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Maritime Spatial Planning and Maritime Archaeology Conservation: Protecting yesterday's legacy by planning for tomorrow, cases from Northern Lebanon

Vera Noon

Beirut; vera.b.n@hotmail.com

Abstract

Maritime Cultural Heritage (MCH) today stands as a witness of early human naval endeavours. Jeopardized by modern days' maritime activities, MCH requires a holistic planning approach for conservation management, taking into consideration the future dimension of humankind's maritime aspirations. This need could be incorporated within a Maritime Spatial Planning (MSP) framework, an emerging multidisciplinary process that seeks to prevent conflicts among maritime activities, whilst promoting environmental conservation and sustainable economic development.

This paper identifies main issues related to MCH, and addresses the role that MSP can play in the conservation of MCH, illustrated by two examples from Lebanon.

Key words

Maritime Spatial Planning - Maritime Archaeology – Cultural Heritage - Blue Growth – Multi-scalar approach – Lebanon

Introduction

Since the dawn of time, humans used the marine environment and its resources for subsistence as the first civilisations thrived on the interface between land and the sea (Yesner *et al.*, 1980). Survival turned into trade, and little by little, humankind's relationship to the sea has shifted. Connecting continents, the Mediterranean trade was a driver for growth since Predynastic times (Mark, 1997), and the Levantine sea basin particularly is a witness of what was always a platform for connectivity, among both cultural and commercial networks (Ashtor, 1983).

Many chronological indicators allow tracing back these ancient civilisations and tracking their expansion throughout time and space, namely archaeological evidence found *in situ* as well as items found across continents and below the oceans. Shipwrecks in particular have always been a gold mine for archaeologists since studying them allowed connecting the dots between the origin and the destination of the products they carry (Villano, 2009). However, other manmade structures that are not necessarily submerged are equally valuable. For this reason, several definitions related to maritime archaeology have been explored to define the paper's scope of work.

The proposed scope of work for the purpose of this paper is based on interpretations from UNESCO's 2001 Convention on Underwater Cultural Heritage, and based on definitions of marine and maritime archaeology (Cottrell, 1993; Ford *et al.*, 2012; [Maritime Archaeology Trust, n.d.](#); [AIMA, n.d.](#)). Thus, Maritime Cultural Heritage (MCH) encompasses tangible and intangible heritage, including coastal, foreshore and submerged remains, possessing a historic, cultural, or archaeological value. (Fig. 1)

While seafaring, trade, and fishing dominated the oceans in the past, today's reality is slightly different. A myriad of maritime activities is taking place in the oceans, all the way to the deep sea, leading to spatial and environmental conflicts (Ehler, 2017). As a result, Maritime Spatial Planning (MSP) emerged, and is increasingly gaining momentum. MSP is a multidisciplinary planning tool, supporting maritime economic development and environmental conservation, while seeking to resolve and prevent conflicts among maritime activities or with the ecosystem. It is both a public and political process, combining bottom-up and top-down approaches (Ehler and Douvère, 2009). A byproduct of the European Integrated Maritime Policy's Blue Growth strategy¹, MSP is expected to provide knowledge and ensure a sustainable management of activities at sea, while promoting new maritime economic sectors ([European Commission, n.d.](#)).

What effects will an increase in maritime activities have on MCH? Can MSP play a role in the mitigation of potential MCH damage and in producing synergies?

To answer these questions, an assessment of various maritime activities' impacts on MCH is conducted, followed by a compilation of MSP interventions that can support MCH conservation. Finally, two case studies from Lebanon are used to illustrate the findings, providing case-specific recommendations for MCH conservation.

Methodology

¹ Blue growth is the long term strategy to support sustainable growth in the marine and maritime sectors.

This paper is built on three main steps (Fig. 2): Identification of issues related to MCH conservation; compilation of MSP interventions related to MCH conservation; and finally, examination of two Lebanese case studies.

To identify issues related to MCH conservation, different elements are taken into consideration: the source of the impact (related to human activity); the nature of the impact (direct, indirect); and the location of the MCH (coastal, foreshore or marine).

As for the different MSP interventions, the compilation is based on nested-approach thinking (Fanning *et al.*, 2013), a common planning methodology adopted in MSP, recommended particularly for small sea spaces (EU MSP platform, n.d. a). As a result, the MSP tools, collected from multiple examples, follow a multi-scalar logic ranging from global to local scales.

The two selected case studies differ in scale, in socio-political context, and in the nature of the MCH. This allows us to explore the different tools MSP has to offer.

Results

The first section displays the negative impacts caused by different maritime activities and fragmented institutional frameworks. It is followed by a compilation of the potential MSP interventions that can tackle these MCH issues.

Identifying issues

In the contextual aspect, among the first obstacles impeding further MCH knowledge acquisition is the accessibility to the site itself. A large share of UCH remains undiscovered, where deeply layered artefacts cannot be easily predicted, especially in the deep sea and areas beyond national jurisdiction ([UNESCO, 2011](#)). Moreover, the spatial distribution of MCH is heterogeneous where MCH is encountered in spots and not in areas (Altvater, 2016). These two conditions render locating and hence protecting MCH difficult.

Direct impacts that may damage MCH mainly stem from the growth of maritime activities such as maritime transport, fishing, energy production, resource extraction, and military activities.

Ports and harbour activities related to commercial and/or recreational maritime transport pose threats during their construction phase as well as during their operational phase (Helcom, 2018). Infrastructural works such as dredging and land reclamation directly damage coastal and foreshore archaeological sites, and may change the course of currents exposing previously buried UCH ([UNESCO, 2017_a](#)). Other activities such as vessel manoeuvres, anchoring, and ground tackle proved to be harmful to both the seabed as well as the water quality, therefore to archaeological vestiges lying on the sea bottom (Dizon *et al.*, 2013: 269).

As for the fishing sector, not all fishing techniques are necessarily harmful to UCH. Near coastal areas, aquaculture may result in the alteration of the water's chemical composition, hence influencing the preservation conditions of certain sites (Haponiuk, 2015). Deeper in the water column, dynamite fishing (or blast fishing) is a destructive practice, often illegal yet still widespread, and it has proved to cause an increase in the corrosion of shipwrecks (MacLeod *et al.*, 2011). In coastal and deep sea areas, bottom trawlers' activities often result in the damage of submerged artefacts and disturbance of assemblages (Dizon *et al.*, 2013: 269).

Somewhat comparable to the maritime transport sector is the energy sector, where activities that take place in the deeper seas are also supported by coastal infrastructure. However energy production requires connections such as oil/gas pipelines and the routing of electrical/telecommunication cables to substations ([UNESCO, 2017 b](#); Karlikowska *et. al.*, 2018). In the oil and gas industry, the construction and operation of industrial facilities can damage coastal and foreshore MCH, whereas drilling for oil wells can directly damage UCH sites ([Faulk, 2010](#)). Likewise, offshore wind farm (OWF) structures for wind turbines require the installation of deep foundations affecting UCH directly, and may also alter current dynamics ([Defingou *et. al.*, 2019: 121, 163](#)). Extractive industries such as deep-sea mining and sand extraction similarly affect seabed archaeology ([UNESCO, 2017 a](#)). Another direct impact to MCH is caused by explosives used during violent conflicts, and unexploded ordinance dumped in the sea (Dizon *et al.*, 2013: 71). The impact of conflicts on terrestrial cultural heritage has been widely explored, particularly in terms of looting and illicit trade in archaeological assets. Yet the case of MCH is often overlooked, probably due to inaccessibility, and thus to monitoring difficulties.

In contrast, several threats to MCH arise from socio-political systems and are harder to tackle. For instance, awareness of the importance of MCH conservation is still lagging: the definition of MCH remains blurry, and the lack of publicly accessible databases and mapping tools further exacerbates this insensitivity. Moreover, there is still a misconception by which MCH is considered an obstacle to economic development, as opposed to an economic opportunity ([EU MSP Platform, n.d.b](#)).

On a global level, discussions about climate change impacts are growing. It has been proven that climate change can lead to the deterioration of many coastal and marine archaeological sites due to sea level rise, erosion, alterations in conservation environment patterns, and even the spread of new animal species and harmful worms (marine borers) ([UNESCO, 2017 c](#)). Climate related flooding of buried sites and severe erosion have been documented in three different archaeological sites in the United States (Reeder Myers, 2015).

Pinpointing solutions

MSP is rather a top-down exercise, and was proven to be a catalyst for administrative and institutional procedures. However, the top-down and bottom-up processes still need to engage with each other. In fact, MSP can also support the planning process by organising participatory and stakeholder engagement in the decision-making process (Morf. *et. al.*, 2019).

The first step towards global awareness began in 1982 through the UN Convention on the Law of the Sea (UNCLOS), which defined maritime boundaries and sovereign rights over the sea bed ([UNCLOS, 1982](#)). As far as MCH is concerned, the convention imposed a general duty on states to protect archaeological and historical objects found at sea. It also promoted collaboration between states: coastal states were given jurisdiction over the Territorial Seas (24 nm) to control traffic in UCH objects, but this does not cover the remaining Exclusive Economic Zone (EEZ) and continental shelf ([European Communities, 2009](#)). Complementing the UNCLOS, the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage prioritizes *in situ* preservation of UCH, and it also defines exclusive rights and responsibilities of state parties over UCH in internal waters, archipelagic waters, and Contiguous Zone (articles 7 & 8). The protection of UCH as well as the reporting and notification measures were addressed in regards to the EEZ and Continental

Shelf (art. 9 & 10) but also beyond those zones, in what is referred to as “the Area”² (art. 11 & 12). Coordinating and consulting states collaborate over issuing authorisations for maritime activities and for conducting research related to UCH. This is done with the consent of the flag states and of the states to which the objects pertain by virtue of their cultural/historical or archaeological origin (UNESCO, 2001). (Fig. 3)

MSP is complementary to the above-mentioned principles through two of its main pillars: transboundary MSP (TMSP) and cross border cooperation. Findings have shown that TMSP can be beneficial to cultural heritage management as it encompasses several state countries, and collaborating might bridge the gaps in their fragmented institutional governance (Soininen and Hassan, 2015). In fact, in 2017, UNESCO’s Intergovernmental Oceanographic Commission (IOC) and the EU adopted a joint road map to accelerate MSP processes worldwide and promote, among other priority actions, TMSP and sustainable Blue Economy. Two pilot projects are ongoing in the western Mediterranean and southeast Pacific, promoting capacity building and spreading awareness about ocean governance matters. Cultural heritage could be one of the topics of future pilot projects (MSPGlobal, 2019).

An example of regional collaboration is BalticRIM, a project focusing on the relationship between MSP and MCH in the Baltic Sea. It aims to improve the capacity of regional MCH planning agencies through innovative public participation methods ([submariner network, n.d. a](#)). It also developed three pilot projects on different scales, serving as concrete exercises for planners and stakeholders ([submariner network, n.d. b](#)).

A different regional (or even national) tool, complying with the *in situ* preservation principle, is related to Marine Protected Areas (MPA) establishment. MSP and MPAs have a special bond since initially, parties were interested in developing MPAs as a response to the degradation of marine areas due to human activities (Olsson *et. al*, 2008). With time, MPAs became more specialised, and began adapting their legal instruments to protection needs. Papageorgiou (2018) listed forms of MPAs recognising not only environmental value of marine sites, but also their cultural and aesthetic values: the International Maritime Organisation’s Particularly Sensitive Sea Areas (PSSAs) define maritime transport routing measures to protect ecologically and culturally sensitive areas (IMO, 2019). The UN Environment’s Mediterranean Action Plan SPA/BD Protocol promotes the establishment of Specially Protected Areas of Mediterranean Importance (SPAMI) for the conservation of areas of cultural, aesthetic, archaeological, historical, and educational interest (RAC-SPA, n.d. a). Such MPAs are important from a strategic planning point of view as they create synergies between environmental protection and MCH conservation. It has been proven that common interests were established among archaeologists and environmental protection agencies (Zwick, 2019) despite occasional clashes recorded due to intrusive excavation techniques (UNESCO, 2012).

From synergies to collocation and multiuse, these two planning strategies are applicable on regional and national scales. Identifying opportunities between MCH sites and new sectors can prove to be beneficial for both sides: activities such as diving trails in UCH sites or virtual UCH tours can provide sources of funding for MCH by diversifying tourism offerings (Przedzrymirska *et al*. 2018). In the Netherlands, the ban on ship passages within

² The Area, according to the UNCLOS, is the seabed, ocean floor, and subsoil beyond the limits of national jurisdiction.

a natural protected marine park has helped preserve wreck locations ([EU MSP Platform, n.d.](#) b). Likewise, the protection of submarine cables requires bans on activities like bottom trawling and dredging, which can help protect UCH in return (Haponiuk, 2015: 11).

On a national level, marine licensing and legislative measures can play a major part in the reduction of harmful marine activities, and thus in the regulation process. For instance, some activities used in the process of archaeological exploration require a marine license or a special permission system (Historic England, 2015; Gdansk Maritime Institute, 2016).

Considering land-sea interaction in the planning approach involved integrating MCH protection policies in land planning processes and Integrated Coastal Zone Management (ICZM) (Khakzad *et. al*, 2015), such as the case of Scotland ([Legislation.gov.uk, 2014](#)).

A global issue, several programs have been designed to mitigate climate change damage to archaeological sites at the national scale (Reeder-Myers, 2015). As far as MSP is concerned, climate change adaptation remains among its top priorities, and several projects introduced it in their planning processes (Santos *et al.*, 2016).

National scale planning sets the stage for a more advanced analysis. However, implementation proves to be more efficient on a local level, particularly through pilot projects. For this reason, place-based planning is the next step in the process.

Zoning is one of the main tools that help resolving spatial conflicts among maritime uses by reducing or prohibiting certain activities. Just like in land-use planning, conflicts can be mitigated by developing a marine cadastral register coupled with zoning regulations as a first step to avoid future overlaps in highly anticipated maritime uses, and a step towards better marine space governance (Suárez de Vivero *et. al*, 2009). It assigns rights, responsibilities, and restrictions in the marine environment on a sub-national level (Balla and Wouters, 2017). Another form of zoning is the archaeological protected zone or cultural zone, such as in Cyprus (Republic of Cyprus MFA, 2019). Establishing buffer zones near and around offshore structures can generate a similar effect (Defingou *et al.*, 2019).

Vertical zoning is currently being tested, whereby certain activities are restricted near the seabed while allowing others in the water column or on the surface. This can be of particular interest for MCH as most of the vestiges lie on the seabed ([Carr, 2019](#)).

On a local level, most of the MSP tools aim to build bridges between the scientific community and the public. Technological advances in digital modelling and 3D visualisation shed the light on a world otherwise unknown, helping in sharing knowledge and raising awareness about MCH importance (Dizon *et al.*, 2013: 80). The next step after producing this data is sharing it: open data portals and web-GIS services generate interactive maps representing different maritime themes, putting MCH into perspective by overlaying it with all sorts of information (Fowler *et. al*, 2010). Cyprus' MSP portal offers thematic maps, conflict maps, and cumulative impacts, allowing for a multidisciplinary view of the marine space ([mspcygr, 2014](#)). To take it further, these portals can be participatory, where stakeholders can upload their own data, and it can be used as a platform to exchange ideas and innovative solutions (Eythorsson and Thuestad, 2015). Interactive communication tools and

visual arts can be even applied in storytelling, such as the example of the Barra Sea ([mappingthsea. n.d.](#)). In summary, with proper planning and the right tools, several conflicts can be mitigated.

Discussion

Lebanon's maritime history stretches back across millennia, with a legacy dating from the Bronze Age. Its seaports were renowned across the Mediterranean and beyond, with moles, forts, and shipwrecks standing as reminders of the maritime journey of its people (Semaan, 2014). Although Lebanon ratified the UNESCO 2001 convention in 2007 ([UNESCO, n.d.](#)), it still lacks a national strategy for the conservation of MCH. Existing maritime policies are sectorial, with outdated and poorly implemented frameworks. On an institutional level, the ministries lack cooperation mechanisms with other stakeholders, leading to overlaps or gaps in responsibilities (IMP-MED, 2018).

More specifically, the north of Lebanon has been under the microscope throughout the past decades as it has been subject to several armed conflicts, such as the 2007 Nahr al-Bared war. Tensions began even prior to the Syrian crisis, as the region has been socially and economically marginalised for a long time (Van Der Molen and Stel, 2015: 13). However, the neighbouring Syrian war ignited further violent events around Tripoli, exacerbated by socioeconomic tensions (Lefevre, 2014). Today, as the Syrian conflict nears its end, Tripoli is back in the headlines: this time, it is expected to receive a share of the post-war reconstruction maritime traffic of Syria (RoL/OEPT/DAH, 2017).

How did these conflicts affect the MCH? Will the surge in maritime traffic impact MCH? For the purpose of this paper, it is not necessary to dive in the archaeological details of the sites, but it is, rather, sufficient to understand their protection status and their spatial extent, as well as the current and future maritime activities of both study areas, in order to scan potential conflicts and plan for solution. (Fig. 4)

Nahr al-Bared and Orthosia

The first case study is a coastal site straddling between the Akkar and North Lebanon Governorates. The Akkar plain stretches seawards to form the widest continental shelf in the country (Sachi and Dimech, 2011: 12; GoL/CDR, 2004). (Fig. 5)

The context of this case is quite peculiar, yet not uncommon in a country such as Lebanon. In 2007, deadly clashes erupted in the Nahr al-Bared Palestinian refugee camp (International Crisis Group, 2012). Later in 2009, as military bulldozers were clearing rubble from the camp, they came across some granite columns. These are now believed to be evidence for the location of the ancient city of Orthosia, which probably dates to the 3rd millennium BC ([Farchakh Bajjalay, 2011](#)). The speculated maritime town might have been an established local or even regional landing site. There is also evidence of coastal quarries slightly southwards (Safadi, 2014; Carayon, 2008 cited in Semaan, 2014: 86). For these reasons, the debate on whether to rebuild the refugees' homes or to protect the valuable archaeology became a controversial issue ([Farchakh Bajjalay, 2011](#)). Eventually, the Lebanese Directorate General of Antiquities (DGA) undertook salvage excavations prior to the reconstruction of the camp (Semaan, 2014: 84).

Today, life in the camp is almost back to normal. Other activities in this region mainly revolve around the fishing sector. Slightly northwards, the Aabde fishing port is one of the largest in the region. It is even reported that an aquaculture facility used to be active in the port (European Commission, 2011; Doumani, 2007: 49). On another note, cases of dynamite fishing have been reported in this area, with little to no law enforcement (S. Annous 2018, personal communication, 24 February).

The fragmentation of responsibilities in such a small marine space render monitoring illegal activities quite difficult. First of all, the site is lying on the banks of the river that separates the Northern Governorate from the Akkar Governorate, resulting in major obstacles on an institutional level. In Lebanon, there is a myriad of ministries responsible for different aspects of the same maritime activities, and other local authorities in charge of implementation. As a result, governance-related conflicts often arise (MRCZM-IOE-UOB, 2014). In similar cases, MSP can provide a communication platform joining the different stakeholders over a common goal, to set policies through an integrative approach, where authorities, scientists, residents, and marine users can raise issues and negotiate potential solutions together.

An outlook towards the future requires addressing the sensitive political context where the outcome of the Palestinian camp, which is governed by the Palestinian Liberation Organisation³, is linked to the Palestinian-Israeli conflict (International Crisis Group, 2012). In such cases, where MSP has little authority, scenario-building tools may be applied to support the decision making process (Mc Gowan *et. al*, 2019).

Akkar's wide continental shelf suggests easy accessibility, so it can be assumed that there is a high probability of finding objects with archaeological value off coastal sites (Gdansk Maritime Institute, 2016). In this case, the land-sea interaction dimension in the planning process is key. Proposing a marine buffer area extending from the coastal site to the sea, or defining an Archaeological Protection Zone with the help of professionals, can help protect the area from future activities, and can also be used as an exploration lab for scientists to conduct research and develop their knowledge.

Tripoli

Tripoli, the second largest city in Lebanon, has a rich and diverse terrestrial, insular, and marine cultural heritage (Semaan, 2014: 104-120). Late Bronze Age and Iron Age artefacts are revealed within El Mina's harbour in 1973. Unfortunately the expansion of the port has damaged the remains (Amadouny, 1973). The presence of a submerged mole was also noted, marking the location of the ancient port (Viret, 1999-2000 cited in Semaan, 2014: 104). In fact, and throughout history, Tripoli had one of the major ports of the Levant, but the dislocation of the Ottoman Empire in the dawn of the 20th century marked the beginning of a new chapter (UNESCO, 1954). Tripoli yielded its historic trade centre role to the capital Beirut, but this might soon change (IDAL, 2017). (Fig. 6)

The city's surrounding waters are dotted with a series of islets, stretching over 5 km seawards. These islets were thought to be used as anchorage spots in antiquity as they protected against dominant winds and currents. Additionally, two shipwrecks are currently lying on the seabed: the HMS Victoria vertically standing between

³ Lebanese Army and security forces do not have legitimate power within the Palestinian camps.

75 and 146 meters, sunk in 1893 and the French torpedo carrier sitting some 60 meters below water, sunk in 1941 (Noshie, 2006). Although the latter hasn't been submerged over than 100 years, it can still be considered as a valuable WWII 'heritage assets' (Firth, 2018: 8).

Three of these offshore islands were declared a Marine Protected Area in 1992⁴, called the Palm Islands Nature Reserve (PINR), also classified as a Ramsar site of International Significance (Ramsar, 2016), and are on the SPAMI list (RAC-SPA, n.d. b). Besides their environmental importance, the islands are known for their several cultural heritage sites (MoE/UNDP/LU, 2004). The Palm Island hosts late Roman and medieval period vestiges, as well as crusader structures re-using Roman architectural elements (Salame-Sarkis, 1980 cited in Semaan, 2014: 112). Ramkin Island is also referred to as Fanar Island due to its abandoned lighthouse built circa 1864 ([Russ Rowlett and University of North Carolina, 2019](#)). Finally, Bakar Islands, the nearest to the coast, possesses traces of stone quarries and two sea walls (Viret 1999-2000 cited in Semaan, 2014: 110-111). Today it is more commonly referred to as Abd el Wahab Island, named after the family that has been practicing traditional boat construction for years (Kayyal *et. al*, 2014: 50). (Fig. 7)

Shipping activity has had its toll on the marine environment: the Health and Environment Department of the port authority identified high levels of air and water pollution due to ship emissions, sewage discharge, and cargo transport (namely coal transport and combustion) likely due to the inauguration of new coal storage areas in 2011 (Merhaby *et. al*, 2015; Tamer, 2013: 117). Another major source of marine pollution near the harbour is the open dump bordering the Abou Ali River estuary (MoE/EU/UNDP, 2014: 39; Lavaill and Clamagirand, 2010: 42). As previously stated, these pollutants may lead to MCH degradation.

Future trends point towards increased maritime traffic linked to the post-conflict reconstruction of Syria, with Tripoli's port expected to receive 20% of the reconstruction traffic (RoL/OEPT/DAH, 2017: 30). As a result, investments for the port's expansion are pouring in from China, the EU, the Islamic Bank and United States Agency for International Development (USAID) (A. Tamer, 2017, personal communication, 24 August). This will increase maritime traffic near the islands (MarineTraffic, 2019).

Interventions should include urban planning considerations for port construction, to make sure land reclamation and dredging activities are not affecting existing or potential heritage resources. Land use planning needs to also consider marine pollution impacts resulting from waste management failure and sewage discharge. In regards to the sea space, anchoring points need to be reviewed by underwater archaeologists to make sure activity is not affecting valuable assets on the seabed. Concerning navigation activities, specific guidelines need to be set by the port authority, in collaboration with the army. To push it even further, a PSSA can be set to protect both the MPA and the seabed around it.

Moreover, a study of Tripoli municipalities showed that amelioration of the political situation will bring about demographic growth (Lavaill and Clamagirand, 2010: 44) likely coupled with tourism growth. In fact, diving and recreational boating activities near the islands have increased during the past few years: guided tours, diving trails, and boat trips are on the rise (G. Jaradi 2018, personal communication, 11 November). In this case, human

⁴ The three islands are: The Palm Island, Ramkin Island and Sanani Island.

⁵ Bakar Island is not part of the PINR

pressure causing increased impacts on the MPA must be mitigated, as trampling proved to have detrimental effects on heritage especially in protected areas (Davenport and Davenport, 2016: 243). Fuel emissions and anchoring need to be monitored as well.

For this purpose, an integrated tourism management plan can help organise marine activities by enforcing boating, fishing, and even research licences. Such an integrated plan can also reduce harmful activities by using vertical zoning. It can alleviate pressures by setting a carrying capacity limit, and minimise overall negative impacts in the long run by keeping a regular monitoring record. Repurposing the existing lighthouse on Ramkin Island can be a potential for Blue Growth, offering educational/recreational services for visitors, as well as a space for monitoring stations: synergies are thus achieved between cultural and economic goals.

Throughout the whole process, the municipality's responsibility is to supplement these policies by organising regular community meetings to spread awareness and inform the locals about new measures through online portals, signage, local gazettes, etc.

Although the fishing sector remains limited to small scale and artisanal fisheries (Kayyal *et. al*, 2014: 103), MSP must address the potential for fishing to occur in deeper waters using more advanced fishing gear such as trawlers (Firth, 2018: 14). For this reason, while MSP must seek to preserve traditional boat building practices and fishing techniques, it should also aim to enforce existing regulations and develop policies to prevent illegal activities stemming from future spatial competition. In fact, and despite the 500 m buffer zone around PINR where access and fishing should be restricted for nine months per year (European Commission, 2011), laws and regulations are still not respected, and the islands suffer from dynamite fishing and other forms of illegal activities (S. Annous 2018, personal communication, 24 February), among which is looting (Semaan, 2014).

Lastly, the oil and gas strategy planning in Lebanon is currently underway (LPA, 2018). Although drilling won't take place before years to come, spatial conflicts deriving from the activities can be predicted, and hence prevented. For instance, a shipwreck is located within the boundaries of one of the exploration blocks. A buffer zone can be set around that shipwreck, to be registered and disseminated to relevant authorities. Using data from oil and gas expeditions to explore UCH location can be a synergy where resources are shared among different users of the sea.

Conclusion

MSP is a multi-step future oriented process. Planning priorities vary according to each case's specific context as there is no 'one size fits all' strategy. However, the planning process must include defining stakeholders, analysing current and future maritime activities, and identifying conflicts and synergies in order to set priorities for the final plan.

Concerning MCH, activities that damage coasts and seabed by direct mechanical action can be managed, along with activities altering the chemical and physical context of the sites. Main solutions revolve around either protecting the site itself from surrounding activities, or managing maritime activities around the site.

In the case of Nahr el-Bared, threats stem from the absence of protection mechanisms and the sensitive and volatile political context, therefore scenario analysis coupled with precautionary protection measures was the go-to strategy.

In the case of Tripoli, where multiple activities are taking place near a protected area, interventions are rather sectorial where behaviour of marine space users can be monitored, and where existing environmental protection measures and tourism activities can be combined with cultural heritage site protection.

Recommendations provided are indicative and future research is required to develop a concrete maritime spatial plan. However, the structural aspect of the paper sets the stage for other case studies that share common issues: one can draw parallels between the Nahr el-Bared camp case in the north and the Rachidie camp in the south of Tyre, where archaeological artefacts have also been unveiled below the coastal refugee camp (Doumet Serhal, 1982). Likewise, Sidon's historic port, its islets, and the impact of its expansion on its cultural heritage are comparable to the case of Tripoli (Marriner *et. al.*, 2008).

The challenge today is using valuation techniques to prioritise the topic of MCH for both the public and the private sectors, in order to later incorporate it in the growing regional Blue Growth trends (Claesson, 2011). With the wide array of planning tools MSP can offer, along with technological advances, the remaining obstacle is to achieve political will.

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Figures

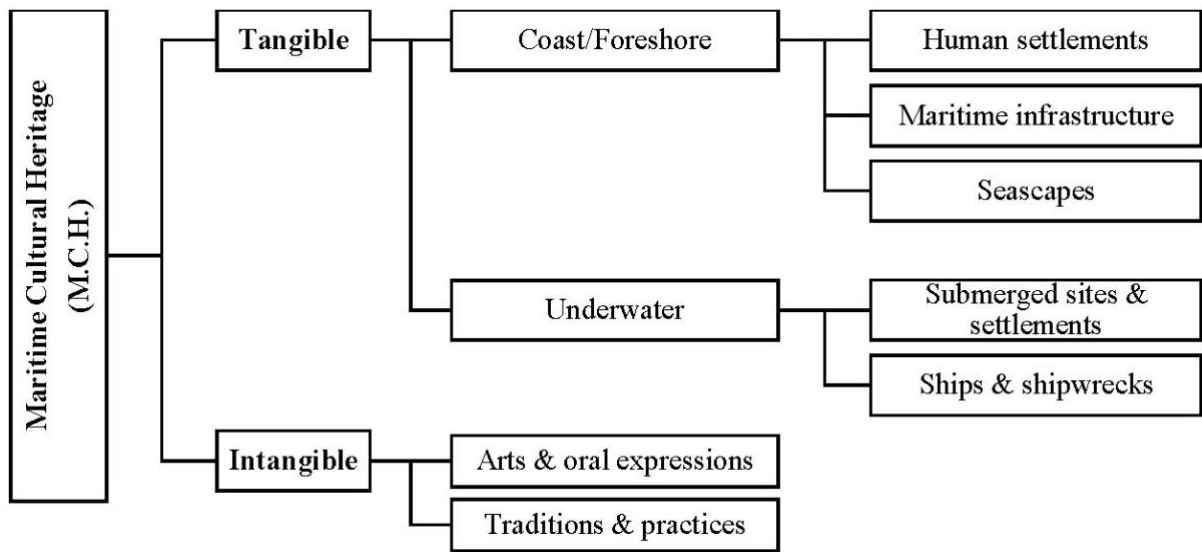


Figure 1: Maritime Cultural Heritage components. © V. Noon.

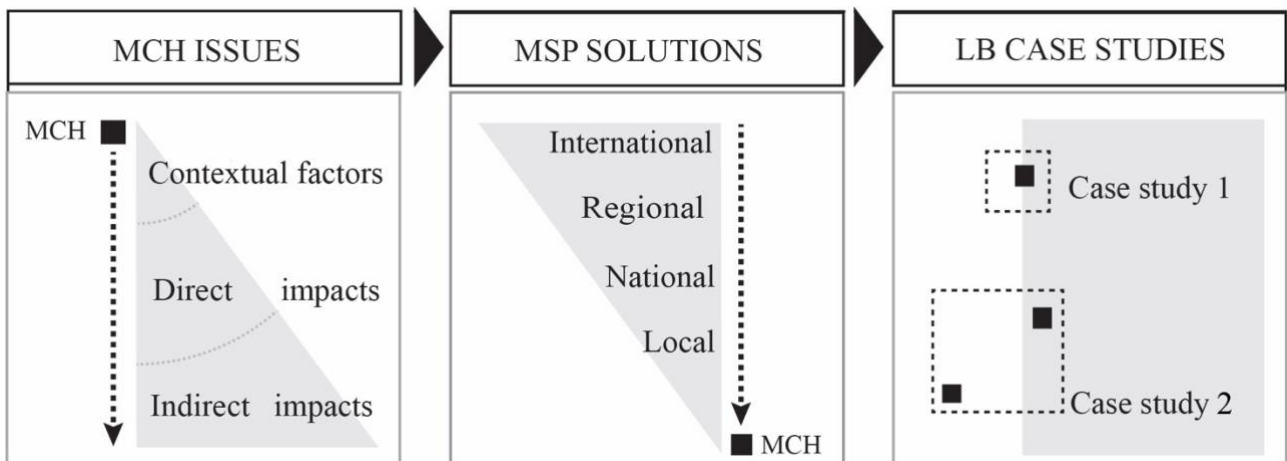


Figure 2: Research methodology. © V. Noon.

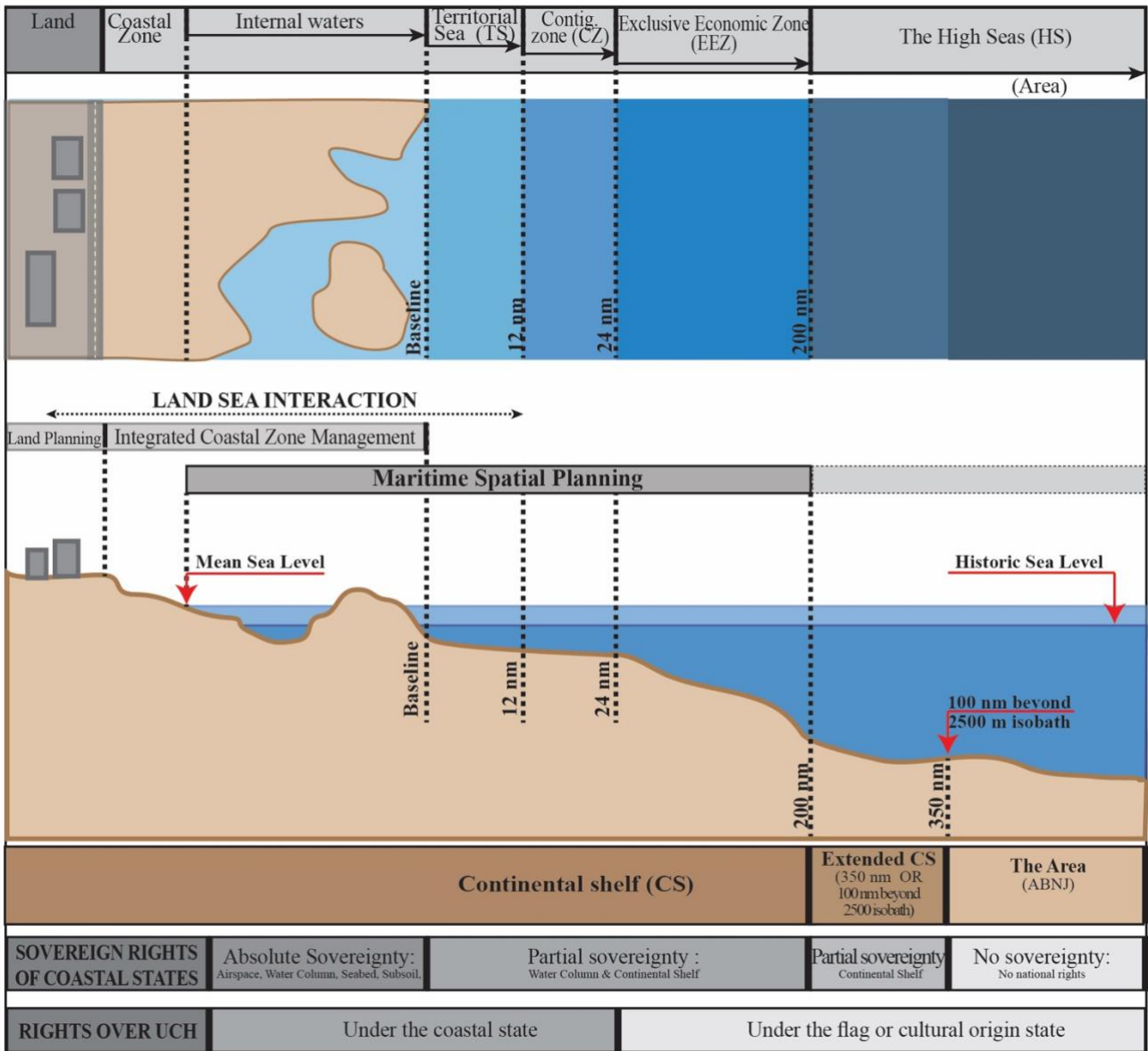


Figure 3: Maritime boundaries, coastal state sovereign rights and jurisdictions over UCH.

© V. Noon, based on UNCLOS 1982, UNESCO 2001, and EU MSP Directive 2014.

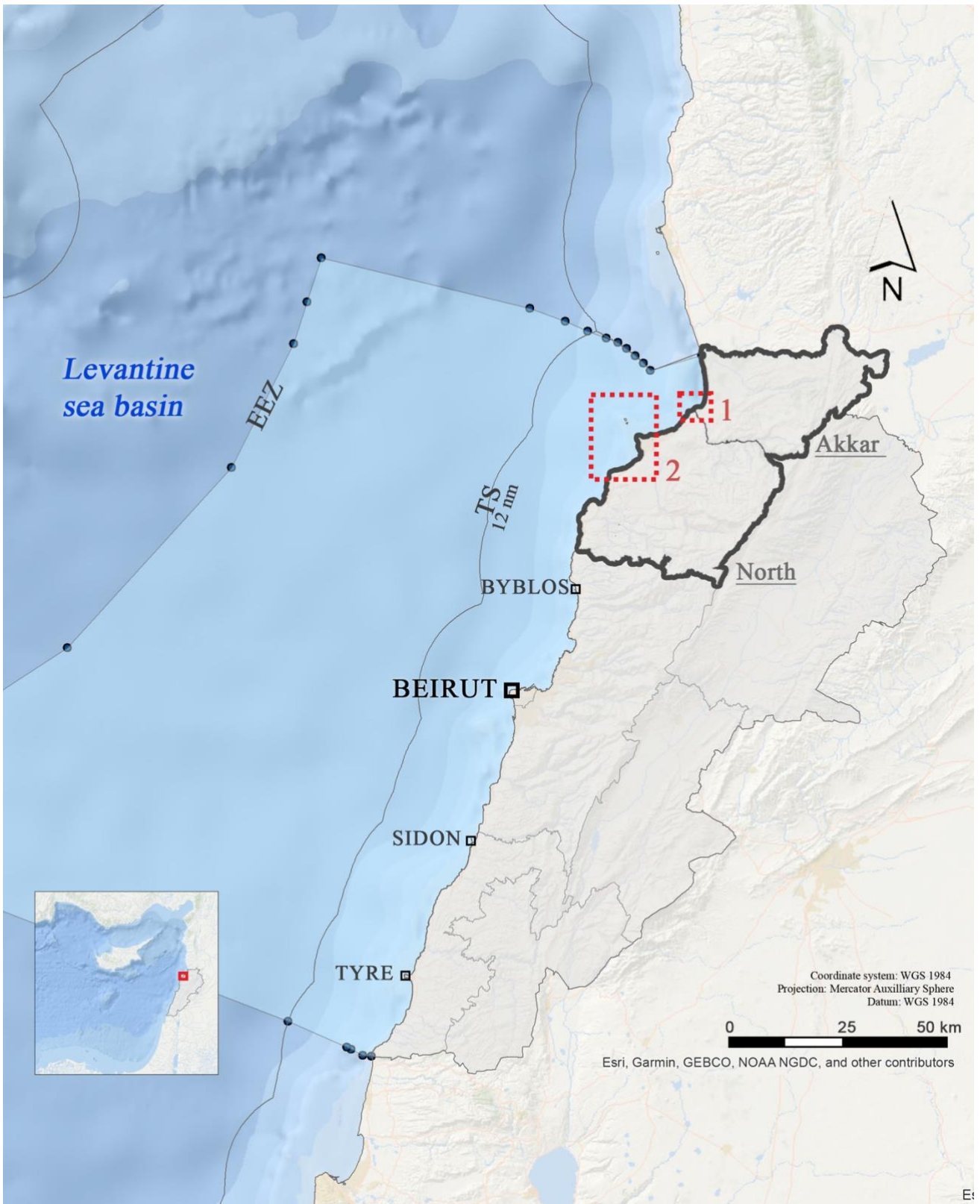


Figure 4: Map of Lebanon with the two case studies: (1) Nahr el-Bared (2) Tripoli. This map shows the Lebanese maritime boundaries along with the major coastal cities. Disputed maritime boundaries are not represented. [TS: Territorial Seas up to 12 nm ; EEZ: Exclusive Economic Zone]. © V. Noon.

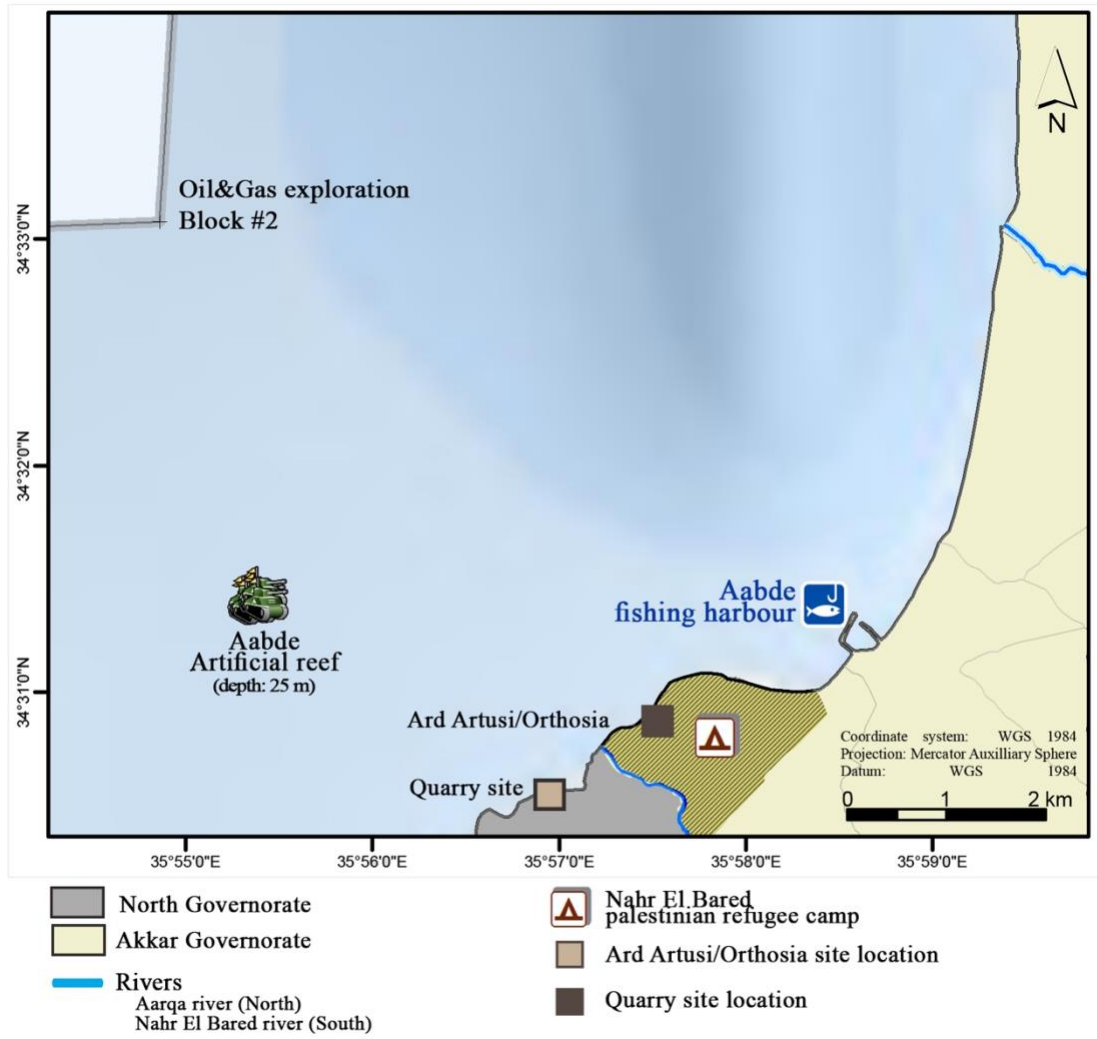
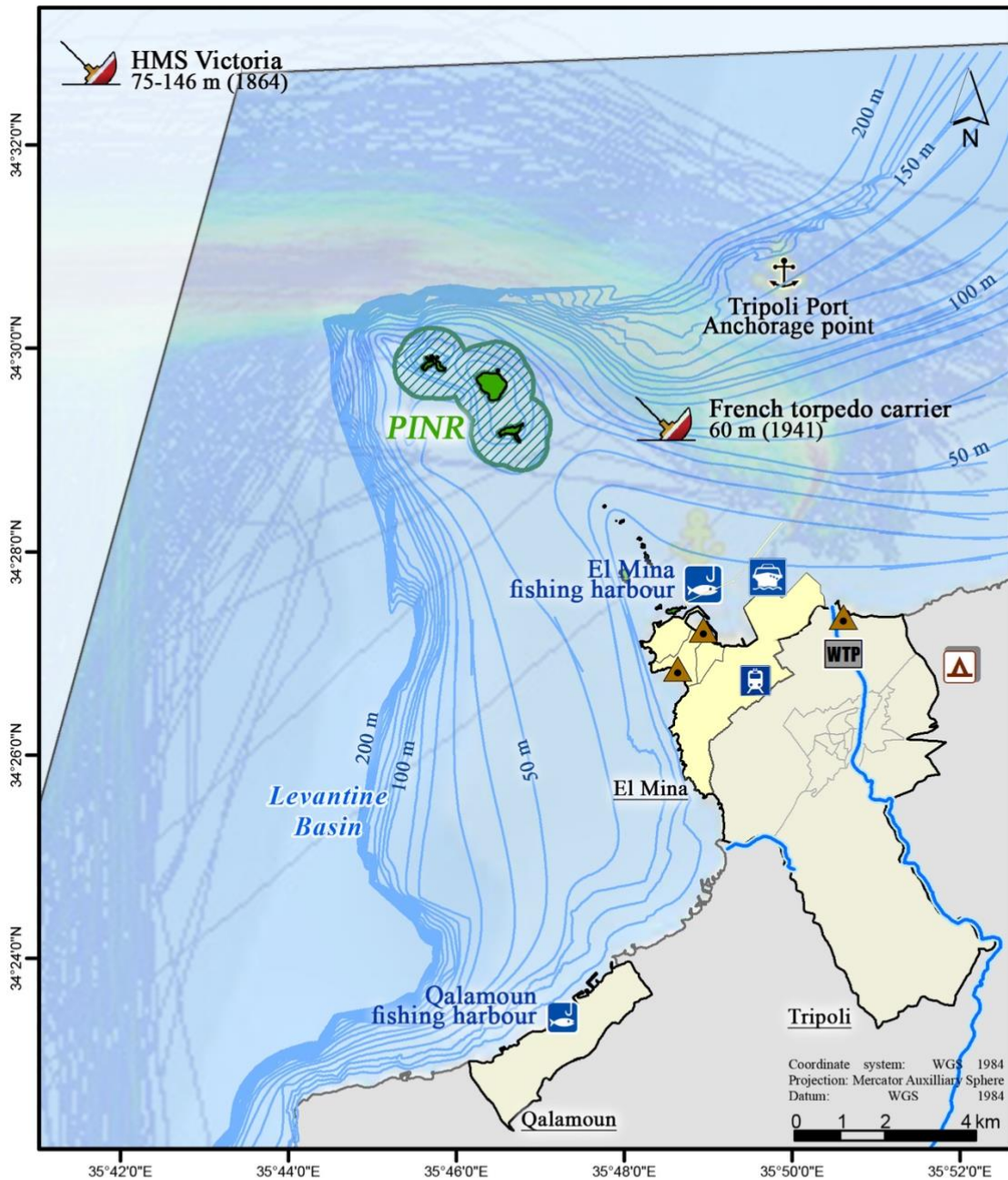


Figure 5: Nahr el-Bared's Palestinian refugee camp and Orthosia's archaeological sites. © V. Noon.



- | | | | |
|----------|--|---------------------------------|---------------------------------|
| Qalamoun | Tripoli's 3 municipalities | Badawi palestinian refugee camp | Shipwreck name |
| -200 m | Bathymetry (10 m contour lines) | WTP | Depth (year sunk) |
| | Abou Ali River | Sewage discharge point | |
| | Palm Islands Nature Reserve marine boundary (PINR) | Fishing harbour | Maritime traffic density |
| | Oil&Gas exploration Block #2 | Tripoli's commercial port | (routes/0.02 km/year) |
| | | Tripoli's Old train station | Source: MarineTraffic, 2019 |

Figure 6: Tripoli and its islets. Tripoli has three municipalities, among which one is physically detached (Qalamoun), posing yet another obstacle for planning maritime activities. Maritime Traffic Density layer shows intensive activity near both the PINR and the French Torpedo carrier. © V.

Noon.

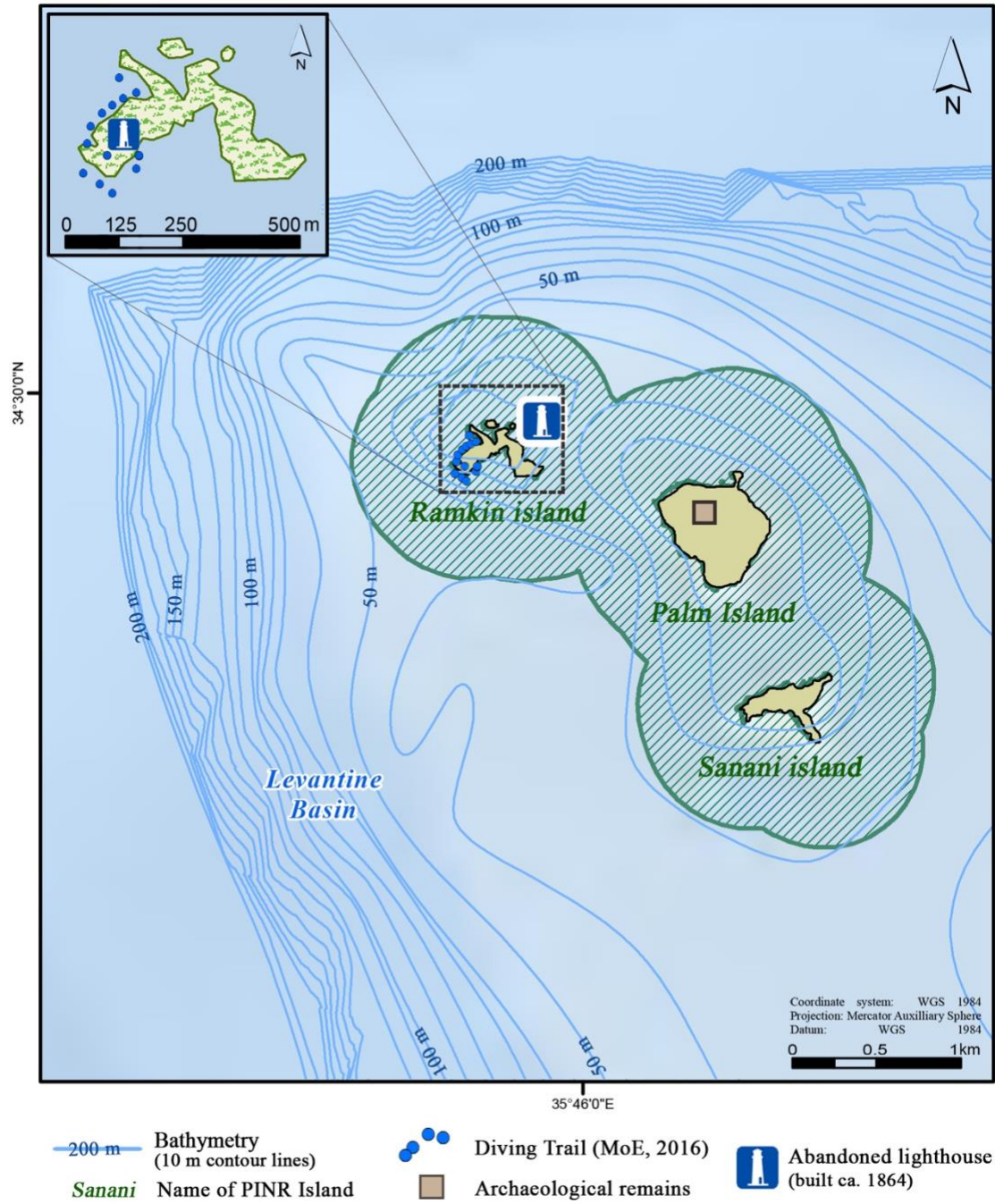


Figure 7: The Palm Islands Nature Reserve and its surroundings. A 500 m buffer zone is set around the three islands to prohibit fishing and recreational activities nine months per year. © V. Noon.