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Second River Basin Management Plans - Member State: Malta

Accompanying the document

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)
Second River Basin Management Plans
First Flood Risk Management Plans

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Acronyms and definitions

EQS Directive	Environmental Quality Standards Directive
FD	Floods Directive
Km	Kilometre
km^2	Kilometre squared
KTM	Key Type of Measure
PoM	Programme of Measures
RBD	River Basin District
RBMP	River Basin Management Plan
WFD	Water Framework Directive
WISE	Water Information System for Europe
Annex 0	Member States reported the structured information on the second RBMPs to WISE (Water Information System for Europe). Due to the late availability of the reporting guidance, Member States could include in the reporting an Annex 0, consisting of a short explanatory note identifying what information they were unable to report and the reasons why. This Annex was produced using a template included in the reporting guidance. If Member States reported all the required information, this explanatory note was not necessary.

Foreword

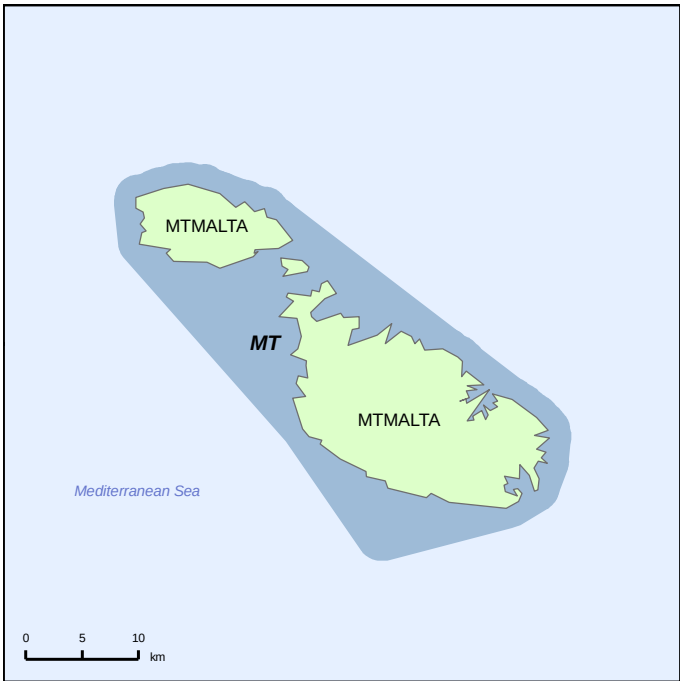
The Water Framework Directive (WFD) (2000/60/EC) requires in its Article 18 that each Member State (MS) reports its River Basin Management Plan(s) (RBMPs) to the European Commission. The second RBMPs were due to be adopted by the Member States in December 2015 and reported to the European Commission in March 2016.

This Member State Assessment report was drafted on the basis of information that was reported by Member States through the Water Information System for Europe (WISE) electronic reporting.

The Member State Reports reflect the situation as reported by each Member State to the European Commission in 2016 or 2017 and with reference to River Basin Management Plans (RBMP) prepared earlier. The situation in the Member States may have changed since then.

General Information

Map A ***Map of River Basin Districts***



Source: WISE, Eurostat (country borders)

International River Basin Districts (within European Union)
International River Basin Districts (outside European Union)
National River Basin Districts (within European Union)
Countries (outside European Union)
Coastal Waters

Malta has a population of 450 000 people and a total surface area greater than 316 km^2. Malta is a group of three islands in the Mediterranean Sea - Malta, Gozo and Comino. The terrain is low and rocky with coastal cliffs.

Malta has identified one river basin district, which is 712 km^2 and covers the whole country's territory. The Malta RBD does not share catchments with other Member States or with other countries. The information on the national river basin district including sharing countries is provided in Table A.

Table A ***Overview of Malta's River Basin Districts***

RBD	Name	Size (km^2)	Countries sharing borders
MTMALTA	Malta	712	-

Source: River Basin Management Plans reported to WISE

Status of second river basin management plan reporting

Malta published its RBMP on 16 February 2016. Documents are available from the European Environment Agency EIONET Central Data Repository https://cdr.eionet.europa.eu/.

Key strengths, improvements and weaknesses of the second River Basin Management Plan(s)

The main strengths and shortcomings of the second RBMP of Malta are as follows:

- **Governance and public consultation**

  - Malta organised an extensive process for the active involvement of stakeholders, including for the development of measures and the discussion of their implementation (thus implementing a Commission recommendation from the first cycle).

  - Malta prepared a joint plan that incorporated both its RBMP and its Flood Risk Management Plan and thus implemented a Commission recommendation from the first cycle to ensure coordination of these plans.

- **Characterisation of the RBD**

  - Inland water bodies have been delineated since the first RBMP. However, river, lake and transitional water bodies do not appear to have equivalent intercalibration types and type-specific reference conditions have not been established. Malta considers that such reference conditions cannot be established at this stage and that for inland surface water bodies, the characteristic hydrological intermittency and complexity renders the hydromorphological and physico-chemical evaluations of ecological status extremely difficult and further long-term trend data are necessary.

  - Further characterisation work for groundwater bodies has been undertaken since the first RBMP, with the inclusion of the assessment of linkages with surface water bodies.

  - For surface water and groundwater bodies, significance of pressures is reported as being linked to the potential failure of objectives. However, the significance is not defined in terms of thresholds and it was reported that a relatively high number of significant pressures (14) were not assessed for surface water, including “dams, barriers and locks and physical alterations”, although pressures due to hydromorphological alterations were qualitatively described for inland surface water bodies in the second RBMP.

- "Anthropogenic pressure – unknown" is reported to affect all surface water bodies and diffuse and point pressures from undefined sources are reported for 47 % of surface water bodies. This shows that the activities and sectors have still not been adequately identified[1].

- It was reported that only five Priority Substances were included in the inventory. The RBMP explains that the inventory only covers substances that are relevant in Maltese water bodies, but the criteria for relevance were not provided. No basic estimation of emissions was provided for these substances of minor relevance. This is not in line with the Common Implementation Strategy Guidance Document n°28. Tier 1 (point source information) was implemented for substances in the inventories (while the Guidance Document recommends implementing at least Tier 1+2 for substances relevant at RBD level). The quality of the input data is reported as uncertain.

- **Monitoring, assessment and classification of ecological status**

  - Since the first RBMP, monitoring has been established for all the required quality elements in coastal waters and for most of the required quality elements in rivers, lakes, and transitional waters.

  - Ecological status was reported as unknown for all rivers, lakes and transitional waters and no biological quality elements were classified in those three water categories. Hydromorphological quality elements were not classified in any water category, except morphological conditions in transitional waters.

  - Phytoplankton and benthic invertebrates were monitored in coastal water but not classified on the basis of an intercalibrated method.

  - Five River Basin Specific Pollutants were identified and were monitored, in sediment only, at a frequency lower than the minimum recommended frequency.

  - Environmental Quality Standards were reported for the five River Basin Specific Pollutants in sediment. They were not derived in accordance with the Technical Guidance n. 27 and the analytical methods are not in line with the requirements of Articles 4(1) and 4(2) of the Quality Assurance/Quality Control Directive (2009/90/EC) for the strictest standard applied.

[1] Malta subsequently clarified that terminology "anthropogenic pressure – unknown" was used in cases where presence of contaminants in surface water bodies could not be attributed to a particular source.

- Intercalibration was not done for phytoplankton and benthic invertebrates in coastal waters, nor for any biological quality elements in rivers, lakes and transitional waters.

- **Monitoring, assessment and classification of chemical status in surface water bodies**

  - For the first RBMP, the chemical status for all water bodies (all coastal water bodies) was unknown. In the second RBMP, Malta has delineated inland surface water bodies and transitional water bodies, and all water bodies have been classified. Approximately half of the water bodies have good chemical status (rivers, lakes and transitional) and half are failing to achieve good status (all coastal water bodies).

  - Water bodies seemed to be classified with medium to high confidence, according to the RBMP.

  - All surface water bodies are monitored with the exception of coastal waters (78 % are monitored). This results from both an increase in monitoring of coastal water bodies and monitoring of the newly delineated freshwater bodies, since the first RBMP.

  - All 41 Priority Substances are monitored, including all priority substances discharged, and all are taken into account in the assessment of status. The monitoring frequency for some Priority Substances in the water column in coastal waters meets the minimum recommended frequency for surveillance but not for operational monitoring. In surface freshwaters, the frequency is less than the minimum recommended.

  - Hexachlorobenzene, mercury and hexachlorobutadiene are not monitored in biota for status assessment.

  - All 14 of the relevant Priority Substances were monitored for trend assessment in sediments and/or biota in all water bodies (14 substances in coastal water bodies, and 13 substances in lake, river, and transitional water bodies). The monitoring frequency is lower than the recommended minimum frequency.

- **Monitoring, assessment and classification of quantitative status of groundwater bodies**

  - There is still a gap in quantitative monitoring, but Malta subsequently clarified that it is intending to extend the monitoring framework to all groundwater bodies within the implementation timeframe of the second cycle.

- The level of confidence of the status results is reported high, but only 3 out of 15 groundwater bodies are monitored, which cover approximately 80 % of the total groundwater body area. Malta subsequently clarified that the existing hydrogeological setting did not allow water level measurements. The groundwater quantitative status was therefore assessed by a water-balance model.

- **Monitoring, assessment and classification of chemical status of groundwater bodies**

  - The coverage of groundwater bodies by surveillance and operational monitoring is complete. Also all WFD core parameters are monitored (in contrast to the conclusions drawn from the electronic reporting).

  - The percentage of the total groundwater body area failing good status is still very high and there is no significant improvement.

  - Terrestrial ecosystems and surface waters were considered in status assessment.

- **Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential**

  - There is still no consistent description of the methodology for the designation of heavily modified water bodies in the Maltese RBMP. The RBMP only explains why the two main coastal heavily modified water bodies are designated as such, including a description of substantial changes in character and significant adverse effects of restoration measures on the use or wider environment. For the five transitional water bodies, which were designated due to historical usage, as well as the two lake and river heavily modified water bodies, no criteria or explanations for the designation were described.

  - In the second RBMP, good ecological potential is reported as defined following the Prague approach, whereas in the first RBMP, good ecological potential had not been defined due to the delay in the implementation of the monitoring programmes. The approach developed to define good ecological potential in the second RBMP only concerns the two coastal heavily modified water bodies. Good ecological potential definition on the basis of biological quality elements and mitigation measures has only taken place for the two coastal heavily modified water bodies, while for the other heavily modified water bodies (rivers, lakes, and transitional waters), no biological quality elements were established/assessed and mitigation measures have been

identified. It is explained that due to the unique characteristics of inland surface waters, additional data is required to understand the complex dynamics associated with such water bodies.

- **Environmental objectives and exemptions**

  - Environmental objectives were reported for coastal water bodies and groundwater. However, the dates by when lake, river, and transitional water bodies will achieve good ecological status/potential are reported as unknown. Good chemical status for river, lake and transitional water bodies was reported to be achieved by 2015 but the dates for achieving good chemical status for coastal waters are unknown.

  - Drivers, pressures and pollutants leading to exemptions are reported.

  - Justifications for exemptions have been provided at water body level. Criteria have been developed for the application of exemptions with regard to technical feasibility and disproportionate costs. Overall the application of exemptions has been reduced between the two cycles.

- **Programme of Measures**

  - The financing of measures is one area of progress. Clear costs are presented and it is reported that 76 % of the funding for the measures will be provided by European Union funds. Financial commitment for the remaining measures has been obtained from all relevant sectors.

  - Not all the significant pressures identified in groundwater bodies are addressed by KTMs. There is a discrepancy between the national measures mapped to KTMs and the KTMs reported to be addressing significant pressures[2].

  - There is a discrepancy between the national KTMs reported as being used to address significant pressures and those against which national measures have been mapped.

  - Very limited information on the gap to good status was reported. Where data was provided, indicators were generally only provided for 2015. Where information is

[2] Malta reported that this is a result of an oversight during the reporting given that all KTMs were linked to the two most important significant pressures which are "abstraction or flow diversion – agriculture" and – "Abstraction or flow diversion - Public water supply".

reported for 2021 it was reported that the water bodies concerned were expected to be of good status.

- **Measures related to abstractions and water scarcity**

- Water abstraction pressures are reported as relevant for Malta; and 13 % of groundwater bodies face water quantity-related problems for achieving good quantitative status.

- The Water Exploitation Index + is 97 % (2014) which is an extraordinarily high figure and might indicate risks of sustainable water use.

- The river basin management plan does not include a water resource and allocation management plan.

- Measurement and monitoring are the basis for calculating urban water consumption. Measures have been implemented to better calculate agricultural water consumption.

- Exemptions for permitting and registering for small abstractions might need to be reviewed and abstractions controls need improvement, as a significant proportion of groundwater bodies does not achieve good quantitative status.

- **Measures related to pollution from agriculture**

  - There is a clear link between agricultural pressures and agricultural measures.

  - A gap assessment for nutrients has not been undertaken and management objectives for nutrient pollution have not been set.

  - Safeguard zones have been established for abstractions.

  - Implementation of basic measures Article 11(3)(h) for the control of diffuse pollution from agriculture at source is ensured and the same rules apply across the whole RBD.

  - Financing of agricultural measures is secured.

  - The level of ambition is unclear, as the area covered by measures to achieve environmental objectives is not reported. Malta however subsequently clarified that the whole RBD's area is covered.

- **Measures related to pollution from sectors other than agriculture**

  - Malta reported KTM to tackle significant chemical pressures.

  - Malta also reported measures specifically to address mercury, the only Priority Substance (mercury) identified as causing failure.

  - There is no specific measure to tackle Zinc.

- **Measures related to hydromorphology**

  - In the second RBMP, no significant hydromorphological pressure affecting water bodies was identified in Malta, and therefore no related hydromorphological measure was reported. According to the information subsequently provided by Malta, physical alterations have been reported for Heavily Modified Water Bodies rather than under significant hydromorphological pressures. In terms of measures, however, natural water retention measures (KTM23) are planned to tackle significant abstractions or flow diversion pressures from public water supply on groundwater.

  - Ecological flows have not been derived or implemented so far but there are plans to do so during the second cycle. In this context, no specific measure is planned to achieve ecological flows and their establishment is not addressed by specific regulations. However, it is indicated that Malta is still in the phase of establishing the baseline for deriving ecological flows.

- **Economic analysis and water pricing policies**

- Cost recovery calculations remain limited – environmental and resource costs have not been included.

- Pricing policies have not been modified to show how “adequate incentives” were provided.

- The Polluter Pays Principle is not adequately reflected in the water pricing policies.

- A narrow definition of water services has been used.

- **Considerations specific to Protected Areas (identification, monitoring, objectives and measures)**

- Although some explanations on the monitoring of Protected Areas were provided in the RBMP, no monitoring programme was reported to WISE for protected areas under the Bathing Water, Birds and Drinking Water Directives.

- Additional objectives have already been set in particular for Drinking Water Protected Areas, as well as for some of the Protected Areas under the Birds and Habitats Directives. Work is still in progress for the remaining Birds and Habitats Protected Areas, and no additional objective was reported for Bathing and Nitrates Protected Areas.

- Safeguard zones have been established around the groundwater bodies associated to Drinking Water Protected Areas. However for other protected areas, it is unclear whether all necessary measures have properly been identified as not all relevant additional objectives have been set.

- **Adaptation to drought and climate change**

- Climate change was considered and the Common Implementation Strategy guidance document on how to adapt to climate change was used.

- Adaptation measures (KTM24 – "adaption to climate change") have not been applied to address any of the significant pressures.

- Drought management plans have been reported for Malta.

Recommendations

- Malta should further strengthen monitoring of surface waters by covering all relevant quality elements in all water categories, particularly in rivers, lakes and transitional waters. For those water categories, surveillance and operational monitoring should be clearly identified with adequate monitoring strategies.

- Malta should continue to develop reference conditions for Biological Quality Elements in rivers and lakes and for supporting Quality Elements for all water bodies.

- Further work is needed on the apportionment of pressures among sources, so that adequate measures can be identified.

- Malta should provide more precise information on the method used for the selection of River Basin Specific Pollutants especially on how diffuse sources are taken into account. Malta should make sure that the environmental quality standards meet the minimum requirements for the protection of freshwater and marine ecosystems from possible adverse effects, as well as of human health. Malta should also make sure that analytical methods are in line with the requirements of Articles 4(1) or 4(2) of the Quality Assurance/Quality Control Directive (2009/90/EC) for the strictest standard applied.

- Malta should develop a complete assessment method for all biological quality elements for lakes, rivers and transitional waters. Assessment methods should also be developed for hydromorphology for all water categories. Moreover, Malta should ensure that the assessment methods for the physicochemical quality elements are linked to the relevant biological quality elements.

- The monitoring frequencies should be at least as high as the recommended minimum frequencies from the WFD and EQS Directive. Priority substances should be monitored in biota where relevant for status assessment, with sufficient spatial coverage to reach sufficient confidence in the assessment. If reduced frequencies or a different matrix are used, the corresponding explanations should be provided, as required by the Directives.

- Monitoring for quantitative status of groundwater is still insufficient, Malta should continue to work on completing the monitoring schemes.

- A consistent methodology needs to be developed for the designation of heavily modified water bodies for all relevant water categories based on sound monitoring performed according to WFD requirements. The designation of heavily modified water bodies needs to comply with all the requirements of Article 4(3). Criteria need to be developed for the assessment of significant adverse effects on their use or the wider environment and the lack of significantly better environmental options, which need to be specifically mentioned in the RBMPs. Further efforts are needed to define ecological potential also in terms of biology for all relevant water categories.

- Progress needs to be continued to further improve the understanding of pressures and effects on water body status, particularly with regard to ecological status of surface water bodies. The assessment of the timeframe until when the WFD objectives will be achieved needs to be completed, taking into account a revised and updated assessment of the justifications of Article 4(4) and 4(5) exemptions.

- No Article 4(7) exemptions were reported to be applied although new physical modifications are planned. Malta needs to ensure a thorough assessment of possible new modifications in line with the requirements of the WFD.

- Malta should prioritise measures and explain in more detail its approach to identifying them in the next RBMP.

- The RBMPs should clearly identify the gap to good status, and the Programme of Measures should be designed and implemented to close that gap.

- Efforts should be made to directly link the status of individual water bodies with measures for the third planning cycle.

- KTMs should address all the significant pressures identified in groundwater bodies.

- The problem of water scarcity and over-abstraction that are significant pressures and cause poor quantitative status should continue to be tackled (results of targeted measures are yet to be assessed).

- Malta should complete a comprehensive gap assessment for diffuse pollutant loads from agriculture (nutrients, agri-chemicals, sediment, organic matter) across all waters and link it

directly to mitigation measures in the third RBMP (as per WFD Article 11(3)(h)), to facilitate the achievement of WFD objectives.

- In the third RBMPs, Malta should specify, for all measures, the area of agricultural land to be covered by measures for achieving WFD objectives.

- Malta should continue to develop a clear strategy, in cooperation with the farming community, which defines the basic measures that all farmers should adhere to and the supplementary measures that can be financed via the Rural Development or other funding sources.

- Malta should continue to address any remaining instances of the discharge of animal husbandry waste in the sewage collecting system and ensure that there are explicit links in the RBMPs between the WFD and supporting programmes and instruments (e.g. Nitrates Directive, Rural Development, etc.).

- Malta should endeavour to establish the drivers behind Zinc pollution and identify substance-specific measures.

- Malta should use the inventory of emissions to identify the need for measures, including supplementary measures if appropriate.

- Further efforts should be made to ensure that chemical pollutants entering water bodies via urban waste water treatment plants are tackled.

- Malta needs to ensure that the hydromorphological pressures are reported and included in the next RBMP, both for natural and heavily modified water bodies, and that the necessary restoration measures are implemented.

- Malta should continue prioritising the use of green infrastructure and/or natural water retention measures that provide a range of environmental (improvements in water quality, flood protection, habitat conservation etc.), social and economic benefits which can be in many cases more cost-effective than grey infrastructure.

- Malta should apply cost recovery for water use activities having a significant impact on water bodies or justify any exemptions using Article 9(4). Malta should transparently present how financial, environmental and resource costs have been calculated and how the

contribution of the different users is ensured. It should transparently present the water-pricing policy, and provide a transparent overview of estimated investments and investment needs.

- Malta should complete the monitoring programmes for all relevant types of Protected Areas, and should fully report them to the Commission. Malta should set additional objectives where relevant for all the Protected Areas, so as to identify and implement all necessary measures.

Topic 1 Governance and public participation

1.1 Assessment of implementation and compliance with WFD requirements in the second cycle

1.1.1 Administrative arrangements – river basin districts

Malta is a group of three islands. It has designated one RBD, Malta, for which it has prepared one RBMP, entitled the Second Water Catchment Management Plan for the Malta Water Catchment District 2015-2021. This plan also incorporates Malta's Flood Risk Management Plan.

1.1.2 Administrative arrangements – competent authorities

Malta reports two Competent Authorities for its RBMP: The Environment and Resources Authority and The Energy and Water Agency. Their main roles are:

- The Environment and Resources Authority: monitoring and assessment of surface water, enforcement of regulations, pressure and impact analysis, economic analysis, preparation of the RBMP and Programme of Measures, public participation, implementation of measures, coordination of implementation, and reporting to the European Commission.

- The Energy and Water Agency: monitoring and assessment of status of groundwater, pressure and impact analysis, economic analysis, preparation of the RBMP and Programme of Measures, public participation, implementation of measures, coordination of implementation and reporting to the European Commission.

1.1.3 River Basin Management plans – structure and Strategic Environmental Assessment

Malta's RBMP contains in its annexes the Flood Risk Management Plan (see section 1.1.5 below) and a Drought Risk Management Plan.

Malta reported that a Strategic Environmental Assessment had not been undertaken for the RBMP and Flood Risk Management Plan. Malta subsequently informed that a Strategic Environmental Assessment screening exercise indicated that a Strategic Environmental Assessment is not required. This screening exercise indicated that the RBMP is unlikely to lead to additional significant environmental effects over and above those positive effects which were identified in the Strategic Environmental Assessment carried out for the first RBMP. In addition, the main measures foreseen under the second RBMP were assessed under the

Strategic Environmental Assessment process for the Operational Programme for Malta, under which all these main measures are identified.

1.1.4 Public consultation

According to the information reported in WISE by Malta, the public and interested parties were informed by: the internet, invitations to stakeholders, local authorities, media (papers, television, radio), meetings and printed material. Documents were available by direct mailing (email) and by download.

The following stakeholder groups were actively involved in the development of the RBMP: agriculture/farmers, fisheries/aquaculture, industry, local/regional authorities, navigation/ports, NGOs/nature protection and water supply and sanitation. The mechanism for stakeholder involvement was involvement in drafting and other outreach activities, which included bilateral meetings and workshops with individual stakeholders or groups.

The public consultation had the following impacts on the RBMP, according to the information reported by Malta: addition of new information, adjustment of specific measures, changes to the selection of measures, commitment to action in the next RBMP, commitment to further research and understanding of cost effectiveness.

The RBMP highlighted that a series of stakeholder consultation activities led to the formulation of the measures for the draft Programme of Measures. These consultation meetings discussed the issues faced by the respective sectors, and stakeholders were involved in the development of specific measures. The general public, agriculture, public sector, utilities and the commercial sector[3] are named as groups involved. Following the drafting of the Programme of Measures, further consultation meetings were undertaken to discuss the measures identified with stakeholders, focusing on issues related to the implementation of these measures.

The consultation process was initiated in March 2014 with a National Conference, which discussed the Significant Water Management Issues. This national conference was open to the general public and was extensively advertised in the local press. Following this national conference, a series of national workshops were held between March and October 2014, focusing on specific issues: (i) the Significant Water Management Issues; (ii) efficient use of water resources; (iii) water use by the industrial and commercial sectors; (iv) optimising groundwater management; (v) energy-water nexus; and, (vi) development of a Water Management Plan (Programme of Measures). These public consultation workshops were

[3] Malta subsequently clarified that the commercial sector included the tourism sector.

followed by a second phase of the consultation process which focused on informal meetings with representatives of the main water use categories in the Maltese islands. No more than 20 participants were invited to each of these meetings, to ensure dynamic discussions.

During this second consultation phase, 12 consultation meetings were held with representatives of the agricultural sector (including a meeting in Gozo) during the period November to March 2015. The total attendance to these meetings reached around 300 full time farmers, around 25 % of the total full time farming population in the Maltese islands. These consultation meetings were organised in cooperation with the Assocjazzjoni tal-Bdiewa (Farmers Association).

The consultation process was concluded with a National Stakeholder Consultation Workshop, jointly organised by the two WFD competent authorities. This workshop presented the updated draft RBMP to stakeholders and provided an opportunity for a final discussion on the second RBMP.

1.1.5 Integration with the Floods Directive and the Marine Strategy Framework Directive

Malta prepared a single plan that incorporated both its second RBMP and its first Flood Risk Management Plan (FRMP) under the Floods Directive[4]. As noted above, the FRMP is presented in an annex to the RBMP. Moreover, the FRMP and RBMP share measures and common sections, such as the discussion of potential climate impacts. In addition, Malta held a joint consultation for the RBMP and FRMP and for the Marine Strategy Framework Directive[5].

1.1.6 International coordination

Malta does not share its RBD with any other Member States or countries.

1.2 Main changes in implementation and compliance since the first cycle

In the first cycle, Malta's competent authorities were the Maltese Resource Authority, and the Maltese Environment and Planning Authority. In the second cycle, the competent authorities are the Environment and Resources Authority, and the Energy and Water Agency (reflecting a reorganisation of government bodies).

[4] Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060

[5] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

1.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Ensure good coordination between public administration and other stakeholders to improve the planning and implementation of Programme of Measures and to monitor their effectiveness.*

  Assessment: Based on information available in the RBMP, Malta carried out an extensive process for stakeholder involvement, including the planning and implementation of measures. Consequently, this recommendation has been fulfilled.

- Recommendation: *Ensure effective coordination between WFD and Floods Directive*[6]*, especially in the elaboration of flood risk and hazard maps.*

  Assessment: Malta has prepared a joint RBMP and Flood Risk Management Plan for the second cycle. On this basis, this recommendation has been fulfilled.

[6] Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060

Topic 2 Characterisation of the River Basin District

2.1 Assessment of implementation and compliance with WFD requirements in the second cycle

2.1.1 Delineation of water bodies and designation of heavily modified and artificial water bodies

The same number of coastal and groundwater bodies was delineated in the second RBMP as there were in the first RBMP (Table 2.1 and Table 2.2). Overall there was an increase in the total number of surface water bodies from 9 to 19 (Table 2.1). There were no inland surface water bodies delineated in the first cycle, but they were reported to be delineated in the second cycle. There were two new lake water bodies, three river water bodies, and five transitional water bodies. The RBMP explained that they were delineated on the basis of technical information which has become available during the course of the implementation of the first cycle.

In the second cycle, 53 % of identified surface water bodies were natural with the remainder designated as heavily modified. There were no artificial water bodies. Overall there was an increase in the number of heavily modified bodies between the first and second cycles, from two to nine surface water bodies, which included one newly delineated lake, one river and the five transitional water bodies (Figure 2.1). The water uses and physical alterations have been reported for each heavily modified water body category.

Table 2.1 Number and area/length of delineated surface water bodies in Malta for the second and first cycles

Year	RBD	Rivers		Lakes		Transitional		Coastal	
		Number of water bodies	Total length of water body (km)	Number of water bodies	Total area (km^2) of water bodies	Number of water bodies	Total area (km^2) of water bodies	Number of water bodies	Total area (km^2) of water bodies
2016	MTMALTA	3	3.75	2	0.04	5	0.12	9	399
2010	MTMALTA	0		0		0		9	398

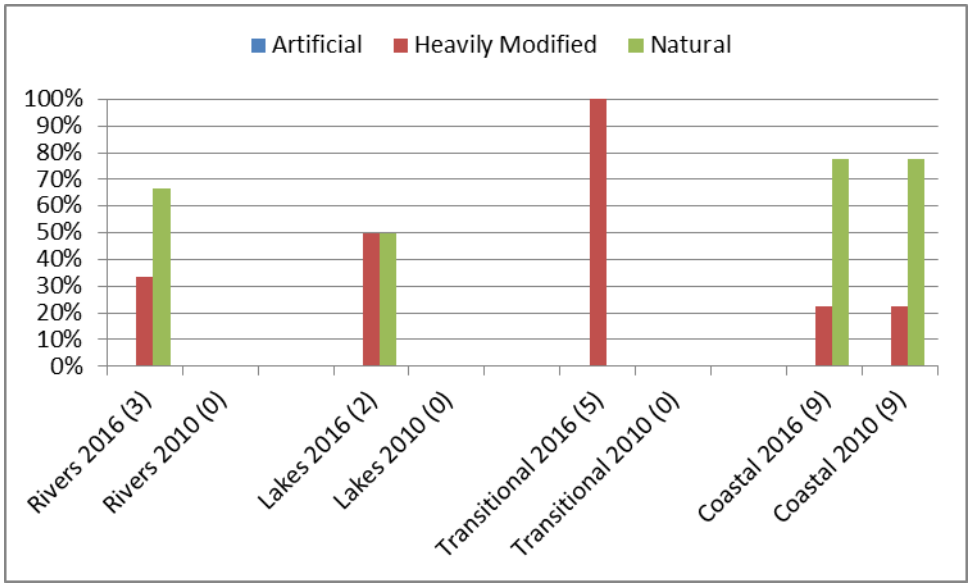
Source: WISE electronic reporting

Table 2.2 Number and area of delineated groundwater bodies in Malta for the second and first cycles

Year	RBD	Number	Area (km^2)		
			Minimum	Maximum	Average
2016	MTMALTA	15	0.39	220.4	23.79
2010	MTMALTA	15	0.4	217	23.69

Source: WISE electronic reporting[7]

Figure 2.1 Proportion of surface water bodies in Malta designated as artificial, heavily modified and natural for the second and first cycles. Note that the numbers in parenthesis are the numbers of water bodies in each water category



Source: WISE electronic reporting

Table 2.3 shows the differences in size distribution of surface water bodies in Malta between the second and first cycles. The minimum size and maximum size of coastal water bodies have remained largely the same. The minimum size criteria were not reported to WISE for the catchment area for rivers or the surface area for lakes. However, it is evident that small water bodies have been delineated in the second cycle[8].

[7] Malta subsequently clarified that the changes in the area of the groundwater bodies between what was reported in 2010 and 2016 results from changes in the method of area calculation, which has led to the slight discrepancies in the extent of the groundwater bodies.

[8] Malta subsequently clarified that the size for river water bodies was reported in terms of area not length in the shapefile SurfaceWaterBody_MT_20170206. Section 4.2.1 of the second RBMP provides 'area of catchment'

Table 2.4 summarises the information provided by Malta on how water bodies have evolved between the two cycles. It also shows that coastal waters and groundwater have remained the same and that new river, lake, and transitional water bodies have been delineated.

Table 2.3 Size distribution of surface water bodies in Malta in the second and first cycles

Year	RBD	River length (km)			Lake area (km^2)			Transitional area (km^2)			Coastal area (km^2)		
		Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
2016	MTMALTA				0	0	0	0.01	0.04	0.02	13.34	96.95	44.33
2010	MTMALTA										11.4	98	44.21

Source: WISE electronic reporting

Table 2.4 Type of change in delineation of groundwater and surface water bodies in Malta between the second and first cycles

Type of water body change for second cycle (wiseEvolutionType)	Groundwater	Lakes	Rivers	Transitional	Coastal
aggregation					
changeBothAggregationAndSplitting					
changeCode					
changeExtendedArea					
noChange	15				9
creation		2	3	5	
deletion					
splitting					
Total water bodies before deletion	15	2	3	5	9
Delineated for second cycle (after deletion from first cycle)	15	2	3	5	9

Source: WISE electronic reporting

2.1.2 Typology of surface water bodies

The numbers of water body types for coastal waters has remained the same between the first and second cycles. There are an additional three types in the second cycle for the newly

and 'length of watercourses' for 'river water bodies' and Section 4.2.2 provides 'areas of water bodies' for standing waters ('lakes').

delineated rivers, lakes, and transitional water bodies (Table 2.5). For coastal waters, the typology has been made biologically relevant by using phytoplankton as the single biological quality element.

Member States were asked to report "Not applicable" if there is no corresponding intercalibration type for national water body types. The coastal water body national types (heavily modified and natural) have been intercalibrated, but the river, lake, and transitional water bodies have no equivalent intercalibration types.

For inland waters, the RBMP states that the physical descriptors in System A and System B were used but are insufficient to precisely characterise the unique waters. Malta is, therefore, attempting to use alternative means to characterise the waters where possible. The description of the characteristics of these water bodies is provided but that types have not been fully established for inland waters. No further information was provided.

Table 2.5 Number of surface water body types at RBD level in Malta for the first and second cycles

RBD	Rivers		Lakes		Transitional		Coastal	
	2010	2016	2010	2016	2010	2016	2010	2016
MTMALTA	0	1	0	1	0	1	4	4

Source: WISE electronic reporting

2.1.3 Establishment of reference conditions for surface water bodies

Table 2.6 shows the percentage of surface water body types in Malta with reference conditions established for the first and second cycles. Type-specific reference conditions have been established for relevant biological quality elements for all coastal water bodies, but not for rivers, lakes, or transitional water bodies. Physico-chemical quality elements and hydromorphological quality elements reference conditions do not appear to have been established for any water body categories. This may lead to some weaknesses in the classification of status/potential for inland waters[9].

[9] Malta subsequently highlighted that the second RBMP (Section 6.2.1) explains why such reference conditions cannot be established at this stage. Malta stated that for inland surface water bodies, the characteristic hydrological intermittency and complexity renders the hydromorphological and physico-chemical evaluations of ecological status extremely difficult and further long-term trend data are necessary.

Table 2.6 ***Percentage of surface water body types in Malta with reference conditions established for all, some, and none of the biological, hydromorphological and physico-chemical quality elements. Numbers in parenthesis are the number of types in each category***

Water category	Water types	Biological quality elements	Hydromorphological quality elements	Physico-chemical quality elements
Rivers (1)	All			
	Some			
	None	100 %	100 %	100 %
Lakes (1)	All			
	Some			
	None	100 %	100 %	100 %
Transitional (1)	All			
	Some			
	None	100 %	100 %	100 %
Coastal (4)	All	100 %		
	Some			
	None		100 %	100 %

Source: WISE electronic reporting

2.1.4 Characteristics of groundwater bodies

The geological formation of the aquifer types in which groundwater bodies reside, along with the details of whether groundwater bodies are layered, have been reported. Further characterisation work has been reported since the first cycle with the inclusion of the assessment of linkages with surface water bodies and terrestrial ecosystems, however there was no link identified with terrestrial ecosystems[10].

2.1.5 Significant pressures and impacts on water bodies

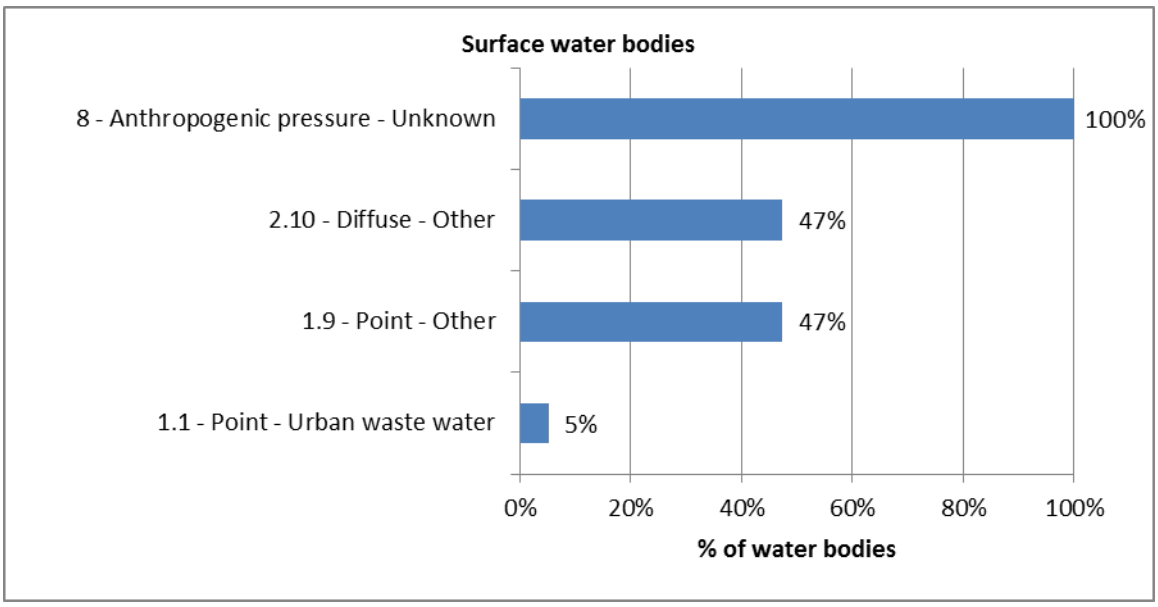
In the second RBMP, "anthropogenic pressure – unknown" was reported to affect the largest proportion of surface water bodies (100 %) followed by "point – other" (47 %), and "diffuse - other (47 %)" (Figure 2.2). In the first RBMP, Malta only reported pressures at an aggregated level. Overall, there was a decrease in point source, diffuse source, and hydromorphological pressures (Figure 2.3).

[10] Malta subsequently clarified that the immediate areas around river water bodies are the only places which can support water dependent terrestrial ecosystems, since these are the only areas where water is naturally available. Hence, Malta have specified that the groundwater bodies which have been marked as having linkages with surface water bodies should also be considered as having linkages with dependent terrestrial water ecosystems.

For the second RBMP, it was reported that 14 significant pressures were not assessed for surface water, including "dams, barriers and locks, and physical alterations", although hydromorphological alterations were qualitatively described. In addition, the main pressure reported was "anthropogenic pressure – unknown"[11].

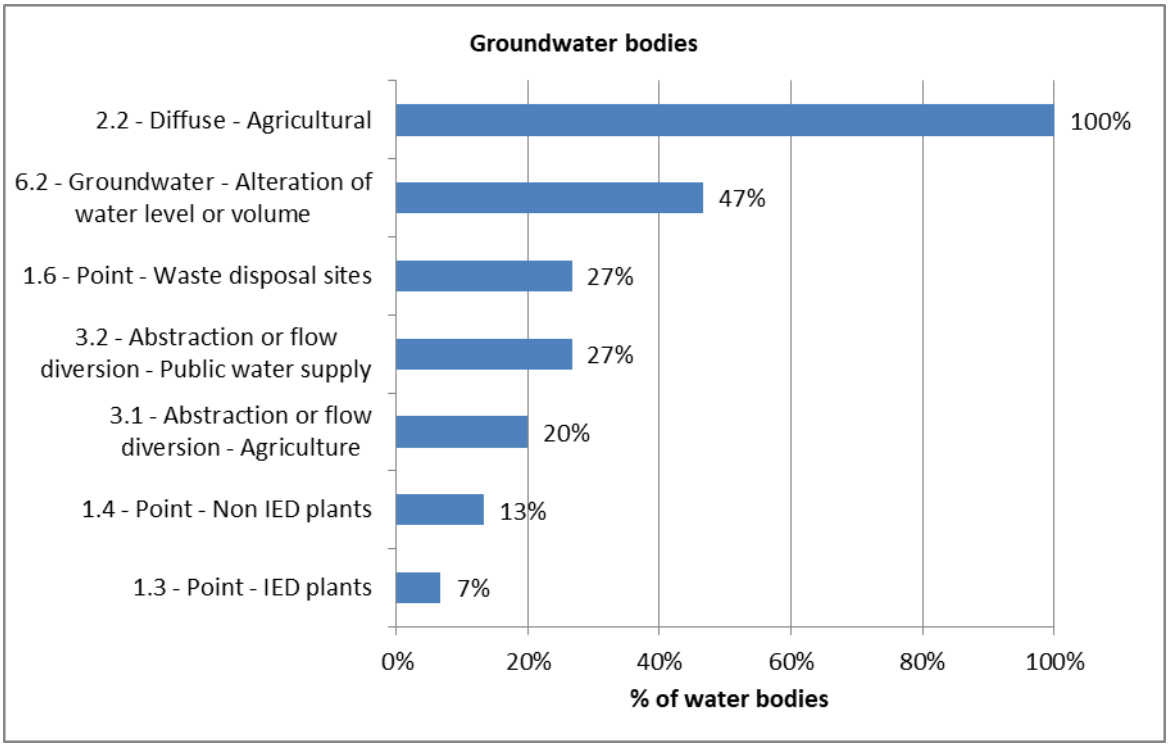
For groundwater bodies, "diffuse – agricultural" was reported most frequently (100 % of groundwater bodies) (Figure 2.2). There were no significant pressures for groundwater that were not assessed reported by Malta.

Figure 2.2 The most significant pressures on surface water bodies and groundwater bodies in Malta for the second cycle[12]



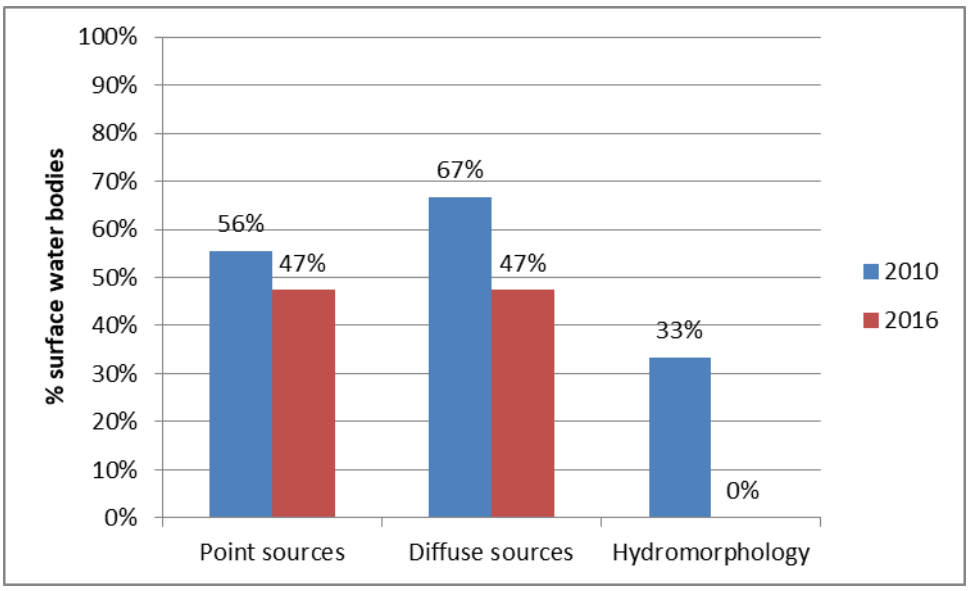
[11] Malta subsequently clarified that terminology "anthropogenic pressure – unknown" was used in cases where presence of contaminants in surface water bodies could not be attributed to a particular source. Malta stated that this was the case for mercury levels of which concentrations cannot be attributed to either point or diffuse sources with certainty.

[12] Malta highlighted that the Point – IED plants in Figure 2.2 was reported as a significant pressure type for the Malta Mean Sea Level GWB, however, this it is a reporting error. Malta clarified that given that the Point – IED installations whilst present in the surface catchment area of the groundwater body are not considered as significant in terms of the pressures that they can potentially exert on the Malta Mean Sea Level GWB.



Source: WISE electronic reporting

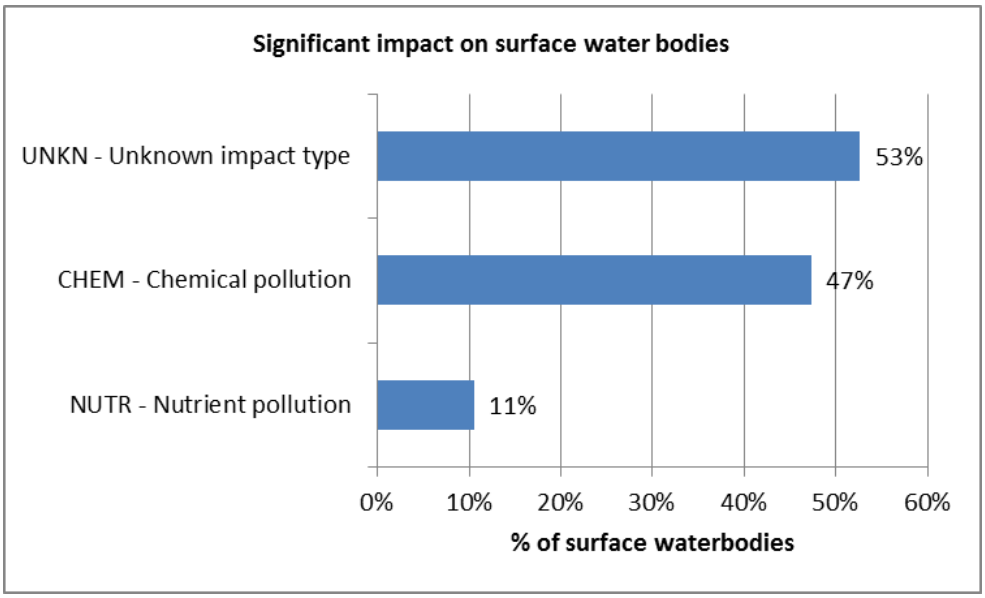
Figure 2.3 Comparison of pressures on surface water bodies in Malta in the first and second cycles. Pressures are presented at the aggregated level. Note there were 19 identified surface water bodies for the second cycle and nine for the first cycle.

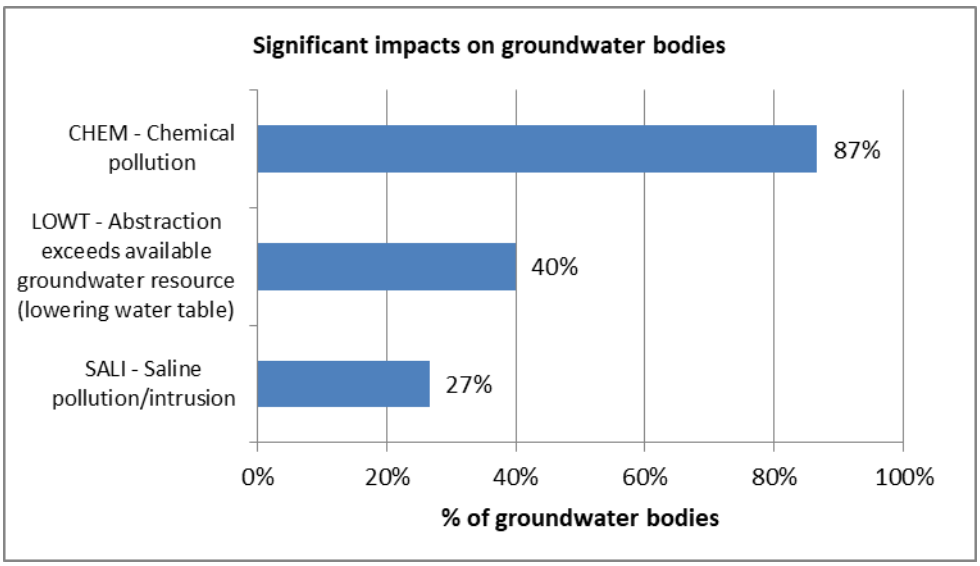


Source: WISE electronic reporting

In the second RBMP, the most significant impact on surface water bodies was "anthropogenic pressure - unknown" in all water body categories (Figure 2.4). It was the only impact reported for rivers, lakes, and transitional water bodies. Chemical pollution was reported to be impacting 87 % of groundwater bodies. Malta did not report on impacts in the first RBMP.

Figure 2.4 Significant impacts on surface water and groundwater bodies in Malta for the second cycle. Percentages of number of water bodies





Source: WISE electronic reporting

2.1.6 Definition and assessment of significant pressures on surface and groundwater

For surface waters, numerical tools and expert judgement were used to define significant pressures from point and diffuse sources, but only expert judgement was used for abstraction and water flow pressures. For surface water bodies, the significance of pressures is reported as being linked to the potential failure of objectives, but they were not defined in terms of thresholds.

For groundwaters, numerical tools and expert judgement were used to define significant pressures from point and diffuse sources, abstraction and artificial recharge, and other pressures. The significance of pressures is reported to be linked to the potential failure of objectives, but the significance of pressures has not been defined in terms of thresholds.

There is no detailed information available on the criteria for the identification of pressures, nor for the determination of their significance in the second RBMP [13].

2.1.7 Groundwater bodies at risk of not meeting good status

87 % of groundwater bodies were reported to be at risk of failing to meet good chemical status. The pollutants putting groundwater bodies at risk of failing good chemical status have been reported for all RBDs. 13 % of groundwater bodies were reported to be at risk of failing to meet good quantitative status.

2.1.8 Quantification of the gap and apportionment of pressures

No information was found in the second RBMP relating to which activities/sectors are contributing significantly to the different impacts that are causing failure of good ecological status/potential.

One priority substance (mercury and its compounds) was reported to be causing failure of good chemical status in Malta. Malta has not reported to WISE the values of the gap to good status for this substance for 2021 (or 2027)[14].

[13] Malta subsequently clarified that the identification of significant pressures in the second RBMP was undertaken on the same analytical basis adopted during the development of the first RBMP and therefore was not described in the second RBMP. The significant pressure were analysed in terms of: (1) Quantitative Pressures: water use assessments for the different water using sectors, correlated to the water sourcing infrastructure and capacity; and (2) Qualitative Pressures: land use extent, prevailing economic activities and typologies. Malta stated that the significance of such pressures was then corroborated through the use of: qualitative and quantitative monitoring data; the physical extent of the particular activity; and the environmental operational framework in force at the site of the activity (in the case of highly significant activities). Malta also stated that the identification of pressures where these information are not actually present is actually difficult to undertake and this is because the development of the RBMP is to be based on factual and accurate data.

2.1.9 Inventories of emissions, discharges and losses of chemical substances

Article 5 of the Environmental Quality Standards Directive[15] requires Member States to establish an inventory of emissions, discharges and losses of all Priority Substances and other pollutants listed in Part A of Annex I of the EQS Directive for each RBD, or part thereof, lying within their territory. This inventory should allow Member States to further target measures to tackle pollution from priority substances. It should also inform the review of the monitoring networks, and allow the assessment of progress made in reducing (resp. suppressing) emissions, discharges and losses for priority substances (resp. priority hazardous substances).

Malta has established an inventory of emissions, however only five Priority Substances were included, namely: tributyltin-cation, benzene, lead, nickel, and cadmium. The RBMP explains that the "National Inventory of Emissions, Discharges and Losses" for Priority Substances and other substances of concern to the surface water environment only covers substances that are relevant in Maltese water bodies. Criteria for relevance were not provided, but the second RBMP explains that the inventory was based on an assessment of available ambient monitoring data, the use of E-PRTR emissions and statistics on the import of chemical substances to Malta during a specified time period. This does not seem to be entirely in line with the Common Implementation Strategy Guidance Document n°28, which recommends that "For the substances discarded (i.e. for substances of minor relevance) MS [Member States] should try to provide a basic estimation of emissions, discharges and losses from available data. This is especially important for PHS [priority hazardous substances – for which emissions must be phased out]".

The two step approach from the Common Implementation Strategy Guidance Document n°28[16] has been followed for all substances included in the inventories. For these substances, Tier 1 (point source information) was implemented (while the Guidance Document recommends implementing at least Tier 1+2 for substances relevant at RBD level). The quality of the input data is reported as uncertain.

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[14] Malta subsequently clarified that the second RBMP does have measures targeting chemical quality, including measures which specifically address mercury in coastal waters. Malta confirmed that the timeframes for achievement of good status in this regard cannot be defined at this stage and that action is required to be undertaken to address uncertainty.

[15] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02008L0105-20130913

[16] CIS Guidance N° 28 - Preparation of Priority Substances Emissions Inventory http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

2.2 Main changes in implementation and compliance since the first cycle

Overall, there was an increase in the total number of surface water bodies from 9 to 19. There were no inland surface water bodies delineated in the first cycle, but they were reported to be delineated in the second cycle. There were two new lake water bodies, three new river water bodies, and five new transitional water bodies. There are an additional three water body types in the second cycle for the newly delineated river, lake, and transitional water bodies. For coastal waters, the typology has been made biologically relevant by using phytoplankton as the single biological quality element.

In the second RBMP, "anthropogenic pressure – unknown" was reported to affect the largest proportion of surface water bodies (100 %) followed by "point – other" (47 %), and "diffuse - other (47 %)". In the first cycle, Malta only reported pressures at an aggregated level. Overall, there was a decrease in point source, diffuse source, and hydromorphological pressures.

2.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Delineate inland surface water bodies in the second RBMPs cycle and develop reference conditions.*

  Assessment: In the second cycle, two lake water bodies, three river water bodies, and five transitional water bodies had been delineated. This resulted in a significant increase in the total number of surface water bodies from 9 to 19. Type-specific reference conditions have been established for relevant biological quality element for all coastal water bodies, but not for river, lake, or transitional water bodies. Physico-chemical and hydromorphological quality elements reference conditions do not appear to have been established for any water body categories. This may lead to some weaknesses in the classification of status/potential. The Maltese RBMP explains why such reference conditions cannot be established at this stage. For inland surface water bodies, the characteristic hydrological intermittency and complexity renders the hydromorphological and physico-chemical evaluations of ecological status extremely difficult and further long-term trend data are necessary. This recommendation has been partially fulfilled.

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to*

be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.

Assessment: For surface waters, numerical tools and expert judgement were used to define significant pressures from point and diffuse sources, and only expert judgement was used for abstraction and water flow pressures. For groundwaters, numerical tools and expert judgement were used to define significant pressures from point and diffuse sources, abstraction and artificial recharge, and other pressures. For surface and groundwater bodies, significance of pressures are reported as being linked to the potential failure of objectives, but they were not defined in terms of thresholds. Therefore, there does not appear to be progress towards the part of the recommendation requiring the methodologies to use concrete thresholds or criteria[17].

In terms of apportionment of sources of pressures to economic sectors, this appears to have been done for groundwaters with the main significant pressures being "diffuse – agricultural". However, this has not been carried out for surface waters, where the main pressure was reported to be "anthropogenic pressure – unknown" (100 %), followed by "point – other" (47 %), and "diffuse – other" (47 %). No information was found in the RBMP relating to which activities/sectors are contributing significantly to the different impacts that are causing failure of good ecological status/potential. Therefore, there has been some progress with this part of the recommendation, but source apportionment is required for surface waters[18].

- Recommendation: *Private groundwater abstraction as a major pressure on groundwater bodies should be adequately monitored.*

  Assessment: This recommendation applies to a number of Topics. In terms of characterisation of significant pressures on groundwater quantitative status, "groundwater - alteration of water level or volume" has been identified as a significant pressure in 46 % of the groundwater bodies in Malta. The tools used were reported to

[17] Malta subsequently stated that in the case of groundwater bodies, the significance of pressures was also correlated with monitoring data, so as to enable the level of significance to be identified. Malta noted that specific studies to enable these issues to be comprehensively addressed were undertaken, which led to the development of specific measures addressing these issues. Malta stated if further focused activities are required, a technical meeting is being requested with the Commission so as to discuss further tools available, which Malta would be interested in adopting.
Malta also stated that for surface waters, the definition of thresholds for pressures requires better understanding of sources. Malta highlighted that measures have been included that target the reduction of current uncertainties, thus working towards definition of thresholds in upcoming cycles.

[18] Malta subsequently highlighted that measures have been included that target the reduction of current uncertainties in source apportionment for surface waters and that source apportionment can be carried out once there is more certainty with respect to anthropogenic activity and pressures in surface water bodies.

be a combination of both expert judgement and numerical models, as well as additional direct monitoring of abstraction through the metering of private groundwater sources. Therefore, in terms of characterisation of significant quantitative pressures on groundwater the recommendation has been fulfilled.

Topic 3 Monitoring, assessment and classification of ecological status in surface water bodies

3.1 Assessment of implementation and compliance with WFD requirements in the second RBMP

3.1.1 Monitoring of ecological status/potential

Monitoring sites and monitored water bodies used for surveillance and operational monitoring

Table 3.1 compares the number of monitoring sites used for surveillance and operational purposes between the first and second RBMPs. It can be seen that no data was reported for the first RBMP.

Table 3.1 Number of sites used for surveillance and operational monitoring in Malta for the second and first RBMPs. Note that for reasons of comparability with data reported in the first RBMP, data for the second RBMP does not take into account whether sites are used for ecological and/or chemical monitoring

	Rivers		Lakes		Transitional		Coastal	
	Surv.	**Op**	**Surv.**	**Op**	**Surv.**	**Op**	**Surv.**	**Op**
Second RBMP								
Total by type of site	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*5*
Total number of monitoring sites used for surveillance and/or operational monitoring	*0*		*0*		*0*		*10*	
First RBMP	No data reported							

Sources: WISE electronic reporting

Table 3.2 gives the number of sites used for different purposes for the second RBMP. The purposes of monitoring shows that surveillance and operational monitoring is only listed for coastal waters, while for the other water categories the sites are reported to be for the purpose of ecological status and chemical status. The reasons why this monitoring is not split into the two different WFD monitoring programmes may be: (i) insufficient data and knowledge not yet allowing status classification, or (ii) very few water bodies delineated for these water categories. For coastal waters, the number of monitoring sites for ecological status assessment of coastal waters (36 sites) is not the same as those given for surveillance (5) and operational (5), but is the same as for State of the Environment (SOE-EIONET) monitoring (36). The

reason for this difference cannot be the same as suggested for the other water categories, because the coastal water bodies have been classified for ecological status/potential (see below).

Table 3.2 Number of monitoring sites in relevant water categories used for different purposes in Malta

Monitoring Purpose	Rivers	Lakes	Transitional	Coastal
CHE - Chemical status	3	2	5	15
ECO - Ecological status	3	2	5	36
HAB - Protection of habitats or species depending on water - WFD Annex IV.1.v	3	2	5	13
NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	3	2	5	26
OPE - Operational monitoring				5
REF - Reference network monitoring site				2
SOE - EIONET State of Environment monitoring	3	2	5	36
SUR - Surveillance monitoring				5
UWW - Nutrient sensitive area under the Urban Waste Water Treatment Directive - WFD Annex IV.1.iv				11
Total sites irrespective of purpose	**3**	**2**	**5**	**36**

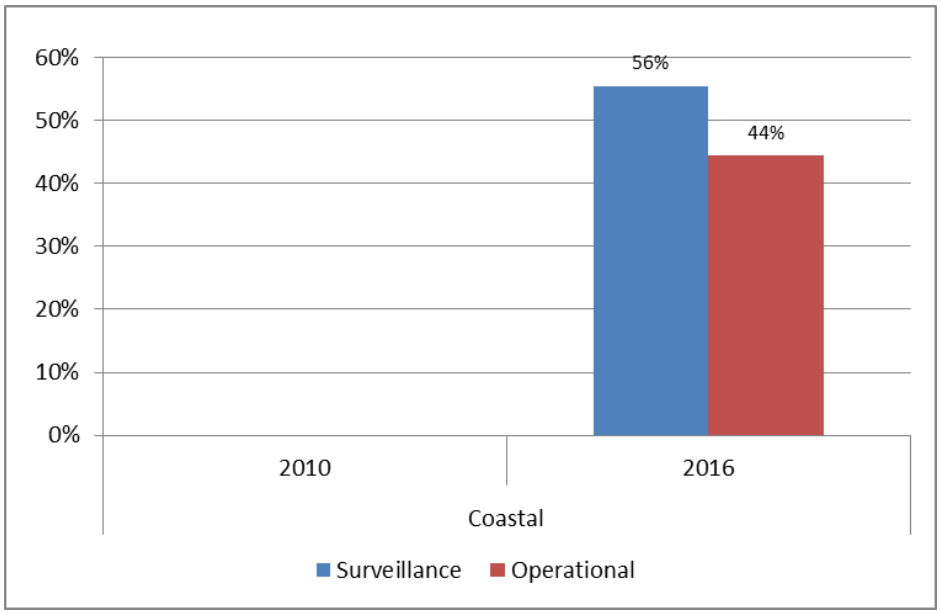
Source: WISE electronic reporting

Malta subsequently stated that surveillance and operational monitoring stations were identified and used to represent status at water body level. The surveillance stations in some cases coincide with protected areas or reference sites, while the operational stations are linked to pressures. The WFD monitoring stations were supplemented by additional monitoring stations that were identified on a national scale. While not part of the WFD monitoring network, the national stations supplement such networks by providing further data to better inform the WFD and assessment processes.

Figure 3.1 shows the proportion of water bodies subject to surveillance and operational monitoring. No data were reported for 2010.

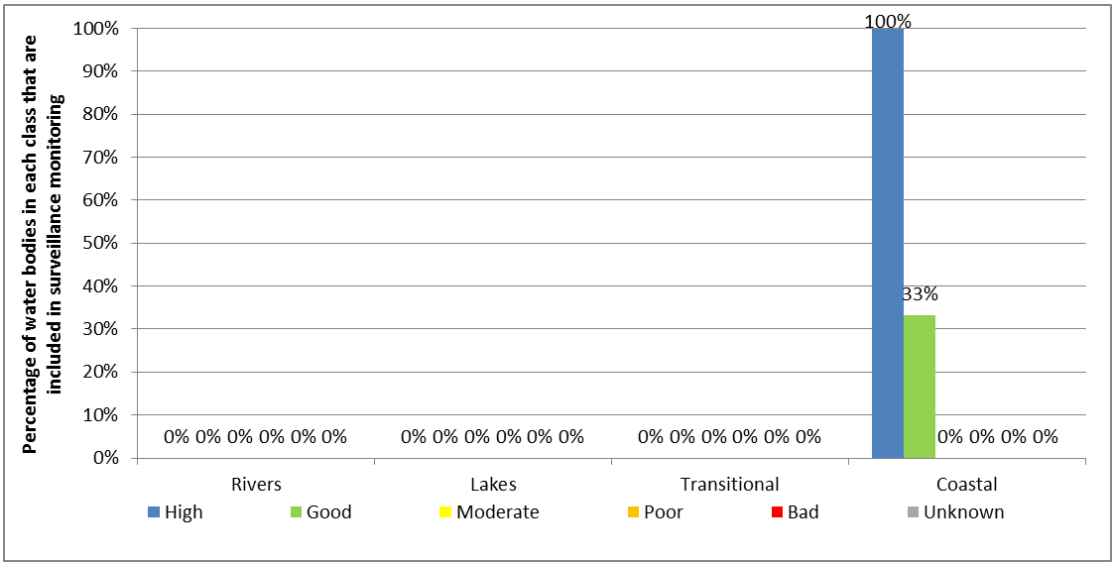
Figure 3.2 shows the proportion of water bodies in each ecological status/potential class that is subject to surveillance monitoring. All coastal water bodies at high status were included in the surveillance monitoring programme. There was no surveillance monitoring in lakes, river or transitional water bodies.

Figure 3.1 Percentage of water bodies included in surveillance and operational monitoring in Malta for the first RBMP (2010) and second RBMP (2016). Note no differentiation is made between water bodies included in ecological and/or chemical monitoring



Source: WISE electronic reporting

Figure 3.2 Proportion of water bodies in each ecological status/potential class that is included in surveillance monitoring in Malta



Source: WISE electronic reporting. A differentiated presentation between ecological status and potential and including all types of quality element can be viewed here - https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_QualityElement_Status_Compare/SWB_QualityElement_Group?iframeSizedToWindow=true&:embed=y&:display_count=no&:showAppBanner=false&:showVizHome=no

Transboundary surface water body monitoring

No transboundary water bodies were identified by Malta, and no monitoring sites were reported to be part of international networks (except the State of the Environment monitoring stations).

Quality elements monitored (excluding River Basin Specific Pollutants)

Table 3.3 illustrates the quality elements used for the monitoring of lakes and rivers for the second RBMP. No differentiation is made between purposes of monitoring. All required biological quality elements are monitored in each water category, except fish in rivers and lakes. Malta subsequently stated that the reason is that there are no established fish communities in rivers and lakes. All the hydromorphological quality elements are monitored, except hydrological conditions/tidal regime in transitional waters. All relevant physicochemical quality elements were reported as being monitored in all the water categories, except transparency in lakes and transitional waters, although Malta subsequently clarified that due to the difficulty in measuring transparency in shallow waters, turbidity was measured.

Table 3.3 Quality elements monitored for the second RBMP in Malta (excluding River Basin Specific Pollutants). Note; quality element may be used for surveillance and/or operational monitoring

	Biological quality elements								
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Angiosperms	Macroalgae	Other aquatic flora	Other species
Rivers		Yes	Yes	Yes	No			No	No
Lakes	Yes	Yes	Yes	Yes	No			No	No
Transitional	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Coastal	Yes			Yes		Yes	Yes	No	No

	Hydromorphological quality elements		
	Hydrological or tidal regime	Continuity conditions	Morphological conditions
Rivers	Yes	Yes	Yes
Lakes	Yes		Yes
Transitional	No		Yes
Coastal	Yes		Yes

	General physicochemical quality elements								
	Transparency conditions	Thermal conditions	Oxygenation conditions	Salinity conditions	Acidification status	Nitrogen conditions	Phosphorus Conditions	Silicate	Other determinand for nutrient conditions
Rivers		Yes	Yes	Yes	Yes	Yes	Yes	No	No
Lakes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No

Transitional	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Coastal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

Source: WISE electronic reporting

River Basin Specific Pollutants and matrices monitored

Malta reported that 58 substances that are not Priority Substances were being monitored. According to the Reporting Guidance for the second RBMPs it was expected that these would be River Basin Specific Pollutants. However, information from the RBMP indicated that this was not the case and only five (fluoride, copper, chromium, manganese and zinc) of the 58 substances were considered by Malta to be River Basin Specific Pollutants. For the first RBMP, Malta had identified a preliminary list of 10 non-priority specific pollutants considered to be equivalent to River Basin Specific Pollutants. The preliminary list was reduced to five substances using the results of the first monitoring campaign for the 10 substances and from the inventory of emissions. Three River Basin Specific Pollutants from the preliminary list (beryllium, boron and fluoride) are subject to further investigative monitoring of the water body including the main harbour (Marsaxlokk).

All delineated water bodies are monitored for at least one River Basin Specific Pollutant for all water categories, except for two coastal water bodies (Table 3.4), which is an improvement since the first RBMP when there was no monitoring of these pollutants reported. Monitoring is performed only in sediment and is reported to be for trend assessment (which might be a mistake in reporting).

Minimum monitoring frequencies in biota are specified for the assessment of Priority Substances in Article 3(2)c of EQS Directive 2008/105/EC: this is once per year for operational and surveillance monitoring purposes, unless greater intervals can be justified on the basis of technical knowledge or expert judgment. It thus seems consistent to monitor River Basin Specific Pollutants at the same frequency in biota, or in sediment, which is also an integrative matrix.

Monitoring for the five River Basin Specific Pollutants has been undertaken once per cycle. This is not in line with the minimum frequency mentioned above, and it is also lower than the minimum frequency for long-term trend monitoring for priority substances. No explanation could be found for these reduced frequencies. Malta mentioned that depending on the results, future monitoring will be decided.

Table 3.4 ***Number of sites used to monitor River Basin Specific Pollutants for the second RBMP and for the first RBMP in Malta. Note the data from both cycles may not be fully comparable as different definitions were used and also not all Member State reported information at the site level meaning that there were no equivalent data for the first RBMP***

RBMP		Rivers	Lakes	Transitional	Coastal
second	Sites used to monitor River Basin Specific Pollutants	3	2	5	17
first	Sites used to monitor non-priority specific pollutants and/or other national pollutants	NR	NR	NR	NR

Source: WISE electronic reporting. NR = not reported

Use of monitoring results for classification

Coastal water bodies were the only category where biological quality elements were used in the classification of ecological status/potential: the classification was solely based on monitoring results. General physicochemical quality elements were also used and based on monitoring results. River Basin Specific Pollutants were not used in the classification even though they were monitored in sediment. Hydromorphological quality elements were reported to be monitored, but were not used in the subsequent classification.

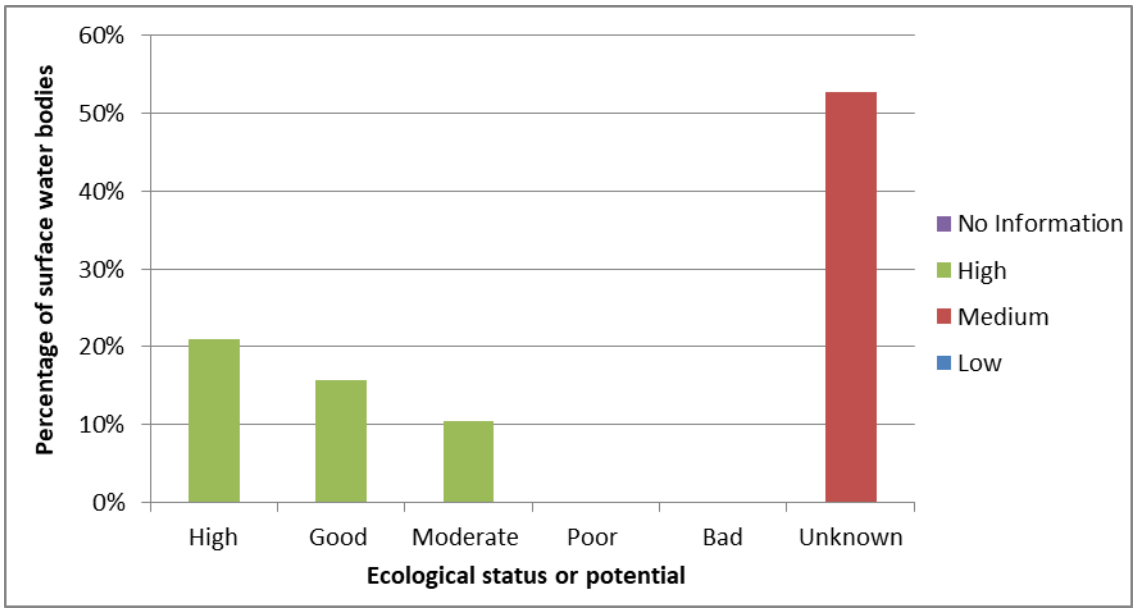
The classification of the ecological status/potential of lakes and rivers was only based on physicochemical quality elements including River Basin Specific Pollutants which were only monitored in sediment, even though biological and hydromorphological quality elements were reported to be monitored (but not as part of surveillance or operational monitoring programmes). However, for transitional water bodies, the status classification was also based on morphological conditions, as well as the physicochemical quality elements including River Basin Specific Pollutants which again were only monitored in sediment. As for lakes and rivers, biological quality elements were also reported to be monitored, though not part of operational or surveillance monitoring programmes.

3.1.2 Ecological Status/potential of surface water

The ecological status/potential of surface water bodies in Malta for the second RBMP is illustrated in Map 3.1. This is based on the most recent assessment of status.

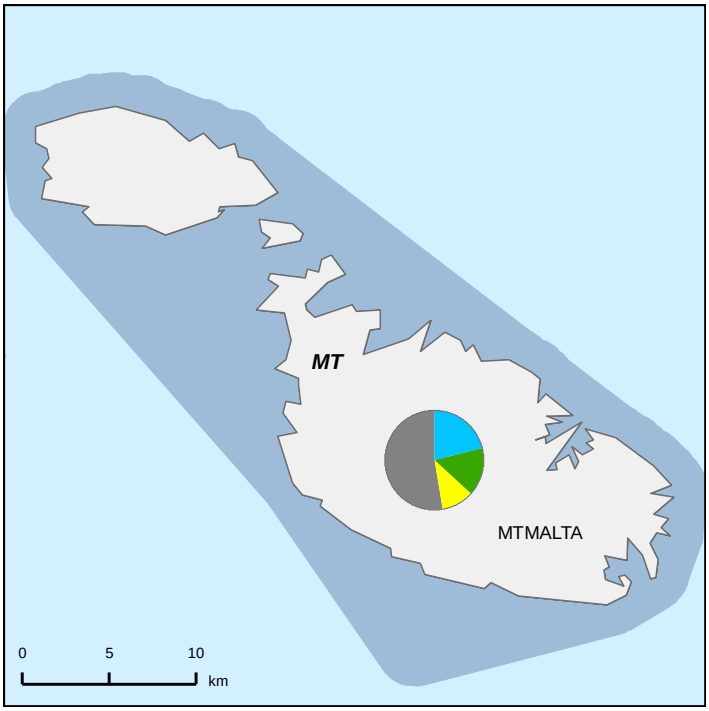
All the rivers, lakes and transitional waters have unknown ecological status/potential due to lack of knowledge, data, and assessment methods. The distribution of status classes for classified water bodies shown in the map is therefore only representing coastal waters. Figure 3.3 shows the confidence in the classification of ecological status/potential. The confidence for water bodies with unknown ecological status/potential (rivers, lakes, and transitional waters) was reported as medium (which may be a reporting error). The coastal water bodies are all classified with high confidence based on classification of all the required biological and physico-chemical quality elements, although the hydromorphological quality elements have not been used.

Figure 3.3 Confidence in the classification of ecological status or potential of surface water bodies in Malta based on the most recently assessed status/potential



Source: WISE electronic reporting

Map 3.1 Ecological status or potential of surface water bodies in Malta based on the most recently assessed status/potential of the surface water bodies



High
Good
Moderate
Poor
Bad
Unknown
River Basin Districts
Countries outside the European Union

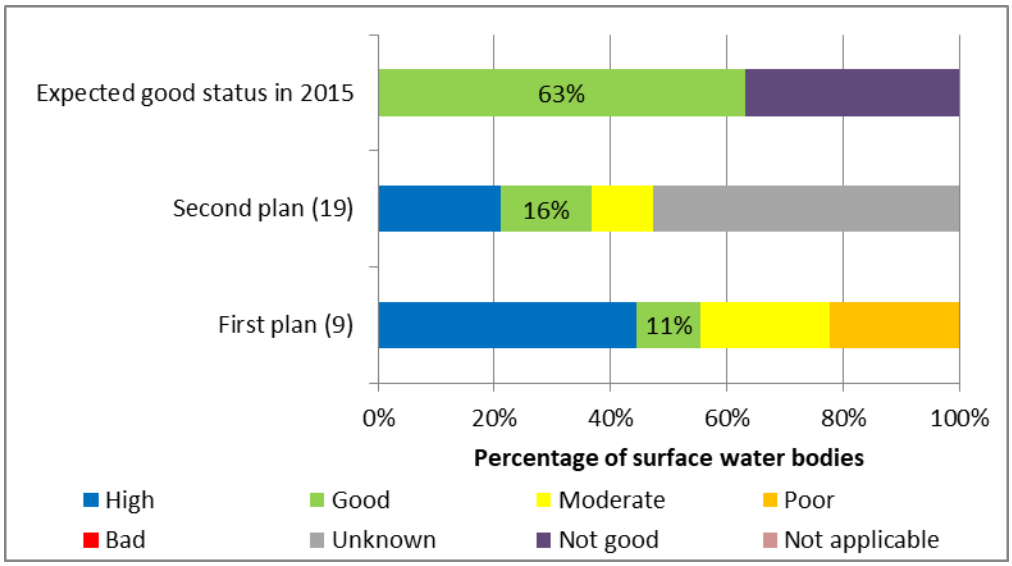
Note: Standard colours based on WFD Annex V, Article 1(4)(2)(i).
Source: WISE, Eurostat (country borders)

A differentiated presentation of this data between ecological status and potential and including all types of quality element can be viewed here -
https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_QualityElement_Status_Compare/SWB_QualityElement_Group?iframeSizedToWindow=true&:embed=y&:display_count=no&:showAppBanner=false&:showVizHome=no

Figure 3.4 compares the ecological status of surface water bodies in Malta for the first RBMP with that for the second RBMP (based on the most recent assessment of status/potential) and that expected by 2015). It should be noted that there were only coastal waters in the first RBMP and all the "unknown" status relates to the new lake, river and transitional water bodies.

The proportion expected to be in good or better status in 2015 shows that the majority of water bodies are expected to achieve the good status objective by 2015. However, this is uncertain because of the large quantity of water bodies with unknown status.

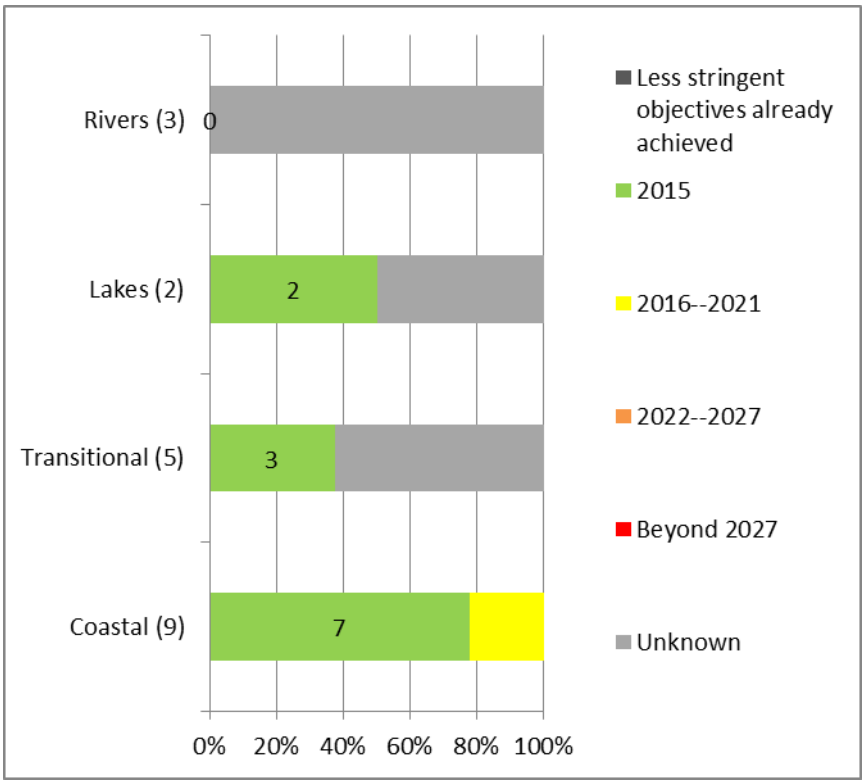
Figure 3.4 ***Ecological status or potential of surface water bodies in Malta for the second RBMP, for the first RBMP and expected in 2015. The number in the parenthesis is the number of surface water bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2012 and only includes coastal waters. The year of the assessment of status for first RBMP is not known.***



Source: WISE electronic reporting

Member States were also asked to report the expected date for the achievement of good ecological status/potential. The information for Malta is shown in Figure 3.5. The time for achieving the objectives is unknown for a large proportion of transitional waters, rivers, and lakes. Most of the coastal water bodies are expected to be in good status already in 2015, while the rest are expected to achieve good status during the period 2016-2021.

Figure 3.5 ***Expected date of achievement of good ecological status/potential of surface water bodies in Malta. The number in the parenthesis is the number of water bodies in each category.***



Source: WISE electronic reporting

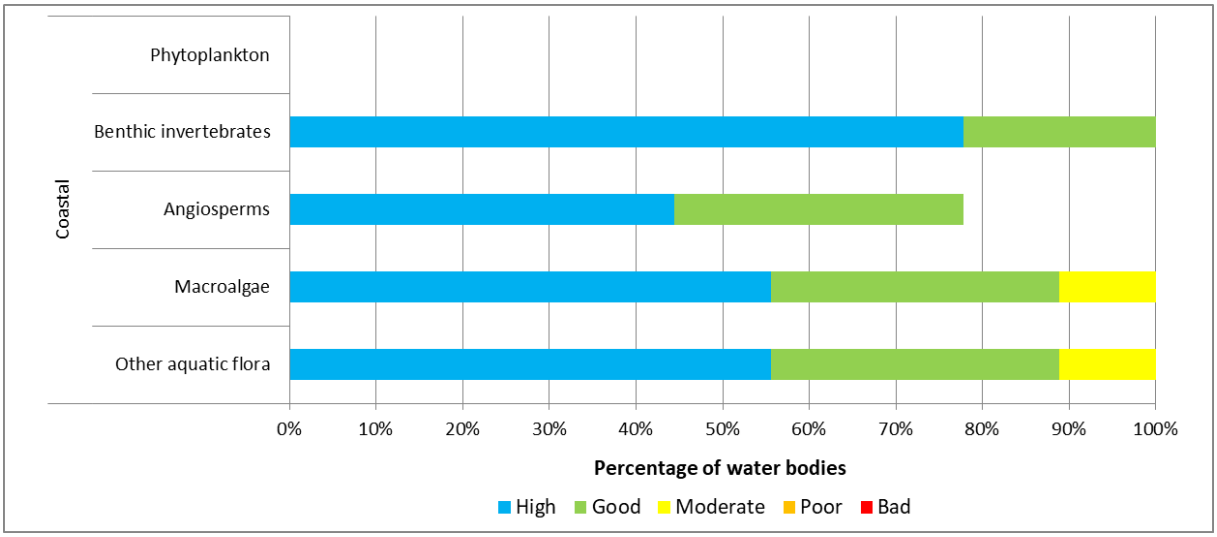
Classification of ecological status in terms of each classified quality element

Figure 3.6 shows that most of the coastal water bodies are in good or high status for each of the biological quality elements. According to the information reported in WISE, the biological quality elements have not been classified in the other water categories: a status assessment of the biological quality elements was not carried out because no potential classification method was identified due to the paucity of data and limited knowledge about these waters.

The WISE reporting on the use of biological quality elements differs from the information provided by Malta in the framework of the assessment of ex-ante conditionalities for EU funding. In this framework, Malta mentioned that in coastal waters, only macroalgae and angiosperms were used as biological quality elements and that the remaining two biological quality elements (benthic invertebrates and phytoplankton) could not be intercalibrated due to data and methodological problems encountered. Malta subsequently clarified that the status assessment for benthic invertebrates and phytoplankton was based on monitoring results that

have not been successfully intercalibrated, but have been used in the interim until further monitoring and the second intercalibration phase has been carried out.

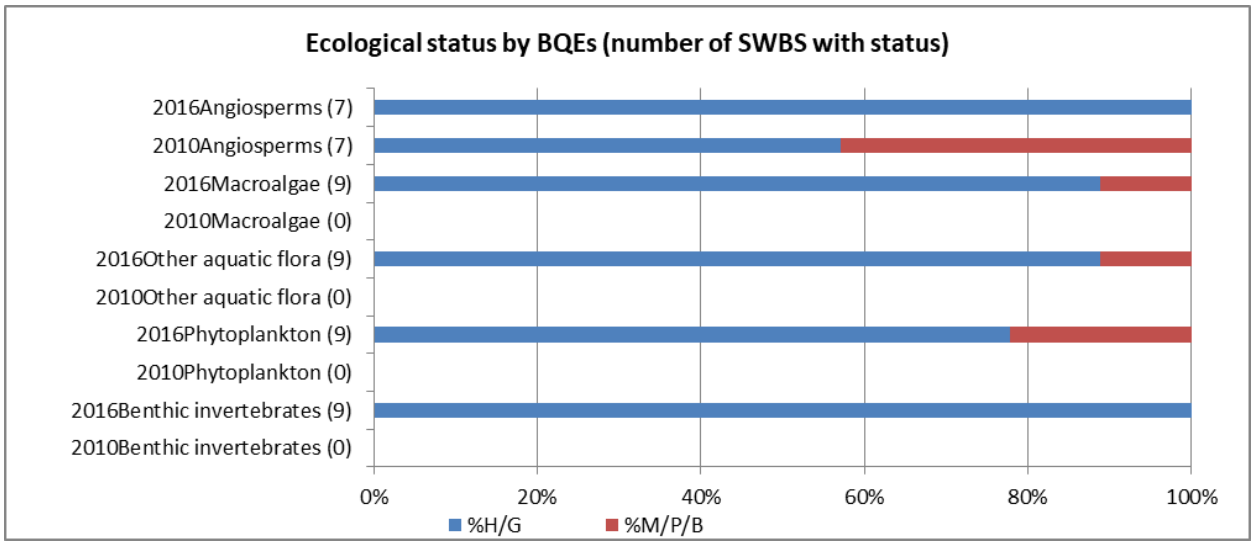
Figure 3.6 Ecological status/potential of the biological quality elements used in the classification of coastal waters in Malta. Note that water bodies with unknown status/potential have been excluded from the presentation



Source: WISE electronic reporting

Figure 3.7 compares the classification of biological quality elements in terms of ecological status/potential for the first and second RBMPs. It should be noted that this comparison should be treated with some caution as there are differences between the numbers of surface water bodies classified for individual elements from the first to the second RBMP. The only quality element that were reported in both the first and second RBMPs is angiosperms in coastal waters, which shows an improvement from 60 % to 100 % in good or high status.

Figure 3.7 Comparison of ecological status/potential in Malta according to classified biological quality elements in rivers and lakes between the first and second RBMPs



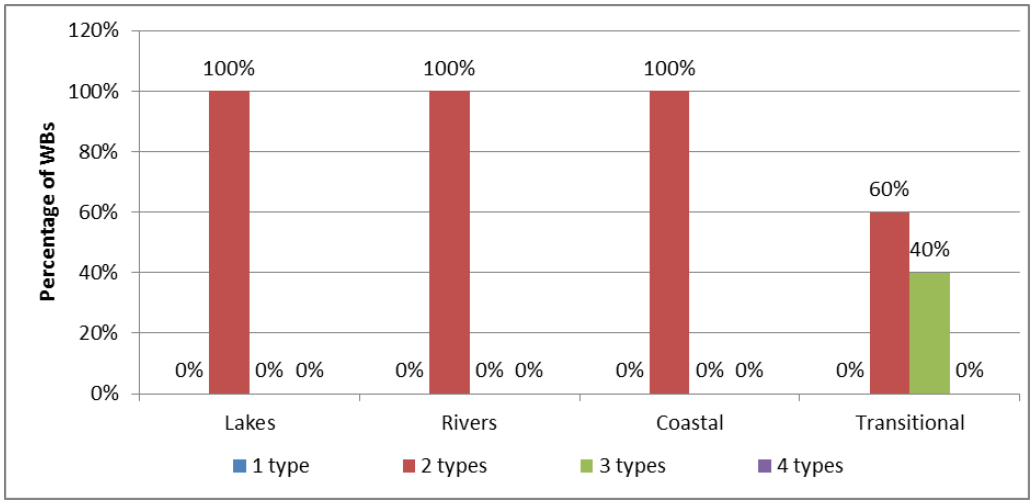
Source: WISE electronic reporting

Figure 3.8 and Figure 3.9 illustrate the basis of the classification of ecological status/potential (or unknown status) of surface water bodies for the second RBMP. The figures show that most of the classification is based on physicochemical quality elements, except in coastal waters, where also the biological quality elements are classified. The hydromorphological quality elements are not used in any water category except two transitional water bodies where morphological conditions have been classified. The River Basin Specific Pollutants are classified in all water bodies in rivers, lakes, and transitional waters, but are not used for classification of coastal waters.

The classification of the individual quality elements is illustrated in Figure 3.10. All the classified quality elements in all the water categories are based on monitoring, and none are based on grouping or expert judgement.

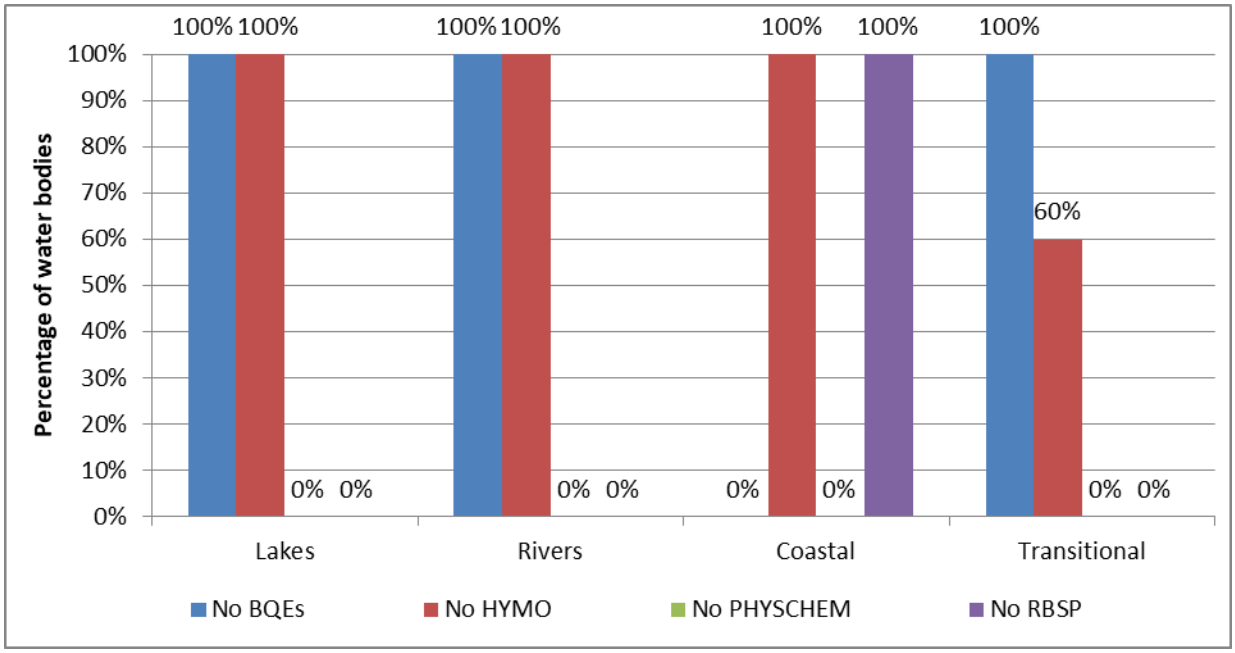
Figure 3.8 ***The classification of the ecological status or potential of surface water bodies in Malta using 1, 2, 3 or 4 types of quality element***

Note: The four types are: biological; hydromorphological, general physico-chemical and River Basin Specific Pollutants.



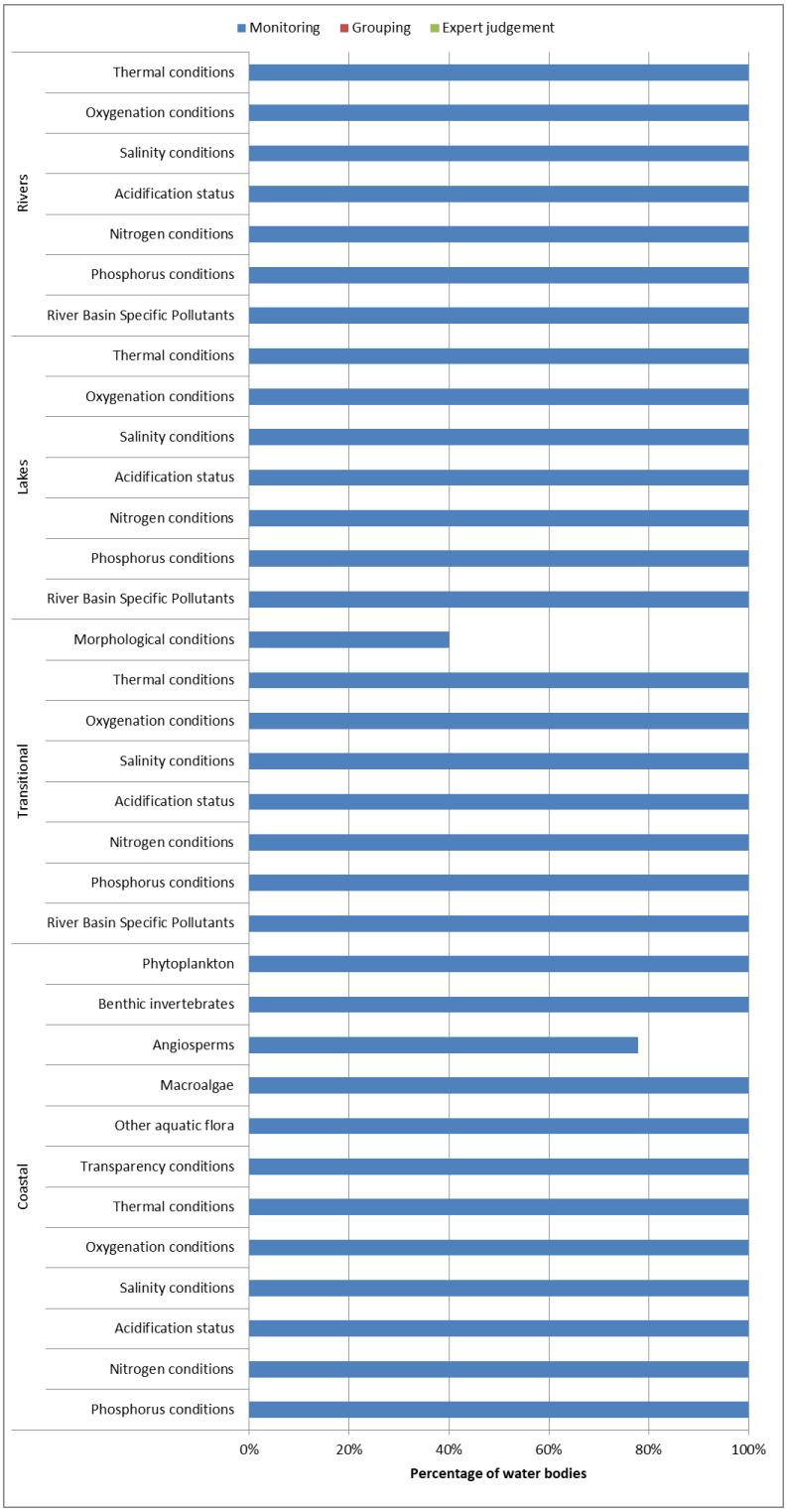
Source: WISE electronic reporting

Figure 3.9 ***The percentage of surface water bodies in Malta where no biological, hydromorphological, general physico-chemical quality elements, nor River Basin Specific Pollutant have been used in the classification of ecological status or potential***



Source: WISE electronic reporting

Figure 3.10 Basis of the classification of ecological status/potential in Malta. The percentages are in terms of all waterbodies in each category



Source: WISE electronic reporting

Assessment methods and classification of biological quality elements

Malta highlighted that there are knowledge gaps on the natural biological conditions of rivers, lakes and transitional waters. This is the reason why biological reference conditions could not be established, obstructing the assessment and classification of biological quality elements in these water categories. Malta further points out that they are "at a stage of testing methods". This testing seems to require further data and knowledge for Mediterranean rivers and lakes.

Intercalibration has only been achieved for macroalgae and angiosperms in coastal waters, but it is not clear whether the results were used in the second RBMP, because the intercalibrated boundaries were only reported in the Intercalibration Official Decision in 2018 (not in 2013)[19]. For the other quality elements in coastal waters (phytoplankton and benthic invertebrates), the intercalibration process could not be completed. For the other water categories, there were no classification methods developed for any of the biological quality elements, and therefore no intercalibration.

Assessment methods for hydromorphological quality elements

Hydromorphological assessment methods have not been developed, except morphological conditions in transitional waters. The basis for the methodology is unclear, as reference conditions have not been reported.

Assessment methods for general physicochemical quality elements

There are no reference conditions or standards reported for any of the physicochemical quality elements, due to lack of data and knowledge. It is therefore surprising that these quality elements are still used for classification of ecological status of all water bodies in all the water categories. It is also indicated in the RBMP that the current classification of nutrients in coastal waters is based on an interim approach adopting chlorophyll boundaries from Greece and Cyprus and using the eutrophication scale provided in Simboura *et al*. 2005[20] for assessing the phytoplankton chlorophyll a status. It is not clear whether this scale has also been used to derive interim class boundaries for nutrients.

It is therefore likely that the assessment methods for physicochemical quality elements are not linked to the relevant biological quality elements.

[19] Malta subsequently stated that the intercalibrated boundaries for macroalgae and angiosperms in coastal waters were used for assessment purposes.

[20] Simboura, N., Panayotidis, P., Papathanassiou, E., 2005. A synthesis of the biological quality elements for the implementation of the European Water Framework Directive in the Mediterranean ecoregion: the case of Saronikos Gulf. Ecol. Indic. 5, 253–266.

Malta subsequently stated that the status classes for nutrients are still to be determined on the basis of longer-term data. In the interim, nutrients data were analysed in terms of distribution of nutrient concentrations across monitoring stations, also in relation to pressures. Expert judgement was employed for determination of ecological status.

Selection of River Basin Specific Pollutants and use of Environmental Quality Standards

The selection of River Basin Specific Pollutants is reported to be based on an inventory of emissions, of substances and the results of monitoring in sediments (only). Environmental Quality Standard values are reported for sediment for the five substances that were found after the monitoring and emissions inventory: copper, chromium, manganese, zinc, and fluoride. There are different environmental quality standard values reported for the different water categories: standards for five substances were applied to rivers, lakes and transitional waters and three (chromium copper and zinc) to coastal waters. However, River Basin Specific Pollutants did not seem to be included in status assessment in coastal waters.

The only exceedance of Environmental Quality Standards reported was in a lake water body and was for zinc.

The Environmental Quality Standards for River Basin Specific Pollutants were not derived in accordance with the 2011 Technical Guidance Document No 27[21].

The analytical methods used for the River Basin Specific Pollutants do not meet the minimum performance criteria laid down in Article 4.1 of the Quality Assurance/Quality Control Directive (2009/90/EC)[22], nor with the requirements laid down in Article 4.2 of the Directive for the strictest standard applied.

Overall classification of ecological status (one-out, all-out principle)

The one-out, all-out principle has been used for coastal waters, which is the only water category where the biological quality elements have been classified. However, the details of the combination rules were not reported.

3.2 Main changes in implementation and compliance since the first RBMP

Monitoring has been established for all the required quality elements in coastal waters, and for most of the required quality elements in rivers, lakes, and transitional waters, in contrast to the first RBMP, when there was no monitoring reported. Though not all required biological quality

[21] https://circabc.europa.eu/sd/a/0cc3581b-5f65-4b6f-91c6-433a1e947838/TGD-EQS%20CIS-WFD%2027%20EC%202011.pdf

[22] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:201:0036:0038:EN:PDF

elements and hydromorphological quality elements are monitored in these three categories (such as fish in transitional waters), this expanded monitoring programme shows considerable progress since the first RBMP. There is also now monitoring of River Basin Specific Pollutants in sediment, and in all water categories, indicating that there has been progress also in this aspect since the first RBMP.

Ecological status for angiosperms in coastal waters has improved since the first RBMP from 60 % to 100 % in good ecological status. For the other water categories, no changes in ecological status can be evaluated because of lacking information on assessment and classification in the first RBMP.

The confidence in the classification of ecological status in coastal waters has improved from low-medium in the first RBMP to high in the second, because the classification was based on only angiosperms in the first RBMP, while it is now based on all the required biological and physicochemical quality elements.

3.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Ensure in the second RBMPs cycle a fully operational monitoring programme, covering at least the following topics: groundwater chemical status (nitrate levels in the annual recharge), groundwater quantitative status, the inland surface water bodies (considering all WFD quality elements), the identification of river basin-specific pollutants, and protected areas.*

  Assessment: Malta's monitoring programme in coastal waters covers all relevant quality elements, however there are still limitations in the way River Basin Specific Pollutants are monitored (no explanation could be found for the lower than recommended monitoring frequencies, and the monitoring does not seem to be performed in accordance with Directive 2009/90/EC). In addition, there are still large uncertainties relating to monitoring of rivers, lakes and transitional waters. For example, apparent monitoring of these three water categories is said to be for ecological status but has not been reported as being for WFD surveillance or operational monitoring. The reasons why this monitoring is not split into the two different WFD monitoring programmes may be: (i) insufficient data and knowledge not yet allowing status classification, or (ii) very few water bodies delineated for these water categories.

Therefore this recommendation has only been partially fulfilled[23].

- Recommendation: *Methodologies and assessment methods for biological quality elements and other quality elements should be established for good ecological status.*

  Assessment: A method for classification of macroalgae in coastal waters has been developed/adopted from neighbouring Member Status and successfully intercalibrated together with the method for angiosperms. Monitoring has started for all the other required and relevant biological and supporting quality elements in all the water categories, to obtain data for developing the classification methods for those quality elements. The physicochemical quality elements are also classified. Therefore, there has been some progress with this recommendation. However, data and knowledge are still insufficient for establishing the assessment methods, so it is not yet possible to assess the ecological status for biological quality elements for lakes, rivers and transitional waters. This is also related to the temporary nature of the inland water of Malta, as well as to the lack of reference sites regarding the definition of natural reference conditions. Moreover, the current methods used for classification of ecological status for the physicochemical quality elements are not linked to good status for the relevant biological quality elements (also for coastal waters, where good status class boundaries have been intercalibrated for macroalgae and angiosperms).

  Therefore this recommendation has been partialy fulfilled.

- Recommendation: *River Basin Specific Pollutants will need to be identified, with clear information on how pollutants were selected, how and where they were monitored, where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status. Environmental quality standards should be derived for all River Basin Specific Pollutants.*

  Assessment: Five River Basin Specific Pollutants have been identified, which constitutes an improvement compared to the first RBMP, in which no such substance was identified. (It is interesting to note that monitoring was reported in all water categories, which also constitutes a significant improvement compared to the first RBMP where no such monitoring existed). However, the information reported on the monitoring and on the Environmental Quality Standards derived does not always seem consistent.

[23] Malta has subsequently clarified that the monitoring programme for inland surface water is an iterative process and will be improved upon as more knowledge is gained.

Environmental quality standard values are reported for sediment for five substances, however one of these five substances seem not to have actually been identified as a River Basin Specific Pollutant by Malta. No Environmental Quality Standard was reported for one of the substances identified as a River Basin Specific Pollutant. There are different environmental quality standard values reported for the different water categories, however River Basin Specific Pollutants were not taken into account in the assessment of status in coastal waters. The 2011 Technical Guidance Document No 27 has not been used to set the environmental quality standard values.

There has been progress on this recommendation, it has been partially fulfilled.

- Recommendation: *Use the inventory of emissions to review the monitoring programme and the list of River Basin Specific Pollutants for the second RBMPs, and to identify appropriate measures against chemical pollution.*

  Assessment: The selection of River Basin Specific Pollutants now seems to be based on an inventory of emissions, supported by information on the substances imported and using the results of monitoring in sediments. However the information reported on which substances were identified as River Basin Specific Pollutants is unclear. It is also unclear whether diffuse sources were taken into account (it is somewhat surprising that only metals have been selected).

  Therefore this recommendation has been partially fulfilled.

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

  Assessment: This recommendation relates to a number of Topics in terms of uncertainty in ecological status classification coastal water bodies are all classified with high confidence based on classification of all the required biological and physicochemical quality elements. However, inland waters are of unknown status with medium confidence.

  Therefore this recommendation has been partially fulfilled.

Topic 4 Monitoring, assessment and classification of chemical status in surface water bodies

4.1 Assessment of implementation and compliance with WFD requirements in the second cycle

4.1.1 Monitoring of chemical status in surface waters

Monitoring sites and monitored water bodies used for monitoring of chemical status

Member States have to implement surveillance and operational monitoring programmes in accordance with the requirements of the WFD and of the EQS Directive, for the assessment of ecological status/potential and chemical status.

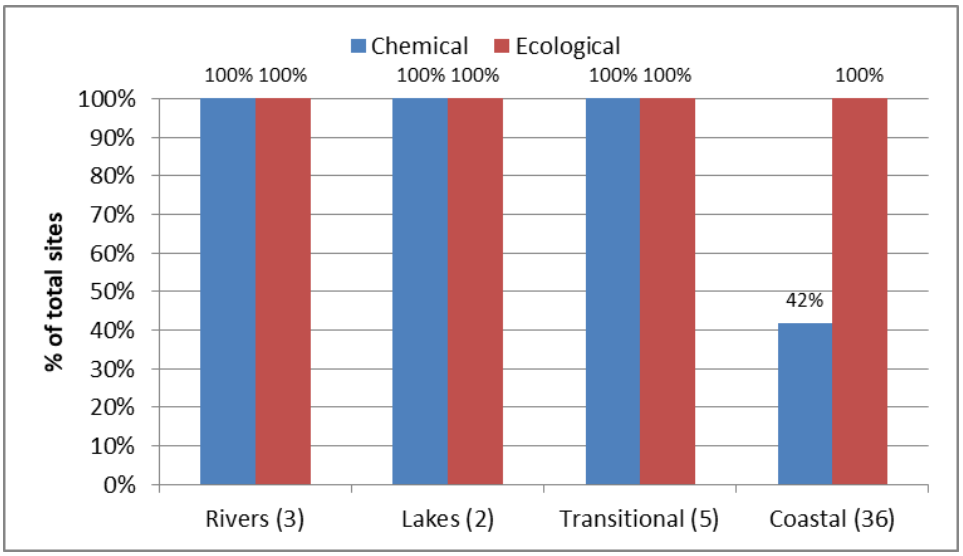
Surveillance monitoring programmes should allow Member States to supplement and validate the impact assessment procedure, to efficiently and effectively review the design of their monitoring programmes, and to assess the long-term changes in natural conditions and those resulting from widespread anthropogenic activity. For operational purposes, monitoring is required to establish the status of waterbodies identified as being at risk of failing to meet their environmental objectives, and to assess any changes in the status of such waterbodies resulting from the programme of measures.

Section 3.1.1 of this report summarises the characteristics of the surveillance and operational monitoring programmes in Malta for the second RBMP.

Figure 4.1 summarises the proportion of sites used for the monitoring of chemical status in surface waters for the second RBMP. According to the WFD, chemical status should be monitored and assessed up to 12 nautical miles; however territorial waters have not been identified, monitored or assessed by Malta. In this figure, no distinction is made between sites used for surveillance and/or operational purposes. More detailed information can be found on the website of the European Environment Agency[24].

[24] https://www.eea.europa.eu/publications/state-of-water

Figure 4.1 ***Proportion of sites used for monitoring of chemical status and, for comparison, ecological status, in Malta. The number in parenthesis next to the category is the total number of monitoring sites irrespective of their purpose***

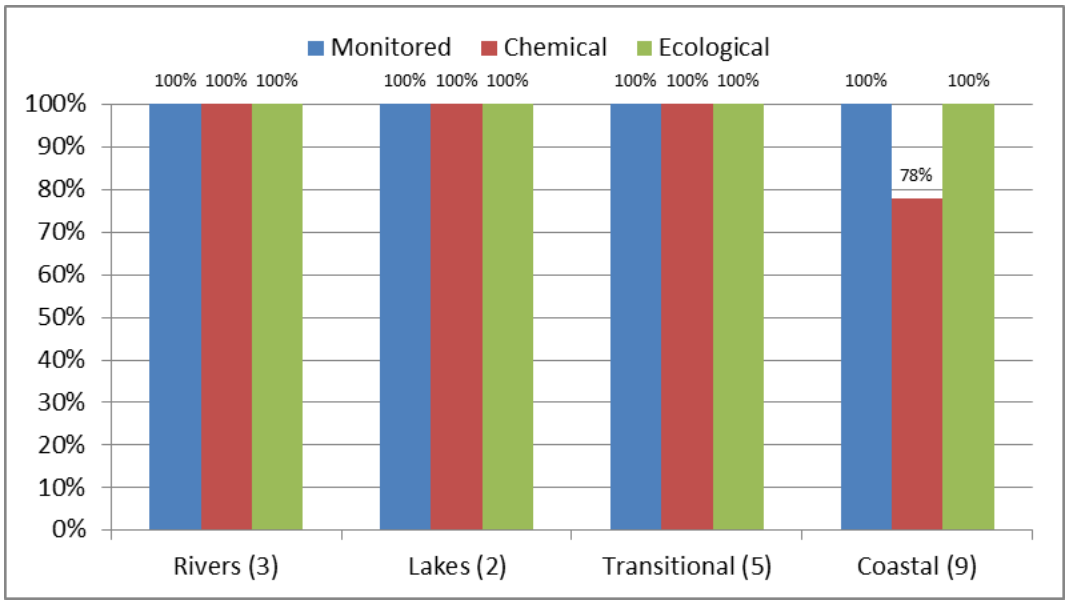


Source: WISE electronic reporting

All sites are used for the monitoring of ecological and chemical status of rivers, lakes and transitional waters, 47 % of coastal sites are monitored for chemical status, whereas all coastal sites are monitored for ecological status. Between the two RBMPs, there has been a net increase in the number of sites used to monitor chemical status (reaching 17, 2, 3 and 5 for coastal, lake, river and transitional water bodies respectively in the second RBMP) and a net increase in the number of water bodies monitored for chemical status (7, 2, 3 and 5 for coastal, lake, river and transitional water bodies respectively in the second RBMP). This includes both an increase in monitoring of coastal water bodies and monitoring of the newly delineated freshwater bodies.

Figure 4.2 summarises the proportion of water bodies monitored for chemical status in surface waters for the second RBMP. In this figure, no distinction is made between water bodies monitored for surveillance and/or operational purposes. Also given is the proportion of water bodies monitored for any purpose and, for comparative purpose, those for ecological status.

Figure 4.2 ***Proportion of total water bodies in each category which are monitored, monitored for chemical status and monitored for ecological status, in Malta. The number in parenthesis next to the category is the total number of water bodies in that category***



Source: WISE electronic reporting

In all water categories apart from coastal waters, all surface water bodies are monitored for chemical status; 78 % of coastal water bodies are monitored.

All nine coastal water bodies were reported to be failing to achieve good chemical status. Seven (78 %) of these water bodies were monitored for operational purposes. No other surface water bodies were reported to be failing to achieve good chemical status.

Long-term trend monitoring and monitoring of Priority Substances in water, sediment and biota for status assessment

Monitoring for status assessment

Requirements

Article 8.1 of the WFD requires Member States to establish monitoring programmes for the assessment of the status of surface water in order to provide inter alia a coherent and comprehensive overview of water status within each RBD. The amount of monitoring undertaken in terms of priority substances, frequency and numbers of sites should be sufficient to obtain a reliable and robust assessment of the chemical status of all water bodies in the RBD. According to the EQS Directive (version in force in 2009), mercury, hexachlorobenzene

and hexachlorobutadiene have to be monitored in biota for status assessment, unless Member States derived a standard for another matrix, which is at least as protective as the biota standard.

Spatial coverage

Malta reports that 78 % of coastal water bodies are monitored for more than 10 Priority Substances and this increases to 100 % for river, lake, and transitional water bodies.

There is one chemical monitoring site in each lake, river and transitional water body, which constitutes a very thorough spatial coverage in terms of waterbodies monitored. For coastal water bodies, seven out of the nine water bodies are reported to be monitored for chemical status using 17 monitoring sites. (The presence of several monitoring sites in one water body, as is the case in monitored coastal waters in Malta, allows reaching higher precision in the assessment, especially for larger waterbodies).

According to WISE, monitoring of sediments and/or biota is not reported to be used for status assessment in Malta. Mercury, hexachlorobenzene and hexachlorobutadiene were monitored in *Posidonia oceanica* in coastal waters, but no corresponding environmental quality standard seems to have been derived.

Frequencies

The WFD indicates that, for the surveillance and operational monitoring of Priority Substances in water, the frequency of monitoring should be at least monthly for one year during the RBMP cycle and at least monthly every year, respectively. Monitoring in biota for status assessment should take place at least once every year according to the EQS Directive. In all cases greater intervals can be applied by Member States if justified on the basis of technical knowledge and expert judgement.

Monitoring frequencies in water were reported for 36 Priority Substances at site level. Priority substances were monitored 12 times per year every three years in coastal waters and three times a year every three years in river, lake, and transitional water bodies. However, the frequency for sevenPriority Substances in the water column for inland waters (rivers, lakes and transitional) dichloromethane, di(2-ethylhexyl)phthalate, fluoranthene, lead, mercury, nickel, and trichloromethane is expected to increase to six times per year, but it is not clear whether this will be maintained in every year in the cycle or every three years as for the other substances.

It is clear, therefore, that the monitoring frequency for some Priority Substances in the water column in coastal waters meets the minimum intra-annual frequency of 12 times per year but for others, and especially in inland waters, the frequency is lower. No information was found on how these reduced frequencies have been chosen (expert judgment, technical knowledge, others).

Monitoring for long-term trend assessment

Requirements

Article 3.3 of the EQS Directive (version in force in 2009) requires Member States to monitor 14 priority substances[25] that tend to accumulate in sediment and/or biota for the purpose of long-term trend assessment. Monitoring should take place at least once every three years, unless technical knowledge and expert judgment justify another interval.

Spatial coverage

Malta reports that arrangements are in place for the long-term trend analysis of concentrations of those Priority Substances that tend to accumulate in sediment and/or biota.

Malta has monitored in sediment and/or biota all 14 relevant Priority Substances mentioned above in coastal water bodies, and 13 of them in lake, river, and transitional water bodies. Malta has monitored 3 of the 14 of the Priority Substances in biota in coastal water bodies (hexachlorobenzene, mercury and hexachlorobutadiene). The RBMP indicates that monitoring in biota in coastal waters is undertaken in Posidonia rhizomes and will be maintained in the second cycle to establish trends. Monitoring in other biota is also reported to be planned.

From a water body perspective, monitoring of sediments has been fairly comprehensive covering all lake, river and transitional water bodies and seven out of nine coastal water bodies. A similar situation is presented for the three substances in biota but with six of the nine coastal water bodies reported to have been monitored.

Frequencies

With regard to monitoring in sediment and/or biota for assessment of trends, the minimum frequency is once every three years (Article 3(3) of the EQS Directive) unless technical knowledge and expert judgement justify another interval.

[25] Anthracene, brominated diphenylether, cadmium, C10-13 chloroalkanes, DEHP, fluoranthene, hexachlorobenzene, hexabutadiene, hexachlorocyclohexane, lead, mercury, pentachlorobenzene, PAH, Tributyltin.

Sediment and biota have been monitored once (in 2012) with monitoring in subsequent years to be decided. The reporting provided no information on whether subsequent monitoring has been carried out.

Monitoring of Priority Substances that are discharged in each RBD

Annex V of the WFD states, in Section 1.3.1 (Design of surveillance monitoring), that "Surveillance monitoring shall be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan for [*inter alia*]: priority list pollutants which are discharged into the river basin or sub-basin." Section 1.3.2 (Design of operational monitoring) of the Directive states that "In order to assess the magnitude of the pressure to which bodies of surface water are subject Member States shall monitor for those quality elements which are indicative of the pressures to which the body or bodies are subject. In order to assess the impact of these pressures, Member States shall monitor as relevant [*inter alia*]: all priority substances discharged, and other pollutants discharged in significant quantities."

Member States are therefore required to monitor all Priority Substances which are discharged into the river basin or sub-basin.

Section 2.1.9 of this report describes the implementation of the requirement for establishing an inventory of emissions in Malta. All Priority Substances identified as discharged are monitored. However, the list of Priority Substances in the inventory is limited to 5, so it is unclear whether all discharged priority substances have been identified.

It should be noted however that 39 groups of priority substances are monitored in Malta, according to WISE.

Malta provided a statement with regard to monitoring of Priority Substances and their inclusion in an inventory.[26]

[26] The compilation of the inventory is based on the results of the monitoring data, the E-PRTR emissions data and importation data. It should be noted that the data presented in the RBMP is based on the first baseline surveys for surface waters carried out in 2012-2013. For the purpose of the baseline surveys, all priority substances were monitored in order to provide a complete picture of the presence (or otherwise) of contaminants in the water bodies. Therefore priority substances were monitored even if there was no evidence of discharge. Most of these chemicals were below detection limits, and hence of limited relevance to surface waters and the inventory. This explains the discrepancy between the number of substances monitored as part of the baseline survey and the number of substances in the inventory. On the other hand, Malta's second RBMP notes that the assessments made in this inventory are considered to be draft and preliminary; containing a considerable degree of uncertainty due to an incomplete dataset of information and it is therefore subject to modification in the light of data.

Performance of analytical methods used

In Malta, for all monitored Priority Substances the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the Technical specifications for chemical analysis and monitoring of water status[27] for the strictest standard applied.

The method of dealing with measurements of Priority Substances lower than the limit of quantification is as specified in Article 5 of the Technical specifications for chemical analysis and monitoring of water status in Malta.

4.1.2 Chemical Status of surface water bodies

Member States are required to report the year on which the assessment of chemical status is based. This may be the year that the surface water body was monitored. In case of grouping this may be the year in which monitoring took place in the surface water bodies within a group that are used to extrapolate results to non-monitored surface water bodies within the same group. For Malta, the assessment of chemical status was undertaken between 2011 and 2013; the RBMP confirms that a water column survey of surface freshwaters was undertaken between December 2011 and February 2012 supplemented with a one-week survey in freshwater sediments in 2013 and with coastal monitoring undertaken between 2011 and 2013.

The one-out-all-out principle was applied to assess chemical status.

The chemical status of surface water bodies in Malta for the second RBMP is illustrated in Map 4.1. This is based on the most recent assessment of status.

The assessment of chemical status for the second RBMP was expected to be based on the standards laid down in the EQS Directive (version in force on 13 January 2009

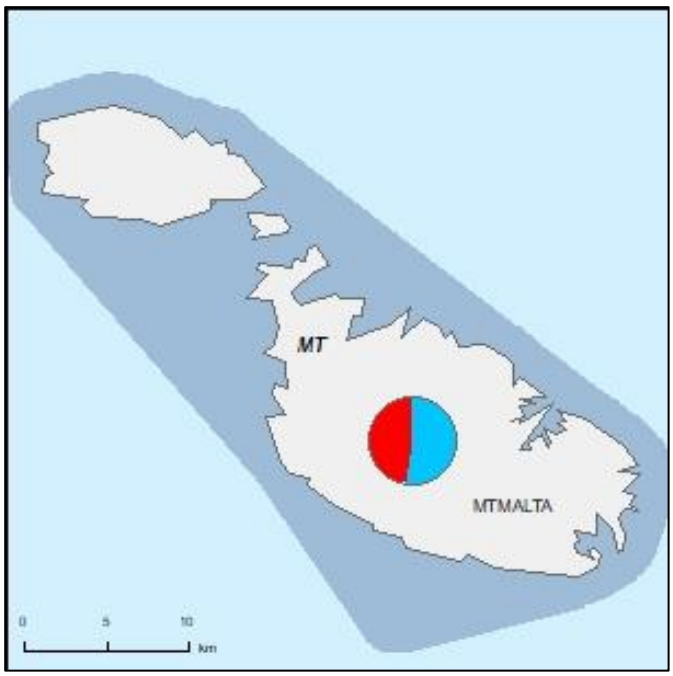
[28]). Some Member States did not fully implement the Directive in the first RBMPs as the transposition deadline was in July 2010, after the adoption of the first RBMPs.

[27] Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1524565750309&uri=CELEX:32009L0090

[28] Please note that following Directive 2013/39/European Union, which amended the Environmental Quality Standards Directive, introduced a less stringent annual average environmental quality standard for naphthalene in transitional and coastal waters. This less stringent environmental quality standard should be taken into account for the determination of surface water chemical status by the 2015 deadline laid down in Article 4 of the WFD.

Map 4.1 ***Chemical status of surface water bodies in Malta based on the most recently assessed status of the surface water bodies***

Note: Standard colours based on WFD Annex V, Article 1(4)(3).



Source: WISE, Eurostat (country borders)

The chemical status of surface waters in Malta for the first and second RBMPs is given in Table 4.1. More information on the chemical status in each RBD and water category can be found on the website of the European Environment Agency[29].

[29] https://www.eea.europa.eu/publications/state-of-water

Table 4.1 ***Chemical status of surface water bodies in Malta for the second and first RBMP. Note: the number in parenthesis next to the water category is the number of water bodies. Chemical status assessment is based on the standards laid down in EQS Directive (version in force on 13 January 2009. Some Member States did not fully implement the Directive in the first RBMPs as the transposition deadline was in July 2010, after the adoption of the first RBMPs***

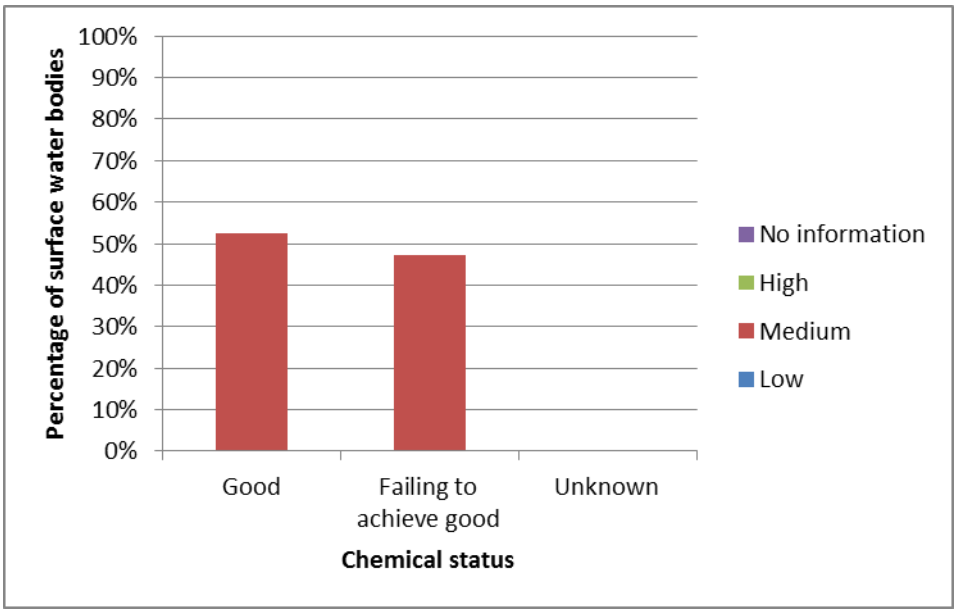
Category	Good		Failing to achieve good		Unknown	
	Number	%	Number	%	Number	%
Second RBMP						
Rivers (3)	3	100 %				
Lakes (2)	2	100 %				
Transitional (5)	5	100 %				
Coastal (9)			9	100 %		
Total (19)	10	53 %	9	47 %		
First RBMP						
Coastal (9)					9	100 %
Total (9)					9	100 %

Source: WISE electronic reporting

It should be noted that there has been a re-delineation of water bodies between the two RBMP. Overall, the number of surface water bodies has increased from 9 in the first RBMP to 19 in the second cycle as RBMP has delineated surface freshwater bodies in response to the Commission's recommendation in the first RBMP. In terms of chemical status for coastal waters, it has changed from unknown to failing to achieve good chemical status and the newly delineated freshwater bodies have been classified as good chemical status. In terms of the Natural/Heavily Modified water body categorisation, the proportion of water bodies with good chemical status is 78 % for heavily modified and 30 % for natural water bodies. This represents a very significant improvement in knowledge.

Figure 4.3 shows the confidence in the classification of chemical status for the second RBMP. All of the classifications are given a medium level of confidence according to information reported to WISE. However, the RBMP reported classifications with both high and medium confidence but no further information on the methodology for assessing confidence and precision. Confidence in the classification of chemical status for the first RBMP was not reported.

Figure 4.3 Confidence in the classification of chemical status of surface water bodies in Malta based on the most recently assessed status/potential

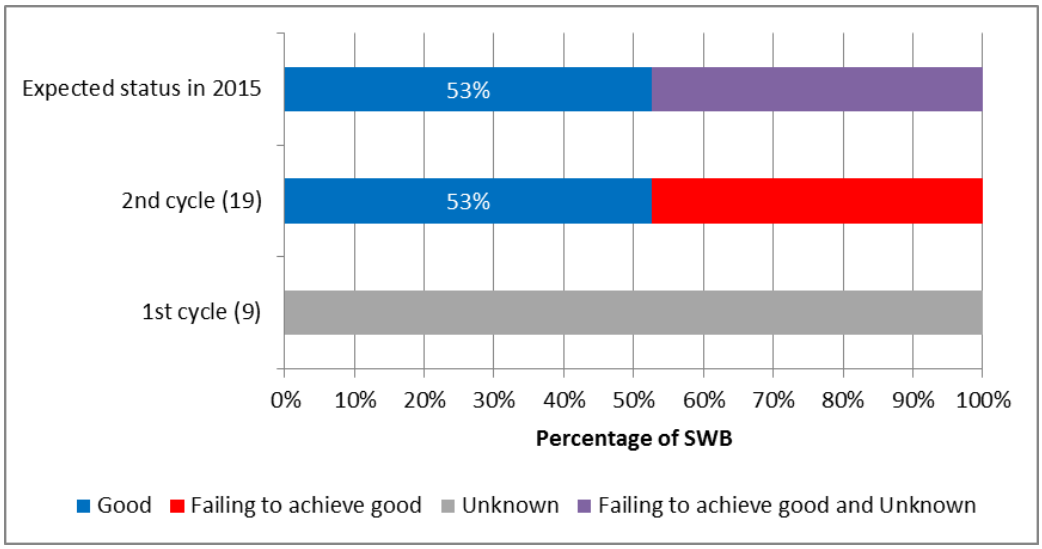


Source: WISE electronic reporting

Figure 4.4 compares the chemical status of surface water bodies in Malta for the first RBMP with that for the second (based on the most recent assessment of status) and that expected by 2015. There was a large decrease in the proportion of surface water bodies classified as "unknown" in the second RBMP compared to the first. The actual proportion of water bodies reported to be at good status in the second RBMPs (53 %) matched what was expected by the end of 2015.

Malta assessed the status of the two unmonitored coastal water bodies based on expert judgment.

Figure 4.4 Chemical status of surface water bodies in Malta for the second RBMP, for the first RBMP and expected in 2015. The number in the parenthesis is the number of surface water bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2011 to 2013. The year of the assessment of status for first RBMP is not known



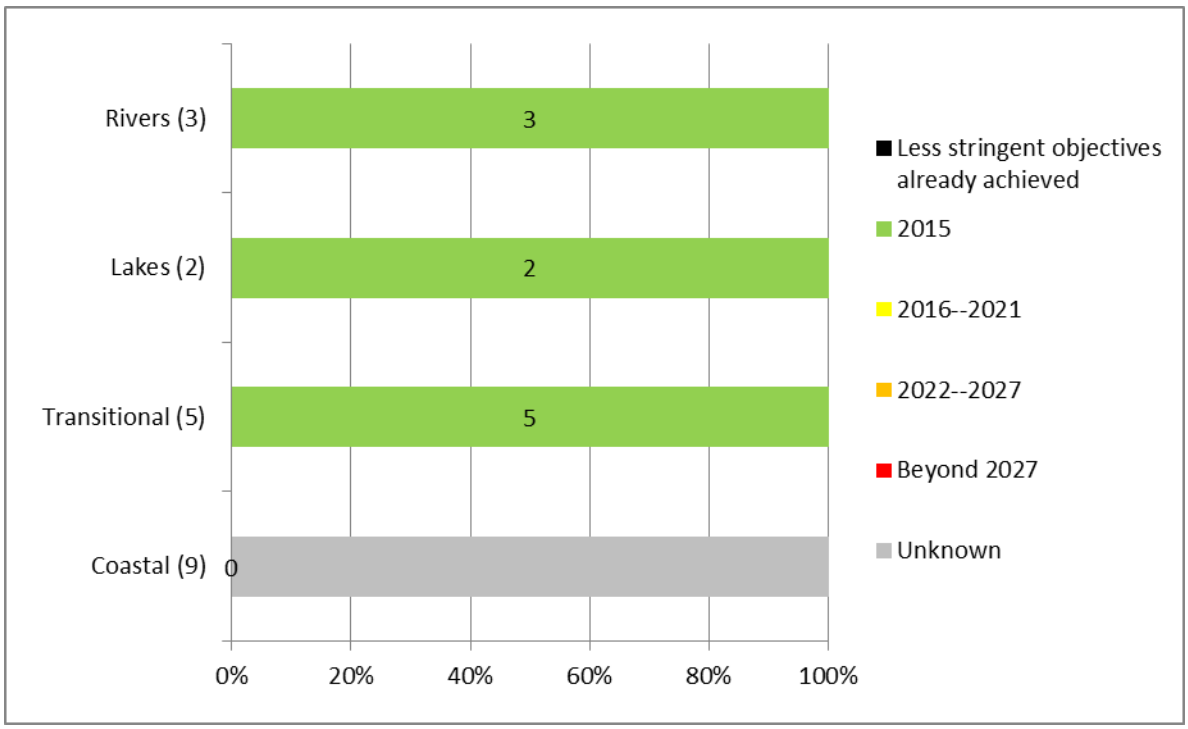
Source: WISE electronic reporting

Directive 2013/39/EU amended the EQS Directive. In particular, it set more stringent environmental quality standards for seven substances[30]. Member States were required to indicate if the new standard caused the status of the surface water body to appear to deteriorate. This was the case for 63 % surface water bodies in terms of lead, 56 % for fluoranthene, and 38 % for nickel in Malta across all water categories. Good chemical status should be reached by 2021 in relation to the revised environmental quality standards, unless Member States apply exemptions under WFD article 4(4) and/or less stringent objectives under WFD article 4(5).

Member States were asked to report the expected date for the achievement of good chemical status. The information for Malta is shown in Figure 4.5. No information was reported to WISE or in the RBMP on when good chemical status of coastal water bodies is expected to be achieved: Malta clarified that the date of achievement of good status is unknown for this category of water. No data on the expected achievement of good status was reported in first cycle. Rivers, lakes and transitional waters were assessed and reported as being at good status within the second RBMP, and the status is expected to remain the same in 2015.

[30] Anthracene, Brominated diphenylether, Fluoranthene, Lead and its compounds, Naphthalene, Nickel and its compounds, Polyaromatic hydrocarbons (PAH)

Figure 4.5 ***Expected date of achievement of good chemical status of surface water bodies in Malta. The number in the parenthesis is the number of water bodies in each category***



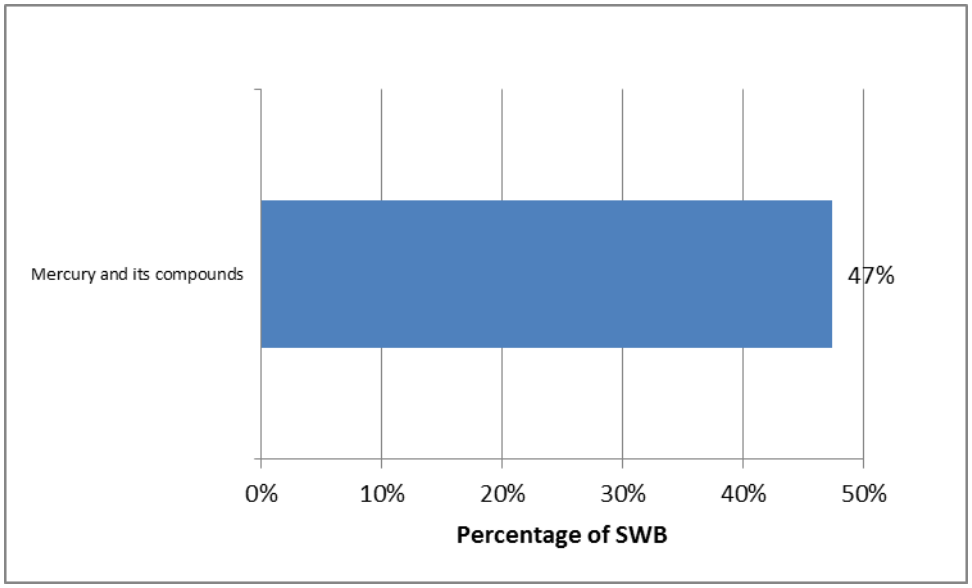
Source: WISE electronic reporting

Priority Substances causing the failure of good chemical status

Member States were expected to report exceedances based on the revised, more stringent Environmental Quality Standards from Directive 2013/39/EU. However from the figure below, it is assumed that the initial standards were used to report exceedances (more substances were reported to cause failure based on the 2013 standards).

A single Priority Substance (mercury) was reported to be causing failure to achieve good chemical status in surface water (coastal) bodies in Malta (Figure 4.6). Exceedances were reported for the annual average values of the environmental quality standard of this substance and not for the maximum allowable concentration.

Figure 4.6 The top Priority Substances causing failure to achieve good chemical status in surface water bodies in Malta



Source: WISE electronic reporting

Ubiquitous persistent, bioaccumulative and toxic Priority Substances

According to article 8(a) of the EQS Directive[31], eight priority substances and groups of priority substances are behaving like ubiquitous, persistent, bioaccumulative and toxic substances[32]. These substances are generally expected to cause widespread exceedances, and their emissions can be challenging to tackle (e.g. due to long-range atmospheric transport and deposition). In order to show progress made in tackling other priority substances, Member States have the possibility to present the information related to chemical status separately for these substances.

Mercury was the only substance reported to be causing the failure of surface water bodies (coastal water bodies only) to meet good chemical status, based on the environmental quality standards in force in 2009. The influence of these ubiquitous persistent and bioaccumulative substances on the overall chemical status is very significant as illustrated in the 2018 State of Water report of the European Environment Agency[33].

[31] Amended by Directive 2013/39/EU

[32] Brominated diphenylether, Mercury and its compounds, Polyaromatic hydrocarbons (PAH), Tributyltin, PFOS, dioxins, hexabromocyclodecane and heptachlor

[33] https://www.eea.europa.eu/publications/state-of-water (p40-41 of the report). Also available in a more interactive format at : https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_SWB_Chemical_Status_Maps/SWB_Failing_Good_Chemical_Status_RBD?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no

Priority Substances used in the assessment of chemical status compared to those monitored

Malta reported that 39 Priority Substances were both monitored and used in the assessment of chemical status. The remaining Priority Substances were not monitored but are included in the assessment of chemical status, they are: octylphenol (4-(1,1',3,3'-tetramethylbutyl)-phenol), trichlorobenzenes (all isomers) [34]. Malta subsequently clarified that this must be an error in reporting as all priority substances are monitored.

Application of alternative environmental quality standards for water, biota and sediment

According to the EQS Directive, Member States may opt to apply environmental quality standards for another matrix than the one specified in the Directive, for a given substance. If they do so, they have to ensure the environmental quality standard they set in the other matrix (or matrices) offer at least the same level of protection as the standard established in the Directive.

Malta reported that alternative and/or additional standards for particular Priority Substances had not been applied.

Use of mixing zones

Article 4 of EQS Directive provides Member States with the option of designating mixing zones adjacent to points of discharge in surface waters. Concentrations of substances may exceed the relevant environmental quality standard within such mixing zones if they do not affect the compliance of the rest of the surface water body with those standards. Member States that designate mixing zones are required to include within their RBMPs a description of the approaches and methodologies applied to define such zones, and of the measures taken to reduce the extent of the mixing zones in the future.

Mixing zones have not been designated under Article 4 of the EQS Directive in Malta.

[34] Malta indicated that these substances were monitored and that substances within groups were reported as separate substances. The following reference was provided which confirms this (see tables 5 and 6): Monitoring Programme for Priority Substances and certain other pollutants in inland surface and transitional waters https://era.org.mt/en/Documents/MEPA%20T08-2-11%20-%20Inland%20Waters%20(v24-8-12%20+%20Appendices).pdf. Another reference relating to coastal waters was also provided: Monitoring programme for coastal waters https://era.org.mt/en/Documents/CW%20Mon%20Final%20Part%201.pdf

Background Concentrations and Bioavailability

The EQS Directive stipulates that Member States have the possibility, when assessing the monitoring results against the EQS, to take into account:

> (a) natural background concentrations for metals and their compounds, if they prevent compliance with the environmental quality standard, and;
>
> (b) hardness, pH or other water quality parameters that affect the bioavailability of metals.

Natural background concentrations for metals and their compounds are not reported to be taken into consideration where such concentrations may prevent compliance with the relevant environmental quality standard. Malta clarified that uncertainty over the levels of such background concentrations prevented taking them into consideration but stated that measures in the second RBMP would be geared towards addressing such uncertainties, particularly in the case of mercury, as the failing chemical pollutant in coastal water bodies. Malta also stated further monitoring data would be required for inland surface waters.

When assessing monitoring results against relevant environmental quality standards, Malta has taken into account water quality parameters that affect the bioavailability of metals.

4.2 Main changes in implementation and compliance since the first cycle

Overall in Malta, between the two RBMPs, there has been a net increase in monitoring for chemical status, both in the number of monitoring sites (17, 2, 3 and 5 for coastal, lake, river and transitional water bodies respectively in the second RBMP) and water bodies (7, 2, 3 and 5 for coastal, lake, river and transitional water bodies respectively in the second RBMP). This includes both an increase in monitoring of coastal water bodies and monitoring of the newly delineated freshwater bodies. For the first RBMP, the chemical status for all water bodies (all coastal water bodies) was unknown but for the second cycle all water bodies were classified. For the second cycle, approximately half of the water bodies have good chemical status (rivers, lakes and transitional) and half are failing to achieve good status (all coastal water bodies). This represents a very significant improvement in knowledge between the two RBMPs.

Overall in Malta, no Priority Substance was reported to have improved from failing to achieve good to good chemical status since the first RBMP; the only change in chemical status was from unknown to failing to achieve good chemical status in coastal waters.78 % of coastal water bodies are monitored for more than 10 Priority Substances and 100 % for river, lake and

transitional water bodies. Malta reported that all 41 Priority Substances were both monitored and used in the assessment of chemical status across all surface water bodies and all categories.

4.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

  Assessment: This recommendation applies to a number of Topics. In terms of the assessment of pressures on surface water bodies failing to achieve good chemical status, this affected only coastal water bodies in Malta, with the pressures contributing to the greatest number of coastal water bodies failing to achieve good status being "point – other", "diffuse – other and anthropogenic pressure – unknown". The significant pressures do not appear to be well characterised despite the failure of good chemical status arising from a ubiquitous, persistent, bioaccumulative, and toxic substance; namely, mercury. Malta state that "anthropogenic pressure – unknown" was used in cases where presence of contaminants in surface water bodies could not be attributed to a particular source. This was the situation for mercury for which concentrations could not be attributed to either point or diffuse sources with certainty. Malta state that measures have been put forward in the second RBMP which includes one measure for addressing the uncertainties on sources of mercury in coastal waters.

  With regard to assessment of chemical status, confidence in the classification is given as medium based on fairly comprehensive monitoring for Priority Substances in 2012/13. All lake, river and transitional water bodies were monitored for all priority substances in 2011-2013 (in particular all discharged substances), this was also the case for almost all coastal water bodies. Monitoring frequencies for some Priority Substances in the water column in coastal waters meets the recommended minimum frequency of 12 times per year but for others, and especially in inland waters, the frequency is less than the minimum frequency, and no explanation could be found in the RBMP for these reduced frequencies. No monitoring was performed in biota for status assessment. In terms of addressing high levels of uncertainty in chemical status, significant progress has been made towards fulfilling this recommendation.

Significant progress has been made, the recommendation is partly fulfilled.

- Recommendation: *Ensure in the second RBMPs cycle a fully operational monitoring programme, covering at least the following topics: groundwater chemical status (nitrate levels in the annual recharge), groundwater quantitative status, the inland surface water bodies (considering all WFD quality elements), the identification of river basin-specific pollutants, and protected areas.*

  Assessment: This recommendation applies to a number of topics. In terms of the surface water monitoring programme for chemical status, it appears that monitoring programmes for Priority Substances are in place to assess the status of surface water bodies in Malta. All lake, river and transitional water bodies were monitored for all priority substances in 2011-2013 (in particular all discharged substances), this was also the case for almost all coastal water bodies. However, territorial waters have not been monitored, and their status was not assessed. Monitoring frequencies for some Priority Substances in the water column in coastal waters meets the recommended minimum frequency of 12 times per year but for others, and especially in inland waters, the frequency is less than the minimum frequency, and no explanation could be found in the RBMP for these reduced frequencies[35]. In terms of chemical status for surface waters, significant progress has been made towards fulfilling this part of the recommendation. However it is still partly fulfilled.

- Recommendation: *All the substances listed in the EQS Directive will need to be monitored in all surface water body categories to allow full assessment of chemical status in relation to the environmental quality standard listed in the EQS Directive. Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQS Directive, unless water environmental quality standard providing an equivalent level of protection are derived. The reporting of chemical status in WISE and the RBMP should be consistent. Trend monitoring in sediment or biota for several substances as specified in EQS Directive Article 3(3) will also need to be reflected in the next RBMP.* This recommendation has been split into sub-sections based on the actions listed under the recommendation for assessment purposes.

[35] Malta subsequently clarified that prior to determining surveillance and operational monitoring further knowledge is required on Malta's highly dynamic inland surface waters: the development of the monitoring programme for inland surface water is an iterative process and will be improved when more knowledge is gained.

- *All the substances listed in the EQS Directive will need to be monitored in all surface water body categories to allow full assessment of chemical status in relation to the environmental quality standard listed in the EQS Directive.*

Assessment: Monitoring in 2012/13 covered the full range of Priority Substances including all those PS discharged, in rivers, lakes, transitional and coastal waters, but not in territorial waters. Malta applies all the environmental quality standards from Annex I of the EQS Directive for assessment of the chemical status. Monitoring of mercury, hexachlorobenzene and hexachlorobutadiene for status assessment was carried out in water, but Malta did not derive an environmental quality standard in water that would be at least as protective as the biota environmental quality standard. These three substances were also monitored in Posidonia oceanica, but Malta did not derive a standard for this matrix. Very significant progress has been made in fulfilling the recommendation, however it is not yet entirely fulfilled (see assessment below in relation to mercury, hexachlorobenzene and hexachlorobutadiene).

- *Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQS Directive, unless water environmental quality standard providing an equivalent level of protection are derived.*

Assessment: Hexachlorobenzene, mercury and hexachlorobutadiene have been monitored in biota but for trend assessment only. These substances are monitored for status assessment in the water column but there is no evidence available as to whether the standard used is as least as protective as the biota EQS. This aspect of the recommendation has not been fulfilled.

- *The reporting of chemical status in WISE and the RBMP should be consistent.*

Assessment: Malta reported detailed information in WISE on which substances are monitored in which waterbodies. This recommendation has been fulfilled.

- *Trend monitoring in sediment or biota for several substances as specified in EQS Directive Article 3(3) will also need to be reflected in the next RBMP*.

Assessment: Malta has monitored in sediment and / or biota all 14 relevant Priority Substances in coastal waters, but only 13 of them in river, lake and transitional waterbodies. The spatial coverage appears to be quite extensive. Monitoring has taken place once in 2012, and with further monitoring to be decided. No information could be

found on this further monitoring, so it was not clear whether the recommended minimum frequency from the EQS Directive was reached.

This aspect of the recommendation is therefore partially fulfilled.

- Recommendation: *Use the inventory of emissions to review the monitoring programme and the list of RBSPs for the second RBMPs, and to identify appropriate measures against chemical pollution.*

  Assessment: All priority substances were monitored in all lake, rivers and transitional waterbodies, and in almost all coastal water bodies. It could not be determined precisely whether the inventory of emissions was used to revise the monitoring programme however all substances appear to be monitored in almost all waterbodies. Malta mentioned that monitoring programmes will be further reviewed as necessary on the basis of the information gathered so far. This recommendation can be considered as fulfilled in relation to chemical status in surface waters.

Topic 5 Monitoring, assessment and classification of quantitative status of groundwater bodies

5.1 Assessment of implementation and compliance with WFD requirements in the second cycle

5.1.1 Monitoring of quantitative status in groundwater

The total number of groundwater bodies in Malta is 15 (Table 2.2). The number of groundwater bodies and the total groundwater body area have not changed between the first and second RBMPs. Four of fifteen groundwater bodies are identified as drinking water protected areas.

Thirteen groundwater bodies are not subject to monitoring for quantitative status (Table 5.1), meaning 87 % of groundwater bodies are not monitored (Table 5.2)[36],[37]. Looking at the groundwater body area, the two monitored groundwater bodies represent 80 % of the total groundwater body area and therefore 20 % of the area is not monitored[38]. Review of the RBMP and background documents found evidence that grouping of groundwater bodies was undertaken, based on the hydrogeological characteristics of the groundwater bodies.

Table 5.1 Number of water bodies in Malta directly monitored and the purpose of monitoring

RBD	Total ground-water bodies directly monito-red	Monitoring Purpose					
		CHE - Chemical status	NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	OPE – Operatio-nal monitoring	QUA - Quantitative status	SOE - EIONET State of Environment monitoring	SUR – Surveil-lance monitoring
MTMALTA	15			15	2 (3)		15

Source: WISE electronic reporting. The numbers in brackets were subsequently provided by Malta and do not match the data reported to WISE.

Table 5.2 Proportion of groundwater bodies in Malta monitored for quantitative status

RBD Code	No of groundwater bodies with quantitative monitoring	Total No. groundwater bodies	% of total groundwater bodies monitored for quantitative status

[36] Malta subsequently clarified that three and not two groundwater bodies are subject to quantitative monitoring, which was a reporting error.

[37] Malta subsequently clarified that, as reported in the second RBMP (page 252) water level monitoring is installed in these groundwater bodies, but failed to work.

[38] Malta subsequently clarified that three groundwater bodies monitored for quantitative status represent 81 % of the total groundwater body area and therefore 19 % of the area is not monitored.

MTMALTA	2 (3)	15	13.33 % (20 %)

Source: WISE electronic reporting. The numbers in brackets were subsequently provided by Malta and do not match the data reported to WISE.

Two groundwater bodies were monitored in the first cycle, which remained the same for the second cycle according to the reported information, although Malta clarified that currently three groundwater bodies are monitored[39]. The number of monitoring sites for quantitative status is listed in Table 5.3, which shows that it decreased from 42 in the first RBMP to 38 in the second cycle. The RBMP and background documents assessment revealed that Malta is planning to upgrade the monitoring programme which is due to start during this second cycle. The project is planned to focus on the optimisation of the national hydrological monitoring capability.

Table 5.3 Number of groundwater monitoring sites in Malta and their purpose

RBD Code	Total groundwater monitoring sites	Monitoring Purpose			
		OPE - Operational monitoring	QUA - Quantitative status	SUR - Surveillance monitoring	Unknown
MTMALTA	80	42	38	42	3

Source: WISE electronic reporting

The RBMP and background documents assessment found that in Mean-Sea-Level-Aquifer-systems, groundwater boreholes dedicated for the measurement of water level were used. The second River Basin Management Plan states, that in addition to water level monitoring, initial conductivity well profiles have been undertaken in the Mean-Sea-Level-Aquifer-systems. In the perched (upper coralline limestone) aquifer systems, the measurement was more difficult, due to the hydrogeological properties of these systems, which presents an extremely thin unsaturated zone (and therefore low standing water levels), which does not permit the installation of traditional water level metering equipment. Hence, only pilot initiatives were undertaken to test the feasibility of using "groundwater flow" measurements in spring channels as an alternative metric for assessing quantitative status. In the RBMP, it is then stated that these methods failed for the perched aquifer systems, and that water balances were also used, as in the Mean-Sea-Level-Aquifer-systems.

[39] Malta subsequently clarified that three and not two groundwater bodies were subject to quantitative monitoring in the first RBMP, and thus there has been an increase in monitored groundwater bodies.

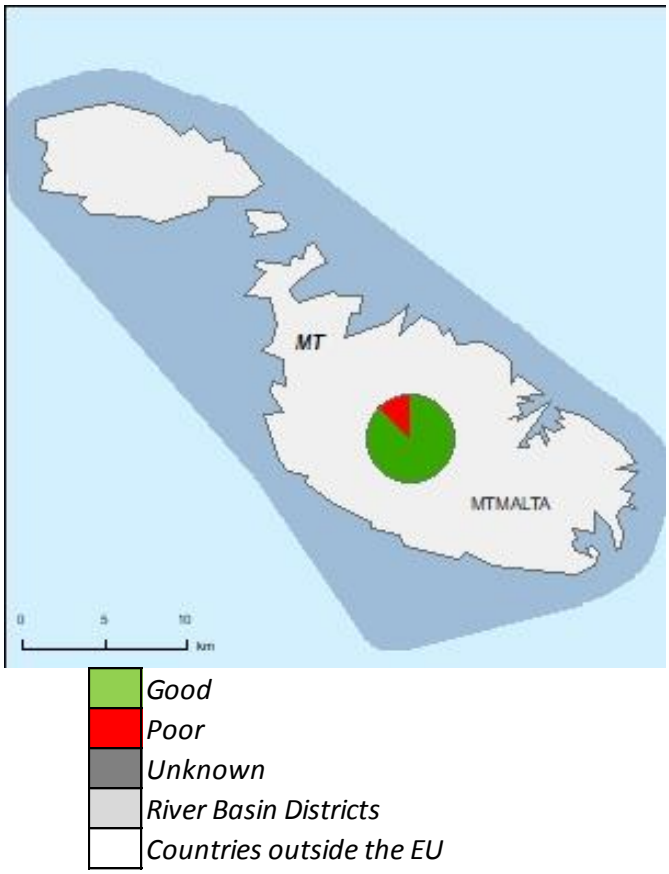
5.1.2 Assessment and classification of quantitative status for groundwater

Map 5.1 displays the most recently assessed quantitative status of groundwater bodies based on status. It shows that 13 of 15 groundwater bodies (87 %) were of good quantitative status and two (13 %) were failing good status (Figure 5.1). On a groundwater body area basis, this situation is the reverse with about 80 % of the total RBD area failing good quantitative status. Figure 5.2 shows that the confidence in status classification is high. All groundwater bodies had a classified qualitative status in the first and in the second RBMP. Thus, there were no water bodies with unknown status.

The total number of groundwater bodies failing good quantitative status decreased significantly from four groundwater bodies (27 %) in the first RBMP to two (13 %) in the second RBMP but it decreased only slightly from 84 % to 80 % in terms of total groundwater body area. The RBMP and background documents provide reasons for the improvement.

In Malta, water balance was assessed by a comparison of annual average groundwater abstraction against the "available groundwater resource" for every groundwater body. The reasons for the failure of good quantitative status of groundwater bodies are shown in Figure 5.3. Both groundwater bodies are failing good status due to failing the water balance test, which means that the long-term annual average rate of groundwater abstraction is exceeding the available groundwater resource. The expected date of achievement of good quantitative status in Malta is the end of this cycle, year 2021, as shown in Figure 5.4.

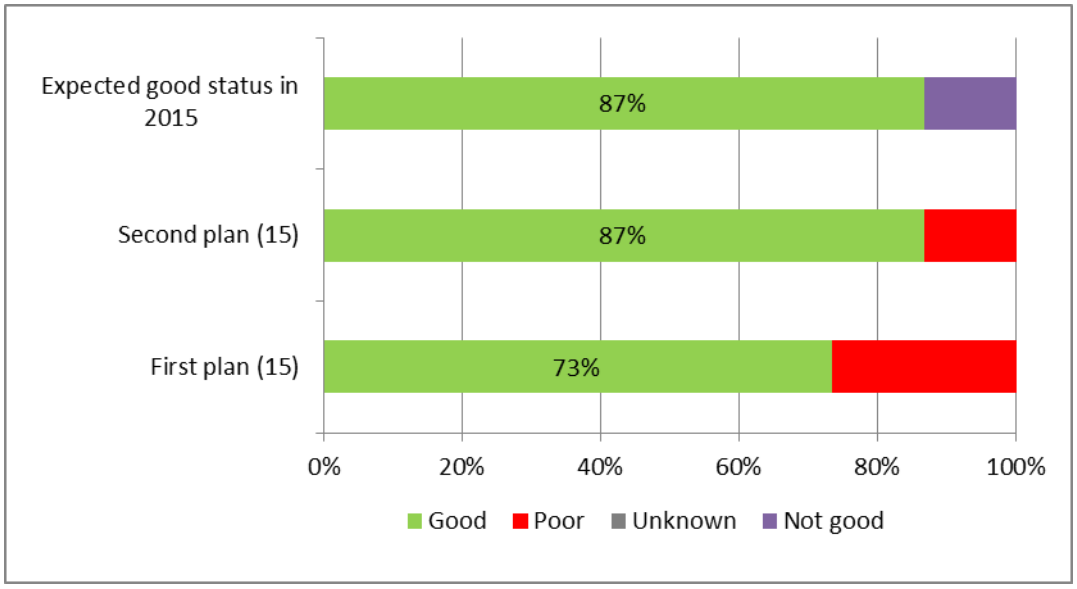
Map 5.1 Map of the most recently assessed quantitative status of groundwater bodies



Note: Standard colours based on WFD Annex V, Article 2.2.4.

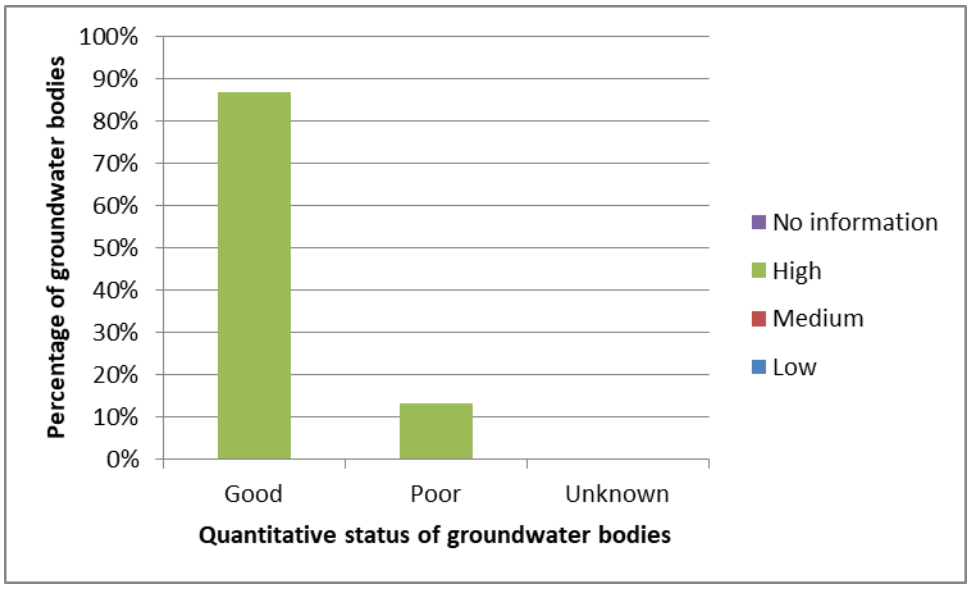
Source: WISE, Eurostat (country borders)

Figure 5.1 ***Quantitative status of groundwater bodies in Malta for the second RBMP, for the first RBMP, and expected in 2015. The number in parenthesis is the number of groundwater bodies for both cycles. Note: the period of the assessment of status for the second RBMP was 2010 to 2014. The year of the assessment of status for first RBMP is not known***



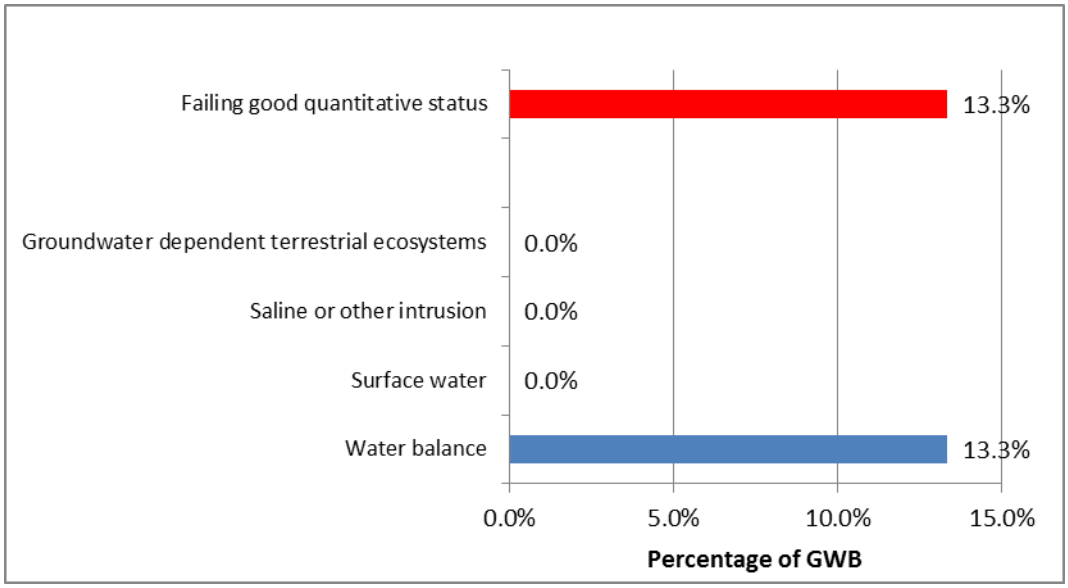
Source: WISE electronic reporting

Figure 5.2 ***Confidence in the classification of quantitative status of groundwater bodies in Malta based on the most recent assessment of status***



Source: WISE electronic reporting

Figure 5.3 Reasons for the failure of good quantitative status of groundwater in Malta based on the most recent assessment of status



Source: WISE electronic reporting

Notes:

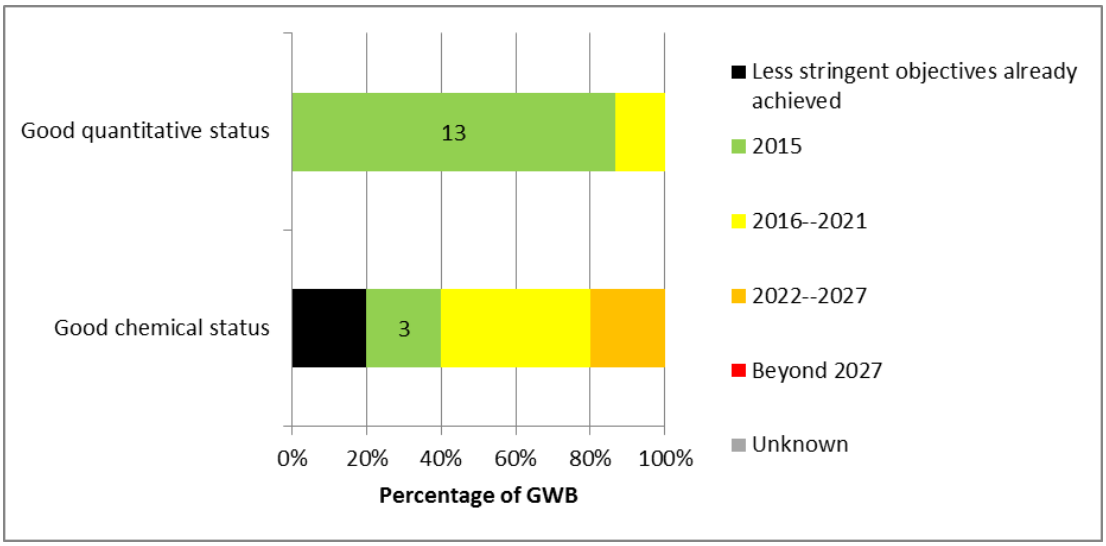
'Water balance' = long-term annual average rate of abstraction exceeds the available groundwater resource which may result in a decrease of groundwater levels.

'Surface water' = Failure to achieve Environmental Objectives (Article 4 WFD) for associated surface water bodies resulting from anthropogenic water level alteration or change in flow conditions; significant diminution of the status of surface waters resulting from anthropogenic water level alteration or change in flow conditions.

'Groundwater dependent terrestrial ecosystems' = Significant damage to groundwater dependent terrestrial ecosystems resulting from an anthropogenic water level alteration.

'Saline or other intrusion' = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.

Figure 5.4 Expected date of achievement of good quantitative and good chemical status of groundwater bodies in Malta. 15 groundwater bodies delineated for second RBMP



Source: WISE electronic reporting

The RBMP describes that due to the failed efforts of undertaking water level measurements in the perched groundwater bodies (due to the specific hydro-geological characteristics of these aquifer systems) the quantitative groundwater status in the second RBMP was assessed using a water-balance model. The results were then discretised[40], with the results presented in the RBMP. The results showed that two groundwater bodies had poor quantitative status, and the rest good quantitative status[41].

In Malta, the criterion of "available groundwater resource" has been fully applied in accordance with WFD Article 2(27) and all environmental objectives have been considered in status assessment.

In total two groundwater bodies (13 %) were reported to be at risk of failing good quantitative status due to harm to actual or potential legitimate uses or functions of groundwater.

[40] Malta subsequently clarified that the original wording of 'extrapolated' should be replaced by the term 'discretised' as detailed assessments had been undertaken on groundwater body level. The water balance calculation was performed first at a grouping level (based on hydrogeological characteristics) and then at groundwater body level. Both assessments contribute to status assessment.

[41] Malta subsequently clarified that grouping is explained under Section 5.5.1 of the second RBMP (pg. 249).

5.1.3 Consideration of groundwater associated surface waters and/or groundwater dependent ecosystems

In two groundwater bodies, groundwater associated surface waters have been reported. They are not related to risk, and have been considered in status assessment.

Groundwater dependent terrestrial ecosystems have not been reported. Nevertheless, they have been considered in status assessment.[42]

5.2 Main changes in implementation and compliance since the first cycle

In terms of delineation, all 15 groundwater bodies remained unchanged since the first RBMP.

The monitoring situation remains incomplete: the number of monitored groundwater bodies is still only 3 of 15, representing 81 % of the total groundwater body area.

The status situation improved slightly, with the number of groundwater bodies failing good status declining from four to two, and the affected total groundwater body area declined slightly from 84 % to 80 %.

The RBMP and background documents did provide a summary of the changes to the quantitative groundwater monitoring system or classification methodologies in the Maltese RBMP. Some descriptions were provided on "lessons learned" from the first cycle (confirmation of the "risk" classification approach and grouping of groundwater bodies).

5.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

  Assessment: Most groundwater bodies are still not subject to quantitative monitoring. RBMP and background documents assessments showed that groundwater bodies were

[42] Malta subsequently clarified that, given the geographical and natural features of the territory, the groundwater bodies indicated as having linkages with surface water bodies should also be considered as having linkages with terrestrial water dependent ecosystems.

grouped into seven groups of groundwater bodies. Nevertheless, there is still a significant monitoring gap and therefore this recommendation has not been fulfilled[43].

- Recommendation: *Private groundwater abstraction as a major pressure on groundwater bodies should be adequately monitored.*

  Assessment: The monitoring programme for quantitative groundwater status uses water-balance models which incorporate these abstractions as factors. Summarising, it can be stated that the monitoring programme for the quantitative groundwater status is indirectly linked to the significant pressure "water abstraction" via the models; the monitoring itself measures only the water level in the boreholes, thus measuring all input and output to and from the system together. Malta subsequently added the following information: practically all private groundwater abstraction sources have been metered and abstraction data is being collected and analysed. Given this additional information, the recommendation can be considered as fulfilled.

- Recommendation: *Ensure in the second RBMPs cycle a fully operational monitoring programme, covering at least the following topics: groundwater chemical status (nitrate levels in the annual recharge), groundwater quantitative status, the inland surface water bodies (considering all WFD quality elements), the identification of river basin-specific pollutants, and protected areas. This monitoring programme should ensure the following crucial steps in the WFD process: clear definition of quality elements, Good Ecological Status and Good Ecological Potential, an apportionment of sources with regard to the different pressures/impacts, and a quantification of the gap to achieving objectives for all pressures affecting all water bodies.*

  Assessment: As already mentioned above, it is reported to WISE that only 2 of 15 groundwater bodies are subject to monitoring. The RBMP and background documents assessments showed that groundwater bodies were grouped into seven groups of groundwater bodies. Despite the progresses, there is still a monitoring gap and therefore this recommendation cannot be considered as fulfilled.[44]

[43] Malta subsequently clarified that efforts to increase monitoring spread were undertaken during first RBMP, but failed. A new measure to develop alternative monitoring facilities has been included under the second RBMP's Programme of Measures.

[44] Malta subsequently provided this additional information: the monitoring gap is being addressed through a project funded under the Cohesion Fund which aims at the optimisation of groundwater monitoring (quantitative and qualitative) infrastructure in Malta. The implementation of this project started in January 2018. Additional information on the project: (https://www.energywateragency.gov.mt/uncategorized/enhancing-national-monitoring-for-improved-water-resources-management/)

Topic 6 Monitoring, assessment and classification of chemical status of groundwater bodies

6.1 Assessment of implementation and compliance with WFD requirements in the second cycle

6.1.1 Monitoring of chemical status in groundwater

All 15 (100 %) groundwater bodies are subject to surveillance monitoring (Table 5.1) and to operational monitoring in both the first and second RBMPs. The number of monitoring sites is listed in Table 5.3 and shows a slight increase from 40 in the first RBMP to 42 in the second RBMP. The number of operational monitoring sites has also been increased since the first RBMP, from 40 to 42.

87 % of the groundwater bodies are at risk of failing good chemical status. All substances at risk of causing deterioration in chemical status are subject to surveillance monitoring. The WFD core parameters nitrate, ammonium and electrical conductivity are monitored, but the WFD core parameters oxygen and pH are not monitored.[45]

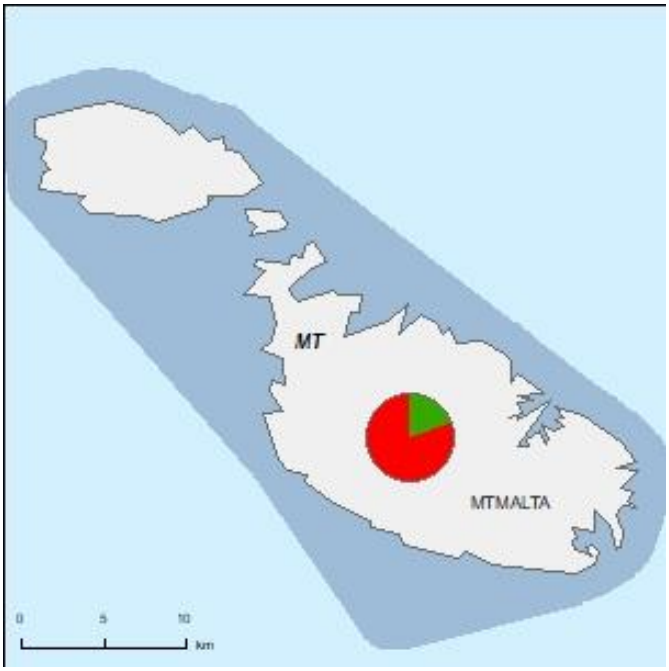
6.1.2 Assessment and classification of chemical status in groundwater

Map 6.1 and Figure 6.1 display the chemical status of groundwater bodies for the most recently assessed status. They show that 3 of 15 groundwater bodies (20 %) were of good chemical status, and the remaining 12 groundwater bodies (80 %) are failing good status. In terms of area this means that about 97 % were failing good chemical status. Figure 6.2 shows that there is high confidence in status classifications. All groundwater bodies had a classified qualitative status in the first and in the second RBMP; that is, there were no water bodies with unknown status.

The total number of groundwater bodies failing good chemical status decreased since the first RBMP from 13 (87 %) to 12 (80 %) groundwater bodies (Figure 6.1) - from 98 % to 97 % of the total groundwater body area. The expected date of achievement of good chemical status in Malta is shown in Figure 5.4. It shows that less stringent objectives have already been achieved for approximately 20 % of groundwater bodies and 20 % achieved good status in 2015, the remainder will achieved good status in the next planning cycles: 40 % from 2016 -2021 and 20 % from 2022 to 2027.

[45] Malta subsequently clarified that this is a reporting error and in fact all WFD core parameters are monitored.

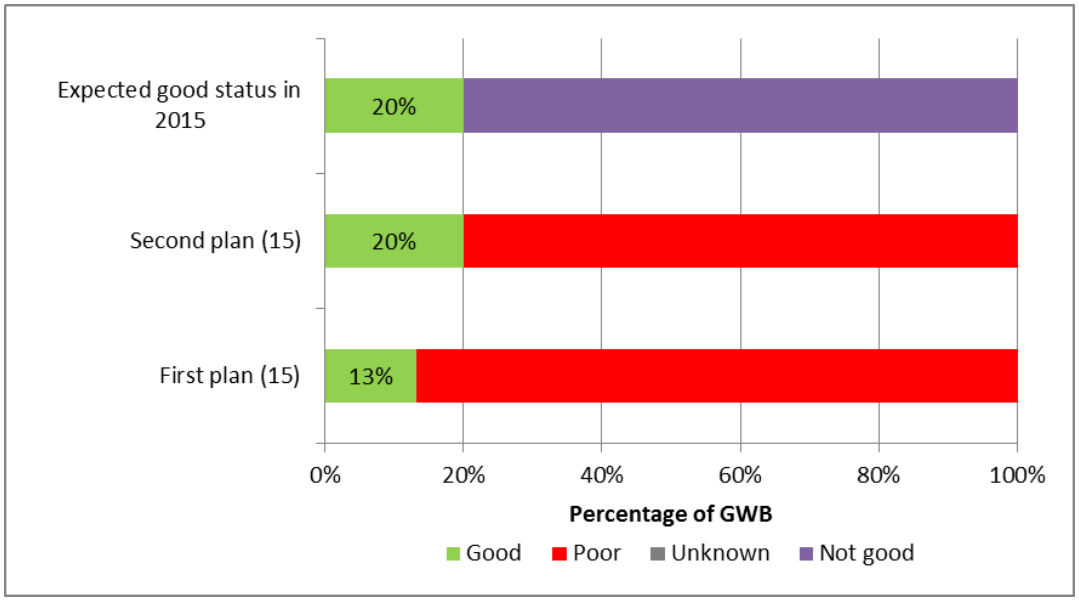
Map *6.1* ***Map of chemical status of groundwater bodies in Malta based on the most recently assessed status of the groundwater water bodies***



Good
Poor
Unknown
River Basin Districts
Countries outside the EU

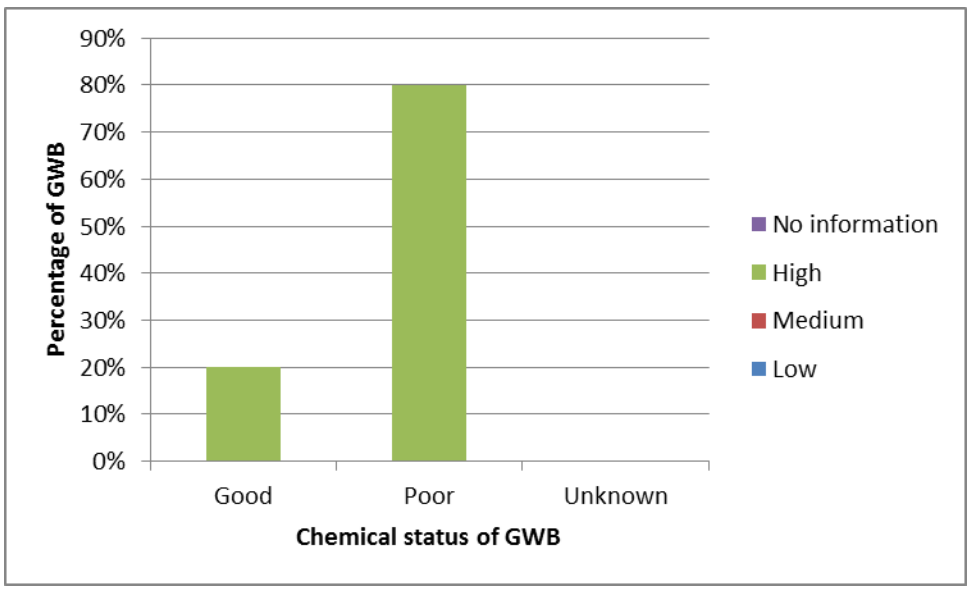
Note: Standard colours based on WFD Annex V, Article 2.4.5.
Source: WISE, Eurostat (country borders)

Figure 6.1 ***Chemical status of groundwater bodies in Malta for the second RBMP, for the first RBMP and expected in 2015. The number in the parenthesis is the number of groundwater bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2010 to 2014. The year of the assessment of status for first RBMP is 2009***



Source: WISE electronic reporting

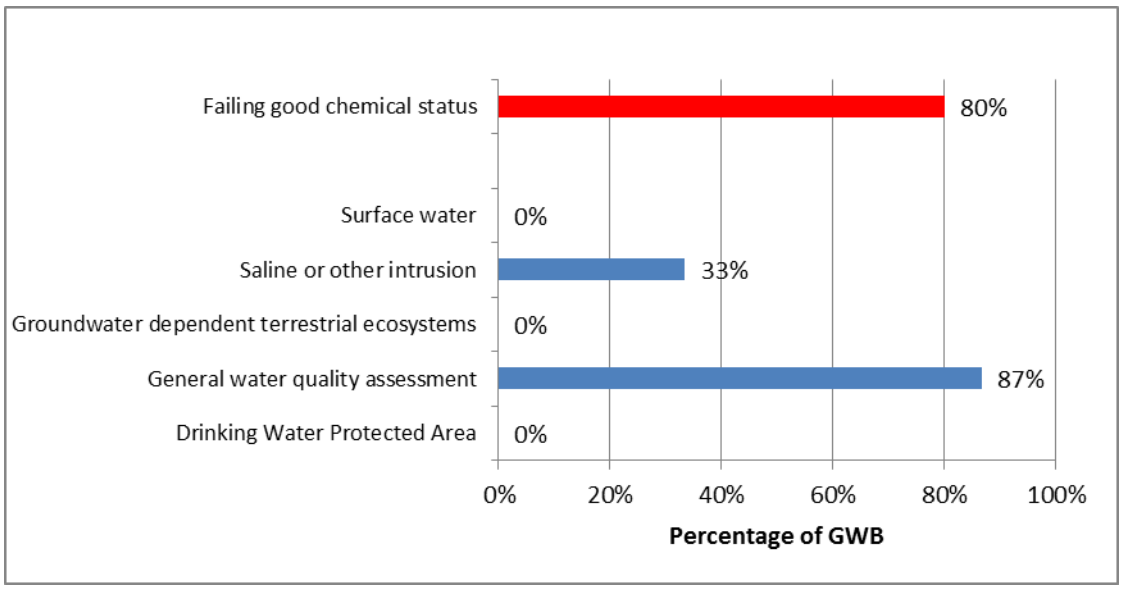
Figure 6.2 ***Confidence in the classification of chemical status of groundwater bodies in Malta based on the most recent assessment of status***



Source: WISE electronic reporting

The reasons for the failure of good chemical status of groundwater bodies are shown in Figure 6.3. For 13 groundwater bodies the general assessment of the chemical status for the groundwater body as a whole failed. This assessment considers the significant environmental risk from pollutants across a groundwater body and a significant impairment of the ability to support human uses. Five groundwater bodies were failing good chemical status due to saline intrusion. Figure 6.5 shows the pollutants causing failure of status and sustained upward trend.

Figure 6.3 Reasons for failing good chemical status in Malta for the most recent assessment of status



Source: WISE electronic reporting

Notes:

'Surface water' = Failure to achieve Environmental Objectives (Article 4 WFD) in associated surface water bodies or significant diminution of the ecological or chemical status of such surface water bodies.

'Groundwater dependent terrestrial ecosystems' = Significant damage to terrestrial ecosystems which depend directly on the groundwater body.

'Saline or other intrusion' = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.

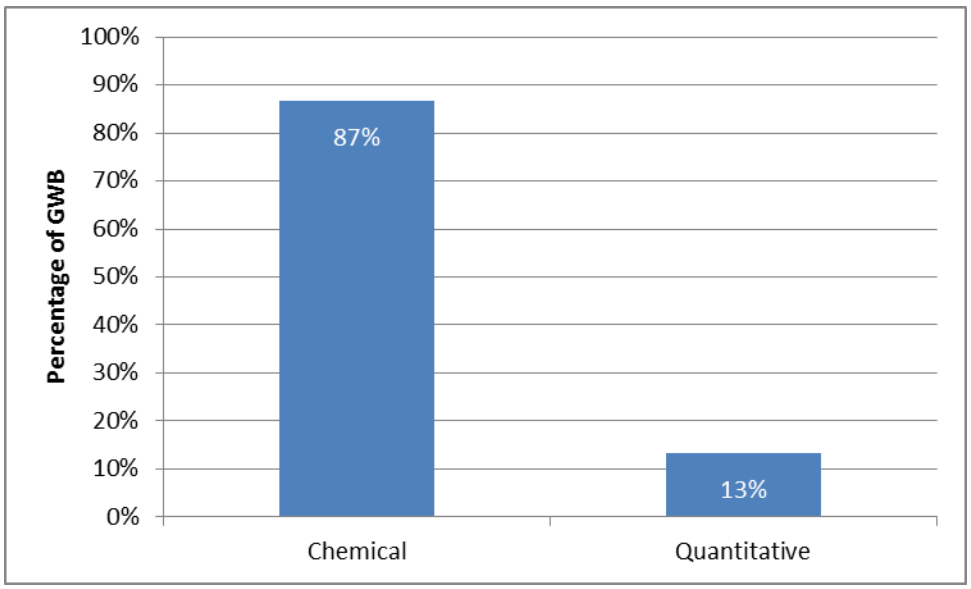
'Drinking Water Protected Area' = Deterioration in quality of waters for human consumption.

'General water quality assessment' = Significant impairment of human uses; significant environmental risk from pollutants across the groundwater body.

The calculation of the extent of exceedance of a groundwater quality standards or groundwater threshold values in the RBD of Malta was based on the number of monitoring sites in the groundwater body. Groundwater threshold values have been established for all pollutants or indicators of pollution causing a risk of failure of good chemical status and background levels have been considered in the groundwater threshold value establishment.

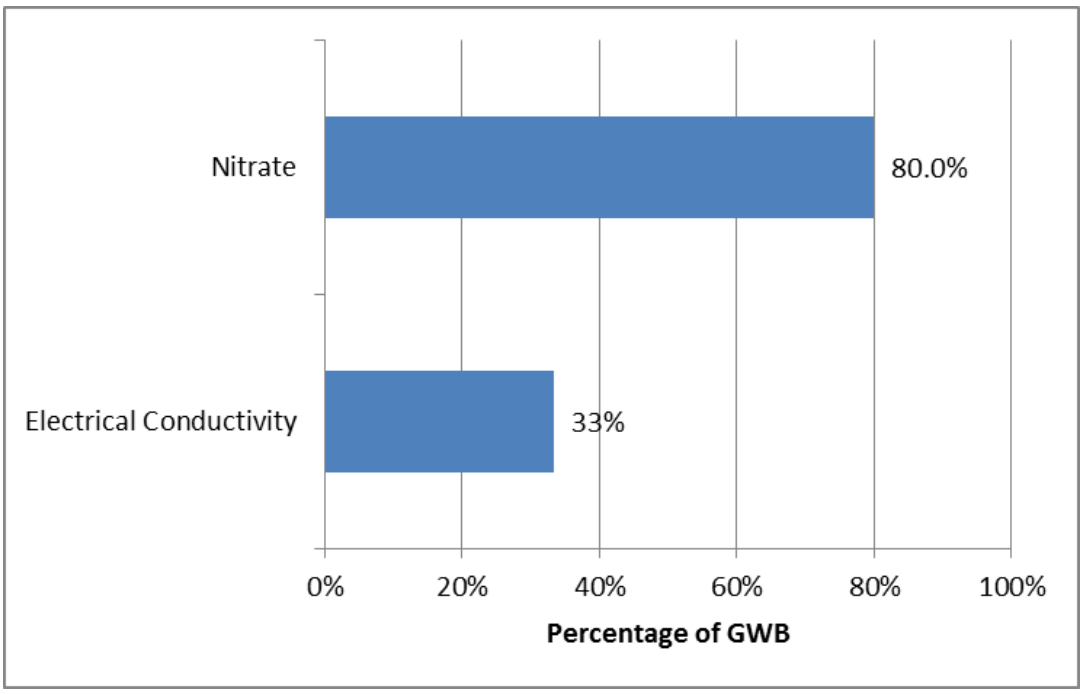
A trend and trend reversal assessment methodology was available and assessments have been performed in the RBD.

Figure 6.4 Percentage of groundwater bodies in Malta at risk of failing good chemical status and good quantitative status for the second RBMP



Source: WISE electronic reporting

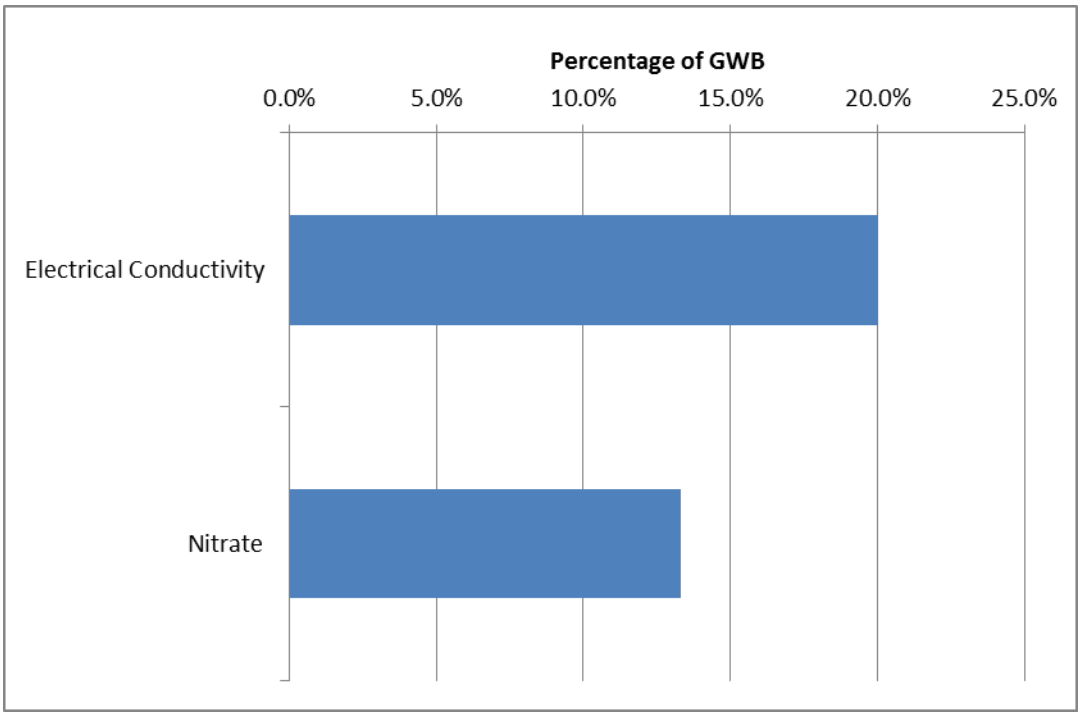
Figure 6.5 Top groundwater pollutants causing failure of good chemical status in Malta



Source: WISE electronic reporting

Note: only two pollutants reported causing failure.

Figure 6.6 Top pollutants with upward trends in groundwater bodies in Malta



Source: WISE electronic reporting

6.1.3 Consideration of groundwater associated surface waters and/ or groundwater dependent ecosystems

In two groundwater bodies groundwater associated surface waters have been reported. They were not related to risk and they have been considered in status assessment. Groundwater dependent terrestrial ecosystems have not been reported. Nevertheless, they have been considered in status assessment.

Groundwater associated aquatic ecosystems and groundwater dependent terrestrial ecosystems have been considered in the establishment of groundwater threshold values.

6.2 Main changes in implementation and compliance since the first cycle

The RBMP mentioned that due to the results of the analysis of the second surveillance monitoring programme, there was no need for the inclusion of further parameters in the operational monitoring strategy for the second RBMP. The only change made in the operational monitoring strategy during the second RBMP implementation period entailed the

inclusion of the new core parameters (nitrites and phosphate) introduced by the amendment of the Groundwater Directive[46].

Since the first cycle the monitoring for chemical status in groundwater has remained complete. The status however has not improved, with about 97 % of the total groundwater body area is still failing to achieve good chemical status.

6.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

  Assessment: All 15 groundwater bodies were subject to surveillance and operational monitoring in the first RBMP and this is still the case in the second RBMP. The confidence in the status results is high. This recommendation has been fulfilled.

- Recommendation: *Ensure in the second RBMPs cycle a fully operational monitoring programme, covering at least the following topics: groundwater chemical status (nitrate levels in the annual recharge), groundwater quantitative status, the inland surface water bodies (considering all WFD quality elements), the identification of river basin-specific pollutants, and protected areas. This monitoring programme should ensure the following crucial steps in the WFD process: clear definition of quality elements, Good Ecological Status and Good Ecological Potential, an apportionment of sources with regard to the different pressures/impacts, and a quantification of the gap to achieving objectives for all pressures affecting all water bodies.*

  Assessment: All groundwater bodies are subject to operational monitoring. However, the RBMP and background documents assessment could not provide any indication that

[46] Groundwater Directive (GWD): Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration.

there has been progress towards monitoring nitrate levels in the annual recharge. The recommendation therefore has been partially fulfilled.[47]

47 Malta subsequently clarified that the establishment of the monitoring network for nitrate levels in annual recharge (which will be the first of its kind in the EU, and goes beyond the requirements of the WFD) is included under the national hydrological monitoring project funded under the Cohesion Fund, and is therefore planned for implementation during the second RBMP. This recommendation was actually not a European Commission recommendation but a Member State (Malta) initiative to ensure a more coherent monitoring of groundwater chemical status.

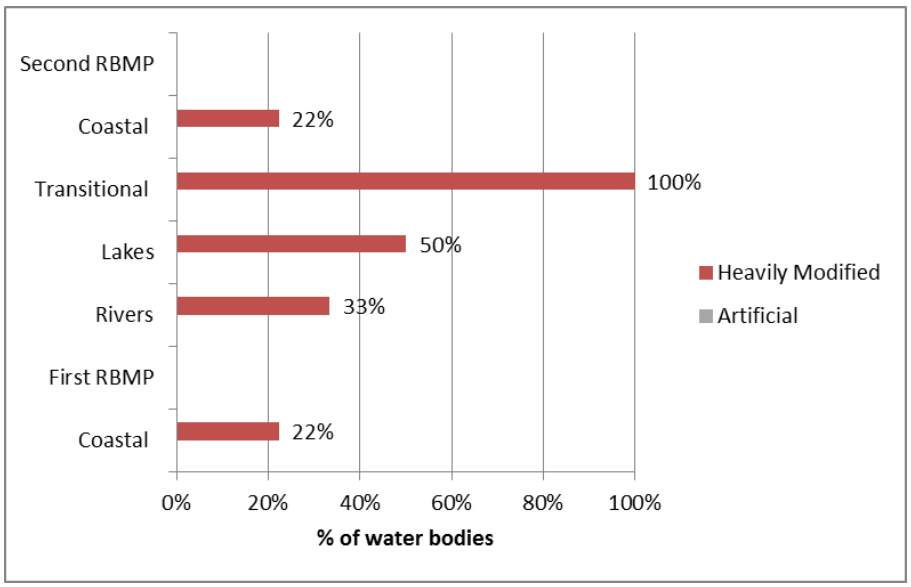
Topic 7 Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential

7.1 Assessment of implementation and compliance with WFD requirements in the second cycle for designation

7.1.1 Designation of Heavily Modified and Artificial Water Bodies

The WFD requires a review of designation every six years. In the second cycle, Malta has designated one river water body, one lake water body and five transitional water bodies as heavily modified water bodies, in addition to the two coastal water bodies designated as heavily modified water bodies in the first cycle. The proportion of total water bodies in each category in Malta that has been designated as heavily modified or artificial is shown in Figure 7.1.

Figure 7.1 Proportion of total water bodies in each category in Malta that has been designated as heavily modified or artificial



Source: WISE electronic reporting

The heavily modified river water body is designated due to irrigation and wider environment, while the coastal heavily modified water bodies were designated mainly due to tourism/recreation, navigation/ports, urban development and industry supply.

The main physical alterations of river, lake, and transitional heavily modified water bodies were channelisation/ straightening/ bed stabilisation/ bank reinforcement. Coastal heavily modified water bodies are affected by dredging and coastal modifications/ ports.

There is no consistent description of the methodology for the designation of heavily modified water bodies in the Maltese RBMP. The RBMP explains why the two main coastal heavily modified water bodies were designated as heavily modified, including a description of substantial changes in character and significant adverse effects of restoration measures on the use or wider environment.

The criteria used to define substantial changes in character due to physical modifications for the two coastal heavily modified water bodies were: significant and irreversible morphological alteration, extent of area of modified bottoms, related to dredging activities, percentage of length of modified shore, area covered by ports and navigation facilities, area of modified segments, frequency and extent of dredging activities. No thresholds for these criteria were provided. According to Malta the activities used to define HMWB in coastal waters are typical of and restricted to the main harbour areas, both of which were designated as HMWBs in view of the substantial modifications resulting from those activities.

The criteria used to assess significant adverse effects of measures needed to reverse the hydromorphological quality of the two coastal heavily modified water bodies include endangered national heritage or historical/cultural monuments, release of priority and/or priority hazardous substances due to reservoirs of historic contaminated sediments in port areas, significant job reduction, significant reduction of shipping/transport (for example due to the reduction of depth/width of fairway should dredging be discontinued), percentage loss of cargos or reduction in passenger traffic should quays/facilities be removed, impossibility to change the current hydromorphological condition as port facilities are completely consolidated in an urban area.

For the two coastal heavily modified water bodies, the RBMP also states that the objectives served by the modified characteristics of the water body cannot for reasons of technical feasibility and/ or disproportionate costs be reasonably achieved by any other alternative means, which are significantly better environmental options.

For the five transitional water bodies, which were designated due to historical usage, as well as the two lake and river heavily modified water bodies, no criteria or explanations for the designation were described in the RBMP.

7.1.2 Definition of Good Ecological Potential for Heavily Modified and Artificial Water Bodies

Good ecological potential is reported as defined at water body level, following the Prague approach, assuming that ecological potential can be achieved if all feasible and practical mitigation measures are taken to address hydromorphological impacts. The approach developed to define good ecological potential in the second RBMP concerns the two coastal heavily modified water bodies. For the other heavily modified water bodies, no information on good ecological potential definition was provided in the RBMP.

Dredging minimisation and sediment management were reported as mitigation measures which have been identified to define good ecological potential for the two coastal heavily modified water bodies. However, the ecological changes that the mitigation measures were designed to achieve were not described.

Good ecological potential was also reported to have been defined in terms of biology. The biological quality element for which biological values have been derived to define maximum ecological potential and good ecological potential are phytoplankton, macroalgae, angiosperms, and benthic invertebrates. The estimation of values for the biological quality elements of ecological potential in the harbours was based on methods that are applied to natural waters and which have been intercalibrated at Mediterranean level. Good ecological potential definition on the basis of biological quality elements has only taken place for the two coastal heavily modified water bodies, while for the other heavily modified water bodies (river, lake, and transitional), no biological quality elements are established/ assessed. The second RBMP explains that due to the unique characteristics of inland surface waters, additional data is required to understand the complex dynamics associated with such water bodies.

For coastal waters, a method for assessing benthic invertebrates and a method for assessing angiosperms are reported as sensitive to altered habitats due to morphological changes. The method to assess macroalgae is reported as sensitive to altered habitats due to both morphological and hydrological changes. For rivers, a method for assessing benthic invertebrates is reported as sensitive to altered habitats due to morphological and hydrological changes. For lakes, a method to assess benthic invertebrates is reported as sensitive to hydrological changes. For transitional waters, there are no biological quality element assessment methods sensitive to hydromorphology.

A comparison between good ecological potential and good ecological status has not been made in the RBD.

7.2 Main changes in implementation and compliance since the first cycle

As indicated above, heavily modified water bodies have been designated in the second RBMP in all surface water categories (one river heavily modified water body, one lake heavily modified water body, five transitional heavily modified water bodies, and two coastal heavily modified water bodies), whereas in the first RBMP, only coastal water bodies were designated as heavily modified water bodies. The five transitional heavily modified water bodies were considered to be heavily modified systems as they have been continuously engineered throughout history. For the river and lake heavily modified water bodies newly designated, the reasons for the designation were not explained. It seems though that these water bodies had not been adequately monitored in the first cycle, and hence no status could be determined.

In the first RBMP, the designation of heavily modified water bodies appeared to be based on a screening of pressures and expert judgement. In the second RBMP, there is still no consistent description of the methodology for designation but an explanation of the criteria used for the designation of the two coastal heavily modified water bodies was provided. No such descriptions were given for the other heavily modified water bodies.

In the second cycle, good ecological potential was reported to be defined following the Prague approach, whereas in the first cycle, good ecological potential had not been defined due to the delay in the implementation of the monitoring programmes.

7.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMP and first Programme of Measures for this topic.

Topic 8 Environmental objectives and exemptions

8.1 Assessment of implementation and compliance with WFD requirements in the second cycle

8.1.1 Environmental objectives

The environmental objectives are defined in Article 4 of the WFD. The aim is long-term sustainable water management based on a high level of protection of the aquatic environment. Article 4(1) defines the WFD general objective to be achieved in all surface and groundwater bodies, that is, good status by 2015. Within that general objective, specific environmental objectives are defined for heavily modified water bodies (good ecological potential and good chemical status by 2015[48]), groundwaters (good chemical and quantitative status by 2015) and for Protected Areas (achievement of the objectives of the associated Directive by 2015 unless otherwise specified).

Environmental objectives are reported for coastal water bodies and groundwater. The dates by when lake, river and transitional water bodies will achieve good ecological status/potential are reported as unknown[49]. Good chemical status for river, lake and transitional water bodies was reported to be achieved by 2015 but the dates for achieving good chemical status for coastal waters are unknown.

Member States are also required to specify additional environmental objectives and standards in Protected Areas where these are required to ensure the requirements of the associated Directive are met. An assessment of such additional objectives for Malta is provided in Chapter 15 of this report.

Assessments of the current status of surface and groundwater bodies in Malta are provided elsewhere in this report: for ecological status/potential of surface waters in Chapter 3; chemical status of surface waters in Chapter 4; quantitative status of groundwater bodies in Chapter 5; chemical status of groundwater bodies in Chapter 6; and for the status of surface and groundwater bodies associated with Protected Areas in Chapter 15.

For the second RBMPs, Member States are required to report the date when they expect each surface and groundwater body to meet its environmental objective. This information is

[48] For priority substances newly introduced by Directive 2013/39/EU, good status should be reached by 2027, and for the 2008 priority substances, for which the Environmental Quality Standards were revised by Directive 2013/39/EU, good status should be reached in 2021.

[49] Malta subsequently clarified that the second RBMP explains that due to the unique characteristics of inland surface waters, additional data is required to understand the complex dynamics associated with such water bodies.

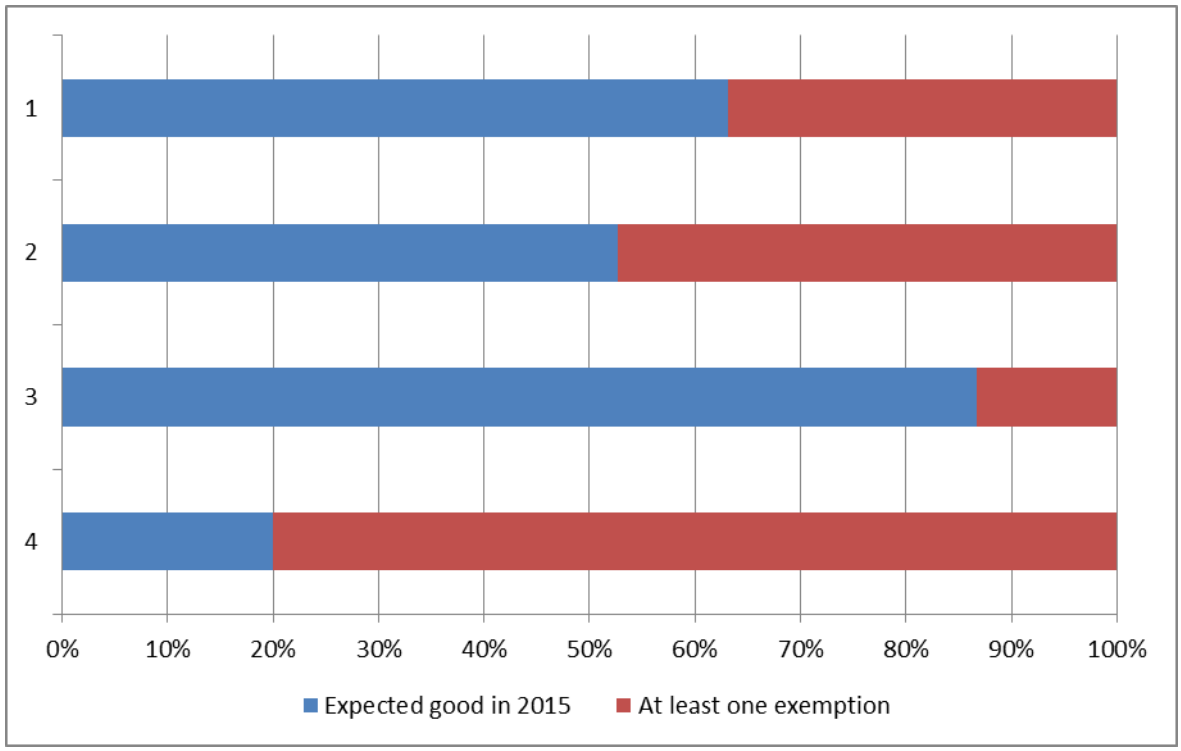
summarised: for ecological status/potential of surface waters in Chapter 3 chemical status of surface waters in Chapter 4; quantitative status of groundwater bodies in Chapter 5; and for chemical status of groundwater bodies in Chapter 6.

8.1.2 Exemptions

Where environmental objectives are not yet achieved exemptions can be applied in case the respective conditions are met and the required justifications are presented in the RBMP.

Figure 8.1 summarises the percentage of water bodies expected to be at least in good status in 2015 and the use of at least one exemption for the four main sets of environmental objectives.

Figure 8.1 ***Water bodies in Malta expected to be in at least good status in 2015 and use of exemptions. 1 = Surface water body ecological status/potential; 2 = Surface water body chemical status; 3 = Groundwater body quantitative status; 4 = Groundwater body chemical status***



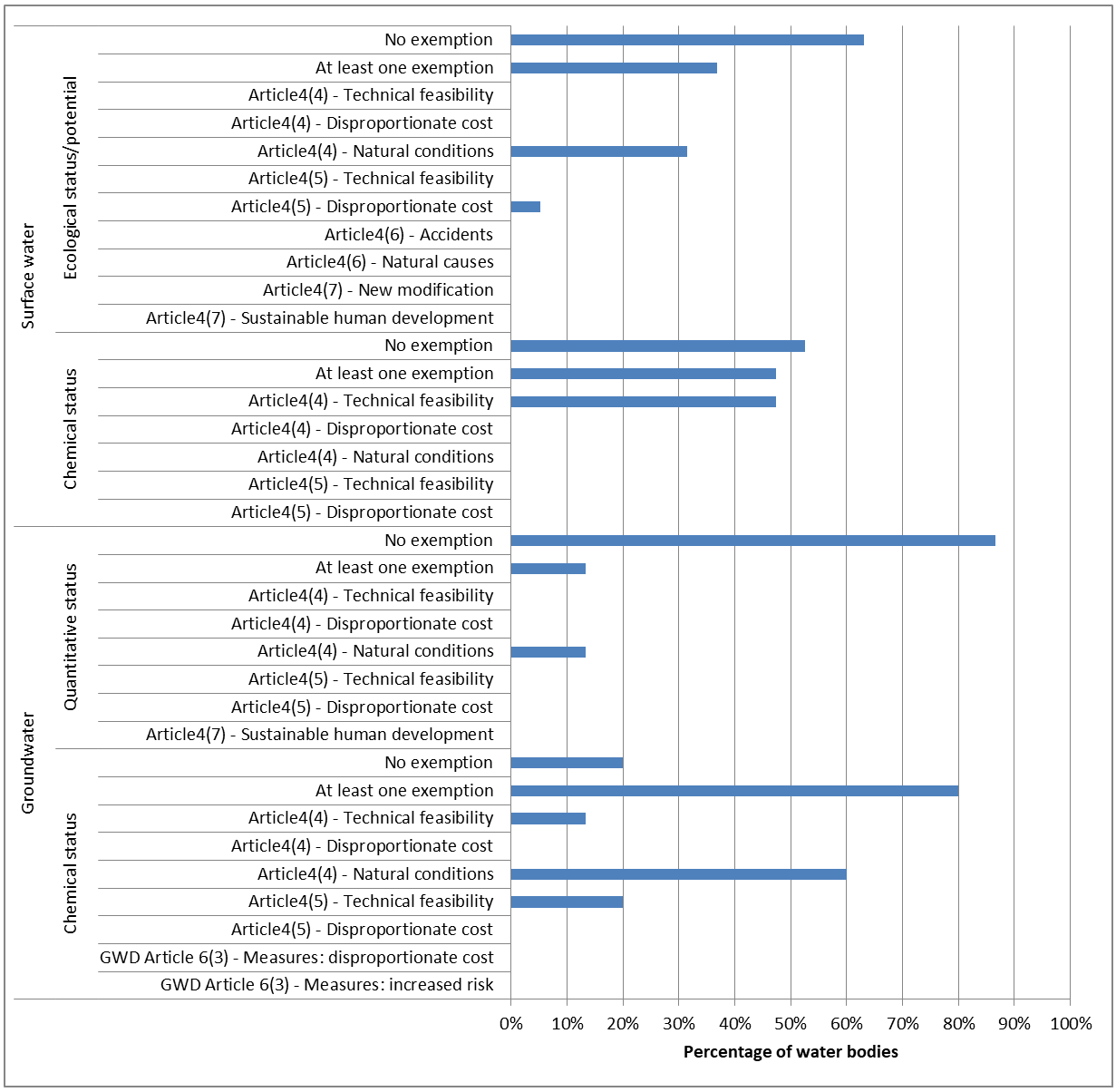
Source: WISE electronic reporting. For some water bodies the date for achievement of good status is unknown.

Article 4 of the WFD allows under certain conditions for different exemptions to the objectives: an extension of deadlines beyond 2015, less stringent objectives, a temporary deterioration, or deterioration / non-achievement of good status / potential due to new modifications, provided a set of conditions is fulfilled. The exemptions under WFD Article 4 include the provisions in Article 4(4) - extension of deadline, Article 4(5) - lower objectives,

Article 4(6) - temporary deterioration, and Article 4(7) - new modifications / new sustainable human development activities. Article 4(4) exemptions may be justified by: disproportionate cost, technical feasibility or natural conditions, and Article 4(5) by disproportionate cost or technical feasibility.

Figure 8.2 summarises the percentage of water bodies subject to each type of exemption (and reason) in relation to the four types of environmental objectives in Malta.

Figure 8.2 ***Type of exemptions applied to surface water and groundwater bodies for the second RBMP in Malta. Note: Ecological status and groundwater quantitative status exemptions are reported at the water body level. Chemical exemptions for groundwater are reported at the level of each pollutant causing failure of good chemical status, and for surface waters for each Priority Substances that is causing failure of good chemical status***



Source: WISE electronic reporting

Application of Article 4(4)

Article 4(4) has been applied in surface waters and groundwaters. In the RBMP technical feasibility and natural conditions were used as an argument for justifying exemptions according to Article 4(4). The RBMP provides detailed justifications at water body level.

The main drivers for exemptions were reported to be agriculture and urban development in relation to exemptions for groundwater bodies. Malta subsequently clarified that the main drivers are actually due to the natural conditions, i.e. the long response time of the aquifers systems. For surface waters, agriculture, industry, transport and urban development as well as unknown drivers are reported.

The main pressures to surface waters leading to exemptions were point pollution from urban waste water, diffuse pollution from urban run-off and agricultural, abstraction or flow diversion, physical alteration of channel/bed/riparian area/shore, hydromorphological alteration, and introduced species and diseases. Table 8.1 outlines reported pressures responsible for Priority Substances failing to achieve good chemical status, which are unknown anthropogenic pressures.

Table 8.1 Pressure on surface water bodies responsible for Priority Substances in Malta failing to achieve good chemical status and for which exemptions have been applied

Significant pressure on surface water bodies	Failing Priority Substances	Article 4(4) - Technical feasibility exemptions	Article 4(5) - Technical feasibility exemptions
	Number	Number	Number
8 - Anthropogenic pressure - Unknown	1	9	0

Source: WISE electronic reporting 2016

For groundwater, the main pressures are abstraction for public supply, agriculture and diffuse agricultural pollution (Table 8.2). The main drivers behind these pressures were urban development and agriculture for groundwater and surface water and in addition industry and transport for surface water.

Table 8.2 Pressure responsible for pollutants in Malta failing to achieve good chemical status in groundwater and for which exemptions have been applied

Significant pressure on groundwater	Number of failing pollutants	Number of exemptions
		Article 4(4) - Natural conditions
2.2 - Diffuse - Agricultural	1	11
3.1 - Abstraction or flow diversion - Agriculture	1	5

Source: WISE electronic reporting

The main impacts causing exemptions under Article 4(4) are nutrient pollution in groundwater and surface water. Surface water is further impacted by altered habitats due to morphological and hydrological changes (includes connectivity) and chemical pollution.

Application of Article 4(5)

Article 4(5) was applied in coastal waters and groundwaters. The justification for exemption to the chemical status of groundwater bodies relates to technical feasibility. For the Grand Harbour (coastal water) the justification was based on disproportional costs. According to WISE disproportional costs were justified by affordability, cost-effectiveness analysis, distribution of costs, and social and sectoral impacts. In the RBMP further details are given and it is stated that reversing the hydromorphological alterations of the Grand Harbour would have significant adverse effects on the wider environment. This could lead to:

- Endangering the national heritage and the area's rich culture
- Reduce the economic activities around the area such as: cruise tourism, ferries to Sicily, waterfronts' retail activity, and other indirect economic activities generated through tourism
- Material loss in employment which are directly and indirectly related to the economic activity of the Grand Harbour area.

Application of Article 4(6)

No exemptions according to Article 4(6) have been applied.

Application of Article 4(7)

In the Grand Harbour water body, several new developments are planned (for example, a cruise terminal, waterfront development, and a “Dock 1 Project”) but no exemptions according to Article 4(7) have been applied.

Application of Article 6(3) Groundwater Directive[50]

No exemptions according to Article 6(3) Groundwater Directive have been applied.

8.2 Main changes in implementation and compliance since the first cycle

The number of groundwater bodies to which Article 4(5) has been applied has decreased by one groundwater body.

8.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures reports requested action on the following:

- Recommendation: *It is unclear whether there are new physical modifications planned in RBMPs. If this is the case, the use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment of whether the project is of overriding public interest and whether the benefits to society outweigh the environmental degradation, and the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.*

  Assessment: No exemptions according to Article 4(7) have been applied. However in the Grand Harbour water body several new developments are planned (for example, a cruise terminal, waterfront development, and a "Dock 1 Project”) but no exemptions according to Article 4(7) have been applied.

- Recommendation: *While the WFD does provide for exemptions, there are specific criteria that must be fulfilled for their use to be justified. The application of exemptions*

[50] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0118-20140711

needs to be more transparent and the reasons for the exemptions should be clearly justified in the plans"

Assessment: In the RBMP technical feasibility and natural conditions were used to justify exemptions according to Article 4(4). The RBMP provides detailed justifications on water body level. The recommendation has been fulfilled.

- Recommendation: *Malta should indicate in the second RBMP when WFD objectives will be achieved. Exemptions should be adequately justified at water body level.*

  Assessment: The dates by when surface water bodies will achieve good ecological status/potential (lake, river and transitional water bodies) were not reported. Information is available for coastal water bodies and groundwater. For the chemical status no dates were given for coastal waters. Exemptions are justified on water body level. This recommendation has been partly fulfilled.

Topic 9 Programme of measures

The aim of this chapter is to provide an overview of the Programme of Measures reported by the Member State; more specific information on measures relating to specific pressures (for example arising from agriculture) is provided in subsequent chapters.

The Key Types of Measures (KTM) referred to in this section are groups of measures identified by Member States in the Programme of Measures, which target the same pressure or purpose. The individual measures included in the Programme of Measure (being part of the RBMP) are grouped into Key Types of Measures for the purpose of reporting. The same individual measure can be part of more than one Key Types of Measure because it may be multi-purpose, but also because the Key Types of Measures are not completely independent. Key Types of Measures have been introduced to simplify the reporting of measures and to reduce the very large number of Supplementary Measures reported by some Member States in 2010 (WFD Reporting Guidance 2016).

A Key Type of Measure may be one national measure but it would typically comprise more than one national measure. The 25 predefined Key Types of Measures are listed in the WFD Reporting Guidance 2016.

The Key Types of Measures should be fully implemented and made operational within the RBMP planning period to address specific pressures or chemical substances and achieve the environmental objectives.

9.1 Assessment of implementation and compliance with WFD requirements in the second cycle

9.1.1 General issues

An indication as to whether or not measures have been fully implemented and made operational is when they have been reported as being planned to tackle significant pressures (at the Key Types of Measure level). Significant pressures are also reported at the water body level. It would therefore be expected that there would be measures planned in the RBMP to tackle all significant pressures. For groundwater bodies KTMs are in place to address only two of the significant pressures reported as causing groundwater bodies to fail to be of good status: “abstraction or flow diversion – agriculture” and – “Abstraction or flow diversion - Public water supply”. The other significant pressures that have been reported as causing groundwater

bodies to fail to be of good status but which do not have operational KTMs in place to address them are 1.3 - Point - IED plants[51], 1.4 - Point - Non IED plants, 1.6 - Point - Waste disposal sites, 2.2 - Diffuse – Agricultural, and 6.2 - Groundwater - Alteration of water level or volume. For surface waters all significant pressures reported as causing a failure of objectives were reported to be addressed by KTMs[52].

51 national basic measures and 54 national supplementary measures have been mapped against 11 of the 25 predefined KTMs. Of these, 27 % of the national basic measures and 26 % of the national supplementary measures have been mapped against KTM 8 - "Water efficiency, technical measures for irrigation, industry, energy and households". 30 % of the national supplementary measures have been mapped against KTM 14 - "Research, improvement of knowledge base reducing uncertainty". Malta has developed a number of other KTMs, specifically awareness raising related to marine litter and waste management, conservation of water dependent habitats and species, improving data management structures, improving marine and terrestrial emergency response and refine existing regulatory controls. Of the basic measure types only those required by Articles 11(3)(a)(c)(f)(g)(h)(i)(k) have been adopted. An inventory of national measures has been reported with links to where further information can be found.

Basic measures have been mapped against more KTMs than have been reported to be tackling significant pressures – those that are not linked to any pressure are:

- KTM2 – Reduce nutrient pollution from agriculture;
- KTM3 – Reduce pesticides pollution from agriculture
- KTM6 – Improving hydromorphological conditions of water bodies other than longitudinal continuity;
- KTM7 – Improvements in flow regime and/or establishment of ecological flows;
- KTM15 – Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances;

[51] Malta also reported measures specifically to address mercury.

[52] Malta subsequently clarified that point-IED sources are identified significant because of their potential to pollute groundwater – current monitoring data shows that such sources do not currently cause any groundwater bodies to fail to be of good status. Point-non-IED plants were identified as a significant pressure due to their wide geographical coverage.

- KTM18 – Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases;

- KTM19 – Measures to prevent or control the adverse impacts of recreation including angling; and

- KTM21 – Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure.

KTM 1 - "Construction or upgrades of wastewater treatment plants" has not been mapped against national measures but it is reported to be tackling significant pressures[53].

A number of new KTMs developed by Malta are reported to be tackling significant pressures, specifically:

- characterise and quantify hydrological input of land based contaminants (including litter) to coastal waters from major sub catchments,

- investigate the role of transboundary contaminants through hydrographic pathways and the extent of its contribution to marine contamination,

- carry out investigations to gauge potential contribution of contaminants to our coastal waters by atmospheric deposition,

- carry out a survey of all direct discharges to sea and identify their source with the objective of setting up a plan to curtail / regulate such discharges,

- establish a Mercury Management Plan to enable the investigation of potential sources of mercury and potential mitigation measures.

This list of new KTMs is completely different to the list of new KTMs against which national measures have been mapped. Further clarity on the status of the measures adopted to address significant pressures is required. No information is provided in Malta on percentage of water bodies affected by significant pressures that are not expected to achieve good status or potential by 2027, and further investigation in RBMP and background documents of the

[53] Malta subsequently clarified that KTM 1 – Construction or upgrades of wastewater treatment plants was not chosen as a KTM because upgrades or improvements to the wastewater treatment plants are generally considered as part of the general upgrading process of these plants, which programme falls under the implementation process of the UWWTD Directive.

assessment showed that the selection of measures has not taken the status of the water body into account[54].

There were two pollutants causing failure to achieve good status in groundwater bodies: nitrate (in 12 groundwater bodies) and electrical conductivity (in five groundwater bodies). No information is provided on either the River Basin Specific Pollutant causing a failure of good status in surface water bodies or the measures in place to address the failure[55].

Mercury is the only priority substance causing failure to achieve good status in nine surface water bodies. A new KTM SWM10 – "Establish a Mercury Management Plan to enable the investigation of potential sources of mercury and potential mitigation measures" is reported to be in place to address this.

Very limited information was reported on the gap to good status to be addressed by the KTMs for significant pressures and the progress in implementation of the measures expected, however in some cases numeric indicators were provided.

Indicators of the gap to good status of groundwater bodies were reported for the significant pressures "abstraction or flow diversion – agriculture" and "abstraction or flow diversion - public water supply". Indicators for the progress in the implementation of measures were reported for two KTMs for each of these two pressures. For both pressures, two water bodies were reported to be affected, and good status is expected to be achieved by 2021.

Indicators for the gap to good status of surface water bodies were reported for the significant pressures, "point - urban waste water", "point – other", "diffuse – other", "anthropogenic pressure – unknown" and "mercury and its compounds". Indicators of the level of progress expected in the implementation of the measures to address these pressures were also reported. For the significant pressure "point - urban waste water", only one water body is reported to be affected and good status is expected to be achieved by 2021. For all the other significant pressures, nine water bodies are reported to be affected in 2015, but no indication of the progress that is expected in 2021 or 2027 is provided.

[54] Malta subsequently confirmed that the selection of measures has taken into consideration the status of the water bodies, since measures address significant management issues identified on the basis of monitoring data and water body status.

[55] Malta subsequently clarified that measures targeting the poor chemical quality of water bodies, are in fact addressing all River Basin Specific Pollutants (in relation to ecological status) and Priority Substances (in relation to chemical status). 'General Surface Water Measures' aim to tackle the most significant point and diffuse sources identified as an outcome of the monitoring programmes carried out under the first RBMP

9.1.2 Cost effectiveness of measures

Cost-effectiveness analysis is an appraisal technique that provides a ranking of alternative measures on the basis of their costs and effectiveness, where the most cost-effective has the highest ranking. Cost-effectiveness analysis was not used as a tool for the appraisal of measures in the first RBMP due to a lack of data. For the second RBMP the information reported to WISE indicated that a combination of both quantitative and qualitative cost-effectiveness analysis has been carried out in Malta, supporting the selection of measures proposed under the 2016-2021 Programme of Measures.

The prioritisation of measures was further investigated by examining the RBMP and background documents where it was found that there has been no real prioritisation of measures. It is stated that a cost-effectiveness analysis has been performed on all measures that will be implemented during the second cycle, assessing "costs" and "effectiveness" by a scoring system, resulting in a ranking of measures by the costs per scoring point. However, it is not clear whether such a prioritisation was actually performed or played any role in selecting the measures or assigning priorities for implementation. It is mentioned in the description of one measure only ("FLD 5 - implementation of sustainable urban drainage systems and natural water retention measures as identified under measure FLD 3") that concrete projects will "*be prioritised according to the project mitigation potential, both from a quantitative perspective (reduction in rainwater runoff generation) and the impact on the population and economic activities in the catchment*".

9.1.3 Financing of Measures

A critical factor in the success of the implementation of the Programme of Measures is the availability of funding to support the investments required.

Investment costs for the first Programme of Measures (2009-2015) have been reported as EUR 99 700 000 for Article 11(3)(a) requirements (measures required to implement community legislation for the protection of water) and EUR 77 370 000 for the requirements of Articles 11(3)(b)(l), 11(4) and 11(5) (all other measures). This represents a total investment of EUR 177 000 000 .

For the second Programme of Measures (2016-2021) it has been reported that a capital investment of EUR 9 500 000 will be required for Article 11(3)(a) measures, but that no annual operation or maintenance costs will be incurred. The capital investment required for measures required by Articles 11(3)(b)(l), 11(4) and 11(5) (all other measures) is reported to be EUR

190 400 000 with annual operation and maintenance costs of EUR 6 237 000. Depreciation has not been included in any calculations.

European Union investment expenditure for the Programme of Measures is reported to have been EUR 32 700 000 for the first Programme of Measures (18 %) and EUR 152 200 000 for the second planning cycle (76 %).

It has been reported that clear financial commitments have been secured for the Programme of Measures in Malta from all relevant sectors.

9.1.4 Coordination with the Marine Strategy Framework Directive and the Floods Directive

There was a joint consultation carried out on the RBMPs and Marine Strategy in Malta. The preparation of the RBMP and Programme of Measures has been reported to be coordinated with the implementation of the Marine Strategy Framework Directive[56]. It has been reported that there is a need for additional measures or more stringent measures beyond those required by WFD to control litter in order to contribute to the achievement of the relevant Marine Strategy Framework Directive objectives in costal and marine environments.

The RBMP and Floods Directive Flood Risk Management Plan have been integrated into a single plan in Malta (also refer to in Chapter 1 on Governance and public participation). The joint consultation was carried out on the RBMP and Flood Risk Management Plan, and the objectives and requirements of the Floods Directive have been considered in the second RBMP and Programme of Measures in Malta. Malta indicated that specific win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and use of Natural Water Retention Measures have been included in the Programme of Measures. The design of new and existing structural measures, such as flood defences, storage dams, and tidal barriers, have been adapted to take into account WFD Environmental Objectives and clear financial commitment has been secured for the implementation of the Programme of Measures in the flood protection sector. Article 9(4) has not been applied to impoundments for flood protection in Malta[57].

[56] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

[57] Malta subsequently clarified that impoundments for flood protection are not relevant in the geographical context of Malta, and hence this is the reason why Article 9(4) has not been applied to impoundments for flood protection

9.1.5 Measures related to other significant pressures

Only one other significant pressure has been reported 8 – "anthropogenic pressure unknown", which is causing failures in surface water bodies. The percentage of surface water bodies affected by this pressure has not been reported, but the indicator of the gap to good status for 2015 was reported to be nine water bodies. Other national KTMs have been reported as being in place to address these measures. No indication of the progress to good status expected by 2021 or 2027 has been reported.

A total of six measures are being planned to tackle significant other pressures: three measures encompassed by KTM 18 - "Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases" and three measures encompassed by KTM 19 - "Measures to prevent or control the adverse impacts of recreation including angling").

- The measures for KTM 18 - "Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases" are: plan, implement and monitor an alien plant/fauna eradication programme; eradicate pests that are a threat to water dependent species; and extend the basic measure related to the removal of alien species from the Qattara habitat, as identified in the Natura 2000 management plan, to the Ghadirra ta Sarraflu.

- The measures for KTM 19 - "Measures to prevent or control the adverse impacts of recreation including angling" are: development of bathing water profile for bathing areas; lobby with users of protected areas for better protection; and to patrol the protected areas during the hunting season, weekends, public holidays and planned activities[58].

- Additionally, an awareness campaign on the impacts of marine litter (KTM 99 – "Other key type measure reported under Programme of Measures") is planned[59].

No measures are reported for KTM20 - "Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants".

[58] Malta subsequently provided additional information that a further measure under KTM99 – Other Key Type of Measure Reported in the Programme of Measures - Streamline designated Bathing waters as defined by the Environmental Health Directorate with designated Swimming Zones as regulated by Transport Malta where these two areas overlap or are in close proximity to each other was also relevant to this KTM.

[59] Malta subsequently provided additional information that a measure listed under KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure - Develop a system to encourage adequate litter management and control in coastal areas and a measure listed under KTM99 - Other key type measure reported in the Programme of Measures - Targeted awareness campaign on impacts of marine litter are also relevant.

9.1.6 Mapping of national measures to Key Types of Measure

It was expected that Member States would be able to report their Programme of Measures by associating their national measures with predefined KTMs. KTMs are expected to deliver the bulk of the improvements through reduction in pressures required to achieve WFD Environmental Objectives. A KTM may be one national measure, but it would typically comprise more than one national measure. Member States are required to report on the national measures associated with the KTMs, and whether the national measures are basic - Article 11(3)(a) or Article 11(3)(b-l), or supplementary - Article 11(4).

Table 9.1 summarises the number of national measures that have been mapped to the relevant KTMs in Malta. Table 9.2 then summarises the type of basic measures associated with the national measures mapped against the KTM.

Table 9.1 Mapping of the types of national measures to Key Types of Measure in Malta

Key Type of Measure	National basic measures	National supplementary measures	Number of RBDs where reported
KTM14 - Research, improvement of knowledge base reducing uncertainty	9	16	1
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances	2	1	1
KTM18 - Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases	2	1	1
KTM19 - Measures to prevent or control the adverse impacts of recreation including angling	3		1
KTM2 - Reduce nutrient pollution from agriculture	2	1	1
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	4	5	1
KTM23 - Natural water retention measures		4	1
KTM3 - Reduce pesticides pollution from agriculture.	1		1
KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity	4	2	1
KTM7 - Improvements in flow regime and/or establishment of Ecological flows	1		1
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households	14	14	1
KTM99 - Other key type measure reported under Programme of Measures – Awareness raising related to marine litter and waste management		2	1
KTM99 - Other key type measure reported under Programme of Measures - Conservation of water dependent habitats and species	8	1	1
KTM99 - Other key type measure reported under Programme of Measures - Improving data management structures	1	1	1
KTM99 - Other key type measure reported under Programme of Measures - Improving marine and terrestrial emergency response		3	1
KTM99 - Other key type measure reported under Programme of Measures - Refine existing regulatory controls		3	1
Total number of Mapped Measures	**51**	**54**	**1**

Source: WISE electronic reporting

Table 9.2 Type of basic measure mapped to Key Type of Measures in Malta

Key Type of Measure	Basic Measure Type										
	Efficient water use	Habitats or Birds	Hydromorphology	IPPC IED	Nitrates	Other	Point source discharges	Pollutants diffuse	Recharge augmentation groundwaters	Surface Priority Substances	Urban Waste Water
KTM14 - Research, improvement of knowledge base reducing uncertainty	5	2			1					1	
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances				1			1				
KTM18 - Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases		2									
KTM19 - Measures to prevent or control the adverse impacts of recreation including angling		2				1					
KTM2 - Reduce nutrient pollution from agriculture					2						
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure				1				1		1	1
KTM3 - Reduce pesticides pollution from agriculture.								1			
KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity		3	1								
KTM7 - Improvements in flow regime and/or establishment of ecological flows		1									
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households	13								1		
KTM99 - Other key type measure reported under PoM		8			1						

Source: WISE electronic reporting

Key

'Efficient water use' = Article 11(3)(c): Measures to promote efficient and sustainable water use.
'Habitats or Birds' = Habitats Directive (92/43/EEC) or Birds Directive (2009/147/EC)
'Hydromorphology' = Article 11(3)(i): Measures to control any other significant adverse impact on the status of water, and in particular hydromorphological impacts.
'IPPC IED' = Integrated Pollution Prevention Control Directive (96/61/EC) and the Industrial Emissions Directive (2010/75/EU) .
'Nitrates' = Nitrates Directive (91/676/EEC).
'Other' = Other Directives mentioned in Part A of Annex VI of the WFD.
'Point source discharges' = Article 11(3)(g): Requirement for prior regulation of point source discharges liable to cause pollution.
'Pollutants diffuse' = Article 11(3)(h): Measures to prevent or control the input of pollutants from diffuse sources liable to cause pollution.
'Recharge augmentation groundwaters' = Article 11(3)(f): Controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies.
'Surface Priority Substances' = Article 11(3)(k): Measures to eliminate pollution of surface waters by Priority Substances and to reduce pollution from other substances that would otherwise prevent the achievement of the objectives laid down in Article 4.

'Urban Waste Water' = Urban Waste Water Treatment Directive (91/271/EEC).

9.1.7 Pressures for which gaps to be filled to achieve WFD objectives have been reported and the Key Types of Measures planned to achieve objectives

Member States are required to report the gaps that need to be filled to achieve WFD Environmental Objectives in terms of all significant pressures on surface waters and groundwaters, in terms of Priority Substances causing failure of good chemical status and in terms of River Basin Specific Pollutants causing failure of good ecological status/potential. Member States were asked to report predefined indicators of the gaps to be filled or other indicators where relevant. Values for the gap indicators were required for 2015 and 2021, and were optional for 2027.

The information reported in WISE on the gaps to fulfil to achieve good ecological status include detailed data on the significant pressures on surface and groundwaters that may cause failure on the environmental objectives. For chemical status, the Member States reported the specific chemical substances causing failure.

This information is reported at the sub-unit level. Sub-units are smaller geographic areas within particular RBDs identified by Member States. Not all Member States have defined and reported sub-units.

Member States were required to report which KTMs are to be made operational to reduce the gaps to levels compatible with the achievement of WFD environmental objectives. A number of indicators were predefined for each KTM. Values of the indicators for the second and subsequent planning cycles were also to be reported to give an indication of the expected progress and achievements: the values for 2027 could be optionally reported. This means that the value of the indicator will be reduced with time as measures are implemented. A value of zero is comparable with 100 % good ecological status or potential or good chemical status.

This information was reported at sub-unit level, or at RBDs level if sub-units have not been reported by the Member State.

9.2 Main changes in implementation and compliance since the first cycle

Often there is no equivalent information for the first cycle and it is difficult, therefore, to make direct comparisons between the two RBMPs on what has changed significantly. Little information was reported on the scale and expected progress with implementation of measures in the second cycle leading to the achievement of WFD objectives. It was not clear how

measures were selected in the first cycle. For the second Programme of Measures, it is not clear whether measures have still not been selected on the basis of the status of the water body or otherwise[60]. It has been reported that the combination of both, quantitative and qualitative cost effectiveness analysis has been carried now to support the selection of measures in the second cycle.

The main changes in the implementation of the WFD in relation to the Programme of Measures were further investigated through a review of the RBMP and background documents where it was found that there is no summary of changes/updates regarding the Programme of Measures[61]. Instead, the Maltese RBMP explains the actions done in the first management cycle (in Chapter 7 of the RBMP), and states: "*Some of the issues identified in the previous preparation phase (that is, 2009) of the first Water Catchment Management Plan are still present day realities and are therefore reiterated in this plan (refer to Chapter 7 for details about what was implemented under the first cycle). In addition, however, comprehensive monitoring of our coastal waters in 2012-13 has brought to the fore additional issues of concern. Additional measures have therefore been identified to deal with these management issues. Such measures would be required in order to ensure that good status is maintained in waters where this has already been achieved; and good status is met in those waters where this is yet to be accomplished.*" However, there is no overview of which measures stem from the first cycle, which from the second, and which ones will be continued from the first into the second cycle.

Malta has reported a significant increase in the funding available for the second Programme of Measures, which includes a significant increase in the contribution from EU funds.

New legislation or regulations to implement the Programme of Measures were considered in the first cycle and have been reported to be in progress.

9.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

[60] Malta subsequently clarified that the size of the smaller groundwater bodies in Malta, ranging between 1 and 5 square kilometres, precludes the development of measures to specifically address the specific issues at water body scale. In as much, comprehensive measures were developed to address all the identified issues on an RBD scale. In respect of surface waters, Malta notes that the measures are targeted to address all the significant management issues identified, which were in turn identified on the basis of monitoring data and the status of water bodies.

[63] Malta subsequently clarified that such an analysis of the measures in the first and second RBMPs was included in Annex V to the RBMP. Unfortunately, the version of the RBMP uploaded by Malta to WISE did not include Annex V (only Annexes I, II and III) and therefore this could not be assessed.

- Recommendation: *Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.*

  Assessment: It is not completely clear how measures were selected, but it has been reported cost effectiveness of measures have been carried out as combination of both, quantitative and qualitative cost effectiveness analysis to support selection of measures. This was further investigated through a review of relevant RBMP and background documents of the assessment in which it was found that the status of water bodies has not been taken into consideration in the selection of measures. The exact methods used for the selection of measures are also not clear. Malta subsequently clarified that "due to the small size of groundwater bodies in Malta (particularly the smaller groundwater bodies) measures were developed on the scale of the River Basin District. However these measures comprehensively address all the status-failing objectives in all the groundwater bodies. The same applies for surface water bodies." Given this additional information, it can be considered that Malta has partially fulfilled this recommendation, but if possible, should make efforts to directly link the status of individual water bodies with measures for the third planning cycle.

- Recommendation: *Meaningful information regarding the scope, the timing and the funding of the measures should be included in the Programme of Measures so the approach to achieve the objectives is clear and the ambition in the Programme of Measures is transparent. All the relevant information on basic and supplementary measures should be included in the summary of the Programme of Measures to ensure transparency on the planned actions for the achievement of the environmental objectives set out in the WFD.*

  Assessment: In the first cycle, the participation of industrial and tourism sectors was very low, measures were projected to cost about 0.009 % and 0.05 % of the gross value added of the industrial and tourist sectors respectively. This was a strong contradiction with the statements that are used to extend the deadline for the achievement of objectives. The agriculture sector was not even mentioned as contributor for sharing the costs of measures. The costs of basic measures have now been reported. Financing of measures has been reported with approximately 76 % of costs being covered by European Union funds in the second cycle. Clear financial commitments have been secured for agricultural, industry, urban, transport, aquaculture, recreation and flood protection in the second cycle. Hydropower and energy have been reported not to be

relevant. It is not clear on what basis the contribution between different sectors is assessed. In the RBMP Malta has provided a detailed list of the measures to be implemented including some actions for the implementation of these measures. However – some of these timescales are quite loosely defined (e.g. "Terms of reference for the study will be developed and awarded by second quarter 2016"). Furthermore there is no assessment of the contribution that it is expected that each measure will make to the achievement of good status. Therefore this recommendation has been partially fulfilled.

- Recommendation: *Identify clearly basic measures in the second RBMPs to allow for a clear assessment of the need for additional measures.*

  Assessment: From the data reported it is clear that basic measures have been identified and national basic and supplementary measures have been mapped against KTMs, including new KTMs. An inventory of national measures has been reported with links to where further information can be found. However, because the basis for the selection of measures is not clear, the assessment of the need for additional measures is not clear, and therefore this recommendation has been partially fulfilled.

- Recommendation: *Ensure in the second RBMPs that measures adopted in the Programme of Measures are based on a reliable status assessment of water bodies and are linked to the relevant pressures. Malta should also specify the impact of the planned measures.*

  Assessment: It was not clear from the data reported to WISE whether this recommendation had been met. It was therefore further investigated by reviewing the RBMP and background documents where it was found that the Programme of Measures is not based directly on the status assessment of water bodies. No information on the proportion of water bodies affected by significant pressures has been reported to WISE. The information on reported on the impact of the planned measures does not cover all measures reported. Whilst it is clear that Malta has based the development on the Programme of Measures on the significant water management issues identified, no assessment of the contribution of each measure will make to the achievement of good status in water bodies has been carried out. This recommendation has been partially fulfilled but further steps are required.

- Recommendation: *Ensure that the RBMPs clearly identify the gap to good status, and that the Programme of Measures is designed and implemented to close that gap. Malta*

should indicate in the second RBMP when WFD objectives will be achieved. Exemptions should be adequately justified at water body level.

Assessment: Malta has taken some significant steps to identify the gaps to good status for some parameters. The Programme of Measures has been developed in order to address the significant water management issues identified, but no quantitative assessment of the contribution each measure will make to the closure of the gaps has been carried out. Malta has identified where good status cannot be achieved and provided justification for this, but it is unclear what level of confidence there is in the ability of the measures to deliver good status. This recommendation has been partially fulfilled.

- Recommendation: *Prioritise measures and explain in more detail in the second RBMP its approach to identifying them.*

  Assessment: It has been reported that cost effectiveness of measures have been carried out as a combination of both, quantitative and qualitative cost effectiveness analysis to support the selection of measures. Further information was sought in the RBMP and background documents on this issue. Clear information on the prioritisation of measures could only be found for one measure, and it is not clear whether a prioritisation using cost-effectiveness analysis has been carried in the selection of measures. This recommendation has therefore not been fulfilled.

- Recommendation: *Available funding, in particular the European Union funds (for example, RDP funds, Structural and Investment Funds, LIFE Integrated Projects and Horizon 2020) needs to be exploited as much as feasible in order to implement Programme of Measures. Consequently, appropriate priorities should be set in the programming documents (PA, OPs and RDPs) of the new European Union funding policy 2014- 2020.*

  Assessment: Clear financial commitment has been reported as secured in Malta. It is reported that approximately 76 % of costs will be covered by European Union funds in the second cycle, compared to 18 % in the first cycle. This recommendation has been fulfilled.

- Recommendation: *Perform the cost-effectiveness analysis as planned. Based on this, a clear prioritisation of measures and an explanation of the process should be developed. The justification for disproportionality of costs of measures should be improved. The*

effectiveness of the implemented measures will have to be demonstrated by the assessment of the status/potential of water bodies in the second RBMP.

Assessment: It has been reported that cost effectiveness of measures have been carried out as combination of both quantitative and qualitative cost effectiveness analysis to support selection of measures. Further information was sought in the RBMP and background documents of the assessment. It is clear that the status of water bodies has not been taken into consideration in the development of the Programme of Measures[62], and an explanation of the process for the selection and prioritisation of measures could not be found. From the aspect of the Programme of Measures this recommendation has not been fulfilled.

[62] Malta stated that due to the small size of groundwater bodies in Malta (particularly the smaller groundwater bodies) measures were developed on the scale of the River Basin District. However these measures comprehensively address all the status-failing objectives in all the groundwater bodies. The same applies for surface water bodies.

Topic 10 Measures related to abstractions and water scarcity

10.1 Assessment of implementation and compliance with WFD requirements in the second cycle

10.1.1 Water exploitation and trends

Water abstraction pressures are reported as relevant for Malta; and 13 % of groundwater bodies face water quantity-related problems for achieving good quantitative status. The Water Exploitation Index + is 97 % (2014) which is an extraordinarily high figure and might indicate risks of sustainable water use. No water quantity data have been reported to support the European State of the Environment Report in relation to Water Quantity. The RBMP does not include a water resource and allocation management plan.

10.1.2 Main uses for water consumption

Regarding water consumption, 48 % of groundwater is used by agriculture, and 37 % by urban uses. Agricultural use is however determined mainly from statistics. Note there is a difference between information reported and the RBMP content on the source of data for agricultural water abstractions. Measurement and monitoring are the basis for calculating urban water consumption.

10.1.3 Measures related to abstractions and water scarcity

Regarding basic measures - Article 11(3)(e), in Malta there is a concession, authorisation and/or permitting regime to control groundwater and a register of groundwater use; and small abstractions are exempted from these controls. There is no information in the second RBMP regarding the procedures and resources in place to control abstractions; the second RBMP (Section 7.2.1) only presents a list of the regulations enacted, without providing any information on controls and compliance mechanisms[63]. The first RBMP showed the enactment of an optimised regulatory framework to control abstraction of groundwater better[64].

[63] Malta subsequently clarified that the information on controls and compliance mechanisms are included as statutory provisions under the cited legislation.

[64] Malta subsequently clarified that the Subsidiary Legislation 423.12 requires all groundwater abstraction stations to be registered independent of their annual yield. Subsidiary Legislation 423.40 however exempts specific abstraction points from metering when: (a) no pump or other mechanical device is installed or used to abstract groundwater from such groundwater source; (b) if it is proved by the user to be a cultural property under the Cultural Heritage Act; or (c) if it is declared as such by the user that the source is used solely for domestic purposes by the user's household and where the abstraction yield from such source does not exceed one cubic metre per day. It is noted that all 'perched aquifer' systems, where exempted abstraction points are located, are classified to be in good quantitative status. It is further noted that some of these groundwater sources have historical value having been constructed during the Roman or Arabic periods (prior to 1000AD)

The regulatory framework of the second RBMP is based on the following legislation:

- Legal Notice 254 of 2008, entitled Borehole Drilling and Excavation Works within the Saturated Zone Regulations, which established a regulatory framework for borehole drilling and excavation works carried out partly or totally within the saturated zone.

- Legal Notice 255 of 2008, entitled Notification of Groundwater Sources Regulations; which established a time-limited period wherein existing groundwater abstraction sources were to be notified to the regulator, following which all un-notified abstraction sources would be considered as illegal.

- Legal Notice 241 of 2010, entitled Groundwater Abstraction (Metering) Regulations, which established a requirement for the metering of all significant groundwater abstraction sources.

- Legal Notice 395 of 2010, entitled Groundwater Sources (Application) Regulations; which allows the notification of historical and low yield (measures on Article 11(3)(c) for sustainable and efficient water use have been implemented in the previous cycle, and new measures and/or significant changes are planned for the 2016-2021 period).

The second RBMP is based on supplementary measures, and no basic measures were targeted at promoting efficient and sustainable water use. Demand-side supplementary measures included:

- Development of a water demand map representing the spatial variation of water demand in terms of quality and quantity, and establishment of benchmarks for efficient water use.

- Support mechanisms for water consumption audits in households.

- Support schemes for the uptake of efficient irrigation technology by the arable agricultural sector.

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and water is abstracted from them by buckets. Whenever cases of illegalities are encountered by the regulatory authorities, imposition of administrative fines and the permanent closure of the source are applied, and in case of non-compliance, criminal prosecution follows. Furthermore, it is clarified that the second RBMP includes several measures to promote an efficient and sustainable water use. These measures were considered to be supplementary in nature. Furthermore, impoundments for flood protection are not relevant in the geographical context of Malta. The only impoundments present in Malta relate to small masonry dams in dry valleys (referred to as dry rivers for the purpose of EU reporting) which have been developed in the late 1800's with the scope of collecting rainwater runoff for infiltration and use by the agricultural sector. The total collection capacity of these small masonry dams is below 125,000 m3, and hence are of marginal importance from a quantitative perspective.

- Support schemes for the uptake of efficient water technology by the animal husbandry sector.

- Support schemes for the development of rainwater harvesting facilities in the agricultural and commercial sectors.

- Establishment of minimum technical and economic levels of leakage in the municipal distribution network, and achievement of these thresholds.

- Development of a long-tern National Water Conservation Campaign.

- Establishment of a voluntary eco-labelling scheme for water-use fixtures and appliances.

- Upgrading the water use efficiency of public buildings and structures.

For each of these measures, a planned implementation time horizon and responsible authorities were identified in the RBMP.

In the RBMP, there is some information on what was implemented in the first cycle, but it is not clear to which degree or how the measures/ topics listed were implemented on the ground:

The RBMP does not report quantitative information on implementation or effects on water body status. However, it does state that:

- The measures included the metering of groundwater abstraction sources operated by the agricultural and commercial sectors; and the development of a data analysis tool which would permit the identification of high-water abstractors to direct the focus of agri-advisory services.

- Measures for the prior authorisation of artificial recharge or augmentation of groundwater bodies under Article 11(3)(f) have been implemented in the previous cycle, and new measures and/or significant changes are planned for the 2016-2021 period.

- KTM8 - "Water efficiency, technical measures for irrigation, industry, energy and households" and KTM 14 - “Research, improvement of knowledge base reducing uncertainty” were applied to tackle abstractions for agriculture and KTM23 – “Natural water retention measures” was applied to tackle abstractions for public water supply.

- Water reuse was also foreseen as a measure.

Exemptions for permitting and registration of small abstractions might need to be reviewed, as 13 % of groundwater bodies do not achieve good quantitative status.

10.2 Main changes in implementation and compliance since the first cycle

Malta has taken action to improve its control on groundwater abstractions, by the adoption and implementation of specific regulations. However, the knowledge base for appropriate water resource allocation management seems to be insufficient, as there is still limited data collection from metering within the agricultural sector[65]. This is in spite of the implementation in the first cycle of the metering of groundwater abstraction sources operated by the agricultural and commercial sectors, and the development of a data analysis tool which will permit the identification of high-water abstractors to direct the focus of agri-advisory services[66]. Furthermore, exemptions for permitting and registration for small abstractions might need to be reviewed, and further control on abstractions ensured as a significant proportion of groundwater bodies do not achieve good quantitative status[67].

10.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *The problem of water scarcity and over-abstraction that are significant pressures and cause poor quantitative status should be tackled with appropriate measures. Malta should include targeted measures to reduce over abstraction in order to avoid salt water intrusion where possible.*

  Assessment: The actions expected to be implemented included implementation and enforcement of the new legislation on groundwater abstractions to balance water

[65] Malta subsequently clarified that the metering of all private groundwater sources including those in the agricultural sector has been almost completed. In fact, more than 3 000 private groundwater sources have been metered, and analysis of abstraction data shows a median range of 1,500 – 2,000 m3 of abstracted groundwater from each groundwater abstraction source. This amounts from 4 to 5.5 m3/day of groundwater abstraction per source, and hence significantly lower than the 10m3/day significance threshold under the WFD. Groundwater abstraction by the agricultural sector peaks in April/May and July/August, periods coinciding with the spring and summer crops respectively

[66] Malta subsequently clarified that the development of a water demand assessment tool to enable the correlation of agricultural water demand with groundwater abstraction by the agricultural sector will be developed during the implementation period of the second RBMP through the LIFE Integrated Project awarded to Malta earlier in 2018.

[67] Malta subsequently clarified that there are no exemptions for permitting and registration for small abstractions as claimed. National legislation requires all groundwater abstraction sources to be registered with the authorities, and this includes even low-yield sources where groundwater is abstracted by buckets.

abstraction with recharge. This would likely ensure both the good quantitative and avoid salt water intrusion. In particular, abstraction should be included under cross compliance once the legislation on authorisations of abstraction is in place.

Malta has taken action to improve its control on groundwater abstractions, by adopting and implementing specific regulations. However, the knowledge base for appropriate water resource allocation management seems to be insufficient, as there is still limited data collection from metering within the agricultural sector (Malta reports agricultural abstraction volumes are determined mainly from statistics)[68]. This recommendation is considered to be partially fulfilled.

[68] Malta subsequently clarified that data from the metering programme is available and was included in the second RBMP. However, due to the significant differences in the abstraction volumes registered through the metering programme, a precautionary approach was adopted and data from water demand assessments was used in the actual status assessments. In parallel with this, a verification (calibration) exercise was initiated to corroborate metering data. Such calibration exercise includes the use of satellite imagery for the estimation of crop water demand and actual land-use. A decision support tool for the calculation remote sensing for agricultural water demand is also planned under the recently launched LIFE Integrated Project targeting the implementation of the second RBMP (LIFE 16 IPE MT 008). In fact, more than 3 000 private groundwater sources have been metered, and analysis of abstraction data shows a median range of 1,500 – 2,000m3 of abstracted groundwater from each groundwater abstraction source. This amounts from 4 to 5.5 m3/day of groundwater abstraction per source, and hence significantly lower than the 10m3/day significance threshold under the WFD.

Topic 11 Measures related to pollution from agriculture

11.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Pressures related to agriculture were clearly identified for groundwater. Pressures reported were: chemical pollution, abstraction, and saline pollution. A gap assessment was not performed[69], and it remains unclear how much the planned measures will contribute to the achievement of the objectives. KTM 2 - "Reduce nutrient pollution from agriculture" (two basic measures and one supplementary), KTM 3 - "Reduce pesticides pollution from agriculture" (one basic measure), and KTM 23 – "Natural water retention measures" were applied. In the second Maltese RBMP, however, there was no reference at all to KTMs. Hence, these measures cannot be identified in the Programme of Measures, and it cannot be determined if these are voluntary or mandatory.

Basic measures under Article 11(3)(h) for the control of diffuse pollution from agriculture at source were applied with the same rules across the whole RBD. General binding rules to control diffuse pollution from agriculture were applied to nitrates, organic pollution, and other pollutants[70].

Around the four groundwater bodies associated to drinking water protected areas[71] safeguard zones have been established on the basis of the zone of influence[72], around public groundwater abstraction sources, determined according to the Dupuit-Forchheimer well discharge equation (300 m radius). The measures to prevent nitrogen, phosphorus or pesticides from entering drinking water resources are the same in the first and second RBMPs.

No information on agricultural pressures in coastal waters is reported in WISE[73].

Farmers and Farmers Unions have been consulted under the Public Consultation process.

Financing of agricultural measures was secured for Malta.

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[69] Malta subsequently clarified that, it has started the process to develop a pilot unsaturated zone monitoring network to assess the quality of recharge within the unsaturated zone. This network will provide information on the annual recharge to groundwater and hence will permit the undertaking of a gap assessment.

[70] Malta subsequently clarified that measures to address nutrient contamination of groundwater have been addressed through the development of Malta's Nitrates Action Programme under the Nitrates Directive. This Programme is a basic measure under the Nitrates Directive.

[71] The Malta Mean Sea Level groundwater body, the Mgarr Perched groundwater body, the Mizieb Mean Sea Level groundwater body, and the Gozo Mean Sea Level groundwater body

[72] Drawdown cone in the piezometric surface of the aquifer

[73] Malta subsequently clarified that management issues identified for coastal waters include nutrient contamination in enclosed bays and harbours.

11.2 Main changes in implementation and compliance since the first cycle

While in the first cycle it was not clear how the funding of measures will take place, funding has now been secured.

11.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Agriculture is indicated as exerting a significant pressure on the water resources in Malta. This should be translated into a clear strategy that defines the basic/mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farmers' community to ensure technical feasibility and acceptance. There needs to be a very clear baseline so that any farmer knows the rules this can be adequately advised and enforced and so that the authorities in charge of the Common Agricultural Policy funds can adequately set up Rural Development Programmes and cross compliance water requirements.*

  Assessment: 'Reduce nutrient pollution from agriculture' refers to basic and mandatory measures. A gap assessment was not performed, so it remains unclear how the different measures under the various Directives will contribute to close the gap to target. Therefore, this recommendation has not been fulfilled.

- Recommendation: *Improve the implementation of the Nitrates Directive*[74] *(especially to counter illegal disposal of farm manure on fields due to lack of adequate storage facilities). Malta should establish a methodology for addressing the pressure from nitrates and submit information on the enforcement, monitoring and controls.*

  Assessment: The information on the implementation of the Nitrates Directive and the Nitrates Action Programme is scarce in the Maltese RBMP. No comprehensive information on the enforcement, monitoring and controls is

[74] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676

provided. What is mentioned to have taken place (first cycle) or will take place (second cycle) are the following activities[75]:

- Controls/enforcement: *"…it is expected that the continuous controls, enforcement and evaluation procedures related to the overseeing of implementation of the Nitrates Action Programme Regulations, estimated to cost €140 000 per annum will be maintained*".

- Information and training: "*An Info Nitrates campaign funded by LIFE+ was also carried out during the* first *cycle. This campaign was designed to provide farmers and livestock breeders with information and training to act in accordance with the Nitrates Directive and the associated Action Plan. Throughout the campaign a total of 849 farmers and 1 739 part-time farmers holding more than 1.5 hectares of land received training. Farmers were provided with soil analysis kits and training sessions were also held with 925 livestock breeders*".

- Additional studies: "*A crop yield study and the undertaking of studies related to manure quality and soil nitrogen content estimated as well as the building and management of a soil monitoring surveillance network*".

- Database: "*The maintenance of a database for monitoring changes in agricultural practices in terms of farm holdings, manure application and soil and manure analysis*".

Therefore progress has been made but it is only partially fulfilled[76].

- Recommendation: *Submit a plan on resolving the discharge of animal husbandry waste in the sewage collecting system because the Maltese wastewater treatment plants had a performance problem as regards compliance*

[75] Malta subsequently stated that in addition to the action listed, other measures have also been established for the protection of public groundwater abstraction sources through Malta's Nitrates Action Programme, which are the following:
- Farmers or land managers have to keep a cropping plan of their holding and to practice crop rotation whilst taking into consideration the nutrient requirements of the crops ;
- Farmers with a holding size of >1 ha have to prepare a Nutrient Management Plan (NMP) for their holding which describes how the major plant nutrients (nitrogen, phosphorus and potassium) will be managed.

[76] Malta subsequently stated that this information has been reported for the Nitrates Directive and is available at this link:
https://cdr.eionet.europa.eu/mt/eu/nid/envv5xyla/Clean_AnnexV-NiDRPT_Final.docx/manage_document.

with the chemical oxygen demand standards. This was linked to farm manure discharges in the collecting system

Assessment: A plan on resolving the discharge of animal husbandry waste in the sewage collecting system seems to have been initiated in the supplementary measure SWM 9 – "Creation and Implementation of the Agriculture Waste Management Plan". It is, however, not entirely clear how far this plan has advanced. It is stated that it already started in 2015. However, the text describing the measure is imprecise: "…*the Government is committed towards a management plan to better tackle the agricultural waste. This has already been proposed with some measures to ensure compliance with the relevant European Union and national legislation. Such a plan will outline a comprehensive governance structure which will be responsible for co-ordinating centrally the management of all farm waste*". It is therefore unclear if the plan is already finalised and/or has been implemented[77].

[77] Malta subsequently clarified that a plan on resolving the discharge of animal husbandry waste was submitted by Malta under the implementation process of the Urban Wastewater Treatment Directive and is currently being implemented.

Topic 12 Measures related to pollution from sectors other than agriculture

12.1 Assessment of implementation and compliance with WFD requirements in the second cycle

In the context of this topic, pollution is considered in terms of nutrients, organic matter, sediment, saline discharges and chemicals (priority substances, river basin specific pollutants, groundwater pollutants and other physico-chemical parameters) arising from all sectors and sources apart from agriculture. Key types of measures are groups of measures identified by Member States in their Programmes of Measures which target the same pressure or purpose. A KTM could be one national measure but would typically comprise more than one national measure. The same individual measure can also be part of more than one KTM because it may be multipurpose, but also because the KTMs are not completely independent of one another.

KTMs relevant to non-agricultural sources of pressures causing failure of WFD objectives have been reported electronically for the Maltese RBD and include only:

KTM1 - "Construction or upgrades of wastewater treatment plants"

KTM15 - "Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances" and

KTM99 – "Other key type measure reported under PoM".

Within KTM99, the following measures have been reported:

KNO 3: Characterise and quantify hydrological input of land based contaminants (including litter) to coastal waters from major sub-catchments.

KNO 4: Investigate the role transboundary contaminants through hydrographic pathways and the extent of its contribution to marine contamination.

KNO 5: Carry out investigations to gauge potential contribution of contaminants to our coastal waters by atmospheric deposition.

KNO 6: Carry out a survey of all direct discharges to sea and identify their source with the objective of setting up a plan to curtail/regulate such discharges.

These KTMs do not include KTM16 - “Upgrades or improvements of industrial wastewater treatment plants (including farms)”.

The WFD specifies that the Programme of Measures shall include “basic measures” as a minimum, and where necessary to achieve objectives, “supplementary measures” may be required when basic measures are not enough. Quantitative information on basic and supplementary measures used to tackle pollution from non-agricultural sources (number of measures per KTM) has been provided for Malta. Quantitative information on basic measures to tackle pollution from non-agricultural sources is provided for one type of basic measure incorporated into each KTM (nitrates / improving data management structures).

In the RBMP and background documents, two basic and one supplementary measure were identified as associated with KTM15 - “Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances”.

- The basic measures are called KEY 1 – “Continue to refine the regulatory framework for industrial operational practices” and SWM 2 – “Continue to control priority hazardous substances, Priority Substances and other substances of concern via the environmental permitting process”.

- The supplementary measure is called KEY 2 - “Create an effective feedback mechanism within the Environment and Resources Authority to ensure compliance and risk mitigation”.

These two measures KEY 1 and SWM 2 were already included in the first RBMP, and apply to all surface waters. They affect all installations in the RBD, including installations that have a discharge point to surface waters along the coast. Both are mandatory measures. The measure called KEY 2 is an indirect basic measure affecting the authorities themselves.

RBMP and background documents also identified the application of KTM21 - “Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure”: four basic and five supplementary measures are associated with this KTM. The basic measures are:

- BAS UWWTD_1 – “connecting the remote hamlet of Bahrija directly to the main sewerage network”,

- KEY 1 – "Continue to refine the regulatory framework for industrial operational practices",
- SWM 1 – "Continue to strengthen the relationship between environmental and planning regulatory processes (including Marine Strategy Framework Directive[78] concerns",
- SWM 2 – "Continue to control priority hazardous substances, Priority Substances and other substances of concern via the environmental permitting process".

Malta subsequently clarified that the hamlet of Bahrija and households along the route from Bahrija to Rabat have been connected to the main sewage system and therefore this measure has been completed.

Malta also clarified that in addition to the measures outlined in the second RBMP, there are 16 measures entailing works for the upgrading and extension of the sewage network and related infrastructure in various parts of Malta, as well as upgrading works on the urban wastewater treatment plants. These specific measures form part of the operational and maintenance programme of the public utility and were not listed in the second RBMP's programme of measures.

All these 4 basic measures date back from the first RBMP, or stem from the Urban Wastewater Treatment Directive. They apply to all surface waters, affect all installations in the RBD, including installations which have a discharge point to surface waters along the coast, and are all mandatory measures. The Urban Wastewater Treatment Directive measures indirectly also affect groundwater.

The supplementary measures are:

- KEY 2 – "Create an effective feedback mechanism within the Environment and Resources Authority to ensure compliance and risk mitigation",
- SWM 5 – "Publish guidelines for the disposal of dredged material",
- SWM 7 – "Develop a system to encourage adequate litter management and control in coastal areas",

[78] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

- SWM 9 - “Creation and Implementation of the Agriculture Waste Management Plan”, and

- SWM 14 - “Develop a strategic policy framework to encourage integrated valley management”.

All these supplementary measures are indirect measures (for example strategy development, and development of plans), and are voluntary (non-mandatory).

Malta provided more targeted information on basic measures required under Article 11(3)(c to k). Use of authorisation and/or permitting regime to control waste water point source discharges - basic measures Article 11(3)(g) - was reported for the Maltese RBD for surface and groundwater. Registration of wastewater discharges (Basic measures Article 11(3)(g)) is mandatory in the Malta RBD for surface and groundwater. There are no thresholds below which wastewater discharges do not require permits and are not subject to registration. There is a prohibition of all direct discharges to groundwater.[79]

There are measures in place to eliminate/ reduce pollution from Priority Substances and other substances in the Malta RBD. In the description of these measures, however, individual substances are not explicitly referred to.

12.2 Main changes in implementation and compliance since the first cycle

In the first RBMP there was no assessment of chemical status for surface water bodies and no environmental quality standard set for River Basin Specific Pollutants. Therefore, there was little information on which to base the measures. This is despite the fact that the pressures analysis identified a number of significant pollution sources such as industrial discharges, agriculture, anti-fouling practices, and some specific pollutants such as polycyclic aromatic hydrocarbons and heavy metals. The first plan contained some generic measures that could contribute to reducing chemical pollution.

In the second RBMP, there are two measures that aim at improving the regulatory and permit system (KEY 1 – “Continue to refine the regulatory framework for industrial operational practices” and SWM 2 – “Continue to control priority hazardous substances, Priority

[79] Malta subsequently provided this additional information: discharges to the public sewer network are regulated by S.L.545.08. Enforcement of this legislation is bestowed to the Water Services Corporation where every commercial/trading premises discharging trade effluent to the public sewer shall apply and obtain a Public Sewer Discharge Permit. This process involves the submission of documentation relating to chemicals used, proof of maintenance of treatment facilities, proof of transfer of hazardous wastes, sampling of trade effluent and inspection of each premises. Subject to the results of analysis performed being below the required thresholds, the permit is granted to the particular entity for a period of one year.

Substances and other substances of concern via the environmental permitting process") for all pollutants, Priority Substances and River Basin Specific Pollutants, dating from the first cycle. In the description of these measures, however, the individual substances are not explicitly referred to.

Malta clarified that the measures mentioned cover all pollutants (Priority Substances and River Basin Specific Pollutants) which are discharged into surface waters by industrial operations through the environmental permitting process. The Environmental Permitting System addresses the type of pollutants depending on relevance of the pollutant to the activity being permitted.

Malta mentioned that measures under KTM15 apply primarily to coastal waters.

Zinc is the only River Basin Specific Pollutant reported to cause failure of good status (in one surface water body, a lake). The drivers are not identified clearly, but atmospheric deposition and pipes containing the material are discussed. No action is being taken to tackle the problem. Malta clarified that measures in the second RBMP address discharges of all substances including River Basin Specific Pollutants (KEY 1, SWM 2) and atmospheric deposition (KNO 5). The issue of pipes is not deemed relevant to the surface water body.

Mercury was reported as the sole parameter that caused failure in chemical status in all waters in the second RBMP. It is associated with fuel combustion of coal, waste or oil; municipal sewage discharge, and the atmospheric deposition of mercury. Measures under KTM1, KTM15, and KTM16 would probably be used to tackle these pressures/sources. However, measures are assigned only for KTM15.

Groundwater bodies were affected mostly by agricultural pollutants and abstractions; information on agricultural measures is in Chapter 11.

12.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: "*Use the inventory of emissions to review the monitoring programme and the list of RBSPs for the second RBMPs, and to identify appropriate measures against chemical pollution*"

  Assessment: According to Malta's clarifications, measures cover all pollutants (Priority Substances and River Basin Specific Pollutants) which are discharged into surface

waters by the industrial operational practices through the environmental permitting process. It is less clear how the inventory of emissions has been used to determine measures to tackle other sources of pollution, including indirect sources and diffuse emissions from non-agricultural sources.

- Recommendation: "*Submit a plan on resolving the discharge of animal husbandry waste in the sewage collecting system because the Maltese wastewater treatment plants had a performance problem as regards compliance with the chemical oxygen demand standards. This was linked to farm manure discharges in the collecting system." "Permitting procedures should guarantee the respect of WFD requirements"*

  Assessment: KTM1 - "Construction or upgrades of wastewater treatment plants" has been reported for the Malta RBD. However, this KTM seems be associated neither with this recommendation nor with discharges of the agricultural sector. There is no reasoning provided for this in the RBMP. However, Malta clarified that regarding KTM1, the ongoing measures for the management of wastewater treatment plants are considered as basic measures for the implementation of the UWWTD. Measures for the polishing of treated waters are considered as water reuse measures, addressing the development of polishing plants which are separate from the statutory wastewater treatment process. Hence such measures are considered under other KTMs. This recommendation is considered partially fulfilled.

- Recommendation: *It is important that there is an ambitious approach to combatting chemical pollution and that adequate measures are put in place.*

  Information reported to WISE shows that only one priority substance (Mercury) and one River Basin Specific Pollutant (Zinc) are causing non-compliance in Malta. In the second RBMP a KTM has been reported to address the pressure from mercury, and measures under KTMs 1 and 16 might also be relevant, although none have been assigned as specifically tackling mercury. KTM 15 has been mapped against national measures. Malta has reported that there are measures in place to eliminate / reduce pollution from Priority Substances and other substances. However, as regards the only River Basin Specific Pollutant (Zinc) identified to be causing failure, there is no clear identification of the drivers, and no measures are proposed to tackle the problem.

  Malta provided further information that measures in Malta's second RBMP address discharges of all substances including River Basin Specific Pollutants (KEY 1, SWM

2) and atmospheric deposition (KNO 5). The issue of pipes is not deemed relevant to the surface water body, but Malta provided no explanation to support this statement.

While Malta has not specifically reported KTM 16, industrial wastewater treatment is specifically considered as part of the environmental permitting systems (covered by Measures KEY 1 and SWM 2).

Therefore this recommendation has been only partially fulfilled.

Topic 13 Measures related to hydromorphology

13.1 Assessment of implementation and compliance with WFD requirements in the second cycle

In the second RBMP, no significant hydromorphological pressure affecting water bodies was identified in Malta, and therefore no related KTM was reported.[80] The types of pressures which have not been assessed for surface waters include dams, barriers and locks, and physical alterations. Given that 47 % of surface water bodies are heavily modified, it is unclear why these pressures were not reported as significant and no relevant information could be found in the RBMP. Malta subsequently mentioned that physical alterations were reported for Heavily Modified Water Bodies rather than under significant pressures. In addition, the main pressures reported were unknown anthropogenic pressures.

The lack of identification of significant hydromorphological pressures may be due to the lack of appropriate assessment methods and of appropriate monitoring data to understand the nature of hydrological and morphological modifications in Maltese waters. The RBMP does not provide information on the criteria for the identification of pressures or on tools used to define significant pressures related to hydromorphology.

It is reported though that, in terms of basic measures, there is an authorisation and/or permitting regime in place to control physical modifications, which covers changes to the riparian area of water bodies according to WFD Article 11(3)(i). There is also a register of physical modifications of water bodies.

Win-win measures to achieve the objectives of the WFD and Floods Directive, drought management, and use of Natural Water Retention Measures are reported to be included in the Programme of Measures. KTM 23 – "Natural water retention measures" has been made operational to tackle significant abstractions or flow diversion pressures from public water supply on groundwater. There are four measures reported under KTM 23 – "Natural water retention measures", of which two are not Natural Water Retention Measures, but technical rainwater harvesting measures. Although the other two measures clearly refer to Natural Water Retention Measures, they are not very specific, referring to actions aiming at the development and implementation of a master plan for sustainable drainage systems and natural water

[80] Malta subsequently mentioned that hydromorphological pressures have been considered for transitional waters and for rivers. Due to current uncertainties, the ecological status of such inland surface water bodies could not be determined. Within this context, Malta's second RBMP adopts water-related measures put forward by the Natura 2000 management plans, including measures dealing with hydromorphological alterations (e.g. enlargement of the water habitat and restoration of habitat) for transitional waters.

retention in the urban and rural framework of the Maltese islands as environmentally friendly flood mitigation measures (envisaged to start in 2019).

In addition, the design of new and existing structural measures is reported to have been adapted to take into account WFD objectives.

Ecological flows have not been derived or implemented so far for the relevant water bodies in Malta but there are plans to do so during the second cycle. In this context, no specific measures were planned to achieve ecological flows, and the establishment of ecological flows is not addressed by specific regulations. However, it is indicated that Malta is still in the phase of establishing the baseline for deriving ecological flows.

In the first cycle, Malta had included one measure related to ecological flows, which is also presented in the second RBMP, namely ECO 1-1 "Establish Ecological flows within sub-catchments of ecological importance (NATURA 2000 sites)". The description of the measure indicates that years of frequently gathered data are required to understand the contribution of natural flows to the water-dependent habitats and species. In addition, further work would be required to understand the habitat requirements and the selection of indicator species. The process of establishing ecological flows will therefore extend into subsequent WFD cycles. In addition, the Natura 2000 Management Plans that were designed during 2012-2014 are expected to contribute to the process of understanding water related requirements and hence can inform the process of developing ecological flows.

Also in the description of the monitoring programme, it is stated that Malta will monitor hydromorphological elements twice every month for every year in order to gather sufficient data to support the ongoing attempt to better understand the water related requirements of habitats and species and ecological flows.

13.2 Main changes in implementation and compliance since the first cycle

In the first RBMP, hydromorphological pressures were identified, namely dredging and hydromorphological alterations in two harbours and physical modifications related to urban development. One measure explicitly targeted hydromorphological pressures: develop and implement planning and environmental guidance on major coastal engineering works, in two coastal heavily modified water bodies (harbours). In the second RBMP, no significant hydromorphological pressure has been reported and therefore no relevant KTM is planned to address these.

13.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *Consider and prioritise the use of green infrastructure and/or natural water retention measures that provide a range of environmental (improvements in water quality, increase of water infiltration and thus aquifer recharge, flood protection, habitat conservation etc.), social and economic benefits which can be in many cases more cost-effective than grey infrastructure.*

  Assessment: KTM 23 – "Natural water retention measures" has been made operational to tackle significant abstractions or flow diversion pressures from public water supply on groundwater. There are four measures reported under this KTM, of which two clearly refer to Natural Water Retention Measures. These refer to actions aiming at the development and implementation of a master plan for sustainable drainage systems and natural water retention in the urban and rural framework of the Maltese islands as environmentally friendly flood mitigation measures (envisaged to start in 2019). Therefore, this recommendation is partially fulfilled, with further progress awaited concerning the future implementation of the planned measures.

Topic 14 Economic analysis and water pricing policies

14.1 Assessment of implementation and compliance with WFD requirements in the second cycle and main changes since the first cycle

Water services were narrowly defined, covering only drinking water supply and waste water treatment. Therefore, the sole entity that falls under the definition of water services supplier is the Water Services Corporation, which is the public utility responsible for the water production, storage, distribution and sale, as well as the collection, treatment, and disposal of treated wastewater. Cost recovery levels were stated to be at 88 % of the total costs of water services in Malta (in 2014).

Water pricing and its incentive function is explained on a general level in the Maltese RBMP. Malta itself has a water pricing policy in place, with a rising block tariff system for both the residential and non-residential consumers, that is, some incentives are provided to consume less water. It is not explained whether the incentives were adequate or not[81].

Although the Polluter Pays Principle is mentioned in a general way in the Maltese RBMP, it is not really considered in the pricing policies or the cost recovery.

Although environmental and resource costs are discussed on a general level in the Maltese RBMP, there is no information on whether or how they have been considered in designing pricing policies or calculating cost recovery rates.

The 2005 economic analysis is reported to have been updated, based on the findings of the Economic and Social Analysis carried out as part of Malta's implementation of the Marine Strategy Framework Directive[82] initial assessment. It is also expanded by an economic characterisation of groundwater use. As part of the development process of this economic characterisation of groundwater use, the methodological approach of the first cycle was reviewed and efforts have been made to provide greater detail on the cost recovery levels of water services and the contribution of the Programme of Measures towards groundwater sustainability.

[81] In June 2018 Malta informed the Commission that the structure of the water tariffs and the characteristics of Maltese water consumption (low per capita consumption, high tariff rate, average elasticity of tariff change to consumption) provide for "adequate" incentives to use water effectively. However, this obviously covers only the water users which are connected to the water system.

[82] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

The methodological approach adopted in the Maltese economic analysis, particularly to define the cost recovery levels, is based on the respective Common Implementation Strategy guidance document[83] and on the discussions held during Commission workshops on the implementation of the relevant articles of the WFD. In the RBMP this is explained in a chapter on economic characterisation of groundwater use, where water services and water pricing is also explained. It is not clear, however, why this is described under an economic characterisation of groundwater use, as other water body categories are also effected (for example, coastal waters through the discharge of treated waste water into the sea). The chapter ends with a section on the Economic Impact of Groundwater, which includes a justification or argument not to price private groundwater abstraction by agricultural users.

14.2 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

- Recommendation: *The cost-recovery should address a broad range of water services, including impoundments, abstraction, storage, treatment and distribution of surface waters, and collection, treatment and discharge of waste water, and also when they are "self-services", for instance self-abstraction for agriculture. The cost recovery should be transparently presented for all relevant user sectors, and environment and resource costs should be included in the costs recovered. Information should also be provided on the incentive function of water pricing for all water services, with the aim of ensuring an efficient use of water. Information on how the polluter pays principle has been taken into account should be provided in the RBMPs.*

- Recommendation (2015): *Develop fully the economic analysis of water use including calculation of Environmental and Resource cost.*

  Assessment: Water services are narrowly defined, covering only drinking water supply and waste water treatment. It is stated in the RBMP that “water users are excluded from this definition, as clarified by the European Court of Justice case in European Commission vs. the Federal Republic of Germany (C-525/12 of 11 September 2014)”. As a result, the sole entity that falls under the definition of water services supplier is the Water Services Corporation, the public utility responsible for the water production,

[83] https://circabc.europa.eu/sd/a/cffd57cc-8f19-4e39-a79e-20322bf607e1/Guidance%20No%201%20-%20Economics%20-%20WATECO%20(WG%202.6).pdf

storage, distribution and sale, as well as, the collection, treatment and disposal of treated wastewater.

Cost recovery levels are calculated based on the financial reports of the Maltese Water Services Corporation and the income generated by user charges; only financial costs are covered as such. The cost recovery rate calculated in this way is stated to be at 88 % of the total costs of water services in Malta (in 2014).

Regarding private abstractions of groundwater, it is stated that "groundwater is also directly abstracted by a number of economic operators. This privately abstracted groundwater may be used for one´s own consumption or production purposes or may be sold to other end-users and transported using the services of water tankers. These activities fall outside the responsibility of the Water Services Corporation and are regulated by the Maltese Resource Authority in-line with government policy direction in this area." Nevertheless, cost recovery rates are also calculated for private abstractions for groundwater, leading to the conclusion that because the provision of water by the Maltese Water Services Corporation is actually cheaper than private abstraction (considering costs for equipment, electricity, boreholes and other costs), the users would eventually switch to public supply (at least this is implied). There were no water charges for private abstractions[84].

Water pricing and its incentive function, is explained on a general level in the Maltese RBMP. Malta itself has a water pricing policy in place, with a rising block tariff system for both the residential and non-residential consumers, that is, some incentives are provided to consume less water. However, an exception is made for non-residential consumers with an annual consumption greater than 40 000 m^3 per year. The three water users, households, industry and agriculture, were reported to benefit from the water services identified. It is not explained whether the incentives are adequate or not[85].

Although the Polluter Pays Principle is mentioned in a general way in the Maltese RBMP, it is not really considered in the pricing policies/the cost recovery. While 100 % of the costs of drinking water provision are covered by the users, only half of the costs of waste water treatment were covered. The other half is covered by a government

[84] Malta subsequently clarified that this is a reporting error and that private abstractions pay all operation and maintenance costs, which on average amount to EUR 0.25/m³.

[85] In June 2018 Malta informed the Commission that the structure of the water tariffs and the characteristics of Maltese water consumption (low per capita consumption, high tariff rate, average elasticity of tariff change to consumption) provide for "adequate" incentives to use water effectively. However, this obviously covers only the water users which are connected to the water system.

contribution (that is, tax money). This is justified by what is called the "beneficiary pays" principle, on account of the environmental benefit being produced by this activity. For example, a cleaner marine environment and enhanced protection of the environmental conditions in the immediate shoreline, including beaches that are an important for tourism and recreation activities and improved health conditions for marine flora and fauna. This can be regarded as contrary to the Polluter Pays Principle.

Furthermore, it is stated that "the regulatory authority" is in the process of implementing a proposal which would entail a full cost recovery of the cost of water services in Malta, through the combination of pricing from consumers, reflecting the "user pays principle", and a contribution from public resources to reflect environmental benefits of groundwater conservation arising from specific activities undertaken by the Water Services Corporation, reflecting the "beneficiary pays principle". Moreover, the system will entail strong elements of financial incentives to reduce losses and enhancing the recycling of water resources, in line with the principles of "resource cost" and "polluter pays", but there is no more concrete information about these future plans.

Although environmental and resource costs are discussed on a general level in the Maltese RBMP, there is no information on whether or how they have been considered in designing pricing policies or calculating cost recovery rates.

Overall it can be concluded that as there are still significant gaps towards a water pricing policy according to Article 9, this recommendation has not been fulfilled.

Topic 15 Considerations specific to Protected Areas (identification, monitoring, objectives and measures)

15.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Protected Areas have been identified for five relevant Directives: the Birds Directive, Habitats Directive, Bathing Water Directive, Urban Wastewater Directive and Drinking Water Directive. Malta has taken a whole territory approach to designation under the Nitrates Directive so no specific Protected Areas are reported (Table 15.1).

Table 15.1 Number of protected areas of all types in each RBD of Malta, for surface and groundwater

Protected Area type	Number of Protected Areas in				
	Rivers	Lakes	Transitional	Coastal	Groundwater
Abstraction of water intended for human consumption under Article 7					1
Recreational waters, including areas designated as bathing waters under Directive 76/160/EEC[86]				87	
Protection of species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 79/409/EEC (Birds Directive)[87]	2	1	2		
Protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC (Habitats)[88]	3	1	5	5	
Nutrient-sensitive areas, including areas designated as vulnerable zones				1	

[86] Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007

[87] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147

[88] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

Protected Area type	Number of Protected Areas in				
	Rivers	Lakes	Transitional	Coastal	Groundwater
under Directive 91/676/EEC (Nitrates Directive[89]) and areas designated as sensitive areas under Directive 91/271/EEC (Urban Wastewater Treatment Directive)[90]					
Areas designated for the protection of economically significant aquatic species					
Other		2			

Source: WISE electronic reporting

The status assessment is mainly done with high or medium confidence - which is in good correspondence with the monitoring activities reported to WISE for the Protected Areas related to the Habitats, Nitrates, and Urban Waste Water Treatment Directives (Table 15.2). For the remaining Directives (Bathing Water, Birds and Drinking Water) no monitoring activities have been reported into WISE[91]. An overview of status reported in WISE is included in Figure 15.1.

Table 15.2 Number of monitoring sites associated with Protected Areas in Malta

Protected Area type	Number of monitoring sites associated with Protected Areas in				
	Rivers	Lakes	Transitional	Coastal	Groundwater
Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	3	2	5	26	40
Nutrient sensitive area under the Urban Waste Water Treatment Directive - WFD Annex IV.1.iv				11	
Protection of habitats or species depending on water - WFD Annex IV.1.v	3	2	5	13	

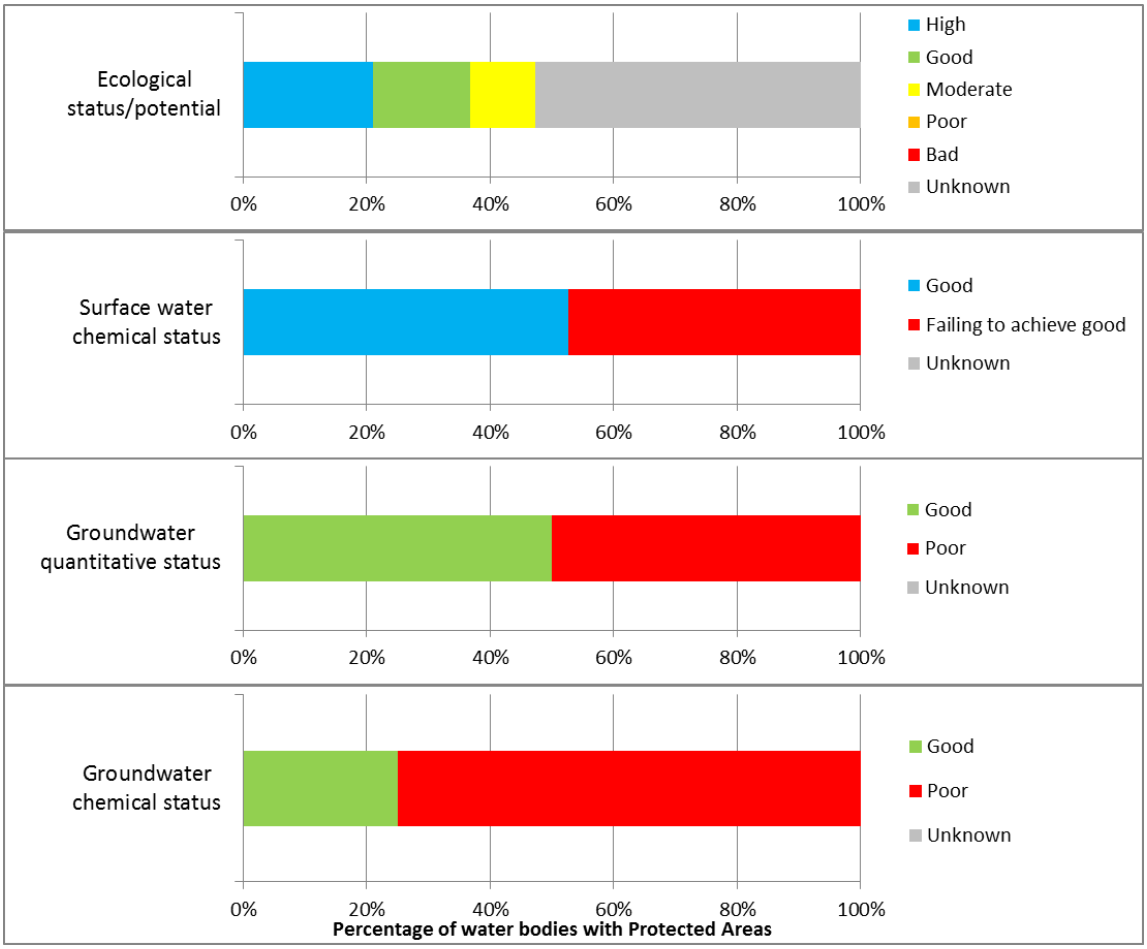
Source: WISE electronic reporting

[89] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676

[90] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271

[91] Malta subsequently informed the Commission that that the monitoring network for groundwaters contains 115 sites in Protected Areas, as well as 17 surveillance and operational monitoring stations under the Water Framework Directive. A monitoring network for Bathing Waters is also in place for specific monitoring sites, (87 sites).

Figure 15.1 Status of water bodies associated with the Protected Areas report for Malta. Note: based on status/potential aggregated for all water bodies associated with all Protected Areas



Source: WISE electronic reporting

For the Habitats and Birds Directives, specific water objectives have been set for the Protected Areas to protect dependent habitats and species but for a third of these areas, work is still on-going to determine needs. For the remaining areas the objectives are already met.

Objectives have been reported for two groundwater Drinking Water Protected Areas. (This seems inconsistent with other information reported to WISE on the total number of groundwater Drinking Water Protected Areas – see Table 15.1). Objectives are reported to be met in one area but not the other.

Monitoring programmes have been reported for the Habitats, Nitrates and Urban Waste Water Treatment Directives, but not for the Birds Directive and Bathing Water Directive and

groundwater dependent Protected Areas[92]. For drinking waters, there is a significant change compared to the first cycle, when 15 groundwater drinking water sites were monitored[93].

Regarding additional measures for the Birds and Habitats Directive Protected Areas, information was not reported because the needs still are to be determined for the Protected Areas, where the objectives not yet have been met. For the remaining Protected Areas, the objectives have already been met.

Exemptions have been applied for around a third of the Habitat and Birds Directives' Protected Areas due to natural conditions. No exemptions have been applied for Bathing Waters, therefore exemptions were used for less than 10 % of the Protected Areas.

15.2 Main changes in implementation and compliance since the first cycle

The number of Protected Areas under Article 7 relating to abstraction of drinking water has changed from seven in the first RBMP to one in the second cycle. For the Urban Waste Water Treatment Directive, the numbers have fallen from eight Protected Areas in the first cycle to one in the second[94].

The number of monitoring sites in surface water has increased significantly from close to zero in the first cycle to 23 (habitat), 36 (nitrate) and 11 (urban wastewater treatment) in the second RBMP.

For groundwater, no monitoring data have been reported in the second cycle, whereas the first cycle report contains 15 monitoring sites for groundwater drinking water Protected Areas[95].

15.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and first Programme of Measures requested action on the following:

[92] Malta subsequently clarified that the groundwater monitoring network includes sites which are strategically located to provide information on the groundwater flowing to groundwater dependent protected areas. These groundwater dependent protected areas are located around the small 'river' water bodies.

[93] Malta subsequently clarified that 89 groundwater abstractions stations were monitored in drinking water protected areas during the first cycle, and 115 sites were monitored during the second cycle. The number of stations from the WFD surveillance and operational monitoring programmes located in Drinking Water Protected Areas remained at 17 in both River Basin Management Plans.

[94] Malta subsequently clarified that the number of protected areas under article 7 relating to the abstraction of drinking water under the second RBMP amounts to five and not one as claimed in the evaluation report; these 5 protected areas (within five distinct bodies of groundwater) have been reported as one feature in the GIS reporting.

[95] Malta clarified that the monitoring sites in Drinking Water Protected Areas are the same sites which were used during the 1st RBMP.

- Recommendation: *Malta should ensure measures are targeted and sufficient for proper protection of Protected Areas.*

  Assessment: In general, measures have not been reported for Protected Areas. For two-thirds of the Birds and Habitat Protected Areas, the objectives have been met. For the remaining third, objectives have been set, but work is still on-going to determine the needs of the areas. Objectives have been set for the two groundwater drinking water areas and for one area the objective has been met. Therefore, the basis for introducing measures does not seem to be in place.

  A few mandatory measures have been implemented in safeguard zones however.

  No information was supplied about objectives set or met for other types of protected areas such as bathing waters or nitrate sensitive areas, so the need for measures cannot be assessed.[96]

  Overall, this measure has been partially fulfilled.

[96] Malta subsequently clarified that all Bathing Water Protected Areas have achieved the objectives of the Bathing Waters Directive whereby excellent water quality was reported at all sites over the 23 week monitoring period during 2014. For the Nitrates Directive, the assessment is carried out under the WFD assessment of water bodies and the Annex V of the Nitrates Report.

Topic 16 Adaptation to drought and climate change

16.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Climate change was considered in Malta and the guidance on how to adapt to climate change (Common Implementation Strategy Guidance Document No. 24[97]) was used. No specific sub-plans addressing climate change are reported for Malta. A climate change check of the Programmes of Measures for the second RBMP was carried out. Adaptation measures KTM24 - "adaption to climate change", have not been applied to address any of the significant pressures.

Even though there is no legal obligation to prepare Drought Management Plans, many Member States have prepared them in order to cope with droughts. A Drought Management Plan has not been reported for Malta[98]. However, in 2012 such plans were in place (see "Topic report on: Assessment of Water Scarcity and Drought aspects in a selection of European Union River Basin Management Plans"[99]). No exemptions have been applied for Malta following Article 4(6) due to prolonged droughts.

16.2 Main changes in implementation and compliance since the first cycle

Drought Management Plans were reported in 2012. No information is provided for the second cycle, however Malta clarified that a Drought Management Plan exists in the second RBMP[100]. In the first RBMP no climate check of the Programme of Measures was carried out[100]. Such a check has been now carried out in the second RBMP.

[97] https://circabc.europa.eu/sd/a/a88369ef-df4d-43b1-8c8c-306ac7c2d6e1/Guidance%20document%20n%2024%20-%20River%20Basin%20Management%20in%20a%20Changing%20Climate_FINAL.pdf

[98] Malta subsequently clarified that Malta's second RBMP includes a specific Drought Management Plan as an Annex to the main RBMP document. Hence a Drought Management Plan has been reported for Malta. In this regard it is however noted that Malta's climatic conditions are defined as 'semi-arid' and hence Malta faces conditions of 'permanent drought'. In as much, Malta's second River Basin Management Plan should also be considered to be a Drought Management Plan in its own right, since this is the major quantitative challenge faced by Malta. It is unfortunate that the review does not recognize these natural conditions which Malta faces, and which place the country at a disadvantaged state compared to other Member States. Guidance from the Commission is therefore requested as to whether Article 4(6) can also be applied to permanent droughts (permanent conditions of water scarcity) in addition to prolonged droughts. Annex 1 of the second RBMP – Management Plans for Extreme Events (pg 549)

[99] http://ec.europa.eu/environment/water/quantity/pdf/Assessment%20WSD.pdf

[100] Malta subsequently clarified that the first RBMP included a climate check of the Programme of Measures.(Chapter 11) https://era.org.mt/en/Documents/1st%20WCMP_final.pdf

16.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMP and first Programme of Measures for this topic.