Ċirkewwa Marine Park Management Plan

2022 – 2027

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Description

The formulation of the Ċirkewwa Marine Park Management Plan is funded by the Malta Tourism Authority and is implemented by Nature Trust FEE Malta. Both entities aim to establish a Management Plan or legal provisions for the newly established Ċirkewwa Marine Park in the North of the island of Malta.

The project started in October 2019, with the initial year being a research year. This project is considered to be a milestone in the protection of marine ecology in Malta, undertaking the necessary actions in establishing and managing the first marine park of its kind in Malta. This involved gathering of existing information on local and international legislation, carrying out ecological surveys, defining a vision and management objectives with an intensive 3-stage stakeholder engagement process. This Management Plan does not aim to halt recreational or economic activity within the marine park, but rather encourage sustainable practices within the park, supporting the sustainability of the marine natural resources. A 'Vision' has been drawn up for the ideal condition of the Marine Park, to be achieved after an interval of management.

Stakeholders were a fundamental part in the drafting of this Management Plan. The Ċirkewwa Marine Park will help Malta in fulfilling its EU and international commitments specifically in reaching the targets set for the protection of the marine environment. The marine park will also contribute to fulfilling the EU's goal in establishing larger areas of water to improve the provision of services from European seas, while contributing the to spill-over effect of fish biomass which would support fisheries outside the sites, while protecting biodiversity inside the sites.

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Produced by

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Contract

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Disclaimer

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Vision Statement for the Ċirkewwa Marine Park

The vision statement for the Ċirkewwa Marine Park in 2050 is that:

- *All natural habitats and marine flora and fauna within the Ċirkewwa Marine Park are sustained and thriving*
- *The Ċirkewwa Marine Park is an important site, used for a range of marine-based activities and by different users in a safe, sustainable, and environmentally conscious manner*
- *The Ċirkewwa Marine Park is receiving full legal protection, implemented according to national legislation and local policies*
- *The Ċirkewwa Marine Park serves as an important educational and research resource*
- *The Ċirkewwa Marine Park is of high visual quality, and retaining its naturalness is considered important for sustaining the conservation status and public enjoyment of the Park, providing visitors with a high quality experience*

Executive Summary

Introduction

The Ċirkewwa Marine Park is located on the north-western coast of Malta, within the Mellieħa Local Council administrative area. The Marine Park lies within the MT0000112 (Żona fil-Baħar madwar Għawdex) Special Protection Area (SPA). The SPA was designated under the Maltese Marine Important Bird Area (IBA) inventory, as part of the EU LIFE+ Malta Seabird Project, for its importance for *Calonectris diomedea* and *Puffinus yelkouan* during the breeding season. The Marine Park includes a popular dive site, with two scuttled wrecks (the Patrol Boat P29 and the tugboat Rożi), as well as part of the Gozo Channel Terminal (South Quay) and the Paradise Bay Hotel. The Paradise Bay sandy beach is also located within the Marine Park, as well as the coastal cliffs extending to Rdum il-Qammieħ.

The biodiversity of the Ċirkewwa Marine Park and the factors affecting it:

The habitats and species of importance (Annex I, Annex II, Annex IV, and Annex V species) within the Ċirkewwa Marine Park include:

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Annex I species:

- *Posidonia oceanica* meadows

Annex II species:

- Bottle-nosed Dolphin (*Tursiops truncatus*) and Common dolphin (*Delphinus delphis*) have occasionally been sighted in the area

Annex IV species:

- Long-spined Sea urchin (*Centrostephanus longispinus*)
- Noble Pen-shell (*Pinna nobilis*) has in the past also been recorded, supported by *Posidonia oceanica* meadows. However, *P. nobilis* has in recent years been considered locally extinct following a virus eradicating the entire population

Annex V species:

- Locust lobster (*Scyllarides latus*)

Field surveys, desk studies and expert knowledge were applied to evaluate the conservation status of several habitats within the area. The Marine Park is characterised by rocky reefs that are present throughout the area and most rise vertically from sandy bottoms. Large boulders are also present at the foot of the vertical reefs. Extensive *P. oceanica* meadows grow in the northern area of the Marine Park, while several patches occur in the remaining area. The *P. oceanica* beds in the area of the Marine Park have, in the past, been recorded as some of the healthiest and most extensive meadows recorded locally.

The area around the Marine Park sees a high anthropogenic influence from several different users. Being a pristine and popular dive site, Ċirkewwa sees an influx of divers on a daily basis, peaking between March and November. The area is also popular with fishermen and boat users, particularly when weather conditions favour the shelter provided by Paradise Bay.

Management Plan Objectives and Actions

The **vision** for the Ċirkewwa Marine Park was developed following the evaluation of the features of conservation importance within the site, together with extensive stakeholder participation. The **Management Objectives** were identified in recognition of the key-steps required to achieve the

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vision. In order to achieve the Management Objectives, the Management Plan sets out a number of **Operational Objectives** and subsequent **Actions.**

One of the most important objectives is to ensure that the habitats of conservation importance are conserved and, where necessary, enhanced. The Management Plan seeks to manage the factors negatively affecting these habitats, to ultimately improve the overall habitat. Species populations and their habitats also need to be conserved or improved, as appropriate. These include the habitat of *Posidonia oceanica*. The Management Plan also seeks to conserve the species of national interest, such as endemic species and others listed in the Red Data Book.

The Management Plan seeks to promote and support the responsible management of the Marine Park while raising awareness on the importance of the area. It seeks to manage pressures and potential dangers exerted on the area and its users. Finally, the Management Plan seeks to ensure that no illegal activities take place within the Marine Park and to facilitate the monitoring of the permitted activities, including through amendments to regulations, as necessary.

Stakeholder Participation

An important component of the Management Plan formulation process was stakeholder participation. The full range of stakeholders, from Government entities to the users of the Marine Park, were key participants in gathering information, in developing the vision statement, and in identifying the Management Objectives, Operational Objectives and Actions required to deliver the vision. Stakeholders working together will be a crucial element in ensuring the successful management of the Marine Park, which recognises the need for their engagement in the formulation of the Management Plan. The majority of the stakeholders consulted agreed with the need for Ċirkewwa to be established as a marine park and to be afforded protection. The stakeholders also highlighted the need for enforcement and for clarity in the regulations established for the Marine Park.

Conclusion

This Management Plan is the first for the Ċirkewwa Marine Park and the Plan has an implementation timeframe of five years. During the implementation, progress reports will be regularly prepared and submitted to the Malta Tourism Authority, which is the current financing authority for this project. Discussions are also underway with the Environment and Resources Authority to establish the

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necessary site management agreements. The Management Plan and the vision set out for the Marine Park will be modified as required through the implementation timeframe, based on the progress reports and in discussion with the relevant stakeholders, the Competent Authority and the Managing Body.

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Acronyms

ADI	ADI Associates
DD	Decimal Degrees
e-NGO	Environmental NGO
ERA	Environment and Resources Authority
EU	European Union
MO	Management Objective
MSPA	Marine Special Protected Area
MTA	Malta Tourism Authority
NGO	Non-Government Organisation
NTM	Nature Trust FEE Malta
OO	Operational Objective
SDG	Sustainable Development Goal
SPED	Strategic Plan for the Environment and Development
TM	Transport Malta
UN	United Nations

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1 INTRODUCTION

The Mediterranean Sea is the largest semi-enclosed sea within the European continent. Although the Mediterranean Sea comprises only 0.7% of the world's ocean area, it is one of the major reservoirs of marine and coastal biodiversity, due to its heterogeneity and isolation. The Mediterranean is home to 28% of endemic species, 7.5% of marine fauna, and 18% of marine flora known globally. In recognition of the importance of the Mediterranean, together with all Mediterranean countries, Malta is required to protect the habitats and species within this basin. Agreements in the Mediterranean concerning the protection of marine life have been in place since 1975, and their importance has increased with the identification of the United Nations (UN) Sustainable Development Goal (SDG) 14, which calls for the conservation and sustainable use of the oceans, seas and marine resources.

In 1992, the European Union (EU) adopted a Council Directive on the conservation of natural habitats and wild fauna and flora - the 'Habitats Directive'. This Directive contains a range of measures aimed at the protection of species and habitats of EU interest.

1.1 Malta's marine Natura2000 network

The Ċirkewwa Marine Park falls within the Marine Special Protection Area (MSPA) MT0000112 (Il-Baħar ta' Madwar Għawdex). This MSPA was designated in 2016 through the LIFE Migrate project, which identified sites important for the loggerhead turtle (*Caretta caretta*), the bottlenose dolphin (*Tursiops truncatus*), and three seabirds that breed in the Maltese Islands - the Scopoli's Shearwater (*Calonectris diomedea*), the Yelkouan Shearwater (*Puffinus yelkouan*), and the European Storm Petrel (*Hydrobates pelagicus*). Currently, there is no Management Plan in place for the MSPA.

The process of managing a protected area is a dynamic and continuous one, requiring coherent planning based on knowledge of the site and its characteristic features, together with the factors exerting negative influences on the site. Using this knowledge, the process is to define management objectives requiring operational measures and actions such that the objectives can be achieved. This Management Plan for the Ċirkewwa Marine Park describes how it is intended to achieve the management objectives in order for the vision for the Marine Park to be realised. The Management Plan has an implementation timeframe of five years and will then be updated, following a review of status of the Marine Park in respect of the vision and the implementation of the objectives. The Management Plan also defines actions for subsequent funding for long-term management of the Ċirkewwa Marine Park area, while providing further commitment and guidance.

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2 DESCRIPTION OF THE MARINE PARK

2.1 Location and Boundaries

The Ċirkewwa Marine Park (circa 2.23 km^2) is located on the northern coast of the island of Malta, at 35.9891. This Marine Park lies within the Mellieħa Local Council boundary administrative area. The Marine Park boundary encompasses the marine area, including the submerged rocky coast falling within the designated boundary. The entire marine area within the Ċirkewwa Marine Park falls within the 12 nm territorial limits and the 25 nm fisheries management zone (Figure 1).

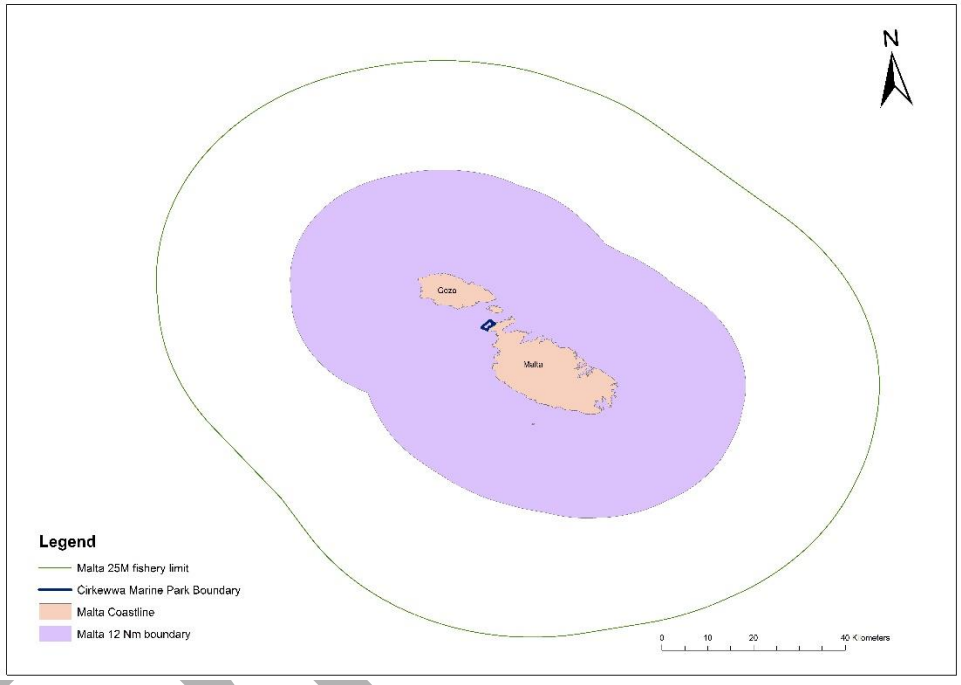

Figure 1: The location of the Ċirkewwa Marine Park within the marine areas under Malta's jurisdiction

2.2 Legal Status and Rights

2.2.1 Legal Rights

Legal rights for the various parts of the Ċirkewwa Marine Park, will be established through the necessary agreements with each relevant authority and will be presented as addenda to this Management Plan.

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2.2.2 *Site status*

The statutory designation that is relevant to the Ċirkewwa Marine Park, is listed in Table 1 below.

Table 1: Statutory designation relevant to the Ċirkewwa Marine Park

Designation	Name	All/Part of the site	Type	Policy / Legislation	Figure reference
Special Protected Area	Żona fil-Baħar madwar Għawdex	All	Environment	LIFE10NAT/MT/090	Figure 2

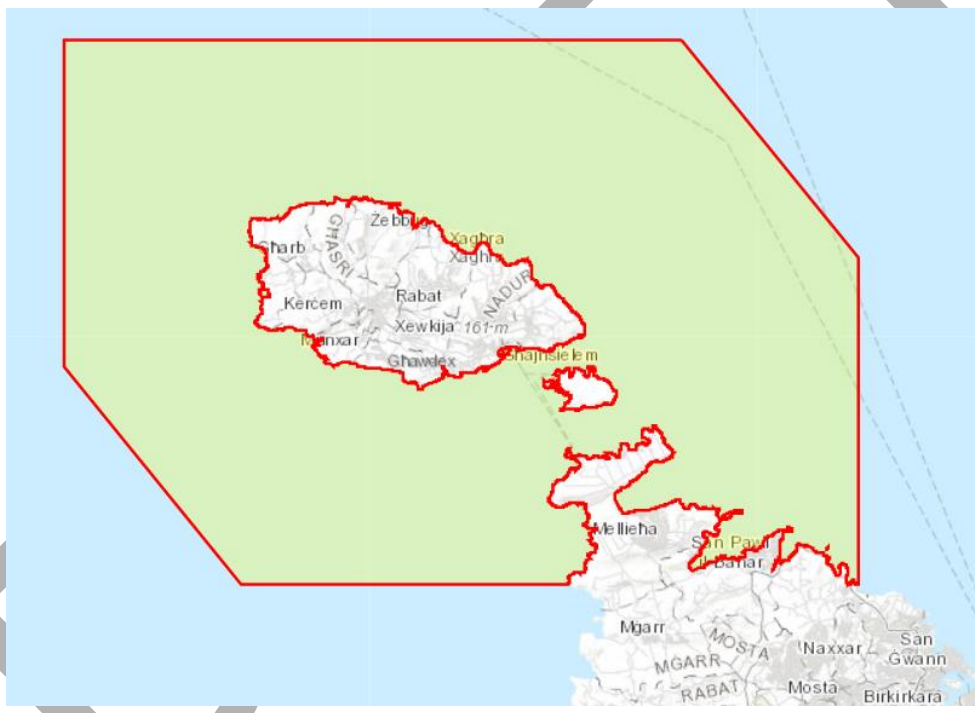

Figure 2: Site map for Żona fil-Baħar ta' madwar Għawdex. Obtained from the Natura2000 - Standard data form (https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=MT0000112#7)

2.2.3 *Applicable Planning Policies*

1.1.1.1 Strategic Plan for the Environment and Development

The Strategic Plan for the Environment and Development (SPED), adopted in 2015, provides the long-term spatial strategy for the environment and development on land and sea. The SPED outlines the National Spatial Framework designed to ensure the sustainable management of land and sea resources.

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It also outlines the strategic policy objectives for the Urban Area, the Rural Area, the Coastal Zone and Marine Area, and Gozo. The Coastal Zone and Marine Area covers the marine waters up to the 25 nautical mile limit of the Fisheries Management Conservation Zone, as delineated in Figure 1.

The vision for the Coastal Zone and Marine Area is to "*maximise the potential for sustainable socio-economic growth and renewable energy infrastructure, shall accommodate legitimate compatible uses, sustain the livelihood of the fishing community, remain rich in biodiversity and visually striking and become pollution free and accessible for public enjoyment. It shall play a significant enabling role for the Maltese Islands to reduce their impact on climate change and strengthen their capacity to adapt to climate change*".

This is to be achieved through three strategic objectives:

Coastal Objective 1: *To prioritise uses that necessitate a location on the coastal zone and marine area in a manner which minimises user conflicts, does not accelerate coastal erosion, protects biodiversity, cultural heritage, landscapes and visual access to them, public access and use and increases resilience to climate change impacts.*

Coastal Objective 2: *To facilitate the sustainable development and diversification of the fishing and aquaculture industries;* and

Coastal Objective 3: *To ensure that existing coastal recreational resources are protected, enhanced and accessible and to facilitate the provision of new recreational facilities which do not restrict or interfere with physical and visual public access of the coast and in a manner which does not have an unacceptable adverse impact on protected areas, species and areas of high landscape sensitivity.* This includes: *(4) protecting designated beaches and swimming zones and identified diving sites from conflicting uses.*

1.1.1.2 Local Plan

The Ċirkewwa Marine Park lies within the area subject of the 2006 North West Local Plan, specifically within the area identified as the Marfa Action Plan area. The coastline of the Northwest is recognised in the Local Plan as a major recreational area for Malta's resident and visiting tourist population. The Plan also recognises the pressures on the coastline, which has subjected parts to environmental degradation. A major objective of the Local Plan is "*to protect and enhance the environmental quality of the Plan area which attracts visitors in the first place*".

Relevant to the Marine Park, the Local Plan strategy for conservation seeks to:

i. recognise and protect the countryside and coast as valuable natural resources.

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ii. continue to identify and protect areas of scientific, geological, archaeological, and ecological importance; and

iii. identify and protect environmentally sensitive areas which are being degraded by informal recreation pursuits by providing protection by means of restrictive access.

The strategy for recreation seeks to:

i. promote regional and national centres for formal and informal recreation, which would include both land and water sports.

Policy NWRE 1 of the Local Plan identifies the entire Marfa peninsula as a 'Major Recreation Area', where the Planning Authority "*will encourage and support the creation of opportunities for recreation by the preparation of Management and Action Area plans in conjunction with the range of public and private agencies involved*". The Draft Marfa Action Plan (described below) was issued for public consultation in 2002, although it was never formally adopted.

Policy NWRE 12 of the Local Plan proposes 'Swimming Zones', including at "*Il-Bajja tac-Ċirkewwa (Paradise Bay)*", in the interests of protecting the safety and enjoyment of swimmers and acknowledging the pressures from conflicting uses on the coast.

The strategy for coastal zone management in the Local Plan seeks to;

i. identify administration areas, i.e., coastal units, in order to allow for a better planning framework where strategic policies correspond to identifiable geographical areas; and

ii. continue to secure and enhance public access to the coastline.

1.1.1.3 Draft Marfa Action Plan

The Draft Marfa Action Plan **Policy MCZ 5** identifies the "*candidate Marine Conservation Area of Ċirkewwa*" (see **Figure 5**). Within the Marine Conservation Area "*No development that may result in damage to or loss of coastal / marine habitats or species, cultural or natural features, will be permitted within the designated coastal zone adjacent to or likely to influence the Marine Conservation Area*".

The Action Plan also identifies the coastline of the Ċirkewwa Marine Park as a 'Public Coastal Access Area' (under **Policy MCZ 2**) and Paradise Bay is identified as a beach (under **Policy MCZ 6**). **Policy MRE 11** advocates the designation of a 'Swimming Zone' at Paradise Bay.

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1.1.1.4 Master Plan to Support a Sustainable Diving Industry for Malta

The Master plan to support a sustainable diving industry for Malta, prepared by Adi Associates Environmental Consultants Ltd for the Malta Tourism Authority in 2022, identified the need to provide tourists with a higher quality diving product. The Master Plan proposed to increase national tourism revenues through sustainable activities, while ensuring that environmental and socio-economic resources were preserved.

The specific aims of the Master Plan were:

i. To maintain and conserve environmental and socio-cultural resources, being the key elements of the Maltese Islands' tourism product.
ii. To increase our competitive advantage and deliver quality and distinct tourism products, built on our characteristics.
iii. To reduce seasonality; and
iv. To increase accessibility to and from Malta.

2.3 Management Infrastructure

The Ċirkewwa Marine Park is a marine area initially funded by the Malta Tourism Authority, with a funding agreement in place until the end of 2023. It includes the maintenance of the existing diving facilities. The approach that has been agreed is that the area will be managed by the environmental NGO – Nature Trust-FEE (Malta) (NTM) under a tripartite agreement between the Malta Tourism Authority (MTA), the Environment and Resources Authority (ERA) and NTM. The ERA is the Competent Authority entrusted with the regulation and management of protected areas pursuant to the Flora, Fauna, and Natural Habitats Regulations (SL 549.44), the MTA is the entity entrusted with promoting tourism in the Maltese Islands, whereas NTM is a local e-NGO with extensive experience in the management of protected areas.

2.3.1 Users, Facilities and Services

The predominant uses within the Ċirkewwa Marine Park fall under the general definition of 'Recreation and Leisure'. Divers are the main user group, with there being a daily influx of divers peaking between March and November in particular. Due to the dynamics and complexity of the dive site, it is used as a training ground for several different levels of diving. However, the site is also very popular due to the high number of diving attractions it provides within one main area, including scuttled wrecks. The

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boating community also makes use of the area, particularly between June and September. Paradise Bay sandy beach is also popular with bathers, who visit the beach in large numbers between June and September. Recreational fishermen also visit the site when weather conditions are favourable throughout the year.

The infrastructure present currently in the coastal area adjacent to the Marine Park includes a lighthouse, which is not open to the public, and facilities for divers (including toilets and showers), located in the area beneath the lighthouse, and which are maintained by the MTA (Figure 3).

Figure 3: The current infrastructure present on site at the Ċirkewwa Marine Park. (A) Shows the light house as a prominent feature adjacent to one of the entry points on-site. (B) Shows the entry to the diver facilities underneath the lighthouse, as managed by the Malta Tourism Authority.

2.3.2 Existing Regulations within the Ċirkewwa Marine Park

Notice to Mariners No. 002 of 2022 designates a conservation area, described as a 'No Stopping Area' around the wrecks located within the Ċirkewwa Marine Park (see Figure 4). While some activity is allowed within the No Stopping Area, access by boats requires pre-notification to the Valletta VTS and anchoring is prohibited. Spearfishing and the use of fishing gear is also not permitted. Notice to Mariners No. 42 of 2017 defines the berth that vessels should maintain from the marker buoys that are placed in

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summer months to indicate the wrecks present on site. This notice to mariners defines this berth to be of no less than 100 m from the buoys, seaward.

Figure 4: The No Stopping Area in Ċirkewwa covered by the Notice to Mariners No. 002 of 2022 showing the position of the two wrecks within the conservation area. The special markers used to indicate the wrecks are in line with the Special Marker IALA standards.

2.4 Climate

Malta has a Mediterranean climate and temperatures have been recorded to be higher in Malta than any other part of Europe. The summer in Malta is hot and dry, with temperatures peaking at 35 °C in July and August. Winter is mild and wet, with temperatures typically dropping to around 15 °C. However, in recent years, discrepancies from these typical average temperatures have been recorded for both the summer and winter seasons in Malta. Water temperature varies from the quoted temperatures above, being cooler than the air temperature in summer and warmer during the winter period. The monthly variances in temperature for air and sea are summarised in Figure 5 based on data compiled by weather-and-climate.com.

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The annual wind speed, as recorded by the website Windfinder for the Malta International Airport was 3 bft with gusts of 7 bft. The predominant wind direction was West-North-West, which directly impacts the Ċirkewwa Marine Park. This data is based on observations made between June 2001 and January 2022 (Figure *5*).

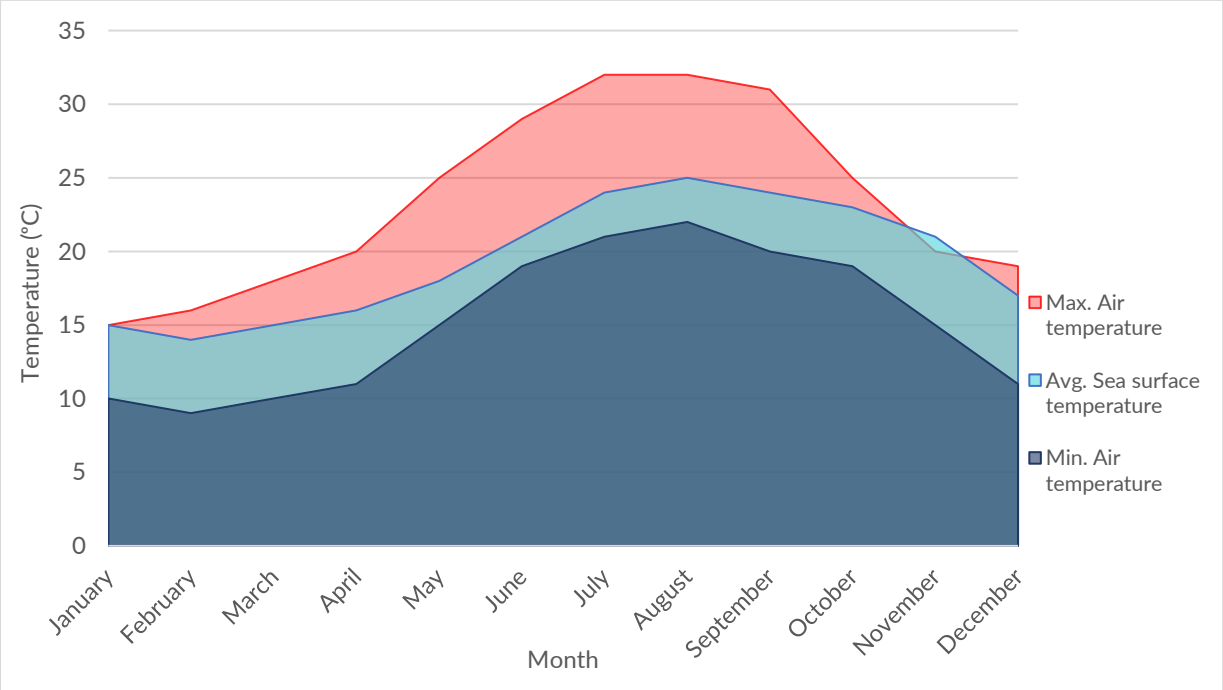

Figure 5: Monthly temperature variances for air and sea surface temperatures. Source: weather-and-climate.com

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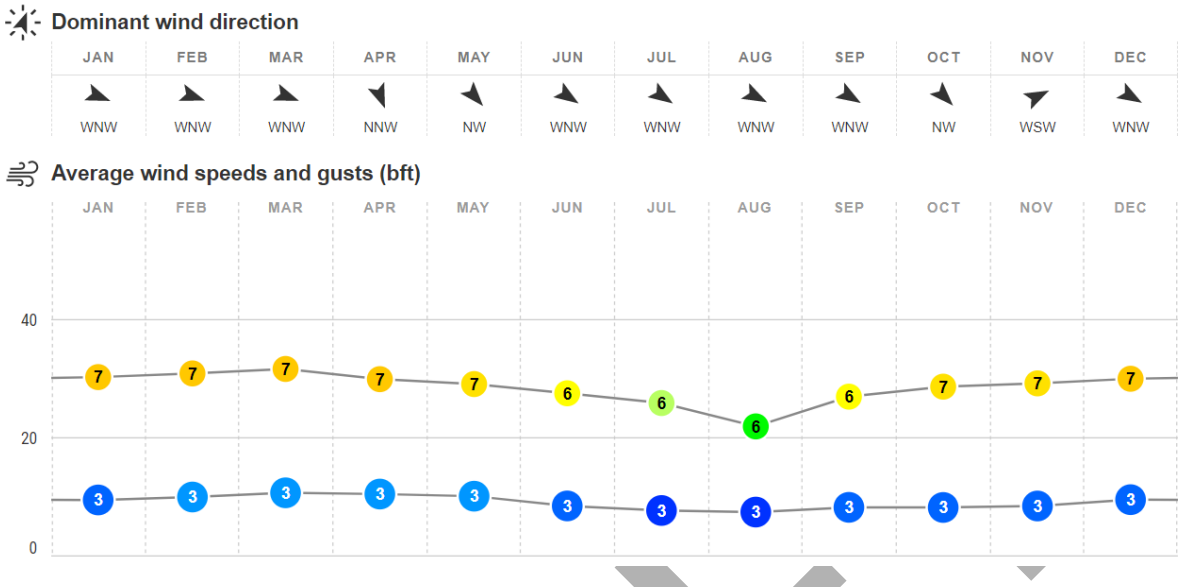

Figure 6: Predominant wind direction and Average speed and gusts data for Malta. Source: Windfinder

2.5 Geology and Morphology of the Ċirkewwa Marine Park

The coastal region within the Ċirkewwa Marine Park is characterised by low-lying rocky areas at the northernmost point. Moving southward, the geomorphology of the area changes and becomes characterised by cliffs. The rock types also vary along the shoreline, with the northern areas, up to Paradise Bay beach, being characterised by Upper Coralline Limestone. Moving southward, the cliffs are initially characterised by Blue Clay formations and then Globigerina Limestone towards the southern boundary of the Marine Park (Figure 7).

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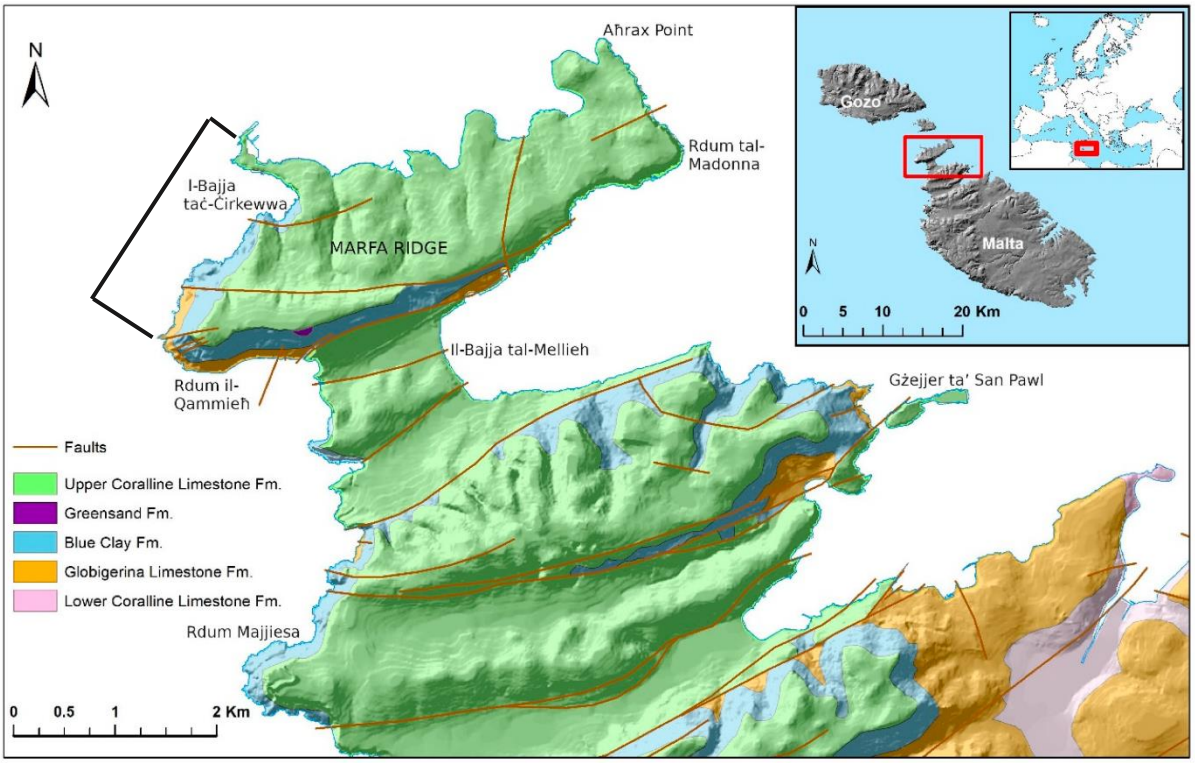

Figure 7: The geology of the North of Malta, with the extent of the Ċirkewwa Marine Park identified in black. Source: Selmi, Coratza, Gauci & Soldati (2019).

The underwater environment within the Ċirkewwa Marine Park is characterised by a variety of rock formations and habitats. The diving area begins with a shallow platform, extending a few metres from the rocky coastline, followed by a steep drop, to a depth of approximately 20 m. Several boulders covered in algae and stands of seagrass characterise the area until a stretch of bare sand is reached, at a depth of approximately 30 m, located approximately 100 m from the shoreline. The areas closer to Paradise Bay vary significantly. The South Quay area, adjacent to Paradise Bay, was dredged in the past, and is now characterised by a drop from the shore of approximately 6 m. Approaching Paradise Bay, large boulders characterise the underwater environment. The habitats and species present between Paradise Bay and Ras il-Qammieħ requires surveying and further studies.

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2.6 Ecosystems/Habitats, Vegetation and Ecological Processes

2.6.1 Description of the Ċirkewwa Marine Park

The area within the Ċirkewwa Marine Park is bordered predominantly by a rocky coast, with a relatively small beach. The marine park incorporates a rich marine biodiversity, due to the extensive reefs and habitats found within the site (Figure 8).

Figure 8: Some of the rich biodiversity present within the Ċirkewwa Marine Park. (A) Shows extensive rocky reefs supporting various coral and algal species. (B) Extensive *Posidonia oceanica* meadows present within the Marine Park which have been designated the healthiest meadows of this species locally.

This has made the site popular among various user groups, thus experiencing a considerable anthropogenic disturbance in the past. The site is popular with water sports fans, the boating community, fishermen, and also the diving industry. It is also very popular amongst kayakers and canoers. The site offers a vast range of habitats allowing an extensive species diversity to characterise the area and for this diversity to thrive successfully for a number of years. A significant decline in the abundance of certain species has been noted by the site users, which pushed the need for this site to be established as a Marine Park.

Ecological surveys started prior to the drafting of this Management Plan, with the aim of assessing the existing habitats and their current natural boundaries as they occur in the different parts of the marine park. Surveys were carried out up to a depth of 30 m, approximately 100 m away from the coastline. These surveys were conducted for the areas accessible from shore; however, these will further be expanded to the areas accessible by boat and for the deeper parts of the marine park.

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2.6.2 Methods

The Monitoring Factsheet: Seabed habitats (2015) was consulted when planning the methodology to be employed in mapping out the habitats present within the Ċirkewwa Marine Park. The techniques employed in habitat mapping were based on the methods described in the baseline study conducted by Borg *et al.* (1997). Transects and visual recording of the features along transect lines was the approach taken up to a depth of 35 m. The transect set for mapping were 100 m in length. For depths beyond 35 m, surveying via Remotely Operated Vehicle will be performed. This was done to map out all the habitats within the Ċirkewwa Marine Park. The habitats will also undergo assessment to determine the conservation status of each of the habitats.

2.6.3 On-site observations

Different on-site observations were conducted prior to the drafting of this Management Plan, to assess and categorise the different threats present within specific areas of the marine park. The degree and spread of these threats were also assessed as listed in Table 2. Figure 9 identifies the areas set for the purpose of defining whether threats and impacts are localised in one part of the marine park or spread throughout the marine park. These designations are merely an indicator for this exercise and do not reflect the zones as will be set up as part of the zonation plan for the marine park.

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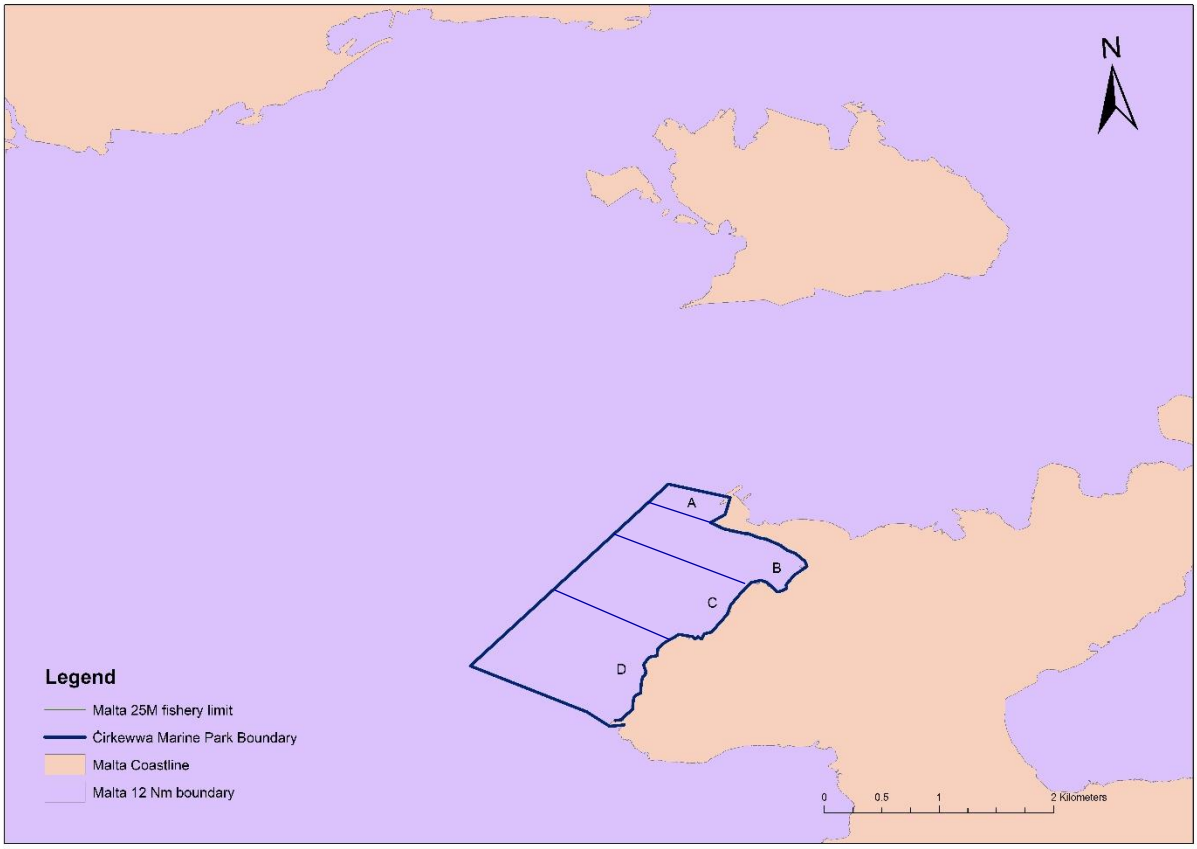

Figure 9: The boundary of the Ċirkewwa Marine Park and the arbitrary divisions given to different parts of the park. The letter designation is merely a simple system to be able to identify specific areas within the park.

Table 2: List of threats present on-site, together with the degree and spread of impact. Some background information on each threat is also given in this table.

Threat	Degree	Spread of Impact	Background information
Littering within the Marine Park	High	Localised	Litter often accumulates within area B. This occurs due to the strong currents and winds which are predominant in winter and the bay morphology of area B, allowing material to be carried into the bay and become trapped there.

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Noise and light pollution	Moderate (low in winter; high in summer)	Localised & widespread	Noise and light pollution from water vessels, namely boats and jet skis, is present in all areas but tends to be more localised and prolonged in area B, particularly during the summer months. Water sports in the Marine Park increases between May and September, having a widespread impact as these move across different parts of the marine park. However, a localised effect in area B is also significantly felt during the summer months with leisure boats congregating there during this period on most weekends; often staying overnight. This exposes species and habitats to increased duration of light and noise coming from these boats.
Alien species	Moderate	Widespread	Several alien species have been recorded in Maltese waters. Since there are no boundaries in the sea, alien species spread in a fast way. A colony of the scleractinian coral *Oculina patagonica* was actually recorded by the site manager in Ċirkewwa during one of the habitat surveys.

2.7 Anthropogenic activities within the Ċirkewwa Marine Park

2.7.1 Tourism and Recreation

There are several tourism and leisure activities that take place within the Ċirkewwa Marine Park, diving being a predominant activity. There is a swimming area located at Paradise Bay, which is also popular for boating and water sports. Fishing, namely rod fishing, is practiced along different parts of the park.

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2.7.2 Transportation

The Gozo Channel ferries cross daily to and from Gozo, mostly from the North Quay, located to the east of the Marine Park. The ferry service operates throughout the day and night. The Gozo Channel ferries also operate from the South Quay (within area B in Figure 9) occasionally when the weather is too rough for operations to take place from the North Quay. The introduction of the fast ferries to Gozo from Valletta have introduced additional traffic to the wider marine area. These operate at much higher speeds than the Gozo Channel ferries.

2.7.3 Incidental Activities

Several different groups and organisations conduct clean-ups within the Ċirkewwa Marine Park. The two most prominent organisations are 'Din l-art Ħelwa – Mellieħa', with a primary focus on coastal and beach clean-ups in the area, and 'Żibel', which focuses on snorkelling and diving clean-ups. Żibel organise at least one yearly clean-up in Ċirkewwa following the winter months.

2.8 Anthropogenic activities outside the Ċirkewwa Marine Park

The human impacts and threats outside the Ċirkewwa Marine Park and having the potential to influence the implementation of the Management Plan, were also evaluated. The following uses / activities were observed.

2.8.1 Sewage Treatment Plant

The Ċumnija Sewage Treatment Plant is located to the south of the Marine Park, located between 'Rdum il-Qammieħ' and Anchor Bay (Figure 10). Issues relating to the treatment of the sewage have been raised in recent years, with the European Union claiming that the treatment being carried does not meet the recognised standards (Bonnici, 2022). The sewage water that is being dumped into the waters a few kilometers away from the marine park, would be rich in nutrients and bacteria, which may result in the process of eutrophication. Eutrophication is the process of extensive algal growth within the marine area, resulting in the disruption to the natural ecosystem.

2.8.2 Fishing

Trawling and bunkering areas located to the south of the marine park, several nautical miles out from the coast (Figure 10) have been noted. The proximity of the bunkering and trawling zones may result in

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an increased boating activity around the Marine Park. The trawling zone may also influence the biodiversity within the Marine Park through the 'spill-over effect' as species move in and out of the Marine Park.

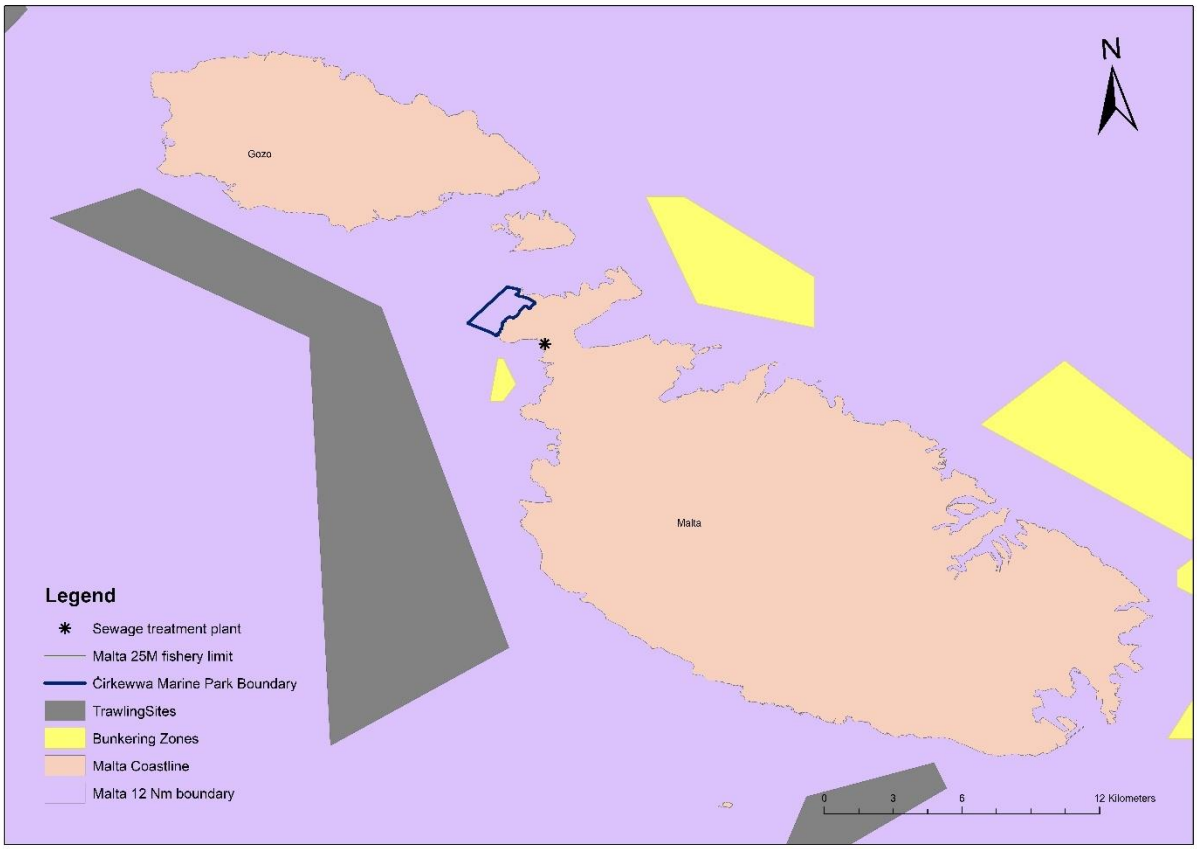

Figure 10: Map generated through ArcMap GIS v. 10.6.1 indicating the anthropogenic influences present outside the Marine Park.

2.9 Stakeholder Participation

The key entities consulted during the formulation of the Ċirkewwa Marine Park Management Plan are listed in Table 3 below.

Table 3: Key Stakeholders.

Group	Entity
Government Ministries,	Ministry for Sustainable Development, the Environment and Climate Change
	Ministry for Tourism

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Group	Entity
Departments and Authorities	Department of Fisheries
	Malta Tourism Authority
	ERA (Biodiversity and Water Unit)
	Superintendence of Cultural Heritage
	Infrastructure Malta
	Gozo Channel
	Transport Malta
	Enemalta Corporation
	Heritage Malta
	Water Services Corporation
Local council	Mellieħa Local Council
National Entities	Free Drivers and skin divers
	Local Clubs (Calypso, ATLAM, Amphibians)
	Professional Diving Schools Association – Malta
NGOs	Federazzjoni tal-Għaqdiet Sajjieda Dilettanti Malta
	Small scale fisheries and fishers' representatives
	Malta Marine Foundation
	Hunter's Association (FKNK)
	Environment and Water Unit
	Bird Life Malta
	Din l-art Ħelwa Mellieħa
	Hunter's Association (KSU)
MPA Managers	Nature Trust Malta
Public and Private operators	Anchor Bay Leisure Ltd
	Beach restaurant owner / operators
	Beach equipment kiosk owners / operators
	Ramla Bay Resort
	LABRANDA Riviera Hotel & Spa
	Paradise Bay Hotel

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Group	Entity
	Paradise Bay Lido
	Ecomarine Company
	Water sports and leisure companies
Residents	Mellieħa local residents

Stakeholder participation in the formulation of the Draft Management Plan was carried out at two keys stages of the Plan formulation process:

- Stage 1, conducted at the outset of the plan formulation, in the form of briefing sessions and workshops designed to gather information and local knowledge, and the views, opinions and perceptions of the stakeholders; and
- Stage 2, conducted following the drafting of the Vision and Management Objectives, in the form of workshops designed to gauge the views and opinions of the stakeholders and consensus on the strategic direction.

Due to the regulations in place at the time in respect of the COVID-19 pandemic, all the Stage 1 and Stage 2 stakeholder consultation events were held online. .

A final stakeholder participation event will be conducted on this draft Management Plan document. The draft Management Plan has been sent to all stakeholders who had participated in the first two stages for their feedback, prior to any final changes being done and final agreement and approval of the Ċirkewwa Marine Park Management Plan.

3 CONSERVATION OBJECTIVES

The Conservation Objectives (or Management Objectives) for the Management Plan were drafted following Stage 1 of the stakeholder participation. During Stage 1, the prominent issues affecting, and/or projects being carried out, or planned to be carried out, within the park or in the vicinity of the Ċirkewwa Marine Park were identified and discussed.

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3.1 Vision Statement

Table 4: The vision statement for the Ċirkewwa Marine Park

Vision Statement for the Ċirkewwa Marine Park
The vision statement for the Ċirkewwa Marine Park in 2050 is that: • *All natural habitats and marine flora and fauna within the Ċirkewwa Marine Park are sustained and thriving.* • *The Ċirkewwa Marine Park is an important site, used for a range of marine-based activities and by different users in a safe, sustainable, and environmentally conscious manner.* • *The Ċirkewwa Marine Park is of high visual quality, and retaining its naturalness is considered important for sustaining the conservation status and public enjoyment of the Park.* • *The Ċirkewwa Marine Park serves as an important educational and research resource.* • *The Ċirkewwa Marine Park is receiving full legal protection, implemented according to national legislation and local policies.*

3.2 Management and Operational Objectives

The Management Objectives (MO) define the policies by which the vision for the Ċirkewwa Marine Park will be fulfilled. MOs have been defined for each vision statement. MOs for the key features identified for the Marine Park were developed through an analysis of the site's needs and concerns and proposals on how to address these, as highlighted during the Stage 1 stakeholder participation.

For every MO defined, a number of Operational Objectives (OO) were developed to facilitate implementation and achievement of the objective. The OOs are the objectives to which all the management work is directly related, and they lay the groundwork for the specific management actions.

The MOs arising from the Vision Statement and the respective OOs are set out in Table 5 below.

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Table 5: The Vision, Management Objectives, and Operational Objectives for the Ċirkewwa Marine Park

Vision Statement	Management Objective (MO)	Operational Objective (OO)
All natural habitats and marine flora and fauna are sustained and thriving.	MO1: To map the habitat types within the Marine Park	OO1.1: To undertake surveys to identify the benthic habitat types present within the Marine Park
	MO2: To expand the spatial distribution of *Posidonia oceanica* within the Marine Park	OO2.1: To undertake surveys annually to assess the changes in the spatial distribution of *Posidonia oceanica* within the Marine Park
	MO3: To enhance and maintain the area, structure, and function of the *Posidonia oceanica* habitat	OO3.1: To undertake annual assessments of the conservation status of the *Posidonia oceanica* habitat
The Ċirkewwa Marine Park is an important site, used for a range of marine-based activities and by different users in a safe,	MO4: To identify the current uses of the Marine Park and identify the potential of different areas as new areas for activity	OO4.1: To identify the uses and their distribution across the different areas of the Marine Park and assess the potential of 'unused' areas as new areas of activity

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Vision Statement	Management Objective (MO)	Operational Objective (OO)
sustainable, and environmentally conscious manner	MO5: To establish defined areas for different activities within the Marine Park	OO5.1: To spatially define specific areas within the Marine Park and identify the permissible activities within each area
		OO5.2: To establish a framework to charge an environmental contribution for specific activities within the park to contribute to the effective management, and long-term financial sustainability of the site.
		OO5.3: To establish which activities will be charged the environmental contribution.
The area around the Ċirkewwa Marine Park is of a high visual quality, and retaining its naturalness is considered	MO6: To enhance the quality of the Marine Park as a dive site through management of the dive area	OO6.1: To establish a Check-in system for divers to check in prior to their dive and check out following the dive, for safety and data tracking purposes.

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Vision Statement	Management Objective (MO)	Operational Objective (OO)
important for sustaining the conservation status and public enjoyment of the park		OO6.2: To increase the health and safety at the dive site by creating access for an ambulance and by having a fully equipped first aid kit available.
		OO6.3: To actively apply for funding for the long-term management of the Marine Park
The Ċirkewwa Marine Park serves as an important educational and research resource ensuring a high-quality touristic experience with the appropriate communication strategy in place	MO7: To promote the educational and scientific value of the Marine Park	OO 7.1: To create a communication strategy for all communication and marketing material for the Ċirkewwa Marine Park
		OO7.2: To create a website specific for the Ċirkewwa Marine Park in line with the communication strategy defined for the park
		OO7.3: To create educational material to be available at the Park Office and to be distributed in schools

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Vision Statement	Management Objective (MO)	Operational Objective (OO)
		OO7.4: To establish a visitors' centre, with information panels and other activities, and a first-aid room
		OO7.5: To develop a code of conduct for the Marine Park and to install signage for the different areas and permissible activities within each zone
	MO8: To raise awareness and appreciation of the Marine Park among specific target groups and the general public in line with the communication strategy defined for the park	OO8.1: Develop a Visitor's experience strategy as part of the communication strategy
		OO8.2: To deploy an underwater camera and set up a live feed, which can be promoted on social media and at the visitors' centre, to create awareness on the different habitats and species

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Vision Statement	Management Objective (MO)	Operational Objective (OO)
		OO8.3: To set up a virtual reality experience at the visitors' centre, as a promotional and educational tool
The Ċirkewwa Marine Park is receiving full legal protection, implemented according to national legislation and local policies	MO9: To ensure against illegal activity within the Marine Park and to monitor the impacts of permissible activities for future controls that may be required	OO9.1: To establish a Park Ranger Unit, under the Heritage Parks Federation (HPF)
		OO9.2 To install night-vision CCTV at the Marine Park, to monitor use at night
		OO9.3: To establish an agreement between the enforcement authorities (ERA, AFM, TM) on enforcement powers and responsibilities
		OO9.4: To establish an oil response strategy for the marine park

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4 MANAGEMENT ACTIONS

Following the establishment of the MOs and OOs, this section defines the Management Actions. One or more of the Management Actions are defined for each of the Operational Objective (OO) and the OO is achieved through the implementation of these Management Actions.

4.1 Formulation of Management Actions

A priority ranking was established prior to defining the Management Actions. The priority ranking was assigned to each of the Management Actions, depending on the urgency in implementation of the actions.

Table 6: The priority ranks under the priority rating defined, with the definition and time frame associated with each.

Critical	Fulfilling actions with this priority rank is a prerequisite for the implementation of the Management Plan to its entirety. Actions marked as critical must be dealt with within the first two years of the project implementation period.
High	Fulfilling actions with this priority rank is a prerequisite for the implementation of the majority of the Management Plan. Actions marked as high priority must be dealt with within the first three years of the project implementation period.
Medium	Fulfilling actions with this priority rank follows the accomplishment of another objective. Actions marked as medium priority should be dealt with within the project implementation period.
Low	Actions with this priority rank, are of complementary importance. These are to be accomplished within the last phase of the implementation period and may also be transferred to the next management period.

Each of the Management Actions is directly related to an OO, and a single action is necessary to achieve the relevant OO. The Management Actions can be categorised as a:

- Measure - a regulation and / or restriction imposed by the central or local administration.
- Duty - routine or recurring management activity, assigned by the administration to some competent entity; or
- Project - planned activity having a definite time frame to accomplish a particular target(s).

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The OOs, respective Management Actions, the priority rating, and the action type are defined below. The table also identifies the performance indicators for each Management Action, as well as the monitoring requirements.

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4.2 Operational Objectives and Management Actions

For every Management Objective (MO) defined, several Operational Objectives (OO) are assigned. These are the objectives to which all the management work is directly related and lay the groundwork for management actions. The Operational Objectives for the key issues that need be addressed to achieve the vision, are derived from the factors which have been identified to affect them. The Management Objectives arising from the Vision Statement and the respective Operational Objectives are depicted in Table 7 on the next page.

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Table 7: The Operational Objectives, the respective Management Actions, the priority rating, and the action type associated with each Management Action

Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
OO1.1: To undertake surveys to identify the benthic habitat types present within the Marine Park OO2.1: To undertake surveys annually to assess the changes in the spatial distribution of *Posidonia oceanica* within the Marine Park OO3.1: To undertake annual assessments of the conservation status of the *Posidonia oceanica* habitat	High	Elaboration of detailed surveying programmes for the surveying of; benthic habitat types within the Marine Park and the spatial distribution and conservation status of the *Posidonia oceanica* habitat	P1	Project	Number of monitoring plans for the benthic habitats and *Posidonia oceanica*	Progress reports on the findings, including maps corresponding to each survey undertaken
OO4.1: To identify the uses and their distribution across the different areas of the Marine	High	Assessment of the uses, their distribution and unused areas of	M1	Measures	A map identifying the uses and distribution of uses	Updating of maps with uses in the marine park over the years

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
Park and assess the potential of 'unused' areas as new areas of activity		the Marine Park and their potential for new areas of activity			and any unused areas across the Marine Park	
OO5.1: To spatially define specific areas within the Marine Park and identify the permissible activities within each area OO7.4: To develop a code of conduct for the Marine Park and to install signage for the different areas and permissible activities within each zone	High	Create a zonation plan for the entire area defined as the Ċirkewwa Marine Park, identifying the activities permissible in each of the zones set up, including a code of conduct. To establish areas for different diving activities (e.g., open water skills training, advanced open water training…). To install moorings in the different areas (dive boat	M2	Measures	Establishment of Zonation Plan for the Ċirkewwa Marine Park Deployment of moorings Formulation and approval of the Ċirkewwa Marine Park Regulations and Codes of Conduct	One full zonation plan with a map of the individual zones and the code of conduct for each of the zones

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
		moorings and general boating mooring) and define mooring regulations. Establish no anchoring zones to safeguard seabed habitats. To develop a code of conduct for the Marine Park and to install signage for the different areas and permissible activities within each zone.				
OO6.1: To establish a Park Ranger Unit, under the Heritage Parks Federation (HPF)	High	Create a Park Ranger Unit with a defined agreement on the number of hours to enforce park regulations and monitor activities undertaken in the park.	D1	Duties	Establishment of the ranger unit for Ċirkewwa with a full complement of rangers and agreed number of hours covered	One agreement with HPF defining number of rangers in Ċirkewwa unit and number of hours to be covered.

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
		To patrol the Marine Park and enforce environmental compliance in respect of all operators using the Marine Park			by patrolling and monitoring.	
OO6.2 To install night-vision CCTV at the Marine Park, to monitor use at night	High	Create an on-site monitoring system to cover time frames when ranger unit is not on-site.	P2	Project	Number of cameras established for monitoring.	Two cameras to be set up on site.
OO6.3: To establish an agreement between the enforcement authorities (ERA, AFM, TM) on enforcement powers and responsibilities	High	Establish an agreement with each of the enforcement authorities defining the responsibilities of each authority in terms of enforcing illegal activity on site.	P3	Project	Number of agreements established to identify and summarise enforcing powers.	Three agreements, with each respective authority.
OO7.1: To create a website specific for the Ċirkewwa Marine Park	High	To create a website, which is frequently updated with information on the species, habitats, rules and regulations as	P4	Project	Number of signs on species and habitats of importance and the number of signs on alien	Signs installed at site and the number of booklets printed and distributed.

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
OO7.2: To create educational material to be available at the park office and to be distributed in schools		well as events and activities occurring in the Marine Park. Set up signs on site, both informative as part of citizen science campaigns and also signs which help divers to plan their dive prior to entering the water. Educational material which can be used for on-site activities and be distributed in schools will also be created. To prepare a tentative programme of events for a number of months or over a calendar year.			species. Number of education booklets for primary and secondary students. Number of educational events held throughout the year.	

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
OO8.1: To deploy an underwater camera and set up a live feed, which can be promoted on social media and at the visitors' centre, to create awareness on the different habitats and species OO8.2: To set up a virtual reality experience at the visitors' centre, as a promotional and educational tool	Moderate	Set up an underwater camera and a virtual reality experience will be set up as an educative tool for non-diver visitors.	P5	Project	Underwater camera deployed and live feed available Virtual reality experience set up in the visitors' centre.	One underwater camera and one virtual reality experience set up.
OO9.1: To establish a 'Check-in' system for divers to check in prior to their dive and check out following the dive, for safety and data tracking purposes.	Moderate	To set-up a diver 'check-in/check-out' system to ensure that all divers entering the site are accounted for. This tool will also prove useful in acquiring data on the number of divers visiting the site daily, for external	P6	Project	Establishment of Check-in system Number of divers making use of the 'Check-in/Check-out system	A comprehensive list of the activities permitted in each zone and the environmental contribution assigned to them.

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
OO9.2: To establish a framework to charge an environmental contribution for specific activities within the park to contribute to the effective management, and long-term financial sustainability of the site OO9.3: To establish which activities will be charged the environmental contribution		funding (e.g., EU LIFE funding). It will also help in establishing the environmental contribution and which activities will be taxable at the marine park, when the environmental contribution is implemented.			Number of activities subject to environmental contribution and the amount set for this contribution	A report on the diver activity in the park is to be generated annually.
OO7.3: To establish a visitors' centre, with information panels and other activities, and a first-aid room	High	Determine the best suited place to establish a visitor's centre having information panels, together with designating a first-aid room.	P7	Project	Establishment of visitor centre and ambulance bay	One visitor's centre and one emergency room to be set up in Ċirkewwa.

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Operational Objective	Priority ranking	Management Action	Code of Action	Action Category	Performance Indicators	Monitoring requirements
OO9.4: To increase the health and safety at the dive site by creating access for an ambulance and by having a fully equipped first aid kit available OO9.5: To actively apply for funding for the long-term management of the Marine Park		Create enough area for an ambulance to be able to access the first-aid room and for paramedics to be able to provide initial treatment of injuries on site. To actively seek out funding to ensure that the Marine Park and all infrastructure set-up within the Marine Park are sustainable and managed long-term.			Number of funding proposals prepared and submitted. Number of successful funding applications.	

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4.3 Description of the Management Actions

The following section describes the Management Actions set up under the Management Objectives and Operational Objectives. One or more Management Actions have been defined for each Operational Objective and the fulfilment of these objectives is dependent on the implementation of each action.

For each action referred to in Table 7, the following details are given:

Code/Title	Each action is given a code number with the initial M, D or P corresponding to measures, duties or projects as defined in section 4.1.
Description	Description of the action to be delivered.
Expected results	Description of the output (deliverable/s) expected.
Priority rating	Priority rating relates to the prioritisation assigned to the relevant Operational Objective given in Table 7 and the time span for the completion of each action is given.
Constraints	Foreseen constraints to the delivery of certain actions are stated and alternatives are suggested. Reference is made mainly to technical or institutional constraints and drawbacks foreseen.

4.3.1 Measures

1.1.1.5 M1: Assessment of the uses, their distribution and unused areas of the Marine Park and their potential for new areas of activity

Description	Within the first year of the implementation of the Management Plan, a full map highlighting all areas being used by the various stakeholders and the use associated with each area will be drafted. The unused area will also be measured and noted.
Expected results	Mitigation of stressors acting in specific areas and control of activities being carried out in the different areas. Creation of new areas for activity, if possible, without the creation of new stressors.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.

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Constraints	No foreseeable constraints.

1.1.1.6 M2: Create a zonation plan for the entire area defined as the Ċirkewwa marine park, identifying the activities permissible in each of the zones set up including a code of conduct.

Description	Within the first two years of the implementation of the Management Plan, a zonation plan for the various activities carried out within the marine park is drafted, agreed upon with the relevant authorities and is implemented on site. Special Marker Buoys are to be installed to delineate the general area of the Ċirkewwa Marine Park. Furthermore, marker buoys are set up to delineate each of the zones physically and a code of conduct for each of the zones is also drafted and made public. The existent Notice to Mariners will be updated in accordance to the zonation plan and the permissable activities within the respective zone. Zones set up as 'no anchoring zones' will be defined and moorings installed, to safeguard habitats of importance.
Expected results	Mitigation of stressors acting in specific areas, and adequate control of activities occurring therein, allowing for the monitoring and enforcement of illegalities.
Priority rating	High; to be accomplished within the first two years from the start of the implementation of the Management Plan.
Constraints	Delays in reaching an agreement with the respective authorities and in the installation of the required marker buoys for the different zones.

4.3.2 Duties

1.1.1.7 D1: Create a Park Ranger Unit with a defined agreement on number of hours to enforce park requirements and code of conduct

Description	Within the first year of the implementation of the Management Plan, a Park Ranger Unit under the Heritage Parks Federation, is set up with a defined number of hours of patrolling and monitoring at the Marine Park. The patrolling schedule

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	will be defined based on the density and frequency of illegal activities, according to a preliminary assessment that would be set. The role of patrolling officers would be to gather proof and information, and relay back to the enforcing body, as per the predefined agreements (refer to P3).
Expected results	Mitigation and reduction in illegal activities within the marine park, in line with pre-set agreements on the enforcing strategy to be employed (refer to P3). Increased awareness of the importance of the marine park, the threats, and code of conduct.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.
Constraints	Number of volunteers is not adequate to cover the required number of hours needed in Ċirkewwa.

4.3.3 Projects

1.1.1.8 P1: Elaboration of detailed surveying programmes for the surveying of; benthic habitat types within the Marine Park and the spatial distribution and conservation status of the *Posidonia oceanica* habitat

Description	In the course of the preparation of the present Management Plan, a method for the evaluation of the conservation status of species and habitats found within the Ċirkewwa Marine Park, with particular focus on *Posidonia oceanica* was developed in accordance with the methodology developed (See Annexes). This is a task to be accomplished within the first period of implementation of the Management Plan.
Expected results	An assignment of the conservation status of the *Posidonia oceanica* habitat.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.
Constraints	No major constraints foreseen.

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1.1.1.9 P2: Create an on-site monitoring system to cover time frames when the ranger unit is not on-site.

Description	Within the first year of implementation of this Management Plan, a CCTV system is installed on site covering the entire area of the marine park. This will allow the monitoring of the activities in the marine park, when the ranger unit is not on site.
Expected results	Mitigation and reduction in illegal activities within the marine park.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.
Constraints	Issues with internet connectivity works are the only foreseeable constraints.

1.1.1.10 P3: Establish an agreement with each of the enforcement authorities defining the responsibilities of each authority in terms of enforcing illegal activity on site.

Description	Within the first year of implementation of this Management Plan, an agreement with the relevant authorities on the enforcement of regulations in the park will be established. This agreement will highlight the responsibility of the different authorities in terms of which regulations fall under which authority's remit and the enforcing power available to these authorities, considering breaches of the regulations set within the park. Standard Operating Procedures to be set up, for the enforcement procedures, as part of the agreements set with the respective agencies.
Expected results	Effective enforcement of illegal activities within the marine park.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.
Constraints	No major constraints foreseen.

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1.1.1.11 P4: Set up a website and educational material including several different signs on site, both informative as part of citizen science campaigns and also signs which aid divers to plan their dive prior to entering the water. The educational material will also include material which can be used for on-site activities and also distributed in schools will also be created.

Description	During the course of the drafting of this Management Plan and throughout the implementation of the Management Plan, signs are to be installed on-site and maintained in good condition for each season. Signs will vary from information signs on the dive site to educational signs on species of importance and 'Code of Conduct' signs. A tentative programme of educational events for a number of months throughout the calendar year is to also be set up.
Expected results	Efficient dive planning from divers and increased awareness on different species. All visitors will be informed of the activities allowed within the specific zones, based on the code of conduct signs through the park rangers, which service will be set up through Action D1.
Priority rating	High; to start with the dive-plan signs and educational signs within the first years. Code of Conduct signs to follow (Action M3)
Constraints	No major constraints foreseen.

1.1.1.12 P5: Set up an underwater camera and a virtual reality experience as an educational tool for non-diver visitors.

Description	Within the first years of the implementation of this Management Plan, an underwater camera will be installed on one of the wrecks as an educational tool. A virtual reality experience will also be set up in the Visitors' Centre once the relevant action is finalised (Action P7).
Expected results	Increased awareness on the importance of underwater habitats and species, together with a higher number of non-diver visitors at the marine park.

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Priority rating	Moderate; to be completed within the 5-year time frame covered by this Management Plan.
Constraints	Limited space within the Visitors' Centre and lack of financial resources for the virtual reality experience to be built and installed.

1.1.1.13 P6: To set-up a diver 'check-in/check-out' system to ensure that all divers entering the site are accounted for.

Description	Within the first years of implementation of the Management Plan, an efficient check-in/check-out system which would be used to gather numerical data on the number of divers visiting the marine park and which activities they are engaging in during their time in the park, will be set up. This tool will also prove useful in acquiring data on the number of divers visiting the site daily, for external funding (e.g., EU LIFE funding). It will also help in establishing the environmental contribution and which activities will fall under the environmental contribution framework at the marine park, when the environmental contribution is implemented
Expected results	An extensive database with all the required information to effectively seek external funding and for effective implementation of the environmental contribution scheme.
Priority rating	Moderate; to be completed within the 5-year time frame covered by this Management Plan.
Constraints	No major constraints foreseen.

1.1.1.14 P7: Create a visitors' centre, in Ċirkewwa which welcomes visitors, and has the necessary health and safety infrastructure.

Description	Within the first two years of implementation of this Management Plan, a visitors' centre having a first-aid room which is fully equipped with emergency material is set up as part of the Marine Park. This project action will also include actively

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	seeking out funding to ensure that the Marine Park and all infrastructure set up within the marine park is sustainably managed in the long-term. This may also include overseas training.
Expected results	One visitors' centre and one fully equipped first-aid room on site as part of the marine park.
Priority rating	High; to be accomplished within the first year from the start of the implementation of the Management Plan.
Constraints	Limited area for the visitors' centre.

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5 Work Plan Structure

Prior to the implementation of the actions in the Management Plan, a work plan is drafted as agreed between Nature Trust FEE Malta and the Malta Tourism Authority. This is a yearly plan of action that is review annually based on the actions accomplished throughout the previous year. The work plan will be an internal document outlining the plan of work and will include;

- A description of the actions and the timeframe allocated to the respective action;
- An indication of the financial resources required to implement the respective action; and
- A checklist of the expected deliverables for the respective action, the year of delivery and the entity proposed as the responsible party to deliver the action

6 Reporting and Review plan

Progress reports on the implementation of the Management Plan will be presented to the Management Council (See Section 7) on a quarterly basis. An annual evaluation (review) of the effectiveness of all or part of the Management Plan in achieving the stated objectives is to be prepared and presented to the Management Council. This will be based on the annual reports as prepared by the site manager. Reporting and reviewing shall occur in line with the agreement with the MTA. The template used for this reporting is as agreed with the MTA. Any templates drafted will be included as addenda to this Management Plan and will be included in future revisions of the Management Plan. A formal review process of the current Management Plan will also be conducted on the fourth year of the implementation of this Management Plan and will set the foundations for the new 5-year Management Plan for the marine park. This will be repeated on the fourth year of each management cycle.

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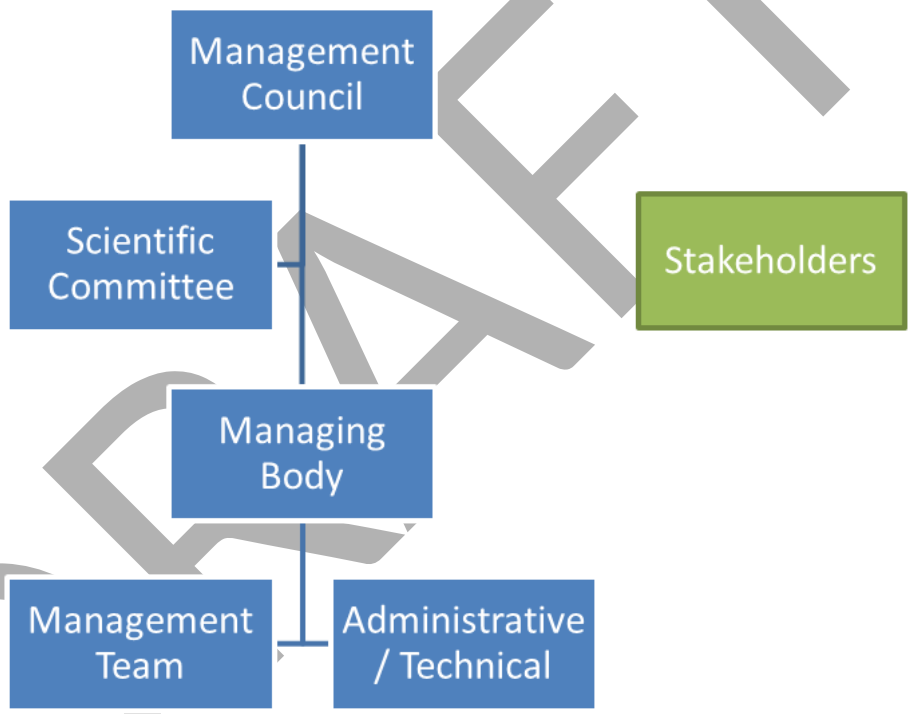
7 Management Framework

7.1 Management Set-up

The day-to-day management of the Ċirkewwa Marine Park will be the responsibility of the Managing Body, which will act under the guidance of the Management Council and in consultation with a purposely set up Scientific Committee.

The organisational set up for the Ċirkewwa Marine Park will be as follows:



7.1.1 Management Council

The Management Council will function as the "board of directors" of the Marine Park. It will be composed of the following:

- The **Environment and Resources Authority** represented by the Director Environment and Resources or his representative;
- The **Malta Tourism Authority** represented by the Director of Product Planning or his representative;

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- **Transport Malta**, represented by the Harbour Master or his representative; and

- A Member of the **Scientific Committee** in an *ex officio* capacity.

The Managing Body, represented by the Site Manager, will be an *ex officio* member and will attend all Council meetings.

7.1.2 Scientific Committee

The Scientific Committee will be setup purposely to guide the Managing Body in the formulation and implementation of the Management Plan for the Marine Park. The Managing Body will be required to consult with the Scientific Committee on day-to-day matters affecting the conservation of the site, establishment of scientific surveys, monitoring programmes, etc.

The Scientific Committee will be composed of the following:

- The Biology Department of the University of Malta represented by the Head of Department or his representative;
- Adi Associates Environmental Consultants Ltd as the MTA's environmental consultants on this project, represented by the Managing Director or his representative; and
- The Environment and Resources Authority represented by the Manager for Biodiversity or his representative.

7.1.3 Managing Body

The Managing Body will be Nature Trust - FEE (Malta), or any successor in title, who will be entrusted with the day-to-day management of the site under the provisions of the Flora, Fauna and Natural Habitats Regulations.

The Managing Body will set up a Management Team for this project, which will include:

- A coordinator, who will liaise with the Scientific Committee and Management Council and who will be part-time;
- A Site Manager, who will be a graduate Marine Biologist and who will be full-time;
- A Technician / Education Officer/intern, who will be part-time; and
- An Administrative Officer, who will be part-time.

The Managing Body will also be able to engage short-term interns and other resources to assist the Site Manager with the day-to-day duties, as well as short-term consultancy input for specific tasks.

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7.1.4 Stakeholders

An important part of the setting up of the marine protected area is engagement with stakeholders. A full list of stakeholders (Table 3) with an interest in the Ċirkewwa Marine Park was compiledin the inital phases of the project, prior to the stakeholder engagement workshops held specifically for the drafting of this Management Plan.

Further consultation with relevant stakeholders is planned throughout the implementation phase of the Management Plan.

8 Conclusion

This Management Plan has been drafted as the initial plan for setting up the area defined in the previous sections as a marine park. It outlines the main actions needed for the site to start functioning as a marine park, following several stakeholder engagement processes. A vision has been identified for the marine park, and all actions have been drafted with this vision in mind. At the end of the five year process as outlined in this Management Plan, a report is prepared as a compilation of deeds and results recorded in the individual annual reports, with an in-depth evaluation of the five year management of the site. The five year report will include reporting on the progress of species and habitats within the site. This report will be presented to the Management Council and will function as the basis for the formulation of the subsequent 5-year Management Plan for the marine park.

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10 Annexes

10.1 Annex 1: *Posidonia oceanica* survey Standard Operating Procedure (SOP)

Last Reviewed: 6th September 2022

SOP Coordinator: M. Cutajar **SOP Owner**: Nature Trust Malta

Introduction

The seagrass *Posidonia oceanica* (L.) Delile is an endemic species of the Mediterranean Sea. It forms monospecific meadows widely distributed between the surface and 44 m depth in the clearest waters (Malta, France (Var, Corsica)) (Augier and Boudouresque, 1979; Boudouresque et al., 1990; Borg and Schembri, 1995). These meadows cover large areas in coastal regions totalling a global surface area of 37,000 km2 (1–2% of the bottom of the Mediterranean Sea (Pasqualini et al. 1998; Boudouresque et al., 2006). *Posidonia* meadows constitute an engineering ecosystem playing a major ecological, geological, and economic role in coastal zones (Boudouresque and Meinesz, 1982; Pergent-Martini et al., 1994; Francour, 1997; Boudouresque, 2004). The meadows are sensitive to human disturbance such as coastal development, pollution, increasing water turbidity and trawling (Boudouresque et al., 2000, 2006). They are now listed as a priority natural habitat in Annex I of the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (EEC, 1992) but the loss of covering has been described in many regions around the Mediterranean Sea. Programmes for monitoring *Posidonia* beds initiated in Europe (Spain, France, Italy) have allowed the definition of the quality of coastal waters (Boudouresque et al., 2007), and *P. oceanica* is regularly used as a bioindicator because of its sensitivity to disturbance (Pergent-Martini, 1998; Gosselin et al., 2006; Leoni et al., 2006; Montefalcone, 2009). Due to the increase in anthropogenic pressure on ecosystems and the associated water quality decline, the European Union has engaged a new strategy to conserve and recover the ecological quality of the marine environment. To attain this objective, the Water Framework Directive (WFD) has established the basis of policies for the monitoring, protection, and enhancement of the status of aquatic systems in the Member States. The main goal of the WFD is to achieve (or maintain at least) a "good water status" for all the European waters by 2015. To this end, this directive defines the concept of ecological status as the quality of the structure and functioning of ecosystems associated with homogenous water bodies. The evaluation of the status of each water body is based on the use of some organisms or groups of organisms sensitive to anthropogenic pressures: biological quality elements (BQEs).

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Purpose and Scope

The purpose of this document is to outline the methodology employed to determine the ecological status of the *Posidonia oceanica* habitat in accordance with the methodology outlined in the Water Framework Directive.

Protocol for the assessment and monitoring of Ċirkewwa's *Posidonia oceanica* meadows

Selection and Measurement of metrics

A lot of descriptors (or metrics) have already been used to assess the health status of *P. oceanica* meadows around the Mediterranean Sea (Pergent-Martini et al., 2005). These metrics provide information:

(i) at different levels (population and community levels, individual, tissue. . .);

(ii) on different types of disturbance;

(iii) with different times of response (week, year, century. . .) .

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Table 8: List of main descriptors of *P. oceanica* used in monitoring and their responses to different impacts, 1: community descriptors, 2: individual descriptors, 3: physiological descriptors (Pergent-Martini et al., 2005; Boudouresque et al., 2006; Romero et al., 2007).

Type	Variable	Impact or Stress	Response
1	Shoot density (shoot/m2)	Reduction of light availability. Burial. Direct elimination due to trawl fishing, boat anchoring, coastal construction, etc.	Shoot density decrease (shoot mortality)
	Cover (%)		Vegetal coverage decrease
	"Matte" structure	Disturbance on sedimentary flux. Burial. Boat anchoring, coastal construction, etc.	Fragilisation of the "matte"structure
	Epiphyte biomass (mg/cm^2)	Reduction of light availability; Eutrophication	Epiphyte biomass decrease; Epiphyte biomass increase, except if compensated by herbivores
	N content in epiphyte	Eutrophication	Increase in tissues
	Species associated with meadow	Reduction of light availability. Burial. Direct elimination due to trawl fishing, boat anchoring, coastal construction, etc.	Decrease of biodiversity
2	Foliar area (cm^2/shoot)	Reduction of light availability; Eutrophication (turbidity increase due to phytoplankton development)	Leaf surface increase to optimize photosynthetic productivity
	Foliar necrosis (% leaves with necrosis/shoot)	Reduction of light availability. Prolonged anoxia (burial). Other stress factors (e.g. toxins, pathogens, hypersalinity)	Possible consumption by herbivores due to nutrient increase Increase in necrosis in tissues
	Lepidochronology	Reduction of light availability, sediment resuspension...	Changes in foliar productivity and the growth rate of the rhizomes
	Plagiotropic rhizomes (%)		Decrease in percentage of plagiotropic rhizomes
3	Sucrose content	Reduction of light availability, sediment resuspension...Burial	Decrease of carbon reserves in rhizomes
	Nitrogen and Phosphorous content	Eutrophication Reduction of light availability	Increase of nutrient content in plant Increase of nutrient content (nitrogen) in leaves due to low growth under low light conditions
		Anoxia in sediment	Decrease of nutrients accumulated in rhizomes due to negative effects on the availability and uptake of nutrients by roots
	δ ^{15}N and δ ^{34}S	Eutrophication Anoxia in sediment	Increase of δ ^{15}N Increase of δ ^{34}S
	Metal traces: Cu, Zn and Pb	Metal contamination	Increase of metals in tissues. Effects on photosynthetic activity (Cu, Pb and Zn)

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Calculating the EQR and classification of the water body

According to the WFD, the classification of ecological status is based on the deviation of the status of the BQE from its potential status under pristine conditions (reference conditions: RC). This ecological status is expressed using a scale going from 1 (RC) to 0 (worst conditions where the BQE is badly affected or missing). The ratio between the status of a given BQE noted in a station and its status in the reference conditions is called the Ecological Quality Ratio (EQR). To calculate this EQR, a definition of RC must be made. RC describes the characteristics in undisturbed conditions. These conditions should be established using (i) the best spatial analysis (data from undisturbed sites), (ii) palaeoecological and historical data, (iii) modelling using existing or historical data and (iv) expert judgment. Due to the impossibility of *P. oceanica* surviving in extremely degraded environments (Boudouresque et al., 2006; Romero et al., 2007), its presence defines the quality of water bodies above a "bad" status (Romero et al., 2007). The "bad" condition has been defined as a condition corresponding to a recorded recent die-off of the meadow (<5 years) due to identified anthropogenic impacts (Med-GIG, 2007).

An arbitrary EQR value of 0.100 for the "bad" status boundary was set as the baseline for the determination of the health status of *Posidonia oceanica*.

Establishing the PREI for the Ċirkewwa Marine Park *Posidonia oceanica* meadows

A summary of the data to be collected for the calculation of PREI is found in the table below. The methodology in detail is deifned in Appendix 1.

Table 9: Table summarising the metrics, units and descriptions of the data required to calculate the PREI for the seagrass meadows at the Ċirkewwa Marine Park.

PREI metrics and units	Methodology and references
Shoot density (shoot m^{-2})	Quadrat 1m x 1m. 20 measurements at different depths (Appendix 1)
Lower depth limit (m)	Noted in situ by scuba diver
Type of this limit (regressive, progressive, stable)	Noted in situ by scuba diver according to the classification of Meinesz and Laurent (1978)
Epiphytic load	On 20 shoots sampled at 15 m depth: measurement of total dry weight of epiphyte and leaf (adult + intermediate) Dauby and Poulicek (1995)
Leaf surface area (cm^2 $shoot^{-1}$	On 20 shoots sampled at 15 m depth: measurement of total leaf surface area according to the methodology of Giraud (1979)

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Appendices

Appendix 1: Methodology for counting the Posidonia oceanica shoot density per metre squared

Data Collection

The Ċirkewwa Marine Park is split into specific study areas. A specific area is chosen for every dive, prior to commencing with the dive. The PREI (*Posidonia oceanica* Rapid Easy Index) method described in Gobert et al. (2009) is applied at specific monitoring stations. This technique requires SCUBA divers working on monitoring stations at constant depths (at 15 ± 1m depth) and on fixed points at the lower limit of the meadow. At each station, three 4m^2 areas each being 10m apart are investigated as replicates.

- Measurements to be collected in situ include:
  - shoot density: by counting shoots present in three replicate samples. Values are expressed as number of shoots/m^2;
  - depth of the lower limit;
  - type of this limit (regressive, progressive, or stable – See Calculation section below).

- Estimates on the percentage cover of *P. oceanica*, typology of substratum, continuity of the meadow, percentage of dead matter, percentage of *Caulerpa racemosa* and percentage of *Cymodocea nodosa* are estimated at each monitoring stations.
- Six orthotropic shoots of *P. oceanica*, randomly chosen, are uprooted for laboratory analyses.

- Measurements to be obtained by processing samples in the laboratory include:
  - shoot leaf surface area: length and width of each leaf must be measured and the leaf surface area per shoot calculated
  - E/L (ratio between epiphytic biomass and leaf biomass) measured on shoots: Epiphytes are to be scratched off with a blade to estimate their epiphyte biomass as dry weight after 48 hours at 60°C. Leaf (adult and intermediate) biomass will be calculated as dry weight after 48 hours at 60°C to calculate the E/L ratio.
- At the lower limit of the meadow for each monitoring station, another 6 randomly selected shoot density measures must be carried out and a further 6 orthotropic shoots must be uprooted for subsequent laboratory analyses.

This is done for different areas across the Marine Park. Prior to the dive, the diving slate or diving notebook must be prepared with the below table headings for the data to be collected. On finishing the dive, the data is copied onto an excel sheet replicating the tables below.

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Table 10: Table for the insitu measurements on the density of the seagrass meadows

Date		Study Area									
Quadrat number	**Depth of quadrat (15m ± 1m)**	**Latitude**	**Longitude**	**Number of shoots in quadrat**	**% cover of *P. oceanica***	**Substratum typology***	**Meadow continuity**	**% dead matter**	**% *Caulerpa racemosa***	**% *Cymodocea nodosa***	
1											
2											
3											
Quadrat number	**Depth of lower limit of *P. oceanica***	**Limit Type (R, P, S)**	**Latitude**	**Longitude**	**Number of shoots in quadrat**	**% cover of *P. oceanica***	**Substratum typology**	**Meadow continuity**	**% dead matter**	**% *Caulerpa racemosa***	**% *Cymodocea nodosa***
1											
2											
3											

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* Substratum Typology		
Hard (immobile)	**Artifical (man-made)**	Man-made structures e.g. of metal, wood or concrete.
Immobile hard substratum e.g. solid rock, concrete but inc. soft rocks , such as chalk .	**Bedrock**	Any stable hard substratum, not separated into boulders or smaller sediment units. Includes soft rock-types such as chalk, peat and clay (Hiscock *et al.*, 1999).
	Large to very large boulders	Boulders >512 mm; likely to be stable (Hiscock, 1996).
	Small boulders	256 - 512 mm. May be unstable.
Hard (mobile)	**Cobbles**	64-256 mm. May be rounded to flat. Substrata that are predominantly cobbles.
Mobile hard substratum, e.g. cobles, pebbles that are regularly moved by wave action	**Pebbles**	16-64 mm. May be rounded to flat. Substrata that are predominantly pebbles.
Sediment / soft	**Coarse sediment**	**Gravel / shingle**
Definitions from Hiscock (1996) and Long (2006)		**Sandy gravel**
		Gravelly sand
	Sand and muddy sand	**Sand**
		Coarse clean sand
		Medium clean sand
		Fine clean sand
		Sandy mud
	Mud and muddy sand	**Muddy sand**
	As defined by Long (2006).	**Mud**
	Mixed	**Muddy gravel**
	Mixtures of a variety of sediment types, composed of pebble / gravel / sand / mud. This category includes muddy gravels, muddy sandy gravels, gravelly muds, and muddy gravelly sands.	**Gravelly mud**
		Muddy sandy gravel
		Muddy gravelly sand
		Sandy gravelly mud

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Table 11: Laboratory analyses for the epiphytic load on the seagrass meadows

Samples taken at 15 m depth					
Shoot	Leaf length	Leaf Width	Lead Surface area	Epiphytic load	
				Epiphytic biomass	Leaf biomass
1					
2					
3					
4					
5					
6					

Samples taken at lower limit					
Shoot	Leaf length	Leaf Width	Lead Surface area	Epiphytic load	
				Epiphytic biomass	Leaf biomass
1					
2					
3					
4					
5					
6					

Calculations

On the basis of the measurements collected as per Appendix 1 above (PREI index), Environmental Quality Ratio for *Posidonia* beds is calculated as:

EQR'= (N density + N leaf surface area + N (E/L) +N lower limit)/3.5

Where:

N density = value measured-0/reference value-0[1] ;

N leaf surface area (per shoot) = value measured-0/reference value-0[2] ;

N (E/L) = [1- (epiphyte biomass / *P. oceanica* leaf biomass)]x0.5 N lower limit = (value measured-17)/ (reference value -17[3]),

N = depth noted on the field + λ, where λ = 0 (stable limit), λ = 3 (progressive limit) or λ = -3 (regressive limit).

[1] 0 being considered the worst value for the density and for the leaf surface area
[2] 0 being considered the worst value for the density and for the leaf surface area
[3] 17 m being considered as the worst lower limit for *P. oceanica* meadows

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The PREI value may vary from 0 to 1 and will give a corresponding value to the Ecological Quality Ratio (EQR). Hence, the EQR may either range from 0 to 1, 0 being considered as the worst value for the density and for the leaf surface area. The EQR is computed as follows:

EQR = (EQR' + 0.11)/(1 + 0.10)