new ways of enabling sustainable access to *in-situ* UCH or further explore methods of providing access to submerged sites for the non-diving public. The possibilities for either are only limited by ingenuity and technology. However, most pertinently, further research could take these eight potential sites and apply a closer analysis of the maritime resources in each region. The MaSS database only provides a sample of the potential UCH in these areas. A closer analysis of the MACHU GIS could reveal many more opportunities for public access and protection through the framework of an underwater heritage park. A physical assessment of the UCH sites suggested in this thesis would also be necessary before further action were to be taken. Furthermore, there remains the possibility to identify and communicate with stakeholder groups and gauge their interest in such a project. This could turn the results of this thesis into a project within the spirit of the Faro Convention (Council of Europe 2005) and the Convention on the Protection of the Underwater Cultural Heritage (UNESCO 2001), to create an underwater heritage park in the Netherlands. Alternatively, the methodology employed by this thesis could be modified and applied to other nations, where authorities in charge of UCH may be interested in using underwater heritage parks as a framework to both protect *in-situ* UCH and present it to the public.

Abstract:

For the public, underwater heritage parks amalgamate the thrill of sports diving with the educational enjoyment of a museum. Consequently, underwater heritage parks have been a popular medium to present *in-situ* underwater cultural heritage (UCH) in countries, such as Australia, the UK, Finland, Sweden, Canada and the US. However, this method to present *in-situ* UCH is not used in the Netherlands. Within the context of the Dutch government's recent decision to ratify the Faro Convention (Council of Europe 2005) and the growing blue tourism economy and diving community within the country, this thesis assesses the effectiveness of underwater heritage parks and explores the plausibility of utilising this approach within the Netherlands. Through an analysis of literature and case studies pertaining to the global use of underwater heritage parks, this thesis first analyses the challenges and opportunities that underwater heritage parks present for heritage management and determines that the challenges can be mitigated. This makes underwater heritage parks an effective tool for heritage management. However, this also highlights a need to explore the challenges and opportunities that underwater heritage parks potentially bring nearby residents. Through an analysis of the case study of the Museum of Underwater Art, Australia, this thesis found that underwater heritage parks can bring societal, environmental, and economic benefits to the communities that they are located nearby. This can be achieved sustainably when mitigating the harmful impacts of heritage tourism through working with the ongoing consent of nearby residents, providing honest and positive experiences for tourists, and competitiveness cluster strategies. However, all of this can only be accomplished when the sustainability of the UCH resources of an underwater heritage park can be ensured. Through an analysis of case studies in Croatia, Sweden and Finland, this thesis determines that sustainable diver access can be achieved through protective methods of site protection, which use prohibitive equipment or create tour guides through commercial dive operators. However, sustainable access can also be achieved through admissive methods of site protection, which allow unrestricted access but protect UCH through community stewardship, legislation, or initiatives that have successfully changed attitudes towards UCH. However, changing attitudes towards UCH also necessitates reaching the non-diving community. This thesis explores how underwater heritage parks have accomplished this and through the case study of Fathom Five Marine Parks, Canada, states that a multi-faceted approach that provides a broad range of ways to interact with UCH is most effective. Having established the effectiveness of underwater heritage parks and the best methods to provide access to UCH and ensure the sustainability of the resource, this thesis then assesses where this approach could be utilised within the Netherlands. Through building on O'Brien and colleagues (2011, 87) matrices of activities that contradict cultural heritage conservation, based from Ehler and Douvere (2009, 58-59), this thesis found that underwater heritage parks could present *in-situ* UCH at Cuijk, Europoort, Grevelingen, Hellevoetsluis, IJsselmeer, Maasdriel, Oostvoornse Meer, and the Wadden Sea.

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Appendix

Site Information					Items that may assist in the designation of an underwater heritage park/museum				Items that contradict cultural heritage conservation according to Ehler and Douvere (2009, 58-59)			
Region	Site Name	Protection status according to MaSS (red if war grave or protected physically)	Suitable for Underwater Heritage Park? (YES/NO)	Site depth (green if under 18m)	Are there diving clubs nearby?	Are there nearby museums/information centres?	Is the area a strictly protected marine reserve? (Ehler and Douvere 2009, 58-59)	Is commercial fishing present in the region?	Is sand/gravel mining present in the region?	Are military operations conducted in the region?	Are there cables and pipelines or wind farms?
Callantsloog	*HMS Prince George*	Protected by law	NO (covered by sediment)	8.4m (covered by sediment)	OSV ORCA	Dutch Navy Museum	Natura 2000 area	Yes (bottom impact equipment prohibited)	No	Yes	Nearby
	HNLMS Johan Maurits van Nassau	War Grave	NO	N/A							
Cuijk	*Cuijk, Roman quay*	National monument	YES	0-3m	Duikteam Atlantis Cuijk; Brandweer Duikvereniging Cuijk	Museum Ceuclum	No	No	No	No	No
Europoort	*SS Zeearend (1916)*	Protected by law	YES	≤25m	Duikschool Oostvorne	Open Luchtmuseum De Duinhuisjes; De Stenen Baak; Historisch Museum Den Briel	No	Yes	Nearby	No	No
	SS Kursk	Unknown	YES	22.5m							
Grevelingen	*Germaine*	Protected by law	YES	≤10m	Duikschool Sealand Diving; Duikschool Scharendijke; Duikvereniging SOV Scaldis	KNRM Station Ouddoorp; Brouws Museum	Natura 2000 area	Yes	No	No	No
Hellevoetsluis	*Lepelaar*	Protected by law	YES	≤10m	JeugdDuikVereniging La Rana	Jan Blanken Dry Dock; St. Behoud Scheepstimmerwerf Middelharnis; Stadsmuseum Hellevotesluis; Ramtorenschip "Buffel"	Natura 2000 area	Yes	No	No	No
	Delft (1657)	Unknown	YES	≤10m							
IJsselmeer	*Medemblik*	National	YES	0m	Active Diving	Zuiderzee	Natura 2000	Yes	No	No	No

Location	Wreck	Protection	Accessible	Depth	Dive centres	Museums	Area	Col1	Col2	Col3	Col4
		monument			mola mola; Atlantic Duikcentrum;	Museum; Duik Museum Lemmer; Museum Hindeloopen; Afsluitdijk Wadden Centre	area				
	Medemblik 1	National monument	YES	3.1m							
	Pepper Wreck Ijsselmeer	National monument	YES	7m							
	Stavoren 17	Protected by law	YES	3-4m							
	Stavoren 18	Protected by law	YES	≤10m							
	Urk 1	Protected by law	YES	4m							
Maasdriel	*Henrica Maria*	Protected by law	YES	0-1m	Kano- en Duiksport Zaltbommel; Dive Action Netherlands; Duikteam Gloria Maris	Historisch Museum; Archaeologisch en Paleontologisch Museum Hertogsgemaal	No	No	No	No	No
Meinerswijk	*Meinerswijk 3*	Protected by law	YES	5m	Duikteam Merou; Stichting "Happy Bubbles"; Dive2dive Duikschool; o.w.s.v Gelre-sub	Nederlands Watermuseum; Valkhof Museum	No	No	No	No	No
Noorderhaaks	*Hollandia (1683)*	Protected by law	YES	11.7m	Duikbedrijf Glomar Subsea/Glomar Diving	Dutch Navy Museum; Lichtschip Texel; Museum Kaap Skil	Natura 2000 area	Yes (bottom impact equipment prohibited)	No	Yes	No
	Princess Sophia Albertina	Protected physically	NO	N/A							
	Wapen Van Reygersbergh	Protected by law	YES	≤15m							
North Sea (Holland)	*Delft (1783)*	Protected by law	YES	26.5m	No	IJmuider Zee en Haven Museum; Musee Scheveningen	No	Yes	Nearby	No	Nearby
	HMS Aboukir	War grave	NO	N/A							
	HMS Cressy	War grave	NO	N/A							
	HMS Hogue	War grave	NO	N/A							
	HMS Scott	Protected by law	YES	22.1m							
	SS Elbe	Protected by law	YES	25.9m							
	Zaanstroom III	War Grave	NO	N/A							
North Sea/ MSG Borkum	*HMS E-3*	War Grave	NO	N/A	No	No	No	Yes	No	No	No

Riffgrund	*Nimwegen*	Protected by law	YES	≤25m				Yes			
Oosterschelde	*Francois Narp*	Protected by law	YES	≤10m	Duikmee vzw	Oosterschelde museum	Natura 2000 area	Yes	No	No	No
Oostvoornese meer	*Oostvoornse meer 04*	Protected by law	YES	13m	Duikschool Oostvorne; JeugdDuikVere niging La Rana; Speleo Dive Adventures	Open Luchtmuseum De Duinhuisjes; De Stenen Baak; Historisch Museum Den Briel	No	No	No	No	No
	Oostvoornse meer 08	Protected by law	YES	14-17m							
	Oostvoornse meer 10	Protected by law	YES	26m							
	Oostvoornse meer 12	Protected by law	YES	35-50m							
	Oostvoornse meer 14	Protected by law	YES	21-23m							
	South America	Protected physically	NO	N/A							
Scheveningen	*Adder, De*	Protected by law	YES	15.7m	Westkust Haven-en Duikservice	Musee Scheveningen	No	Yes	No	No	Nearby
Stortemelk and Oost Vlieland	*HNLMS Frans Naerebout*	Protected by law	NO	5.8m (wreck has disappeared)	Duikclub Ecuador	Museum Reddingsboot Terschelling; Wrakken Museum; De Noordwester, waddencentru m en zeeaquarium	Natura 2000 area	Yes (bottom impact equipment prohibited)	No	No	No
	Witte Kalf	Protected by law	YES	≤10m							
Terschelling	*Bantam (1613)*	Protected by law	YES	≤10m	Duikclub Ecuador	Museum Reddingsboot Terschelling; Wrakken Museum; De Noordwester, waddencentru m en zeeaquarium	Natura 2000 area	Yes (bottom impact equipment prohibited)	No	No	No
	HMS Lutine	Protected by law	NO (covered by sediment)	6-10m							
	Midloo	Protected by law	YES	0.2m							
Texel, North Sea	*HMS E17*	Protected by law	YES	20.5m	Duikclub Texel; Duik Bedrijf Glomar	Dutch Navy Museum; Lichtschip Texel; Museum Kaap Skil	Natura 2000 area	Yes	Nearby	Nearby	No
	SS Madrid	Protected by law	YES	13.7m							
	Vrede van Nijmegen (1700)	Protected by law	YES	≤25m							
Utrecht	*De Meern 4*	Protected physically	NO	N/A	Duikvereniging Gejo Utrecht; Polar Bear	Waterlinie Museum; Centraal	No	No	No	No	No
	Vleuten 1	Protected by	YES	≤5m							

		law			Duikschool;	Museum;					
	Vleuten 2	Protected by law	YES	≤5m	Dive4all Duikschool	University Museum Utrecht					
Vlakte van de Raan	Akerboom	Unknown	YES	≤15m	Onderwatersportvereniging Narwal; Z.V.v.O. Dolfijn; Duikteam Zeeland	Gemeentelijk Archeologisch Museum Aardenburg; Bezoekerscentrum 't Zwin; Zeeland Maritime Museum Vlissingen; Museum Scheepsbouw Geschiedenis Vlissingen	Natura 2000 area	Yes	No	No	No
Voordelta	ARM-16	Protected by law	YES	≤15m	Duikschool Sealand Diving; Duikschool Scharendijke; Duikvereniging SOV Scaldis	NME Centra	Natura 2000 area	Yes	No	No	No
	Pollux (1765)	Protected by law	YES	≤15m							
	Stoomloodsvaartuig no.14	Protected by law	YES	8.7-9m							
Wadden Zee	Burgzand Noord 02 (BZN 2)	Protected physically	NO	N/A	Duikclub Texel; Duikbedrijf Glomar Subsea/Glomar Diving	Afsluitdijk Wadden Centre; Dutch Navy Museum; Lichtschip Texel; Museum Kaap Skil	Natura 2000 area; UNESCO World Heritage	Yes	No	No	No
	Burgzand Noord 03 (BZN 3)	National monument	YES	6-9m							
	Burgzand Noord 04 (BZN 4)	National monument	YES	6-9m							
	Burgzand Noord 08 (BZN 8)	Protected physically	NO	N/A							
	Burgzand Noord 09 (BZN 9)	Protected physically	NO	N/A							
	Burgzand Noord 10 (BZN 10)	Protected physically	NO	N/A							
	Burgzand Noord 11 (BZN 11)	National monument	YES	7.5-10m							
	Burgzand	National	YES	9- 15m							

	Noord 12 (BZN 12)	monument									
	Burgzand Noord 13 (BZN 13)	National monument	YES	9.5-12m							
	Burgzand Noord 14 (BZN 14)	National monument	YES	9- 15m							
	Burgzand Noord 15 (BZN 15)	National monument	YES	10.5-13m							
	Burgzand Noord 17 (BZN 17)	Protected physically	NO	N/A							
	Burgzand Noord 18 (BZN 18)	National monument	YES	8-11m							
	Burgzand Noord 19 (BZN 19)	Protected physically	NO	N/A							
	Buytensorg	Protected by law	YES	≤15m							
	HNLMS Koningin Emma der Nederlanden	Protected by law	YES	5.1m							
	Rob (1640)	National monument	YES	≤15m							
	Scheurrak SO1	Protected by law	YES	≤15m							
	Raadhuise van Ehkhuizen	Protected Physically	YES	≤15m							
Walcheren	Domburg Badstraat	Protected physically	NO	N/A	Z.V.v.O. Dolfijn; Duikteam Zeeland	Zeeland Maritime Museum Vlissingen; Museum Scheepsbouw Geschiedenis Vlissingen; Terra Maris	Natura 2000 area	Yes	No	Nearby	No
	Roompot	Protected by law	YES	18.9m							
Westerschelde and Saeftinghe	HNLMS BV 34	War Grave	NO	N/A	Z.V.v.O. Dolfijn; Duikteam Zeeland	Zeeland Maritime Museum Vlissingen; Museum Scheepsbouw	Natura 2000 area	Yes	No	No	No
	Loodsboot nr.1 MV	Protected by law	YES	8.2m							
	Ritthem Shipwreck	Protected by law	YES	19-22m 40m (one part) (16.3m)							

	Walcheren (1665)	Protected by law	YES	17.5-20m (one beam)		Geschiedenis Vlissingen; Terra Maris					
Woerden	*Woerden 1*	Protected physically	NO	N/A	Seahorse Diving Club Duikbedrijf; Go Dive Xperience Woerden	City Museum Woerden	No	No	No	No	No