Department of the Environment,
Sustainability, Climate Change
and Heritage

HM Government of Gibraltar

MARINE STRATEGY FRAMEWORK DIRECTIVE

UPDATED MONITORING PROGRAMME FOR BRITISH GIBRALTAR TERRITORIAL WATERS

July 2021

ABBREVIATIONS

ACCOBAMS	The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
AChE	Acetylcholinesterase
AGDS	Acoustic Ground Discrimination System
AIS	Automatic Identification System
AMBI	AZTI Marine Biological Index
AUV	Autonomous Underwater Vehicle
BGTW	British Gibraltar Territorial Waters
BOPA	Benthic Opportunistic Polychaetes Amphipods
CI	Common Indicators
DBT	Dibutyl tin
DEHP	Di(2-ethylhexyl)phthalate
DESCCH	Department of the Environment, Sustainability, Climate Change and Heritage
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
EASIN	European Alien Species Information Network
EC	European Commission
EIA	Environmental Impact Assessment
EPRU	Environmental Protection & Research Unit
ESG	Environmental Safety Group
GES	Good Environmental Status
GFCM	General Fisheries Commission for the Mediterranean
GONHS	Gibraltar Ornithological and Natural History Society
GPA	Gibraltar Port Authority
HMGoG	Her Majesty's Government of Gibraltar
HMWB	Heavily Modified Water Body
IMAP	Integrated Monitoring and Assessment Programme
IMMA	Important Marine Mammal Area
LMS	Lysosomal membrane stability
MAMIAS17	Marine Mediterranean Invasive Alien Species
MCZs	Marine Conservation Zones
MMIRC	Marine Mammal Information, Research and Conservation
MN	Micronuclei frequencies
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MSY	Maximum Sustainable Yields
NGO	Non-Governmental Organisation
NIS	Non-Indigenous Species
P2P SPL	Peak to Peak SPL
PERSEUS Project	Policy-Oriented Marine Environmental Research in the Southern European Seas
PoM	Programme of Measures
POP	Platforms-of-opportunity
PSPL	Peak Sound Pressure Level
RBMP	River Basin Management Plan
ROV	Remotely Operated Vehicle
SEL	Sound Exposure Level
TACs	Total Allowable Catches
TBT	Tributyl tin
WFD	Water Framework Directive
UKTAG	UK Technical Advisory Group
UNEP/MAP	United Nations Environment Programme Mediterranean Action Plan

CONTENTS

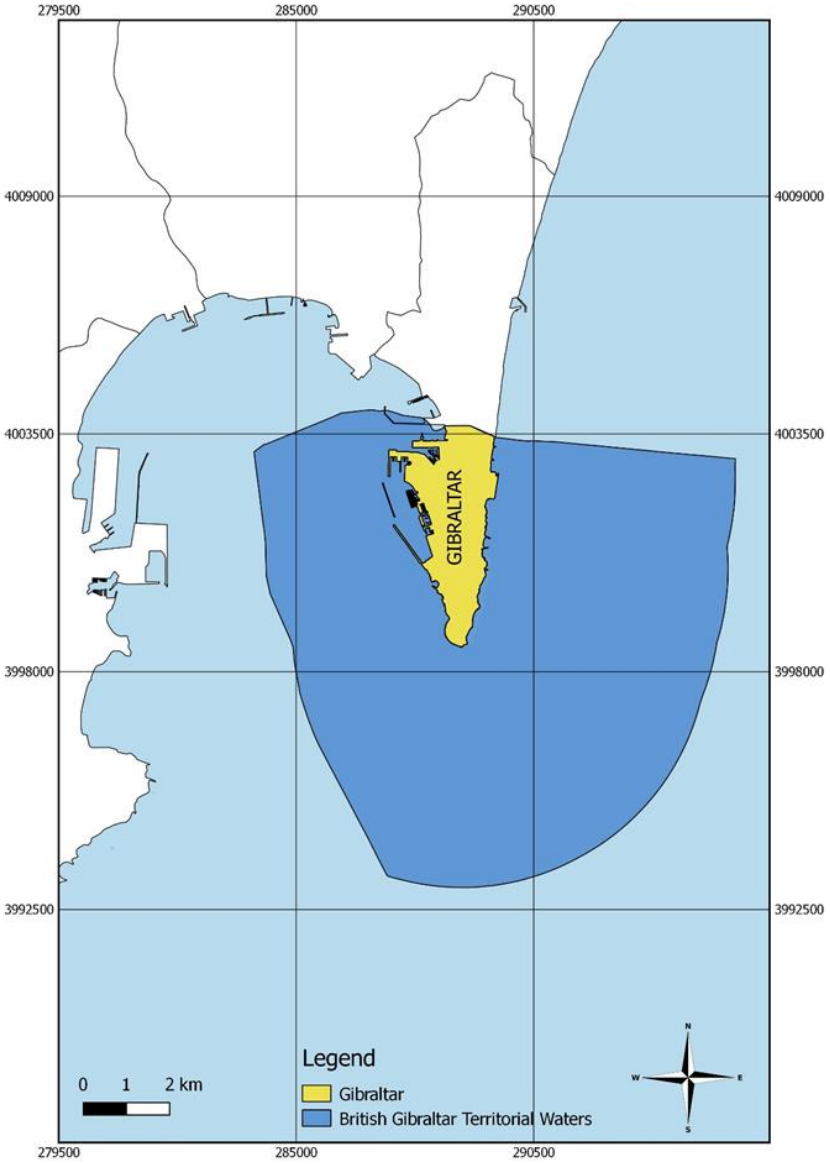
1. INTRODUCTION

1.1 Context

The Marine Strategy Regulations 2011[1] transpose the EU Marine Strategy Framework Directive (MSFD)[2], which aims to achieve Good Environmental Status (GES) of the marine environment and protect the resource base upon which marine-related economic and social activities depend.

The geographic scope of the Marine Strategy extends to the entirety of British Gibraltar Territorial Waters (BGTW) which are located within the Western Mediterranean subregion of the Mediterranean Sea.

Figure 1-1: British Gibraltar Territorial Waters.



[1] Available at: https://www.gibraltarlaws.gov.gi [Accessed 17/11/20]

[2] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). Available at: https://eur-lex.europa.eu [Accessed 17/11/20]

The Barcelona Convention for the Protection of the Mediterranean Sea and subsequent Protocols therein[3] provide a high-level legal framework for the protection of this marine ecoregion. Although Gibraltar is not yet formally a signatory of the Barcelona Convention, Her Majesty's Government of Gibraltar (HMGoG) continues to actively pursue becoming a Contracting Party, through the UK, using established diplomatic channels. In doing so, the necessary legislative powers to transpose the Barcelona Convention in Gibraltar law have been drafted and are ready for enactment. Notwithstanding, efforts are being made to increase involvement, cooperation and alignment with policies and methodologies identified at a regional level. The extension of the Barcelona Convention to BGTW, will further assist in harmonising monitoring and assessment methods employed as part of the Monitoring Programme for BGTW moving forward.

The Marine Strategy Regulations 2011 form part of a series of national legislative instruments that protect the marine environment in Gibraltar. Other relevant legislation includes the following:

- **Nature Protection Act (NPA)** (1991, as amended), which provides protection of wild birds, animals and plants and their habitats. The NPA enacts the Bern Convention on the Conservation of European Wildlife and Natural Habitats, the EU's Habitats and Birds Directive[4]. Moreover, the NPA 1991 includes the following subsidiary legislation of relevance:
    - **Marine Protection Regulations 2014 (as amended)** which includes provisions for the protection of the marine environment; permitting regime for fishing, diving operations and dolphin tour operators, and lists designated Marine Conservation Zones (MCZ) among other provisions;
    - **Tuna Preservation Regulations 2014** (as amended) which includes provisions for the licensing of tuna fishing including conditions, Total Allowable Catches (TAC), season opening conditions, offences and penalties, among others.
    - **Dolphin Protection Zone Regulations 2018** (as amended) which designates a Dolphin Protection Zone and defines restrictions within it, including provisions for offences and penalties.
- **Public Health (Water Framework) Rules 2004** (as amended) which designates river basin districts, i.e. area of land and sea with associated bodies of water that form a management unit, and requires the preparation of a River Basin Management Plan, setting environmental objectives, a monitoring programme and a programme of measures to achieve water quality targets within the river basin district. It transposes the Water Framework Directive[5].
- **Environment Act 2005,** including the following subsidiary legislation of relevance:
    - **Environment (Quality of Bathing Water) Regulations 2009** (as amended), which lays down provisions for monitoring and classification of bathing waters.
    - **Environment (Maritime Spatial Planning) Regulations 2016** (as amended), which designate the DESCCH as the Competent Authority responsible for the establishment of a maritime spatial plan within BGTW, including objectives, requirements and procedures. It transposes the Maritime Spatial Planning (MSP) Directive[6].

Under the Marine Strategy Regulations 2011, HMGoG is required to:

- **Conduct an assessment of the environmental status** of BGTW and environmental impact of human activities (Article 8 of the MSFD);

[3] Coordinated by UNEP http://web.unep.org/unepmap/

[4] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Available at: https://eur-lex.europa.eu; and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available at: https://eur-lex.europa.eu

[5] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Available at: https://eur-lex.europa.eu [Accessed 17/11/20]

[6] Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning. Available at: https://eur-lex.europa.eu [Accessed 18/11/2020]

- **Determine the characteristics of GES** based on the qualitative descriptors that define GES (Article 9 of the MSFD);
- **Establish environmental targets and associated indicators** to measures progress on achieving GES (Article 10 of the MSFD);
- **Establish and implement a monitoring programme** for the ongoing assessment and regular updating of targets (Article 11 of the MSFD); and
- **Develop a programme of measures (PoM)** designed to achieve or maintain GES (Article 13 of the MSFD).

Article 17(2) of the MSFD requires that the initial assessment, determination of GES, setting of environmental targets, monitoring programmes and PoM (also referred to as MSFD elements) to be updated every six years from initial creation forming different MSFD cycles (see Figure 1-), with the first cycle aimed at achieving GES by 2020.

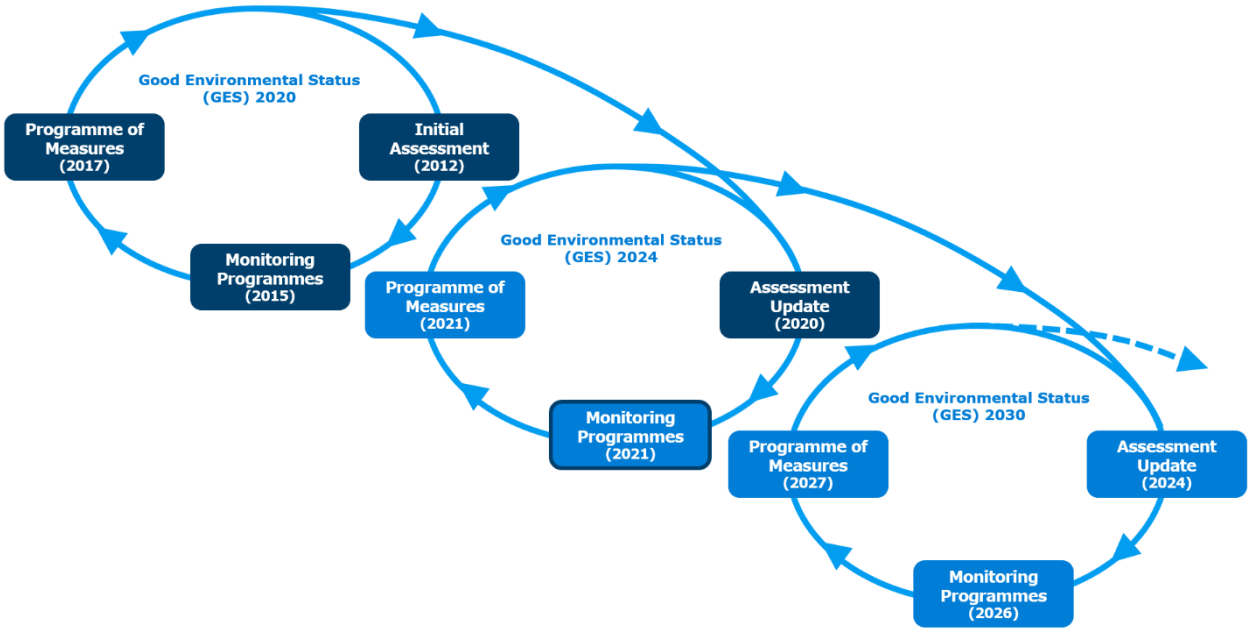


Figure 1-2: MSFD cycles as implemented in Gibraltar. In dark blue, MSFD elements completed.

The initial assessment for BGTW[7] was published in 2012, in line with the requirements set out in Articles 8, 9 and 10, which subsequently informed the initial monitoring programmes (2015)[8] and PoM (2017)[9] for BGTW. The assessment was updated in 2020[10], presenting an analysis of progress made towards the achievement of GES within BGTW between 2012 and 2019, and setting out revised targets up to 2024, forming the second MSFD cycle that aims to achieve / maintain GES by 2024.

1.2 Purpose of this Document

In line with article 17(2) of the MSFD, this document updates the monitoring programmes for BGTW to be implemented as part of the second MSFD cycle, allowing for the ongoing assessment of the

[7] Department of Environment, Heritage and Climate Change (DEHCC) (2012) Initial Assessment and Proposals for Good Environmental Status in British Gibraltar Territorial Waters. Available at: https://www.gibraltar.gov.gi [Accessed 18/11/20]

[8] DEHCC (2015) Monitoring Programme for British Gibraltar Territorial Waters. Marine Strategy Framework Directive. HM Government of Gibraltar. Available at: https://www.gibraltar.gov.gi [Accessed 18/11/2020]

[9] DEHCC (2017) Programme of Measures for British Gibraltar Territorial Waters. Marine Strategy Framework Directive. HM Government of Gibraltar. Available at this https://www.gibraltar.gov.gi [Accessed 18/11/2020]

[10] Department of Environment, Sustainability, Climate Change and Heritage (DESCCH) (2020) Updated Assessment and Good Environmental Status for British Gibraltar Territorial Waters. Marine Strategy Framework Directive. Available at: https://www.gibraltar.gov.gi [Accessed 18/11/20]

environmental status of BGTW, making reference to the environmental targets established in the 2020 assessment update.

This document has been prepared in line with European Commission (EC) published Guidance[11], which updates the reporting structure requirements and clarifies terminology used for three different concepts:

- **Monitoring strategies:** each strategy describes the overall approach to monitoring for a particular descriptor and collects information on the coverage of GES criteria, targets and measures, as well as any gaps in the monitoring and plans to fill the gaps;
- **Monitoring programmes:** gathers information on the practicalities of monitoring, reflecting different monitoring types, methods, spatial and temporal scope, etc; and
- **Metadata:** gathers information related to the administrative set-up of the monitoring programmes, including regional cooperation processes and public consultation.

1.3 Consultation

In keeping with the requirements of the MSFD, the Department of the Environment, Sustainability, Climate Change and Heritage (DESCCH) gathered feedback on the Assessment Update for BGTW with a focus on the following questions:

- Are the proposed monitoring programmes sufficient to meet the requirements of the Marine Strategy Regulations 2011?
- Are the proposed monitoring programmes sufficient to provide the necessary data to assess progress towards the achievement of GES and the related targets as set out in the 2020 updated assessment?
- Are any additional monitoring programmes needed in order to assess progress towards achieving GES and the related targets?
- Are you aware of any additional marine monitoring currently being carried out or planned, that we have not covered which could contribute to our assessments and make them more effective?

The consultation deadline ended on the 13th August 2021.

[11]European Commission. 2020. Reporting on the 2020 update of Article 11 for the Marine Strategy Framework Directive (MSFD Guidance Document 17). Brussels. 51pp.

2. METHODOLOGY

2.1 Monitoring Programme Requirements

This section outlines the requirements that monitoring programmes need to meet under Annex V of the MSFD, indicating specific applicability to BGTW:

- provide information for an assessment of the environmental status and for an estimate of the distance from, and progress towards, GES in accordance with Annex III (characteristics, pressures and impacts) and agreed criteria and methodological standards;
- ensure that appropriate information is generated to enable the identification of suitable indicators for the environmental targets provided for in Article 10 (i.e. as defined in the 2020 assessment update);
- ensure that appropriate information is generated to allow the assessment of the impact of the measures established in the PoM (i.e. as defined in the 2017 PoM for BGTW[9]);
- include activities to identify the cause of the change and hence the possible corrective measures that would need to be taken to restore GES, when deviations from the desired status range have been identified;
- provide information on chemical contaminants in species for human consumption from fishing areas;
- include activities to confirm that the corrective measures deliver the desired changes and not any unwanted side effects;
- aggregate the information on the basis of marine regions or subregions in accordance with Article 4 (i.e. Western Mediterranean Sea subregion);
- ensure comparability of assessment approaches and methods within and between marine regions and/or subregions (e.g. under the Integrated Monitoring and Assessment Programme (IMAP) under the Barcelona Convention);
- develop technical specifications and standardised methods for monitoring at Community level, so as to allow comparability of information;
- ensure, as far as possible, compatibility with existing programmes developed at regional and international level, with a view to fostering consistency between these programmes and avoiding duplication of effort, making use of those monitoring guidelines that are the most relevant for the marine region or subregion concerned;
- include, as part of the initial assessment provided for in Article 8, an assessment of major changes in the environmental conditions as well as, where necessary, new and emerging issues;
- address, as part of the initial assessment provided for in Article 8, the relevant elements listed in Annex III including their natural variability and to evaluate the trends towards the achievement of the environmental targets laid down pursuant to Article 10(1), using, as appropriate, the indicators established and their limit or target reference points.

2.2 Good Environmental Status (GES)

GES is defined as the environmental status of marine waters providing ecologically diverse and dynamic oceans and seas, which are clean, healthy and productive, and the use of the marine environment is sustainable.

In order to facilitate the assessment of progress towards GES, this is broken down into 11 different qualitative descriptors used to describe GES which for BGTW include:

- Biodiversity [Descriptors 1 (biological diversity), 3 (fish and shellfish), 4 (food webs) and 6 (sea-floor integrity)], subdivided into the following:
    - Species (seabirds, marine mammals, marine reptiles, fish and shellfish);
    - Habitats (pelagic and benthic habitats);
    - Ecosystems.
- Non-indigenous species (NIS) (Descriptor 2);

- Eutrophication (Descriptor 5);
- Hydrographical conditions (Descriptor 7);
- Contaminants (Descriptor 8 (Contaminants) and 9 (Contaminants in fish and other seafood for human consumption);
- Litter (Descriptor 10);
- Underwater Noise (Descriptor 11).

The 2020 assessment update showed that although there are a number of descriptors for which data collection and monitoring need to be reinforced to reduce uncertainty on the status of BGTW, historical and existing marine management measures, together with the PoM set out in BGTW in 2017, are considered to have resulted in the following:

- GES achieved for seabirds and pelagic habitats (Descriptor 1, 3, 4, 6); eutrophication (Descriptor 5) and hydrographic conditions (Descriptor 7);
- GES partly achieved for marine mammals and marine reptiles (Descriptor 1, 3, 4, 6); and contaminants (Descriptors 8 and 9);
- GES not achieved for NIS (Descriptor 2);
- GES uncertain due to lack of data for benthic habitats, fish and shellfish and ecosystems (Descriptor 1, 3, 4, 6), marine litter (Descriptor 10) and underwater noise (Descriptor 11)

Full findings are available in the 2020 assessment update[10]. The next assessment update will be published in 2024.

The 2017 PoM for BGTW will be updated in 2022 to review the effectiveness of measures to date and present any additional measures required to achieve / maintain GES in BGTW by 2024 (see Figure 1-2).

2.3 Approach

The purpose of the updated monitoring programme for BGTW is to provide sufficient evidence to demonstrate the extent to which targets are met, so a robust assessment of progress towards achieving GES within BGTW can be provided as part of the next reporting cycling in 2024.

For each descriptor, a monitoring strategy and associated monitoring programmes are described. Most of the proposed monitoring programmes are a continuation of existing programmes and often fulfil other legal requirements, such as those under the Habitats and Birds Directives, the Water Framework Directive (WFD) and monitoring programmes established as part of the Gibraltar River Basin Management Plan (RBMP)[12] for example. Some of these programmes have been revised in order to provide a more robust evidence base to evaluate whether GES will be achieved or maintained. Monitoring gaps and plans to address these have also been identified for further action.

In addition, reference is made to the extent to which existing monitoring aligns with the UNEP/MAP Integrated Monitoring and Assessment Programme (IMAP)[13], which defines common indicators and parameters that are indicative of the state of the environment, prevailing anthropogenic pressures and impacts, and progress towards GES in the Mediterranean. The IMAP Guidance (2016)[14] further details monitoring recommendations.

[12] DECC (2015) Gibraltar River Basin Management Plan 2015 – 2021. Water Framework Directive. Available at: https://www.gibraltar.gov.gi [Accessed 18/11/20]

[13] Decision IG.22/7 Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria. Available at: https://mcc.jrc.ec.europa.eu [Accessed 14/01/21]

[14] Available at: http://www.rac-spa.org [Accessed 26/11/20]

3. MONITORING STRATEGIES AND PROGRAMMES

3.1 Introduction

Following the UK's approach to the presentation of monitoring programmes, the monitoring strategy for each descriptor and associated monitoring programmes have been tabulated as shown in Table 3-1:

Table 3-1: Format used to present the Monitoring Strategy for each descriptor component-subcomponent

Qualitative descriptor for determining GES	High level objective for achieving GES as defined in the MSFD. For some assessments more than one qualitative descriptor applies.
Environmental Status in 2019	Using the findings of the 2020 assessment update, summary of the assessment for the descriptor component / subcomponent, and the trends towards achieving GES using the following key: ● GES achieved ● GES partially achieved ● GES not achieved ● GES uncertain ⇧ Improvement observed in relation to the 2012 assessment. ⇔ No change observed in relation to the 2012 assessment. ⇩ Deterioration observed in relation to the 2012 assessment.
Monitoring Strategy Summary	Summary of the of overall approach to monitoring.
How progress towards GES is measured through monitoring and data collection	Specification of the criteria and indicators set in the 2020 assessment update, elements that are used in subsequent assessments and how this links to monitoring programmes within BGTW and common indicators (CI) agreed at regional level as part of the IMAP.
Monitoring programme details	High-level description of monitoring site locations, frequency and methods employed for each individual monitoring programme.
Monitoring gaps	Identification of any gaps in the monitoring strategy, particularly in relation to primary and secondary criteria used in assessments and considerations to address these.

The monitoring strategies and associated programmes presented in this section build on the 2015 monitoring programme for BGTW and are considered adaptive and subject to regular review. The DESCCH carry out environmental monitoring and research activities within BGTW and are the Competent Authority for the implementation of MSFD Monitoring Programmes, including reporting any incidents of relevance under the MSFD.

3.2 Biodiversity (Descriptors 1, 3, 4 and 6)

3.2.1 Seabirds

Biodiversity - Seabirds						
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.					
Environmental Status (2019)		Gibraltar achieved its aim of GES for seabirds in the last assessment. Stable population numbers were recorded for both indicator breeding seabird species (Western Mediterranean Shag) and foraging and/or migrating seabirds (Cory's, Scopoli's and Balearic Shearwaters) since 2012.				
GES Targets	D1T1 – Nesting, foraging and migrating seabird population numbers and distribution are maintained.					
	D1T2 – No seabirds are reported to be significantly affected by by-catch, oil spills, invasive species, noise, light pollution, disturbance and marine litter, particularly floating litter.					
Monitoring Strategy	The Monitoring Strategy for seabirds largely relies on bird count data published by the GONHS annually. Data collected are used to inform abundance and distribution. Habitat condition is monitored by separate programmes under Section 3.2.5 and 3.2.6).					
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators						
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**	
D1C1 (primary) Bycatch mortality	No by-catch mortality recorded for marine mammal species.	Seabirds [Using the following species as GES indicators: Western Mediterranean Shag *(Phalacrocorax aristotelis ssp. Desmarestii),* Balearic Shearwater (*Puffinus mauretanicus*), Scopoli's Shearwaters (*Calonectris borealis*), Cory's Shearwater (*Calonectris diomedea)]*	Number of incidents	• Incidence Reporting by the EPRU/DESCCH/ NGOs.	• CI 12: By-catch of vulnerable or non-target species.	
D1C2 (primary) Population abundance	No human induced decrease in seabird population abundance.		Abundance	• GONHS Seabird Surveillance Monitoring.	• CI 4: Population abundance of selected species.	
D1C3 (secondary) Population demographic characteristics	No human induced impacts upon population demographic characteristics.		N/A	Equivalent to D1C2.	• CI 5: Population demographic characteristics.	
D1C4 (secondary) Distributional range	No shrinkage in the population distribution for seabirds.		Geographical distribution	• GONHS Seabird Surveillance Monitoring.	• CI 3: Species distributional range.	
D1C5 (secondary) Habitat condition	No human induced changes to relevant seabird habitats.		Habitat condition	Monitoring of Habitats (see Section 3.2.5, 3.2.6) used to inform this secondary criterion.	• CI 2: Condition of the habitat's typical species and communities.	

Biodiversity - Seabirds					
Monitoring Programme Details					
Incidence reporting by the EPRU/DESCCH	The EPRU/DESCCH[15] maintains a records database with incidents and observations reported by different stakeholders, including recreational users and enforcement authorities. This includes recording any incidents observed that affect seabirds. • **Frequency of monitoring:** Daily surveillance, subject to weather conditions. • **Methods/standards used:** - Daily patrols. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any incidents.				
GONHS Seabird Surveillance Monitoring	GONHS[16] maintains an ongoing monitoring programme and records database with bird observations conducted across Gibraltar. Published annual reports provide a summary of bird records and observations of each bird species, including seabirds and migratory species. These data provide a useful means to monitor abundance and distributional range in particular. Seabird observations are typically conducted from the Straits of Gibraltar Bird Observatory at Europa Point (Southern Waters of Gibraltar) throughout the year and on a frequent basis.				
Habitats Directive Surveillance Monitoring Programme	Data collected by the GONHS are used in parallel for reporting purposes under Article 17 of the Habitats Directive and Article 12 of the Birds Directive.				
Monitoring developments & gaps					
Human impacts	Improve incidence reporting protocols and by-catch assessments. There is a need to further develop our knowledge of breeding populations and the impact (if any) of human pressures on seabirds. Secondary criteria require further development.				

3.2.2 Marine Mammals

Biodiversity – Marine Mammals		
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.	
Environmental Status (2019)		Gibraltar partially achieved its GES for marine mammals in the last assessment. Adequate data on abundance and distribution of indicator species exist (i.e. Striped Dolphin, Common Dolphin and Bottlenose Dolphin) and there has been a significant increase in Fin Whale abundance in BGTW recently. However, human pressures could be affecting the achievement of GES.
GES Targets	D1T3 – Indicator marine mammal species distribution and abundance are maintained.	
	D1T4 – Zero by-catch mortality of indicator cetacean species.	

[15] The EPRU, part of DESCCH, is responsible for surveying BGTW and enforcing environmental protection legislation. They also assist in monitoring and research activities.

[16] GONHS is a Gibraltar Registered Charity, Gibraltar Partner of BirdLife International and a member of The World Conservation Union (IUCN). Annual reports are publicly available at their website: https://www.gonhs.org/

<table>
<tr><th colspan="6">Biodiversity – Marine Mammals</th></tr>
<tr><td></td><td colspan="5">D1T5 – Ensure that disturbance and pressures caused by human activity are below levels that can have a significant impact on feeding and migratory patterns, reproductive success, physiological health and/or long-term trends in behaviour. Specific pressures to assess include physical injury, chemical contamination, marine litter and underwater noise.</td></tr>
<tr><td>Monitoring Strategy</td><td colspan="5">The Monitoring Strategy for marine mammals largely relies on data collected by the EPRU as part of their surveillance monitoring programme in BGTW, citizen science monitoring and seasonal surveys conducted by the DESCCH and MMIRC. Data collected are used to inform marine mammal by-catch mortality rates, abundance, demographic characteristics and distribution. Habitat condition is monitored by separate programmes under Section 3.2.5 and 3.2.6).</td></tr>
<tr><th colspan="6">How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators</th></tr>
<tr><th>Criteria</th><th>Indicators</th><th>Element</th><th>Parameter</th><th>Monitoring Programme</th><th>Regional CI</th></tr>
<tr><td>D1C1 (primary)
Bycatch mortality</td><td>No by-catch mortality recorded for marine mammal species.</td><td rowspan="6">Marine mammals
[Using the following species as GES indicators: Striped Dolphin (Stenella coeruleoalba)
Common Dolphin (Delphinus delphis)
Bottlenose Dolphin (Tursiops truncatus)]</td><td>Number of incidents</td><td>• Incidence Reporting by the EPRU/DESCCH.
• Marine Wildlife Stranding Programme.</td><td>• CI 12: By-catch of vulnerable or non-target species.</td></tr>
<tr><td>D1C2 (primary)
Population abundance</td><td>No human induced decrease in marine mammal population abundance.</td><td>Abundance</td><td>• Incidence Reporting by the EPRU/DESCCH.
• Seasonal marine mammal surveys by DESCCH and MMIRC.</td><td>• CI 4: Population abundance of selected species.</td></tr>
<tr><td>D1C3 (secondary)
Population demographic characteristics</td><td>No human induced impacts upon population demographic characteristic.</td><td>Demographic characteristics</td><td>• Seasonal marine mammal surveys by DESCCH and MMIRC.</td><td>• CI 5: Population demographic characteristics.</td></tr>
<tr><td>D1C4 (secondary)
Distributional range</td><td>No shrinkage in the population distribution for marine mammals.</td><td>Geographical distribution</td><td>• Seasonal marine mammal surveys by DESCCH and MMIRC.</td><td>• CI 3: Species distributional range.</td></tr>
<tr><td>D1C5 (secondary)
Habitat Condition</td><td>No human induced changes to relevant marine mammal habitats.</td><td>Habitat condition</td><td>Monitoring of Habitats (see Section 3.2.5, 3.2.6) used to inform this secondary criterion.</td><td>• CI 2: Condition of the habitat's typical species and communities.</td></tr>
<tr><th colspan="6">Monitoring Programme Details</th></tr>
<tr><td>Incidence reporting by the EPRU/DESCCH</td><td colspan="5">The EPRU/DESCCH maintains a records database with incidents and observations reported by different stakeholders, including NGOs, recreational users and enforcement authorities. This includes recording any observations of marine mammals and any incidents affecting marine mammals.

• Frequency of monitoring: Daily surveillance, subject to weather conditions.</td></tr>
</table>

Biodiversity – Marine Mammals	
	• **Methods/standards used:** - Regular patrols and defined monitoring transects covering the extent of BGTW. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observation / incidents.
Marine Wildlife Stranding Programme	DESCCH operates an investigative stranding programme and registers all reported strandings in BGTW. In conjunction with qualified experts, the DESCCH undertakes necropsies of marine wildlife, especially cetaceans and marine reptiles, including seabirds and fish. • **Frequency of monitoring:** Opportunistic • **Methods/standards used:** - Collation of information about the stranding event (e.g. time, date and location of stranding, environmental conditions, unusual event / markings on the individual, sex and species of individual, written description of areas examined on the carcass). - Necropsy (if possible), recording details of any rope or other gear or debris attached to the carcass during recovery, morphometric data (length etc.), photographic evidence, decomposition state of animal, etc; and collation of basic samples from skin, blubber and muscle, as well as stomach contents, parasites and teeth, stored for future analysis.
Seasonal marine mammal surveys by DESCCH and MMIRC	DESCCH and MMIRC conduct boat-based marine mammal surveys to monitor the occurrence and abundance of cetaceans in BGTW. • **Frequency of monitoring:** - Opportunistic surveys on cetaceans have been conducted since 2017. - Survey effort varies across the months during the year, depending on weather conditions and the availability of the DESCCH's research vessel Storm Petrel (9.8 m). The cetacean peak period is during summer (Jul – Sep). • **Methods/standards used:** - Opportunistic surveys are carried out in favourable conditions: Beaufort Sea state <3, visibility >1.5 km and no precipitation. - A double platform of observers is used consisting of 2-3 of observers. Information collected includes changes in the effort, environmental data and information about the group of cetaceans sighted[17]. The vessel tracks are recorded continuously with position plotted every 60 seconds. - The types of effort during each survey include: a) Dedicated search with observers constantly scanning the area and the boat not following any transect line; b) Photo identification, when the boat approaches a group of animals at close range with the aim of obtained images of the animals.
Monitoring developments & gaps	
Long-term monitoring patterns	No monitoring gaps to cover primary criteria have been identified. Secondary criteria require further development. Continuity and consistency of data collection has been identified as a critical requirement to be able to extract reliable statistics on the long-term status of marine mammal populations within BGTW.

[17] This includes number of sightings, species observed, sighting rates, behaviour (travelling/feeding/foraging/search dives/milling), group size, dolphin activity budgets and group composition (including age classification).

3.2.3 Marine Reptiles

Biodiversity – Marine Reptiles		
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.	
Environmental Status (2019)		Gibraltar partially achieved its GES for marine reptiles in the last assessment. Numerous indicators were considered favourable and there was an increase in the abundance of indicator species (Loggerhead turtles) since the previous assessment. However, more information is required to better assess if there have been any significant impacts from natural or human-induced factors.
GES Targets	D1T6 – Zero by-catch mortality of Loggerhead turtles.	
	D1T7 – Loggerhead turtle distribution and abundance are maintained.	
	D1T8 - Ensure that disturbance and pressures caused by human activity are below levels that can have a significant impact on feeding and migratory patterns, physiological health and/or long-term trends in behaviour. Specific pressures to assess include physical injury, chemical contamination, marine litter and underwater noise.	
Monitoring Strategy	The Monitoring Strategy for marine reptiles largely relies on data collected by the DESCCH/EPRU as part of their surveillance monitoring programme in BGTW, citizen science monitoring and marine mammal seasonal surveys conducted by MMIRC which also record any observed marine reptiles. Data collected are used to inform marine reptile by-catch mortality rates and abundance. Habitat condition is monitored by separate programmes under Section 3.2.5 and 3.2.6).	

How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D1C1 (primary) Bycatch mortality	No by-catch mortality recorded for marine reptile species.	Marine Reptiles [Using the following species as GES indicators: Loggerhead Turtle (*Caretta caretta*)]	Number of incidents	• Incidence Reporting by the DESCCH/EPRU • Marine Wildlife Stranding Programme.	• CI 12: By-catch of vulnerable or non-target species.
D1C2 (primary) Population abundance	No human induced decrease in marine reptile population abundance.		Abundance	• Incidence Reporting by the DESCCH/EPRU. • Seasonal marine mammal surveys by DESHCC and MMIRC. • Citizen science monitoring.	• CI 4: Population abundance of selected species.

Biodiversity – Marine Reptiles					
D1C3 (secondary) Population demographic characteristics	No human induced impacts upon marine reptile population demographic characteristic.		Demographics	• Equivalent to D1C1 and D1C2.	• CI 5: Population demographic characteristics.
D1C4 (secondary) Distributional range	No shrinkage in the population distribution for marine reptiles.		Distribution	• Equivalent to D1C2.	• CI 3: Species distributional range.
D1C5 (secondary) Habitat Condition	No human induced changes to relevant marine mammal habitats.		Habitat condition	Monitoring of Habitats (see Section 3.2.5, 3.2.6) used to inform this secondary criterion.	• CI 2: Condition of the habitat's typical species and communities.
Monitoring Programme Details					
Incidence reporting by the DESCCH/EPRU	DESCCH/EPRU maintains a records database with incidents and observations reported by different stakeholders, including NGOs, recreational users and enforcement authorities. This includes recording any observations of marine reptiles and any incidents affecting marine reptiles. • **Frequency of monitoring:** Daily surveillance, subject to weather conditions • **Methods/standards used:** - Daily patrols - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observation / incidents.				
Marine Wildlife Stranding Programme	DESCCH operates an investigative stranding programme and registers all reported strandings in BGTW. In conjunction with qualified experts, the DESCCH undertakes necropsies of marine wildlife, especially cetaceans and marine reptiles, including seabirds and fish. • **Frequency of monitoring:** Opportunistic • **Methods/standards used:** - Collation of information about the stranding event (e.g. time, date and location of stranding, environmental conditions, unusual event / markings on the individual, sex and species of individual, written description of areas examined on the carcass). - Necropsy (if possible), recording details of any rope or other gear or debris attached to the carcass during recovery, morphometric data (length etc.), photographic evidence, decomposition state of animal, etc; and collation of basic samples from skin, blubber and muscle, as well as stomach contents, parasites and teeth, stored for future analysis.				
Seasonal marine mammal surveys by DESCCH and MMIRC	DESCCH and MMIRC conduct boat-based marine mammal surveys to monitor the occurrence and abundance of cetaceans in BGTW. However, these surveys are also used to record marine reptile sightings. • **Frequency of monitoring:** - opportunistic surveys on cetaceans have been conducted since 2017. - survey effort varies across the months during the year, depending on weather conditions and the availability of the research vessel Storm Petrel (9.8 m) provided by DESCCH. The cetacean peak period is during summer (Jul – Sep).				

Biodiversity – Marine Reptiles	
	• **Methods/standards used:** - opportunistic surveys are carried out in favourable conditions: Beaufort Sea state <3, visibility >1.5 km, and no precipitation. - a double platform of observers is used, consisting of 2-3 of observers. Information collated includes changes in the effort, environmental data, and information about marine reptiles sighted. The vessel tracks are recorded continuously with position plotted every 60 seconds. - The types of effort during each survey include: a) dedicated search with observers constantly scanning the area and the boat not following any transect line b) photo identification, when the boat approaches a group of animals at close range with the aim to obtain images of the animals.
Monitoring developments & gaps	
Long-term monitoring patterns	No monitoring gaps to cover primary criteria have been identified. Secondary criteria require further development. Continuity and consistency of data collection has been identified as a critical requirement to be able to extract reliable statistics on marine reptile abundance / occurrence within BGTW.

3.2.4 Fish and Shellfish

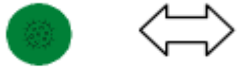
Biodiversity – Fish and Shellfish					
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions. D3 - Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.				
Environmental Status (2019)		The extent to which Gibraltar achieved its GES for fish and shellfish species was uncertain in the last assessment. Although some species were showing signs of recovery (e.g. Atlantic Bluefin tuna, Grouper, Meagre, etc.) there was not sufficient information to assess overall changes in abundance and distribution of all key species targeted in BGTW.			
GES Targets	D1T7 - Fish species distribution, population size and community composition are maintained.				
	D1T8 - Incidental by-catch is below levels that can threaten the long-term viability and recovery of fish populations.				
Monitoring Strategy	The Monitoring Strategy for fish and shellfish largely relies on recreational fishing data shared by local fishing clubs or recorded at designated landing points for specific species. Data collected by the DESCCH/EPRU as part of their surveillance monitoring programme in BGTW are also used for this descriptor. Habitat condition is monitored by separate programmes under Section 3.2.5 and 3.2.6).				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D1C1 (primary) Bycatch mortality	No by-catch mortality recorded for shellfish or fish species.	Fish species	Number of incidents	• Incidence Reporting by the DESCCH/EPRU.	• CI 12: By-catch of vulnerable or non-target species.

Biodiversity – Fish and Shellfish					
D1C2 (primary) Population abundance	No human induced decrease in shellfish or fish population abundance.		Abundance	• Monitoring of recreational catch data. • Monitoring of Bluefin tuna catch data.	• CI 4: Population abundance of selected species.
D1C3 (secondary) Population demographic characteristics	No human induced impacts upon shellfish or fish population demographic characteristic.		N/A	No monitoring available to inform this secondary criterion.	• CI 5: Population demographic characteristics.
D1C4 (secondary) Distributional range	No shrinkage in the population distribution for shellfish or fish.		Geographical distribution	• Tagging programmes for selected species.	• CI 3: Species distributional range.
D1C5 (secondary) Habitat Condition	No human induced changes to relevant shellfish or fish habitats.		Habitat condition	Monitoring of Habitats (see Section 3.2.5, 3.2.6) used to inform this secondary criterion.	• CI 2: Condition of the habitat's typical species and communities.
D3C1 - Fishing mortality rate in relation to maximum sustainable yields (MSY)			N/A	N/A	N/A[18]
D3C2 - Spawning Stock Biomass in relation to MSY					
D3C3 - age and size distribution of individuals					
Monitoring Programme Details					
Incidence reporting by the DESCCH/EPRU	The DESCCH/EPRU maintains a records database with incidents and observations reported by different stakeholders including NGOs, recreational users and enforcement authorities. This includes recording any incidents that could affect fish and shellfish. • **Frequency of monitoring:** Daily surveillance, subject to weather conditions. • **Methods/standards used:** - Daily patrols. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observation/ incidents.				
Monitoring of recreational catch data	DESCCH has recently expanded its monitoring programme of recreational catch data in 2021.				

[18] There are a number of CI's used to monitor commercial fishing stocks: CI 7: Spawning stock biomass; CI 8: Total landings; CI 9: Fishing Mortality; CI 10: Fishing effort; CI 11: Catch per unit of effort (CPUE) or Landing per unit of effort (LPUE) as a proxy;

Biodiversity – Fish and Shellfish	
	• **Frequency of monitoring:** Monthly • **Methods/standards used:** **-**Roving creel marine recreational fishing (MRF) MRF surveys are carried out in favourable conditions: Beaufort Sea state <3, visibility >1.5 km, and no precipitation; - Information collected on the data sheets are transferred to a bespoke QGIS database; - MRF roving creel surveys capture, date, time, location within BGTW, number of vessels fishing, catch, MRF methodology.
Monitoring of Bluefin tuna catch data	Bluefin Tuna catch data are collected during the open season and monitored by the DESCCH to ensure compliance with the Total Allowable Catch (TAC). • **Frequency of monitoring:** Catches have been recorded since 2015 and data are available for each Open Season. The TAC varies each year and is defined in legal notices under the Tuna Preservation Regulations 2014. • **Methods/standards used:** - Recording of weight, length and number of specimens caught. Stomach and tissue samples obtained for analysis.
Tagging programmes	Tagging programmes are carried out in BGTW with the aim of monitoring the movement and growth of selected demersal and migratory fish species. • **Frequency of monitoring:** Tagging programmes commenced in 2020. • **Methods/standards used:** - Target species include selected demersal fish species as well as Bluefin tuna. Data from fish caught include date, time, location, species, length, weight, fish tag number & angler.
Monitoring developments & gaps	
Improve data collection of selected fish species including molluscs.	New tagging and recreational catch monitoring programmes implemented. There is a need to further develop our understanding of fish populations in Gibraltar by expanding data collection of selected fish species e.g. Octopus, European Sea Bass, Dusky Grouper, Meagre spp, etc., as well increased involvement with regional fisheries organisations such as the GFCM.

3.2.5 Pelagic Habitats

Biodiversity – Pelagic Habitats					
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.				
Environmental Status (2019)		Gibraltar achieved its aim of GES for pelagic habitats in the last assessment. Chlorophyll-a annual average levels consistently recorded above High / Good status during the period between 2014 and 2019.			
GES Targets	D1T9 – Achievement of good water quality status in relation to chlorophyll-a and algal blooms in line with relevant thresholds.				
Monitoring Strategy	The Monitoring Strategy for pelagic habitats relies on data collected by DESCCH as part of their surveillance monitoring programme for BGTW including monitoring undertaken in line with the requirements of the Water Framework Directive (WFD). Data collected are used to inform habitat condition based on chlorophyll-a concentrations and plankton communities.				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D1C6 (primary) Condition of habitat type	Chlorophyll-a concentration below thresholds.	Chlorophyll-a	Annual average concentrations in water.	• WFD Coastal Monitoring Programme.	• CI 14: Chlorophyll-a concentration in water column.
	Plankton communities are maintained.	Plankton communities.	Species composition.	• WFD Coastal Monitoring Programme.	N/A
	No algal blooms recorded.	Algal blooms.	Number of bloom events / calendar year.	• Incidence Reporting and Analysis by the DESCCH and experts.	N/A
Monitoring Programme Details					
WFD Coastal Monitoring Programme.	Under the WFD, regular monitoring is undertaken within BGTW which can be used to assess the condition of pelagic habitats. • **Sites monitored:** - Site 1: Sandy Bay.				

Biodiversity – Pelagic Habitats	
	- Site 2: Camp Bay. - Site 3: Runway (northwest). - Site 4: Mid-harbour. • **Frequency of monitoring:** - the WFD monitoring programme commenced in 2009. Chlorophyll-a and phytoplankton samples are taken at monthly intervals. • **Methods/standards used:** - Parameters monitored: Chlorophyll-a and plankton community composition; - Collection of near-surface samples at selected sites and subsequent analysis; - Assessment based on Intercalibration Decision (2013/480/EU)[19], standards adopted by the Northeast Atlantic Geographical Intercalibration Group applied in the Western Iberian region.
Incidence reporting by the DESCCH/EPRU.	The DESCCH/EPRU maintains a database with incidents and observations reported by different stakeholders including recreational users, NGOs and enforcement authorities. This includes recording any incidents associated with algal blooms. • **Frequency of monitoring:** Daily surveillance. • **Methods/standards used:** - Monthly dedicated sampling regime undertaken by DESCCH. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observation / incidents.
Monitoring developments & gaps	
Increased number of monitoring stations and zooplankton monitoring.	The number of monitoring locations and depth stations have been increased to better assess (a) vertical chlorophyll-a profiles particularly in deeper/offshore locations within BGTW and (b) potential anthropogenic impacts on phytoplankton communities. Integration of additional regionally harmonised metrics (other than chlorophyll-a) in future assessments is required particularly in relation to phytoplankton and zooplankton diversity and abundance.

[19] Direction (2013/480/EU) available at https://publications.europa.eu

3.2.6 Benthic Habitats

Biodiversity – Benthic Habitats						
Qualitative descriptor for determining GES	D1 - Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions. D6 - Sea floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular are not adversely affected.					
Environmental Status (2019)		Although some benthic habitat types have a favourable conservation status and there has been no reduction in physical extent, the degree to which Gibraltar had achieved GES for benthic habitats overall was uncertain in the last assessment. There was not enough information to assess changes in the condition of all key benthic habitat types found in BGTW.				
GES Targets	D1T10 - No deterioration in qualifying features of designated sites, including a reduction of extent, in line with targets applied in hard and soft substrate habitats covered by the Habitats Directive.					
	D6T11 – No habitat loss caused by human activity.					
	D6T12 - The species composition of benthic habitat shows a positive trend, with an increased number of specimens / diversity / abundance.					
Monitoring Strategy	There are currently a number of existing monitoring and assessment programmes targeting benthic habitats including ad-hoc project specific assessments. New metrics developed to monitor anthropogenic pressures on benthic habitats.					
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators						
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**	
D6C1 (Primary) Spatial extent and distribution of physical loss (permanent change) of the natural seabed.	There are no increases in the spatial extent and distribution of physical loss of the natural seabed.		Physical loss.	- High-resolution bathymetry surveys. - Benthic ecology surveys. - Project based surveys and impact assessments.	CI 1: Habitat distributional range (EO1) to also consider habitat extent as a relevant attribute. CI 15: Location and extent of the habitats impacted directly by hydrographic alterations.	
D6C2 (Primary) Spatial extent and distribution of physical disturbance pressures on the seabed.	The spatial extent and distribution of physical disturbances of the natural seabed decreases.		Physical disturbance.	- Equivalent to D6C1 and Surveillance monitoring and quantitative analysis of anthropogenic pressures affecting benthic habitats.		
D6C3 (Secondary) Spatial extent of each habitat type which is adversely affected by physical disturbance.	The spatial extent of habitats affected by physical disturbances of the natural seabed decreases.		Physical disturbance.	- Equivalent to D6C1 and Surveillance monitoring and quantitative analysis of anthropogenic pressures affecting benthic habitats.		

Biodiversity – Benthic Habitats				
D6C4 (Primary) Spatial extent of loss of the habitat type.	There are no additional losses in habitat types due to human activity.	Physical loss.	- Equivalent to D6C1.	
D6C5 (Secondary) extent of adverse effects from anthropogenic pressures on the condition of the habitat type.	Habitat condition is not adversely affected by anthropogenic pressures.	Extent of pressures.	- Equivalent to D6C1 and Surveillance monitoring and quantitative analysis of anthropogenic pressures affecting benthic habitats.	
Monitoring Programme Details				
Benthic habitat monitoring programme sources.	- High-resolution bathymetry surveys of BGTW; - Benthic ecology surveys (e.g. habitat mapping, protected species assessments) conducted by DESCCH in BGTW including citizen science data; - Project-based surveys and impact assessments (e.g. EIAs) conducted to ascertain potential habitat loss; - Surveillance monitoring and quantitative analysis of individual pressures affecting benthic habitats e.g. % coverage invasive species, % area affected by anchoring activity, % area affect by marine macro-litter, etc.			
Monitoring developments and gaps				
Benthic Monitoring.	New pressure metrics developed. Revised high-resolution habitat mapping exercise targeting deep-water benthic habitats, in particular, planned for 2021/2022. Improved knowledge of key benthic habitat types and species together with the impact of human pressures required moving forward.			

3.2.7 Ecosystems

Biodiversity – Ecosystems		
Qualitative descriptor for determining GES	D4 - All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.	
Environmental Status (2019)		The extent to which Gibraltar had achieved GES for food webs was uncertain in the last assessment. Although seabird, cetacean and marine reptile numbers were stable and/or increasing, there was still uncertainty in other trophic guilds e.g. fish. More indicators and data are required to develop a robust assessment of anthropogenic impacts on food webs in BGTW.
GES Targets	D4T13 - The health of the marine food web is not significantly adversely affected by human activities in BGTW.	
Monitoring Strategy	The Monitoring Strategy for ecosystems presently relies on the monitoring programmes specified for different species and habitats groups, as described in sections 3.2.1 to 3.2.6.	

Biodiversity – Ecosystems					
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D4C1 (primary) diversity of the trophic guild is not adversely affected due to anthropogenic pressures.	The diversity (species composition and their relative abundance) of the trophic guild is not adversely affected due to anthropogenic pressures.		Diversity	Data collated as part of monitoring programmes for seabirds, marine mammals, marine reptiles, fish and shellfish and pelagic habitats.	N/A
D4C2 (primary) balance of total abundance between the trophic guilds is not adversely affected due to anthropogenic pressures.	The balance of total abundance between the trophic guilds is not adversely affected due to anthropogenic pressures.		Abundance		
D4C3 (secondary) size distribution of individuals across the trophic guild is not adversely affected due to anthropogenic pressures.	The size distribution of individuals across the trophic guild is not adversely affected due to anthropogenic pressures.		Size distribution	Equivalent to D4C1 & D4C2	
D4C4 (secondary) Productivity of the trophic guild is not adversely affected due to anthropogenic pressures.	Productivity of the trophic guild is not adversely affected due to anthropogenic pressures.		Productivity	Equivalent to D4C1 & D4C2	
Monitoring Programme Details					
Equivalent to D4C1 & D4C2.	Indicators / criteria informed by aforementioned descriptor elements focusing on Seabirds, Marine Mammals, Marine Reptiles, Fish and Shellfish and Pelagic Habitats monitoring.				
Monitoring developments and gaps					
Additional indicators required to improve assessment.	There is a need for additional monitoring data and indicators for some trophic guilds, e.g. fish and zooplankton, to help improve our understanding of food webs in BGTW. These data will be available for the next assessment. Improved harmonisation with indicators being developed at a regional level is also required.				

3.3 Non-Indigenous Species (Descriptor 2)

Non-Indigenous Species		
Qualitative descriptor for determining GES	D2 - Non-indigenous species (NIS) introduced by human activities are at levels that do not adversely alter the ecosystem.	
Environmental Status (2019)		Gibraltar did not achieve its aim of GES for NIS in the last assessment. The number and abundance of NIS identified within BGTW had increased over the reporting period. However, the ability to detect new NIS has improved significantly.

Non-Indigenous Species					
GES Targets	D2T14 - Reduced number of new NIS identified within BGTW.				
	D2T15 - Decrease abundance and spread of established invasive NIS within BGTW.				
Monitoring Strategy	The Monitoring Strategy for NIS relies on data collected by DESCCH as part of their surveillance monitoring programme in BGTW including its citizen science programme.				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D2C1 (primary) Newly introduced NIS.	The number of non-indigenous species, which are newly introduced via human activity into the wild, in each assessment period (6 years) measured from the reference year as reported for the Initial Assessment is minimised and where possible reduced to zero.		Number of species newly introduced.	• Incidence Reporting by the DESCCH/EPRU. • Benthic and intertidal surveys.	N/A
D2C2 (secondary) Abundance and spatial distribution of established non-indigenous species.	Abundance of NIS introduced by human activities reduced Impacts of NIS reduced.	N/A	Abundance and spatial distribution.	Equivalent to D2C2	• CI 6: Trends in abundance, temporal occurrence, and spatial distribution of non-indigenous species, particularly invasive, non-indigenous species, notably in risk areas.
D2C3 (secondary) Proportion of species group or spatial extent.	Proportion of the species group or spatial extent of the broad habitat type which is adversely altered due to non-indigenous species, particularly invasive non-indigenous species.	N/A	Proportion of species group.	Equivalent to D2C2	N/A
Monitoring Programme Details					
Benthic and intertidal habitat monitoring programme sources	- Benthic and intertidal ecology surveys (e.g. habitat mapping, protected species assessments) conducted by DESCCH in BGTW including citizen science data;				

Non-Indigenous Species	
	- Project-based surveys and impact assessments (e.g. EIAs); - Surveillance monitoring and quantitative analysis of individual pressures affecting benthic and intertidal habitats.
Monitoring development and gaps	
NIS Monitoring – Improved harmonisation with regional monitoring.	The Updated Initial Assessment (2019) reported that the number and abundance of NIS within BGTW had increased. Targeted NIS monitoring has improved and allowed for this assessment with increased confidence. The development of a NIS watch list of species that could affect BGTW, in conjunction with the GB Non-Native Species Secretariat, has also been a notable and beneficial development. There is now a greater need for regional collaboration, awareness and outreach work in relation to these species as part of the alert system in place.

3.4 Eutrophication (Descriptor 5)

Eutrophication		
Qualitative descriptor for determining GES	D5 - Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.	
Environmental Status (2019)		Gibraltar achieved GES for Eutrophication in the last assessment. High quality conditions were consistently reported for DIN, Chlorophyll a and DO in establishing long-term monitoring stations.
GES Targets	D5T16 – Nutrient, DO and chlorophyll a concentrations do not exceed relevant thresholds.	
Monitoring Strategy	The Monitoring Strategy for eutrophication largely relies on data collected by DESCCH as part of its surveillance monitoring programme in BGTW especially monitoring undertaken in line with the requirements of the Water Framework Directive (WFD). Data collected are used to assess the concentration of nutrients, chlorophyll-a and dissolved oxygen levels in selected monitoring stations. Algal bloom events are also being recorded.	

How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D5C1 (primary) nutrient concentrations.	Dissolved Inorganic Nitrogen (DIN) concentration below thresholds .	DIN	Concentration in water.	• WFD Coastal Monitoring Programme.	• CI 13: Concentration of key nutrients in water column.
D5C2 (primary) chlorophyll a concentration.	Chlorophyll- a concentration below thresholds.	Chlorophyll-a	Concentration in water.	• WFD Coastal Monitoring Programme.	• CI 14: Chlorophyll-a concentration in water column.

Eutrophication				
D5C3 (secondary) harmful algal blooms.	The number, spatial extent and duration of harmful algal bloom events are not at levels that indicate adverse effects of nutrient enrichment.	Number of bloom events / calendar year.	• Incidence Reporting by the DESCCH and NGOs e.g. Nautilus Project.	N/A
D5C4 (secondary) photic limit.	The photic limit (transparency) of the water column is not reduced, due to increases in suspended algae, to a level that indicates adverse effects of nutrient enrichment.	Turbidity.	• WFD Coastal Monitoring Programme	Secchi depth as proxy for the thickness of the euphotic zone.
D5C5 (primary) dissolved oxygen.	Dissolved Oxygen (DO) concentration is above 1.6 mg/L (DO)	Concentration in water.	• WFD Coastal Monitoring Programme	N/A
D5C6 (secondary) opportunistic macroalgae.	The abundance of opportunistic macroalgae is not at levels that indicate adverse effects of nutrient enrichment.	Number and abundance of opportunistic algae in selected monitoring stations.	• WFD Coastal Monitoring Programme	N/A
D5C7 (secondary) macrophyte communities.	The species composition and relative abundance or depth distribution of macrophyte communities achieve values that indicate there is no adverse effect due to nutrient enrichment.	N/A	N/A. Macrophytes are not presently found in BGTW.	N/A
D5C8 (secondary) macrofaunal communities.	The species composition and relative abundance of macrofaunal communities, achieve values that indicate that there is no adverse effect due to nutrient and organic enrichment.	Sensitive vs. opportunistic benthic macroinvertebrates.	• BOPA macroinvertebrate index.	N/A
Monitoring Programme Details				
WFD Coastal Monitoring Programme (includes algal bloom and benthic macroinvertebrate monitoring).	Under the WFD, regular monitoring is undertaken within BGTW, which can be used to assess eutrophication conditions. • **Sites monitored:** - Site 1: Sandy Bay. - Site 2: Camp Bay. - Site 3: Runway (northwest). - Site 4: Mid-harbou.r • **Frequency of monitoring:** - The WFD monitoring programme commenced in 2009; - Chlorophyll-a and DIN samples are taken at monthly intervals (together with other nutrient levels). DO is measured at monthly intervals;			

Eutrophication	
	- Benthic macroinvertebrate samples are collected from all monitoring stations in line with WFD frequency requirements; - Ad hoc samples of plankton blooms are collected for analysis and identification whenever a bloom is recorded. • **Methods/standards used:** - Parameters monitored in water: DIN, chlorophyll-a and DO among others; - Collection of samples at selected sites and subsequent analysis. For chlorophyll-a, the assessment is based on Intercalibration Decision (2013/480/EU)[19] adopted by the Northeast Atlantic Geographical Intercalibration Group and applied in the Western Iberian region; - For DIN and DO, the assessment is based on the River Basin District Typology Directions 2010[20].
Incidence reporting by the DESCCH/EPRU.	The DESCCH/EPRU maintains a records database with incidents and observations reported by different stakeholders, including recreational users and enforcement authorities. This includes recording any incidents associated with algal blooms. • **Sites monitored:** BGTW • **Frequency of monitoring:** Daily surveillance, subject to weather conditions • **Methods/standards used:** - Daily patrols. - Reporting protocols in place with relevant stakeholders using designated points of contact to communicate any observation / incidents.
Monitoring developments and gaps	
Long-term water column profile data and increased number of monitoring stations.	Since the last assessment, ad hoc bloom monitoring has recorded numerous bloom events of *Noctulica scintillans* in different parts of BGTW and in the wider Alboran region near Gibraltar. This is being closely monitored by the DESCCH. Additional monitoring sites have been established as part of the wider coastal water monitoring programme to better assess point source discharges in BGTW. Although the number of stations is already deemed suitable, deep-water (offshore) sites in the 2.5-3 nm range limit have also been added to better improve the representativity of the existing monitoring programme.

3.5 Hydrographic Conditions (Descriptor 7)

Hydrographic Conditions		
Qualitative descriptor for determining GES	D7 - Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.	
Environmental Status (2019)		Gibraltar achieved GES for hydrographic conditions in the last assessment. Neither habitats nor species were shown to have been affected by significant hydrographical changes during the assessment period.
GES Targets	D7T17 – No impacts on biological components considered under Descriptors 1, 4, and 6 reported to be caused by hydrographical changes in BGTW.	

[20] The River Basin Districts Typology, Standards and Groundwater threshold values (WFD) (England and Wales) Directions 2010 available at https://gweddill.gov.wales/docs

Hydrographic Conditions				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators				
Criteria	**Indicators**	**Element**	**Monitoring Programme**	**Regional CI**
D7C1 (secondary) spatial extent and distribution of hydrographic condition alterations.	No significant human-induced changes to the spatial extent and distribution of hydrographical conditions.		• EIAs; • Bathymetric surveys; • Benthic and intertidal surveys; • WFD coastal water programme.	• CI 16: Length of coastline subject to physical disturbance due to the influence of man-made structures. • CI 25: Candidate Indicator: Land use change.
D7C2 (secondary) spatial extent of affected habitat types.	No significant human-induced changes to the spatial extent of species or habitats.		Equivalent to D7C1.	• CI 15: Location and extent of the habitats impacted directly by hydrographic alterations.
Monitoring developments and gaps				
Hydrographic Monitoring.	The Gibraltar Port Authority (GPA) has recently established the Gibraltar Hydrographic Committee, which the DESCCH is part of, in order to coordinate more regular hydrographical surveys. These surveys will be used to better inform hydrographic conditions and/or improve knowledge, informing secondary criteria D7C1 (spatial extent and distribution of hydrographic condition alterations) and D7C2 (spatial extent of affected habitat types). There continues to be a need for improved regional cooperation for this descriptor especially in the Bay of Gibraltar.			

3.6 Contaminants (Descriptor 8 and 9)

Contaminants		
Qualitative descriptor for determining GES	D8 - Concentrations of contaminants are at levels not giving rise to pollution effects; D9 - Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.	
Environmental Status (2019)		The last assessment revealed that GES had largely been achieved. Water quality data collected since 2014 showed that concentrations of chromium VI, copper, zinc, benzene, DEHP, lead and nickel had consistently been recorded below threshold values. TBT concentrations in water were observed to be gradually decreasing. Values for microbial contamination showed no significant changes in relation to previous assessments with excellent water quality recorded for all bathing sites except for Western Beach. Although data are limited,

Contaminants					
		some contaminants in edible tissue were detected above max. levels and this requires further monitoring moving forward, including the use of different indicator species to better improve future assessments.			
GES Targets	D8T18 - Concentrations of contaminants in water, sediment or biota are kept within agreed levels, according to the WFD, and these concentrations are not increasing.				
	D8T19 - Concentrations of substances identified within relevant legislation and international obligations are below the concentrations at which adverse effects are likely to occur (e.g. are less than Ecological Quality Standards applied within the Water Framework Directive).				
	D8T3 - Decreasing trend in the occurrences of acute pollution events.				
Monitoring Strategy	The Monitoring Strategy for contaminants relies on data collected by the DESCCH as part of their surveillance monitoring programme in BGTW including monitoring undertaken for the purposes of the Water Framework Directive (WFD) such as the Biota Monitoring Programme.				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D8C1 (primary) concentrations of contaminants.	Contaminants concentration below thresholds.	Cr IV, Cu, Zn, Benzene, DEHP, Pb, Ni, TBT, *Escherichia Coli*, *Intestinal Enterococci* [although monitoring covers a wider range of pollutants, these are the elements used for subsequent assessment]	Concentration in water. Concentration in sediment.	• WFD Coastal, including Biota, Monitoring Programme. • Bathing Sites Water Quality Monitoring Programme.	• CI 17: Concentration of key harmful contaminants measured in the relevant matrix. • CI 21: Percentage of intestinal enterococci concentration measurements within established standards.
D8C2 (secondary) species health and habitat condition.	The health of species and the condition of habitats are not adversely affected by contaminants including cumulative effects.		*Under review.*	• Equivalent to D8C1 and additional monitoring using new indicators under review (e.g. Imposex in molluscs, Fish disease, Acetylcholinesterase activity (AChE), Lysosomal membrane stability (LMS) and Micronuclei frequencies (MN);	• CI 18: Level of pollution effects of key contaminants where a cause and effect relationship has been established.

Contaminants				
			• Data collated to assess D1, D5 & D6; • BOPA index.	
D8C3 (primary) significant acute pollution events.	The spatial extent and duration of significant acute pollution events are minimised.	Number of acute pollution events per year.	• Incidence Reporting by the DESCCH/EPRU; • Benthic and intertidal surveys	• CI 19: Occurrence, origin (where possible), and extent of acute pollution events and their impact on biota affected by this pollution.
D8C4 (secondary) adverse effects of significant acute pollution events.	The adverse effects of significant acute pollution events on the health of species and on the condition of habitats (such as their species composition and relative abundance) are minimised and, where possible, eliminated.	*Under review.*	• Equivalent to D8C1 and additional monitoring using new indicators under review (e.g. Imposex in molluscs, Fish disease, Acetylcholinesterase activity (AChE), Lysosomal membrane stability (LMS) and Micronuclei frequencies (MN); • Data collated to assess D1 & D6.	
D9C1 (primary) contaminants in edible tissues.	Contaminants in edible tissues below thresholds.	Levels of contaminants in selected biota.	• Biota monitoring Programme (*Mytilus edulis/galloprovinciallis* and *Diplodus sargus* tissue analyses).	• CI 20: Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory

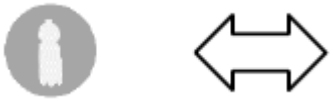
Contaminants				
				levels in commonly consumed seafood.
Monitoring Programme Details				
WFD Coastal, including Biota Monitoring Programme.	Under the WFD, regular monitoring is undertaken within BGTW which is used to assess contaminant concentrations in water, biota and sediment. • **Sites monitored:** - Site 1: Sandy Bay. - Site 2: Camp Bay. - Site 3: Runway (northwest). - Site 4: Mid-harbour. • **Frequency of monitoring:** - the WFD monitoring programme commenced in 2009; - Chemical samples are taken at quarterly intervals; sediment samples are taken at quarterly or biannual intervals; - Biota sampling is carried out every 3 years. • **Methods/standards used:** - Parameters monitored in water: Cr IV, Cu, Zn, Benzene, DEHP, Pb, Ni, TBT amongst other contaminants; - Parameters monitored in sediment: TBT among other contaminants; - For Cr IV, Cu and Zn assessment is based on the River Basin District Typology Directions 2010. UKTAG (2014); For Benzene, DESHP, Pb, Ni and TBT, assessment is based on Environmental Quality Standards (EQS) defined in the WFD Daughter Directive (2008/105/EC); - Biota Monitoring: Commission Regulation (EC) No. 1881/2006 sets maximum levels for certain contaminants in food and those relevant to fish and seafood.			
Bathing Sites Water Quality Monitoring Programme.	The Bathing Sites Water Quality Monitoring Programme is run by the Environmental Agency Gibraltar[21] to monitor and maintain water quality in designated bathing waters. • **Sites monitored:** - Camp Bay. - Little Bay. - Catalan Bay. - Eastern Beach. - Sandy Bay and			

[21] Environmental Agency Gibraltar, 2016. Monitoring – Bathing Water. Available at: http://environmental-agency.gi [Accessed 04/12/2020].

Contaminants	
	- Western Beach. - Bathing Pavilion Europort Avenue (Monitoring commenced in 2012.) - Mid Harbours (Monitoring commenced in 2019). • **Frequency of monitoring:** - Monitoring of bathing sites commenced in 2006 and is undertaken on a monthly basis throughout the year with a minimum of four samples taken during every bathing season. • **Methods/standards used:** - Parameters monitored: *E. Coli* and *intestinal enterococci*. - Methodology as per Environment (Quality of Bathing Water) Regulations 2009[22]. - Bathing Site Quality Reports are produced annually.
Incidence reporting by the DESCCH/EPRU.	The DESCCH/EPRU maintains a records database with incidents and observations reported by different stakeholders including NGOs, recreational users and enforcement authorities. This includes recording any pollution incidents, such as oil spills. • **Sites monitored:** BGTW. • **Frequency of monitoring:** Daily surveillance subject to weather conditions. • **Methods/standards used:** - Daily patrols. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observations / incidents.
Monitoring developments and gaps	
Monitoring adverse effects of contaminants on species health.	Data collected for this Descriptor have been increasing steadily since the last monitoring programme was published in 2015. Further work on new indicators used to measure adverse effects of chemical contaminants on species is required and this is being spearheaded by the DESCCH. It includes an assessment of the following indicators: Imposex in molluscs, Fish disease, Acetylcholinesterase activity (AChE), Lysosomal membrane stability (LMS) and Micronuclei frequencies (MN). Data collected on the appropriate indicator(s) will be used as part of the next assessment. Harmonisation with regional indicators is one of the determining criteria for the chosen indicators(s) moving forward.

[22] HM Government of Gibraltar, 2013. Environment (Quality of Bathing Water) Regulations 2009. Available at: https://www.gibraltarlaws.gov.gi [Accessed 04/12/2020].

3.7 Marine Litter (Descriptor 10)

Marine Litter					
Qualitative descriptor for determining GES	D10 - Properties and quantities of marine litter do not cause harm to the coastal and marine environment.				
Environmental Status (2019)		The 2019 assessment revealed that the extent to which Gibraltar had achieved its GES for marine litter was uncertain although there was an indication that the amount of beach litter remained consistent since 2012. There were limited long-term baseline data available to assess changes in abundance, distribution and composition of marine macro-litter. In addition, data on sea floor and micro-litter were poor or lacking respectively. Based on the data available, together with evidence from regional monitoring programmes, it was deemed unlikely that this descriptor would achieve GES in the near future.			
GES Targets	D10T20 - The amount of litter and its degradation products on coastlines is reduced.				
	D10T21 – A decrease in the number of items of litter on the seabed.				
	D10T22 – A downward trend in the amount of marine macro-litter found in marine reptiles, mammals, birds and fish.				
	D10T23 – Develop an appropriate indicator to monitor trends in the amount, distribution and composition of micro-litter.				
Monitoring Strategy	The Monitoring Strategy for marine macro-litter largely relies on data collected by The Nautilus Project and the Environmental Safety Group, as well as surveillance monitoring and marine stranding data collected by the DESCCH. Reference is also made to regional sources of information as well as trends observed in adjacent waters outside BGTW.				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D10C1 (primary) composition, amount and distribution of litter.	The composition, amount and spatial distribution of litter on the coastline, in the surface layer of the water column and on the seabed are at levels that do not cause harm to the coastal and marine environment.	Litter on the coastline.	Composition, amount and spatial distribution of litter on the coastline, in the surface layer of the water column.	• Coastline macro-litter data collected by NGOs such as the ESG and Nautilus Project; • Floating and seafloor macro-litter surveys.	• CI 22: Trends in the amount of litter washed ashore and/or deposited on coastlines (including analysis of its composition, spatial distribution and, where possible, source.)
D10C2 (primary) composition, amount and distribution of micro-litter.	The composition, amount and spatial distribution of micro-litter on the coastline, in the surface layer of the water column and in seabed sediment are at levels that do not cause harm to the coastal and marine environment.		Micro-plastic particle levels in the water column	• Micro-plastic particle levels in the water column and sediment.	• CI 23: Trends in the amount of litter in the water column including

Marine Litter					
			and sediment.		microplastics and on the seafloor.
D10C3 (secondary) amount of litter / micro-litter ingested.	The amount of litter and micro-litter ingested by marine animals is at a level that does not adversely affect the health of the species concerned.		*In development.*	• Incidence Reporting by the DESCCH including citizen science data; • Micro-plastic particle levels in fish; • Marine wildlife stranding programme.	• CI 24 (Candidate): Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds and marine turtles.
D10C4 (secondary) number of individuals affected by litter.	The number of individuals of each species which are adversely affected due to litter, such as by entanglement, other types of injury or mortality, or health effects.	Number of individuals.	*In development.*	• Incidence Reporting by the DESCCH including citizen science data; • Marine wildlife stranding and necropsy programme.	
Monitoring Programme Details					
NGO (Nautilus Project and ESG) led Clean-up campaigns.	Shoreline clean-up campaigns are organised on a regular basis by the Nautilus Project and also by the ESG as part of their Clean up the world campaign, to help raise awareness on marine litter and engage the local community in marine conservation issues of concern. • **Sites monitored:** Entirety of Gibraltar's coastline especially public beaches. • **Frequency of monitoring:** Varies across the year. • **Methods/standards used:** - Physical collection of marine litter found in beaches or along the coastline. - Composition and weight of litter collected.				

Marine Litter	
Incidence reporting by the DESCCH/EPRU.	The DESCCH/EPRU maintains a records database with incidents and observations reported by different stakeholders, including recreational users and enforcement authorities. This includes recording any incidents associated with marine litter and/or affecting marine wildlife. • **Sites monitored:** BGTW. • **Frequency of monitoring:** Daily surveillance, subject to weather conditions. • **Methods/standards used:** - Daily patrols. - Reporting protocols in place, with relevant stakeholders using designated points of contact to communicate any observation / incidents.
Marine wildlife stranding programme.	DESCCH operates an investigative stranding programme and registers all reported strandings in BGTW. In conjunction with qualified experts, the DESCCH undertakes necropsies of marine wildlife, especially cetaceans and marine reptiles, including seabirds and fish. • **Frequency of monitoring:** Opportunistic. • **Methods/standards used:** - Collation of information about the stranding event (e.g. time, date and location of stranding, environmental conditions, unusual event / markings on the individual, sex and species of individual, written description of areas examined on the carcass). - Necropsy (if possible), recording details of any rope or other gear or debris attached to the carcass during recovery, morphometric data (length etc.), photographic evidence, decomposition state of animal, etc; and collation of basic samples from skin, blubber and muscle, as well as stomach contents, parasites and teeth, stored for future analysis.
Monitoring developments and gaps	
Improvements in quantitative data collection and regional harmonisation.	Considerable quantitative data collection improvements have been recorded since the 2015 Monitoring Programme particularly in relation to shoreline marine litter composition, weight and distribution. New indicators have been defined and more are currently in development (e.g. seafloor and stomach macro-litter and micro-plastics in the water column, fish and sediment). We will also ensure that indicators applied are comparable with those used in the wider Western Mediterranean region.

3.8 Underwater Noise (Descriptor 11)

Underwater Noise					
Qualitative descriptor for determining GES	D11 - Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.				
Environmental Status (2019)		The achievement of GES for underwater noise in BGTW was uncertain. Maritime activity in the western anchorage seems to have decreased during the last assessment, although an increase in nearshore recreational vessel activity was reported that might have resulted in an intermittent and localised deterioration of underwater noise levels in some coastal areas. There were no significant changes in land-based sources of underwater noise. Overall, there were limited baseline data available to assess general changes in underwater noise conditions in BGTW.			
GES Targets	D11T24 - Loud, low and mid-frequency impulsive sounds introduced into the marine environment through anthropogenic activities are managed below regionally agreed levels.				
	D11T25 - Continuous low-frequency sound inputs are managed below regionally agreed levels.				
Monitoring Strategy	The Monitoring Strategy for underwater noise relies on data collected by the DESCCH and University of Gibraltar. Vessel activity data recorded by the GPA are also used as a proxy measure. Data collected are being used to assess underwater noise ambient levels and improve our understanding of pressures exerted by maritime traffic in particular.				
How progress towards GES is measured through monitoring / data collection and relationship with regional common indicators					
Criteria	**Indicators**	**Element**	**Parameter**	**Monitoring Programme**	**Regional CI**
D11C1 (Primary) –anthropogenic impulsive sound sources.	The spatial distribution, temporal extent, and levels of anthropogenic impulsive sound sources do not exceed levels that adversely affect populations of marine animals.	Sound Exposure Level (SEL), Peak Sound Pressure Level (PSPL).	Number of days and distribution within a calendar year and spatial distribution. Average noise levels per quarter or month.	• Ambient Underwater Noise Monitoring Programme. • Underwater Noise Register.	• CI 26 (Candidate): Proportion of days and geographical distribution where loud, low, and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals.
D11C2 (Secondary) anthropogenic continuous low-frequency sound.	The spatial distribution, temporal extent and levels of anthropogenic continuous low-frequency sound do not exceed levels that adversely affect populations of marine animals.	Ambient noise level within the 1/3 octave bands 63 and 125 Hz.	Underwater sound level per unit area.	• Ambient Underwater Noise Monitoring Programme. • Underwater Noise Register.	• CI 27 (Candidate): Levels of continuous low frequency sounds with the use of models as appropriate.

Underwater Noise					
				• Automatic Identification System (AIS) data.	

Monitoring Programme Details	
Ambient Underwater noise monitoring Programme.	Underwater noise monitoring is conducted by the DESCCH and University of Gibraltar in order to assess ambient underwater noise levels. • **Sites monitored**: BGTW, characterised by measurements at three different sites; - Eastside. - Bay of Gibraltar (North). - Southern Waters of Gibraltar Marine Protected Area. • **Frequency of monitoring**: - Ongoing campaign operating between June and Dec 2021. • **Methods/standards used**: - Parameters monitored: Sound Exposure Level (SEL), Peak Sound Pressure Level (PSPL) and Peak to Peak SPL (P2P SPL). - Hydrophone deployments at selected sites between May and July when the (average) incidence of high wind speeds are low and sea state is calmer. - Short measurement cycles implemented with regular checks to minimise risk of equipment loss.
Underwater Noise Register.	The DESCCH has developed and continues to refine an Underwater Noise Register. Information about impulsive sound sources is collected by the DESCCH from the Gibraltar Planning Portal, surveillance monitoring and voluntary sources. Similar to the wider UK approach, the Register will help gather data to monitor cumulative pressure, assess the potential for disturbance impacts, understand thedistribution of impulsive sound, and if needed, inform management activities in BGTW.
Automatic Identification System (AIS) data.	The GPA monitor vessel AIS activity and these data can be used by the DESCCH, when required for defined assessment periods, to better assess marine shipping traffic in BGTW and thus provide a useful metric to compare with the Ambient Underwater Noise Monitoring Programme data outputs.
Monitoring developments and gaps	
Improved baseline and regional assessments.	Ongoing collaboration between the DESCCH and the University of Gibraltar has improved baseline data on ambient underwater noise levels in the Southern Waters of Gibraltar MPA. Further work is required in different areas of BGTW to further build on existing dataset. Underwater Noise Register created. There remains a need for improved regional coordination and assessment of underwater noise monitoring in the Straits of Gibraltar and wider Western Mediterranean region.