

Good Environmental Status and Environmental Targets:

Descriptors 1, 4 and 6

1.1 Introduction

This report outlines the Good Environmental Status (hereinafter referred to as 'GES') and environmental targets established to achieve this GES in terms of MSFD Descriptors 1, 4 and 6 reproduced hereunder:

- **Descriptor 1:** 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
- **Descriptor 4:** All elements of 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
- **Descriptor 6:** 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.

All three descriptors are relevant to GES determination for benthic and pelagic habitats, while Descriptor 1 is also relevant to species or functional groups which have been considered by the MSFD Initial Assessment, namely seabirds, fish, reptiles and cetaceans.

1.2 Selection of relevant criteria and indicators

Determination of GES was made in consideration of the criteria and indicators stipulated by Commission Decision 2010/477/EU deemed relevant to Malta. Relevant criteria and indicators were selected on the basis of the outcome of the Initial Assessment, with the current data scenario being a major influence throughout this process.

Current limitations in data did not permit application of all criteria and indicators for all marine habitats or species/functional groups. Any criteria and indicators which were not applied for the purposes of the Initial Assessment due to data limitations are not considered relevant for the purposes of GES determination in the first MSFD reporting cycle. This is to ensure that only well-informed realistic targets are set. Determination of GES and environmental targets for criteria and indicators which could not be addressed by the Initial Assessment would be premature and may result in the establishment of unattainable targets.

The criteria and indicators which will not be addressed in this first reporting cycle, together with the necessary justifications, are listed in Table 1.

Table 1: Criteria and Indicators listed in Commission Decision 2010/477/EU for Descriptors 1, 4 and 6, which are not being considered for determination of GES and environmental targets.

Criteria	Indicators	Justification
Descriptor 1		
1.1 Species Distribution	1.1.2 Distributional Pattern within the latter, where appropriate	While distributional pattern has been tentatively described for some species groups by the MSFD Initial Assessment, there is no clear definition of this indicator for all species groups under consideration. Given the lack of methodological standards in determining distributional pattern, the definition of GES for this indicator is deemed premature.
1.3 Population Condition	1.3.2 Population genetic structure, where appropriate	Population genetics is a field which has only recently started being addressed for a very limited number of species. Therefore knowledge on population genetics is too limited to permit development of GES at this stage.
1.4 Habitat Distribution	1.4.2 Distributional Pattern	At this stage, there is no clear definition of what distributional pattern would mean for the different benthic and water column habitat types. This, coupled with the lack of methodological standards for applying this indicator, presents difficulties in establishing GES for distributional pattern for marine habitats.
1.5 Habitat Extent	1.5.2 Habitat Volume, where relevant	All habitat types under consideration by the MSFD Initial Assessment were assessed on the basis of habitat extent through indicator 1.5.1 Habitat Area rather than 'Habitat Volume'. Therefore development of GES for this particular indicator is not deemed relevant.
1.7 Ecosystem Structure	1.7.1 Composition and relative proportions of ecosystem	The current data scenario allows assessment of status, at different levels of detail, of the different species

	components (habitats and species)	groups and habitat types under consideration. Nevertheless, there is little knowledge with respect to the interactions amongst species and habitats and their role within the ecosystem. Within this context, developing GES at the ecosystem level was not possible at this stage.
Descriptor 4		
4.1 Productivity (production per unit biomass) of key species or trophic groups	4.1.1 Performance of key predator species using their production per unit biomass (productivity)	Indicators associated with Descriptor 4 could not be applied at this stage due to the dearth of information and knowledge with respect to ecosystem functioning. Although indicator species could have been selected, these would not necessarily reflect the ecosystem as a whole. In this regard, definition of GES specifically for Descriptor 4 is deemed premature at this stage. On the other hand, GES for Criteria 1.2 and 1.3 could indirectly incorporate GES for Criteria 4.1.1 and 4.2.1. Further knowledge is required with respect to key species of which assessment would represent the overall functioning of the ecosystems and this will be addressed through the MSFD monitoring programme.
4.2 Proportion of selected species at the top of food webs	4.2.1 Large fish (by weight)	
4.3 Abundance/distribution of key trophic groups/species	4.3.1 Abundance trends of functionally important selected groups/species	
Descriptor 6		
6.2 Condition of benthic community	6.2.2 Multi-metric indexes assessing benthic community condition and functionality, such as species diversity and richness, proportion of opportunistic to sensitive species	These indicators require the application of specific methodological standards which have never been applied for Malta. Therefore the development of GES based on these indicators is deemed premature.
	6.2.3 Proportion of biomass or number of individuals in the macrobenthos above some specified length/size.	
	6.2.4 Parameters describing the characteristics (shape,	

	slope and intercept) of the size spectrum of the benthic community.	
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The MSFD monitoring programme will make sure that knowledge gaps currently limiting application of these criteria and indicators will be addressed in the near future, with a view to apply such criteria and indicators, where feasible, in the next MSFD reporting cycle.

1.3 Good Environmental Status

Good Environmental Status constitutes a qualitative description of the desired status of the biological characteristics under consideration for the relevant criteria established for Descriptors 1 and 6. The proposed GES builds on requirements stipulated by related policies, in particular the EU Habitats Directive and EU Water Framework Directive, while taking into consideration the additional requirements of the MSFD.

GES for Descriptors 1 and 6 for Malta are listed in Table 2. The relevant criteria and indicators which the proposed GES is addressing are also indicated.

Table 2: Proposed Good Environmental Status and related criteria and indicators

Proposed GES	Related Criteria	Indicators
The natural range and extent of marine habitats and species are stable, or otherwise in line with the physiographic and climatic conditions, taking into consideration the sustainable use of the marine environment.	1.1 Species Distribution	1.1.1 Distributional Range
		1.1.3 Area covered by the species (for sessile/benthic species)
	1.4 Habitat Distribution	1.4.1 Distributional Range
	1.5 Habitat Extent	1.5.1 Habitat Area
	6.1 Physical damage, having regard to substrate characteristics	6.1.1 Type, abundance, biomass and areal extent of relevant biogenic substrate
The population abundance of key marine species is stable and their population dynamics are indicative of long-term viability.	1.2 Population Size	1.2.1 Population Abundance and/or biomass as appropriate
	1.3 Population Condition	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates)

The structure and function of marine habitats ensure their long-term viability	1.6 Habitat Condition	1.6.1 Condition of the typical species and communities
		1.6.2 Relative abundance and/or biomass, as appropriate
		1.6.3 Physical, hydrological and chemical conditions
	6.2 Condition of the benthic community	6.2.1 Presence of particularly sensitive and/or tolerant species
The long-term viability of key marine habitats is not compromised by anthropogenic pressures and impacts.	6.1 Physical damage, having regard to substrate characteristics	6.1.2 Extent of the seabed significantly affected by human activities for the different substrate types.

The achievement of GES is tied to environmental targets which will be applied to relevant biological characteristics (refer to section below). Given the link across MSFD Initial Assessment, GES and targets, the proposed GES will be applied at the same geographic scales used by the MSFD Initial Assessment for the relevant biological attributes.

1.4 Environmental Targets and Associated Indicators

This section outlines the environmental targets and associated indicators set for the achievement of above-mentioned GES for each relevant biological characteristic stipulated in Table 1 of Annex III of the Directive.

1.4.1 Benthic Habitats

Environmental targets have been set to achieve GES for benthic habitats based on the relevant criteria and indicators for Descriptors 1 and 6 and are listed in Table 3. The targets are linked with specific biological characteristics and indicators. This means that the targets are not applicable to all predominant habitat types assessed through the MSFD Initial Assessment. The applicability of the environmental targets to each predominant habitat type or other specific habitat types depends on:

- (i) current state of knowledge on the habitat types which may not allow the formulation of environmental targets for achievement of GES in terms of specific criteria and indicators, also in view of the unavailability of baseline or reference conditions;

- (ii) the relevance of the criteria and indicators addressed by the environmental target in achieving GES for the habitat type in question. For example GES for benthic habitats of a dynamic nature or habitats which cover extensive areas of the seabed, would be better reflected through criteria on habitat condition rather than habitat extent.

In general, it was possible to establish state-based targets¹ for habitat types for which a relatively good knowledge-base is available or for which baseline or reference conditions could be established. Pressure-based targets² were resorted to when the current data scenario precluded determination of state targets that could be measured against realistic reference or baseline conditions, or when focus on specific pressures was deemed to be more effective in achieving GES for that particular habitat-type. Pressure-based targets for Descriptors 1 and 6 focused on the most significant pressures as identified through the MSFD Initial Assessment, excluding pressures which are covered through GES and environmental targets for other Annex I descriptors. Operational targets³ were also resorted to when it was deemed to be premature to articulate the desired levels for specific criteria and indicators (specifically distributional range and extent) in a quantitative manner.

As indicated above, the individual targets would not apply to all predominant habitat types or specific habitat types reported through the MSFD Initial Assessment. Nevertheless, every effort was made to adequately cover all MSFD predominant habitat types through application of relevant targets.

Given current state of knowledge, most targets are qualitative or trend-based, and may be considered to be interim targets which would be better defined once further knowledge is available.

¹ State-based targets provide an indication as to the physical, chemical and biological condition of the environment that would be observed when GES is achieved [definition extracted from Common Understanding of (Initial) Assessment, Determination of Good Environmental Status (GES) & Establishment of Environmental Targets (Articles 8, 9 & 10 MSFD)].

² Pressure-based targets articulate the desired or acceptable level of a particular pressure which would not prevent the achievement or maintenance of GES [definition extracted from Common Understanding of (Initial) Assessment, Determination of Good Environmental Status (GES) & Establishment of Environmental Targets (Articles 8, 9 & 10 MSFD)].

³ Operational targets relate directly to the nature of management action required in order to achieve or maintain GES without directly establishing the specific measures themselves.

Table 3: Proposed Environmental Targets to achieve GES for benthic habitats. State-based targets are highlighted in blue and operational targets in green.

Good Environmental Status	Environmental Target	Habitat Type	Indicators
<p>The natural range and extent of marine habitats and species are stable, or otherwise in line with the physiographic and climatic conditions, taking into consideration the sustainable use of the marine environment.</p>	<p>Efforts are undertaken, through implementation of conservation measures or existing permitting and licensing procedures, to ensure maintenance of the distributional range and extent of selected habitat types in selected areas.</p>	<p>Littoral Sediment: Biocoenosis of mediolittoral sands</p>	<p>Length of coastline <u>OR</u> Information on Conservation measures or permitting and licensing processes, as appropriate (to be developed)</p>
		<p><i>Posidonia oceanica</i> meadows</p>	<p>Indicator for range and area covered by seagrass meadows <u>OR</u> Information on Conservation measures or permitting and licensing processes, as appropriate (to be developed)</p>
		<p>Shelf sublittoral sediment: Maerl facies</p>	<p>Indicator on range and extent of maerl beds <u>OR</u> Information on Conservation measures or permitting and licensing processes, as appropriate (to be developed)</p>
<p>The structure and function of marine habitats ensure their long-term viability</p>	<p>Species composition and/or abundance associated with selected marine habitats is stable over a period of time (to be identified) or is indicative of good status, based on definition of status through the</p>	<p>Littoral Rock and Biogenic Reefs</p>	<p>Community Indicators (to be developed)</p>
		<p>Shallow Sublittoral Sediment</p>	<p>Community Indicators (to be developed)</p>
		<p>Shelf sublittoral Sediment</p>	<p>Relative abundance of selected key species</p>
		<p>Upper Bathyal</p>	<p>Relative</p>

	implementation of the EU Water Framework Directive.	Sediment	abundance of selected key species
	Health status of seagrass meadows is maintained	<i>Posidonia oceanica</i> meadows	Community Indicators (to be developed)
The long-term viability of key marine habitats is not compromised by anthropogenic pressures and impacts.	Benthic habitats affected by currently regulated anthropogenic activities show signs of recovery.	Littoral Rock and Biogenic Reefs	Community Indicators (to be developed)
		Shallow sublittoral rock and biogenic reefs	Community Indicators (to be developed)
	Maintaining and enforcing regulations governing fishing activities within the 25 nautical mile Fisheries Management Zone.	Shelf sublittoral rock and biogenic reefs; Shelf sublittoral sediment; <i>Posidonia oceanica</i> meadows (as relevant)	Indicators on the distribution of fishing activities OR on areas impacted by fishing activities (to be developed).
	Localised or sensitive marine habitats are afforded legal protection by 2025	Upper Bathyal Rock	Protected Areas

1.4.2 Water Column Habitats

The MSFD Initial Assessment for water column habitats provides a review of the existing data on the physical, chemical and hydrological characteristics of the water column within the proposed assessment area and of the associated planktonic communities. This review highlights difficulties in defining or delineating water column habitat types in line with the predominant habitat types identified by the MSFD Commission Staff Working Paper⁴ on the basis of the existing data. Within this context, the MSFD Initial Assessment focused on a description of the water column habitat type defined by the MSFD Commission Staff Working Paper as 'Marine waters: coastal', also as a result of the fact that most of the data available pertains to inshore waters. The distribution and extent of this habitat type were considered as the water column throughout the assessment area. However the definition and/or delineation of water column habitat types need to be further developed for Malta.

Pending further development of the definition of water column habitat types for Malta, it would not be possible to apply the GES characteristics identified for Descriptor 1 to water column habitats, particularly GES characteristics defined on the basis of 'habitat distribution' (criterion 1.4) and 'habitat extent' (criterion 1.5). Difficulties will also be encountered in applying or assessing GES in terms of the structures and functions of the habitat type ['habitat condition' (criterion 1.6)], since these would necessitate consideration of both phytoplankton and zooplankton. Currently available data is mainly related to phytoplankton, also as a result of the fact that phytoplankton constitutes a 'Biological Quality Element' which needs to be assessed for the purposes of the EU Water Framework Directive.

Articulation of GES targets was also not possible at this stage and Malta is thus proposing an interim target aimed at strengthening knowledge with a view to further develop the definition of water column habitat types in Malta (refer to Table 4).

Current pressures on water column habitat types were described by the MSFD Initial Assessment, which indicated that the most significant pressure is related to nutrient and organic matter enrichment. No pressure-based targets are being proposed for the purposes of the water column habitat types, since targets related to 'nutrient and organic matter enrichment' will be formulated within the framework of MSFD Descriptor 5.

⁴ Commission Staff Working Paper: Relationship between the initial assessment of marine waters and the criteria for good environmental status. SEC(2011)1255 final

Table 4: Proposed Interim Targets for water column habitat types.

Good Environmental Status	Environmental Target	Features	Indicators
Not applicable at this stage	To strengthen knowledge via updated data on key characteristics of the water column, including plankton communities, that would enable Malta to further develop the definition of this habitat type in line with the requirements of the Marine Strategy Framework Directive.	Water column habitats (including phytoplankton and zooplankton)	Level of knowledge on water column habitat types

1.4.3 Seabirds

Environmental targets set to achieve GES for seabirds focus on the three breeding seabirds assessed for the purposes of the MSFD Initial Assessment, namely *Calonectris diomedea*, *Puffinus yelkouan* and *Hydrobates pelagicus*. Focus on these three species is a result of the current data scenario with respect to seabirds.

All three species are listed in Annex I to the Birds Directive and the proposed state-based targets build on the requirements of this Directive in terms of MSFD criteria on species distribution and population size. These state-based targets are complemented by proposed operational targets aimed at addressing the main pressures as identified through the MSFD Initial Assessment. Regulation of the identified pressures as per proposed targets is deemed necessary for achievement of the state-based targets.

Proposed environmental targets and associated indicators for seabirds are listed in Table 5.

Table 5: Proposed Environmental Targets aimed at achieving GES for seabirds. State-based targets are highlighted in blue and operational targets in green.

Good Environmental Status	Environmental Target	Species	Indicators
The natural range and extent of marine habitats and species are stable, or otherwise in line with the physiographic and climatic conditions, taking into consideration the sustainable use of the marine environment.	Efforts are undertaken, through conservation measures or existing permitting and licensing procedures, to ensure that the distributional range of breeding sites of <i>Puffinus yelkouan</i>, <i>Calonectris diomedea</i> and <i>Hydrobates pelagicus</i> is stable, with no loss of breeding sites due to anthropogenic disturbance.	<i>Puffinus yelkouan</i> , <i>Calonectris diomedea</i> & <i>Hydrobates pelagicus</i>	Location and extent of breeding sites for selected seabirds
The population abundance of key marine species is stable and their population dynamics are indicative of long-term viability.	Population abundance of breeding seabirds is stable over a period of twelve years, taking into consideration the natural variability of the species population and their ecology.	<i>Puffinus yelkouan</i> , <i>Calonectris diomedea</i> & <i>Hydrobates pelagicus</i>	Number of breeding pairs
	Longline Fisheries are adequately using mitigation measures aimed at reducing seabird bycatch	<i>Calonectris diomedea</i>	Indicator on mitigation measures to be developed.
	Efforts are undertaken to control the population of the yellow-legged gull on the islet of Filfla	<i>Hydrobates pelagicus</i>	Breeding pairs of yellow-legged gulls on Filfla OR Indicator on

			measures undertaken.
	Efforts are undertaken to reduce current levels of pressures originating from light pollution and predation by rats in areas to be selected.	<i>Puffinus yelkouan</i> & <i>Calonectris diomedea</i>	Indicator on level of pressures (to be developed)
	Marine Special Protection Areas are designated within the framework of the Birds Directive to include marine areas used by seabirds throughout their life cycle.	<i>Puffinus yelkouan</i> , <i>Calonectris diomedea</i> & <i>Hydrobates pelagicus</i>	Number of marine SPAs

1.4.4 Reptiles

The current data scenario with respect to marine turtles is limited in terms of population abundance and population condition. Within this context, the definition of state targets aimed at achieving good status in terms of these criteria was not possible.

On the other hand, the MSFD Initial Assessment identified incidental capture of marine turtles by fisheries as one of the major threats on this functional group. At this stage, the extent of by-catch, hence the level of pressure, cannot be quantified with certainty. Therefore the proposed target aims at achieving better information on this pressure with a view to inform the development of measures which may be required to address the identified threats.

The proposed target is in line with Recommendation GFCM/35/2011/4 of the General Fisheries Commission for the Mediterranean, which recommendation acknowledges the need to improve the collection of scientific data regarding all sources of mortality for sea turtle populations (not just fishing). According to this recommendation “any event of incidental taking as well as releasing or discarding shall be recorded by the ship-owner/master in the logbook (or any other equivalent document as developed by a Contracting Party to this specific end) and reported to national authorities for notification to GFCM Secretariat within the annual national reporting to Scientific Advisory Committee” and “Contracting Parties and Cooperating non-contracting Parties shall ensure that incidental taking of sea turtles in fishing activities is monitored and recorded...”.

The proposed target is thus an initial step aimed at providing better information with respect to the risks which are currently deemed most relevant to the marine turtle population, in line with current practices adopted at a regional scale. Other sources of mortality may need to be addressed in the future.

Table 6: Proposed Interim Target for the marine turtle *Caretta caretta*.

Good Environmental Status	Environmental Target	Species	Indicator
The population abundance of key marine species is stable and their population dynamics are indicative of long-term viability.	To ensure systematic collection of records of turtle by-catch by the Maltese registered fishing fleet and of data on mortality rate of landed turtles	<i>Caretta caretta</i>	An indicator on the systems of data collection in place OR indicators on incidentally caught turtles and mortality of landed turtles

1.4.5 Marine Mammals

The MSFD Initial Assessment highlights the current data limitations with respect to marine mammals in Malta. Most of the information available pertains to sightings collected by BirdLife Malta as part of EU funded projects⁵ carried out in recent years. Apart from limited knowledge on the distribution and population abundance of marine mammals, there is also limited knowledge on the interactions with anthropogenic activities, hence levels of pressures to which this functional group is exposed to. Long-term data is thus deemed necessary to enable articulation of GES targets for this functional group.

Within this context, an interim target is proposed with a view to identify adverse effects of human activities on marine mammals and to protect essential habitats in the longer-term (Table 7). Further work would be required on the basis of the proposed interim target to gain the necessary knowledge on marine mammals and pressures thereon and inform conservation measures accordingly.

⁵ <http://www.lifeshearwaterproject.org.mt;>
[http://www.birdlifemalta.org/Content/LIFEPROJECTS/maltaseabirdproject/1115/;](http://www.birdlifemalta.org/Content/LIFEPROJECTS/maltaseabirdproject/1115/)

Table 7: Proposed Interim Target for marine mammals, specifically the ‘Toothed Whales’ functional group.

Good Environmental Status	Environmental Target	Species	Indicator
The population abundance of key marine species is stable and their population dynamics are indicative of long-term viability.	To strengthen knowledge on the conservation status of <i>Tursiops truncatus</i> , <i>Delphinus delphis</i> and <i>Stenella coeruleoalba</i> in Malta, and on interactions of these species with human activities, with a view to contribute to the regional conservation of marine mammals in the long-term.	<i>Tursiops truncatus</i> ; <i>Delphinus delphis</i> ; <i>Stenella coeruleoalba</i>	Indicators on level of knowledge