Marine Strategy Framework Directive (MSFD)

Common Implementation Strategy

Guidance for 2012 reporting under the Marine Strategy Framework Directive, using the MSFD database tool

Version 1.0

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Contents

ACRONYMS

CBD	Convention on Biological Diversity
CEFAS	Centre for Environment, Fisheries & Aquaculture Science (UK)
CICES	Common International Classification of Ecosystem Goods and Services
CSWP	Commission Staff Working Paper
DAISIE	Delivering Alien Invasive Species Inventories for Europe (FP7 project)
DBTable	MSFD database table
EAC	Environmental Assessment Criteria
EEA	European Environment Agency
ENSTA	École nationale supérieure de techniques avancées (France)
EQS	Environment Quality Standard
ESA	Economic and Social Assessment
ESONET	European Seas Observatory NETwork
EU	European Union
EUNIS	European Nature Information System
F	Fishing mortality
GFCM	General Fisheries Commission for the Mediterranean
GES	Good Environmental Status
GIS	Geographic Information System
GML	Geography Mark-up Language
HELCOM	Helsinki Commission
ICES	International Council for the Exploration of the Sea
JRC	Joint Research Centre
LIDO	Listening to the Deep Ocean Environment
MARNET	Marine Environmental Monitoring Network in the North and Baltic Sea
MEECE	Marine Ecosystem Evolution in a Changing Environment (FP7 project)
MS	Member State
MSFD	Marine Strategy Framework Directive
MSY	Maximum Sustainable Yield
N	Nitrogen
NACE	Nomenclature Générale des Activités Économiques dans les Communautés Européennes
OSPAR	Oslo-Paris Convention
P	Phosphorus
PA	Precautionary Approach
PRTR	Pollutant Release and Transfer Registers
RS	Reporting Sheets
SEEA	System of Environmental-Economic Accounts
SHOM	Service Hydrographique et Océanographique de la Marine (France)
SEIS	Shared Environmental Information System
SSB	Spawning Stock Biomass
TEEB	The Economics of Ecosystems and Biodiversity
TSG	Technical Subgroup
UNCLOS	United Nations Convention on Law of the Sea
WFD	Water Framework Directive
WISE	Water Information System for Europe
WG DIKE	Working Group on Data, Information and Knowledge Exchange
WG ESA	Working Group on Economic and Social Assessment
WG GES	Working Group on Good Environmental Status

1. Introduction

1.1 Reporting requirements in 2012 under the MSFD

The Marine Strategy Framework Directive (MSFD, 'the Directive') requires that by 15 July 2012 Member States complete their Initial Assessment (Article 8), determination of Good Environmental Status (GES) (Article 9) and establishment of a set of environmental targets and associated indicators (Article 10) (Art. 5(2)), and that these are notified (reported) to the European Commission within three months (Art. 9(2) and Art. 10(2)), that is by 15 October 2012 at the latest.

1.2 Development of the reporting framework and guidance

The development of 2012 reporting for the MSFD has taken a similar approach to reporting as under the Water Framework Directive (WFD), with consensus-based cooperation with Member States to develop and agree on the reporting framework and the reporting content and format via a set of 'reporting sheets' (RS). This was developed through an informal process in the Working Group on Data, Information and Knowledge Exchange (WG DIKE) under the guidance of the Marine Directors.

Reporting sheets were prepared under contract to DG Environment by MRAG Ltd, UNEP-WCMC and URS. An initial paper[1] setting out options for the reporting of 2012 requirements was presented to WG DIKE in May 2011. The reporting sheets (RS) were subsequently developed through a number of iterations of draft RS, based on feedback from Member States through WG DIKE.

A 'reporting package'[2] was endorsed by the Marine Directors in June 2012, comprising the following:

a. The reporting framework concept paper: 'Approach to reporting for the MSFD';

b. A set of reporting sheets, addressing geographic aspects, regional cooperation and Articles 8, 9, and 10;

c. An associated guidance document: 'Guidance for 2012 reporting under the MSFD'.

1.3 Purpose of this document

The reporting sheets provide a detailed specification of data and information that Member States should report on the basis of their initial assessments and determinations of Good Environmental Status and related targets and indicators. This document provides additional information for Member States to help complete the reporting sheets, giving guidance on when it is appropriate to complete each reporting sheet, and which fields should be completed in a particular reporting sheet depending on the approach taken by the Member State. It builds upon 'Guidance for 2012 reporting under the MSFD', by adding specific guidance to support completion of reporting using of the MSFD database tool.

This guidance should be used in conjunction with the following:

a. The Marine Strategy Framework Directive (2008/56/EC)[3], which provides the legal basis for reporting;

[1] MRAG Ltd. 2011. Background paper on reporting under the Marine Strategy Framework Directive – 2012 Requirements. (DIKE 2011/1/4).

[2] http://www.acceptance.ec.europa.eu/environment/marine/publications/index_en.htm

[3] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF

b. The Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (2010/477/EU)[4], which provides the criteria and indicators for assessment and which help structure MSFD reporting;

c. The Commission Staff working Paper (CWSP) on the Relationship between the initial assessment of marine waters and the criteria for good environmental status (SEC(2011) 1255)[5], which provides the linkages between the Annex I descriptors and the characteristics and pressures in Annex III to the Directive;

d. The MSFD 'reporting package', as noted in Section 1.2.

1.4 Status of reporting package and this guidance document

The reporting package has been developed with the aim of assisting and facilitating reporting by Member States in their implementation of the Directive. This reporting applies only to those Member States who have marine waters, and is not relevant to those who are land-locked. The reporting package does not constitute formal guidance on the interpretation of the Directive.

The Marine Directors agreed that the Commission and Member States shall review and, where appropriate, revise the reporting sheets and overall reporting framework after 2012, taking into account the results of the reporting process in 2012 and the work by Member States to establish monitoring programmes in 2014, with a view to establishing in good time the reporting framework for 2018.

[4] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:232:0014:0024:EN:PDF

[5] European Commission (2011) Commission Staff Working Paper – Relationship between the initial assessment of marine waters and the criteria for good environmental status. Brussels, 14.10.2011. SEC(2011) 1255 final. http://ec.europa.eu/environment/marine/pdf/SEC_2011_1255_F_DTS.pdf

2. Reporting under the Marine Strategy Framework Directive

2.1 Reporting requirements of Articles 8, 9 and 10

Article 8 of the Directive requires Member States to make an initial assessment of their marine waters taking account of existing data and assessments where available. The initial assessment comprises three elements:

- An analysis of the predominant essential features and characteristics, and the current environmental status of their marine waters (Art 8 (1a)). This analysis should be based on an indicative list of characteristics set out in Table 1 of Annex III of the Directive. The analysis should cover the physical and chemical features, the habitat types, the biological features and the hydro-morphology.
- An analysis of the predominant pressures and impacts, including human activity, on the environmental status of those waters (Art 8 (1b)), based on the list of elements in Table 2 of Annex III including the quantitative and qualitative mix of pressures and discernible trends. It should cover the main cumulative and synergetic effects, and take into account relevant assessments which have been made under existing Community legislation.
- An economic and social analysis of the use of the marine waters, and of the cost of degradation of the marine environment (Art 8 (1c)).

Article 9 of the Directive requires Member States to determine for their marine waters, a set of characteristics for good environmental status (GES) on the basis of the qualitative descriptors listed in Annex I of the Directive.

The determination of GES shall take into account:

i) The indicative list of elements set out in Table 1 of Annex III; and

ii) The pressures or impacts of human activities in each marine region or subregion having regard to the indicative lists set out in Table 2 of Annex III.

The Commission Decision of 1 September 2010 (2010/477/EU) provides the criteria to be used by Member States to assess the extent to which GES is being achieved. Part B of the Annex to the Decision provides detailed criteria for GES in relation to each of the descriptors of Annex I to the Directive.

Article 10 of the Directive requires that on the basis of their initial assessment, Member States establish a comprehensive set of environmental targets and associated indicators for their marine waters. The aim of the targets and indicators is to guide progress towards achieving GES in the marine environment, taking into account the indicative lists of pressures and impacts set out in Table 2 of Annex III to the Directive and of characteristics set out in Annex IV.

Annex IV to the Directive includes a set of twelve indicative characteristics to be taken into account when setting environmental targets. The characteristics include coverage of targets, types of targets, consistency of targets, specification of environmental status to be achieved, resources needed for the achievement of targets, and specification of indicators.

2.2 Reporting formats

Member States are generally expected to prepare and deliver to the Commission text-based ('paper') reports on their Initial Assessments, determination of GES and environmental targets and indicators to address the needs of Articles 8, 9 and 10. In addition, Marine Directors have agreed to reporting electronically on these articles according to an agreed set of reporting sheets. Both 'paper'[6] and reporting sheet information are to be submitted via the European Environment Agency's ReportNet system for inclusion in WISE-Marine, the marine module of the Water Information System for Europe (WISE), which itself is a component of the Shared Environmental Information System (SEIS). WISE-Marine has been adopted as the main platform for exchanging and sharing reported information and data under the MSFD.

The electronic reporting through WISE-Marine has the aim of presenting the information in these reports in a common format and structure across Member States. This should greatly facilitate the Commission's assessment required under Article 12, which will assess whether the Initial Assessment, determination of GES and environmental targets and indicators, constitute an appropriate framework to meet the requirements of the Directive. The Commission has only six months to carry out this assessment; therefore receiving the information from Member States in the standardised format of RS will be important to facilitate this. Additionally the common format will considerably assist the use of the reported information for European-scale state of the environment reporting.

2.3 Reporting language

Member States have the right to complete the reporting sheets in any official EU language. However, **reporting in English is strongly encouraged** for the following reasons:

a. The information reported will be needed to support and enhance ongoing cooperation amongst Member States within a region or subregion (when the information is made accessible via WISE-Marine, for example); use of a common language will facilitate such cooperation.

b. The translation of a Member State's information into a common language will support its further use in aggregation of the information to regional, European and global scales for ongoing State of the Environment reporting.

c. The Commission has 6 months in which to undertake its Article 12 assessment. It will greatly assist this process if the information is available in a common language. This short time period means it is not feasible to have the information formally translated; consequently, translation by the Member State itself prior to submission will help avoid misinterpretation of the information reported.

2.4 Use of the information

The information reported is of use at a variety of levels from Member States to Regional Sea Conventions, the European Commission, the European Environment Agency and for global reporting. Further details are provided in the concept paper on MSFD reporting, with particular emphasis on its use by the Commission (for instance in the Article 12 assessment) and by the EEA for State of the Environment reporting.

[6] In pdf format

2.5 Reporting sheets

A series of reporting sheets has been developed to enable Member States to report on their implementation in a consistent and comparable manner. The list of reporting sheets is as follows:

- **Overarching sheets**
    - 03_4: Geographic boundaries
    - 05_6: Regional cooperation
- **Article 8 – Initial assessment of Member State's marine waters**
    - ***Analysis of features and characteristics:***
        - 8A01: Physical features
        - 8A02: Habitats
        - 8A03: Functional groups
        - 8A04: Species
        - 8A05: Ecosystems
        - 8A06: Non-indigenous species[7] inventory
        - 8A07: Other features
    - ***Analysis of pressures and impacts:***
        - 8B01: Physical loss
        - 8B02: Physical damage
        - 8B03: Underwater noise
        - 8B04: Marine litter
        - 8B05: Interference with hydrological processes
        - 8B06: Contamination by hazardous substances
        - 8B07: Acute pollution events
        - 8B08: Nutrients and organic matter enrichment
        - 8B09: Microbial pathogens
        - 8B10: Non-indigenous species
        - 8B11: Extraction of species
        - 8B12: Marine acidification
    - ***Economic and social analysis:***
        - 8C01: Use of marine waters: human activities and marine water accounts approach
        - 8C02: Use of marine waters: ecosystem services and other approaches
        - 8C03: Cost of degradation
- **Article 9**
    - 0901: Determination of GES
- **Article 10**
    - 1001: Environmental targets and associated indicators

2.6 Completing the reporting sheets

All reporting sheets are expected to be relevant to each coastal Member State for the 2012 reporting, with the following exceptions:

[7] Includes genetically distinct forms of native species

a. Ecosystem services and other approaches (8C02) should only be completed by those Member States that have used an approach other than the 'Marine Water Accounts' approach to assess the use of their marine waters.
b. Not all sections of the reporting sheets are relevant to every Member State. Specific details are given in the relevant section for each Reporting Sheet.
c. For Article 8 reporting sheets, where fields are relevant, they should be completed. This can be:
    i. On the basis of existing datasets which are described in the subsequent metadata fields;
    ii. On the basis of expert judgement, where there is partial data within an assessment area or when the drawing together of available data in the specified format has not been possible in the time available;
    iii. Where confidence in the information reported is low, this can be further explained in the associated 'limitations' field;
    iv. Indicated as 'unknown/not assessed', with an indication of the reason for this in the 'Information gaps' field.

The Reporting Sheets use a colour coding system for different types of cells in the Excel spreadsheets. This document follows the same colour coding, as shown below:

Cells giving titles for fields and guidance on information to be provided on the field
Fields to be completed. This typically includes text Description fields and categorical Summary Information fields that provide supporting and contextual information to the priority fields, including trend information.
Fields to be completed as a priority. These are typically Summary Information fields in Article 8 that provide key information on the Initial Assessment or the key fields for Articles 9 and 10. This prioritisation is linked to how the information can be expected to assist the Commission in its Article 12 assessment.
Cells/fields which are not relevant for the particular Reporting Sheet. Because the Reporting Sheets for Article 8 follow a similar structure within each of the three main sections, there are sometimes cells that are not relevant to the particular Reporting Sheet.
Fields about data sets which are not yet defined. Access to specific datasets and GIS maps according to Art 19.3 of the MSFD will be discussed and agreed with Member States through a longer-term process. The only spatial data to be reported in October 2012 are those for RS 03_4 Geographic boundaries.

At the meeting of the Marine Directors in December 2011 it was agreed that:

a. **Reporting of 'priority' fields** in the reporting sheets is to be completed **by 15 October 2012** (*i.e.* together with notification of 'paper' reports' for Articles 8, 9 and 10), in order to facilitate the Commission's Article 12 assessment.
b. **Reporting for the remaining content** of the reporting sheets should be completed within six months (*i.e.* **by 15 April 2013**) for agreed data and information, if available, particularly to support regional, European and global commitments to State of Environment reporting.

In May 2012, following a request for advice by a Member State, the Commission acknowledged that reporting using only the Reporting Sheets (*i.e.* no additional submission of text-based 'paper' reports) was acceptable on the basis that:

a. The reporting sheets have been developed with Member States in a way which the Commission considers should address all relevant aspects of the 2012 reporting requirements (in a structured manner), and from this has identified the priority fields which should provide the key information needed for the Commission to undertake its Article 12

assessment. The remaining fields will provide additional important information to add detail and context to the priority information and as such should provide a more complete report than the priority fields on their own.

b. From this perspective, it is not strictly necessary to also submit a text (paper) report(s), if the Member State considers that it can adequately report using the reporting sheets alone. However, it seems likely that useful contextual information would only appear in the non-priority fields and that it could be difficult for the Commission to get a full understanding of the Member State's reports from the priority information alone (most Member States are likely to additionally submit 'paper' reports, which can provide such context and understanding). In this context, and because a Member State may find it more effective to complete all or some of the non-priority fields at the same time as the priority fields, the Commission encourages the completion of as many non-priority fields as possible by 15 October, should the Member State decide not to notify any 'paper' reports. The Member State should still provide complete reports (*i.e.* all fields) by April 2013 as per current arrangements, but have the discretion to go beyond reporting of the priority fields in October 2012 where it considers the additional information will help in the Commission's understanding of MS reports for the Article 12 assessment.

3. Development of the MSFD database tool and schemas

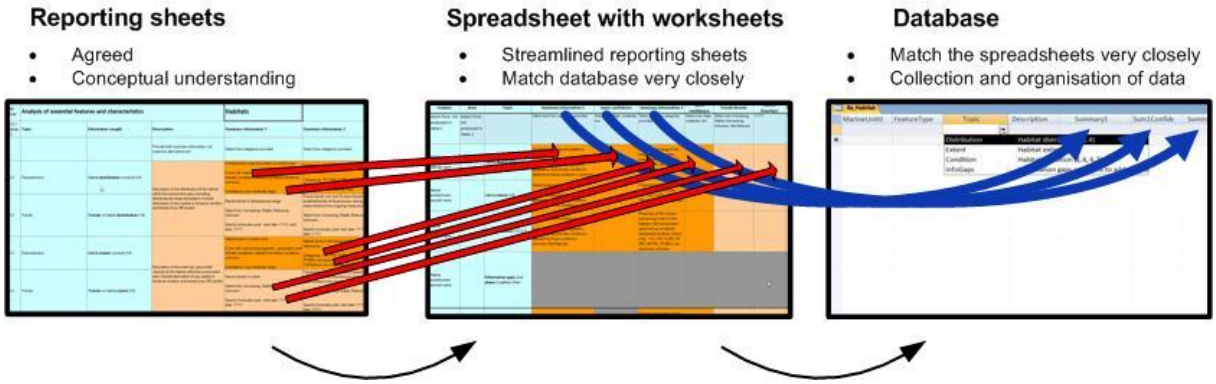
3.1 Converting reporting sheets into a database

The reporting specifications in the reporting sheets have been converted into a MSFD database reporting tool (in MS Access) and XML schemas which enable the information to be submitted by Member States in a standardised format to the Commission through the European Environment Agency's (EEA) ReportNet system[8]. These submissions will be combined to contribute to WISE-Marine.

For general guidance on the process for submission of electronic reports refer to Section 11 and:

> *Marine Strategy Framework Directive reporting: a user guide for electronic reporting 2012*. Atkins Danmark a/s for the European Commission (Version 2.0 July 2012).[9]

Some re-organization of the fields in the reporting sheets has been undertaken to allow the database tables to be constructed in a way which closely 'mirrors' the structure of the reporting sheets. The approach taken is illustrated below:



The relationship between the reporting sheets and their corresponding database tables is shown in later sections of this guidance. The re-organised spreadsheets, providing specific guidance for each cell (field) and indicating if it is a priority field or not, are incorporated into each section of this guidance. These provide a direct read across to the relevant tables in the database.

3.2 Overview of the reporting process

The concept paper 'Approach to reporting for the MSFD' provides a high level introduction to the overall approach being adopted. Step-wise guidance on the completion of the reporting sheets in the database is presented in the following sections. The completion of these electronic reports can be considered in a series of steps:

Step 1. Define the set of features (*e.g.* a habitat, a pressure) to be reported on;

Step 2. Define the geographic areas (*e.g.* an MS subdivision, an 'assessment area') used for assessment/reporting of each feature and to define the areas encompassed within the 'marine waters' of the Member State;

Step 3. Complete reports for Article 8 (initial assessment);

[8] http://icm.eionet.europa.eu/schemas/dir200856ec/resources

[9] http://icm.eionet.europa.eu/schemas/dir200856ec/resources

Step 4. Complete report for Article 9 (determination of GES);

Step 5. Complete report for Article 10 (environmental targets);

Step 6. Complete report on regional cooperation (Article 5/6);

Step 7. Complete the information on the reporter responsible for each report;

Step 8. Prepare the XML schemas and upload to ReportNet

Steps I and 2 are necessary precursors to completing the rest of the reporting, as they are used to generate unique database codes for each feature and area to which are associated all subsequent information. Steps 3-6 are effectively independent of each other and can be completed in any order. It is sensible to complete the reporter (step 7) information in conjunction with the relevant sections of Articles 8.1a, 8.1b, 8.1c, 9 and 10 and on regional coordination.

3.3 Reference/term lists

A number of 'reference' or 'term' lists have been developed to structure the reporting, and to ensure consistent and standardised linking of different aspects of the reporting. The lists and terms are provided in Annex 1: Reference and term lists.

3.4 User support in the MSFD database

The MicroSoft Access database provides some support functions that will help the reporter filling information into the different tables in the database:

a. The '*Feature overview'* worksheet is translated into a start-up form in the database;

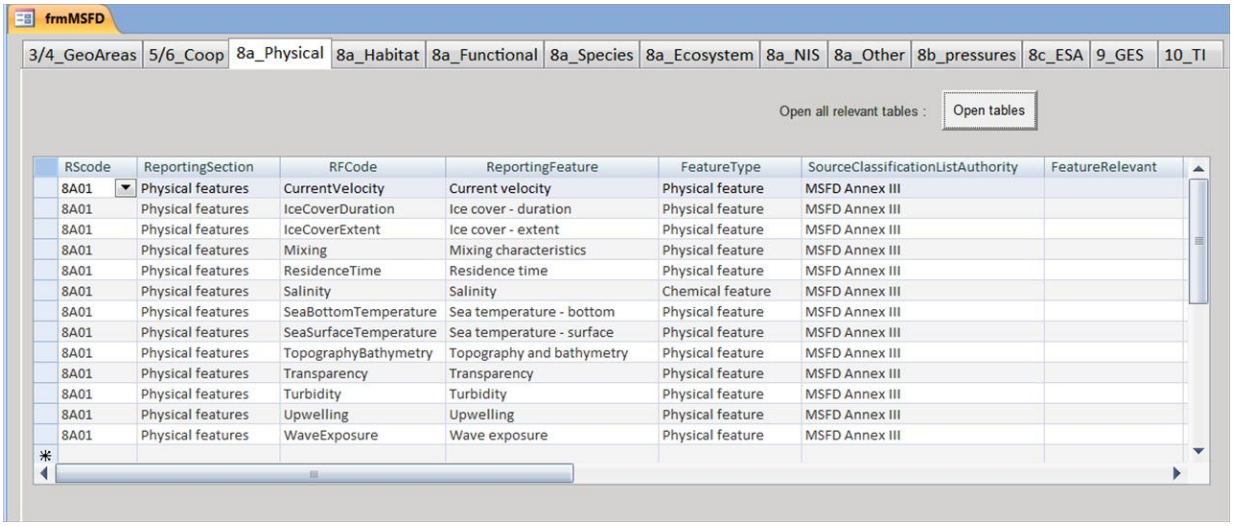
b. Table columns and rows mirror spreadsheet design;

c. Annotations supports the data entry;

d. Drop-down lists reflect the enumeration (term) lists in the spreadsheet and the type of data needed for specific topics.

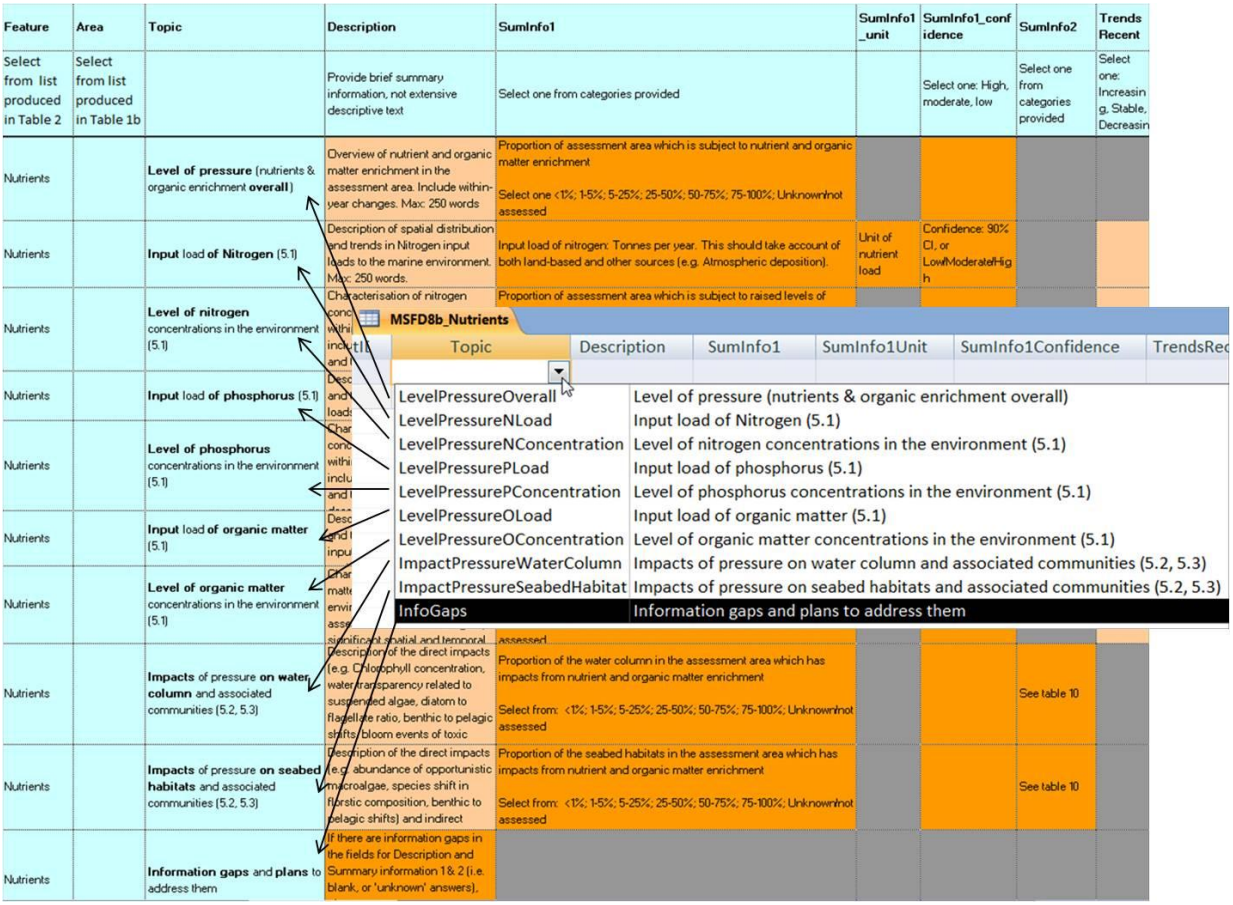
When opening the database a front-end user interface (**frmMSFD**) will be the entry point to the database. The different sections of the reporting are divided into tabs with a table directly linked to the back-end table *Features_Overview*. This table is a copy of the DBTable **Features_overview** in the spreadsheet. The columns '*FeatureRelevant*', '*FeatureReported*' and '*Comments*' are open for MS to fill in data as indicated. *FeatureReported* is of particular importance as only features where 'Y' (yes) has been reported will be available features to choose from in all relevant child tables. For some features it is possible to define the feature name (*ReportingFeature*) and the feature code (*RFCode*) – *e.g.* for habitats. In these cases all columns will be open to type in data – however, please notice that only columns which indicate that data is to be defined by the Member State should be completed (free text entry). The *RFCode* is of particular importance as this is used to link relevant child tables in the database. It is therefore recommended when defining this code that the name is relatively short and does not include spaces and special characters. For all other columns, relevant data will be available to fill in from a drop-down list.

From each tab in the front-end form it is possible to open relevant tables for this particular part of the reporting. Please refer to Appendix G in the '*User guide for electronic reporting 2012'* for filling information into the tables in a specific order.



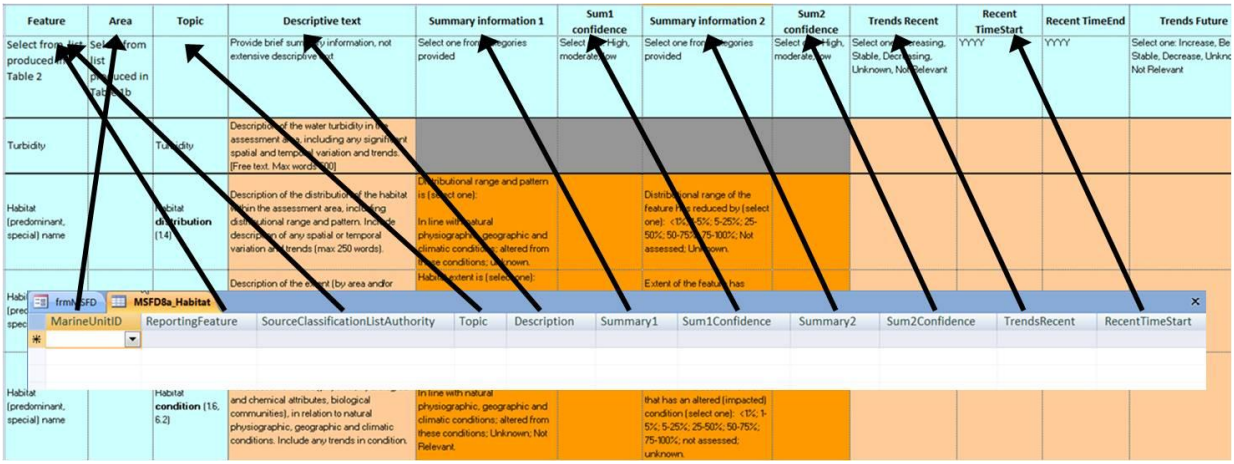
RScode	ReportingSection	RFCode	ReportingFeature	FeatureType	SourceClassificationListAuthority	FeatureRelevant
8A01	Physical features	CurrentVelocity	Current velocity	Physical feature	MSFD Annex III	
8A01	Physical features	IceCoverDuration	Ice cover - duration	Physical feature	MSFD Annex III	
8A01	Physical features	IceCoverExtent	Ice cover - extent	Physical feature	MSFD Annex III	
8A01	Physical features	Mixing	Mixing characteristics	Physical feature	MSFD Annex III	
8A01	Physical features	ResidenceTime	Residence time	Physical feature	MSFD Annex III	
8A01	Physical features	Salinity	Salinity	Chemical feature	MSFD Annex III	
8A01	Physical features	SeaBottomTemperature	Sea temperature - bottom	Physical feature	MSFD Annex III	
8A01	Physical features	SeaSurfaceTemperature	Sea temperature - surface	Physical feature	MSFD Annex III	
8A01	Physical features	TopographyBathymetry	Topography and bathymetry	Physical feature	MSFD Annex III	
8A01	Physical features	Transparency	Transparency	Physical feature	MSFD Annex III	
8A01	Physical features	Turbidity	Turbidity	Physical feature	MSFD Annex III	
8A01	Physical features	Upwelling	Upwelling	Physical feature	MSFD Annex III	
8A01	Physical features	WaveExposure	Wave exposure	Physical feature	MSFD Annex III	

As indicated in Section 3.1 the database tables match the worksheets within the spreadsheet very closely. The controlling row in the worksheets is named '*Topic*' and will be available from a drop-down list from a column with same name in the database table.



The same principle applies to columns in the worksheets which are mirrored in the database tables. Please notice that the column *MarineUnitID* will always link to the mother table – in this example the *MarineUnitID* column is directly linked to the DBTable **MSFD4_GeographicalAreasID**. The annotations text for the *MarineUnitID* column will always indicate to which table it is linked. The *ReportingFeature* column is linked to the *RFCode* in the DBTable **Features_Overview** – however only in cases where it has been indicated that the feature has been reported in the DBTable **Features_Overview**. For reporting on habitats and species it is, in addition, necessary to link to the

column *SourceClassificationListAuthority* in the DBTable **Features_Overview**, as both can come from several sources.

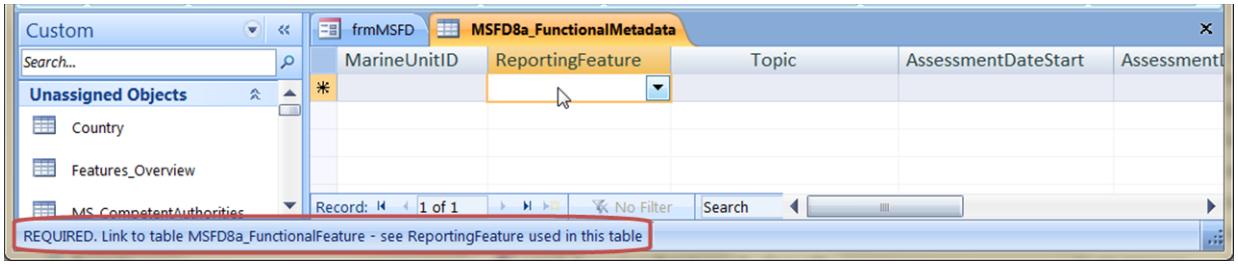


Every table within the database contains guidance on what information is required in a description field of the table. The field descriptions provide information on which rows are required for which *Topic* in a table and if the information is linked to a mother table. All descriptions for fields can be seen by opening the table in Access and then clicking on the design button in the top left corner:

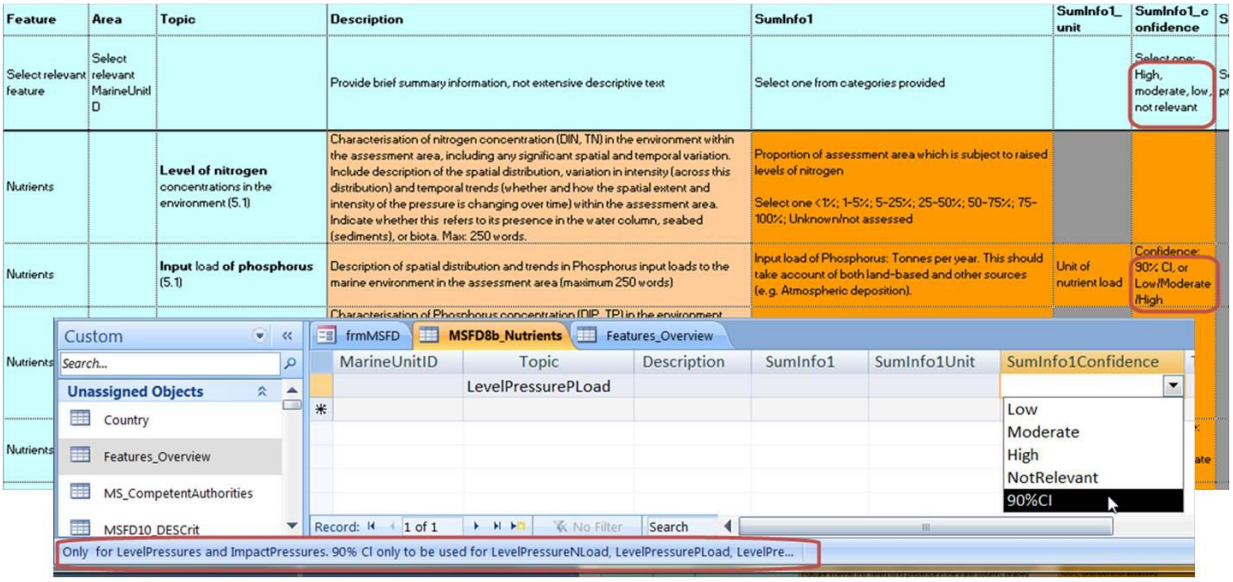
MSFD8a_Habitat

Field Name	Data Type	Description
MarineUnitID	Text	REQUIRED. Link to table MSFD4_GeographicalAreasID - see MarineUnitID defined in this table
ReportingFeature	Text	REQUIRED. Choose from enumeration list generated in Features_Overview table
SourceClassificationListAuthorit	Text	REQUIRED. Choose from enumeration list generated in Features_Overview table
Topic	Text	REQUIRED. Choose from enumeration list
Description	Memo	All topics
Summary1	Text	Only for Distribution, Extent and Condition
Sum1Confidence	Text	Only for Distribution, Extent and Condition
Summary2	Text	Only for Distribution, Extent and Condition
Sum2Confidence	Text	Only for Distribution, Extent and Condition
TrendsRecent	Text	Only for Distribution, Extent and Condition
RecentTimeStart	Text	yyyy. Only for Distribution, Extent and Condition
RecentTimeEnd	Text	yyyy. Only for Distribution, Extent and Condition

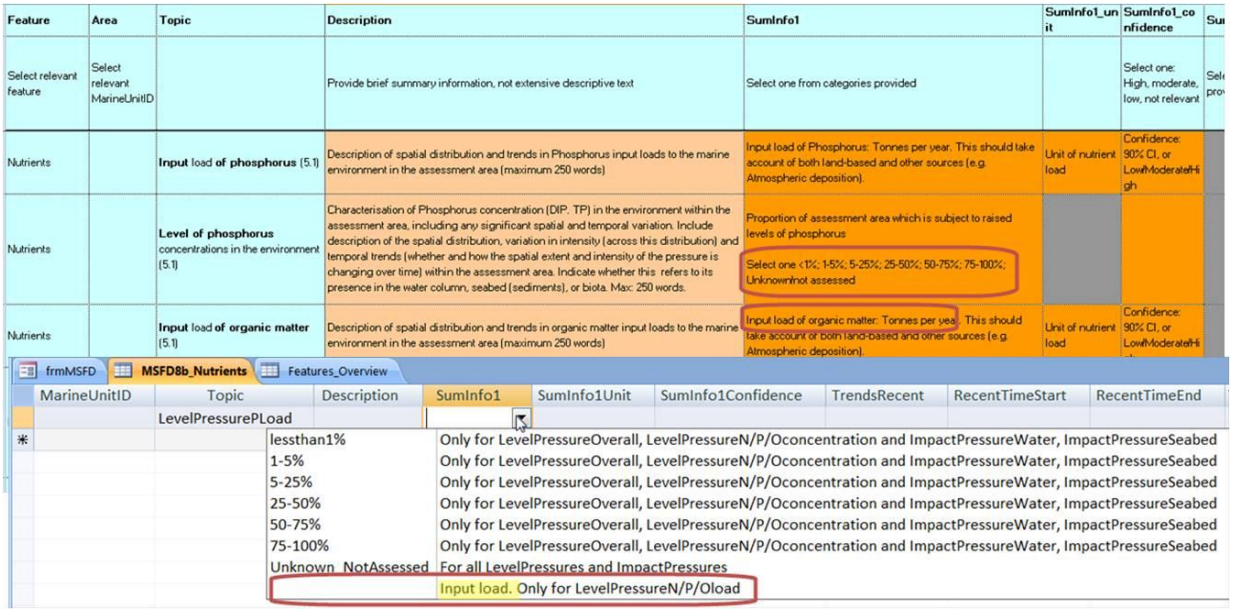
Alternatively this field description text can be seen in the status bar at the bottom left of the Access window, for the field which is selected:



The drop-down lists available in the database tables reflect the values to choose as listed in the spreadsheets (term list worksheet). In some cases the values to choose from will only be relevant for specific topics. In the example below (from DBTable **MSFD8b_Nutrients**) the confidence value 90% CI is only relevant for specific topics indicated in the annotation text:



In some columns both predefined values from an enumeration list and 'free text' can be reported. The drop-down list in these cases will look like the example given below. In this case the 'free text' option in the drop-down list will appear blank to indicate the option to type in a value/text described in the worksheet. The description text next to the values to choose from will also provide some guidance on when the specific values are relevant. However, please note that the database will only hold a very limited amount of explanation of the requirements for each topic. Please always refer to the worksheets within the spreadsheet to find the exact requirements.



4.Step 1: Features to be reported

The term 'feature' (or Reporting Feature) is used here generically to refer to the different subjects being reported on. It consequently covers the following:

a. Geographic areas;

b. Ecosystem components (physical features, habitat types, functional groups, species, ecosystems, typical features);

c. Pressures;

d. Uses/activities, ecosystem services or themes for the economic and social analysis;

e. GES descriptors, criteria and indicators;

f. Environmental targets

g. Regional cooperation per Article.

As a first step in preparing the electronic reports, a list of features being reported by the Member State should be produced (Table 4.1), either by:

a. Selecting from the standard lists (*e.g.* of predominant habitat types, uses/activities) the features that are relevant to the Member State (*i.e.* that are present in, or relevant to, their marine waters); or

b. Creating a list of features, for those features which are defined by Member States (*e.g.* which species to report, environmental targets).

The resultant list is used in subsequent steps (tables in the database) to add the associated information needed for each feature (as defined in the relevant reporting sheet).

Table 4.1: The list of features to be drawn up (in sections marked * only the first three features from the list are displayed) in frmMSFD (=DBTable Features_Overview). Note that fields *RFCode* and *FeatureType* are not shown for simplicity.

RS code	Reporting section	Feature	Feature list source	Feature relevant	Feature reported	Comments
		Where indicated, specify feature name (*e.g.* for a habitat, species, ecosystem service), adding a new row for each feature being reported	This list is predefined (for data management purposes)	This field indicates the source of the feature list	Indicate if feature is relevant to MS waters (yes/no)	Provide commentary on reason for not reporting a feature which is relevant to MS waters (*e.g.* vagrant species)
03_4	Geographic areas	MS marine waters and other geographic areas	MSFD Art. 3 & 4			
		Assessment areas list	MS defined			
05_6	Regional coordination	Article 8 - initial assessment	MSFD Art. 5 & 6			
		Article 9 - determination of GES	MSFD Art. 5 & 6			
		Article 10 - targets and indicators	MSFD Art. 5 & 6			
8A01	Physical features*	Topography & bathymetry	MSFD Annex III			
		Sea temperature – surface	MSFD Annex III			
		Sea temperature – bottom	MSFD Annex III			
8A02	Predominant habitats*	Littoral rock and biogenic reef	MSFD CSWP 2011			
		Littoral sediment	MSFD CSWP 2011			
		Shallow sublittoral rock and biogenic reef	MSFD CSWP 2011			
	Special habitats	Habitats Directive Annex I habitat	Habitats Directive	Yes	Is reporting deferred to Habitats Directive timeline (June 2013)? Yes/no	

RS code	Reporting section	Feature	Feature list source	Feature relevant	Feature reported	Comments
		Give name - add rows as needed	OSPAR Convention			
		Give name - add rows as needed	Helsinki Convention			
		Give name - add rows as needed	Other international agreement - specify			Specify name of international convention
	Habitat - other	Give name, - add rows as needed	Provide the EUNIS class or equivalent EUNIS class(es) (*e.g.* A2.34 or Equates broadly to A4.34+A4.36) using EUNIS habitat classification (version 2011-11)			
8A03	Functional groups* (of highly mobile/ widely dispersed species groups)	Birds (all marine species)	MSFD Annex III			
		Intertidal benthic-feeding birds	MSFD CSWP 2011			
		Inshore surface-feeding birds	MSFD CSWP 2011			
8A04	Listed species	Annex II, IV, V species	Habitats Directive	Yes	Is reporting deferred to Habitats Directive timeline (June 2013)? Yes/no	
		Wild bird species	Birds Directive	Yes	Is reporting deferred to Birds Directive timeline (December 2013)? Yes/no	
		Give scientific name, authority & date - add rows as needed	Barcelona Convention			
		Give scientific name, authority & date - add rows as needed	Bucharest Convention			
		Give scientific name, authority & date - add rows as needed	Helsinki Convention			
		Give scientific name, authority & date - add rows as needed	OSPAR Convention			
		Give scientific name, authority & date - add rows as needed	Other international agreement - specify			
	Other species	Give scientific name, authority & date - add rows as needed	MS-defined features			
8A05	Ecosystems	Give name - add rows as needed	MS-defined features			
8A06	Non-indigenous and genetically distinct forms of native species	Non-indigenous species inventory	MSFD Annex III			
		Genetically-distinct forms of native species inventory	MSFD Annex III			
8A07	Other features	Give name for Area of merit - add rows as needed	MS-defined features			
		Give name for Typical features or characteristics - add rows as needed	MS-defined features			
8B01	Pressure & impacts	Physical loss	MSFD Annex III			
8B02		Physical damage	MSFD Annex III			
8B03		Underwater noise	MSFD Annex III			
8B04		Marine litter	MSFD Annex III			
8B05		Interference with hydrological processes	MSFD Annex III			
8B06		Contamination by synthetic compounds	MSFD Annex III			
		Contamination by non-synthetic substances & compounds	MSFD Annex III			
		Contamination by radio-nuclides	MSFD Annex III			
8B07		Acute pollution events	MSFD Annex III			
8B08		Nutrient and organic matter enrichment	MSFD Annex III			
8B09		Introduction of microbial pathogens	MSFD Annex III			
8B10		Non-indigenous species	MSFD Annex III			
8B11		Extraction of species: fish & shellfish	MSFD Annex III			

RS code	Reporting section	Feature	Feature list source	Feature relevant	Feature reported	Comments
		Extraction of species: maerl extraction	MSFD Annex III			
		Extraction of species: seaweed harvesting	MSFD Annex III			
		Extraction of species: other	MSFD Annex III			
8B12		Marine acidification	MSFD Annex III			
8C01	Marine uses & activities*	Marine-based renewable energy generation (wind, wave & tidal power)	MSFD CSWP 2011			
		Marine hydrocarbon extraction (oil & gas)	MSFD CSWP 2011			
		Fisheries incl. recreational fishing (fish & shellfish)	MSFD CSWP 2011			
8C02	Ecosystem services	Give name (if MS has used this approach) - add rows as needed	MS-defined features			
	Themes	Give name (if MS has used this approach) - add rows as needed	MS-defined features			
8C03	Cost of degradation	Overview	MSFD Art. 8.1c			
0901	Determination of GES*	D1 Biodiversity	MSFD Annex I	Yes		Justification for non reporting
		D2 Non indigenous species	MSFD Annex I	Yes		Justification for non reporting
		D3 Commercial fish and shellfish	MSFD Annex I	Yes		Justification for non reporting
		C1.1 Species distribution	Decision 2010	Yes		Justification for non reporting
		C1.2 Population size	Decision 2010	Yes		Justification for non reporting
		C1.3 Population condition	Decision 2010	Yes		Justification for non reporting
1001	Environmental targets	Targets - general characteristics	MSFD Annex IV			
		Target 1 - add rows as needed	MS-defined features	Yes	Yes	
		Target 2 - add rows as needed	MS-defined features	Yes	Yes	

5.Step 2: Geographic areas

5.1 Introduction

According to Article 5(1) each Member State is required to develop a marine strategy for its 'marine waters', the jurisdictional scope of which is defined in Article 3(1) of the Directive[10] as relating to where Member States have and/or exercise sovereignty or jurisdictional rights, and therefore the area over which the Directive must be applied.

In preparation of their marine strategies, Article 4 requires Member States to take due account of the fact that marine waters covered by their sovereignty or jurisdiction form an integral part of the following marine regions:

a. the Baltic Sea;

b. the North-east Atlantic Ocean;

c. the Mediterranean Sea;

d. the Black Sea;

and the subregions specified in Article 4(2) for the NE Atlantic and Mediterranean regions.

Article 3(5) provides a definition of GES and states that is to be determined at the level of the marine region or subregion, whilst Article 5(2) indicates that Member States sharing a region or subregion are required to cooperate in the delivery of their marine strategies to ensure these are coherent and coordinated, including through the relevant Regional Sea Conventions (Article 6). In this context, it is necessary for reporting to be organised according to these marine regions and subregions (CSWP 2011) and that Member States delimit these boundaries in agreement with other relevant Member States to ensure they are coherent across national boundaries.

Additionally, Member States have the option of establishing subdivisions coherent with the subregions (Article 4(2)). If Member States elect to define such subdivisions, these needed to be reported to the Commission by 15 July 2010 but may be revised by the Member State upon completion of the initial assessment (*i.e.* by 15 July 2012).

For reports on the Initial Assessment (Article 8), the determination of GES (Article 9) and the setting of environmental targets (Article 10), due in 2012, Member States need to clearly define the geographic areas to which the different elements of their reports apply (CSWP 2011). These 'assessment areas' may equate to regions, subregions, subdivisions or other areas as specifically defined by Member States (called 'assessment areas' in the reporting sheets; see Section 5.3).

From the above there is consequently a need for Member States to delimit, where relevant:

a. Boundaries of their marine waters (according to Article 3(1));

b. Regions (according to Article 4(1));

[10] Article 3(1) of the Directive defines the jurisdictional scope of 'marine waters' as follows:

a. Waters, the seabed, and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area where a Member State has and/or exercises jurisdictional rights, in accordance with UNCLOS, with the exception of waters adjacent to the countries and territories mentioned in Annex II to the Treaty and the French Overseas Departments and Collectivities; and

b. Coastal waters as defined by Directive 2000/60/EC, their seabed and their subsoil, in so far as particular aspects of the environmental status of the marine environment are not already addressed through that Directive or other Community legislation.

c. Subregions (according to Article 4(2));

d. Subdivisions (according to Article 4(2), if defined by the Member State);

e. Boundaries for assessment areas used for reporting under Articles 8, 9 and 10.

There is therefore a need for Member States to provide a range of 'baseline' geographic boundary data to delineate the areas for which they have developed and will implement their marine strategies. Defining these areas is an important initial step, as all subsequent reporting will need to be associated to these geographic areas.

5.2 Delimiting MS marine waters, and regional, subregional and subdivision boundaries

5.2.1 Marine waters of the Member State

The boundaries of a Member State's marine waters may vary in the following ways:

a. in accordance with the United National Convention on Law of the Sea (UNCLOS), the boundaries of Member States' jurisdiction over the water column may differ to the boundaries of Member States' jurisdiction over the seabed and subsoil (*e.g.* where the Continental Shelf area extends beyond Territorial Waters or Exclusive Economic Zones or other types of jurisdictional zone);

b. the boundaries of marine waters of neighbouring Member States may overlap between two Member States due to overlapping jurisdictional areas (*e.g.* where an EEZ boundary is not coincident with the boundary for the seabed and subsoil); and

c. the boundaries of a Member State's marine waters may change over time as disputed jurisdictional claims are resolved.

These issues highlight the need for adequate metadata associated with the boundary datasets, and a need to report separately on the jurisdictional area of the water column and of the seabed and subsoil, recognising that for some Member States these boundaries may coincide. Boundaries of the area over which the Member State has and/or exercises jurisdictional rights according to Article 3(1) of the Directive are consequently needed for:

a. The water column of its marine waters;

b. The seabed and subsoil of its marine waters.

5.2.2 Boundaries of marine regions and subregions

Within the marine waters of the Member State, boundaries for the following should be identified, if relevant:

a. Regions (according to Article 4(1));

b. Subregions (according to Article 4(2));

On behalf of, and in consultation with Member States via WG DIKE, the European Environment Agency (EEA) has led a process to define boundaries for each of the MSFD marine regions and subregions. This has helped ensure the boundaries are compatible across the Member States and has led to a consensus on the boundaries to be used.

5.2.3 Boundaries of subdivisions

Article 4(2) of the Directive makes provision for the Member States to formally define subdivisions of their marine waters, in order to take into account the specificities of a particular area and provided

that they are delimited in a manner compatible with the subregions. Only some Member States have elected to define such subdivisions.

5.3 Defining assessment areas

Reporting on the different topics covered by Articles 8, 9 and 10 needs to be specifically linked to a geographic area to which the report refers. This makes explicit the geographic scope of the particular report and facilitates the visualisation of the reported information on maps. As the reporting concerns the assessment of status of the marine waters and its pressures and impacts in relation to achieving good environmental status, these areas are hereafter referred to as 'assessment areas'.

Comparable reporting under the WFD is undertaken according to a defined set of river basin districts (subdivided into water bodies) for all quality elements, and under the Habitats Directive assessments are undertaken for all species and habitats at the national level within each biogeographic region (with a subsequent assessment at the biogeographic region level). In contrast, the MSFD provides only a broad framework of geographic areas (regions, subregions and subdivisions) and allows considerable flexibility in the scale at which different elements of the assessments are undertaken and reported.

Where reporting uses geographic areas which differ to the areas defined for Member State's marine waters and regions, subregions and subdivisions (Sections 5.2.2 and 5.2.3), additional areas should be defined. These additional 'assessment areas' are non-legally-binding divisions, which Member States define for the purposes of reporting.

5.3.1 Guidance

At present, there is no formal guidance on this aspect of reporting and Member States have flexibility in reporting according to how they are implementing Articles 8, 9 and 10. From this general perspective, the following approaches provide initial guidance on reporting geographic areas, accommodating the flexibility inherent in the Directive and noting that guidance on assessment scales is being developed by the Working Group on Good Environmental Status (WG GES).

5.3.1.1 Size of assessment areas

Below the scale of the marine region and subregion, some Member States have opted to define 'subdivisions' which are areas of a region or subregion formally defined for the purposes of implementation of the Directive (Art. 4(2)). Alternately, or in addition, Member States may wish to report according to smaller, informally-defined, assessment areas for Articles 8, 9 and 10. Such areas should in principle be nested within the region/subregion, and subdivisions where defined, and not straddle their boundaries.

As the MSFD area overlaps with the area covered by WFD coastal waters, it may also be appropriate for some aspects to use the WFD coastal water bodies or types as assessment areas in the coastal zone. Specific assessment areas may also be identified for 'other features' or 'habitats in particular areas' (see RS 8A07 'Other features'). Typically assessment areas further offshore might be larger than those inshore.

It is the responsibility of the Member State to report against their marine strategies, noting that these need to be developed and delivered in cooperation with other countries in the same region/subregion. For 2012 reporting, it seems likely that Member States will mostly do this by reporting at the scale of their national waters (separated into regions/subregions where their boundaries lie within a Member State's waters) or appropriate subareas of this.

However, it is also possible to report at scales which extend beyond national waters. For example, assessments of highly mobile species (*e.g.* cetaceans) are more appropriately undertaken at broader scales, such as at subregion level, and can be done collectively by several Member States (reporting

the same assessment in their national reports). It is normal practice to assess commercial fish stocks at similar scales, regardless of national borders, as this is the scale at which the species live and the data are collected.

5.3.1.2 Coherence between assessments under Articles 8, 9 and 10

Different 'assessment areas' can be defined for the various aspects of Article 8 reporting (ecosystem characteristics, pressures, human uses) and for Articles 9 and 10; the divisions between the areas may be different for different topics (*i.e.* there is no formal requirement in the Directive for the reporting to be against the same set of assessment areas across all aspects of the Directive). These may, for example, relate to differing assessment areas for ecosystem components, pressures and uses of marine waters according to the elements given in Tables 1 and 2 of Annex III to the Directive.

However, Member States should consider the reporting areas they define for Articles 8, 9 and 10 in the light of the relationships between the articles and in relation to future implementation phases (*i.e.* when linking to monitoring, measures and future updates of marine strategies). For example, it could be helpful in ongoing implementation to use the same assessment areas for pressures and the ecosystem components they most effect (*e.g.* linking assessment scales of physical loss and damage to those used for seabed habitats) as this could facilitate links to targets and any future measures.

Given the flexibility afforded by the Directive and the current lack of agreed guidance, it may become apparent (within a Member State, at regional or EU level) that some consistency in areas used (*e.g.* between the elements of Article 8 and between Articles 8, 9 and 10) may be useful or necessary when considered as a whole (*e.g.* in presenting reports in WISE-Marine and in achieving regional coherence).

5.3.1.3 Other considerations

Article 3(2) provides criteria for defining ecologically relevant regions and subregions, in support of an ecosystem-based approach to implementation of the Directive. These criteria are equally applicable for defining other types of assessment areas.

Article 4 requires that Member States take into account marine regions (Art 4(1)) and subregions for the NE Atlantic and Mediterranean (Art 4(2)) in implementing the Directive and Article 5 requires marine strategies to be developed for each marine region or subregion concerned. Article 3.5 states that GES shall be determined at the level of the marine region or subregion. Consequently the reporting arrangements need to be consistent with these marine regions and subregions and have therefore been established to enable separate reports for each region/subregion to be derived (*e.g.* from reports of several Member States sharing the same region/subregion). Where the Member State has more than one region or subregion, reporting should be undertaken separately for each one. For both the Atlantic and the Mediterranean, reporting should be at subregion level (*i.e.* reporting should be undertaken separately for each subregion).

Whatever the approach adopted, the whole of the Member State's waters within each region/subregion need to be covered by the set of assessment areas, because the assessment of GES is ultimately to be determined at the level of the region or the subregion and because the marine strategies address all marine waters of a Member State. Where several assessment areas are defined for a reporting topic, a separate reporting sheet should be completed for each assessment area.

Given that the area of a Member State's marine waters relating to the water column may differ to that covered by the seabed and subsoil (*e.g.* where an MS has an extended Continental Shelf area), it would seem necessary to reflect this in the assessment areas established. Assessments relating to the water column (*e.g.* proportion of water column habitat impacted) should not then include areas of water which lie beyond the jurisdiction (over MS areas of seabed). Note that assessments of some highly mobile species groups (fish, birds, cetaceans) are often best undertaken at scales beyond MS waters.

5.4 Reporting on geographic boundaries (RS 03_4)

The reporting sheet on geographic boundaries (RS 03_4) is represented in the MSFD database by two tables:

a. DBTable **MSFD4_GeographicalAreasDescription** outlines the approach taken to delimiting relevant geographic boundaries (*e.g.* legal basis or rationale) for:

   i. the Member State's marine waters;

   ii. any boundaries of regions, subregions and subdivisions within MS waters;

   iii. any additional geographic 'assessment areas' used for reporting under Art. 8, 9 and 10 (see Section 5.3).

b. DBTable **MSFD4_GeographicalAreasID** is used to provide a list of all assessment areas which are in the rest of the reporting sheets. It includes a unique identifier code (MarineUnitID) which is used in the database to link all subsequent reports (for articles 8, 9 and 10) to a specified assessment area (see Section 5.6.1).

The reporting sheet also specifies the two sets of spatial data to be provided (see Sections 5.7 and 5.8):

a. For MS marine waters and related boundaries of regions, subregions and subdivisions (*i.e.* relating to a(i) and a(ii) above);

b. For all assessment areas (*i.e.* related to (b) above).

5.5 Step 2a: Approach to delimiting geographic areas

The legal basis or rationale for delimiting the Member State marine waters, the region and subregion boundaries, any subdivisions adopted and any additional assessment areas should be described in DBTable **MSFD4_GeographicalAreasDescription** (Table 5.1).

Table 5.1: DBTable MSFD4_GeographicalAreasDescription

Feature	Area	Topic	Description
	Not relevant		Provide one description only per topic
MS marine waters and other geographic areas	Report covers all of the MS marine waters	**Member State**	Provide a brief description of the basis for defining 'marine waters' according to Art. 3.1 of the MSFD, including the basis for defining 'waters' (*e.g.* EEZ or other type of designation) and the 'seabed and subsoil', including the status of any submissions to the Commission on the Limits of the Continental Shelf. For coastal waters, as defined under the WFD, indicate the basis for delimiting the landward boundary (*e.g.* Mean High Water). Indicate if there are any unresolved/disputed or jointly managed areas with neighbouring states.
MS marine waters and other geographic areas		**Region/Subregion**	If a regional or subregional boundary occurs within the MS marine waters, briefly describe the basis for its delineation (*e.g.* using criteria in Art. 3.2).
MS marine waters and other geographic areas		**Subdivisions**	If formal subdivisions have been defined, briefly describe the rationale for their delineation.
MS marine waters and other geographic areas		**Assessment areas**	Describe the rationale for defining assessment areas for reporting against the different elements of Art. 8, and for Art. 9 and 10 reporting (*e.g.* reuse of WFD coastal water bodies, based on criteria in Art. 3.2, following administrative boundaries).

5.6 Step 2b: Listing the assessment areas (MarineUnitID)

A list of assessment areas for reporting should be drawn up in DBTable **MSFD4_GeographicalAreasID** (Table 5.2). The areas can include:

a. Region (Baltic and Black Sea)

b. Subregion (of NE Atlantic and Mediterranean)

c. MS marine waters part of a region or subregion

d. Subdivision (formally defined by the MS)

e. Other assessment areas (informally defined by the MS); these should nest within the region/subregion being reported on (*i.e.* not straddle their borders), but may extend beyond a national boundary.

Whether or not used for reporting on elements of Art. 8, 9 or 10, it is recommended that a Marine Unit is defined for:

a. The entire marine waters of the MS;

b. MS marine waters of each relevant region (where MS waters lie in two separate regions);

c. MS marine waters of each relevant subregion (where MS waters lie in several subregions).

These will enable reporting of general items, such as regional cooperation and reporter.

Table 5.2: DBTable MSFD4_GeographicalAreasID

Feature	**Area**	**Region/Subregion**	**Member State**	**Area type**	**Assessment** (reporting) **area name**	**MarineUnitID**
Select relevant feature	Not relevant	Where a Member State's marine waters fall within several regions or subregions, provide a separate set of assessment areas for each one.	Identify the MS to which this report refers	Add lines as needed, entering one assessment (reporting) area per line (each assigned to a particular region or subregion)		
Assessment areas list		Select ONE from **List: Region/subregion** (*e.g.* Baltic Sea, Western Mediterranean Sea)	Select one Member State ISO code from **List: Country** (*e.g.* NL)	Select one option per assessment area from **List: Area type** to categorise the type of reporting area (*e.g.* region, subdivision).	Provide a **name** for each assessment (reporting) area used for this particular region or subregion. An assessment area can be any of the following: a. a Region b. a Subregion c. the MS marine waters part of a region or subregion d. a Subdivision (*i.e.* a formally defined area) e. another area, as defined by the MS (informal) For coastal waters, MS may opt to use the same areas as used for WFD assessments. Each one used should be listed here. Assessment areas should nest within the region/subregion being reported on (*i.e.* not straddle their borders), but may extend beyond a national boundary.	Provide a **MarineUnitID** (unique reference code) for the assessment (reporting) area. The code should be constructed as follows: Region/subregion code-MS ISO code-Area type code-Sequential number or alphanumeric (*e.g.* ANS-NL-AA-001; MWE-ES-SD-Alboran)

5.6.1 Creating MarineUnitID codes

The MarineUnitID code should follow a standard format which will enable subsequent use of the spatial data and associated information reported (Table 5.3). Each complete code should be unique.

Table 5.3: Construction of MarineUnitID codes

	Region or Subregion code	**Hyphen**	**MS code**	**Hyphen**	**Area type code**	**Hyphen**	**MS-defined identifier**
Options	Three-character code[11]: Baltic: BAL Atlantic: ANS, ACS, ABI, AMA Mediterranean: MWE, MAD, MIC, MAL Black: BLK	-	Two-character ISO code	-	Two-character code: RG (Region) SR (Subregion) MS (MS part of a Region or Subregion) SD (Subdivision) AA (Assessment Area)	-	An alphanumeric label up to 32 characters. Use only letters (capital or small) from the Latin alphabet, underscore, point, comma or dash. No spaces or special characters (*e.g.* &, %, ë, ã).
Example	ANS	-	NL	-	AA	-	001
Example	MWE	-	ES	-	SD	-	Alboran

[11] Refer to Annex 1 for region and subregion names for these codes

5.7 Step 2c: Provision of spatial data relating to MS marine waters

5.7.1 Introduction

Spatial data relating to MS marine waters, and related boundaries for regions, subregions and subdivisions, as reported into DBTable **MSFD4_GeographicalAreasDescription**, should be provided as a GIS polygon dataset (ESRI shapefile or GML[12] format):

a. Member State marine waters. Polygons are needed for the areas relating to the jurisdictional rights for the water column and separately for the seabed and subsoil (Section 5.2.1). The landward boundary of these areas is expected to use the landward limit of coastal waters as already reported for the WFD to reflect Article 3(1)(b) of the MSFD, but needs extension to the outer limits of marine waters for the purposes of MSFD implementation;

b. Marine region and subregion boundaries within MS marine waters. The GIS files of the region and subregion boundaries will be available from the EEA for MS to incorporate into their GIS files;

c. Boundaries of subdivisions. Within the marine waters of the Member State, boundaries for any formally defined subdivisions should be provided as polygons. Only some Member States have elected to define such subdivisions.

Figures 5.1 and 5.2 provide a schematic view of the areas that should be included (where relevant).

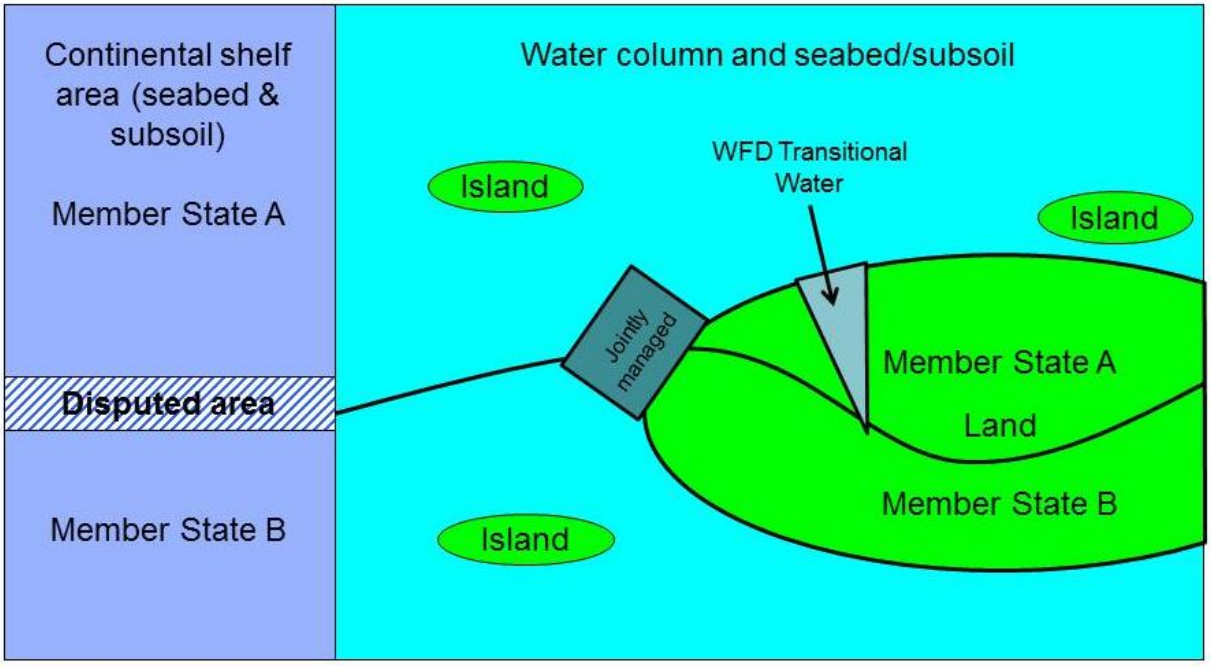


Figure 5.1: Schematic view of MS marine waters. Marine waters = water column and seabed out to limits of EEZ or similar designation, plus any area of Continental Shelf (seabed and subsoil only). Landward boundary = landward boundary of WFD Coastal Waters; WFD Transitional Waters are excluded from MSFD. Some states have arrangements to jointly manage areas (*e.g.* for WFD implementation). Areas with disputed or unresolved jurisdiction may occur between neighbouring states.

Where the boundaries of the above areas are intended to be coincident, care should be taken to ensure use of the same polyline, when needed for several polygons. In some cases, there may be

[12] GML (Geography Mark-up Language) is the Extensible Mark-up Language (XML) grammar defined by the Open Geospatial Consortium (OGC) to express geographic features.

areas under joint management (*e.g.* for WFD implementation purposes) and areas of unresolved/disputed jurisdictional nature[13]. Such areas can be indicated in the polygon dataset provided.

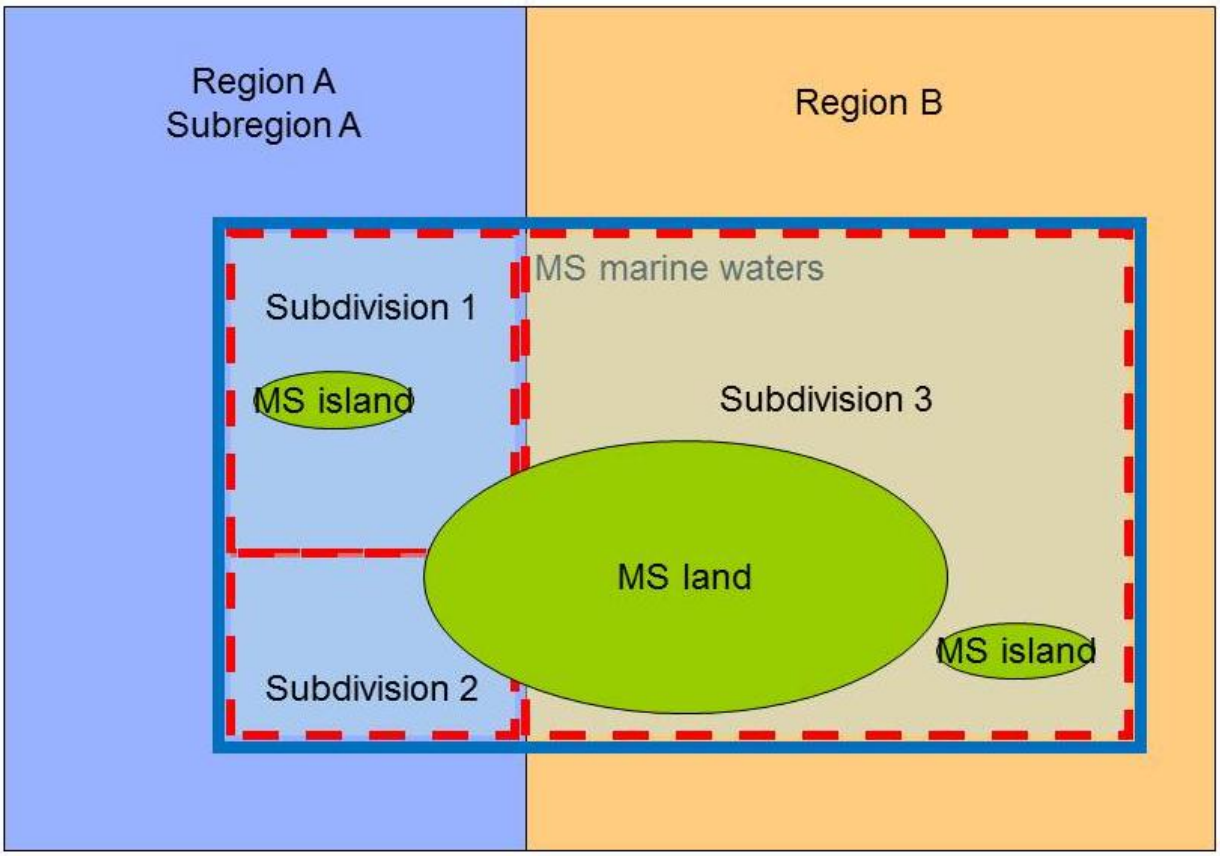


Figure 5.2: Schematic view of Marine regions, subregions and subdivisions. Marine waters of a Member State (solid blue line), lying in subregion A of region A and in region B with no subregions. Waters divided into three subdivisions, two in subregion A and one in region B. Note boundaries of subdivisions should coincide with those of the Member State's waters and any regional or subregional boundaries (shown offset in diagram for clarity).

5.7.2 Data specification for GIS polygon data

This section provides outline guidance on the provision of GIS data; for further technical guidance, including quality assurance issues, and associated metadata such as accuracy of polygons[14], refer to:

Technical guidance for provision of spatial data for MSFD reporting[15]

The boundary information should be in the format of geographic information system (GIS) data (Table 5.4). The data files and associated metadata standards should follow, where possible, the standards developed under the INSPIRE Directive (2007/2/EC[16]).

[13] It is not within the scope of the MSFD to address issues of Member State jurisdiction. This information is intended to allow understanding of where such issues are relevant to particular MS and for appropriate display of these matters on maps, for the purposes of implementation of the Directive.

[14] If possible refer to ISO/DIS 19157 standards codes

[15] http://icm.eionet.europa.eu/schemas/dir200856ec/resources

[16] Latest data specifications (July 2012) are available : http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/1. Note that the INSPIRE standards are not yet fully adopted; additionally there are several options as to which standard might be most suitable to use (*e.g.* sea regions, area management). In view of this, it is expected that full INSIRE compliance can only be achieved in future years, following further work on linkages between the

Table 5.4: Provision of GIS polygon data

MS Marine Waters boundary data
Provide a GIS (polygon) file, including all geographic boundaries relevant to the Member State's marine waters (including region/subregion boundaries and subdivisions where relevant). The file should be separate from files for assessment areas covered by DBTable MSFD4_GeographicalAreasID.
A **GIS file** (SHP or GML) should be submitted showing the boundaries of each area described here (except assessment areas). The following attributes should be defined for each polygon in the attribute table: Country from the **List: Country (ISO codes)** (*e.g.* NL) Area type (*e.g.* land, island, water column, seabed) from the **List: MS area type** Status (*e.g.* undisputed, shelf submission) from the **List: MS area status** GML and ESRI shapefiles are the preferred GIS file format according to WFD guidance (CIS Guidance document on GIS, No. 22) where it states (pp113) 'The short term approach pointed to the use of Geography Mark-up Language (GML) as best practise and the published open standard file format ESRI shape file as a minimum standard. The long term approach (for 2009) recommends the use of 'web services' and 'The recommendation of GML has recently been supported by the INSPIRE Drafting Team on Data Specifications....'. GML schemas can be developed by the EEA, and p120 notes 'The use of GML in WISE will gradually be extended and further use of Shapefiles will not be stimulated'

The polygon dataset should include an attribute table containing the information shown in Table 5.5 for each polygon.

Table 5.5: Attribute data for polygons in MS marine waters dataset

	MS code	**Area type**	**Area status**
Options	Two-character ISO code	**from the following options (enter code only)**: LD - MS land outside marine waters (mainland) LM - MS land within marine waters (island/rocks) (to enable calculation of the area of marine waters) WC - MS waters (water column) SS - MS seabed and subsoil MW - MS marine waters (*i.e.* waters and seabed/subsoil) MS - MS marine waters part of a Region or Subregion SD - MS subdivision	**from the following options (enter code only)**: UA - Undisputed area (of MS marine waters, including agreed Continental Shelf areas) DA - Disputed/unresolved area (of MS marine waters with neighbouring state) CS - Continental Shelf area awaiting CLCS outcome JM - Jointly managed area (with neighbouring state)

5.8 Step 2d: Spatial data relating to assessment areas

This section provides outline guidance on the provision of GIS data; for further technical guidance, including quality assurance issues, and associated metadata such as accuracy of polygons[17], refer to:

Technical guidance for provision of spatial data for MSFD reporting[18]

The data files and associated metadata standards should follow, where possible, the standards developed under the INSPIRE Directive (2007/2/EC[19]).

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two Directives. However Member States are encouraged to follow INSPIRE Implementing Rules for 2012 reporting, *e.g.* in their metadata about projections (ETRS89 options) and datums.

[17] If possible refer to ISO/DIS 19157 standards codes

[18] http://icm.eionet.europa.eu/schemas/dir200856ec/resources

[19] Latest data specifications (July 2012) are available : http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/1. Note that the INSPIRE standards are not yet fully adopted; additionally there are several options as to which standard might be most suitable to use (*e.g.* sea regions, area management). In view of this, it is expected that

5.8.1 Introduction

Spatial data relating to the assessment areas reported into DBTable **MSFD4_GeographicalAreasID** should be provided as either a GIS polygon dataset or an INSPRE-compatible grid dataset (Table 5.6).

Refer to Sections 5.3 and 5.6 for guidance on defining assessment areas and provision of a list of areas to be used for reporting, including their unique MarineUnitID codes. The assessment areas may in some cases be the same as areas given in the MS marine waters dataset (*e.g.* the MS waters part of a Subregion) (Section 5.7); in such cases, the areas need also to be incorporated into the assessment area dataset, together with any additional areas used for reporting against articles 8, 9 and 10.

Table 5.6: Provision of an assessment area dataset

Assessment area boundary data
Provide a GIS file (polygon or grid) which includes all assessment area boundaries used for reporting on Art. 8, 9 and 10 (*i.e.* listed in this table). The file should be separate from the file for MS marine waters covered by DBTable **MSFD4_GeographicalAreasDescription**.
Option 1: polygons If assessment areas are provided as polygons (one polygon per assessment area), each polygon should be assigned its unique MarineUnitID code (*i.e.* only one) in the attribute table. No other attribute information is needed. GML and ESRI shapefiles are the preferred option for GIS files according to WFD guidance (CIS Guidance document on GIS, No. 22) where it states (pp113) 'The short term approach pointed to the use of Geography Mark-up Language (GML) as best practise and the published open standard file format ESRI shape file as a minimum standard. The long term approach (for 2009) recommends the use of 'web services' and 'The recommendation of GML has recently been supported by the INSPIRE Drafting Team on Data Specifications....'. GML schemas can be developed by the EEA, and p120 notes 'The use of GML in WISE will gradually be extended and further use of Shapefiles will not be stimulated' **Option 2: grid** If assessment areas are provided in grid format, all the assessment areas should be addressed in a single grid. Each grid cell may be relevant to many assessment areas and thus needs to be labelled with all relevant MarineUnitID codes. Refer to the **Technical guidance for provision of spatial data for MSFD reporting** for further details on use of INSPIRE-compliant grids and assignment of MarineUnitID codes.

full INSPIRE compliance can only be achieved in future years, following further work on linkages between the two Directives. However Member States are encouraged to follow INSPIRE Implementing Rules for 2012 reporting, *e.g.* in their metadata about projections (ETRS89 options) and datums.

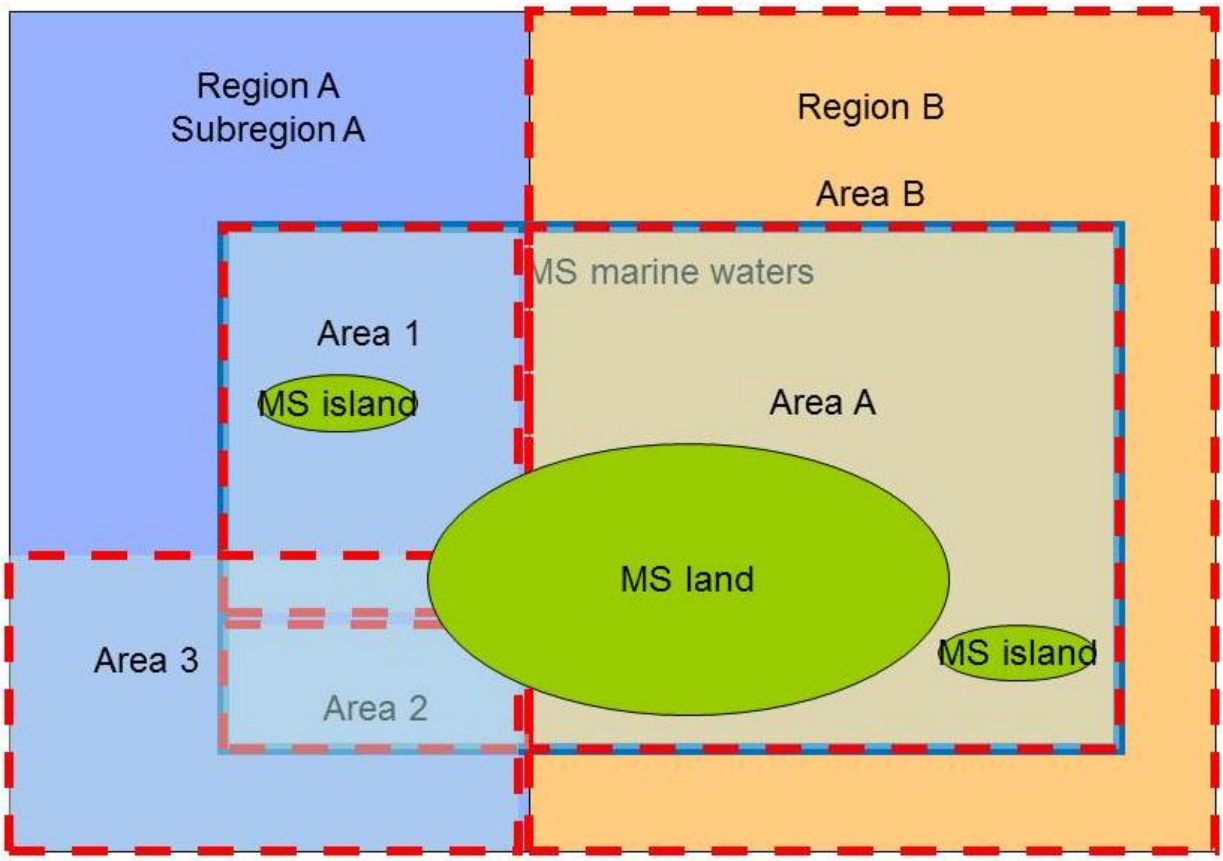


Figure 5.3: Schematic view of assessment areas. Possible scenarios for delimiting assessment areas: Assessment areas 1 and 2 are within MS waters of subregion A, together covering all the MS waters of that subregion. Area 3 extends outside to other parts of the subregion and overlaps with area 2 and part of area 1. Assessment area A encompasses all MS marine waters of Region B, whilst area B encompasses the entire region. Note: some features may be better assessed according to ecologically defined areas rather than those delimited by administrative boundaries.

5.8.2 Provision as polygon data

Refer to guidance in Section 5.7.2. The polygon dataset should include an attribute table containing only the MarineUnitID codes, one for each polygon (assessment area).

Where assessment areas are identical to polygons created for MS marine waters (*e.g.* the MS part of a region or subregion), copy the polygon into this dataset to ensure it has identical geometry, but adjust the attribute table to include only the relevant MarineUnitID code.

5.8.3 Provision as grid data

The reporting of assessment areas can be done using a standard INSPIRE-compatible grid; these are available from the EEA[20]. Further guidance on grid-based reporting can be found in the technical guidance.

Single cells in the grid may relate to more than one assessment area; each cell there should have associated with it all relevant MarineUnitID codes.

[20] http://www.eea.europa.eu/data-and-maps/data/eea-reference-grids-1 match

6. Step 3: Reporting on the initial assessment (Article 8)

6.1 Introduction

Within each of the three main sections of Article 8 (analysis of features and characteristics of marine waters and assessment of its status, analysis of pressures and impacts, economic and social analysis) the reporting sheets follow a similar structure for the different features. The sheets have consequently been represented in the MSFD database by a common set of tables, with minor variation according to the specific requirements of each reporting sheet.

A separate report should be provided for each feature in each assessment area. Some reporting sheets (*e.g.* the pressure/impact sheets) cover a single feature, whilst for others (*e.g.* predominant habitat types, functional groups) it is necessary to identify the feature being reported (see Section 4) and provide a separate report for each relevant feature. In all cases, Member States need to define the assessment areas used for each feature and to provide a report for each area. Refer to Section 5.3 for guidance on assessment areas.

The Article 8 reporting sheets are structured around the Characteristics of the environment (MSFD Annex III, Table 1) and the Pressures and Impacts (MSFD Annex III, Table 2). Each reporting sheet has an 'Analysis' section and an 'Assessment' section.

Guidance which is common to many reporting sheets for Article 8 is given in Section 6.2. Common term lists are given in Annex 1: Reference and term lists.

6.2 Common elements

To avoid repeating the same guidance for each reporting sheet, this section provides common guidance that is relevant to multiple reporting sheets.

6.2.1 Feature, assessment area and topic being reported

In each table, the particular feature (*e.g.* habitat type, pressure, use/activity) and area being reported on are identified from the lists developed in Step 1 (Features) and Step 2 (Geographic areas). These provide the unique combination, to which the remaining report is associated. The table then generally asks for a topic to be selected (from a drop-down list) on which to provide subsequent information.

6.2.2 Analysis sections

The analysis sections are structured to report information on the characteristics of that component of the environment, or pressure and impact; according to relevant GES criteria for the topic, and generally request a text description, categorical summary information (such as the extent of a feature as a proportion of the assessment area), and trend information.

6.2.2.1 Confidence levels

For some of the summary information fields requested in the Analysis/Characteristics sections of the reporting sheets (*e.g.* proportion of assessment area impacted by a pressure, characteristic altered by anthropogenic pressure(s)), a level of confidence for the information in that field is requested. This level of confidence is to be expressed as Low, Moderate or High. The criteria for each of these levels are provided in Table 6.1.

Table 6.1: Guidance on categories for confidence assessments

Category	Guidance
Low	1. Calculated, but based on very incomplete data 2. Not calculated, based on expert opinion (little or no monitoring)
Moderate	3. Calculated, based on partial data with some extrapolation 4. Not calculated but based on surveys/monitoring with short time series and/or low spatial resolution 5. Not calculated but based on surveys/monitoring and trend analysis with good spatial resolution but large variability
High	6. Calculated, based on extensive data with minimal extrapolation/modelling required 7. Not calculated but based on surveys/monitoring and trend analysis with long time series, good spatial resolution and low/acceptable variability

There is an option to select 'not relevant', where an indication of confidence is inappropriate (*e.g.* if the previous field is marked as 'unknown/not assessed'.

The confidence ratings given for individual fields in the Characteristics/analysis sections are likely to inform any confidence rating given in the Assessment sections; *e.g.* mostly high confidence ratings in the analysis would likely yield a high confidence rating in the assessment.

6.2.2.2 Recent and future trends

Information on 'recent trends' is requested, with the options of 'increasing, stable, decreasing, unknown/not assessed'. The timescale used for the trend assessment should be specified; a six-year period is suggested as most appropriate, in line with the MSFD reporting cycle and as used in other reporting (*e.g.* Habitats Directive).

Information on 'future trends' is also requested, usually for future expected trends over the next twelve years, which represents two reporting cycles (consistent with reporting under the Habitats Directive). However, the actual timescale used to assess future trends should be specified, and a timescale other than twelve years can be used.

The same flexibility (suggested timescale, but with the ability for Member States to specify the actual timescale used) applies to all fields for reporting on trends, or where timescale is an issue (*e.g.* for acute pollution events).

6.2.2.3 Identification of pressures

The reporting sheets on Characteristics of the environment (Article 8a, Annex III Table 1) include a section for the identification of the top three pressures that are adversely affecting (impacting) the ecosystem component within the assessment area (in the 'Characteristics/Analysis' section of the reporting sheet).

A description of the main pressures that are adversely affecting the component of the environment should be provided, including the main cumulative and synergistic impacts.

Following this, up to three pressures should be identified as being the main pressures adversely affecting (impacting) the ecosystem component. The name of the pressure should be entered from the List: Pressures, and a rank provided for how important the pressure is (1=highest, 3=lowest), in terms of the impact caused to the ecosystem component in the assessment area. If two pressures are ranked equally, they can both be given the same rank number. If information to enable a ranking is not available, they can all be assigned rank '0'. Up to three pressures should be reported on, but if only one or two pressures are relevant for that particular component in the assessment area, there is no need to complete all three.

The impacts that the pressure is causing should be identified from the list of options provided. The option 'other' is also provided, and a description of this 'other' impact should be given in the Description field.

A description of future pressures expected to adversely affect (impact) the ecosystem component over the next twelve years (two reporting cycles) should also be provided. Up to three relevant pressures should be entered from the List: Pressures.

6.2.2.4 Impacts on ecosystem components

In the pressure reporting sheets, the impacts of the pressure on the water column (and associated plankton communities), seabed habitats (and associated communities) and functional groups is requested, as appropriate to the pressure being considered.

For water column and seabed habitats, this is requested as the proportion of the habitat in the assessment area that is impacted (adversely affected) by the pressure, with categorical response options of:

a. <1%
b. 1-5%;
c. 5-25%;
d. 25-50%
e. 50-75%
f. 75-100%
g. Unknown/not assessed.

The <1% and 1-5% responses can be used to indicate that the pressure impacts only a small part of the environment and impacts are localised, or at the other end of the scale, 75-100% can be used to indicate that the impacts of the pressure are widespread throughout the assessment area.

Functional groups are treated differently. The number of functional groups impacted[21] should be reported, together with the total number of functional groups present in the assessment area. This will give an indication of the proportion of functional groups impacted (in the format *x* out of *y* functional groups), whilst avoiding masking differences due to the total number of functional groups present in an area that may arise if using percentages. For example, 50% of functional groups impacted could mean 1 functional group is impacted out of 2 functional groups present, just as it could also mean 10 functional groups are impacted out of 20 functional groups present. This is a preliminary method for assessment – its usefulness and appropriateness will be evaluated and it may be modified for future reporting.

N.B. The functional groups should be counted according to the specific functional groups in the reference list (*e.g.* 'intertidal benthic-feeding birds', or 'pelagic elasmobranchs') — the 'species groups' should not be counted (*e.g.* 'birds (all marine species)', or 'reptiles (all marine species)'). Thus, there are a maximum of 25 functional groups that may be present in an assessment area.

These assessments of impacts are intended to provide a high-level but consistent assessment across each of the pressures being reported. For 2012 reporting it is likely that detailed information on the extent of impacts will not always be available and that some reliance on the use of expert judgement will be needed. The use of expert judgement would justify a lower confidence rating for the assessment.

[21] Reasonable judgement is required to assess if a functional group is impacted. It is not necessary to have evidence that the entire functional group (all species, all individuals) is affected, but rather it is acceptable to know there is evidence that some individuals from some species are adversely affected by the pressure.

6.2.2.5 Identification of activities

The reporting sheets on Pressures and Impacts (Article 8b, Annex III Table 2) include a section for the identification of the top three activities that are contributing to, or causing, the pressure in the assessment area (in the 'Characteristics/Analysis' section of the reporting sheet).

The name of the activities should be entered from the List: Uses/activities, and a rank provided for the relative importance of the activity in terms of its contribution to causing the pressure in the area being reported (1=highest, 3=lowest). If two activities are ranked equally, they can both be given the same rank number. If information on rank is not available, they can all be assigned rank '0'.

Up to three activities should be identified, but if only one or two activities are relevant, there is no need to complete all three. Information on cumulative impacts of activities can be provided in the text Description field.

6.2.2.6 Limitations of information and data

Fields to report limitations of data are provided against each topic in the reporting sheets. This field should be used to describe any limitations of the data, such as patchiness or incomplete timescales, frequency of sampling, relevance and availability. This may be particularly relevant where there is low confidence in the information reported.

For pressures impacting an ecosystem component, this field should be used to indicate how compelling the evidence of impacts is.

If limitations of data are the same for multiple entries of reporting on a particular topic (*i.e.* within a particular reporting sheet), the previous entry can be referred to (*e.g.* "Same as entry for yyy") – the same text does not need to be repeated for every field.

If particular aspects of the reporting sheets are reported as 'unknown/not assessed', an explanation of the reasons for this should be provided in the 'Information gaps' field (see Section 6.2.2.7).

6.2.2.7 Information gaps and plans

If there are information gaps in the Description and Summary Information fields (*e.g.* blank, or 'unknown/not assessed' answer), use this field to explain why there are gaps (*e.g.* insufficient data, data not analysed in required framework/ scale/ categories, or lack of established method). For 2012 reporting, some gaps in knowledge are expected; this field provides an opportunity to identify key gaps and explain how these will be addressed and by when. Note, it is important to consider risks from pressures in developing plans to address gaps in information, so that collection of new data is appropriately targeted towards higher risk areas and features. It is important at EU level to understand the scale of knowledge gaps and how this might feed into monitoring and research needs.

6.2.3 Assessment/status sections

The reporting sheets on Characteristics of the environment (Article 8a, Annex III Table 1) and Pressures and Impacts (Article 8b, Annex III Table 2) include a section for the assessment or status of relevant topics. Status is the result of an assessment, ideally done using specified criteria, threshold values and baselines, according to a defined methodology.

Assessments of pressures and impacts should be undertaken, as well as assessments of the status of environmental components, in order to determine whether current levels of pressures require action or not (with appropriate links through to targets (Art. 10) and eventually measures (Art. 13)). There are well-established methods for assessing some pressures and impacts against criteria and threshold values. However, assessments for other pressures may be difficult or not possible for the 2012 Initial Assessment due to a lack of methodology; methods should be developed for all pressures covered by the MSFD in time for the 2018 assessments.

For Characteristics of the environment, the status topics usually relate to the relevant GES criteria, and typically also include an 'overall' category for the status of the ecosystem component. This is similar to assessments undertaken in the Habitats Directive (*i.e.* at criterion level for species and habitats and then an overall assessment derived from these).

For Pressures and impacts, the topics usually relate to:

- an assessment of the pressure, broken down in the most appropriate way for the pressure (*e.g.* by N, P, organic matter for nutrient and organic matter enrichment; by water, sediment and biota for hazardous substances) and taking into account GES criteria; and,
- an assessment of the impacts, generally broken down into assessments of the water column and its biological communities, seabed habitats and associated biological communities, and functional groups, but also specified for seafood (commercial fish and shellfish stocks) where appropriate and taking into account GES criteria.

6.2.3.1 Status

In the field *Status* the following options are available:

a. 'good', 'not good'. For use when the GES classes have been used;

b. 'other'. It is possible that the status assessments for the 2012 Initial Assessment will not be based on the same methodologies (*e.g.* criteria/thresholds/indicators) as will be used for future GES assessments. This option is provided for use when status assessments are based on existing assessments that have different status classes from the MSFD. The status class should be provided in the text field. The metadata section should be used to identify the methodology and source of the information used for the assessment.

c. 'description provided'. For use when Member States have assessed status in a descriptive manner. A description of status should be provided in the free text field; this should clearly indicate whether the situation is considered 'acceptable' or 'not acceptable'. The latter should then link to appropriate actions (targets for improvement and ultimately measures).

d. 'not assessed'. For use when a status assessment has not been undertaken against one of these categories, criteria or overall. An explanation should be provided.

Where any of the options (a), (b) or (c) are selected, the remaining fields should be completed, as appropriate.

6.2.3.2 Status description

This field should be completed if options (b), (c) or (d) were selected in the field *Status*, as there is a need to either:

a. Specify the status class used (Other);

b. Provide a description of the status (Descriptive status provided), or

c. Give reasons for not being able to provide an assessment (e.g. insufficient data, lack of established methods, assessment only done at 'overall' level) (Not assessed).

6.2.3.3 Status trend

Similar categories for trend in status are provided, as in the analysis sections (*i.e.* improving, stable, declining, and unknown/not assessed) and should be given for the same time period used in the associated analysis. It is sometimes possible to give a trend when an assessment of actual status has not been possible (*e.g.* due to a lack of agreed threshold value for status classes). Additionally, if status is considered poor, it can be helpful to know that it is improving over time, even if it has not yet reached the overall desired state.

6.2.3.4 Status confidence and Limitations

The fields *Status confidence* and *Limitations* should be used to indicate how robust the assessment is, and explain any lack of data, or reasons for not assessing a particular component. The degree of confidence given here should be based on the associated confidence ratings given for the topic/criterion in the Characteristics/analysis section.

6.2.3.5 Criteria and Indicators used

The fields on 'Criteria used' and 'Indicators used' are important to link the assessment of status to relevant aspects of GES under Article 9, including the Decision criteria and indicators and should be completed (an option 'other' is provided if GES criteria or indicators are not appropriate).

6.2.3.6 Threshold values (and units) and Baselines

The fields *Threshold values* and *Baseline* identify the thresholds between different status classes, and the baseline on which those status classes are based. Target or limit threshold values are typically set in relation to a specified baseline and hence define the desired state (GES) or an undesired state (below GES).

Baselines are typically defined according to one of the following approaches:

a. Reference state or background levels: a state of the environment considered largely free from the adverse effects of anthropogenic activities (*i.e.* negligible impacts from pressures). This can be defined in relation to aspects of environment state (physical, chemical and/or biological characteristics), or to levels of pressure or impact (*e.g.* an absence of contaminants or certain impacts). This type of baseline is typically used to allow an acceptable deviation in state to be defined which acts as the target threshold value to be achieved. Reference state can be defined using a variety of methods, including:

   i. Historic conditions, based on various evidence about conditions before there was significant anthropogenic activity;

   ii. Past date/period, based on time-series datasets in which a time that is considered to best equate to 'reference state', is selected;

   iii. Current conditions in areas considered substantively free from anthropogenic pressures;

   iv. Modelling, to predict current state in the absence of pressures.

b. A specified/known state (of the environment, or the pressures and impacts acting upon it) usually implying, due to the methods used to derive it, that it may not be a reference state. This type of baseline is typically used to define the state at a specified time, often with an aim that there should be no further deterioration in environmental quality or levels of pressures and their impacts and/or that there should be improvements in quality from that date. Targets are consequently set towards improvement in quality or to ensure no further deterioration. This specified state can be defined using a variety of methods, including:

   i. Past state, at the time a new policy was introduced;

   ii. Current state (which could also be at the start of a new policy);

   iii. Past state, based on time series data, but where the data are known to reflect certain levels of impact.

6.2.4 Information on the assessment methods (Metadata)

All reporting sheets contain a 'Metadata' section to record the overarching information that pertains to the data and information contained within the rest of the report, and are shown in DBTable **MSFD8_[Report]Metadata** (Table 6.2). The fields are:

- Date (period used for reporting);
- Method used; and
- Sources of information.

Table 6.2: Example of a metadata table (DBTable MSFD8a_PhysicalMetadata: only the first few features are shown)

Feature	Area	Topic	Assessment date start	Assessment date end	Method used	Sources of information
Select the relevant feature	Select the relevant Marine UnitID	Select one from list: Metadata topics	Start of period used for reporting YYYY	End of period used for reporting YYYY	Describe / give reference to the methodology used; also indicate whether quantitative assessments are used, or if it is mainly expert judgement-based. For trends, include justification for timescale used (*e.g.* data availability, appropriate for the subject)	Provide links to web resources, or references to papers or datasets, of information used. If information from other Directives is relevant, indicate which Directive and date of reporting
Topography & bathymetry			yyyy	yyyy	Free text	Free text
Sea temperature			yyyy	yyyy	Free text	Free text
Ice cover			yyyy	yyyy	Free text	Free text
Salinity			yyyy	yyyy	Free text	Free text

The fields should be reported according to the structure of each reporting sheet. For example, for reporting on features and characteristics of the marine environment (Section 6.3), each of the above fields should be reported for the analysis of the characteristic, the assessment of the characteristic, and the analysis of pressures. For reporting on pressures and impacts (Section 6.4), the fields should be completed for the analysis of the pressure, the assessment of the pressure, the analysis of the impacts, the assessment of the impacts, and the analysis of the activities causing the pressure. If the metadata are the same for each of these elements, select analysis (all) or assessment (all) in the Topic drop-down list.

6.2.4.1 Assessment date (period used for reporting)

This field should be used to specify the date (year) or time period (years) of the data that were used for the relevant aspect of the reporting. Enter the first (*AssessmentDateStart*) and last (*AssessmentDateEnd*) years of the reporting period (YYYY–YYYY) used for the analysis or assessment.

6.2.4.2 Method used

This field should be used to describe the methodology used for deriving the information reported. Where common, regional methodologies are established and have been used, name and describe them. If it is a published method, provide a reference and web link if available. If the method is unpublished, please describe it. If expert judgement has been used, describe how this was achieved.

This field should be used to describe both the method for the acquisition and processing of the underlying dataset(s), as well as the derivation of summary information.

For trends, include a justification for the timescale used (*e.g.* data availability, appropriate for the topic *i.e.* the time period for assessing trends in sea level is likely to be longer than for assessing the abundance of benthic invertebrates).

Where relevant, specific guidance is provided for particular reporting sheets; for example, for the disaggregation of social and economic data into onshore and offshore under the Economic and Social Analysis reporting (Section 0).

6.2.4.3 Sources of information

This field should be used to provide references to papers and datasets of the main sources of the information reported. Where sources are available online, provide web links. The relevant section (chapter, page number etc.) of the Initial Assessment or other documentation should also be indicated.

If information from other EU Directives has been used, indicate which Directive and from which year information has been used. If information from formal reporting to the Regional Sea Conventions has been used, please indicate where the information can be readily and specifically accessed. This information will be used to support on-going and future streamlining of reporting.

6.3 Analysis of features and characteristics (Art. 8(1a))

From the concept paper, the reporting sheets for this section of Art. 8.1 aim to address the following:

Characterisation and analysis of the component:

1. *What are the characteristics of the component*?
2. *What is the current situation for the component*, according to the relevant Commission Decision criteria, if any, (*e.g.* for species: its distribution, population size and condition) and how is this changing over time?
3. *What are the key pressures affecting (impacting) the component*, and which criteria do they affect?

The information reported on pressures and their impacts should directly support the reporting for this section, as the current situation for a particular component (and its current status – see below) are likely to depend in part upon the information emanating from the assessments of pressures and impacts. In particular, the assessments of ecosystem components can only be achieved through an understanding of the level of impacts from all relevant pressures, and thus enable the cumulative impacts on the component to be reflected in the overall assessment (and current status) of each component.

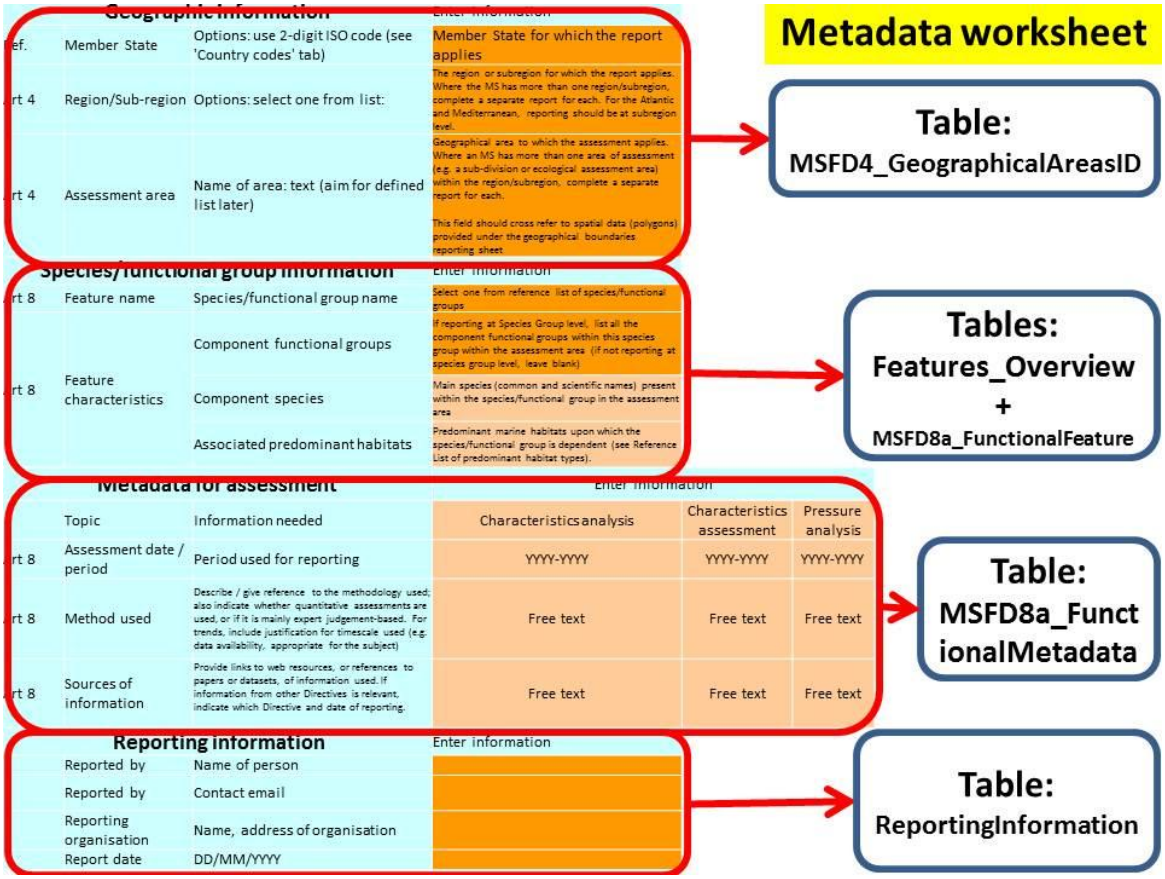
Current status of the component:

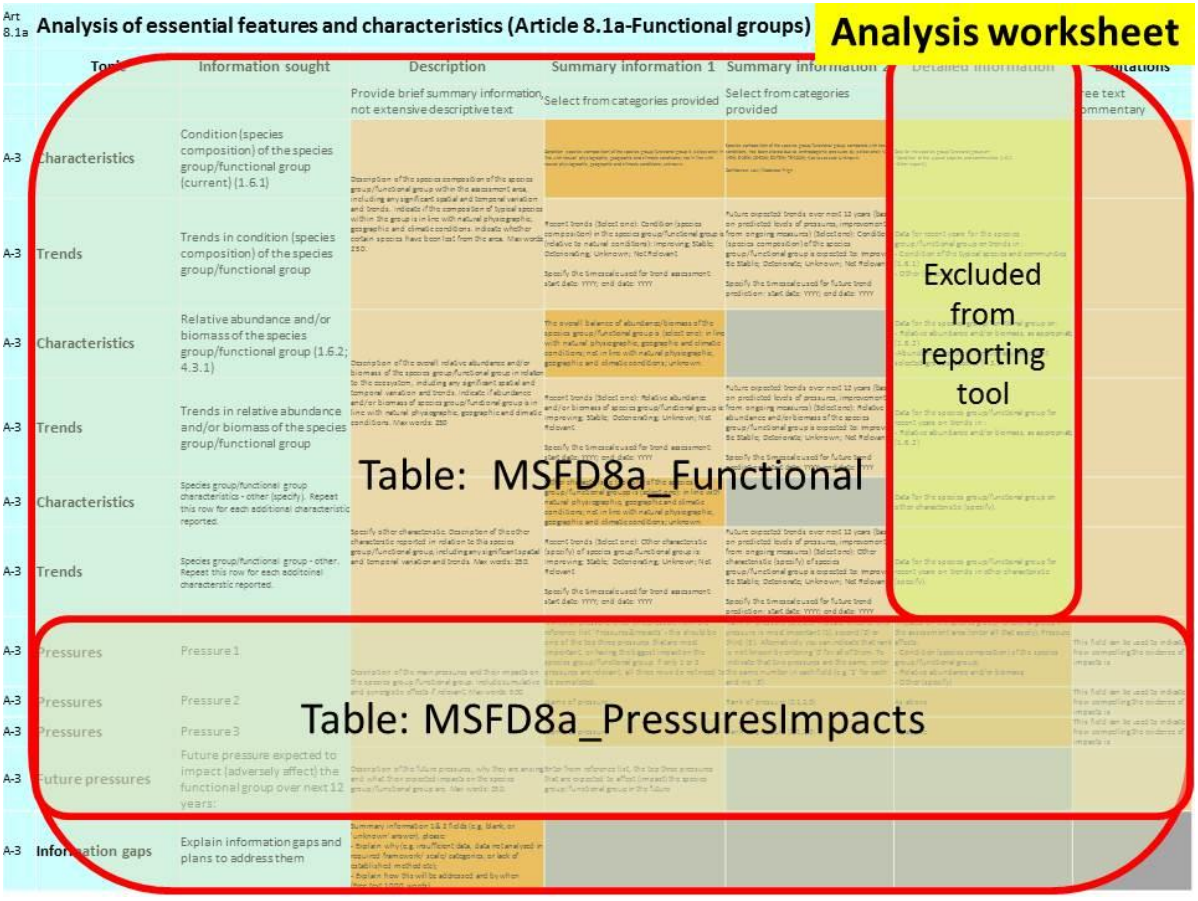
4. *What is the current status of the component*?

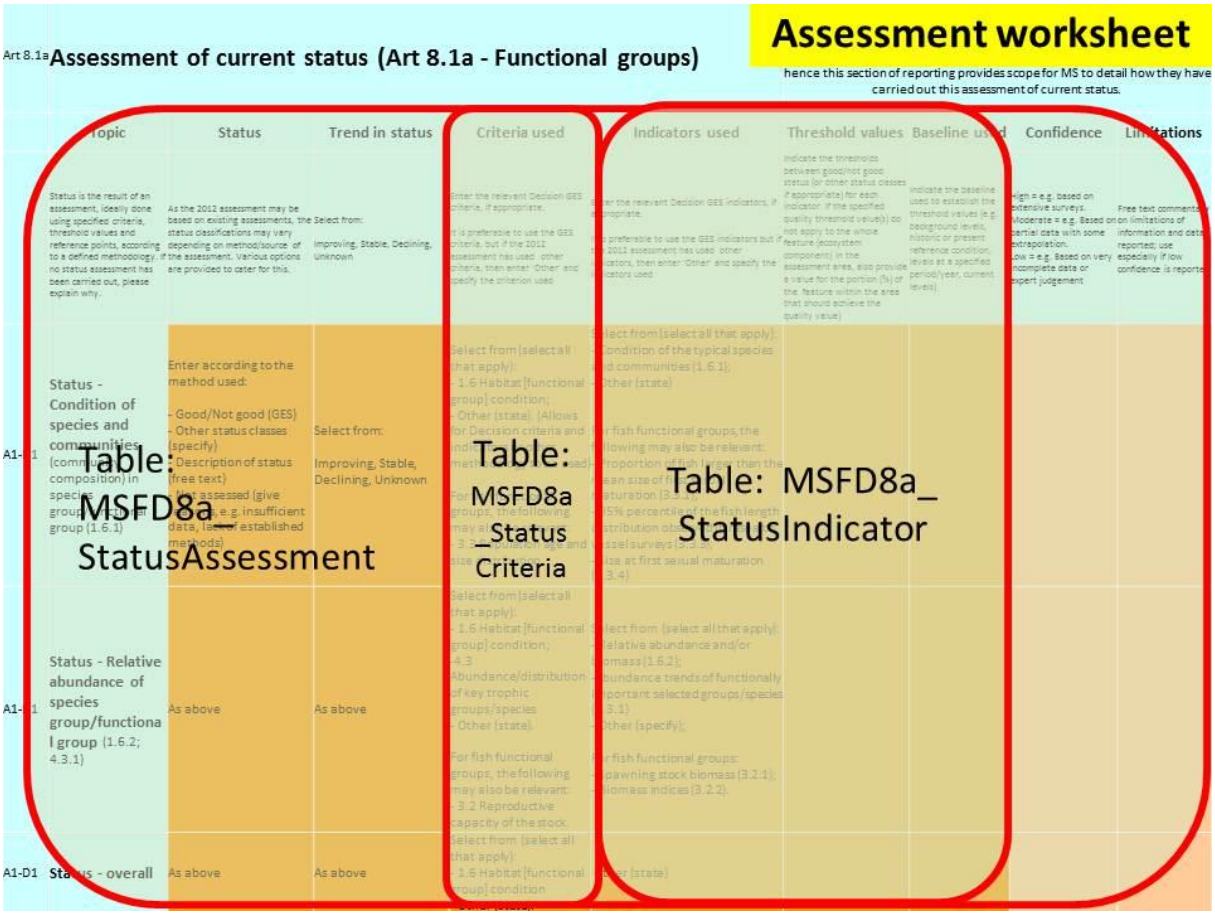
The assessment of current status is specifically requested in Art. 8 (1a) and should indicate whether each component is considered to be in an acceptable state or not in the assessment area (based on specified criteria and threshold values).

6.3.1 Representation of reporting sheets in the MSFD database

The conversion of the Art. 8.1a reporting sheets into database tables is illustrated below (example for RS 8A03 Functional groups):


Metadata worksheet
Geographic information
Enter information
Ref.
Member State
Options: use 2-digit ISO code (see 'Country codes' tab)
Member State for which the report applies
Art 4
Region/Sub-region
Options: select one from list:
The region or subregion for which the report applies. Where the MS has more than one region/subregion, complete a separate report for each. For the Atlantic and Mediterranean, reporting should be at subregion level.
Art 4
Assessment area
Name of area: text (aim for defined list later)
Geographical area to which the assessment applies. Where an MS has more than one area of assessment (e.g. a sub-division or ecological assessment area) within the region/subregion, complete a separate report for each.
This field should cross refer to spatial data (polygons) provided under the geographical boundaries reporting sheet
Table: MSFD4_GeographicalAreasID
Species/functional group information
Enter information
Art 8
Feature name
Species/functional group name
Select one from reference list of species/functional groups
Art 8
Feature characteristics
Component functional groups
If reporting at Species Group level, list all the component functional groups within this species group within the assessment area (if not reporting at species group level, leave blank)
Component species
Main species (common and scientific names) present within the species/functional group in the assessment area
Associated predominant habitats
Predominant marine habitats upon which the species/functional group is dependent (see Reference List of predominant habitat types).
Tables: Features_Overview + MSFD8a_FunctionalFeature
Metadata for assessment
Enter information
Topic
Information needed
Characteristics analysis
Characteristics assessment
Pressure analysis
Art 8
Assessment date / period
Period used for reporting
YYYY-YYYY
YYYY-YYYY
YYYY-YYYY
Art 8
Method used
Describe / give reference to the methodology used; also indicate whether quantitative assessments are used, or if it is mainly expert judgement-based. For trends, include justification for timescale used (e.g. data availability, appropriate for the subject)
Free text
Free text
Free text
Art 8
Sources of information
Provide links to web resources, or references to papers or datasets, of information used. If information from other Directives is relevant, indicate which Directive and date of reporting.
Free text
Free text
Free text
Table: MSFD8a_FunctionalMetadata
Reporting information
Enter information
Reported by
Name of person
Reported by
Contact email
Reporting organisation
Name, address of organisation
Report date
DD/MM/YYYY
Table: ReportingInformation


Art 8.1a
Analysis of essential features and characteristics (Article 8.1a-Functional groups)
Analysis worksheet
Information sought
Description
Summary information 1
Summary information 2
Detailed information
Limitations
Provide brief summary information not extensive descriptive text
Select from categories provided
Select from categories provided
Free text commentary
A-3
Characteristics
Condition (species composition) of the species group/functional group (current) (1.6.1)
A-3
Trends
Trends in condition (species composition) of the species group/functional group
A-3
Characteristics
Relative abundance and/or biomass of the species group/functional group (1.6.2; 4.3.1)
A-3
Trends
Trends in relative abundance and/or biomass of the species group/functional group
A-3
Characteristics
Species group/functional group characteristics - other (specify). Repeat this row for each additional characteristic reported.
A-3
Trends
Species group/functional group - other. Repeat this row for each additional characteristic reported.
Excluded from reporting tool
Table: MSFD8a_Functional
A-3
Pressures
Pressure 1
A-3
Pressures
Pressure 2
A-3
Pressures
Pressure 3
A-3
Future pressures
Future pressure expected to impact (adversely affect) the functional group over next 12 years:
A-3
Information gaps
Explain information gaps and plans to address them
Table: MSFD8a_PressuresImpacts



There are seven reporting sheets to be addressed under Art. 8.1a. Table 6.3 shows the relevant database tables (all tables are prefixed MSFD8a).

Table 6.3: Relationship between Article 8.1a reporting sheets and their MSFD database tables

	Analysis against criteria	Characteristics of feature	Analysis of pressures	Assessment of status	Metadata	Reporter
Physical features (RS 8A01)	Physical				PhysicalMetadata	Reporting Information
Habitats (RS 8A02)	Habitat	HabitatFeature	Pressures Impacts	StatusAssessment StatusCriteria StatusIndicator	HabitatMetadata	
Functional groups (RS 8A03)	Functional	FunctionalFeature			FunctionalMetadata	
Species (RS 8A04)	Species				SpeciesMetadata	
Ecosystems (RS 8A05)	Ecosystem Ecosystem_Summary2	EcosystemFeatures			EcosystemMetadata	
Other features (RS 8A07)	Other				OtherMetadata	
Non-indigenous and genetically distinct species inventory (RS 8A06)	NISInventory				NISInventoryMetadata	

6.3.2 Physical features (8A01)

6.3.2.1 Introduction

The Physical features reporting sheet (RS 8A01) is provided to allow reporting on essential physical features and characteristics in the marine environment, within the scope of the Initial Assessment, Article 8.1a, and Annex III Table 1. The physical features listed include topography and bathymetry of the seabed; annual and seasonal temperature regime; annual and seasonal ice cover; current velocity; upwelling; wave exposure; mixing characteristics; turbidity and residence time. Water transparency has additionally been identified as an important feature to report on, particularly in connection with eutrophication issues.

Of the chemical features listed in Annex III Table 1 of the Directive, spatial and temporal distribution of salinity is addressed here (alongside its related parameter sea temperature), but nutrients and oxygen are considered in RS 8B08 Nutrient and organic matter enrichment, whilst pH is addressed in RS 8B12 Marine acidification.

All of these physical features should be reported per assessment area.

Although there are no criteria and indicators in the Commission Decision on GES criteria that address physical features specifically, the CSWP states that 'all physical features mentioned above are relevant for the description of the characteristics and the assessment of the condition of the water column and seabed habitats, of habitats for species and of ecosystems as a whole'. This RS seeks only limited information on each parameter in the form of a text description. Where climate change or eutrophication may influence the parameter, additional trend information is sought.

6.3.2.2 Step 3.1: Analysis of physical features

Reporting on the analysis of physical features is shown in DBTable **MSFD8a_Physical**:

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant MarineUnitID		Provide a brief summary description of the feature in the assessment area, including any significant spatial and temporal (seasonal) variation, and longer-term trends if relevant. [Maximum words 500]	Select one from categories provided	Select one from: High, moderate, low, not relevant	Select one from: Increasing, Stable, Decreasing, Unknown/not assessed	YYYY	YYYY	Select one from: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on any limitations in the information and data reported; use especially if low confidence is reported.
Topography & bathymetry		Topography and Bathymetry of seabed										
Sea temperature		Sea surface temperature (SST)				The timescale used should be in relation to climate change						

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Sea temperature		Near-bottom temperature	In accordance with oceanographic standards, near-bottom temperature refers to measurements about 2m from the seabed									
Ice cover		Ice cover (duration)		Average duration of ice cover per year. Select one from: - None - 1-90 days; - 91-150 days; - >150 days								
Ice cover		Ice cover (extent)										
Salinity		Salinity										
Current velocity		Current velocity										
Wave exposure		Wave exposure										
Upwelling		Upwelling										
Mixing characteristics		Mixing characteristics										
Residence time		Residence Time										
Turbidity		Turbidity				The timescale used should reflect the same timescales as the biological information						
Transparency		Transparency										

6.3.2.3 Step 3.2: Assessment/status of physical features

No assessment of status for physical features is required.

6.3.2.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a PhysicalMetadata**.

6.3.3 Habitats (8A02)

6.3.3.1 Introduction

The Habitats reporting sheet (RS 8A02) is provided to allow reporting on predominant habitats and special habitats, within the scope of the Initial Assessment, Article 8a, and Annex III Table 1. In accordance with the Decision on GES criteria, reporting on habitats should include their associated communities of phytoplankton, zooplankton, angiosperms, macroalgae and bottom fauna. For reporting on 'habitats that occur in particular areas which by virtue of its characteristics, location or strategic importance merit a particular reference' (Annex III Table 1 of the MSFD) the 'Other Features' reporting sheet (RS 8A07) should be used.

A set of predominant habitats is given in the CSWP (2011), covering all marine regions and including seabed habitats, water column habitats and ice habitats. The predominant habitat types are sufficiently generic to apply to all regions (and are already available as GIS maps for the Baltic, North, Celtic and western Mediterranean Seas in EUSeaMap[22]).

Not all predominant habitats in the reference list will occur within every Member State's marine waters; only those which are present in the Member State's marine waters should be reported. Collectively the predominant habitat types reported by a Member State should cover all the seabed and water column of the marine waters of that Member State. A separate reporting sheet should be completed for each predominant habitat type present in the assessment area.

The Habitats reporting sheet should also be used to report on special habitat types, especially those recognised or identified under Community legislation (the Habitats Directive and Birds Directive) or international conventions as being of special scientific or biodiversity interest (MSFD Annex III Table 1). A separate sheet should be completed for each special habitat type present in the assessment area.

For habitats listed under Annex I of the Habitats Directive special arrangements have been made to avoid duplicate reporting, as reporting is also expected directly under the Habitats Directive by June 2013. Further details are provided in Annex 2 of *Guidance for 2012 reporting under the MSFD*.

In order to implement this proposal for reporting under the MSFD, Member States should:

a. Indicate 'yes' in field *FeatureReported* against the row for Habitats Directive habitats in DBTable **Features_Overview** and;

b. Submit a letter to the Commission via ReportNet by 15 October 2012, stating their intentions for reporting of marine species and habitats which are also to be reported under the Habitats and Birds Directives. This should include their intension to follow the approved reporting formats of the Habitats and Birds Directives and indicate when the reports will be submitted.

[22] http://jncc.defra.gov.uk/page-5020

In the case of special habitat types, the habitat type being reported, together with the 'classification/list' from which the habitat type is drawn is identified at Step 1: Features. This may be from the formal lists of international conventions, such as OSPAR and HELCOM, or an 'other' type, preferably taken from the European Nature Information System (EUNIS) habitat classification (or equated to one or more EUNIS classes). It is however preferable that Member States restrict their reporting of special habitat types to those on defined lists, such as OSPAR and HELCOM.

6.3.3.2 Step 3.1: Analysis of the habitat

The information requested for habitats is based on the GES criteria 1.4, 1.5, 1.6, 6.1 and 6.2 which are relevant to biodiversity and benthic habitats. There is some overlap of GES criterion 1.6 (habitat condition, which includes both biotic and abiotic aspects) with criteria 6.1 (physical damage having regard to substrate characteristics, *i.e.* includes aspects of the benthic biogenic substrate (biotic)) and 6.2 (condition of benthic community (biotic)). The reporting sheet combines abiotic and biotic aspects of habitat condition, with the relevant GES indicators indicated under the data needs (abiotic: 1.6.3, 6.1.2; biotic: 1.6.1, 1.6.2, 6.1.1, 6.2.1, 6.2.2, 6.2.3, 6.2.4). Therefore, information is requested on current state and trends for habitat distribution (1.4), habitat extent (1.5), and habitat condition (1.6, 6.1 and 6.2).

Reporting on the analysis of habitats is shown in DBTable **MSFD8a_Habitat**. Note that field *SourceClassificationListAuthority* from DBTable **Features_Overview** is repeated in each table for habitat reporting because a habitat type may be reported under several lists (Conventions).

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary information 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant MarineUnitID			Select one from categories provided	Select one from: High, moderate, low, not relevant	Select one from categories provided	Select one from: High, moderate, low, not relevant	Select one from: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one from: Increase, Be Stable, Decrease, Unknown/not assessed	YYYY	YYYY	Comment on any limitations in the information and data reported
Habitat (predominant, special) name		Habitat **distribution** (1.4)	Description of the distributional range and pattern of the habitat within the assessment area, including any spatial or temporal (seasonal) variation and any longer term trends (maximum 250 words).	In relation to natural physiographic, geographic and climatic conditions, the distributional range and pattern is (select one): in line; altered; unknown/not assessed.		Distributional range of the habitat has reduced by (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/ not assessed								
Habitat (predominant, special) name		Habitat **extent** (1.5)	Description of the extent of the habitat within the assessment area, including any spatial or temporal (seasonal) variation and any longer term	In relation to natural physiographic, geographic and climatic conditions, the habitat extent is (select one):		Extent of the habitat has reduced by (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%;								

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary information 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			trends (maximum 250 words).	in line; altered; unknown/not assessed.		unknown/ not assessed								
Habitat (predominant, special) name		Habitat **condition** (1.6, 6.1, 6.2)	Description of the condition (physical, hydrological and chemical attributes, biological communities) of the habitat in the assessment area, in relation to natural physiographic, geographic and climatic conditions. Include any trends in condition (maximum 500 words).	In relation to natural physiographic, geographic and climatic conditions, the habitat condition is (select one): in line; altered; unknown/not assessed.		Proportion of the current (remaining) extent of the habitat in the assessment area that has an altered (impacted) condition (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/ not assessed								
Habitat (predominant, special) name		**Information gaps** and **plans** to address them	See general guidance											

6.3.3.3 Step 3.2: Characteristics of the habitat

If a special or 'other' habitat type is being reported on, identify the predominant habitat type(s) in which it occurs in the assessment area (typically a special habitat will only occur within one predominant habitat, but some are broadly defined and can occur within several) in DBTable **MSFD8a_HabitatFeature**.

Feature	Area	Predominant habitats – present	Functional groups - present	Species – present
Select the relevant feature	Select the relevant MarineUnitID	Add rows as needed	Add rows as needed	Add rows as needed
Habitat type		If reporting a special or other habitat type, list the predominant habitat types in which the special/other habitat occurs within the assessment area		

6.3.3.4 Step 3.3: Pressures on the habitat

Information on the main pressures on the habitat, together with an indication of the types of impact (*i.e.* which criteria they affect), are to be included in the DBTable **MSFD8a_PressuresImpacts**:

Feature	Area	Topic	Description	Pressure 1	Pressure 1 rank	Pressure 2	Pressure 2 rank	Pressure 3	Pressure 3 rank	Impact 1	Impact 2	Impact 3	Impact 4	Impact 5	Limitations
Select the relevant feature	Select the relevant Marine UnitID		Past/ongoing pressures: describe the main pressures and their impacts on the feature. Include cumulative and synergistic effects if relevant. Maximum 500 words. Future pressures: describe the future pressures, why they are arising, and what the expected impacts on the feature will be. Maximum 250 words	Pressure 1, 2 and 3: Enter one of the top three pressures that are having the most impact on the feature. If only 1 or 2 pressures are relevant, all three fields do not need to be completed. Rank: Rank the pressure as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two pressures are the same, enter the same number in each field (*e.g.* '2' for each and no '3') Future pressure 1, 2 and 3: Enter the top three pressures that are expected to affect (impact) the feature in the next 12 years						Select if pressures are impacting this attribute (criterion)					This field can be used to indicate how compelling the evidence of impacts is
Habitat (predominant, special) name		Pressures								Distri-bution	Extent	Cond-ition		Other (specify in Descrip-tion field)	
Habitat (predominant, special) name		Future pressures													

6.3.3.5 Step 3.4: Assessment/ status of the habitat

For habitats, status should be reported for the GES criteria habitat distribution (1.4), habitat extent (1.5), habitat condition (1.6, 6.1 and 6.2), and an overall assessment. This is a similar approach to that used under the Habitats Directive.

The status assessment is split across three database tables (**MSFD8a_AssessmentStatus, MSFD8a_AssessmentCriteria, MSFD8a_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature	Select the relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/ not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Habitat (predominant, special) name		Status - habitat distribution (1.4)					
Habitat (predominant, special) name		Status - habitat extent (1.5)					
Habitat (predominant, special) name		Status - habitat condition (1.6, 6.1, 6.2)					
Habitat (predominant, special) name		Status - habitat overall					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature from the list	Select the relevant MarineUnitID from the list		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)
Habitat (predominant, special) name		Status - habitat distribution (1.4)	Select from: - 1.4 Habitat Distribution - Other (specify)	Select from: — Distributional range (1.4.1) — Distributional pattern (1.4.2) — Other (specify)				
Habitat (predominant, special) name		Status - habitat extent (1.5)	Select from: - 1.5 Habitat Extent. - Other (specify)	Select from: — Habitat area (1.5.1) — Habitat volume, where relevant (1.5.2) — Other (specify)				
Habitat (predominant, special) name		Status - habitat condition (1.6, 6.2)	Select from: - 1.6 Habitat Condition (biotic aspects) - 6.1 Physical damage, having regard to substrate characteristics - 6.2 Condition of benthic community - Other (specify)	Select from: — Condition of the typical species and communities (1.6.1) — Relative abundance and/or biomass, as appropriate (1.6.2) — Physical, hydrological and chemical conditions (1.6.3) — Type, abundance, biomass and areal extent of biogenic substrate (6.1.1) — Extent of the seabed significantly affected by human activities for the different substrate types (6.1.2) — Presence of particularly sensitive and/or tolerant species (6.2.1) — Multi-metric indexes assessing benthic community condition and functionality, such as species diversity and richness and proportion of opportunistic species to sensitive species (6.2.2) — Proportion of biomass or number of individuals in the macrobenthos above some specified length/size (6.2.3) — Parameters describing the characteristics (shape, slope and intercept) of the size spectrum of the benthic community (6.2.4) — Other (specify)				
Habitat (predominant, special) name		Status - habitat overall	Select from: - 1.4 Habitat distribution - 1.5 Habitat extent - 1.6 Habitat condition - 6.2 Condition of benthic community - Other (specify)	Select from: — Other (specify)				

6.3.3.6 Step 3.5: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_HabitatMetadata**.

6.3.4 Functional groups (8A03)

6.3.4.1 Introduction

The functional groups reporting sheet (RS 8A03) is provided to allow reporting of the following biological features, within the scope of the Initial Assessment, Article 8a, and Annex III Table 1: birds, mammals, reptiles, fish and pelagic cephalopods.

It is recommended that reporting of these highly mobile or widely dispersed species groups is primarily undertaken at the level of functional groups, rather than on individual species within each group. The CSWP provides a set of functional groups, based on the advice from the relevant ICES/JRC Task Group report, and their further consideration by Regional Sea Conventions. This set aims to allow reporting on the status of these five groups of biological features at an ecologically relevant level of detail for MSFD purposes.

Some Member States may have used the broader 'species group' categories (*i.e.* birds, mammals, reptiles, fish, cephalopods) in their Initial Assessments. This reporting sheet allows reporting either at this species group level, the functional group level, or both. In some cases, it is appropriate to report on individual species (see Section 6.3.5). It should be noted that reporting on phytoplankton, zooplankton, angiosperms, macroalgae and invertebrate bottom fauna should be undertaken in conjunction with the relevant predominant habitat type with which they are associated, through the Habitats reporting sheet (Section 6.3.3).

One report should be completed per species group or functional group, per assessment area.

6.3.4.2 Step 3.1: Analysis of the species group/functional group

The information requested for species groups/functional groups is based on the GES criteria 1.6 Habitat condition because the CSWP notes that the assessment at functional group level is similar to that for a community of species in water column and seabed habitats, *i.e.* it is focused on the species composition of the group and the relative abundance of the species within the group. The CSWP also indicates that 'assessment at functional group level may use representative species from the group' (assessed at species level to inform the overall assessment) provided suitable consideration is given to the overall state of the group (*i.e.* overall species composition and relative abundance). The assessment should consider all species within the group in the assessment area, including any which are commercially exploited.

Information is requested on current state and trends for each criterion. The GES criteria 4.3 'Abundance/distribution of key trophic groups/species' may also be relevant for some species groups/functional groups as it is closely related to the GES indicator 1.6.2 'Relative abundance, or biomass, as appropriate'. Descriptive (free) text should be provided on the state and trend for each criterion, followed by related categorical summary information.

Where information is requested on change in species composition within the species group/functional group, the change referred to should be the alteration (either increase or decrease) from natural conditions which is due to anthropogenic pressures.

Reporting on the analysis of functional groups is shown in DBTable **MSFD8a_Functional**:

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant Marine UnitID		Provide a brief summary description of the feature in the area, including any significant spatial and temporal (seasonal) variation, and longer-term trends if relevant [maximum words 500]	Select one from categories provided	Select one from: High, moderate or low	Select one from categories provided	Select one from: High, moderate or low	Select one Increasing, Stable, Decreasing, Unknown/not assessed	YYYY	YYYY	Select one Increase, Be Stable, Decrease, Unknown /not assessed	YYYY	YYYY	Comment on any limitations in the information and data reported
Species/ functional group name		Condition (**species composition**) of the species group/ functional group (1.6.1)	Description of the species composition of the species group/functional group within the assessment area, including any significant spatial and temporal variation and trends. Indicate if the composition of typical species within the group is in line with natural physiographic, geographic and climatic conditions. Indicate whether certain species have been lost from the area. Max words: 250.	In relation to natural physiographic, geographic and climatic conditions, the condition (species composition) of the species group/ functional group is (select one): in line; altered, unknown/not assessed		Species composition of the species group/ functional group, compared with natural conditions, has been altered due to anthropogenic pressures by (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.								
Species/ functional group name		Relative **abundance** and/or biomass of the species group/ functional group (1.6.2; 4.3.1)	Description of the overall relative abundance and/or biomass of the species group/functional group in relation to the ecosystem, including any significant spatial and temporal variation and trends. Indicate if abundance and/or biomass of species group/functional group is in line with natural physiographic, geographic and climatic conditions. Max words: 250	In relation to natural physiographic, geographic and climatic conditions, the overall relative abundance and/or biomass of the species group/functional group is (select one): in line; altered, unknown/not assessed										

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Species/ functional group name		Species group/ functional group characteristics - **other** (specify). Repeat this row for each additional characteristic reported.	Description of any other characteristic/criteria used to assess this species group/functional group, including any significant spatial and temporal variation and trends. Max words: 250.	In relation to natural physiographic, geographic and climatic conditions, the 'Other characteristic/criterion' (specified in Description field) of the species group/ functional group is (select one): in line; altered, unknown/not assessed										
Species/ functional group name		**Information gaps** and **plans** to address them	See general guidance											

6.3.4.3 Step 3.2: Characteristics of the species group/functional group

The following information on the characteristics of the species group or functional group should be given in DBTable **MSFD8a_FunctionalFeature**:

a. The predominant habitat types, upon which the species group/functional group depends, should be listed;

b. If reporting at species group level, all component functional groups for the assessment area should be listed; this allows both for the identification of all relevant functional groups within the species group in the assessment area, and for situations where a Member State has undertaken a combined assessment of several functional groups, and can report others within the same species group separately;

c. The component species of the species group or functional group in the assessment area should be listed; this should in particular focus on the most common species, any listed species, and any other species used to assess the overall status of the group.

Feature	Area	Predominant habitats - present	Functional groups - present	Species - present
Select the relevant featuret	Select the relevant MarineUnitID	Add rows as needed	Add rows as needed	Add rows as needed
Species group/ functional group		List all predominant habitat types upon which the species group/functional group is dependent within the assessment area	If reporting at Species Group level, list all the component functional groups (from List) within the assessment area	List the main species (scientific name, authority, date) present in the species group/functional group within the assessment area

6.3.4.4 Step 3.3: Pressures on species group/functional group

Information on the main pressures on the species group/functional group, together with an indication of the types of impact (*i.e.* which criteria they affect), are to be included in the DBTable **MSFD8a_PressuresImpacts**.

Feature	Area	Topic	Description	Pressure 1	Pressure 1 rank	Pressure 2	Pressure 2 rank	Pressure 3	Pressure 3 rank	Impact 1	Impact 2	Impact 3	Impact 4	Impact 5	Limitations
Select the relevant feature from the list	Select the relevant Marine UnitID from the list		Past/ongoing pressures: describe the main pressures and their impacts on the feature. Include cumulative and synergistic effects if relevant. Maximum 500 words. Future pressures: describe the future pressures, why they are arising, and what the expected impacts on the feature will be. Maximum 250 words	Pressure 1, 2 and 3: Enter one of the top three pressures that are having the most impact on the feature. If only 1 or 2 pressures are relevant, all three fields do not need to be completed. Rank: Rank the pressure as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two pressures are the same, enter the same number in each field (*e.g.* '2' for each and no '3') Future pressure 1, 2 and 3: Enter the top three pressures that are expected to affect (impact) the feature in the next 12 years						Select if pressures are impacting this attribute (criterion)					This field can be used to indicate how compelling the evidence of impacts is
Species group/ functional group		Pressures								Condition (species compos-ition)	Relative abun-dance and/or biomass			Other (specify in Descrip-tion field)	
Species group/ functional group		Future pressures													

6.3.4.5 Step 3.4: Assessment/status of the species group/functional group

For species groups/functional groups, status should be reported for the GES criteria habitat (functional group) condition (1.6), specifically against the indicators condition (1.6.1) and relative abundance (1.6.2). For some groups GES criterion 4.3 could also be relevant and status should be reported using the indicator for abundance trends of functionally important selected groups/species (4.3.1). For fish functional groups, the GES criteria for reproductive capacity of the stock (3.2) and population age and size distribution (3.3) may also be relevant. The 'overall' status should be provided.

The status assessment is split across three database tables (**MSFD8a_AssessmentStatus, MSFD8a_AssessmentCriteria, MSFD8a_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature from the list	Select the relevant MarineUnitID from the list		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/ not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Species/functional group name		Status - condition (community composition) of species group/functional group (1.6.1)					
Species/functional group name		Status - relative abundance of species group/functional group (1.6.2; 4.3.1)					
Species/functional group name		Status - species group/functional group overall					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature	Select the relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)
Species/ functional group name		Status - condition (community composition) of species group/ functional group (1.6.1)	Select from (select all that apply): - 1.6 Habitat [functional group] condition; - Other (state). For fish functional groups, the following may also be relevant: - 3.3 Population age and size distribution.	Select from (select all that apply): - Condition of the typical species and communities (1.6.1); - Other (specify) For fish functional groups, the following may also be relevant: - Proportion of fish larger than the mean size of first sexual maturation (3.3.1); - 95% percentile of the fish length distribution observed in research vessel surveys (3.3.3); - Size at first sexual maturation (3.3.4)				
Species/ functional group name		Status - relative abundance of species group/ functional group (1.6.2; 4.3.1)	Select from (select all that apply): - 1.6 Habitat [functional group] condition; -4.3 Abundance/distribution of key trophic groups/species - Other (specify). For fish functional groups, the following may also be relevant: - 3.2 Reproductive capacity of the stock.	Select from (select all that apply): - Relative abundance and/or biomass (1.6.2); -Abundance trends of functionally important selected groups/species (4.3.1) - Other (specify); For fish functional groups: - Spawning stock biomass (3.2.1); - Biomass indices (3.2.2).				
Species/ functional group name		Status - species group/ functional group overall	Select from (select all that apply): - 1.6 Habitat [functional group] condition - Other (specify).	Other (specify)				

6.3.4.6 Step 3.5: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_FunctionalMetadata**.

6.3.5 Species (8A04)

6.3.5.1 Introduction

The species reporting sheet is provided to allow reporting on particular species of concern or of interest in the marine environment, within the scope of the Initial Assessment, Article 8a, and Annex III Table 1.

It is expected that most reporting of species will be at the level of functional groups (see Section 6.3.4). However, in some cases, it is appropriate to report on individual species. The CSWP indicates that at the level of individual species, the following are relevant for reporting:

- species listed under EU Directives and international agreements;
- commercially exploited species (in relation to Descriptor 3);
- genetically distinct forms of indigenous species;
- non-indigenous species, particularly those which are invasive;
- species which are assessed to represent or contribute to the assessment of functional groups (selection of species should be based upon agreed criteria).

From the above list, the following should be noted:

- an inventory of non-indigenous and genetically-distinct forms of indigenous species should be reported in RS 8A06 (Section 6.3.7) and non-indigenous species as a pressure should be reported in RS 8B10 (Section 6.4.11).

For species listed under Annex II, IV and V of the Habitats Directive, and wild bird species addressed by the Birds Directive special arrangements have been made to avoid duplicate reporting, as reporting is also expected directly under the Habitats Directive by June 2013 and under the Birds Directive by December 2013. Further details are provided in Annex 2 of *Guidance for 2012 reporting under the MSFD*.

In order to implement this proposal for reporting under the MSFD, Member States should:

- Indicate 'yes' in field *FeatureReported* against the rows for Habitats Directive and Birds Directive species in DBTable **Features_Overview** and;
- Submit a letter to the Commission via ReportNet by 15 October 2012, stating their intentions for reporting of marine species and habitats which are also to be reported under the Habitats and Birds Directives. This should include their intension to follow the approved reporting formats of the Habitats and Birds Directives and indicate when the reports will be submitted.

For each species that the Member State reports, one reporting sheet should be completed per species, per assessment area.

It is often most ecologically relevant to assess species at the population (stock) level or for the entire range of the species. In such circumstances, assessment areas often do not coincide with national boundaries, but can be larger than a Member State's waters. Assessment of commercial fish stocks is typically at stock level and hence often covers several Member State's waters. It is also now possible to assess species at a multi-national level under the Habitats Directive, undertaking a collective assessment, with each Member State reporting the same outcomes in their national report. Such approaches are envisaged also for the MSFD, where it is preferable to use the subregion scale as the largest area of assessment.

6.3.5.2 Step 3.1: Analysis of the species

The information requested for species is based on the GES criteria 1.1, 1.2 and 1.3, which are relevant to biodiversity. Information is requested on current state and trends for each criterion. Descriptive text should be provided on the state and trend for each criterion, followed by related categorical summary information.

Where information is requested on change in the characteristic, the change referred to should be the alteration (either increase or decrease) from natural conditions due to anthropogenic pressures.

Reporting on the analysis of species is shown in DBTable **MSFD8a_Species**. Note that field *SourceClassificationListAuthority* from DBTable **Features_Overview** is repeated in each table for species reporting because a species may be reported under several lists (Conventions).

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant MarineUnitID			Select one from categories provided	Select one from: High, moderate or low	Select one from categories provided	Select one from: High, moderate or low	Select one from: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one from: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on any limitations in the information and data reported
Species name		**Distribution** of species (1.1)	Description of the distributional range and pattern of the species within the assessment area, including any spatial or temporal (seasonal) variation and any longer-term trends (maximum 250 words).	In relation to natural physiographic, geographic and climatic conditions, the distributional range and pattern is (select one): in line; altered; unknown/not assessed.		Distributional range of the species has deviated from natural conditions by (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/not assessed								
Species name		**Population size** of species (1.2)	Description of the population size of the species within the assessment area, including any spatial or temporal (seasonal) variation and any longer-term trends (maximum 250 words).	In relation to natural physiographic, geographic and climatic conditions, the population size is (select one): in line; altered; unknown/not assessed.		Population size of the species has deviated from natural conditions by (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/not assessed								

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Species name		Population **condition** of species (1.3)	Description of the condition (demographic characteristics - *e.g.* body size or age class structure, sex ratio, fecundity rates, survival/mortality rates) of the species in the assessment area, including any significant spatial and temporal (seasonal) variation and longer-term trends (*e.g.* whether and how the population condition is changing over time) (maximum 500 words).	In relation to natural physiographic, geographic and climatic conditions, the population condition is (select one): in line; altered; unknown/not assessed.		Proportion of the current (remaining) population of the species in the assessment area that has an altered (impacted) condition (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/not assessed								
Species name		**Information gaps** and **plans** to address them	See general guidance											

6.3.5.3 Step 3.2: Pressures on the species

Information on the main pressures on the species, together with an indication of the types of impact (*i.e.* which criteria they affect), are to be included in the DBTable **MSFD8a_PressuresImpacts**.

Feature	Area	Topic	Description	Pressure 1	Pressure 1 rank	Pressure 2	Pressure 2 rank	Pressure 3	Pressure 3 rank	Impact 1	Impact 2	Impact 3	Impact 4	Impact 5	Limitations
Select the relevant feature	Select the relevant Marine UnitID		Past/ongoing pressures: describe the main pressures and their impacts on the feature. Include cumulative and synergistic effects if relevant. Maximum 500 words. Future pressures: describe the future pressures, why they are arising, and what the expected impacts on the feature will be. Maximum 250 words	Pressure 1, 2 and 3: Enter one of the top three pressures that are having the most impact on the feature. If only 1 or 2 pressures are relevant, all three fields do not need to be completed. Rank: Rank the pressure as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two pressures are the same, enter the same number in each field (*e.g.* '2' for each and no '3') Future pressure 1, 2 and 3: Enter the top three pressures that are expected to affect (impact) the feature in the next 12 years						Select if pressures are impacting this attribute (criterion)					This field can be used to indicate how compelling the evidence of impacts is
Species name		Pressures								Distrib-ution	Popul-ation size	Popul-ation condition	Habitat of the species	Other (specify in Descrip-tion field)	
Species name		Future pressures													

6.3.5.4 Step 3.3: Assessment/status of the species

For species, status should be reported for the GES criteria species distribution (1.1), population size (1.2), population condition (1.3), and overall (*i.e.* a similar approach to that adopted under the Habitats Directive).

The status assessment is split across three database tables (**MSFD8a_AssessmentStatus, MSFD8a_AssessmentCriteria, MSFD8a_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature	Select the relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/ not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Species name		Status - species distribution (1.1)					
Species name		Status - species population size (1.2)					
Species name		Status - species population condition (1.3)					
Species name		Status - species overall					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature	Select the relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)
Species name		Status - species distribution (1.1)	Select from (select all that apply): - 1.1 Distribution Other (specify)	Select from (select all that apply): - Distributional range (1.1.1); - Distributional pattern within the range (1.1.2); - Area covered by the species (for sessile/benthic species) (1.1.3); - Other (specify)				
Species name		Status - species population size (1.2)	Select from (select all that apply): - 1.2 Population size; - Other (specify) For fish species, the following may also be relevant: - 3.1 Level of pressure of the fishing activity - 3.2 Reproductive capacity of the stock.	Select from (select all that apply): - Population abundance and/or biomass (1.2.1); - Other (specify); For fish species: - Fishing mortality (3.1.1); - Ratio between catch and biomass index (3.1.2); - Spawning stock biomass (3.2.1); - Biomass indices (3.2.2).				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Species name		Status - species population condition (1.3)	Select from (select all that apply): - 1.3 Population condition; - Other (specify) For fish species, the following may also be relevant: - 3.3 Population age and size distribution.	Select from (select all that apply): - Population demographic characteristics (1.3.1); - Population genetic structure (1.3.2); - Other (specify). For fish species: - Proportion of fish larger than the mean size of first sexual maturation (3.3.1); - 95% percentile of the fish length distribution observed in research vessel surveys (3.3.3); - Size at first sexual maturation (3.3.4)				
Species name		Status - species overall	Select from (select all that apply): - 1.1 Distribution; - 1.2 Population size; - 1.3 Population condition; - Other (specify)	Other (specify)				

6.3.5.5 Step 3.4: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_SpeciesMetadata**.

6.3.6 Ecosystems (8A05)

6.3.6.1 Introduction

The Ecosystems reporting sheet (RS 8A05) is provided to allow reporting on biodiversity in the marine environment at the ecosystem level. This reporting sheet is within the scope of the Initial Assessment, Article 8a, and Annex III Table 1 and should capture overall aspects of GES according to the definition in Article 3(5), including the functioning of the ecosystem where Descriptor 4 on food-webs is especially relevant.

This sheet provides Members States the opportunity to report on their marine waters as a whole entity, combining information on predominant habitats and functional groups within the ecosystem to compare ecosystem structure and functioning against prevailing climatic and physiographic conditions. It can be expected that, for 2012, ecosystem level reporting may be poorly developed due to a lack of established approaches for such assessments. Nevertheless, provision is made for such reporting where Member States consider it possible, particularly to address assessments in relation to Descriptor 4 (food webs) and criterion 1.7 (ecosystem structure).

The ecosystems reported on should typically be large areas which encompass multiple predominant habitat types and functional groups of species and which represent a level of ecological coherence above the level of their component functional groups and predominant habitat types. Small areas may be more appropriately addressed as 'Other features' (RS 8A07).

For each ecosystem that the Member State reports, one reporting sheet should be completed per assessment area.

6.3.6.2 Step 3.1: Analysis of the ecosystem

The information requested for ecosystems is based on the GES criteria 1.7, 4.1, 4.2 and 4.3 which are relevant to biodiversity and marine food webs.

Reporting on ecosystem structure relates to criterion 1.7 (the composition and relative proportions of ecosystem components (predominant habitats and functional groups) relative to natural physiographic conditions).

Reporting on ecosystem functioning relates to Descriptor 4 on food webs (*i.e.* whether elements of marine food webs, to the extent that they are known, occur at normal abundance, diversity and levels capable of ensuring the long-term abundance of the species and retention of their full reproductive capacity). Reporting on ecosystem functioning is divided into three rows for GES criteria 4.1, 4.2 and 4.3 and a row to provide any other criteria Member States have used to assess ecosystem functioning.

Ecosystems should be considered to be in a natural condition if there is no evidence of any change in the ecosystem's condition as a result of anthropogenic impacts, compared to the condition to be expected under prevailing conditions. This refers to the 'prevailing physiographic, geographic and climate conditions' referred to in Descriptor 1 and 'normal abundance and diversity' referred to in Descriptor 4.

Descriptive text should be provided on the state and trend for each criterion, followed by related categorical summary information.

Reporting on the analysis of ecosystems is shown in DBTable **MSFD8a_Ecosystem**:

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant Marine UnitID			Select one from categories provided	Select one from: High, moderate or low	Select one from categories provided	Select one from: High, moderate or low	Select one from: Increasing, Stable, Decreasing, Unknown/not assessed	YYYY	YYYY	Select one from: Increase, Be Stable, Decrease, Unknown/not assessed	YYYY	YYYY	Comment on any limitations in the information and data reported
Ecosystem name		Ecosystem **structure** (1.7)	Describe how the current relative extent of habitats or proportion of functional groups within the ecosystem compare to that expected under natural physiographic and climatic conditions (max 250 words)	The relative extent of the predominant habitats and proportion of functional groups, compared to natural conditions, is (select one): in line; altered; unknown/not assessed		See DBTable MSFD8a_Ecosystem_Summary2								
Ecosystem name		Ecosystem functioning - **Productivity** (production per unit mass) of key species or trophic	Describe how the current productivity (production/unit biomass) of key species or trophic groups (*e.g.* predators) compares to that expected under	Productivity of key species or trophic groups, compared to natural conditions, is (select one): in line; altered; unknown/not assessed		See DBTable MSFD8a_Ecosystem_Summary2								

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Summary 2	Sum2 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
		groups (4.1)	natural physiographic and climatic conditions											
Ecosystem name		Ecosystem functioning - **Proportion** of selected **species at the top of food webs** (4.2)	Describe how the current proportion of selected species at the top of food webs, in particular large fish by weight (4.2.1), compares to that expected under natural and climatic physiographic conditions	Proportion of selected species at the top of food webs, compared to natural conditions, is (select one): in line; altered; unknown/not assessed		See DBTable MSFD8a_Ecosystem_Summary2								
Ecosystem name		Ecosystem functioning - **Abundance/** distribution of **key trophic groups/species** (4.3)	Describe how the current abundance of groups with fast turnover rates compares to that expected under natural physiographic conditions	Abundance/distribution of key trophic groups/species, compared to natural conditions, is (select one): in line; altered; unknown/not assessed		See DBTable MSFD8a_Ecosystem_Summary2								
Ecosystem name		Ecosystem functioning - **other**	Description of any other criteria used to assess ecosystem functioning	Criterion used to assess ecosystem functioning, compared to natural conditions, is (select one): in line; altered; unknown/not assessed										
Ecosystem name		**Information gaps** and **plans** to address them	See general guidance											

Summary 2 information should be entered into DBTable **MSFD8a_Ecosystem_Summary2:**

Feature	Area	Topic	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	Select relevant topic	Add rows as needed	Add rows as needed
Ecosystem name			List all predominant habitats (from List) in the assessment area that are impacted (adversely affected)	List all functional groups (from List) in the assessment area that are impacted (adversely affected)

6.3.6.3 Step 3.2: Characteristics of the ecosystem

The ecosystem that is being reported on should be identified giving a suitable name (see Step1: Features). It is expected that together all of the ecosystems that a Member State reports on should represent the majority of the marine waters of that Member State. It is recognised that ecosystems may span the waters of several Member States within a region/subregion, so Member States may need to cooperate with neighbouring countries which share an ecosystem when making an assessment.

The characteristics of the ecosystem being reported should be given in DBTable **MSFD8a_EcosystemFeatures**:

- The component functional groups of the ecosystem in the assessment area should be listed; this should list in particular the main/most common groups;
- The component predominant habitat types of the ecosystem in the assessment area should be listed.

Feature	Area	Predominant habitats – present	Functional groups - present	Species - present
Select the relevant feature	Select the relevant MarineUnitID	Add rows as needed	Add rows as needed	Add rows as needed
Ecosystem		List the main predominant habitat types present in this ecosystem within the assessment area	List the main functional groups (from List) present in this ecosystem within the assessment area	List the species or trophic groups (*e.g.* mammals, seabirds) (criterion 4.1), species at the top of food webs (criterion 4.2) or key trophic groups or species (criterion 4.3) used in this assessment. In database, use field 'Other'.

6.3.6.4 Step 3.3: Assessment/status of the ecosystem

For ecosystems, status should be reported for the GES criteria ecosystem structure (1.7), ecosystem functioning (productivity (4.1), proportion of species at the top of food webs (4.2), abundance/distribution of key trophic groups/species (4.3), any other criteria used to assess ecosystem functioning, and/or overall status, as appropriate.

The status assessment is split across three database tables (**MSFD8a_AssessmentStatus, MSFD8a_AssessmentCriteria, MSFD8a_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature from the list	Select the relevant MarineUnitID from the list		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/ not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported
Ecosystem name		Status - ecosystem structure (1.7)					
Ecosystem name		Status - ecosystem functioning: productivity (4.1)					
Ecosystem name		Status - ecosystem functioning: proportion of species at the top of food webs (4.2)					

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Ecosystem name		Status - ecosystem functioning: abundance/distribution of key trophic groups/species (4.3)					
Ecosystem name		Status - ecosystem functioning: other					
Ecosystem name		Status - ecosystem overall					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature	Select the relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)
Ecosystem name		Status - ecosystem structure (1.7)	Select from (select all that apply): — Ecosystem structure (1.7) — Other (specify)	Select from (select all that apply): — Composition and relative proportions of ecosystem components (habitats and species) (1.7.1) — Other (specify)				
Ecosystem name		Status - ecosystem functioning: productivity (4.1)	Select from (select all that apply): — Productivity (production/unit biomass) of key species or trophic groups (4.1) — Other (specify)	Select from (select all that apply): — Performance of key predator species using their productivity (production/unit biomass) (4.1.1) — Other (specify)				
Ecosystem name		Status - ecosystem functioning: proportion of species at the top of food webs (4.2)	Select from (select all that apply): — Proportion of selected species at the top of food webs (4.2) — Other (specify)	Select from (select all that apply): — Large fish (by weight) (4.2.1) — Other (specify)				
Ecosystem name		Status - ecosystem functioning: abundance/distribution of key trophic groups/species (4.3)	Select from (select all that apply): — Abundance/distribution of functionally important selected groups/species (4.3) — Other (specify)	Select from (select all that apply): — Abundance trends of functionally important selected groups/species (4.3.1) — Other (specify)				
Ecosystem name		Status - ecosystem functioning: other	— Other (specify)	— Other (specify)				
Ecosystem name		Status - ecosystem overall	Select from (select all that apply): — Productivity (production/unit biomass) of key species or trophic groups (4.1) — Proportion of selected species at the top of food webs (4.2) — Abundance/distribution of functionally important selected groups/species (4.3) — Other (specify)	Select from (select all that apply): — Performance of key predator species using their productivity (production/unit biomass) (4.1.1) — Large fish (by weight) (4.2.1) — Abundance trends of functionally important selected groups/species (4.3.1) — Other (specify)				

6.3.6.5 Step 3.4: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_EcosystemMetadata**.

6.3.7 Non-indigenous species inventory (8A06)

6.3.7.1 Introduction

The reporting sheet on the non-indigenous species inventory (RS 8A06) relates to the listing in Annex III, Table 1 of an inventory of the temporal occurrence, abundance and spatial distribution of non-indigenous, exotic species, or where relevant, genetically distinct forms of native species, which are present in the marine region or subregion.

Non-indigenous species (NIS) (also known as alien, exotic, non-native or allochthonous species), are species, subspecies or lower taxa introduced outside of their natural range (past or present) and outside of their natural dispersal potential. These include 'lesseptian' species which have migrated across man-made structures, such as the Suez Canal.

Non-indigenous species encompass invasive alien species. **Invasive species** are defined broadly as 'species whose introduction and/or spread threaten biological diversity or have other unforeseen consequences'[23] (*e.g.* adverse effects on ecosystem functioning, socio-economic values and/or human health in invaded regions). This definition is in line with the Convention on Biological Diversity (CBD) Guiding Principles, which defines Invasive Alien Species as 'alien species whose introduction and/or spread threaten biological diversity' (CBD Guiding Principles (CBD Decision COP VI/23)).

Resources such as the inventory of invasive species in Europe developed as part of the Delivering Alien Invasive Species in Europe (DAISIE) project or Marine Ecosystem Evolution in a Changing Environment (MEECE) may provide useful sources of information for Member States on non-indigenous species.

6.3.7.2 Step 3.1: Inventory

For each species, the scientific name and whether it is a non-indigenous species (invasive or not) or a genetically distinct form of a native species should be provided. Other fields requested are: the date it was first recorded in the area; the country or area of origin; its means of arrival (pathway); temporal occurrence (the months of the year during which the species is commonly present in the assessment area; if it is permanently established enter all months of the year); its abundance; the predominant habitat(s) where it occurs or functional group it belongs to (taken from term lists); and its spatial distribution (proportion of area in which it is found.

[23] SEC(2008) 2886 Commission Staff Working Document. Annex to the Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. Towards an EU Strategy on Invasive Species. Impact Assessment – Executive Summary {COM(2008) 789 final} {SEC(2008) 2887}. Brussels, 3.12.2008.

It is recognised that detailed information may not be available for all these fields for all non-indigenous species. If exact values on abundance are not available, a qualitative assessment of abundance can be provided.

Data on sub-sections of the assessment area such as 'hotspots' can be used to complete the inventory, but the limited geographic range of the background data should be stated in the 'limitations of information/data' field.

The inventory should be entered into DBTable **MSFD8a_NISInventory**:

Feature	**Area**	**Species name**	**Relevant predominant habitat/ functional group**	**Country/ area of origin**	**Means of arrival (NIS Pathway)**	**Date first recorded**	**Abundance**	**Abundance unit**	**Spatial distribution 1**	**Spatial distribution confidence**	**Temporal occurrence Start**	**Temporal occurrence End**	**Invasive species?**	**Limitations**
Select the relevant feature	Select the relevant Marine UnitID	Scientific name, authority and date Repeat this row for each species recorded	Enter the predominant habitat or functional group to which the species belongs, or is associated	Specify the geographic area where the species originates from	Identify the route by which the species arrived in the area (select one from **List: NIS Pathways**)	Date first recorded in the assessment area (MM/YYYY)	Enter abundance figure (*e.g.* number of individuals, biomass). If exact values are unavailable make a qualitative assessment	Give unit for abundance value used	Proportion of assessment area in which the species is present (select one: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; unknown/ not assessed	Select one from: High, moderate or low	Enter the first month of the year when species is commonly present in assessment area. If present all year enter January	Enter the last month of the year when species is commonly present in assessment area. If present all year enter December	Specify whether the species is: - Invasive - Not invasive	of information/ data
Non-indigenous species inventory														
Genetically -distinct forms of native species inventory														

6.3.7.3 Step 3.2: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_NISInventoryMetadata**.

6.3.8 Other features (8A07)

Reporting on other features (RS 8A07) is within the scope of the Initial Assessment, Article 8a, and Annex III Table 1. Table 1 suggests a number of parameters which could potentially fall under 'other features' (*e.g.* a description of the situation with regards to chemicals, hotspots); however, these need not be reported in the 'other features' sheet as they have been included within the scope of the reporting sheets on contamination by hazardous substances (8B06).

6.3.8.1 Step 3.1: Analysis of features

Space has been provided to report characteristics and trends for:

a. any feature or characteristic typical of or specific to the marine region or subregion, and

b. habitats in areas which by virtue of their characteristics, location or strategic importance merit a particular reference. This may include areas subject to intense or specific pressures or areas which merit a specific protection regime.

These rows can be repeated as many times as needed to report on various 'other features' or 'areas which merit a particular reference'.

Descriptive text should be provided on the state and trend for each feature, followed by related categorical summary information. Member States can provide any summary information and trend data that is considered relevant.

The information should be entered into DBTable **MSFD8a_Other**:

Feature	Area	Topic	Description	Summary 1	Sum1 confidence	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select the relevant MarineUnitID			Select one from categories provided	Select one from: High, moderate or low	Select one from: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one from: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on any limitations in information and data reported
Feature or typical characteristic name		**Feature or characteristic** typical or specific to the region or subregion	Description of the feature or characteristic, including any spatial and temporal variation and trends (maximum 250 words)	Provide any relevant summary data.								
Area of merit name		Habitats in **specific areas**	Description of the habitats in areas of merit, including any spatial or temporal variation and trends (maximum 250 words)	Provide any relevant summary data.								
Area of merit name		**Information gaps** and **plans** to address them	See general guidance									

6.3.8.2 Step 3.2: Assessment/status of features

The assessment of status for this reporting sheet is optional. There is no requirement to report status if it is not appropriate for the feature or habitat.

The status assessment is split across three database tables (**MSFD8a_AssessmentStatus, MSFD8a_AssessmentCriteria, MSFD8a_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature from the list	Select the relevant MarineUnitID from the list		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/ not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Feature or typical characteristic name		Status - typical/specific feature					
Area of merit name		Status - area meriting a particular reference					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature	Select the relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)
Feature or typical characteristic name		Status - typical/specific feature	Select from (select all that apply): - Other (specify)	Select from (select all that apply): - Other (specify). (Allows for Decision criteria and indicators or other methodology to be used)				
Area of merit name		Status - area meriting a particular reference	Select from (select all that apply): - Other (specify)	Select from (select all that apply): - Other (specify). (Allows for Decision criteria and indicators or other methodology to be used)				

6.3.8.3 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8a_OtherMetadata**.

6.4 Pressures and impacts (Art. 8(1b))

Reporting on pressures and impacts follows a standard format, but the details of levels of inputs to the environment, levels present in the environment, the breakdown of reporting, and the impacts on water column, seabed, functional groups, and seafood, varies according to the reporting sheet. This is summarised in Table 6.4.

Table 6.4: Summary of pressure and impact reporting against different matrices and components

	Analysis of pressure		Analysis of impact				Assessment of pressure				Assessment of impact			
	Level of inputs to environment	Level of pressure in environment	on water column habitats	on seabed habitats	on functional groups	on fish & other seafood	Overall	Water column	Seabed	Biota	Water column habitats	Seabed habitats	Functional groups	Fish & other seafood
Physical loss														
Physical damage														
Underwater noise		Impulsive sounds, Continuous sounds						Impulsive sounds, Continuous sounds						
Litter		On shore, in water column, on seabed							Shore, Subtidal seabed					
Interference with hydrological changes														
Contamination by hazardous substances (synthetic, non-synthetic, radio-nuclides)	From land-, sea- and air-based sources	In water, sediment or biota, as appropriate; in functional groups							Sediment	Seabed biota, Functional groups				
Acute pollution events														
Nutrients & organic matter enrichment	Nitrogen, phosphorus, organic matter	Nitrogen, phosphorus, organic matter						N, P, Organic matter						
Microbial pathogens		In bathing waters, shellfish & 'other'				Shellfish	'Other'	Bathing waters		Shellfish				Shellfish
Non-indigenous species														
Species extraction (fishing, seaweed harvesting, maerl extraction, other)		For different fishing types, seaweed harvesting, maerl extraction, other				Fish, shellfish			Seaweed harvesting, Maerl extraction	Fish & shellfish				Fish, shellfish
Marine acidification														

From the concept paper, the reporting sheets for this section of Art. 8.1 aim to address the following:

Analysis of the pressure[24]:

1. What are the characteristics of the pressure, including any seasonal variation?

2. What are the sources of the pressure (*i.e.* the human activities)?

One or both of the following, depending on relevance:

3. What is the level of pressure arising from the human activities (the 'input level'[25]), including its spatial distribution and intensity and any changes over time?

4. What is the level of the pressure found in the environment (the 'output level') (which may be measured in the water column, the seabed or the biota depending on which is most appropriate), including its spatial distribution and intensity and any changes over time?

Analysis of impacts[26]:

5. What are the impacts of the pressure on the environment, including their spatial distribution and intensity and any changes over time?

This should reflect physical, chemical or biological changes caused by the pressure (*e.g.* changes to the abiotic structure of habitats, to the structure of communities or to species, and changes to ecosystem functions).

The assessment should distinguish impacts to water column habitats separately to seabed habitats and, if relevant, particular functional groups.

Assessment of the pressure and its impacts:

6. Is the current level of the pressure acceptable?

7. Is the current level of the impacts acceptable?

These assessments have a link to the determination of GES (Art. 9) as they should indicate whether the pressure and its impacts are at a level consistent with GES or not. The structure of this section of the reporting sheet is therefore very similar to that for Art. 9, but accommodates situations where Member States will draw from existing assessments that may have used alternative methods and criteria.

Additionally, these assessments should have a link to the identification of targets under Art. 10, as they will indicate whether targets are needed to achieve GES (or just to maintain it, if already considered to be at GES).

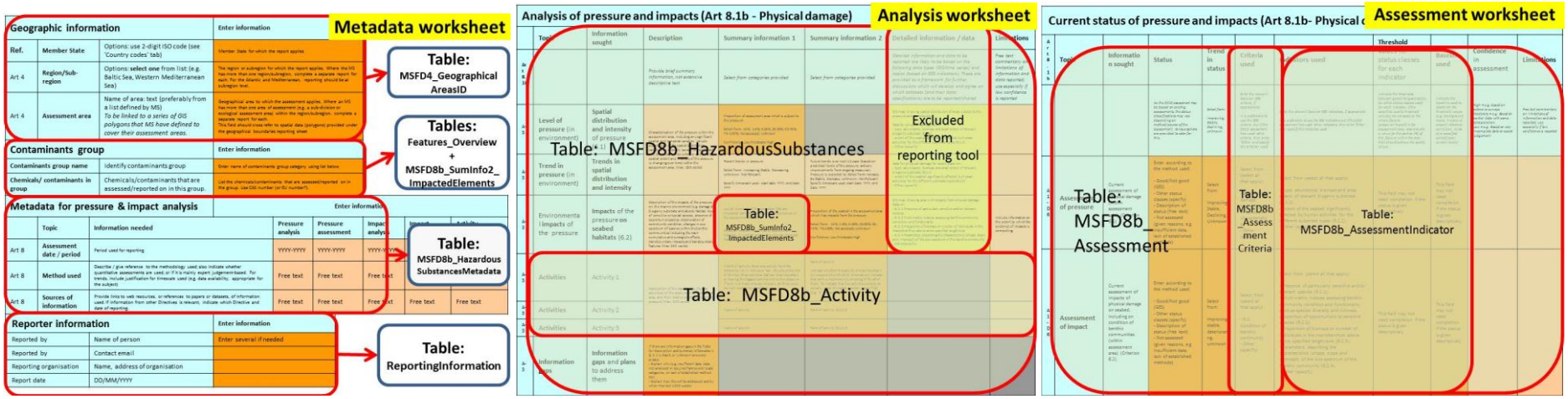
[24] A pressure can be described as a change, due to anthropogenic activities, in a physical, chemical or biological characteristic of the environment compared with background levels. A pressure, at particular levels of intensity, has the potential to have a direct or indirect impact on any part of the ecosystem.

[25] Whether the pressure is most appropriately/most easily measured at the input or output stage (or both) will vary according to the pressure. An indicative approach for each pressure was discussed at WG DIKE in September 2011.

[26] An impact is the alteration, whether permanent or temporary and compared with background conditions, in a physical, chemical or biological aspect of the environment which is the result of direct or indirect pressure(s) from human activities and which is considered undesirable.

6.4.1 Representation of reporting sheets in the MSFD database

The conversion of the Art. 8.1b reporting sheets into database tables is illustrated below (from RS 8B06 Contaminants and RS 8B02 Physical damage):



There are twelve reporting sheets to be addressed under Art. 8.1b. Table 6.5 below shows the relevant database tables (all tables are prefixed MSFD8b):

Reporting sheet	Analysis against criteria	Features impacted	Analysis of activities	Assessment of status	Metadata	Reporter
Physical loss (RS 8B01)	PhysicalLoss	SumInfo2_ ImpactedElements	Activity	Assessment AssessmentCriteria AssessmentIndicator	PhysicalLossMetadata	Reporting Information
Physical damage (RS 8B02)	PhysicalDamage				PhysicalDamageMetadata	
Underwater noise (8B03)	Noise				NoiseMetadata	
Marine litter (8B04)	Litter				LitterMetadata	
Interference with hydrological processes (8B05)	HydrologicalProcesses				HydrologicalProcessesMetadata	
Contamination by hazardous substances (8B06)	HazardousSubstances				HazardousSubstancesMetadata	
Acute pollution events (8B07)	PollutantEvents				PollutantEventsMetadata	
Nutrients & organic matter enrichment (8B08)	Nutrients				NutrientsMetadata	
Microbial pathogens (8B09)	MicrobialPathogens				MicrobialPathogensMetadata	
Non-indigenous species (8B10)	NIS				NISMetadata	
Extraction of species (8B11)	ExtractionFishShellfish ExtractionSeaweedMaerlOther				ExtractionFishShellfishMetadata ExtractionSeaweedMaerlOtherMetadata	
Marine acidification (8B12)	Acidification				AcidificationMetadata	

6.4.2 Physical loss (8B01)

6.4.2.1 Introduction

The physical loss reporting sheet (RS 8B01) is provided to allow reporting on physical loss of habitats in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

Reporting of physical loss should be done at a general level, with specification of the cause of physical loss (*e.g.* by smothering, sealing, removal) done only in descriptive text, or at the level of specific datasets which may be agreed by Member States in due course.

Physical loss refers to the permanent or long-term alteration of the marine habitat (*e.g.* a change from a natural substrate to a man-made substrate, the conversion of a marine habitat to terrestrial through land claim, the loss of biogenic substrate). Where the seabed has been damaged but continues to comprise the same or similar natural substrate (but its structure and biota are altered) this should be addressed under Physical damage (RS 8B02).

One reporting sheet should be completed for physical loss per assessment area.

6.4.2.2 Step 3.1: Characteristics/analysis of physical loss

The information requested for physical loss is based on the GES criteria 6.1 and 6.2. Information is requested on the spatial distribution and intensity (temporal pattern) of physical loss in the environment including recent trends. Information on the physical, chemical and biological impacts of physical loss on seabed habitats (specifying the predominant habitat types that are adversely affected) is also requested. A text description should be provided on the state and trend for each criterion, followed by related categorical summary information. This includes a characterisation of physical loss within the assessment area and a description of the impacts of physical loss on the marine environment.

The information should be entered into DBTable **MSFD8b_PhysicalLoss**:

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select the relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided	Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Physical loss		**Level of pressure** in environment (6.1)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words)	Proportion of the assessment area which is subject to the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed									

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Physical loss		**Impacts** of pressure **on seabed habitats** and associated communities (6.2)	Description of the impacts of the pressure on this aspect of the marine environment in the assessment area (*e.g.* damage to biogenic substrate and abiotic habitat, loss of sensitive or typical species, presence of opportunist species, deterioration of community condition, changes in size spectrum of species within the benthic communities) including the main cumulative and synergistic effects, transboundary impacts and transboundary features (maximum 250 words)	Proportion of the seabed in the assessment area which has impacts from the pressure (Note: for this pressure it should normally be the same proportion as the pressure itself) (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/ not assessed		See DBTable MSFD8b_SumInfo2_ImpactedElements							
Physical loss		**Information gaps** and **plans** to address them	See general guidance										

Information on which physical/chemical features, predominant habitat types or functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements**:

Feature	Area	Physical/chemical features – impacted	Predominant habitats - impacted	Functional groups - impacted	Species - present	Species - impacted
Select the relevant feature	Select the relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed	
Physical loss			Seabed types only			

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**:

Feature	Area	Topic	Description	Activity 1	Activity 1 rank	Activity 2	Activity 2 rank	Activity 3	Activity 3 rank	Limitations
Select the relevant feature from the list	Select the relevant MarineUnitID from the list		Description of the main causes (human activities) of the pressure in the assessment area, and their relative contribution to the pressure (Max: 500 words)	Activity 1, 2 and 3: Enter one of the top three activities that are having the most contribution to the pressure. If only 1 or 2 activities are relevant, all three fields do not need to be completed. Rank: Rank the activity as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two activities are the same, enter the same number in each field (e.g. '2' for each and no '3')						
Physical loss		**Activities**								

6.4.2.3 Step 3.2: Assessment of physical loss

For physical loss, pressure status should be reported for the GES criteria physical damage, with regard to substrate characteristics (6.1), and impact status should be reported for impacts on the seabed — condition of the benthic community (6.2). Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic:

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select the relevant feature	Select the relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one from: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Physical loss		Assessment - physical loss (6.1)					
Physical loss		Assessment - impacts of physical loss on seabed habitats (6.2)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select the relevant feature	Select the relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value..	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Physical loss		Assessment - physical loss (6.1)	Select all that apply: - 6.1 Physical damage, having regard to substrate characteristics. - Other (specify).	Select all that apply: - Type, abundance, biomass and areal extent of relevant biogenic substrate (6.1.1). - Extent of the seabed significantly affected by human activities for the different substrate types (6.1.2). - Other (specify)				
Physical loss		Assessment - impacts of physical loss on seabed habitats (6.2)	Select all that apply: - 6.2. Condition of benthic community - Other (specify)	Select all that apply: - Presence of particularly sensitive and/or tolerant species (6.2.1). - Multi-metric indexes assessing benthic community condition and functionality, such as species diversity and richness, proportion of opportunistic to sensitive species (6.2.2). - Proportion of biomass or number of individuals in the macrobenthos above some specified length/size (6.2.3). - Parameters describing the characteristics (shape, slope and intercept) of the size spectrum of the benthic community (6.2.4). - Other (specify)				

6.4.2.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_PhysicalLossMetadata**.

6.4.3 Physical damage (8B02)

6.4.3.1 Introduction

The physical damage reporting sheet is provided to allow reporting on physical damage of habitats in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

Reporting of physical damage should be done at a general level, with specification of the cause of physical damage (*e.g.* by changes in siltation, abrasion, selective extraction or other) done only in descriptive text, or at the level of specific datasets which may be agreed by Member States in due course.

Physical damage should be distinguished from physical loss, as described in Section 6.4.2. Additionally, where physical damage differentially affects different predominant habitat types, the impacts on the condition of those habitat types should be reflected in the reporting for that predominant habitat type (see Section 6.3.3).

One reporting sheet should be completed for physical damage per assessment area.

6.4.3.2 Step 3.1: Characteristics/analysis of physical damage

The information requested for physical damage is based on the GES criteria 6.1 and 6.2. Information is requested on the spatial distribution and intensity (temporal pattern) of physical damage in the environment including recent trends. Information on the physical, chemical and biological impacts of physical damage on seabed habitats (specifying the predominant habitat types that are adversely affected) is also requested. Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information. This includes a characterisation of physical damage within the assessment area and a description of the impacts of physical damage on the marine environment.

The information should be entered into DBTable **MSFD8b_PhysicalDamage**:

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided	Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Physical damage		**Level of pressure** in environment (6.1)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution	Proportion of the assessment area which is subject to the pressure (select one):									

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			and intensity, and any longer-term trends within the assessment area (maximum 250 words)	<1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.									
Physical damage		**Impacts** of pressure **on seabed habitats** and associated communities (6.2)	Description of the impacts of the pressure on the marine environment (*e.g.* damage to biogenic substrate and abiotic habitat, loss of sensitive or typical species, presence of opportunist species, deterioration of community condition, changes in size spectrum of species within the benthic communities) including the main cumulative and synergistic effects, transboundary impacts and transboundary features (maximum 250 words)	Proportion of the seabed in the assessment area which has impacts from the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed		See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Physical damage		**Information gaps** and **plans** to address them	See general guidance										

Information on which physical/chemical features, predominant habitat types or functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements**:

Feature	Area	Physical/chemical features – impacted	Predominant habitats - impacted	Functional groups - impacted	Species - present	Species - impacted
Select the relevant feature	Select the relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed	
Physical damage			Seabed types only			

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.3.3 Step 3.2: Assessment of physical damage

For physical damage, pressure status should be reported for the GES criteria physical damage, with regard to substrate characteristics (6.1), and impact status should be reported for impacts on the seabed — condition of the benthic community (6.2). Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic. The same criteria and indicators as used for Physical loss are relevant (Section 6.4.2.3).

6.4.3.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_PhysicalDamageMetadata**.

6.4.4 Underwater noise (8B03)

6.4.4.1 Introduction

The Underwater noise reporting sheet is provided to allow reporting on underwater noise in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2. Due to underwater noise being a relatively new topic for assessment there is typically limited data and information available, and it is understood that Member States may not be able to complete all aspects of the reporting sheet but should aim to provide all appropriate information available.

The information requested for underwater noise is based on the GES criteria 11.1 and 11.2. The original indicators for 11.1.1 (low and mid frequency impulsive noise) and 11.2.1 (ambient noise) have been reviewed and alterations suggested by the Technical Sub-Group (TSG) on Underwater Noise and other forms of energy[27]. These will be reviewed by WG GES and are not expected to be used for reporting in 2012. The proposed altered indicators are:

- The proportion of days and their distribution within a calendar year, over geographic locations whose shape and area are to be determined, and their spatial distribution in which either the monopole energy source level (in units of dB re 1 µPa² m² s), or the zero to peak monopole source level (in units of dB re 1 µPa² m²) of anthropogenic sound sources, measured over the frequency band 10 Hz to 10 kHz, exceeds a value that is likely to entail significant impact on marine animals (11.1.1).
- Trends in the annual average of the squared sound pressure associated with ambient noise in each of two third octave bands, one centred at 63 Hz and the other at 125 Hz, expressed as a level in decibels, in units of dB re 1 µPa, either measured directly at observation stations, or inferred from a model used to interpolate between or extrapolate from measurements at observation stations (11.2.1).

The TSG report on Underwater noise also highlights existing or planned monitoring networks for ambient noise which can be used for further development to implement that ambient noise indicator and that Member States may find useful to refer to. These include LIDO (Listening to the Deep-Ocean Environment), SHOM and ENSTA Bretagne experiment in western English Channel, European Seas Observatory NETwork (ESONET), MARNET (Marine Environmental Monitoring Network in the North- and Baltic Sea) and CEFAS/Defra monitoring for ambient noise in support of MSFD in UK waters.

[27] Van der Graaf AJ, Ainslie MA, André M, Brensing K, Dalen J, Dekeling RPA, Robinson S, Tasker ML, Thomsen F, Werner S (2012). European Marine Strategy Framework Directive – Good Environmental Status (MSFD GES): Report of the Technical Subgroup on Underwater Noise and other forms of energy.

It is expected that in 2012 most reporting of underwater noise will relate to its characteristics – loudness, frequency and intensity – and its spatial distribution and temporal trends within the assessment area. The underwater noise reporting sheet enables Member States to report on the impacts of underwater noise on functional groups, including for example the avoidance of areas by sensitive species and changes in biological communities; and to provide a description of the main cumulative and synergistic effects, and transboundary impacts and transboundary features. Member States should also report the main causes of underwater noise.

The underwater noise reporting sheet should be completed once per assessment area.

6.4.4.2 Step 3.1: Characteristics/analysis of underwater noise

Information is requested in this section on the spatial distribution, intensity and trends in underwater noise in the environment, in two different categories — loud, low and mid-frequency impulsive sounds, and continuous low frequency sound, as specified in GES criteria 11.1 and 11.2.

Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information. It is understood that underwater noise is a relatively new topic for assessment, and Member States may therefore not be able to provide trend information; however it should be reported if available.

Where the response to the 'proportion of assessment area' which is subject to raised levels of sounds is not assessed or unknown, an explanation should be given in the 'limitations of information' and 'information gaps' fields.

Where descriptive text is requested on the impacts of underwater noise on functional groups, these can be explained in terms of the potential negative effects of sound on marine life provided in the TSG report on Noise and other forms of energy[28]. These include the following:

Impact	Type of effect
Physiological, non auditory	Damage to body tissue: *e.g.* massive internal haemorrhages with secondary lesions, ossicular fractures or dislocation, leakage of cerebro-spinal liquid into the middle ear, rupture of lung tissue
	Induction of gas embolism (Gas Embolic Syndrome, Decompression Sickness/DCS, 'the bends', Caisson syndrome)
	Induction of fat embolism
	Disruption of gas-filled organs like the swim bladder in fishes, with consequent damage to surrounding tissues
Auditory-(Sound Induced Hearing Loss)	Gross damage to the auditory system – *e.g.* resulting in: rupture of the oval or round window or rupture of the eardrum
	Vestibular trauma – *e.g.* resulting in: vertigo, dysfunction of coordination, and equilibrium

[28] Van der Graaf AJ, Ainslie MA, André M, Brensing K, Dalen J, Dekeling RPA, Robinson S, Tasker ML, Thomsen F, Werner S (2012). European Marine Strategy Framework Directive – Good Environmental Status (MSFD GES): Report of the Technical Subgroup on Underwater Noise and other forms of energy.

Impact	Type of effect
	Damage to the hair cells in fishes
	Permanent hearing threshold shift (PTS) – a permanent elevation of the level at which a sound can be detected
	Temporary hearing threshold shift (TTS) – a temporary elevation of the level at which a sound can be detected
Perceptual	Masking of communication with conspecifics
	Masking of other biologically important sounds
Behavioural	Stranding and beaching
	Interruption of normal behaviour such as feeding, breeding, and nursing
	Behaviour modified (less effective/efficient)
	Adaptive shifting of vocalisation intensity and/or frequency
	Displacement from area (short or long term)

The reference to raised levels of sounds implies an assessment of background (natural) levels of noise, and agreement on a regional basis on what level of noise/sound represents 'raised levels' that consequently would be classified as a pressure. Ambient noise is defined as background noise without distinguishable sound sources. This could be used as a basis for calculating background levels of noise.

The information should be entered into DBTable **MSFD8b_Noise**:

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided	Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Noise		**Level of pressure** in environment from loud, low and mid frequency **impulsive sounds** (11.1)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words)	Proportion of the assessment area which is subject to the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.									

Feature	Area	Topic	Description	SumInfo1	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Noise		**Level of pressure** in environment from **continuous low frequency sound** (11.2)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words)	Proportion of the assessment area which is subject to the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.									
Noise		**Impacts** of pressure **on functional groups**	Description of the impacts of underwater noise in the assessment area (*e.g.* Physiological (Non auditory), Auditory, Perceptual, Behavioural) on functional groups, including the main cumulative and synergistic effects; transboundary impacts and transboundary features (maximum 250 words).			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Noise		**Information gaps** and **plans** to address them	See general guidance										

Information on which functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements**:

Feature	Area	Physical/chemical features - impacted	Predominant habitats – impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
Noise				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.4.3 Step 3.2: Assessment of underwater noise

Pressure status should be reported for GES criteria: distribution in time and place of loud, low and mid frequency impulsive sounds (11.1); and continuous low frequency sound (11.2); and Impact status should be reported for impacts on the different functional groups of mobile species. Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Noise		Assessment - loud, low and mid frequency impulsive sounds (11.1)					
Noise		Assessment - continuous low frequency sound (11.2)					
Noise		Assessment - impacts of underwater noise on functional groups (D11)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Noise		Assessment - loud, low and mid frequency impulsive sounds (11.1)	Select from: - 11.1 Distribution in time and place of loud, low and mid frequency impulsive sounds - Other (specify).	Select from: - Proportion of days and their distribution within a calendar year over areas of a determined surface, as well as their spatial distribution, in which anthropogenic sound sources exceed levels that are likely to entail significant impact on marine animals measured as Sound Exposure Level (in dB re 1µPa2.s) or as peak sound pressure level (in dB re 1µPapeak) at one metre, measured over the frequency band 10 Hz to 10 kHz (11.1.1). - Other (specify)				
Noise		Assessment - continuous low frequency sound (11.2)	Select from: - 11.2 Continuous low frequency sound - Other (specify)	Select from: - Trends in the ambient noise level within the 1/3 octave bands 63 and 125 Hz (centre frequency) (re 1µPa RMS: average noise level in these octave bands over a year) measured by observation stations and/or with the use of models if appropriate (11.2.1) - Other (specify)				
Noise		Assessment - impacts of underwater noise on functional groups (D11)	Select from: - Other (specify).	Select from: - Other (specify)				

6.4.4.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_NoiseMetadata**.

6.4.5 Marine litter (8B04)

6.4.5.1 Introduction

The marine litter reporting sheet is provided to allow reporting on litter in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

It is expected that most reporting of litter will relate to its characteristics, volume and impact on predominant habitats and functional groups in the assessment area. Further guidance on marine litter is available in the 2011 report of the TSG on Marine Litter[29].

One reporting sheet should be completed for marine litter, per assessment area.

6.4.5.2 Step 3.1: Characteristics/analysis of marine litter

The information requested for marine litter is based on the GES criteria 10.1 and 10.2. Information is requested on the spatial distribution and trends in spatial distribution and intensity of marine litter in the environment. Information on physical, chemical and biological impacts of marine litter on the water column (including surface water and associated communities), the seabed (including the condition of benthic communities) and on functional groups (including birds and mammals) is also sought. Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information.

It should be noted that for 'level' and 'assessment' of pressure, water column and water surface are grouped together given that assessments in the 'water column' are likely to measure floating litter at the surface and in the top few metres.

Where the response to the 'amount of litter observed' is not assessed or unknown, an explanation should be given in the 'information gaps' fields. The Task Group 10 Report on Marine Litter[30] should be referred to for the procedure of calculating the amount of litter *e.g.* it references OSPAR's formal Guidelines for Monitoring Beach Litter.

Given that there can be up to 120 types of litter and there is a scarcity of data on this issue, disaggregation into litter types should not be considered for this higher level reporting in 2012. However, harmonising the categories used across the regions is likely to be considered at a later date.

[29] http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/22826/2/msfd_ges_tsg_marine_litter_report_eur_25009_en_online_version.pdf

[30] Galgani, F; Fleet, D; Van Franeker, J; Katsanevakis, S; Maes, T; Mouat, J; Oosterbaan, L; Poitou, I; Hanke, G; Thompson, R; Amato, E; Birkun, A; Janssen, C. 2010. Marine Strategy Framework Directive Task Group 10 on Marine Litter. ICES/JRC

The information should be entered into DBTable **MSFD8b_Litter**:

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Litter		**Level of pressure on shores** (10.1)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words).	Amount (value) of litter on the coastline (*e.g.* number of individual items per km). If information is not available, indicate 'Unknown/not assessed'.	Unit of litter									
Litter		**Level of pressure in water column and water surface** (10.1)	As above	Amount (value) of litter observed in water column and on water surface (*e.g.* individual items per km^2). If information is not available, indicate 'Unknown/not assessed'.	Unit of litter									
Litter		**Level of pressure on subtidal seabed** (10.1)	As above	Amount (value) of litter observed on seabed (*e.g.* individual items per km^2). If information is not available, indicate 'Unknown/not assessed'.	Unit of litter									
Litter		**Impacts** of pressure **on water column** and associated communities (10.2)	Description of the impacts of marine litter in the assessment area (*e.g.* mortality or sublethal impacts to plants and animals through entanglement, physical damage and ingestion including uptake of microplastics, accumulation of chemicals from plastics, facilitating the invasion of non-indigenous species) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the assessment area where the water column has impacts from marine litter (select one) : <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%, Unknown/not assessed			See 8Bc-PI_FeaturElmpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Litter		**Impacts** of pressure **on seabed habitats** and associated communities (10.2)	Description of the impacts of marine litter in the assessment area (*e.g.* mortality or sublethal impacts to plants and animals through entanglement, physical damage and ingestion including uptake of microplastics, accumulation of chemicals from plastics, facilitating the invasion of non-indigenous species, or altering the structure of the benthic community) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the assessment area where the seabed has impacts from marine litter (select one) : <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%, Unknown/not assessed			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Litter		**Impacts** of pressure **on functional groups** (10.2)	Description of the impacts of marine litter in the assessment area (*e.g.* mortality or sublethal impacts to plants and animals through entanglement, physical damage and ingestion including uptake of microplastics, accumulation of chemicals from plastics, facilitating the invasion of non-indigenous species) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the functional groups in the assessment area impacted (adversely affected) by marine litter. Provide: number of functional groups impacted; or Unknown/not assessed	Provide: total number of functional groups present in the area		See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Litter		**Information gaps** and **plans** to address them	See general guidance											

Information on which predominant habitats and functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements**:

Feature	Area	Physical/chemical features – impacted	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
Litter				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.5.3 Step 3.2: Assessment of marine litter

An assessment of the pressure should be reported for marine litter for the shore (intertidal seabed), water column/water surface and subtidal seabed. Impact status should be reported for: water column/water surface and associated communities; seabed (and benthic communities); and functional groups. It is recognised that assessing litter in the water column is difficult; however this field also includes surface floating litter. The water column assessment has been retained due to the presence of microlitter/plastics formed from the degradation of surface floating litter.

GES criteria: characteristics of litter in the marine and coastal environment (10.1); and impact of marine litter on marine life (10.2) are relevant. Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The assessments of litter are for the whole assessment area; therefore where hotspots have been identified under distribution for the level of pressure, reference should also be made to hotspots in the text description for the status. When assessing the overall scale of a pressure, it could include the sum of the pressure in hotspots. This is similar to assessing the overall physical damage from multiple licensed areas as is done in other reporting sheets.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Litter		Assessment - marine litter on shores (10.1)					
Litter		Assessment - marine litter in water column and water surface (10.1)					
Litter		Assessment - marine litter on subtidal seabed (10.1)					
Litter		Assessment - impacts of marine litter on water column habitats (10.2)					
Litter		Assessment - impacts of marine litter on seabed habitats (10.2)					
Litter		Assessment - impacts of marine litter on functional groups (10.2)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Litter		Assessment - marine litter on shores (10.1)	Select from: - 10.1 Characteristics of litter in the marine and coastal environment - Other (specify)	Select from: - Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source (10.1.1). - Amount of litter on the coastline per km. -Other (specify).				
Litter		Assessment - marine litter in water column and water surface (10.1)	Select from: - 10.1 Characteristics of litter in the marine and coastal environment - Other (specify)	Select from: - Trends in the amount of litter in the water column (including floating at the surface) and deposited on the seafloor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2). - Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics) (10.1.3) -Percentage of floating macroscopic litter observed on water surface. -Amount of litter captured from surface net trawls - Other (specify).				
Litter		Assessment - marine litter on subtidal seabed (10.1)	Select from: - 10.1 Characteristics of litter in the marine and coastal environment - Other (specify)	Select from: - Trends in the amount of litter in the water column (including floating at the surface) and deposited on the seafloor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2) -Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics) (10.1.3). - Other (specify)				
Litter		Assessment - impacts of marine litter on water column habitats (10.2)	Select from: - 10.2 Impacts of marine litter on marine life. - Other (state).	Select from: - Other (specify)				
Litter		Assessment - impacts of marine litter on seabed habitats (10.2)	Select from: - 10.2 Impacts of marine litter on marine life. - Other (specify).	Select from: - Other (specify)				
Litter		Assessment - impacts of marine litter on functional groups (10.2)	Select from: - 10.2 Impacts of marine litter on marine life. - Other (specify).	Select from: - 10.2.1 Trends in the amount and composition of litter ingested by marine animals (*e.g.* stomach analysis). - Other (specify)				

6.4.5.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_LitterMetadata**.

6.4.6 Interference with hydrological processes (8B05)

6.4.6.1 Introduction

The hydrological processes reporting sheet is provided to allow reporting on interference with hydrological processes and permanent alterations in hydrographical conditions in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

One reporting sheet should be completed for interference with hydrological processes per assessment area.

6.4.6.2 Step 3.1: Characteristics/analysis of hydrological processes

The information requested for interference with hydrological processes is based on the GES criteria 7.1 and 7.2. This includes the spatial distribution and intensity of interference with hydrological processes in the environment and the physical, chemical and biological impacts of interference with hydrological processes on the water column (and associated communities), the seabed (including the condition of benthic communities) and on functional groups (including birds and mammals). Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information.

It is recognised that measurement timescales are important with regards to data on the interference of hydrological processes *e.g.* a single measurement of currents would not be representative. Therefore, if possible, information should represent the spatial and temporal variation and not a single time instant. The analysis and assessment should therefore reflect the long-term changes that have resulted from constructions/infrastructure or alterations to the coastline and be a cumulative assessment of these alterations across the assessment area.

The information should be entered into DBTable **MSFD8b_HydrologicalProcesses**:

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Hydrological processes		**Level of pressure** in environment (7.1)	Description of the pressure within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words).	Proportion of the assessment area which is subject to the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.										

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Hydrological processes		**Impacts** of pressure **on water column** and associated communities (7.2)	Description of the impacts of interference with hydrological processes and alteration of hydrographical conditions on the water column and associated communities (*e.g.* changes in salinity and temperature, changes in biological communities) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the assessment area where the water column has impacts from the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_Feature Impacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Hydrological processes		**Impacts** of pressure **on seabed habitats** and associated communities (7.2)	Description of the impacts of interference with hydrological processes and alteration of hydrographical conditions on the seabed and its benthic communities (*e.g.* changes in benthic communities, loss of sensitive species, change in size spectrum of benthic species) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the assessment area where the seabed has impacts from the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_Feature Impacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Hydrological processes		**Impacts** of pressure **on functional groups** (7.2)	Description of the impacts of interference with hydrological processes and alteration of hydrographical conditions on functional groups (*e.g.* effects on migratory species, loss of sensitive species) including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of the functional groups in the assessment area impacted (adversely affected) by interference with hydrological processes. Provide: number of functional groups impacted; or Unknown/not assessed	Provide: total number of functional groups present in the area		See 8Bc-PI_Feature Impacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Hydrological processes		**Information gaps** and **plans** to address them	See general guidance											

Information on which physical/chemical features, predominant habitats and functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements**:

Feature	Area	Physical/chemical features - impacted	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
Hydrological processes				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.6.3 Step 3.2: Assessment of interference with hydrological processes

An assessment of the pressure (interference with hydrological processes) should be provided, in accordance with GES criterion: spatial characterisation of permanent alterations (7.1). An assessment of impact should be provided (GES criterion 7.2), for water column, seabed and functional groups. Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Hydrological processes		Assessment - interference with hydrological processes and alteration of hydrographical conditions (7.1)					
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on water column habitats (7.2)					
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on seabed habitats (7.2)					
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on functional groups (7.2)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Hydrological processes		Assessment - interference with hydrological processes and alteration of hydrographical conditions (7.1)	Select from: - 7.1 Spatial characterisation of permanent alterations - Other (specify)	Select from: - Extent of area affected by permanent alterations (7.1.1). - Other (specify)				
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on water column habitats (7.2)	Select from: - 7.2 Impact of permanent hydrographical changes. - Other (specify).	Select from: - 7.2.1 Spatial extent of habitats affected by the permanent alteration - 7.2.2 Change in habitats, in particular the functions provided (*e.g.* spawning breeding and feeding areas and migration routes of fish, birds and mammals), due to altered hydrographical conditions - Other(specify)				
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on seabed habitats (7.2)	Select from: - 7.2 Impact of permanent hydrographical changes. - Other (specify)	Select from: - 7.2.1 Spatial extent of habitats affected by the permanent alteration - 7.2.2 Change in habitats, in particular the functions provided (*e.g.* spawning, breeding and feeding areas and migration routes of fish, birds and mammals), due to altered hydrographical conditions - Other(specify)				
Hydrological processes		Assessment - impacts of interference with hydrological processes and alteration of hydrographical conditions on functional groups (7.2)	Select from: - 7.2 Impact of permanent hydrographical changes. - Other (specify)	Select from: - 7.2.1 Spatial extent of habitats affected by the permanent alteration - 7.2.2 Change in habitats, in particular the functions provided (*e.g.* spawning, breeding and feeding areas and migration routes of fish, birds and mammals), due to altered hydrographical conditions - Other(specify)				

6.4.6.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_HydrologicalProcessesMetadata**.

6.4.7 Contamination by hazardous substances (8B06)

6.4.7.1 Introduction

The Contamination by hazardous substances reporting sheet is provided to allow reporting on particular groups of hazardous substances in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 1 and Table 2. Hazardous substances are addressed in Annex III Table 2 as a pressure, but chemicals are also included in Annex III Table 1. All reporting on chemicals and hazardous substances has been brought together into this Contamination by hazardous substances reporting sheet. As for nutrients this implies assessment of background (natural) levels of certain chemicals. The OSPAR objective for hazardous substances (also accepted by HELCOM) provides a basis for defining 'raised levels' of chemicals and hazardous substances, *i.e.* pressures exists where concentrations are: '*above background levels for naturally occurring substances and above zero for non-naturally occurring substances/synthetic substances'.*

For the environmental impacts of the pressure, the definition of an impact (the impact of the pressure under consideration, *i.e.* biological response) for the contaminant group being reported, should be expressed in the threshold values for status assessment for the relevant criterion (seabed habitat/biota etc).

Reporting of hazardous substances should be by broad groups of hazardous substances, rather than for each individual contaminant element. Hazardous substances do not need to be reported on individually but it is expected that references and 'signposts' to more detailed information can be provided at the reporting stage. Member States should aim to provide a high-level overview through the reporting sheets, and allow access to data on individual hazardous substances through other reporting channels and databases (*e.g.* Pollutant Release and Transfer Registers (PRTR), Environmental Quality Standard (EQS), Regional Sea Conventions (RSCs)). A separate reporting sheet is provided for reporting on significant acute pollution events and their impacts (as per GES indicator 8.2.2) (see Section 6.4.8).

For the sections on hazardous substances one reporting sheet should be completed for each hazardous substances group, per assessment area. The broad hazardous substances groups to be reported on are taken from Table 2, Annex III of the Directive, and are as follows:

- Synthetic substances;
- Non-synthetic substances;
- Radionuclides.

Consideration of hazardous substances in the Initial Assessment should include an assessment of their input loads according to the following categories:

- Land-based (riverine and coastal) inputs from point and diffuse sources, from above the last monitoring station;
- Sea-based inputs (point and diffuse sources *e.g.* oil and gas platforms, shipping / cleaning tanks);
- Air-based/atmospheric inputs (*e.g.* atmospheric deposition,recognising that the source of pollutants may be from land-based sources emitting to air).

6.4.7.2 Step 3.1: Characteristics/analysis of hazardous substances

The information requested for hazardous substances is based on the GES criteria 8.1, 8.2 and 9.1. Information is requested on the spatial distribution and intensity of inputs of each contaminant group as well as on the level and trends of the pressure in water, seabed habitats (sediment), seabed habitats (associated biota), and functional groups. It should be noted that the level of pressure and impacts on seabed habitats/biota will include littoral habitats and associated species, for example dog whelks or mussels.

For the level of the pressure in water, sediment, seabed habitats/biota and functional groups, only those rows that are relevant to the contaminant group being reported on should be completed (*i.e.* some hazardous substances may only be measured in water, others may only be measured in sediment, and others only in tissue/biota).

Descriptive (free) text should be provided on the state and trend of the pressure, followed by related summary categorical information. It is recognised that reporting all seasonal variation is not practically possible for parameters which cannot be determined directly by use of automatic devices at a high frequency, and the number of variables influencing known natural biological variations (*e.g.* meteorological and hydrographic conditions) reduces any value of reporting all seasonal variation. Therefore only significant spatial and temporal variation should be reported. The trends timescale has deliberately been left open for Member States to decide what period to use for trends. For future trends, 12 years is suggested (two reporting cycles, consistent with the Habitats Directive), but as with all reporting sheets, a different timescale can be specified. It is noted that there may be seasonal/short-term fluctuations, so Member States need to provide their best judgement on longer-term trends using the most appropriate timescales and data available.

Member States are asked to provide categorical summary information indicating the proportion of the assessment area (%) which is subject to raised levels of hazardous substances (this may be based on a risk-based approach to monitoring, where monitoring is focused on those areas considered at highest risk of having hazardous substances). It is recognised that if it is a widespread pressure, the response might be 75-100% of the assessment area is subject to the pressure. If sampling does not cover the whole assessment area, the confidence can be given as 'low' and limitations of data can be reported in the limitations of data field. For functional groups, the number of functional groups with raised levels of the contaminant group, and the total number of functional groups present in the assessment area should be reported. Monitoring information from a species can be used as an indication of the level of hazardous substances in the functional group to which the species belongs (*i.e.* use the species as an indicator of the functional group). It is not expected, for 2012, that levels of hazardous substances at the population level or across the whole functional group will be available.

Information on the physical, chemical and biological impacts of the pressure on functional groups and on seabed habitats/biota is also requested. Descriptive (free) text and related summary categorical information should be provided on the impacts of the pressure. Impacts on functional groups should be interpreted as impacts on individuals or species from the functional groups list. Impacts on species/individuals can be defined in relation to Environmental Assessment Criteria (EACs), which set acceptable levels/thresholds. It is assumed that if individual specimens are tested at the species level, their condition in relation to hazardous substances is representative of the whole (local) population and can therefore be indicative of wider impacts. Therefore it is not necessary to report impacts at functional group level (and it is noted that Member States are unlikely to know impacts at functional group level). However, where there are visible signs of whole population effects (*e.g.* reductions in population size or reproductive capacity) at functional group level this can be mentioned in the description of impacts. The impacts on functional groups should be reported as the number of functional groups in the

assessment area that have impacts from hazardous substances (*e.g.* levels above EAC threshold values), and the total number of functional groups that are present in the assessment area. This will give an indication of the proportion of functional groups adversely affected. As above, impacts on a single species or individuals can be used as an indication of impacts on the functional group to which that species belongs.

The information should be entered into DBTable **MSFD8b_HazardousSubstances**:

Feature	**Area**	**Topic**	**Description**	**SumInfo1**	**SumInfo 1_unit**	**SumInfo1_ confidence**	**SumInfo 2**	**Trends Recent**	**Recent Time Start**	**Recent Time End**	**Trends Future**	**Future Time Start**	**Future Time End**	**Limitations**
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Hazardous substances group		**Level of pressure** - input load from **land-based** sources	Description of the input levels of this pressure from this source within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words)	Input load of this group of hazardous substances from riverine inputs (existing data sources): Tonnes per year (or unknown/not assessed)	Unit of hazardous substances load	90% CI or Low/Moderate/High								
Hazardous substances group		**Level of pressure** - input load from **sea-based** sources	As above	Input load of this group of hazardous substances from sea-based sources: Tonnes per year (or unknown/not assessed)	Unit of hazardous substances load	90% CI or Low/Moderate/High								
Hazardous substances group		**Level of pressure** - input load from **air-based** sources	As above	Input load of this group of hazardous substances from air-based sources: Tonnes per year (or unknown/not assessed)	Unit of hazardous substances load	90% CI or Low/Moderate/High								
Hazardous substances group		**Level of pressure in environment (8.1)**	Description of the pressure in the specified matrix (water, sediment, seabed biota) within the assessment area, including any significant spatial and temporal (seasonal) variation in its distribution and intensity, and any longer-term trends within the assessment area (maximum 250 words)	Proportion of assessment area which is subject to raised levels of this group of hazardous substances (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.			Matrix used for assessment (select one): water, sediment, seabed biota							

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Hazardous substances group		**Level of pressure in functional groups** (bioaccumulation) **(8.1)**	Description of the concentrations of this group of hazardous substances in individuals and species of functional groups (*e.g.* in fish, mammals or seabirds, particularly with respect to bioaccumulation) in the assessment area, including any significant spatial and temporal (seasonal) variation, and any longer-term trends (maximum 250 words)	Proportion of functional groups in the area which are subject to raised levels of this group of hazardous substances in individuals, species or populations of functional groups: provide the number of functional groups with raised levels; or Unknown/not assessed	Provide: total number of functional groups present in the area									
Hazardous substances group		**Impacts** of pressure **on seabed habitats** and associated communities (8.2)	Description of the impacts of this group of hazardous substances on the predominant habitats and associated communities (*e.g.* Impact on biota) including the main cumulative and synergistic effects; transboundary impacts and transboundary features.(Max 250 words)	Proportion of the assessment area in which seabed biota have impacts from the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.			See DBTable MSFD8b_ SumInfo2 _ImpactedElements							
Hazardous substances group		**Impacts** of pressure **on functional groups** (8.2)	Description of the impacts of this group of hazardous substances on individual organisms of functional groups and at the population level if appropriate (*e.g.* effects of bioaccumulation) including the main cumulative and synergistic effects; transboundary impacts and transboundary features.(Max 250 words)	Proportion of the functional groups in the assessment area impacted (adversely affected) by this group of hazardous substances. Provide: number of functional groups impacted; or Unknown/not assessed	Provide: total number of functional groups present in the area		See DBTable MSFD8b_ SumInfo2 _ImpactedElements							
Hazardous substances group		**Impacts** of pressure **on fish and other seafood** (9.1)	Description of the impacts of the hazardous substances on fish and seafood for human consumption (*e.g.* Levels of hazardous substances in fish and seafood, bioaccumulation) including the main cumulative and synergistic effects; transboundary impacts and transboundary features.(Max 250 words)	Proportion (%) of assessed fish and seafood samples tested under existing regulations where maximum levels of relevant hazardous substances (*i.e.* according to the hazardous substances group being reported) have been exceeded (select one): <1%; 1-5%; 5-25%; 25-50%;										

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
				50-75%; 75-100%; Unknown/not assessed										
Hazardous substances group		**Information gaps** and **plans** to address them	See general guidance											

Information on which physical/chemical features, predominant habitats and functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements.** In this table also list the chemicals/hazardous substances (and their CAS number) that have been included within this group for the assessment area (for an initial list of substances compiled for reporting, refer to http://forum.eionet.europa.eu/nrc-eionet-freshwater/library/wise_reporting_2010/codelists_substances/requirements_2010xls - copy available in spreadsheet: TablesforMSFDdatabase.xls).

Feature	Area	Physical/chemical features - impacted	Predominant habitats – impacted	Functional groups - impacted	Chemicals/ hazardous substances present	CAS number
Select relevant feature	Select relevant Marine UnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed	Add rows as needed
Hazardous substances group			Seabed types only		List the chemicals/hazardous substances that are assessed/reported on in this group	Chemicals/ hazardous substance CAS number

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.7.3 Step 3.2: Assessment of hazardous substances

An assessment of the pressure (or status) for hazardous substances should be provided in accordance with GES criteria: concentration of hazardous substances (8.1), as appropriate, for water, seabed habitats (sediment), seabed habitats (biota) and functional groups. If a particular 'matrix' (water/sediment/seabed biota/functional group) is not appropriate for the assessment of a particular hazardous substances group, 'not assessed' should be indicated in the status class field, and an explanation given.

An assessment of the impacts of the pressure for hazardous substances should be provided in accordance with GES criteria for effects of contaminants (8.2) for seabed habitats and functional groups; and for levels, number and frequency of contaminants in fish and other seafood for human consumption (9.1).

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant Marine UnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Hazardous substances (select group)		Assessment of pressure of hazardous substances (in matrix used for analysis) (8.1)					
Hazardous substances (select group)		Assessment of pressure of hazardous substances in functional groups (8.1)					
Hazardous substances (select group)		Assessment - impacts of hazardous substances on seabed habitats (8.2)					
Hazardous substances (select group)		Assessment - impacts of hazardous substances on functional groups (8.2)					
Hazardous substances (select group)		Assessment - impacts of hazardous substances o fish and seafood (9.1)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Hazardous substances group		Assessment of pressure of hazardous substances (8.1) (in matrix used for analysis)	Select from: - 8.1 Concentration of contaminants - Other (specify)	Select from: - Concentration of contaminants in water (8.1.1) - Other (specify)				
Hazardous substances group		Assessment of pressure of hazardous substances in functional groups (8.1)	Select from: - 8.1 Concentration of contaminants - Other (specify)	Select from: - Concentration of contaminants in functional groups (8.1.1) - Other (specify)				
Hazardous substances group		Assessment - impacts of hazardous substances on seabed habitats (8.2)	Select from: - 8.2 Effects of contaminants; - Other (specify)	Select from: - Levels of pollution effects on the ecosystem components concerned, having regard to the selected biological processes and taxonomic groups where a cause/effect relationship has been established and needs to be monitored (8.2.1); - Other (specify)				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Hazardous substances group		Assessment - impacts of hazardous substances on functional groups (8.2)	Select from: -8.2 Effects of contaminants; - Other (specify)	Select from: - Levels of pollution effects on the ecosystem components concerned, having regard to the selected biological processes and taxonomic groups where a cause/effect relationship has been established and needs to be monitored (8.2.1); - Other (specify)				
Hazardous substances group		Assessment - impacts of hazardous substances on fish and seafood (9.1)	Select from: -9.1Levels, number and frequency of contaminants - Other (specify)	Select from: - Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels (9.1.1); - Frequency of regulatory levels being exceeded (9.1.2); - Other (specify)				

6.4.7.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_HazardousSubstancesMetadata**.

6.4.8 Acute pollution events (8B07)

6.4.8.1 Introduction

The Acute pollution events reporting sheet is provided to allow reporting on the occurrence and effects of significant acute pollution events, such as oil spills. This is within the scope of the Initial Assessment, within the 'contamination by hazardous substances' in Annex III Table 2, and specifically addresses GES indicator 8.2.2.

Reporting on significant acute pollution events should be restricted to levels of contaminants and their impacts that can be directly attributable to significant acute pollution events (*e.g.* number of oiled seabirds, mortality of seabirds from oil slicks, oil on beaches), and should not repeat information reported under the Contamination by hazardous substances reporting sheet.

The Acute pollution events reporting sheets only need to be completed once per area, not for each contaminant group per area.

6.4.8.2 Step 3.1: Characteristics/analysis of acute pollution events

The information requested for significant acute pollution events is based on GES indicator 8.2.2 which covers both pressure and impact aspects of these events:

> *8.2.2: Occurrence, origin (where possible), extent of significant acute pollution events (e.g. slicks from oil and oil products) and their impact on biota physically affected by this pollution.*

Information is requested on the 'input level' of the pressure, *i.e.* the number of significant acute pollution events that occurred in the assessment area over the previous six-year period (timescale is based on the reporting cycle). For the first report this should capture the previous six-year period, *e.g.* 2006-2011 (or similar); after this, sequential six-year periods should be used. The precise time period used is to be specified by Member States.

Information is also requested for the level and trends in the environment of the contaminants resulting from these pollution events. Longer-term effects of significant pollution events, and whether the levels of contaminants in the environment result from significant pollution events from some time ago, can be described and clarified in the descriptive text fields.

Information on the physical, chemical and biological impacts of these contaminants on seabed habitats and functional groups is also requested, in accordance with GES indicator 8.2.2. Descriptive (free) text should be provided on the state and trend of the pressure and its impacts, followed by related summary categorical information.

The information should be entered into DBTable **MSFD8b_PollutantEvents**:

Feature	**Area**	**Topic**	**Description**	**SumInfo1**	**SumInfo 1_unit**	**SumInfo1_ confidence**	**SumInfo2**	**Trends Recent**	**Recent Time Start**	**Recent Time End**	**Trends Future**	**Future Time Start**	**Future Time End**	**Limitations**
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Acute pollution events		**Level of pressure** (acute pollution **events**)	Description of significant acute pollution events within the assessment area, including their occurrence, origin (where possible) and extent (maximum 250 words).	Number of significant pollution events in the assessment area over previous 6-year period (in later reporting cycles, since previous report)			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Acute pollution events		**Level of pressure** (**contamination** from acute pollution events) (8.1)	Description of the quantity and contaminants from significant acute pollution events and extent of area affected within the assessment area (in water, seabed habitats, and functional groups). Include the spatial distribution, variation intensity (across this distribution) and longer-term trends (maximum 250 words).	Maximum extent of area affected by significant acute pollution events as a proportion of assessment area (%) (that was subject to raised levels of contaminants from significant pollution events): Select one: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.										

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Acute pollution events		**Impacts** of pressure **on seabed habitats** and associated communities (8.2.2)	Description of the impacts of significant pollution events on seabed habitats (*e.g.* Impact on biota), in particular the impact on biota physically affected by the pollution. Include the main cumulative and synergistic effects and transboundary impacts (maximum 250 words).	Proportion of the assessment area where seabed habitats have impacts from the pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Acute pollution events		**Impacts** of pressure **on functional groups** (8.2.2)	Description of the impacts of significant pollution events on the functional groups in the assessment area (*e.g.* seabird mortality), in particular the impact on biota physically affected by the pollution. Include the main cumulative and synergistic effects and transboundary impacts (maximum 250 words)	Proportion of functional groups in the area which are adversely affected (impacted) by significant acute pollution events in individuals, species or populations of functional groups. Provide: number of functional groups impacted; or Unknown/not assessed.	Provide: total number of functional groups present in the area		See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Acute pollution events		**Information gaps** and **plans** to address them	See general guidance											

Information on which physical/chemical features, predominant habitats and functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements.**

Feature	Area	Physical/chemical features – impacted	Predominant habitats - impacted	Functional groups – impacted	Chemicals/ hazardous substances present
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed
Acute pollution events			Seabed types only		Identify which hazardous substances groups were released into environment (refer to **List: hazardous substances group**)

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.8.3 Step 3.2: Assessment of acute pollution events

An assessment of the pressure status for significant acute pollution events should be provided, in accordance with the GES indicator for occurrence, origin, extent of significant acute pollution events (*e.g.* slicks from oil and oil products) (8.2.2). An assessment of the impacts of the significant pollution events should also be provided in accordance with GES indicator 8.2.2, as appropriate, for seabed habitats and functional groups.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Acute pollution events		Assessment of pressure from acute pollution events (8.2.2)					
Acute pollution events		Assessment - impacts of acute pollution events on seabed habitats (8.2.2)					
Acute pollution events		Assessment - impacts of acute pollution events on functional groups (8.2.2)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Acute pollution events		Assessment of pressure from acute pollution events (8.2.2)	Select from: - 8.2 Effects of contaminants (relating to 8.2.2 occurrence of significant pollution events) - Other (specify)	Select from: - Occurrence, origin (where possible) extent of significant pollution events (*e.g.* Slicks from oil and oil products) (8.2.2) - Other (specify)				
Acute pollution events		Assessment - impacts of acute pollution events on seabed habitats (8.2.2)	Select from: - 8.2 Effects of contaminants (relating to impact of significant pollution events on biota) - Other (specify)	Select from: - Impact on biota of significant pollution events (*e.g.* slicks from oil and oil products) (8.2.2); - Other (specify)				
Acute pollution events		Assessment - impacts of acute pollution events on functional groups (8.2.2)	Select from: - 8.2 Effects of contaminants (relating to impact of significant pollution events on biota) - Other (specify)	Select from: - Impact on biota of significant pollution events (*e.g.* slicks from oil and oil products) (8.2.2); - Other (specify)				

6.4.8.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_PollutantEventsMetadata**.

6.4.9 Nutrient and organic matter enrichment (8B08)

6.4.9.1 Introduction

The nutrients reporting sheet is provided to allow reporting on nutrient and organic matter enrichment in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2 and Table 1 in relation to characteristics of nutrients in the marine waters.

It is expected that most reporting of nutrient and organic matter enrichment will be done at the level of nitrogen, phosphorus and organic matter, completing one report per assessment area.

6.4.9.2 Step 3.1: Characteristics/analysis of nutrient and organic matter enrichment

Firstly, an overview of nutrient and organic matter enrichment in the assessment area is requested, which attempts to draw a general picture of the situation that combines information on Nitrogen (N), Phosphorus (P) and organic matter.

Subsequently, the information requested for nutrient and organic matter enrichment is based on the GES criteria 5.1, 5.2 and 5.3. Criterion 5.1 relates to the level of the pressure (input loads and resulting levels of nutrients and organic matter in the marine environment); criterion 5.2 relates to the direct impacts of the pressure; and criterion 5.3 relates to the indirect impacts. Criteria 5.2 and 5.3 have been combined into 'impacts of the pressure' in the reporting sheet, as none of the other Pressure/impact reporting sheets distinguish between direct and indirect effects.

Information is requested on the current state and trends for criterion 5.1, and for criteria 5.2 and 5.3 combined. For 5.1, covering both 'level of pressure (inputs to environment)' (*e.g.* input loads) and 'level of pressure (in environment)' (resulting concentrations in the environment), this is broken down to treat N, P and organic matter separately. For 5.2 and 5.3, the direct and indirect impacts of the pressure (N, P and organic matter) are treated together in order to consider their combined impacts on the marine environment. Impacts on the marine environment are split between impacts on the water column/plankton communities and impacts on the seabed including benthic communities. Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information. This includes input load data, summary of spatial extent, recent trends and temporal patterns.

The information should be entered into DBTable **MSFD8b_Nutrients**:

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant MarineUnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Nutrients		**Level of pressure** (nutrients & organic enrichment **overall**)	Overview of nutrient and organic matter enrichment in the assessment area, including any seasonal variation (maximum 250 words).	Proportion of assessment area which is subject to nutrient and organic matter enrichment. Select one <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed										
Nutrients		**Input** load **of Nitrogen** (5.1)	Description of spatial distribution and trends in Nitrogen input loads to the marine environment in the assessment area (maximum 250 words).	Input load of nitrogen: Tonnes per year. This should take account of both land-based and other sources (*e.g.* Atmospheric deposition).	Unit of nutrient load	Confidence: 90% CI, or Low/ Moderate/ High								
Nutrients		**Level of nitrogen** concentrations in the environment (5.1)	Characterisation of nitrogen concentration (DIN, TN) in the environment within the assessment area, including any significant spatial and temporal variation. Include description of the spatial distribution, variation in intensity (across this distribution) and temporal trends (whether and how the spatial extent and intensity of the pressure is changing over time) within the assessment area. Indicate whether this refers to its presence in the water column, seabed (sediments), or biota (maximum 250 words).	Proportion of assessment area which is subject to raised levels of nitrogen Select one <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed										
Nutrients		**Input** load **of phosphorus** (5.1)	Description of spatial distribution and trends in Phosphorus input loads to the marine environment in the assessment area (maximum 250 words).	Input load of Phosphorus: Tonnes per year. This should take account of both land-based and other sources (*e.g.* Atmospheric deposition).	Unit of nutrient load	Confidence: 90% CI, or Low/ Moderate/ High								

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Nutrients		**Level of phosphorus** concentrations in the environment (5.1)	See guidance for Nitrogen	Proportion of assessment area which is subject to raised levels of phosphorus. Select one <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed										
Nutrients		**Input** load **of organic matter** (5.1)	Description of spatial distribution and trends in organic matter input loads to the marine environment in the assessment area (maximum 250 words).	Input load of organic matter: Tonnes per year. This should take account of both land-based and other sources (*e.g.* Atmospheric deposition).	Unit of nutrient load	Confidence: 90% CI, or Low/ Moderate/ High									
Nutrients		**Level of organic matter** concentrations in the environment (5.1)	See guidance for Nitrogen	Proportion of assessment area which is subject to raised levels of organic matter. Select one <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed										
Nutrients		**Impacts** of pressure **on water column** and associated communities (5.2, 5.3)	Description of the direct impacts (*e.g.* Chlorophyll concentration, water transparency related to suspended algae, diatom to flagellate ratio, benthic to pelagic shifts, bloom events of toxic algal blooms) and indirect impacts (*e.g.* dissolved oxygen levels) of the pressure on the water column and associated communities, including the main cumulative and synergistic effects; transboundary impacts and transboundary features.	Proportion of the water column in the assessment area which has impacts from nutrient and organic matter enrichment Select from: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_Feature Impacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Nutrients		**Impacts** of pressure **on seabed habitats** and associated communities (5.2, 5.3)	Description of the direct impacts (*e.g.* abundance of opportunistic macroalgae, species shift in floristic composition, benthic to pelagic shifts) and indirect impacts (*e.g.* abundance of perennial seaweeds and seagrasses adversely impacted by decrease in water transparency, dissolved oxygen levels and increased organic matter deposition) of	Proportion of the seabed habitats in the assessment area which has impacts from nutrient and organic matter enrichment Select from: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_Feature Impacts See DBTable MSFD8b_SumInfo2_ImpactedElements							

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			the pressure on the seabed habitats and associated communities, including the main cumulative and synergistic effects; transboundary impacts and transboundary features.											
Nutrients		**Information gaps** and **plans** to address them	See general guidance											

Information on which physical/chemical features and predominant habitats are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements.**

Feature	Area	Physical/chemical features - impacted	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
Nutrients				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.9.3 Step 3.2: Assessment of nutrient and organic matter enrichment

Methodologies, criteria and threshold values for carrying out assessments of the pressure nutrient and organic matter enrichment impacts are well developed in many EU regions, and it is expected that Member States should be able to report pressure and impact status for nutrient and organic matter enrichment against GES Descriptor 5.

For nutrient and organic matter enrichment, pressure status should be reported for individual nutrient levels (N, P and organic matter), and/or for all three combined (5.1). Member States do not necessarily need to report on the status of N, P and organic matter separately, and can report on their overall combined status instead, or in addition to the separate status assessments. These options are provided to capture the various ways in which Member States have undertaken their assessment of nutrients. If Member States have not undertaken an assessment for a particular category, 'Not assessed' should be reported in the status class field, and an explanation of why should be given. If Member States have assessed status of N, status of P and status of N and P combined, it is suggested that they only report the status of N and P individually, as the 'combined' field in the reporting sheet implies the consideration also of organic matter.

Impact status combines the direct and indirect impacts of nutrient enrichment (5.2 and 5.3), but splits it according to impact on the water column/plankton communities, and impact on the seabed/benthic communities (as in the Characteristics section).

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Nutrients		Assessment of nitrogen (5.1)					
Nutrients		Assessment of phosphorus (5.1)					
Nutrients		Assessment of organic matter (5.1)					
Nutrients		Assessment of nutrient and organic enrichment (overall) (5.1)					
Nutrients		Assessment - impacts of nutrient enrichment on water column habitats (5.2, 5.3)					
Nutrients		Assessment - impacts of nutrient enrichment on seabed habitats (5.2, 5.3)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant MarineUnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Nutrients		Assessment of nitrogen (5.1)	Select all that apply: - 5.1 Nutrient levels; - Other (specify)	Select all that apply: — Nutrients concentration in the water column (5.1.1); — Nutrient ratios (silica, nitrogen and phosphorus), where appropriate (5.1.2); — Other (specify).				
Nutrients		Assessment of phosphorus (5.1)	Select all that apply: - 5.1 Nutrient levels; - Other (specify)	Select all that apply: — Nutrients concentration in the water column (5.1.1); — Nutrient ratios (silica, nitrogen and phosphorus), where appropriate (5.1.2); — Other (specify).				
Nutrients		Assessment of organic matter	Select all that apply: - 5.1 Nutrient levels;	Select all that apply: — Nutrients concentration in the water column (5.1.1);				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
		(5.1)	- Other (specify).	— Other (specify).				
Nutrients		Assessment of nutrient and organic enrichment (overall) (5.1)	Select all that apply: - 5.1 Nutrient levels; - Other (specify).	Select all that apply: — Nutrients concentration in the water column (5.1.1); — Nutrient ratios (silica, nitrogen and phosphorus), where appropriate (5.1.2); — Other (specify).				
Nutrients		Assessment - impacts of nutrient enrichment on water column habitats (5.2, 5.3)	Select all that apply: - 5.2 Direct effects of nutrient enrichment; - 5.3 Indirect effects of nutrient enrichment. - Other (specify).	Select all that apply: - Chlorophyll concentration in the water column (5.2.1); - Water transparency related to increase in suspended algae, where relevant (5.2.2); - Abundance of opportunistic macroalgae (5.2.3); - Species shift in floristic composition such as diatom to flagellate ratio, benthic to pelagic shifts, as well as bloom events of nuisance/toxic algal blooms (*e.g.* cyanobacteria) caused by human activities (5.2.4); - Dissolved oxygen, *i.e.* changes due to increased organic matter decomposition and size of the area concerned (5.3.2). - Other (specify)				
Nutrients		Assessment - impacts of nutrient enrichment on seabed habitats (5.2, 5.3)	Select all that apply: - 5.2 Direct effects of nutrient enrichment; - 5.3 Indirect effects of nutrient enrichment. - Other (specify).	Select all that apply: - Species shift in floristic composition such as diatom to flagellate ratio, benthic to pelagic shifts, as well as bloom events of nuisance/toxic algal blooms (*e.g.* cyanobacteria) caused by human activities (5.2.4); - Abundance of perennial seaweeds and seagrasses (*e.g.* fucoids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency (5.3.1); - Dissolved oxygen, *i.e.* changes due to increased organic matter decomposition and size of the area concerned (5.3.2). - Other (specify)				

6.4.9.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_NutrientsMetadata**.

6.4.10 Microbial pathogens (8B09)

6.4.10.1 Introduction

The Microbial pathogens reporting sheet is provided to allow reporting on biological disturbance through the introduction of microbial pathogens into the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

It is expected that most reporting of microbial pathogens will be based on existing monitoring and assessments of defined bathing waters and shellfish sampled within defined shellfish waters which are reported under other Directives, namely the Bathing Waters Directive, Shellfish Waters Directive and Shellfish Hygiene Directive. Shellfish Waters are defined by the Member State, and can include any area where shellfish are harvested, including areas used

for aquaculture. This monitoring considers only contamination by sewage effluents, and resulting increases in microbial pathogens, in particular faecal coliforms. It is not expected that Member States will be able to assess the levels of microbial pathogens across their entire waters, as monitoring is linked to human health and is risk-based, undertaken only in bathing water areas and areas where shellfish are harvested. The reporting sheets also provide the option for reporting any other information about microbial pathogens across Member State's waters if it is available, and leaves this open for the future when more may be known.

Currently reporting on bathing waters is under the revised 2006 Bathing Waters Directive, although some Member States may still report under the 'old' Bathing Waters Directive. Reporting for shellfish waters is currently under the Shellfish Waters Directive and the Shellfish Hygiene Directive. However, the Shellfish Waters Directive is due to be repealed in 2013 and information may then be reported under the Water Framework Directive. Information used for assessments in the microbial pathogens reporting sheets should focus on aggregating existing microbial pathogens reporting for these other Directives; it should be noted that although information is currently reported to the Bathing Waters and Shellfish Waters Directives this may change in the future, but the same information can be utilised. Information on the status of Bathing Waters is currently available from a publicly accessible database on the EEA website[31].

6.4.10.2 Step 3.1: Characteristics/analysis of microbial pathogens

There are no specific GES criteria listed for microbial pathogens. Information is requested on the current state and trends for output levels of microbial pathogens within bathing waters (based on monitoring currently under the Bathing Waters Directive), and in shellfish (based on monitoring currently under the Shellfish Waters Directive and the Shellfish Hygiene Directive). Descriptive (free) text should be provided on the state and trend for each.

The summary categorical information for level of the pressure (*i.e.* the proportion of assessed areas that do not meet lower and higher limit values) can be obtained directly from existing reporting under other Directives. The Shellfish Directive and old Bathing Waters Directive currently have two set limit values for assessing the status of microbial pathogens; 'mandatory' (to be used as higher limit levels), and 'guide' (to be used for lower limit levels). The new Bathing Water Directive sets three limit values; 'good' (to be used for higher limit levels), 'excellent' (to be used for lower limit levels), and 'sufficient' which is in-between the two. The limit value used will vary depending on which Directive is being reported to, and may alter over time. Therefore, the limit value used for the assessment should be stated along with the proportion of the assessed areas which meets the standard.

The reporting sheets also provide an option for reporting any other information about microbial pathogens if it is available (Level of pressure and Trend in pressure (Other)), providing flexibility in reporting and leaving open this option for the future when more may be known. Describe any locations of particular interest/concern within the overall assessment area in the Description field.

The impacts of microbial pathogens are requested for the main impacts on the marine environment, including an identification of the predominant habitat types and functional groups adversely affected. An indication of the proportion of assessed shellfish samples where levels of microbial pathogens did not meet mandatory food safety levels could also be provided, from food safety legislation (*e.g.* for *Salmonella* and *E. coli*). This information should only be

[31] http://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-2

provided and used for the assessment if it is clear where the product came from *i.e.* the specific Member States' waters. If Member States wish to mention microbial pathogens as a key pressure on specific habitats or other characteristics, then it can be listed in the pressures section of any Article 8a Characteristics sheets.

The information should be entered into DBTable **MSFD8b_MicrobialPathogens**:

Feature	**Area**	**Topic**	**Description**	**SumInfo1**	**SumInfo 1_unit**	**SumInfo1_ confidence**	**SumInf o2**	**Trends Recent**	**Recent Time Start**	**Recent Time End**	**Trends Future**	**Future Time Start**	**Future Time End**	**Limitations**
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Microbial pathogens		**Level** of microbial pathogens **in Bathing Waters** - lower limits	Characterisation of situation with regards microbial pathogens in assessed Bathing Waters, including any significant spatial and temporal variation. Description of the main pathogens present, their spatial distribution, variation in intensity (across this distribution) and temporal trends (whether and how the spatial extent and intensity of microbial pathogens is changing over time) within the assessment area. NB. this information refers only to the status of areas assessed for microbial pathogens, not across the entire waters of the MS (maximum 250 words).	Proportion of assessed Bathing Waters not meeting lower limit values (% or not assessed/unknown). *To be obtained from existing reporting to other Directives*	Limit value used									
Microbial pathogens		**Level** of microbial pathogens **in Bathing Waters** - higher limits		Proportion of assessed Bathing Waters not meeting higher limit values (% or not assessed/unknown). *To be obtained from existing reporting to other Directives*	Limit value used									
Microbial pathogens		**Level** of microbial pathogens **in Shellfish Waters** - lower limits	Characterisation of situation with regards microbial pathogens in assessed Shellfish Waters, including any significant spatial and temporal variation. Description of the main pathogens present, their spatial distribution, variation in intensity (across this distribution) and temporal trends (whether and how the spatial extent and intensity of microbial pathogens is changing over time) within the assessment area. NB. this	Proportion of assessed Shellfish Waters where microbial pathogens in shellfish do not meet lower limit values (% or Unknown/not assessed) . *To be obtained from existing reporting to other Directives where possible*	Limit value used									

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInf o2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			information refers only to the status of areas assessed for Shellfish waters, not across the entire waters of the MS (maximum 250 words).											
Microbial pathogens		**Level** of microbial pathogens **in Shellfish Waters** - higher limits		Proportion of assessed Shellfish Waters where microbial pathogens in shellfish do not meet higher limit values (% or not assessed/unknown). *To be obtained from existing reporting to other Directives where possible*	Limit value used									
Microbial pathogens		**Level of microbial pathogens (other)**	Characterisation of microbial pathogens in any other areas assessed (specify areas)											
Microbial pathogens		**Impacts** of microbial pathogens **on shellfish hygiene**	Description of the impacts of microbial pathogens on the marine environment (*e.g.* human health, contamination in biota) and main habitats and functional groups affected (maximum 250 words).	Proportion of assessed shellfish samples where microbial pathogens do not meet mandatory food safety levels: Give % or indicate 'Unknown/not assessed'.										
Microbial pathogens		**Information gaps** and **plans** to address them	See general guidance											

No information is needed for DBTable **MSFD8b_SumInfo2_ImpactedElements.**

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.10.3 Step 3.2: Assessment of microbial pathogens

It is expected that Member States should be able to report pressure status for microbial pathogens against GES Descriptor 9 (contaminants in fish and seafood for human consumption). Other criteria may be developed in the future. Pressure status should be provided for levels in water, with regards to assessments for monitored Bathing Waters, and levels in shellfish within monitored Shellfish Waters. There is also the option of reporting status based on other criteria, if Member States have additional information regarding microbial pathogens outside that gathered for other Directives. It is not expected that any other information will currently be available from Member States, but this may change in the future as more research is conducted in this area.

It is considered that it is currently unlikely that Member States will be able to report on the environmental impact of microbial pathogens (*e.g.* mortality of biota, shifts in community structure due to contamination by microbial pathogens); however, there is the option for any information available to be provided here.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Microbial pathogens		Assessment of microbial pathogens in Bathing Waters					
Microbial pathogens		Assessment of microbial pathogens in Shellfish Waters					
Microbial pathogens		Assessment of microbial pathogens (other assessment)					
Microbial pathogens		Assessment - impact of microbial pathogens in Shellfish Waters					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Microbial pathogens		Assessment of microbial pathogens in Bathing Waters	Select from (select all that apply): - 9.1 Levels, number and frequency of contaminants - Other (specify) NB. No specific GES criteria exist for microbial pathogens	Select from (select all that apply): - Other - Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels (9.1.1); - Frequency of regulatory levels being exceeded (9.1.2). - Other (specify) NB. For 'contaminants' consider microbial pathogens monitored				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Microbial pathogens		Assessment of microbial pathogens in Shellfish Waters	Select from (select all that apply): - 9.1 Levels, number and frequency of contaminants - Other (specify) NB. No specific GES criteria exist for microbial pathogens	Select from (select all that apply): - Other - Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels (9.1.1); - Frequency of regulatory levels being exceeded (9.1.2). - Other (specify) NB. For 'contaminants' consider microbial pathogens monitored				
Microbial pathogens		Assessment of microbial pathogens (other assessment)	Select from (select all that apply): - Other (specify)	Select from (select all that apply): - Other (specify)				
Microbial pathogens		Assessment - impact of microbial pathogens in Shellfish Waters	Select from (select all that apply): - 9.1 Levels, number and frequency of contaminants - Other (specify) NB. No specific GES criteria exist for microbial pathogens	Select from (select all that apply): - Other - Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels (9.1.1); - Frequency of regulatory levels being exceeded (9.1.2). - Other (specify) NB. For 'contaminants' consider microbial pathogens monitored				

6.4.10.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_MicrobialPathogensMetadata**.

6.4.11 Non-indigenous species (8B10)

6.4.11.1 Introduction

The Non-indigenous species reporting sheet is provided to allow reporting on non-indigenous species (NIS) as a pressure in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2. Table 1 of Annex III also includes the need for an inventory of NIS and this should be reported using reporting sheet 8A06 (see Section 6.3.7). See Section 6.3.7.1 for definitions of NIS and invasive NIS.

The assessment of non-indigenous species as a pressure needs to consider all non-indigenous species, but the assessment of impact of non-indigenous species will naturally address those which are invasive, in high abundance or present in low abundances but are particularly damaging or include multiple species within the habitat.

Reporting on non-indigenous species as a pressure should be done overall, completing this reporting sheet once for non-indigenous species as a whole per assessment area. This should address the level and impacts of non-indigenous species as a whole. Information on individual non-indigenous species should be reported through the Inventory of non-indigenous species (8A06) (see Section 6.3.7).

6.4.11.2 Step 3.1: Characteristics/analysis of non-indigenous species

The information requested for non-indigenous species is based on the GES criteria 2.1 and 2.2. Information is requested on the spatial distribution and intensity (abundance) of non-indigenous species (all species combined) in the environment including recent trends. Descriptive (free) text should be provided on the state and trend for each criterion, followed by related summary categorical information.

The proportion of assessment area (%) where non-indigenous species are present is requested; this should be an overall assessment of the scale of the pressure and based on information for the entire assessment area if possible. MSs may only have information for 'hotspots' of non-indigenous species or a small part of the assessment area. This can be appropriate for monitoring key areas and the impacts of particular species, but an overall assessment is still appropriate. If this is based on 'hotspot' data, the proportion of the overall area can be estimated and confidence given as 'low', and an explanation of the limitations of the data provided in the 'limitations' field. If it is impossible to provide an estimate, 'not assessed' can be selected and an explanation given in 'information gaps'. Data on sub-sections of the assessment area such as 'hotspots' can be used to respond to the rest of the sheet, but the limited geographic range of the background data should be stated in the 'limitations' and 'information gaps' fields.

Trends in abundance should be based on both the number of non-indigenous species and the abundance of each non-indigenous species (*e.g.* number of individuals, coverage, or biomass, depending on the species).

Information regarding the impact of non-indigenous species on water column habitats (and their associated plankton communities), seabed habitats (and their associated benthic communities), and functional groups (*i.e.* on fish, mammals, seabird and reptile populations) is also requested. This section provides an opportunity to report which predominant habitats (including associated communities) and functional groups are considered to be impacted by non-indigenous species. If MSs wish to identify non-indigenous species as a key pressure on specific habitats or other ecosystem components, then it can be listed in the pressures section of any Article 8a Characteristics sheets.

The information should be entered into DBTable **MSFD8b_NIS**:

Feature	**Area**	**Topic**	**Description**	**SumInfo1**	**SumInfo 1_unit**	**SumInfo1_ confidence**	**SumInfo2**	**Trends Recent**	**Recent Time Start**	**Recent Time End**	**Trends Future**	**Future Time Start**	**Future Time End**	**Limitations**
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
NIS		**Level of pressure** in the environment (2.1)	Characterisation of non-indigenous species within the assessment area, including any significant spatial and temporal variation. Include description of the spatial distribution, variation in intensity (a function of both number of non-indigenous species and their abundance) (across this distribution) and temporal trends (whether and	Proportion of assessment area (%) where non-indigenous species are present Select one: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.										

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_unit	SumInfo1_ confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			how the spatial extent and intensity of non-indigenous species is changing over time) within the assessment area (maximum: 250 words).											
NIS		**Impacts** of pressure **on water column** and associated communities (2.2)	Description of the impacts of non-indigenous species on the water column habitats and associated species (*e.g.* displacement of native species, impacts at the level of species, habitats and ecosystem), including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of water column habitat impacted (adversely affected) by non-indigenous species Select one: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
NIS		**Impacts** of pressure **on seabed habitats** and associated communities (2.2)	Description of the impacts of non-indigenous species on seabed habitats and associated species (*e.g.* displacement of native species, impacts at the level of species, habitats and ecosystem), including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of seabed habitat impacted (adversely affected) by non-indigenous species Select one: <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
NIS		**Impacts** of pressure **on functional groups** (2.2)	Description of the impacts of non-indigenous species on functional groups (*e.g.* displacement of native species, impacts at the level of species and ecosystem), including the main cumulative and synergetic effects; transboundary impacts and transboundary features (maximum 250 words).	Proportion of functional groups in the area impacted (adversely affected) by non-indigenous species Provide: number of functional groups impacted in the area; or Unknown/not assessed	Provide: total number of functional groups present in the area		See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
NIS		**Information gaps** and **plans**	See general guidance											

Information on which predominant habitats and functional groups are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements.**

Feature	Area	Physical/chemical features - impacted	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
NIS				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.11.3 Step 3.2: Assessment of non-indigenous species

For non-indigenous species, pressure and impact status should be reported for the GES criteria: Abundance and state characterisation of non-indigenous species, in particular invasive species (2.1), and Environmental impact of invasive non-indigenous species (2.2). Where possible the use of GES indicators is preferable but the 'other' option provides flexibility where status is based on other assessments.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
NIS		Assessment of non-indigenous species pressure (2.1)					
NIS		Assessment - impact of non-indigenous species on water column habitats (2.2)					
NIS		Assessment - impact of non-indigenous species on seabed habitats (2.2)					
NIS		Assessment - impact of non-indigenous species on functional groups (2.2)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels)..
NIS		Assessment of non-indigenous species pressure (2.1)	Select from (select all that apply): - 2.1 Abundance and state characterisation of non-indigenous species, in particular invasive species - Other (specify)	Select from (select all that apply): - Trends in abundance, temporal occurrence and spatial distribution in the wild of non-indigenous species, particularly invasive non-indigenous species, notably in risk areas, in relation to the main vectors and pathways of spreading such species (2.1.1) - Other (specify)				
NIS		Assessment - impact of non-indigenous species on water column habitats (2.2)	Select from (select all that apply): - 2.2 Environmental impact of invasive non-indigenous species - Other (specify)	Select from (select all that apply): - Ratio between invasive non-indigenous species and native species in some well studied taxonomic groups (*e.g.* Fish, macroalgae, molluscs) that may provide a measure of change in species composition (*e.g.* Further to the displacement of native species) (2.2.1) - Impacts of non-indigenous invasive species at the level of species, habitats and ecosystem, where feasible (2.2.2) - Other (specify)				
NIS		Assessment - impact of non-indigenous species on seabed habitats (2.2)	As above	As above				
NIS		Assessment - impact of non-indigenous species on functional groups (2.2)	As above	As above				

6.4.11.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_NISMetadata**.

6.4.12 Extraction of species (8B11)

6.4.12.1 Introduction

The reporting sheet for Extraction of species (RS 8B11) is provided to allow reporting on particular types of fishing, and other selective extraction activities in the marine environment, within the scope of the Initial Assessment, Article 8b, and Annex III Table 2.

Reporting should be undertaken for the following types of selective extraction, completing one report per assessment area for each relevant type:

a. Fishing (all types)

b. Seaweed harvesting

c. Maerl extraction

d. Other (specify)

Selective extraction does not include aquaculture of any type.

The reporting sheet has two sections, one for all fishing activities (fish and shellfish) and one for the other types of selective extraction (seaweed harvesting, maerl extraction, other types).

For fishing, it is likely that information from the International Council for Exploration of the Sea (ICES) and General Fisheries Commission for the Mediterranean (GFCM) will be relevant for reporting for a number of Member States. It should be noted that it is the responsibility of Member States to report under the Directive, but they may use information from ICES, GFCM or the RSCs where appropriate. It is up to Member States to decide what the appropriate scale is for reporting on fishing (and other selective extraction activities) for their marine waters, noting that Member States can report at the regional, subregional or other appropriate level, using ICES or GFCM data, by defining suitable assessment areas.

6.4.12.2 Step 3.1: Characteristics/analysis of extraction of species - fishing

The information requested for selective extraction by fishing (commercial and recreational) is based on the GES criteria 'level of pressure of fishing activity' (3.1) (by fishing categories) and the criteria and indicators for Descriptor 1 (for impacts on functional groups) and Descriptor 6 (for impacts on the seabed habitats and associated benthic communities).

Information on the fishing pressure should be provided for <u>each</u> of the following fishing categories if they are relevant to the assessment area:

a. Fishing - vessels <12m - passive & mobile gears;

b. Fishing - vessels >12m - passive gears;

c. Fishing - vessels >12m - mobile gears – affecting seabed (*i.e.* trawls, dredges);

d. Fishing - vessels >12m - mobile gears – all other;

e. Fishing – recreational;

f. Fishing - other **(specify in description field)**;

g. Shellfish collection.

The size categories for fishing relate to the length of the fishing vessel (*i.e.* over or under 12m).

The information requested is on the current level of the fishing pressure and any trends over time, via descriptive text and related categorical summary information on the proportion of the area which is subject to the pressure, and information on the number of vessels, total tonnage and power and number of fishing days.

The second part of the sheet seeks information on the overall effects of fishing, rather than by individual fishing categories, according to the following categories:

a. The environmental impacts on seabed habitats and associated benthic communities;

b. The environmental impacts on functional groups;

c. The environmental impacts of the commercially-exploited fish and shellfish stocks, which is addressed by:

   i. Listing the species which are commercially fished in the assessment area;

   ii. Of the species listed under (i), identifying those where a stock assessment has been undertaken and the method used (*e.g.* using reference points such as Fpa, Fmsy, Bpa and Bmsy trigger or other methods, such as the ratio between catch and biomass index; biomass indices);

   iii. Of the species listed under (i), indicating which species are impacted on the basis of the assessments (i.e. above or below the threshold values used).

For those stocks that have been assessed using quantitative stock assessments, the following are to be reported:

a. What % of stocks are either F<Fpa OR F<Fmsy: give % or indicate 'unknown/not assessed'. Of the stocks used to calculate this statistic, indicate the number assessed against Fpa and the number assessed against Fmsy.

b. What % of stocks are either SSB>Bpa OR SSB>=Bmsy-trigger: give % or indicate 'unknown/not assessed'. Of the stocks used to calculate this statistic, indicate the number assessed against Bpa and the number assessed against Bmsy.

If a stock is assessed using both Fpa and Fmsy, or Bpa and Bmsy, then the assessment using MSY should be the one used in this report.

For fish stocks in the assessment area that have been assessed using other methods (*e.g.* catch/biomass ratio, biomass indices, population age and size distribution), the following are to be reported:

a. Indicate what % of the fish stocks are within safe biological limits: <1%, 1-5%, 5-25%, 25-50%, 50-75%, 75-100%; unknown/not assessed.

'Safe biological limits' should be determined based on the indicators from GES Descriptor 3 using data from monitoring programmes for their calculation, namely:

a. 3.1.2 Ratio between catch and biomass index;

b. 3.2.2 Biomass indices;

c. 3.3.1 Proportion of fish larger than the mean size of first sexual maturation;

d. 3.3.2 Mean maximum length across all species found in research vessel surveys;

e. 3.3.3 95% percentile of the fish length distribution observed in research vessel surveys;

f. 3.3.4 Size at first sexual maturation, which may reflect the extent of undesirable genetic effects on exploitation;

Further information on how this information can be calculated is provided in the Core Group Report on MSFD Descriptor 3+ produced by ICES[32].

For stocks not assessed by quantitative stock assessment or by other methods, it is possible to indicate 'unknown/not assessed' and explain the reasons for this in the topic *Information gaps*. In addition, it should be indicated in the field *Limitations* if the MSY used for the stocks is the 'real' MSY or if a proxy has been used for certain stocks.

Any additional information on the health of the fish stocks can be reported on in the Functional Groups 8A03 and Species 8A04 reporting sheets (see Sections 6.3.4 and 6.3.5 respectively).

The information should be entered into DBTable **MSFD8b_ExtractionFishShellfish**:

Feature	Area	Topic	Description	SumInfo1	SumInfo1_unit	SumInfo1_confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant MarineUnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels <12m - passive & mobile gears)	Characterisation of the level of fishing pressure for the fishing category within the assessment area (*e.g.* number of vessels, number of fishing days, power), including any significant spatial and temporal variation. Include description of the spatial distribution, variation in intensity (across this distribution) and temporal trends (whether and how the spatial extent and intensity of the pressure is changing over time) within the assessment area (maximum 250 words).	Proportion of assessment area which is subject to this fishing pressure category (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species		**Level of pressure**	As above	As above			See additional table below							

[32] ICES. 2012. Marine Strategy Framework Directive – Descriptor 3+, ICES CM 2012/ACOM: 62. 169pp.

Feature	Area	Topic	Description	SumInfo1	SumInfo1_unit	SumInfo1_confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
- fish & shellfish		**from fishing** (vessels >12m - passive gears)					(8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels >12m - mobile gears - affecting seabed (*i.e.* trawls, dredges))	As above	As above			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels >12m - mobile gears - other types)	As above	As above			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Level of pressure from fishing** (recreational)	As above	As above			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Level of pressure from fishing** (other - specify in Description field)	As above	As above			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Level of pressure from shellfish collection**	As above	As above			See additional table below (8Bb-PI_Analysis_Fisheries)							
Extraction of species - fish & shellfish		**Impacts** of pressure **on seabed habitats** and associated communities	Description of the impacts of the pressure on the seabed habitats, and associated benthic communities (*e.g.* Distribution, extent, condition, size composition) including the main cumulative and synergetic effects; transboundary impacts (maximum 500 words).	Proportion of the assessment area where seabed habitats have impacts from fishing pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed.			List of predominant habitats impacted. See 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements							
Extraction of species - fish & shellfish		**Impacts** of pressure **on functional groups**	Description of the impacts of the pressure on functional groups (*e.g.* non-target bycatch) including the main cumulative and synergetic effects; transboundary impacts	Proportion of functional groups in the area which are impacted (adversely affected) by selective extraction – fishing:	Provide: total number of functional groups present		List of functional groups impacted. See 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo							

Feature	Area	Topic	Description	SumInfo1	SumInfo1_unit	SumInfo1_confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
			(maximum 500 words).	provide: number of functional groups impacted; or indicate Unknown/not assessed	in the area		2_ImpactedElements							
Extraction of species - fish & shellfish		**Impacts** of all fishing types **on commercially exploited fish stocks** (3.1, 3.2)	Description of the impacts of the pressure on relevant fish stocks (*e.g.* reproductive capacity, biomass, population age and size distribution) including the main cumulative and synergetic effects; transboundary impacts. Include here description of fish stocks assessed by stock assessment methods using reference points (*e.g.* Fpa, Bpa, Fmsy, Bmsy) and stocks assessed using other methods (*e.g.* biomass indices, ratio between catch and biomass index, population age and size distribution) (maximum 500 words).	What % of stocks in the area are F<Fpa OR F<Fmsy, SSB>Bpa OR SSB>=Bmsy-trigger, or proportion within safe biological limits: see 8Bc-PI_AnalysisFisheries and use fields SumInfo3, SumInfo4 and SumInfo5			List of commercial fish impacted. See 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements							Also indicate if MSY used for most stocks is 'real' MSY or if a proxy has been used for certain stocks.
Extraction of species - fish & shellfish		**Impacts** of all fishing types **on commercially exploited shellfish stocks** (3.1, 3.2)	As above	What % of stocks in the area are F<Fpa OR F<Fmsy, SSB>Bpa OR SSB>=Bmsy-trigger, or proportion within safe biological limits: see 8Bc-PI_AnalysisFisheries and use fields SumInfo3, SumInfo4 and SumInfo5			List of commercial shellfish impacted. See 8Bc_PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements							Also indicate if MSY used for most stocks is 'real' MSY or if a proxy has been used for certain stocks.
Extraction of species - fish & shellfish		**Information gaps** and **plans** to address them	See general guidance											

For this reporting sheet there are additional summary information fields (to the right of field *Limitations*) in DBTable **MSFD8b_ExtractionFishShellfish:**

Feature	Area	Topic	SumInfo2	SumInfo3	SumInfo 4	SumInfo5
Select relevant feature	Select relevant MarineUnitID					
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels <12m - passive & mobile gears)	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels >12m - passive gears)	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of		**Level of pressure from fishing**	Number of	Total tonnage	Total power	Total number of fishing days

Feature	Area	Topic	SumInfo2	SumInfo3	SumInfo 4	SumInfo5
species - fish & shellfish		(vessels >12m - mobile gears - affecting seabed (*i.e.* trawls, dredges))	vessels			
Extraction of species - fish & shellfish		**Level of pressure from fishing** (vessels >12m - mobile gears - other types)	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of species - fish & shellfish		**Level of pressure from fishing** (recreational)	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of species - fish & shellfish		**Level of pressure from fishing** (other -specify in Description field)	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of species - fish & shellfish		**Level of pressure from shellfish collection**	Number of vessels	Total tonnage	Total power	Total number of fishing days
Extraction of species - fish & shellfish		**Impacts** of all fishing types **on commercially exploited fish stocks** (3.1, 3.2)		For stocks that have been assessed in the assessment area using quantitative stock assessment with reference points: State % of stocks which are either F<Fpa OR F<Fmsy or indicate Unknown/not assessed. Use of Fpa or Fmsy is covered by stock assessment method in worksheet 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements	For stocks that have been assessed in the assessment area using quantitative stock assessment: State % of stocks which are either SSB>Bpa OR SSB>=Bmsy-trigger or indicate Unknown/not assessed. Use of Bpa or Bmsy-trigger is covered by stock assessement method in worksheet 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements	For stocks in the assessment area that have been assessed using other methods (e.g. catch/biomass ratio, biomass indices, population age and size distribution), indicate what % of the fish stocks are within safe biological limits (select one): <1%, 1-5%, 5-25%, 25-50%, 50-75%, 75-100%; Unknown/not assessed
Extraction of species - fish & shellfish		**Impacts** of all fishing types **on commercially exploited shellfish stocks** (3.1, 3.2)		For stocks that have been assessed in the assessment area using quantitative stock assessment with reference points: State % of stocks which are either F<Fpa OR F<Fmsy or indicate Unknown/not assessed. Use of Fpa or Fmsy is covered by stock assessment method in worksheet 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements	For stocks that have been assessed in the assessment area using quantitative stock assessment: State % of stocks which are either SSB>Bpa OR SSB>=Bmsy-trigger or indicate Unknown/not assessed. Use of Bpa or Bmsy-trigger is covered by stock assessement method in worksheet 8Bc-PI_FeatureImpacts and DBTable MSFD8b_SumInfo2_ImpactedElements	For stocks in the assessment area that have been assessed using other methods (e.g. catch/biomass ratio, biomass indices, population age and size distribution), indicate what % of the fish stocks are within safe biological limits (select one): <1%, 1-5%, 5-25%, 25-50%, 50-75%, 75-100%; Unknown/not assessed

Information on which predominant habitats, functional groups and commercial species are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements:**

Feature	Area	Topic	Physical/chemical features - impacted	Predominant habitats – impacted	Functional groups - impacted	Species - present	Species - impacted	Species stock assessment method
Select relevant feature	Select relevant Marine UnitID	Impact type	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed	Indicate Yes or No against the species listed in field SumInfo2	Add rows as needed
Extraction of species - fish				Seabed types only		Identify all relevant commercially exploited species for the assessment area (scientific name, authority, date)	Indicate which commercially exploited species (scientific name) in the assessment area are impacted (adversely affected) by the pressure. Based on the species stock assessment method indicated, is the species above the threshold value: Yes or No?	Select one: -Assessed quantitatively (F<Fpa,) -Assessed quantitatively (F<Fmsy) -Assessed quantitatively (SSB>Bpa) -Assessed quantitatively (SSB>=Bmsy trigger) -Assessed by other methods (*e.g.* ratio between catch and biomass index; biomass indices) -Not assessed
Extraction of species - shellfish				Seabed types only		Identify all relevant commercially exploited species for the assessment area (scientific name, authority, date)	Indicate which commercially exploited species (scientific name) in the assessment area are impacted (adversely affected) by the pressure. Based on the species stock assessment method indicated, is the species above the threshold value: Yes or No?	Select one: -Assessed quantitatively (F<Fpa,) -Assessed quantitatively (F<Fmsy) -Assessed quantitatively (SSB>Bpa) -Assessed quantitatively (SSB>=Bmsy trigger) -Assessed by other methods (*e.g.* ratio between catch and biomass index; biomass indices) -Not assessed

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.12.3 Step 3.2: Assessment of extraction of species - fishing

For selective extraction by fishing, status of the pressure should be reported for the GES criteria 3.1, relating to the level of fishing activity. The status of the pressure is requested for all fishing categories together whilst the related information on the level and trend in pressure in the characteristics/analysis section is requested by fishing category. The reason information is requested 'overall' for status is that the indicators associated with status of pressure are fishing mortality (3.1.1) and ratio between catch and biomass index (3.1.2), which are assessed at stock level rather than by type of fishing gear employed etc. In order to get a more precise idea of levels and trends of fishing pressure, information requested in the characteristics/analysis sheet is broken down by the fishing categories.

For assessment of impacts from fishing, the following GES criteria are relevant, depending on which part of the ecosystem is being assessed (seabed, functional group): reproductive capacity of the stock (3.2), population age and size distribution (3.3), species distribution (1.1), population size (1.2), population condition (1.3), habitat distribution (1.4), habitat extent (1.5), habitat condition (1.6), physical damage, having regard to substrate characteristics (6.1) and condition of the benthic community (6.2).

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, *e.g.* insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = *e.g.* based on extensive surveys. Moderate = *e.g.* Based on partial data with some extrapolation. Low = *e.g.* Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Extraction of species - fish & shellfish		Assessment of fishing pressure (3.1)					
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on seabed habitats					
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on functional groups					
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on commercially exploited fish stocks (3.2, 3.3)					
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on commercially exploited shellfish stocks (3.2, 3.3)					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (*e.g.* background levels, historic or present reference condition, levels at a specified period/year, current levels).
Extraction of species - fish & shellfish		Assessment of fishing pressure (3.1)	Select from (select all that apply): - 3.1 Level of pressure of fishing activity; - Other (specify)	Select from (select all that apply): — Fishing mortality (3.1.1), — Ratio between catch and biomass index (3.1.2), — Other (specify)				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on seabed habitats	Select from (select all that apply): - 1.4 Habitat distribution; - 1.5 Habitat extent; - 1.6 Habitat condition; - 6.1 Physical damage, having regard to substrate characteristics; - 6.2 Condition of the benthic community; - Other (specify)	Select from (select all that apply): — Distributional range (1.4.1) — Distributional pattern (1.4.2) —Habitat Area (1.5.1); — Habitat volume, where relevant (1.5.2) — Condition of the typical species and communities (1.6.1) — Relative abundance and/or biomass, as appropriate (1.6.2) — Physical, hydrological and chemical conditions (1.6.3) — Extent of the seabed significantly affected by human activities for the different substrate types (6.1.2) — Multimetric indices assessing benthic community condition and functionality (6.2.2) — Proportion of biomass or number of individuals in the macrobenthos above some specified length/size (6.2.3) — Parameters describing the characteristics of the size spectrum of the benthic community (6.2.4) — Other (specify)				
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on functional groups	Select from (select all that apply): - 1.1 Species distribution; - 1.2 Population size; - 1.3 Population condition; - 1.4 Habitat distribution; - 1.5 Habitat extent; - 1.6 Habitat condition; - Other (specify)	Select from (select all that apply): — Distributional range (1.1.1) — Distributional pattern within the latter, where appropriate (1.1.2) —Area covered by the species (for sessile/benthic species) (1.1.3); — Population abundance and/or biomass, as appropriate (1.2.1) — Population demographic characteristics (*e.g.* body size or age class structure, sex ratio, fecundity rates, survival/mortality rates) (1.3.1) — Population genetic structure, where appropriate (1.3.2) — Distributional range (1.4.1) — Distributional pattern (1.4.2) —Habitat Area (1.5.1); — Habitat volume, where relevant (1.5.2) — Condition of the typical species and communities (1.6.1) — Relative abundance and/or biomass, as appropriate (1.6.2) — Physical, hydrological and chemical conditions (1.6.3) — Other (specify)				
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on commercially exploited fish stocks (3.2, 3.3)	Select from (select all that apply): - 3.2 Reproductive capacity of the stock; - 3.3 Population age and size distribution; - Other (specify)	Select from (select all that apply): — Spawning stock biomass (SSB) (3.2.1) — Biomass indices (3.2.2) — Proportion of fish larger than the mean size of first sexual maturation (3.3.1) — Mean maximum length across all species found in research vessel surveys (3.3.2) — 95% percentile of fish length distribution observed in research vessel surveys (3.3.3) — Other (specify)				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Extraction of species - fish & shellfish		Assessment - impacts of fishing pressure on commercially exploited shellfish stocks (3.2, 3.3)	Select from (select all that apply): - 3.2 Reproductive capacity of the stock; - 3.3 Population age and size distribution; - Other (specify)	Select from (select all that apply): — Spawning stock biomass (SSB) (3.2.1) — Biomass indices (3.2.2) — Proportion of fish larger than the mean size of first sexual maturation (3.3.1) — Mean maximum length across all species found in research vessel surveys (3.3.2) — 95% percentile of fish length distribution observed in research vessel surveys (3.3.3) — Other (specify)				

6.4.12.4 Step 3.3: Metadata - fishing

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_ExtractionFishShellfishMetadata**.

6.4.12.5 Step 3.1: Characteristics/analysis of extraction of species – seaweed harvesting, maerl, other

The information requested for these selective extraction categories is based on the level and trend in the pressure, and its impacts on commercially-exploited species, on seabed habitats and associated benthic communities, and on functional groups. GES criteria and indicators are identified from Descriptor 1 and Descriptor 6 that may be relevant. Information is requested on current state and trends. Descriptive (free) text should be provided on the state and trend, followed by related categorical summary information.

The information requested is on the current level of the pressure and any trends over time, via descriptive text and related categorical summary information on the proportion of the area which is subject to the pressure.

The second part of the sheet seeks information on the overall effects of the species extraction, according to the following categories:

a. The environmental impacts on seabed habitats and associated benthic communities;

b. The environmental impacts on functional groups (if relevant);

c. The environmental impacts of the commercially-exploited species, which is addressed by:

   i. Listing the species which are commercially exploited in the assessment area;

   ii. Of the species listed under (i), identifying those where an assessment has been undertaken and the method used);

   iii. Of the species listed under (i), indicating which species are impacted on the basis of the assessments (i.e. above or below the threshold values used).

The information should be entered into DBTable **MSFD8b_ExtractionSeaweedMaerlOther**:

Feature	Area	Topic	Description	SumInfo1	SumInfo1 unit	SumInfo1 confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided		Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Extraction of species - seaweed harvesting, maerl, other		**Level of pressure** (seaweed harvesting, maerl extraction or other - specify in Description)	Characterisation of the level of selective extraction pressure within the assessment area, including any significant spatial and temporal variation. Include description of the spatial distribution, variation in intensity (across this distribution) and temporal trends (whether and how the spatial extent and intensity of the pressure is changing over time) within the assessment area (maximum 250 words).	Proportion of assessment area which is subject to this selective extraction pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed										
Extraction of species - seaweed harvesting, maerl, other		**Impacts** of the pressure **on commercially exploited species**	Description of the impacts of the selective extraction pressure on target species (e.g. population size, condition, distribution) including the main cumulative and synergetic effects; transboundary impacts (maximum 250 words).	Proportion of the assessment area where target species have impacts from this selective extraction pressure (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Extraction of species - seaweed harvesting, maerl, other		**Impacts** of pressure **on seabed habitats** and associated communities	Description of the impacts of the pressure on the seabed habitats, including the benthic communities (e.g. Distribution, extent, condition, distribution, size composition) including the main cumulative and synergetic effects; transboundary impacts (maximum 250 words).	Proportion of the assessment area where seabed habitats have impacts from this selective extraction (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed			See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							
Extraction of species - seaweed harvesting, maerl, other		**Impacts** of pressure **on functional groups**	Description of the impacts of the pressure on functional groups (e.g. non-target bycatch) including the main cumulative and synergetic effects; transboundary impacts (maximum 250 words).	Proportion of functional groups in the area impacted (adversely affected) by other selective extraction Provide: number of functional groups impacted; or not assessed/unknown	Provide: total number of functional groups present in the area		See 8Bc-PI_FeatureImpacts See DBTable MSFD8b_SumInfo2_ImpactedElements							

Feature	Area	Topic	Description	SumInfo1	SumInfo1 unit	SumInfo1 confidence	SumInfo2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Extraction of species - seaweed harvesting, maerl, other		**Information gaps** and **plans** to address them	See general guidance											

Information on which predominant habitats, functional groups and commercial species are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements:**

Feature	Area	Topic	Physical/chemical features - impacted	Predominant habitats - impacted	Functional groups - impacted	Species - present	Species – impacted	Species stock assessment method
Select relevant feature	Select relevant Marine UnitID	Select impact type from list	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	Add rows as needed	Indicate Yes or No against the species listed in field SumInfo2	Add rows as needed
Extraction of species - seaweed harvesting, maerl, other				Not water column habitats, unless relevant	Only if relevant	Identify all relevant commercially exploited species for the assessment area (scientific name, authority, date)	Indicate which commercially exploited species (scientific name) in the assessment area are impacted (adversely affected) by the pressure. Based on the species stock assessment method indicated, is the species above the threshold value: Yes or No?	Select one: -Assessed -Not assessed

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.12.6 Step 3.2: Assessment of extraction of species - seaweed harvesting, maerl, other

For selective extraction categories, status should be reported for the pressure and its impacts on commercially-exploited species, on seabed habitats and associated benthic communities, and on functional groups. There are no GES criteria for other selective extraction activities. However, relevant GES criteria for the impacts include species distribution (1.1), population size (1.2), population condition (1.3), habitat distribution (1.4), habitat extent (1.5), habitat condition (1.6), physical damage, having regard to substrate characteristics (6.1) and condition of the benthic community (6.2), as appropriate.

The status assessment is split across three database tables (**MSFD8b_Assessment, MSFD8b_AssessmentCriteria, MSFD8b_AssessmentIndicator**), because there may be several criteria or indicators used for each topic.

Feature	Area	Topic	Status	Status description	Status trend	Status confidence	Limitations
Select relevant feature	Select relevant MarineUnitID		Select one from: - Good (GES) - Not good (GES) - Other status class - Descriptive status provided - Not assessed	Use this field if, in previous column, one of the following options was selected: Other (specify), Description, Not assessed (give reasons, e.g. insufficient data, lack of established methods, in 'Status description' field)	Select one: Improving, Stable, Declining, Unknown/not assessed	High = e.g. based on extensive surveys. Moderate = e.g. Based on partial data with some extrapolation. Low = e.g. Based on very incomplete data or expert judgement	Free text commentary on limitations of information and data reported; use especially if low confidence is reported
Extraction of species (select seaweed, maerl or other)		Assessment of species extraction pressure					
Extraction of species (select seaweed, maerl or other)		Assessment - impacts of species extraction pressure on commercially exploited species					
Extraction of species (select seaweed, maerl or other)		Assessment - impacts of species extraction pressure on seabed habitats					
Extraction of species (select seaweed, maerl or other)		Assessment - impacts of species extraction pressure on functional groups					

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Select relevant feature	Select relevant Marine UnitID		Enter the relevant Decision GES criteria, if appropriate. It is preferable to use the GES criteria, but if the 2012 assessment has used other criteria, then enter 'Other' and specify the criterion used	Enter the relevant Decision GES indicators, if appropriate. It is preferable to use the GES indicators but if the 2012 assessment has used other indicators, then enter 'Other' and specify the indicators used	Indicate the thresholds between good and not good status (or other status classes used) for each indicator.	Give the units used for threshold values	Indicate the proportion (%) of the feature within the area that should achieve the threshold quality value.	Indicate the baseline used to establish the threshold values (e.g. background levels, historic or present reference condition, levels at a specified period/year, current levels).
Extraction of species - seaweed, maerl, other		Assessment of species extraction pressure	Select from (select all that apply): - Other (specify)	Select from (select all that apply): — Other (specify)				
Extraction of species - seaweed, maerl, other		Assessment - impacts of species extraction pressure on commercially exploited species	Select from (select all that apply): - 1.1 Species distribution; - 1.2 Population size; - 1.3 Population condition; - Other (specify)	Select from (select all that apply): — Distributional range (1.1.1) — Distributional pattern within the latter, where appropriate (1.1.2) —Area covered by the species (for sessile/benthic species) (1.1.3); — Population abundance and/or biomass, as appropriate (1.2.1) — Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates) (1.3.1) — Population genetic structure, where appropriate (1.3.2) — Other (specify)				

Feature	Area	Topic	Criteria used	Indicators used	Threshold value	Threshold value unit	Threshold proportion	Baseline used
Extraction of species - seaweed, maerl, other		Assessment - impacts of species extraction pressure on seabed habitats	Select from (select all that apply): - 1.4 Habitat distribution; - 1.5 Habitat extent; - 1.6 Habitat condition; - 6.1 Physical damage, having regard to substrate characteristics; - 6.2 Condition of the benthic community; - Other (specify)	Select from (select all that apply): — Distributional range (1.4.1) — Distributional pattern (1.4.2) —Habitat Area (1.5.1); — Habitat volume, where relevant (1.5.2) — Condition of the typical species and communities (1.6.1) — Relative abundance and/or biomass, as appropriate (1.6.2) — Physical, hydrological and chemical conditions (1.6.3) — Extent of the seabed significantly affected by human activities for the different substrate types (6.1.2) — Multimetric indices assessing benthic community condition and functionality (6.2.2) — Proportion of biomass or number of individuals in the macrobenthos above some specified length/size (6.2.3) — Parameters describing the characteristics of the size spectrum of the benthic community (6.2.4) — Other (specify)				
Extraction of species - seaweed, maerl, other		Assessment - impacts of species extraction pressure on functional groups	Select from (select all that apply): - 1.4 Habitat distribution; - 1.5 Habitat extent; - 1.6 Habitat condition; - 6.1 Physical damage, having regard to substrate characteristics; - 6.2 Condition of the benthic community; - Other (specify)	Select from (select all that apply): — Distributional range (1.4.1) — Distributional pattern (1.4.2) —Habitat Area (1.5.1); — Habitat volume, where relevant (1.5.2) — Condition of the typical species and communities (1.6.1) — Relative abundance and/or biomass, as appropriate (1.6.2) — Physical, hydrological and chemical conditions (1.6.3) — Extent of the seabed significantly affected by human activities for the different substrate types (6.1.2) — Multimetric indices assessing benthic community condition and functionality (6.2.2) — Proportion of biomass or number of individuals in the macrobenthos above some specified length/size (6.2.3) — Parameters describing the characteristics of the size spectrum of the benthic community (6.2.4) — Other (specify)				

6.4.12.7 Step 3.3: Metadata – seaweed harvesting, maerl, other

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_ExtractionSeaweedMaerlOtherMetadata**.

6.4.13 Marine acidification (8B12)

6.4.13.1 Introduction

The Marine acidification reporting sheet is provided to allow reporting within the scope of the Initial Assessment, Article 8a, and Annex III Table 1. It relates to chemical features of the marine environment not covered in other sheets (*i.e.* 'contamination by hazardous substances' and 'nutrient and organic enrichment') and addresses chemical features which can contribute to marine acidification (pH, pCO_2, total inorganic carbon and alkalinity).

One reporting sheet should be completed per assessment area.

6.4.13.2 Step 3.1: Characteristics/analysis of marine acidification

There are no specific GES criteria provided for chemical features (marine acidification). Information is requested on current state and trends for pH. The average pH is requested along with a 90% confidence interval, which will show the range in pH value over the assessment period.

Descriptive (free) text should be provided on the state and trend (if known) for marine acidification and its impacts, followed by related summary categorical information. Impacts of marine acidification on the water column habitats and associated communities, and on seabed habitats and associated communities are requested, rather than impacts on functional groups such as fish or cetaceans.

The information should be entered into DBTable **MSFD8b_Acidification**:

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant MarineUnitID		Provide brief summary information, not extensive descriptive text	Select one from categories provided	Select one: High, moderate, low, not relevant	Select one from categories provided	Select one: Increasing, Stable, Decreasing, Unknown/ not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/ not assessed	YYYY	YYYY	Comment on limitations of information and data reported
Marine acidification		**Level of marine acidification**	Description of the acidity (pH levels, pCO_2 profiles or equivalent information) of the marine waters in the assessment area, including any significant spatial and temporal variation [maximum words 250]	State average pH (or indicate 'Unknown/not assessed')	Confidence: 90% CI								
Marine acidification		**Impacts** of pressure **on water column** and associated communities	Describe the impacts of marine acidification on water column habitats and associated communities (maximum 250 words)	Proportion of the assessment area where the water column has impacts from marine acidification (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed		See DBTable MSFD8b_SumInfo2_ImpactedElements							

Feature	Area	Topic	Description	SumInfo1	SumInfo 1_confidence	SumInfo 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Marine acidification		**Impacts** of pressure **on seabed habitats** and associated communities	Describe the impacts of marine acidification on the seabed habitats and associated communities (maximum 250 words)	Proportion of the assessment area where the seabed has impacts from marine acidification (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed		See DBTable MSFD8b_SumInfo2_ImpactedElements							
Marine acidification		**Information gaps** and **plans** to address them	See general guidance										

Information on which predominant habitats are impacted by the pressure should be entered into DBTable **MSFD8b_SumInfo2_ImpactedElements:**

Feature	Area	Physical/chemical features - impacted	Predominant habitats - impacted	Functional groups - impacted
Select relevant feature	Select relevant MarineUnitID	List all physical/chemical features in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all predominant habitats in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.	List all functional groups in the assessment area that are impacted (adversely affected) by the pressure. Add rows as needed.
Marine acidification				

Information on which activities are responsible for the pressure in the assessment area should be entered into DBTable **MSFD8b_Activity**.

6.4.13.3 Step 3.2: Assessment of marine acidification

The Marine acidification reporting sheet does not have an assessment/status section, because there are no GES criteria for this topic. Nevertheless acidification is an important issue for which some initial perspectives should be captured (under the previous section).

6.4.13.4 Step 3.3: Metadata

Refer to Section 6.2.4 for guidance on Metadata reporting into DBTable **MSFD8b_AcidificationMetadata**.

6.5 Economic and social analysis (Art. 8(1c))

6.5.1 Overview

The Economic and Social Analysis (ESA) reporting sheets were developed based on: requirements in the MSFD; the Guidance on economic and social analysis for the initial assessment produced by the Working Group on Economic and Social Assessment (WG ESA) in December 2010; and feedback received from WG ESA and WG DIKE.

There are three reporting sheets:

- 8C01: Human activities (economic and social analysis of the use of marine waters);
- 8C02: Ecosystem services and other approaches (economic and social analysis of the use of marine waters);
- 8C03: Cost of degradation.

Reporting sheet 8C01 (human activities) should be completed by Member States who have used the Marine Water Accounts approach, but some elements of the sheet should be completed by all Member States. Reporting sheet 8C02 (ecosystem services and other approaches) should **only be completed** by those Member States that have used an Ecosystem services or other (thematic) type of approach. Reporting sheet 8C03 on the cost of degradation addresses whichever approach Member States have followed; in the MSFD database, these are consequently incorporated with the relevant ESA assessments (*i.e.* uses, services or themes).

Terminology: Uses, activities and sectors

The MSFD refers to 'uses' of the marine waters in Art. 8(1c) and to 'human activities' elsewhere in the Directive (*e.g.* Art. 8(1b)). This terminology is consequently followed in the CSWP and adopted in the Reporting Sheets. The CSWP provides an indicative list of uses and activities relevant for the MSFD.

However, the WG ESA Guidance refers to the term 'sectors' whilst the Marine Water Accounts approach is likely to use statistical information on economic sectors from national statistical offices. The human activities identified in the CSWP can be considered equivalent to the economic sectors identified in the WG ESA Guidance document, as shown in the correspondence between the different terminologies provided in **Error! Reference source not found.**. The table also provides a cross reference to the EU's Nomenclature Générale des Activités Économiques dans les Communautés Européennes (NACE) codes.

Table 6.7: Relationship between the human activities provided in the CSWP and the sectors listed in the ESA 2010 Guidance, together with an indication of relevant NACE 4-digit codes.

CSWP Reference List		ESA Guidance	NACE 4-digit codes Rev 2[33]
Category	**Human activities**	**Sectors**	
Energy production	Marine-based renewable energy generation (wind, wave and tidal power)	Renewable energy	
	Marine hydrocarbon (oil and gas) extraction	Oil & Gas	06.10 Extraction of crude petroleum 06.20 Extraction of natural gas 09.10 Support activities for petroleum and natural gas extraction
	Energy production - Other		
Extraction of living resources	Seaweed and other sea-based food harvesting		
	Extraction of genetic resources/ bioprospecting/maerl		
	Fisheries incl. recreational fishing (fish and shellfish)	Fisheries	03.11 Marine fishing 03.12 Freshwater fishing Processing of fish products: 10.20 Processing and preserving of fish, crustaceans and molluscs
	Extraction of living resources - Other		
Extraction of non-living resources	Marine mining (sand and gravel, rock)	Mining	08.1 Quarrying of stone, sand and clay 08.11 Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate 08.12 Operation of gravel and sand pits; mining of clays and kaolin 08.9 Mining and quarrying n.e.c. 08.99 Other mining and quarrying n.e.c.
	Dredging		
	Desalination/water abstraction	Water abstraction	
	Extraction of non-living resources - Other		08.93 Extraction of salt
Food production	Aquaculture (fin-fish and shellfish)	Aquaculture & mariculture	03.21 Marine aquaculture 03.22 Freshwater aquaculture
	Food production - Other		
Man-made structures (incl. construction phase)	Land claim, coastal defence	Coastal defence	
	Port operations	Supporting infrastructure (ports, marinas, navigation aids)	42.91 Construction of water projects
	Submarine cable and pipeline operations	Cables	

[33] Notes: 1) NACE Regulation: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-015/EN/KS-RA-07-015-EN.PDF, 2) There may be other NACE codes that are also relevant

CSWP Reference List		ESA Guidance	NACE 4-digit codes Rev 2[33]
Category	**Human activities**	**Sectors**	
	Placement and operation of offshore structures (other than for energy production)		
	Man-made structures (incl. construction phase) - Other		
Military	Recurrent defence operations	Defence – military	
	Dumping of unwanted munitions		
	Military - Other		
Recreation	Tourism and recreation incl. yachting	Tourism	55.10 Hotels and similar accommodation
	Recreation - Other		
Research and survey	Marine research, survey and educational activities		
Transport	Shipping	Shipping construction & transport	Shipping construction: 30.11 Building of ships and floating structures 30.12 Building of pleasure and sporting boats 33.15 Repair and maintenance of ships and boats Shipping transport: 50.10 Sea and coastal passenger water transport 50.20 Sea and coastal freight water transport
	Transport - Other		
Waste disposal	Solid waste disposal incl. dredge material	Waste and wastewater disposal	
	Storage of gases	Storage of gases	
	Waste disposal - Other		
Land-based activities/industries	Industry (discharges, emissions)		
	Agriculture & forestry (run-off, emissions)		
	Urban (municipal waste water discharge)	Waste and wastewater disposal (see also above)	
	Land-based activities/industries - Other		
Other	Other marine uses and activities		

6.5.2 Human activities (8C01)

6.5.2.1 Introduction

This reporting sheet allows for information and data on human activities in, or affecting, the marine environment to be reported, and provides the information on sectors/activities that are cross-referenced from the pressure and impact reporting sheets.

This reporting sheet should be completed for each relevant human activity per assessment area, following the categories provided in the CSWP. If a human activity is relevant to the assessment area but there are no specific data available, the activity should still be reported on, even if most fields are left blank, so that it is known that this is an activity relevant for the area. Member States do not need to report on all activities in the reference list, only those that are relevant to the area (and should therefore have been included in the Initial Assessment).

6.5.2.2 Step 3.1: Analysis of human activities

Characteristics

Provide an overall description of the activity, including a more specific description of the scope of the activity (CSWP category) to suit the area being reported and, if appropriate, the relevant NACE codes.

An indication of the proportion (%) of the assessment area that is subject to the activity should be provided. For land-based activities (*e.g.* industrial discharges, agricultural run-off), this field should be used to report the % of the assessment area under the influence of the land-based activity. Recent and future trends are also requested. For future trends, a twelve-year timescale is suggested, but Member States should specify the timescale they have used for their trend analysis.

Note: for reporting on the activity *Fisheries including recreational fishing (fish and shellfish)*, the field *Summary information 1* (proportion of the assessment area subject to the use/activity) and information on recent and future trends does not need to be completed if this has already been reported by fishing category (level and trends in the spatial distribution and intensity of the pressure) through the Extraction of species reporting sheet (8B11).

Socio-economic indicators

These fields seek data on value-added, employment and production values for the human activity (with confidence levels, where available). Space is given for a description of these socio-economic indicators, which should include the spatial coverage of the data (*e.g.* if it refers to offshore only or to both the offshore and coastal region). Other relevant socio-economic indicators can also be provided in the 'other indicators' field (add as many indicators as needed).

These fields on socio-economic indicators should only be completed if the 'Marine Water Accounts' approach to the analysis of the use of marine waters has been used. Member States that will report the analysis of the use of marine waters through reporting sheet 8C02 (Ecosystem services and other approaches) do not need to complete these fields.

Use of NACE codes

Data related to NACE codes are currently only available at the *national level,* and for many sectors data have not been disaggregated between land-based and marine-based activities. Where Member States marine waters lie in several regions/subregions, the data will need to be disaggregated to enable reporting at the level of the region or subregion. If data based on NACE codes have been used, Member States should describe in the 'Method used' fields of

the Metadata section how the data have been disaggregated for marine sectors, between land-based and marine-based activities, and between regions/subregions. Table 6.7 provides an indication of which are the most relevant NACE codes for each activity/sector.

Another source of information for value-added and employment per sector at the national level is available at: http://ec.europa.eu/maritimeaffairs/pdf/clusters/study_results_annexes_en.pdf (see pages 16-17).

The information to be reported should be entered into DBTable **MSFD8c_Uses:**

Feature	Area	Topic	Description	Summary information 1	SumInfo1_ Confidence	Summary information 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text		Low, moderate, high, not relevant		Select one: Increasing, Stable, Decreasing, Unknown/not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/not assessed	YYYY	YYYY	Describe uncertainties, main gaps and progress in reporting
Uses/activity		**Characteristics** of activity (/use/sector) in assessment area	Describe elements included within this activity (e.g. if activity is Fisheries, is this specifically commercial fisheries, are both finfish & shellfish included etc; are other uses/sectors incorporated?). Describe the main characteristics of the Activity including its spatial distribution and intensity, any temporal (seasonal) variation, and trends in the Activity (is it increasing, declining) (maximum 500 words).	Proportion (%) of assessment area subject to this Use/activity (select one): <1%; 1-5%; 5-25%; 25-50%; 50-75%; 75-100%; Unknown/not assessed		Provide a list of relevant NACE codes							
Uses/activity		**Production value**	Describe economic value of the activity and trends (maximum 100 words)	Production value (€ million)		Socio-economic indicators: MS that are reporting their analysis of the use of marine waters on reporting sheet 8C02 (Ecosystem Services and Other Approaches) do not need to complete this indicator information.							
Uses/activity		**Value added**	Describe value-added, upstream and downstream, of the activity and trends (maximum 100 words)	Value-added (€ million)									
Uses/activity		**Employment**	Describe employment (e.g. number of jobs) and relative importance for the area assessed (maximum 100 words)	Employment (direct) (*1000 FTE)									
Uses/activity		**Other indicators** [add rows for other indicators as needed]	Describe levels of indicator (maximum 100 words)	Add name of indicator, value and associated units									
Uses/activity		**Cost of degradation**	Describe costs incurred in relation to this activity/sector in preventing degradation to the environment, and whether these costs are borne by the public or private sector.	Costs (€ million per year)		Describe measures included	These fields to be completed only if a cost-based approach has been used						
Uses/activity		Explain **information gaps** and **plans** to address them	See general guidance										

6.5.2.3 *Step 3.2: Dependencies*

Information on the dependencies of the use/activity in the assessment area on the ecosystem (predominant habitat types and functional groups) should be entered into DBTable **MSFD8c_Depend:**

Feature	Area	Predominant habitats - dependency	Functional groups - dependency	Uses/activities - supported	GES descriptor/criterion
Select relevant feature	Select relevant MarineUnitID	Add rows as needed	Add rows as needed	Add rows as needed	Add rows as needed
Use/activity		List (from reference list) the predominant habitats upon which this activity relies/is dependent	List (from reference list) the functional groups upon which this activity relies/is dependent		

6.5.2.4 *Step 3.3: Pressure analysis*

In this section the most important pressures caused by the activity should be identified, and if possible ranked. This is intended to provide a link to the pressure and impact analysis (Art. 8.1b), but from the perspective of each activity, rather than collectively as in the Pressures & Impacts reporting sheets. Some pressures caused by activities may not be captured in the Pressures & Impacts reporting sheets, because an activity may not be one of the top three activities that are causing a particular pressure.

Information on the pressures from the use/activity in the assessment area should be entered into DBTable **MSFD8c_Pressures:**

Feature	Area	Topic	Description	Pressure 1	Pressure 1 rank	Pressure 2	Pressure 2 rank	Pressure 3	Pressure 3 rank	Limitations
Select relevant feature	Select relevant Marine UnitID		Description of the main pressures on the marine environment caused by this human activity and the ecosystem components which they are affecting (maximum 500 words).	Pressure 1, 2 and 3: Enter one of the top three pressures that are having the most impact on the marine environment as a result of this activity. If only 1 or 2 pressures are relevant, all three fields do not need to be completed. Rank: Rank the pressure as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two pressures are the same, enter the same number in each field (e.g. '2' for each and no '3')						
Use/activity		**Pressures**								

6.5.2.5 *Step 3.4: Metadata*

Information on the assessment dates, methods (including details of methods used to disaggregate data between onshore and marine-based activities, where existing data may aggregate the two) and sources of information should be provided for the main fields of the reporting sheet:

- Characteristics & trend analysis;
- Production value;
- Added value (only to be completed if Marine Water Accounts approach has been used);
- Employment (only to be completed if Marine Water Accounts approach has been used);

- Other socio-economic indicators (only to be completed if Marine Water Accounts approach has been used);
- Pressure analysis.

Information on the metadata for the assessment of the use/activity and associated costs of degradation should be entered into DBTable **MSFD8c_Metadata:**

Feature	Area	Topic	Assessment date start	Assessment date end	Method used	Sources of information
Select relevant feature To report on multiple features together, select aggregated features (e.g. seabed habitats - all; birds - all)	Select relevant MarineUnitID	Select one from List: Metadata topics	Start of period used for reporting YYYY	End of period used for reporting YYYY	Describe / give reference to the methodology used; also indicate whether quantitative assessments are used, or if it is mainly expert judgement-based. For trends, include justification for timescale used (e.g. data availability, appropriate for the subject)	Provide links to web resources, or references to papers or data, for information used. If information from other Directives is relevant, indicate which Directive and date of reporting
Economic and social analysis (overview)	MW waters of region/ subregion				Describe methodology, including any additional detail and/or deviation from the methodology outlined in the WG ESA Guidance document (max 500 words).	
Use/activity						
Cost of degradation (overview)					Describe methodology (max 500 words)	
Cost of degradation (by topic)						

6.5.3 Ecosystem services and other approaches (8C02)

6.5.3.1 Introduction

This reporting sheet is for reporting on the economic and social analysis of the use of marine waters using the ecosystem services approach, or other types of approach ('themes'). If the Member State has used the Marine Water Accounts approach, this should be reported through the 'Human Activities' reporting sheet 8C01 (see Section 0).

Classifications/typologies for marine ecosystem services are ever-changing. There is an ongoing initiative (CICES) to develop internationally-agreed definitions for ecosystem services that Member States may wish to refer to (UNESA, 2010)[34], in addition to the reference list of ecosystem services mentioned in the ESA Guidance document[35]. This classification may change in the future, but for the moment it is the most 'common' and internationally-supported classification. The reporting sheet includes a field to specify to which CICES class the ecosystem service identified most closely relates. This should enable the ability to cross-reference between the two in the future, although recognising that the CICES list is still under development. Table 6.8 shows the

[34] UNESA (2010) Proposal for a common international classification of ecosystem goods and services (CICES) for integrated environmental and economic accounting. ESA/STAT/AC.217. Available at http://unstats.un.org/ unsd/envaccounting/ceea/meetings/UNCEEA-5-7-Bk1.pdf

[35] DEFRA (2007) 'An introductory guide to valuing ecosystem services'. London: Department for Environment, Food and Rural Affairs. Available at: http://ec.europa.eu/environment/nature/biodiversity/economics/pdf/ valuing_ecosystems.pdf

CICES classes, and links to the functions identified in the United Nations Handbook of National Accounting – Integrated Environmental and Economic Accounting (SEEA) and the categories of The Economics of Ecosystems and Biodiversity (TEEB) study (both referenced in UNESA, 2010).

Table 6.8: Links between proposed classification of ecosystem goods and services (CICES) classes, the SEEA[36] functions and The Economics of Ecosystems and Biodiversity (TEEB) categories.[37]

SEEA 2003function	CICES Theme	CICES Class	TEEB Categories			
resource	Provisioning	Food & Beverages	Food	Water		
resource		Materials	Raw Materials	Genetic resources	Medicinal resources	Ornamental resources
resource		Energy				
sink	Regulating and Maintenance	Regulation of waste assimilation processes	Air purification	Waste treatment (esp. water purification)		
service		Regulation against hazards	Disturbance prevention or moderation	Regulation of water flows	Erosion prevention	
service		Regulation of biophysical conditions	Climate regulation (incl. C-sequestration)	Maintaining soil fertility		
service		Regulation of biotic environment	Gene pool protection	Lifecycle maintenance	Pollination	Biological control
service	Cultural	Symbolic	Information for cognitive development			
service		Intellectual and Experiential	Aesthetic information	Inspiration for culture, art and design	Spiritual experience	Recreation & tourism

6.5.3.2 Step 3.1: Analysis of ecosystem service or theme

Member States should fill in the appropriate row for the approach they have used. Rows/sets of fields can be inserted for each ecosystem service (for the ecosystem services approach) or for each theme/category (for any other approaches) that has been addressed.

Each ecosystem service, or theme, identified in the analysis, should be reported. The name of the ecosystem service or theme should be provided in Step 1 (DBTable **Features_Overview**). The following information should be provided for each service/theme: a summary description; any information on the

[36] From the United Nations Handbook of National Accounting – Integrated Environmental and Economic Accounting.

[37] Source: UNESA (2010) Proposal for a common international classification of ecosystem goods and services (CICES) for integrated environmental and economic accounting. ESA/STAT/AC.217. Available at http://unstats.un.org/unsd/envaccounting/ceea/meetings/UNCEEA-5-7-Bk1.pdf.

valuation of benefits derived from the ecosystem service or theme in part or in whole (including details on what aspect has been valued) and the most closely related proposed CICES class (for ecosystem services only – not for themes).

The information to be reported should be entered into DBTable **MSFD8c_Uses:**

Feature	Area	Topic	Description	Summary information 1	SumInfo1_ Confidence	Summary information 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Select relevant feature	Select relevant Marine UnitID		Provide brief summary information, not extensive descriptive text		Low, moderate, high, not relevant		Select one: Increasing, Stable, Decreasing, Unknown/not assessed	YYYY	YYYY	Select one: Increase, Be Stable, Decrease, Unknown/not assessed	YYYY	YYYY	Describe uncertainties, main gaps and progress in reporting
Ecosystem service		**Characteristics** of the ecosystem service	Give the ecosystem service a short name/title. Describe it and the ecosystem component (and/or structure/function) from which it is derived and the ecosystem service's condition where possible. Provide details of any valuation of the benefits derived from the ecosystem service in part or in whole, including details on what aspects have been valued (maximum 500 words).	See worksheet 8Cb-ESA_Dependencies and DBTable MSFD8c_Depend		Select the CICES class to which this ecosystem service most closely relates							
Ecosystem service		**Cost of degradation**	Describe changes in ecosystem service due to degradation	Provide a qualitative and quantitative indication of the value of the changes and consequences to human well-being									
Ecosystem service		I**nformation gaps** and **plans** to address them	See general guidance										
Theme		**Characteristics** of the theme	Give the theme a short name/title and describe it. Provide details on the importance or value of the theme, or on the benefits derived from it, and details on what aspects have been included (maximum 500 words).	See worksheet 8Cb-ESA_Dependencies and DBTable MSFD8c_Depend									

Feature	Area	Topic	Description	Summary information 1	SumInfo1_ Confidence	Summary information 2	Trends Recent	Recent Time Start	Recent Time End	Trends Future	Future Time Start	Future Time End	Limitations
Theme		**Cost of degradation**	Describe main changes in the theme due to degradation	Provide a qualitative and quantitative indication of the costs, expenses and loss of benefits due to degradation, and consequences to human well-being		Indicate the type of costs (select those that apply): - Mitigation cost; - Enhancement cost; - Transaction cost; - Opportunity cost; - Other (specify in Description field)							
Theme		I**nformation gaps** and **plans** to address them	See general guidance										

6.5.3.3 *Step 3.2: Dependencies*

Information on the dependencies of the ecosystem service or theme in the assessment area on the ecosystem (predominant habitat types and functional groups) and on the human activities should be entered into DBTable **MSFD8c_Depend:**

Feature	Area	Predominant habitats - dependency	Functional groups - dependency	Uses/activities - supported	GES descriptor/criterion
Select relevant feature	Select relevant MarineUnitID	Add rows as needed	Add rows as needed	Add rows as needed	Add rows as needed
Ecosystem service		List the predominant habitats (from Reference Lists) on which the ecosystem service is dependent	List the functional groups (from Reference Lists) on which the ecosystem service is dependent	Insert relevant human activities that are supported by or that use this ecosystem service (from Reference List on Human Activities)	Insert relevant GES descriptors or criteria (from Reference List) on which this ecosystem service is based.
ESA theme		List the predominant habitats (from Reference Lists) on which the ecosystem service is dependent	List the functional groups (from Reference Lists) on which the ecosystem service is dependent	Insert relevant human activities that are related to this theme/category (from Reference List on Human Activities)	Insert relevant GES descriptors or criteria (from Reference List) to this theme/category, or on which this theme/category is based.

In identifying the relevant GES descriptors and criteria for the ecosystem services approach, it should be noted that Criterion 1.7 relates to ecosystem structure; and Criteria 4.1, 4.2 and 4.3 relate to ecosystem functioning.

6.5.3.4 *Step 3.3: Pressure analysis*

In this section the most important pressures that are impacting (adversely affecting) the ecosystem service or theme should be identified, and if possible ranked. This is intended to provide a link to the pressure and impact analysis (Art. 8.1b), but from the perspective of each service or theme, rather than collectively as in the Pressures & Impacts reporting sheets.

Information on the pressures per ecosystem service/theme in the assessment area should be entered into DBTable **MSFD8c_Pressures:**

Feature	Area	Topic	Description	Pressure 1	Pressure 1 rank	Pressure 2	Pressure 2 rank	Pressure 3	Pressure 3 rank	Limitations
Select relevant feature	Select relevant Marine UnitID		Description of the main pressures on the marine environment caused by this human activity and the ecosystem components which they are affecting. (Free text max 500 words)	Pressure 1, 2 and 3: Enter one of the top three pressures that are having the most impact on the ecosystem service or theme. If only 1 or 2 pressures are relevant, all three fields do not need to be completed. Rank: Rank the pressure as most important (1), second (2) or third (3). Alternatively rank (0) if relative importance is not known. To indicate that two pressures are the same, enter the same number in each field (e.g. '2' for each and no '3')						
Ecosystem service or theme		**Pressures**								

6.5.3.5 Step 3.4: Metadata

Information on the assessment dates, methods and sources of information can be provided overall (if it is the same for all ecosystem services or themes/categories), or by ecosystem service or theme/category if it is different for each. Where Member States have followed the Ecosystem Services approach described in the ESA Guidance document, this can be referenced, and any additional detail or deviation from this method can be described.

Information on the metadata for the assessment of the ecosystem service or theme and associated costs of degradation should be entered into DBTable **MSFD8c_Metadata:**

Feature	Area	Topic	Assessment date start	Assessment date end	Method used	Sources of information
Select relevant feature **To report on multiple features together, select aggregated features (e.g. seabed habitats - all; birds - all)**	**Select relevant MarineUnitID**	**Select one from List: Metadata topics**	**Start of period used for reporting YYYY**	**End of period used for reporting YYYY**	**Describe / give reference to the methodology used; also indicate whether quantitative assessments are used, or if it is mainly expert judgement-based. For trends, include justification for timescale used (e.g. data availability, appropriate for the subject)**	**Provide links to web resources, or references to papers or data, for information used. If information from other Directives is relevant, indicate which Directive and date of reporting**
Economic and social analysis (overview)	**MW waters of region/ subregion**				**Describe methodology, including any additional detail and/or deviation from the methodology outlined in the WG ESA Guidance document (maximum 500 words).**	
Ecosystem service						
Theme						
Cost of degradation (overview)					**Describe the overall methodology/approach used for the analysis (maximum 500 words).**	
Cost of degradation (by topic)						

6.5.4 Cost of degradation (8C03)

6.5.4.1 Introduction

The assessment of the cost of degradation within the scope of the Initial assessment (Art. 8(1c)) is to be completed by all Member States. The cost of degradation reporting sheet (RS 8C03) allows for reporting by activity/sector (cost-based approach), by ecosystem service or by theme; this information can be entered against the appropriate activity, service or theme in DBTable **MSFD8c_Uses** (Section 6.5.2.2). Only complete the section relevant for the ESA approach used, completing a report for each assessment area.

6.5.4.2 Step 3.1: Analysis of cost of degradation

The section on Cost of degradation allows for a summary text description of the outcome and key results of the analysis of the cost of degradation. References to the full analysis and results in the ESA Initial Assessment document can be provided in the 'Sources of information' fields in the Metadata section. The information should be entered into DBTable **MSFD8c_Uses:**

Feature	Area	Topic	Description
Select relevant feature	Select relevant MarineUnitID		Provide brief summary information, not extensive descriptive text
Cost of degradation		**Overview** of analysis	Describe the overall outcomes of the analysis of the cost of degradation, including reference to pressures and impacts identified in assessments for Art 8.1a and 8.1b (maximum 1000 words).

If the Cost-based approach has been used, information should be provided for each relevant activity/sector (and specify which human activity/ies are relevant from the Reference List), the costs incurred in preventing degradation, and if possible provide quantitative information of the cost of degradation for each activity/sector, and the measures included in the analysis. The row should be repeated for each relevant activity/sector in the analysis.

If the Ecosystem services approach has been used, information should be provided for each relevant ecosystem service, describing the changes in the ecosystem service due to degradation, and if possible, qualitative and quantitative information on the value of the changes and consequences to human well-being. The row should be repeated for each ecosystem service in the analysis.

If the Thematic approach has been used, information should be provided for each relevant theme, describing the main changes in the theme due to degradation, and if possible, qualitative and quantitative information on the costs, expenses and loss of benefits due to degradation, and consequences to human well-being, and an indication of the type of costs (mitigation cost, enhancement/prevention cost, transaction cost, opportunity cost, or other type of cost). The row should be repeated for each theme in the analysis.

The cost categories have been taken from the WG ESA Guidance document, and are defined as follows:

- Mitigation costs = costs associated with avoidance expenses for an impact linked to the loss of ecosystem services;

- Enhancement/prevention costs = costs related to positive action in favour of the environment (including prevention costs), linked to prevention of degradation of ecosystem services and costs linked to restoration, costs of economic incentives inducing a better management of the environment;
- Transaction costs = costs associated with information gathering, scientific monitoring, time of negotiation, implementation of rules and rights, control and respect of these rules;
- Opportunity costs = loss of benefits associated with the lack of resources for biodiversity conservation or ecosystem services degradation;
- Other costs = any other costs, or different categorisation of costs, from those above.

The cost of degradation information above should be entered into DBTable **MSFD8c_Uses** (see Section 6.5.2.2 and Section 6.5.3.2).

6.5.4.3 Step 3.2: Metadata

Information on the metadata for the assessment of the costs of degradation should be entered into DBTable **MSFD8c_Metadata**, and can be entered once for the overall assessment or against each activity or ecosystem service, as appropriate (see Section 6.5.2.5 and Section 6.5.3.5).

7. Step 4: Reporting on the determination of Good Environmental Status (Article 9)

7.1 Step 4.1: Determination of GES

Reporting of the determination of Good Environmental Status (GES) (RS 0901) is organised according to Art. 9 of the MSFD and the eleven GES Descriptors in Annex I to the Directive.

For each Descriptor, the determination of GES can be reported at the level of the Descriptor, Criterion and/or Indicator. If there are determinations of GES that do not relate to any of the eleven Descriptors (*i.e.* to reflect other aspects of the Art. 3(5) definition of GES), they should be reported under 'Other'.

More than one determination of GES can be reported for any particular Descriptor, Criterion or Indicator, if appropriate, *e.g.* to relate to different aspects of biodiversity (such as birds, mammals, seabed habitats separately) for Descriptor 1.

The fields to report GES (Art. 9) and the fields to report Targets and associated indicators (Art. 10) (see Section 7.3) are similar. This is due to the different ways in which Member States may have approached their determination of GES and setting of targets and indicators and is in accordance with the Common Understanding guidance from WG GES. For example, some Member States have determined GES quantitatively with specific thresholds; other Member States have determined GES qualitatively (descriptively), with specific indicators and thresholds being set only for targets. As a result, there is a repetition of fields between the Article 9 GES reporting, and the Article 10 Targets and Indicators reporting. Member States are not expected to complete all of the 'priority' fields, but ***only those fields that are relevant to the way in which they have determined GES***.

The information reported on the determination of GES should be stand-alone (*i.e.* it should not have to rely on reference to another source of information to interpret it). However, where the determination of GES is drawn from other directives and conventions, this can be referred to in the 'description of the characteristics of GES' field, provided the full description is given in the reporting sheet.

The key fields that should be completed by all Member States, for each determination of GES, are:

- Description of the characteristics of GES (text-based description of GES);
- Features to which the GES definition applies (to which components of the ecosystem and/or pressure it refers);
- Scale at which GES has been determined (*e.g.* region, subregion, Member State, subdivision, assessment area)*;
- Justification for not addressing the Criterion (to be filled in only for those Criteria for which no description of GES is provided – use the *Comments* field in **Features_Overview**).

The remaining fields are to be completed if appropriate:

- Threshold value(s) and unit for the GES criterion or indicator. These can refer to the quality level to be achieved for the feature (*e.g.* the condition of a species population or habitat, the desired maximum intensity of a pressure or impact) or to the proportion of the feature within the area that should achieve the threshold value (*e.g.* the extent of a habitat type). In some cases it is appropriate to use both a quality threshold and a proportion value (*e.g.* the condition of a habitat type or the intensity and extent of a pressure). There is a differentiation between a reference point threshold value, which is where the feature (*e.g.* an ecosystem component) should be at or above the specified threshold to achieve GES; and a *limit* reference point threshold value, where the feature (*e.g.* a pressure or impact) should be at or below the specified threshold to achieve GES;
- Baseline used to establish the threshold values (*e.g.* reference condition/background level, specified date or period in the past, current condition). This is mainly for quantitative determinations of GES, but may also be relevant to qualitative determinations of GES;
- Specific areas for assessment (*i.e.* areas for which GES will be assessed)*;
- Assessment method to be used to assess whether GES has been met (if known);
- Development status of GES description/indicator (if indicators are specified under Article 9) (Fully operational (in 2012); Further development needed (expected to be operational by 2014); Further development needed (expected to be operational by 2018 if adopted)).

* There is a differentiation between the scale at which GES has been determined and the specific areas to be used for assessment of whether GES has been achieved (areas for which GES will be assessed) because GES may be determined at a regional or subregional scale, but individual Member States may assess whether their waters meet that determination on a different scale (*e.g.* subdivision or other defined area).

The information on the determination of GES is to be entered into DBTable **MSFD9_Descriptors**:

Feature	Area	Topic	Description	Threshold value(s)	Reference point type	Baseline	Proportion	Assessment method	Development status
Select the relevant feature from the list (Directive/Decision item). These sheets provide the Descriptor, Criterion and Indicator level, and should be completed only at the level(s) relevant for the MS. Rows can be repeated as many times as necessary (*e.g.* if you wish to report a GES determination for different species/functional groups, a separate row should be completed for each against the relevant GES descriptor/criterion/indicator)	**Select the relevant MarineUnitID from the list. This is the scale at which GES has been <u>determined</u>** (*e.g.* region/subregion/Member State/subdivision/ecological assessment area). This relates to the area for which GES has been defined and for which parameter values have been defined/agreed (if appropriate). For example, this may be at regional level, in coordination with other MS.	It is expected that most MS will report GES at Descriptor or Criterion levels. However, for those MS who have assessed GES at indicator levels, this can also be entered	Qualitative description of GES, including *e.g.* If GES is based on trends from a specified date. If GES thresholds are expressed qualitatively and not quantitatively, they should be included here. (Free text; max 250 words)	Give threshold value(s) for GES, if appropriate (*e.g.* deviation from reference condition, degree of improvement compared to current values). Quantitative values only. Qualitative description of GES thresholds should be given in 'Description of characteristics of GES'.	Indicate if GES is achieved at or above the threshold value ([target] reference point) or if GES is achieved at or below the threshold value (limit reference point).	Give the baseline used to establish the threshold values (*e.g.* background levels, reference condition, specified period/year)	If the specified quality threshold value(s) will not apply to the whole feature (ecosystem component, pressure/impact) in the assessment area, also provide the proportion (%) of the feature within the area that should achieve the quality threshold value.	Describe the assessment method to be used to assess whether GES has been met	If indicators are specified here, indicate whether the indicator is (select one): - Fully operational (in 2012) - Further development needed (expected to be operational by 2014) - Further development needed (expected to be operational by 2018 if adopted) Provide supporting free text to explain

Feature	Area	Topic	Description	Threshold value(s)	Reference point type	Baseline	Proportion	Assessment method	Development status
GES descriptor from list		GES descriptor							
GES criterion from list		GES criterion		Default - same as descriptor level	Default - same as descriptor level	Default - same as descriptor level	Default - same as descriptor level		
GES indicator from list		GES indicator	If relevant	If relevant	If relevant	If relevant	If relevant	If relevant	If relevant

7.2 Step 4.2: Features and areas linked to determination of GES

The information on the features to which the determination of GES applies is to be entered into DBTable **MSFD9_FeaturesPressuresImpacts** and information on the assessment areas to be used for future assessments of GES is to be entered into DBTable **MSFD9_AssessmentAreas**:

		MSFD9_FeaturesPressuresImpacts				MSFD9_AssessmentAreas
Feature	**Area**	**Physical/chemical features**	**Predominant habitats**	**Functional groups**	**Pressures**	**Assessment areas**
Select the relevant feature from the list	Select the relevant MarineUnitID from the list	List all physical/chemical features (if relevant to the descriptor/criterion) in the assessment area that are addressed by the GES definition. Add rows as needed.	List all predominant habitats (if relevant to the descriptor/criterion) in the assessment area that are addressed by the GES definition Add rows as needed.	List all functional groups (if relevant to the descriptor/criterion) in the assessment area that are addressed by the GES definition Add rows as needed.	List all pressures (if relevant to the descriptor/criterion) in the assessment area that are addressed by the GES definition. Add rows as needed.	Give the areas to be used to assess whether GES has been achieved. Assessments may be carried out for several different areas. These may be formally defined areas (region/subregion or formally reported subdivision), or informal assessment areas. Add rows as needed. Refer, where appropriate, to assessment areas used for Art. 8 reporting.
GES descriptor		If relevant	If relevant	If relevant	If relevant	
GES criterion		If relevant	If relevant	If relevant	If relevant	
GES indicator		If used in Art 9 and relevant	If used in Art 9 and relevant	If used in Art 9 and relevant	If used in Art 9 and relevant	If used in Art 9 and relevant

7.3 Step 4.3: Metadata

The metadata section provide for a descriptive text field to elaborate on the overall approach used for determining GES (including defining indicators), as set out in the WG GES Common Understanding document[38].

The information on the approach to the determination of GES is to be entered into DBTable **MSFD9_Metadata**:

RS code	Feature	Area	Topic	Assessment date start	Assessment date end	Method used	Sources of information
0901	Determination of GES		Article 9			Describe approach used for determining GES (refer to different approaches MS have adopted, set out in Common Understanding document). (max 500 words)	

38 http://circa.europa.eu/Members/irc/env/marine/library?l=/eu-level_implementation/experts_february_2009/directors_2011-warsaw/meeting_documents/12_doc_3pdf/_EN_1.0_&a=d

8.Step 5: Reporting on the establishment of environmental targets and associated indicators (Article 10)

8.1 Introduction

Reporting sheet RS 1001 addresses the establishment of environmental targets and associated indicators as addressed in MSFD Art. 10. It should take into account the list of characteristics in Annex IV of the Directive. Therefore, the reporting sheet for targets and indicators has three sections:

a. Targets and indicators;
b. General questions relating to Annex IV;
c. Approach to setting targets.

Definitions of the terms used in the Article 10 reporting sheets are provided in Table 8.1.

Table8.1: Definitions of terminology in Article 10 reporting sheets

Term	Definition
Environmental target (target)	Directive definition: 'a qualitative or quantitative statement on the desired condition of the different components of, and pressures and impacts on, marine waters in respect of each marine region or subregion'. Interpretation: an expression of 'where we want to be' or 'what we want to achieve' that will achieve or contribute towards achieving GES.
Indicator	A measure that summarises data into a simple, standardised and communicable figure. Targets must be associated with appropriate indicators so that they can be measurable. Indicators may be based on those in the EU COM Decision 2010/477/EU, but may require further development and specification.
State-based target	A target that relates to the state of a component of the marine environment, providing an indication of the physical, chemical or biological condition of the environment.
Pressure-based target	A target that relates to the level of a pressure in the marine environment, articulating the desired or acceptable level of a particular pressure. They should be used in particular where a clear understanding of the relationship between pressure, state and impact exists and where cumulative effects can be accounted for. Where such a relationship has not yet been established, pressure targets may be set on the basis of the precautionary principle or to reduce pollution as defined in Art. 3(8). In instances where a quantitative approach is not feasible, trend-based targets may be appropriate.
Impact-based target	A target that relates to the level of impacts caused by pressures, providing an indication of the acceptable level of impact on the components of the marine environment arising from a particular pressure or range of pressures.
Operational target	Operational targets relate directly to the nature of management action required, without directly establishing the specific measures themselves, and may relate to concrete implementation measures to support their achievement.
Threshold value	The value of a criterion or indicator above or below which GES is achieved or a target is met, *i.e.* the boundary between success and failure

Term	Definition
	or acceptable and unacceptable state. The threshold value can be equated to the different types of reference points - see below.
Reference point	The value of the indicator when GES (or the target) is achieved. The reference point would be used where higher values are desirable (*e.g.* for abundance of threatened species), *i.e.* the indicator must be at or above the specified value to achieve the target or GES. Also called 'target' reference point (compared to 'limit' reference point - see below), but using the word 'target' is not helpful in this context, as it can be confused with the 'environmental targets'
Limit reference point	The value of the indicator when GES (or the target) is achieved. The limit reference point would be used where lower values are desirable (*e.g.* for pressures), *i.e.* the indicator must be at or below the specified value to achieve the target of GES.
Baseline	A specific and quantifiable point against which subsequent assessments can be compared and from which a threshold/limit/level can be defined for GES (or targets), typically as a specified degree of deviation from the baseline. Types of baseline include reference condition/background level, specified date or period in the past, current condition.

8.2 Step 5.1: Targets and indicators

Each target should be specified individually. At least one indicator must be associated with each target, but more than one indicator can be specified for each target if appropriate.

Some of the fields to be completed for targets and indicators reflect the fields requested in the GES reporting (0901, see Section 7). This is due to the different ways in which Member States may have approached their determination of GES and setting of targets and indicators. Member States are not expected to complete all the fields, but ***only those fields that are relevant to the way in which they have established targets and indicators***. As stated in Section 7, where there is a repetition of fields between the Article 9 GES reporting, and the Article 10 Targets and Indicators reporting, Member States are not expected to complete all of the fields, but only those fields that are relevant to the way in which they have determined GES and established targets and indicators, as referred to in the WG GES Common Understanding document.

Where targets and indicators draw upon existing targets and indicators from other directives and conventions, this can be cross-referenced in the field on 'Compatibility with existing targets'.

Furthermore, some fields in the targets and indicators reporting are repeated between the part relating to targets and the part relating to indicators. Again, this is to encompass the variety of ways in which targets and indicators may have been specified by different Member States, and ***only the fields that are relevant should be completed***.

Target fields

The key fields that should be completed by all Member States, for each target, are:

- Description of target to achieve GES;
- Timescale for achievement of target;

- Interim or GES target (*i.e.* whether achieving the target reflects achievement of GES, or an interim step on the way to GES);
- Relevant GES Descriptors, Criteria and Indicators;
- Relevant features, pressures and impacts;
- Baseline used to establish target (includes 'not relevant' option);
- Target assessment area;
- Type of target.

The remaining target fields should be completed if appropriate:

- Compatibility with existing targets.

Indicator fields

The key fields that should be completed by all Member States, for each target, are:

- Specific indicator to be used (including qualitative description of threshold value);
- Relevant features, pressures and impacts.

The following fields are to be completed if appropriate:

- Threshold value(s) for indicator to achieve target (for quantitative thresholds), including value, units and proportion of the feature within the area that should achieve the quality target if appropriate*;
- Baseline (*e.g.* reference condition) on which the threshold values are based (includes 'not relevant' option);
- Development status of indicator (Fully operational (in 2012); Further development needed (expected to be operational by 2014); Further development needed (expected to be operational by 2018 if adopted)).

* If the threshold value represents the minimum allowable value of the indicator (*i.e.* the feature should be at or above the threshold value), enter it in the 'Reference point' field. If the threshold value represents the maximum allowable value of the indicator (*i.e.* the feature should be at or below the threshold value), enter it in the 'Limit reference point' field.

The remaining indicator fields should be completed if possible:

- Indicator assessment area;
- Type of indicator;

- Compatibility with other targets/indicators.

The information on targets is to be entered into DBTable **MSFD10_Targets**:

Feature	**Area**	**Topic**	**Description**	**Threshold value(s)**	**Reference point type**	**Baseline**	**Proportion**	**Development status**	**Type of target/ indicator**	**Timescale**	**Interim or GES target?**	**Compatibility with existing targets/ indicators**
Select the relevant feature from the list	Select the relevant Marine UnitID from the list	Add new rows if needed for additional indicators for each target.	Text description of target/indicator (max 250 words) (Annex 4-3, 4-7) and qualitative description of threshold value to achieve the target, if appropriate. Describe the specific indicator that is to be used for the target (the GES Indicators are not always specific enough). At least one indicator must be specified for each target. More than one indicator can be specified for each target. Where the threshold for achieving the target is qualitative, include it here. Where the threshold will not apply to the whole feature in the assessment area, also provide the proportion (%) of the feature within the area that should achieve the threshold.	Give threshold value(s) for target, if appropriate (*e.g.* deviation from reference condition, degree of improvement compared to current values). State quantitative value and specify units. Note: qualitative description of GES thresholds should be given in 'Description of characteristics of GES'.	Indicate if the target or indicator must be at or above the threshold value ([target] reference point) (*e.g.* for ecosystem components) or if GES must be at or below the threshold value (limit reference point) (*e.g.* for pressures). (Annex 4-8)	Give the baseline used to establish the threshold values (*e.g.* background levels, reference condition, specified period/year) - describe and give its value. If use of a baseline is not appropriate, state not relevant.	If the specified quality threshold value(s) will not apply to the whole feature (ecosystem component, pressure/ impact) in the assessment area, also provide the proportion (%) of the feature within the area that should achieve the quality threshold value.	If indicators are specified here, indicate whether the indicator is (select one): - Fully operational (in 2012) - Further development needed (expected to be operational by 2014) - Further development needed (expected to be operational by 2018 if adopted) Provide supporting free text to explain	Annex 4-2. Select one from: - State - Pressure - Impact - Operational - Other	Timescale for achievement of target (Annex 4-6). Enter date by which target must be achieved (MM/YYYY)	Select one: - Interim target; - GES target Some targets may relate to achieving GES, other targets may be interim targets to guide progress towards achieving GES. This is to distinguish between the two types.	Compatibility with existing targets/ indicators (Annex 4-11). Describe how the target/indicator relates to other targets (*e.g.* national, regional, Community or international)
Target 1		Environmental target										
Target 1		Associated indicator	Indicator 1									
Target 1		Associated indicator	Indicator 2									
Target 2		Environmental target										
Target 2		Associated indicator	Indicator 1									
Target 2		Associated indicator	Indicator 2									

8.3 Step 5.2: Criteria, features and areas linked to targets

The information on relevant GES descriptors, criteria and indicators is to be entered into DBTable **MSFD10_DESCrit**, whilst information on features relevant to each target should be entered into **DBTable MSFD10_FeaturesPressures** and assessment areas into DBTable **MSFD10_TargetAssessmentArea**:

			MSFD10_DESCrit			**MSFD10_FeaturesPressures**				**DBTable MSFD10_Assessment Areas**
Feature	**Area**	**Topic**	**GES Descriptors**	**GES Criteria**	**GES Indicators**	**Physical/chemical features**	**Predominant habitats**	**Functional groups**	**Pressures**	**Assessment areas**
Select the relevant feature	Select **the** relevant MarineUnitID	Add new rows if needed for additional indicators for each target.	Select all relevant GES Descriptors for the target/ indicator	Select all relevant GES Criteria for the target/ indicator	Select all relevant GES indicators for the target/ indicator	List all relevant physical/chemical features in the assessment area that are addressed by the target/indicator. Add rows as needed.	List all relevant predominant habitats in the assessment area that are addressed by the target/indicator Add rows as needed.	List all relevant functional groups in the assessment area that are addressed by the target/indicator Add rows as needed.	List all relevant pressures in the assessment area that are addressed by the target/indicator Add rows as needed.	For indicators, give the areas to be used for assessment if they differ from the area given under Area (column B)
Target 1		Environmental target				If relevant	If relevant	If relevant	If relevant	
Target 1		Associated indicator				If relevant	If relevant	If relevant	If relevant	If relevant
Target 1		Associated indicator				If relevant	If relevant	If relevant	If relevant	If relevant
Target 2		Environmental target				If relevant	If relevant	If relevant	If relevant	
Target 2		Associated indicator				If relevant	If relevant	If relevant	If relevant	If relevant
Target 2		Associated indicator				If relevant	If relevant	If relevant	If relevant	If relevant

8.4 Step 5.3: General questions relating to Annex IV

All of the questions relating to Annex IV should be answered. They comprise an initial question relating to various elements listed in Annex IV (not all of the points in Annex IV are included in this section, as some are dealt with on a target-by-target basis together with the reporting of targets and indicators) with categorical options for answers (either Yes / Possibly / No / Unknown, or Yes / Partly / No / Unknown, depending on the question). Further supporting text is then requested, depending on the answer to the categorical question.

The last two questions — adequacy of targets for achieving GES in Member State's waters, and adequacy of targets for achieving GES in the marine environment — are an interpretation of Annex 4-10 and Annex 4-12, respectively. Annex 4-10 specifically relates to the 'marine waters falling under the sovereignty or jurisdiction of Member States', whereas Annex 4-12 refers to 'the marine environment'. This has been interpreted as the marine environment more generally within a region or subregion, not confined to the waters under the sovereignty or jurisdiction of a Member State.

The information on the general questions to the setting of targets to be entered into DBTable **MSFD10_GeneralInformation**:

Feature	Area	Topic	Question	Supporting text (Y)	Supporting text (N)	Supporting text (Unknown)
Select the relevant feature from the list	Select the relevant MarineUnitID from the list	For setting environmental targets and associated indicators, indicate how the following have been taken into account:	Answer each question with one of the provided answers (yes, possibly/partly, no, unknown)	Complete if answer 'Yes', 'Possibly' or 'Partly' to column D question	Complete if answer 'No', 'Possibly' or 'Partly' to column D question	Complete if answer 'Unknown' to column D question
Targets - general issues		**Adequate coverage** of elements characterising marine waters (Annex 4-1)	Have all relevant elements characterising marine waters been covered by the set of targets? (Yes, Possibly, No, Unknown)	Description of whether and how this has been achieved (max 200 words)	If this has not been achieved, explain the shortcomings and why it was not possible to cover all elements	Explain why this is unknown and what plans there are to rectify this in the future
Targets - general issues		**Consistency of the set of targets, absence of conflicts between them** (Annex 4-4) (No, possibly, yes, unknown)	Are all targets in the set consistent, with no conflicts between them? (Yes, Possibly, No, Unknown)	Description of whether and how this has been achieved (max 200 words)	If any potential conflicts have been identified, describe where those conflicts arise	Explain why this is unknown and what plans there are to rectify this in the future
Targets - general issues		**Resources needed** (Annex 4-5)	Have the resources needed to achieve the targets been specified yet? (Yes, Partly, No, Unknown)	Description of how resources have been specified (max 200 words)	If resources have not been specified, explain why and indicate when they will be specified	Explain why this is unknown and what plans there are to rectify this in the future
Targets - general issues		**Social & economic** considerations (Annex 4-9)	Have social and economic considerations been taken into account in the setting of targets? (Yes, Partly, No, Unknown)	Description of how social and economic concerns have been taken into account and any adjustments made to targets as a result	Explanation of why social and economic concerns have not been taken into account, or any shortcomings in incorporating these concerns in setting the targets	Explain why this is unknown and what plans there are to rectify this in the future
Targets - general issues		**Adequacy of targets for achieving GES** in MS waters (Annex 4-10)	If the set of environmental targets (together with associated indicators, limit and target reference points) is achieved, will this lead to the marine waters under jurisdiction of the Member State within a marine region or subregion, achieving a status matching the environmental objectives laid down in Article 1 (*see below)? (Yes, Possibly, No, Unknown)	Description of how this has been ensured	Description of potential shortcomings and why these exist	Explain why this is unknown and what plans there are to rectify this in the future
Targets - general issues		**Adequacy of targets for achieving GES** in marine environment (Annex 4-12)	If the set of environmental targets (together with associated indicators, limit and target reference points) is achieved, will this lead to the marine environment achieving a status matching the environmental objectives laid down in Article 1 (presumably, on a regional/subregional level) (*see below)? (Yes, Possibly, No, Unknown)	Description of how this has been ensured, in particular coordination at the regional level	Description of potential shortcomings and why these exist	Explain why this is unknown and what plans there are to rectify this in the future

8.5 Step 5.4: Metadata

The metadata section includes a descriptive text field to elaborate on the approach used for setting targets and indicators, as set out in the Common Understanding document. The information on the approach to the setting of targets to be entered into DBTable **MSFD10_Metadata**:

RS code	Feature	Area	Topic	Assessment date start	Assessment date end	Method used	Sources of information
1001	Environmental targets and associated indicators		Article 10			Describe approach used for setting targets and indicators (refer to different approaches MS have adopted, set out in Common Understanding document) (maximum 500 words)	

9. Step 6: Reporting on regional coordination (Articles 5 and 6)

The Regional coordination reporting (05_06) is provided to enable Member States to report on issues in relation to their implementation according to the requirements of Article 5(2) and in relation to Article 6 on cooperation via the Regional Sea Conventions.

Member States should enter information on any regional or subregional coordination they have participated in with reference to Articles 8, 9 and 10. There are fields to record the countries involved in the coordination, the nature of the coordination (free text), the level of coherence, common approach and consistent methodologies achieved and a description of problems encountered, if applicable. The field for the level of the coherence, common approach and consistent methodologies achieved has three options – full, partial and incomplete.

The information on regional coordination is to be entered into DBTable **MSFD4_RegionalCooperation** and **MSFD4_RegionalCooperationMS** for *Countries*.

Feature	Area	Topic	Nature of coordination	Regional coherence	Regional coordination problems	Countries
Select the relevant feature from the list	Select the relevant region or subregion		Describe how regional coordination has been achieved (maximum 500 words)	Indicate the level of coherence, common approaches and consistent methodologies achieved. Select one from: full, partial, incomplete	Describe any problems encountered in achieving regional coordination (maximum 500 words)	Select all relevant EU MS and non-EU states in the region/subregion with whom coordination was undertaken.
Initial assessment (Art 8)		Initial assessment (Art 8)				Enter 2-digit ISO code for each country
Determination of GES (Art 9)		Determination of GES (Art 9)				Enter 2-digit ISO code for each country
Targets and associated indicators (Art 10)		Targets and associated indicators (Art 10)				Enter 2-digit ISO code for each country

10. Step 7: Reporter

A reporter should be identified for each of the main sections of Article 8, and for the other Articles (3/4, 5/6, 9 and 10). This should be the person who can be contacted, if needed, in case of any validation queries on the report submitted into ReportNet. It is possible that such a person may need to liaise with those responsible for the content of a specific reporting sheet within any one schema. The DBTable **ReportingInformation** contains fields to enter the name of the person completing the report, their contact email, reporting organisation and date of report.

If a Member State wishes, a Reporter can also be assigned to specific features (*e.g.* a single pressure) or can be assigned more collectively to a broader topic (*e.g.* all seabed habitats). It is recommended that the reporter is assigned to all assessment areas for the feature in the region/subregion (*i.e.* by selecting the area 'MS marine waters of the region/subregion'). The person most relevant to note here is the one familiar with or responsible for the content of the particular report.

Feature	Area	Topic	Reporter's name	Contact email	Reporter's organisation	Reporting date
Select the relevant feature from the list	Report covers all MS waters in region/subregion being reported on	Select one from: Article 3/4, 8a, 8b, 8c, 9, 10 or 5/6	Surname, first name	Email address	Name of organisation	DD/MM/YYYY
Reporter						
Select the relevant feature from the list defined in Step 1: Features						

11. Step 8: Submitting reports into ReportNet

For general guidance on the process for submission of electronic reports refer to:

> *Marine Strategy Framework Directive reporting: a user guide for electronic reporting 2012*. Atkins Danmark a/s for the European Commission (Version 2.0 July 2012).

Annex 1: Reference and term lists

List	List_subgroup	List_short_name	List_long_name
Area			
Assessment area			MS-defined list
Country	Country - EU	AT	Austria
		BE	Belgium
		BG	Bulgaria
		CY	Cyprus
		CZ	Czech Republic
		DE	Germany
		DK	Denmark
		EE	Estonia
		EL	Greece
		ES	Spain
		FI	Finland
		FR	France
		HR	Croatia
		HU	Hungary
		IE	Ireland
		IT	Italy
		LT	Lithuania
		LU	Luxembourg
		LV	Latvia
		MT	Malta
		NL	Netherlands
		PL	Poland
		PT	Portugal
		RO	Romania
		SE	Sweden
		SI	Slovenia
		SK	Slovakia
		UK	United Kingdom
	Country - non-EU	IL	Israel
		IS	Iceland
		LB	Lebanon
		LY	Libya
		MA	Morocco
		MD	Moldova
		ME	Montenegro
		NO	Norway
		RU	Russia
		SY	Syria
		TN	Tunisia
		TR	Turkey
		UA	Ukraine
Region/subregion	A - Baltic Sea	BAL or Baltic Sea	Baltic Sea
	B - NE Atlantic Ocean	ATL or Atlantic	NE Atlantic
		ANS or North Sea	NE Atlantic: Greater North Sea, incl. Kattegat & English Channel
		ACS or Celtic Seas	NE Atlantic: Celtic Seas
		ABI or Biscay_Iberia	NE Atlantic: Bay of Biscay & Iberian Coast

List	List_subgroup	List_short_name	List_long_name
		AMA or Macaronesia	NE Atlantic: Macaronesia
	C - Mediterranean Sea	MED or Mediterranean	Mediterranean
		MWE or WestMed	Mediterranean: Western Mediterranean Sea
		MAD or Adriatic	Mediterranean: Adriatic Sea
		MIC or Ionian_CentralMed	Mediterranean: Ionian Sea & Central Mediterranean Sea
		MAL or Aegean_Levantine	Mediterranean: Aegean-Levantine Sea
	D - Black Sea	BLK or Black Sea	Black Sea
Subdivision			MS-defined list
Area Type			
Assessment area type		RG_Region	Region
		SR_Subregion	Subregion
		MS_MSpartRegionSubregion	MS marine waters part of a Region or Subregion
		SD_Subdivision	Subdivision
		AA_AssessmentArea	Assessment area (other)
MS area status	For GIS data on MS marine waters	UA_UndisputedArea	Undisputed area (of MS marine waters, including agreed Continental Shelf areas)
		DA_DisputedArea	Disputed/unresolved area (of MS marine waters with neighbouring state)
		CS_ShelfSubmission	Continental Shelf area awaiting CLCS outcome
		JM_JointArea	Jointly managed area (with neighbouring state)
MS area type		LD_Land	MS land outside marine waters (mainland)
		LM_Island	MS land within marine waters (island/rocks)
		WC_WaterColumn	MS waters (water column)
		SS_Seabed	MS seabed and subsoil
		MW_MarineWaters	MS marine waters (i.e. waters and seabed/subsoil)
		MS_MSpartRegionSubregion	MS marine waters part of a Region or Subregion
		SD_Subdivision	MS subdivision
Feature type			
Feature list source		MSFDArt3_4	MSFD Articles 3 and 4
		MSFDArt5_6	MSFD Articles 5 and 6
		MSFDAnnexI	MSFD Annex I
		MSFDAnnexIII	MSFD Annex III
		MSFDDecision	MSFD Decision 2010
		MSFDCSWP	MSFD CSWP 2011
		MSFDDIKE	WG DIKE
		DirectiveBirds	Birds Directive
		DirectiveHabitats	Habitats Directive
		ConventionBarcelona	Barcelona Convention
		ConventionBucharest	Bucharest Convention
		ConventionHelsinki	Helsinki Convention
		ConventionOSPAR	OSPAR Convention
		ConventionOther	Other international agreement - specify in Comment field
		EUNIS	EUNIS habitat classification (version 2011-11)
Feature type		GeogAreas	Geographic areas
		RegCoord	Regional coordination
		PhysicalFeature	Physical feature
		ChemicalFeature	Chemical feature
		HabitatPredominant	Habitat - predominant
		HabitatSpecial	Habitat - special (listed)
		HabitatOther	Habitat - other
		SpeciesGroup	Species group

List	List_subgroup	List_short_name	List_long_name
		FunctionalGroup	Functional group (of birds, mammals, reptiles, fish or pelagic cephalopods)
		SpeciesListed	Species - listed (in a Directive or Convention)
		SpeciesOther	Species - other
		SpeciesCommercial	Species - commercial
		Ecosystem	Ecosystem
		SpeciesNIS	Species - non-indigenous
		SpeciesGeneticForm	Species - genetically distinct forms of native species
		Pressure	Pressure
		UseActivity	Use/activity
		EcosystemService	Ecosystem service
		ESATheme	Theme (economic and social analysis)
		CostDegradation	Cost of degradation
		DeterminationGES	Determination of GES (Art. 9)
		TargetsIndicators	Environmental targets and associated indicators (Art. 10)
Feature			
Cost of degradation		CostDegradationOverview	Cost of degradation overview
Ecosystem			MS-defined features
Ecosystem service			MS-defined features
Geographic areas		MSwatersGeogAreas	MS marine waters and other geographic areas
		AssessmentAreasList	Assessment areas list (with MarineUnitIDs)
Habitat - other			MS-defined habitat (using EUNIS classes)
Habitat - predominant	A - Seabed habitats	LitRock	Littoral rock and biogenic reef
		LitSed	Littoral sediment
		ShallRock	Shallow sublittoral rock and biogenic reef
		ShallCoarseSed	Shallow sublittoral coarse sediment
		ShallSand	Shallow sublittoral sand
		ShallMud	Shallow sublittoral mud
		ShallMxdSed	Shallow sublittoral mixed sediment
		ShelfRock	Shelf sublittoral rock and biogenic reef
		ShelfCoarseSed	Shelf sublittoral coarse sediment
		ShelfSand	Shelf sublittoral sand
		ShelfMud	Shelf sublittoral mud
		ShelfMxdSed	Shelf sublittoral mixed sediment
		UBathRock	Upper bathyal rock and biogenic reef
		UBathSed	Upper bathyal sediment
		LBathRock	Lower bathyal rock and biogenic reef
		LBathSed	Lower bathyal sediment
		AbysRock	Abyssal rock and biogenic reef
		AbysSed	Abyssal sediment
	B - Water column habitats	RedSalinity	Reduced salinity water
		VarSalinity	Variable salinity (estuarine) water
		MarineCoast	Marine water: coastal
		MarineShelf	Marine water: shelf
		MarineOceanic	Marine water: oceanic
	C - Ice habitats	IceHabitat	Ice-associated habitats
	D - General	SeabedHabitatsAll	Seabed habitats - all
		WaterColumnHabitatsAll	Water column habitats - all
Habitat - special (listed)			MS-defined habitat (from Convention lists)
		SpecialHabitatsAll	Special habitats - all

List	List_subgroup	List_short_name	List_long_name
Hazardous substances group		SynthComp	Synthetic compounds
		NonSynthSubst	Non-synthetic substances and compounds
		RadioNuclides	Radio-nuclides
Other features		AreaOfMerit	Habitats in areas meriting particular reference
		TypicalFeature	Typical features or characteristics
Physical & chemical features		TopogBathy	Topography and bathymetry
		SeaTemp	Sea temperature
		IceCover	Ice cover
		Salinity	Salinity
		Current	Current velocity
		WaveExposure	Wave exposure
		Upwelling	Upwelling
		Mixing	Mixing characteristics
		ResidenceTime	Residence time
		Turbidity	Turbidity
		Transparency	Transparency
		Nutrients	Nutrient levels (DIN, TN, DIP, TP, TOC)
		Oxygen	Oxygen levels
		pH	pH
Pressure	A - Physical loss	PhysLoss	Physical loss (all)
		PhysLoss-Smother	Physical loss (smothering)
		PhysLoss-Seal	Physical loss (sealing)
	B - Physical damage	PhysDam	Physical damage (all)
		PhysDam-silt	Physical damage (changes in siltation)
		PhysDam-abrasion	Physical damage (abrasion)
		PhysDam-extraction	Physical damage (selective extraction)
	C - Other physical disturbance	PhysDisturbance	Physical disturbance (other)
		Noise	Underwater noise
		Litter	Marine litter
	D - Interference with hydrological processes	ChangeHydrology	Interference with hydrological processes (all)
		ChangeThermal	Changes in thermal regime
		ChangeSalinity	Changes in salinity regime
	E - Contamination by hazardous substances	IntroHazSubstOther	Contamination by hazardous substances (all)
		IntroSynthComp	Introduction of synthetic compounds
		IntroNonSynthSubst	Introduction of non-synthetic substances & compounds
		IntroRadioNuclides	Introduction of radio-nuclides
		AcutePollutionEvents	Acute pollution events
	F - Systematic and/or intentional release of substances	SystematicReleaseSubst	Systematic/intentional release of substances
	G - Nutrient and organic matter enrichment	NutrientOrgEnrich	Nutrient and organic matter enrichment (all)
		InputN-Psubst	Inputs of fertilisers and other N- and P-rich substances
		InputOrganics	Inputs of organic matter
	H - Biological disturbance	BioDisturb-other	Biological disturbance (all)
		IntroMicroPath	Introduction of microbial pathogens
		IntroNIS	Introduction of non-indigenous species and translocations
		ExtractSpeciesAll	Selective extraction of species, including non-target catches (all)
		ExtractSpeciesFishShellfish	Extraction of species: fish & shellfish
		ExtractSpeciesMaerl	Extraction of species: maerl extraction
		ExtractSpeciesSeaweed	Extraction of species: seaweed harvesting
		ExtractSpeciesOther	Extraction of species: other
	I - Marine acidification	Acidification	Marine acidification

List	List_subgroup	List_short_name	List_long_name
	J - Other pressures	PressureOther	Pressure - other
Regional coordination		Art8_IA	Article 8 - initial assessment
		Art9_GES	Article 9 - determination of GES
		Art10_Targets	Article 10 - environmental targets and indicators
Species - commercial			MS-defined species
Species - genetically distinct forms		GeneticDistinctSpecies	Genetically distinct forms of native species inventory
Species - listed			MS-defined species (from Convention lists)
		ListedSpeciesAll	Species - listed (all)
Species - non-indigenous (inventory)		NISinventory	Non-indigenous species inventory
Species - other			MS-defined species
Species group/Functional group	A - Birds	Birds-all	Birds (all marine species)
		BirdsIntertidalBenthic	Intertidal benthic-feeding birds
		BirdsInshoreSurface	Inshore surface-feeding birds
		BirdsInshorePelagic	Inshore pelagic-feeding birds
		BirdsInshoreBenthic	Inshore benthic-feeding birds
		BirdsInshoreHerbiv	Inshore herbivorous-feeding birds
		BirdsOffshoreSurface	Offshore surface-feeding birds
		BirdsOffshorePelagic	Offshore pelagic-feeding birds
		BirdsIce	Ice-associated birds
	B - Mammals	Mammals-all	Mammals (all marine species)
		MammalsToothedWhales	Toothed whales
		MammalsBaleenWhales	Baleen whales
		MammalsSeals	Seals
		MammalsIce	Ice-associated mammals
	C - Reptiles	Reptiles-all	Reptiles (all marine species)
		ReptilesTurtles	Turtles
	D - Fish	Fish-all	Fish (all marine species)
		FishDiadromous	Diadromous fish
		FishCoastal	Coastal fish
		FishPelagic	Pelagic fish
		FishPelagicElasmobranchs	Pelagic elasmobranchs
		FishDemersal	Demersal fish
		FishDemersalElasmobranchs	Demersal elasmobranchs
		FishDeep-sea	Deep-sea fish
		FishDeep-seaElasmobranchs	Deep-sea elasmobranchs
		FishIce	Ice-associated fish
	E - Cephalopods	Cephalopods-all	Cephalopods (all pelagic species)
		CephalopodsCoastShelf	Coastal/shelf pelagic cephalopods
		CephalopodsDeep-sea	Deep-sea pelagic cephalopods
	F - Other	FunctionalGroupOther	Functional group - other (highly mobile/widely dispersed species groups)
Targets & indicators			MS-defined features
Targets characteristics		TargetGeneral	Targets - general characteristics
Theme (ESA)			MS-defined features
Use/activity	Energy production	RenewableEnergy	Marine-based renewable energy generation (wind, wave & tidal power)
		Oil&Gas	Marine hydrocarbon extraction (oil & gas)
	Extraction of living resources	Fisheries	Fisheries incl. recreational fishing (fish & shellfish)
		SeaweedOtherSeafood	Seaweed and other sea-based food harvesting
		GeneticBioprospectMaerl	Extraction of genetic resources/bioprospecting/maerl
	Extraction of non-living	MiningSandGravel	Marine mining (sand, gravel, rock)

List	List_subgroup	List_short_name	List_long_name
	resources	Dredging	Dredging
		Desalination	Desalination/water abstraction
	Food production	Aquaculture	Aquaculture (fin-fish & shellfish)
	Land-based activities/industries	Industry	Industry (discharges, emissions)
		AgricultForestry	Agriculture & forestry (run-off, emissions)
		Urban	Urban (municipal waste water discharge)
	Man-made structures (incl. construction phase)	LandClaimDefence	Land claim, coastal defence
		Ports	Port operations
		OffshoreStructures	Placement & operation of offshore structures (other than for energy production)
		CablesPipelines	Submarine cable & pipeline operations
	Military	Defence	Defence operations
		DumpingMunitions	Dumping of munitions
	Research and survey	ResearchSurvey	Marine research, survey & educational activities
	Tourism and recreation	TourismRecreation	Tourism & recreation incl. yachting
	Transport	Shipping	Shipping
	Uses and activities - other	UsesActivitiesOther	Other marine uses and activities
		UsesActivitiesAll	Uses and activities - all
	Waste disposal	SolidWasteDisposal	Solid waste disposal incl. dredge material
		StorageGases	Storage of gases
Feature topic			
Cost of degradation type		CostEnhancement	Enhancement cost
		CostMitigation	Mitigation cost
		CostOpportunity	Opportunity cost
		CostTransaction	Transaction cost
		CostOther	Other type of degradation cost (specify in Description field)
Ecosystem service class	Cultural	Symbolic	Symbolic
		Intellectual and experimental	Intellectual and experimental
	Provisioning	Nutrition	Nutrition
		Materials	Materials
		Energy	Energy
	Regulation and maintenance	Regulation of wastes	Regulation of wastes
		Flow regulation	Flow regulation
		Regulation of physical environment	Regulation of physical environment
		Regulation of biotic environment	Regulation of biotic environment
Extraction of species type		Fishing-<12mAll	Fishing - vessels <12m - passive & mobile gears
		Fishing->12mPassive	Fishing - vessels >12m - passive gears
		Fishing->12mMobileTrawl	Fishing - vessels >12m - mobile gears - affecting seabed (i.e. trawls, dredges)
		Fishing->12mMobileOther	Fishing - vessels >12m - mobile gears - other types
		Fishing-recreation	Fishing - recreational
		Fishing-other	Fishing - other (specify in Description field)
		ShellfishCollection	Shellfish collection
		SeaweedHarvesting	Seaweed harvesting
		MaerlExtract	Maerl extraction
		SppExtract-other	Other types of extraction (specify in Description field)
Hazardous substance			Worksheet **HazSubstancesList** containts relevant substances and CAS numbers
NACE code			MS-defined list
NIS pathway		Shipping	Shipping & floating structures (all vessels, buoys, etc.)
		Canals	Canals (channels, drainage cuts to lagoons, marina basins etc.)

List	List_subgroup	List_short_name	List_long_name
		Fisheries	Wild fisheries
		Culturing	Culture activities
		AquariumLiveTrade	Aquarium & live food trade
		Leisure	Leisure activities
		ResearchEducation	Research & education (including pilot projects)
		BiolControl	Biological control
		AlteredNaturalFlow	Alteration to natural water flow
		HabitatManagement	Habitat management
Assessment			
Confidence		High	High
		Moderate	Moderate
		Low	Low
		NotRelevant	Not relevant
Hazardous substance matrix		Water	Water
		Sediment	Sediment
		SedimentBiota	Sediment biota
Ice cover duration		None	None
		1-90days	1-90 days
		91-150days	91-150 days
		>150days	>150 days
Impacts - ecosystems		EcosystemStructure	Ecosystem structure - predominant habitats, functional groups
		EcosystemFunctionProductivity	Ecosystem function - productivity of key species/groups
		EcosystemFunctionProportionTopWeb	Ecosystem function - proportion of species at top of food web
		EcosystemFunctionAbundanceDistribution	Ecosystem function - abundance/distribution of key groups/species
		Other	Other (specify in Description field)
Impacts - functional groups		Condition	Condition (species composition)
		RelativeAbundance	Relative abundance/biomass
		Other	Other (specify in Description field)
Impacts - habitats		Distribution	Habitat distribution
		Extent	Habitat extent
		Condition	Habitat condition
		Other	Other (specify in Description field)
Impacts - species		Distribution	Species distribution
		PopulationSize	Population size
		PopulationCondition	Population condition
		HabitatOfSpecies	Habitat of the species
		Other	Other (specify in Description field)
Natural conditions		InLine	In line
		Altered	Altered
		Unknown/NotAssessed	Unknown/not assessed
NIS inventory		SpeciesInvasive	Species - non-indigenous invasive
		SpeciesNonInvasive	Species - non-indigenous non-invasive
Pressure rank		0	Not known
		1	Most important
		2	Second most important
		3	Third most important
Proportion (%)		<1%	<1%
		1-5%	1-5%
		5-25%	5-25%

List	List_subgroup	List_short_name	List_long_name
		25-50%	25-50%
		50-75%	50-75%
		75-100%	75-100%
		Unknown/not assessed	Unknown/not assessed
Regional cooperation		Full	Full
		Partial	Partial
		Incomplete	Incomplete
Status		Good	Good
		NotGood	Not good
		OtherStatus	Other status class (specify)
		Descriptive	Description provided (specify)
		NotAssessed	Not assessed (give reasons)
Stock assessment method			Assessed
			Assessed-quantitatively (F<Fpa)
			Assessed-quantitatively (F<Fmsy)
			Assessed-quantitatively (SSB>Bpa)
			Assessed-quantitatively (SSB>=Bmsy trigger)
			Assessed-other method (e.g. ratio between catch and biomass index; biomass indices)
			Not assessed
Trends - future		Increase	Increase
		BeStable	Be stable
		Decrease	Decrease
		Unknown/NotAssessed	Unknown/not assessed
Trends - recent		Increasing	Increasing
		Stable	Stable
		Decreasing	Decreasing
		Unknown/NotAssessed	Unknown/not assessed
Trends - status		Improving	Improving
		Stable	Stable
		Deteriorating	Deteriorating
		Unknown/NotAssessed	Unknown/not assessed
ESA type			Marine water accounts (by activity/sector)
			Ecosystem services approach
			Thematic approach
			Other type of approach (specify in Description field)
GES & targets			
GES	A - GES (general)	GES - other	GES - other (describe in field DescriptionGES)
GES descriptor	B - GES descriptor		Refer to MSFD Annex I
GES criteria	C - GES criterion		Refer to Commission Decision
GES indicator	D - GES indicator		Refer to Commission Decision
Reference point type		Target reference point	Target reference point (GES achieved at or above threshold value)
		Limit reference point	Limit reference point (GES achieved at or below threshold value)
Target aim		InterimTarget	Interim target
		GESTarget	Target for GES
Target type		State	State
		Impact	Impact
		Pressure	Pressure
		Operational	Operational
		Other	Other

List	List_subgroup	List_short_name	List_long_name
Metadata			
Metadata topics		Analysis-all	Analysis (all aspects)
		AnalysisCharactTrend	Analysis-of characteristics/trends (state, pressure or use)
		AnalysisPressureImpact	Analysis-of pressures & impacts on state
		AnalysisActivityfromPressure	Analysis-of activities from pressures
		AnalysisPressurefromActivity	Analysis-of pressures from activities
		ESAIndicator-all	Analysis-of socio-economic indicators (all)
		ESAIndicatorProduction	Analysis-of socio-economic indicators (production value)
		ESAIndicatorValue	Analysis-of socio-economic indicators (added value)
		ESAIndicatorEmployment	Analysis-of socio-economic indicators (employment)
		ESAIndicatorOther	Analysis-of socio-economic indicators (other)
		AnalysisCostDegradation	Analysis-cost of degradation
		Assessment	Assessment (of status)
		ESAWaterAccounts	Economic and social analysis - water accounts approach
		ESAEcosystemServices	Economic and social analysis - ecosystem services approach
		ESAThematic	Economic and social analysis - thematic approach
		ESAOther	Economic and social analysis - other approach
		DegradationCostBased	Cost of degradation - cost-based approach
		DegradationEcoServices	Cost of degradation - ecosystem services approach
		DegradationThematic	Cost of degradation - thematic approach