Decentralized
Administration
Macedonia
Thrace

2nd UPDATE OF RIVER BASIN MANAGEMENT PLAN

River Basin District of
Eastern Macedonia (EL11)

Management Plan Summary

European Union
Cohesion Fund

NSRF 2014-2020
programme for development

Co-financed by Greece and the European Union

HELLENIC REPUBLIC
DECENTRALIZED ADMINISTRATION OF MACEDONIA-THRACE

PROJECT: "2ND UPDATE OF RIVER BASIN MANAGEMENT PLANS OF THREE (3) RIVER BASIN DISTRICTS OF CENTRAL MACEDONIA (EL10), EASTERN MACEDONIA (EL11) AND THRACE (EL12) ACCORDING TO THE SPECIFICATIONS OF DIRECTIVE 2000/60/EC". SUBPROJECTS/SECTIONS 1, 2, 3 AND 4.

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2nd Update of River Basin Management Plan (RBMP) of the River Basin District of Eastern Macedonia (EL11)

Summary of 2nd Update of River Basin Management Plan– English

Final Version

Government Gazette A 82/12.06.2024 (Approval of the 2nd Revision of the RBMP)

2ND UPDATE OF RIVER BASIN MANAGEMENT PLAN (RBMP) OF THE RIVER BASIN DISTRICT OF EASTERN MACEDONIA (EL11)

MANAGEMENT PLAN SUMMARY

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ABBREVIATIONS

Abbreviation	Interpretation
AAC	Annual Average Concentration
AR	At Risk
AL	Artificial Lake
AWB	Artificial Water Body
BG	Bank of Greece
BQEs	Biological Quality Elements
BW(A)	Bathing water (areas)
C	Consortium
CF	Cohesion Fund
CM	Central Macedonia
Cms	Cubic meters per second (m^3/sec)
CSICC	Committee for the Study of the Impact of Climate Change
CUGM	Central Union of Greek Municipalities
D.W.C.M.	DIRECTORATE OF WATER OF CENTRAL MACEDONIA
D.W.E.M.T	DIRECTORATE OF WATER OF EASTERN MACEDONIA – THRACE
DAET	Decision to Approve Environmental Terms
DGW	General Directorate for Water
DAMT	Decentralized Administration of Macedonia and Thrace
EDSP	Environment Directorates and Spatial Planning
EIA	Environmental Impact Assessment
EP	Equivalent Population
EQR	Ecological Quality Ratio
EQS	Environmental Quality Standards
EMT	Eastern Macedonia and Thrace
FRMP	Flood Risk Management Plan
GEP	Good Ecological Potential
GLIO	General Land Improvement Organization
GNS	Government Newspaper Sheet
GS	General Secretariat
GT	Guidance Text
GVA	Gross Value Added
GWB	Groundwater Water Body
GBWC	Greek Biotope Wetland Centre
HAO	Hellenic Agricultural Organization
HAS	Hellenic Statistical Authority
HCMR	Hellenic Centre for Marine Research
HGMEA	Hellenic Geological and Mineral Exploration Authority (former Institute of Geological and Mineral Exploration)
HGRS	Hellenic Geodetic Reference System
HLMM	Hellenic Library of Mitigation Measures
hm^3	Cubic centimetres or Millions of cubic metres

Abbreviation	Interpretation
HMWB	Heavily Modified Water Body
JMD	Joint Ministerial Decision
km	Kilometers
km^2	Square kilometers
km^3	Cubic kilometers
L	Landfill
L.	Law
LC	Local Communities
LD	Local District
LEPL	Legal Entity Under Public Law
LGO	Local Government Organization
LLRA	Local Land Reclamation Agency
LR	Landfill of Residues
m	Measures
m^2	Square meters
m^3	Cubic meters
MD	Ministerial Decision
MD	Ministry of Development
MED GIG	Mediterranean Intercalibration Group
MEE	Ministry of Environment and Energy
MI	Management Institution
MIT	Ministry of Infrastructure & Transport
MRDF	Ministry of Rural Development and Food
MSFD	Marine Strategy Framework Directive
MU	Municipal Units
MWSSC	Municipal Water Supply and Sewerage Company
NAP	National Action Plan
NECCO	Natural Environment and Climate Change Organization
NECP	National Energy and Climate Plan
NMN	National Monitoring Network
NOP	National Operational Plan
NP	National Park
NR	Not at Risk
NSACC	National Strategy for Adaptation to Climate Change
NSRF	National Strategic Reference Framework
OPENSD	Operational Program "Environment and Sustainable Development"
OPETIESD	Operational Program "Transport Infrastructure, Environment and Sustainable Development"
PAR	Probably At Risk
PCAGGCA	Payment and Control Agency for Guidance and Guarantee Community Aid
PD	Presidential Decree
PNR	Probably Not at Risk
POM	Program of Measures

Abbreviation	Interpretation
RB	River Basin
RBD	River Basin District
RBMP	River Basin Management Plan
RCCAP	Regional Climate Change Adaptation Plan
RCM	Region of Central Macedonia
RDP	Rural Development Program
REM	Region of Eastern Macedonia – Thrace
RES	Renewable Energy Sources
RPA	Register of Protected Areas
RSF	Regional Spatial Framework
RU	Regional Unit
SAC	Special Area of Conservation
SCI	Site of Community Importance
SCLR	Site of Community Land Reclamation
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEIA	Strategic Environmental Impact Assessment
SPA	Special Protection Area
SPA	Special Protection Area
SPI	Standard precipitation indicator
SROP	Open City Spatial and Residential Organization Plans
SSCI	Special Service for the Coordination of Implementation General Secretariat for Public Investments NSRF
SSSPE	Special Service for Strategy, Planning and Evaluation
SSW	Special Secretariat for Water
SWB	Surface Water Body
TWSS	Thessaloniki Water Supply & Sewerage Company S.A.
UMWSSE	Union of Municipal Water Supply and Sewerage Enterprises
UWDA	Uncontrolled Waste Disposal Area
UAV	Upper acceptable values
WB	Water Body
WFD	Water Framework Directive
WFD	Water Framework Directive (2000/60/EC)
WG ECOSTAT	Working Group on Ecological Status
WISE	Water Information System for Europe
WS	Wildlife Sanctuaries
WSP	Water Safety Plans
WSSC	Water Supply and Sewerage Company of the Capital
WTP	Wastewater Treatment Plant
EC	European Council / Union (where applicable)
EEC	European Economic Community
EEC	European Economic Community
EU	European Union
MEP	Maximum Ecological Potential

1 INTRODUCTION - 2nd UPDATE OF RIVER BASIN MANAGEMENT PLAN

1.1 INTRODUCTION

The Water Management Framework is defined at European level by the Water Framework Directive 2000/60/EC (WFD), as incorporated into the National Institutional Framework by Law 3199/2003, as amended and in force, and Presidential Decree 51/2007. The Directive requires appropriate measures to be taken to promote sustainable water use, as well as to protect and/or improve the status of surface (river, lake, transitional and coastal) and groundwater through the establishment of a River Basin Management Plan (RBMP), which is reviewed every six years. The RBMP is a strategic document, which sets the objectives for water status at River Basin District (RBD) level and proposes the necessary measures and actions to achieve these objectives. With its approval, the RBMP is an institutional obligation and must be considered by all public bodies in decision-making.

The first Management Plans, which have been approved, concerned the 1st Management Cycle (2009-2015) and were valid until their revision. The Management Plans drawn up with the 1st Update of the River Basin Management Plans of the 14 River Basin Districts of the country, in accordance with the specifications of Directive 2000/60/EC, concerned the 2nd Management Cycle (2016-2021) and were in effect until their Update.

In this context, the first RBMP of the Ministry of Eastern Macedonia (EL11) was approved by the National Water Commission in 2013 (Government Gazette B'2291/13.09.2013), while its 1st Update in 2017 (Government Gazette B 4679/29.12.2017).

The Management Plans prepared with the 2nd Update of the River Basin Management Plans of the 14 River Basin Districts of the country, in compliance with the requirements of Directive 2000/60/EC, refer to the 3rd Management Period (2022-2027). The 2nd Update of the River Basin Management Plan of the Eastern Macedonia RBD (EL11) was implemented by the Decentralised Administration of Macedonia-Thrace and approved in 2024 (Government Gazette A' 82/12.06.2024).

1.2 PREPARATION OF THE 2ND UPDATE OF RIVER BASIN MANAGEMENT PLAN

1.2.1 Requirements of Directive 2000/60/EC and objectives of the 2nd Update

The Directive 2000/60/EC puts the protection of the water environment and ecological objectives at the centre of an approach based on integrated water management at river basin scale. For this purpose, appropriate implementation planning is required with the design and coordination of individual actions so that the outcome is 'good status' (or 'good potential') of water bodies.

The implementation of the Directive includes the following main components:

1. Assessment of the current situation and preliminary gap analysis.
2. Organisation of environmental objectives.
3. Establishment of monitoring programs.
4. Gap analysis.
5. Preparation of the Program of Measures.
6. Preparation of the country's River Basin Management Plan.
7. Implementation of the Program of Measures.
8. Evaluation of the Program of Measures.
9. Public consultation, active involvement of stakeholders.

For the River Basin District of Eastern Macedonia (EL11), in the framework of the 2nd Review of River Basin Management Plans, the following actions were carried out:

- Update the identification and characterization of surface water bodies (river, lake, transitional and coastal) and groundwater bodies.
- Review and update to the assessment/classification of the status/potential of surface (ecological, chemical), including heavily modified and artificial, and groundwater (quantitative, qualitative) water bodies, based on new data available from the operation of the National Water Status Monitoring Network.
- Re-evaluation of surface hydrological bodies with significant hydromorphological alterations, in order to define those that constitute heavily modified (HMWB) and artificial (AWB).
- Update and further develop the list of significant pressures on the list of significant pressures as included in the 1st RBMP Update and their impacts.
- Update of the Register of Protected Areas, based on new data emerged from the implementation of relevant EU Directives.
- Update of data on planned water resource development projects/activities
- Review of environmental objectives for all surface WBs and groundwater bodies, including heavily modified and artificial water bodies.
- Assessment of progress in relation to the achievement of the environmental objectives of the Directive, as defined during the 1st Update of the Management Plan.
- Update of the Program of basic and supplementary Measures for the protection and restoration of water resources or bodies of the River Basin District, as included in the approved 1st Update of the Management Plan of the River Basin District, in accordance with Article 11 and Annex VI of Directive 2000/60/EC (Article 12 and Annex VIII of Presidential Decree 51/2007).
- Update the economic analysis of water use.
- Recording of the transboundary partnerships so far and promotion of the implementation of joint or compatible Management Plans of the transboundary Strymonas river basin.
- Revision of the Strategic Environmental Impact Assessment (SEIA) to identify, describe and assess the environmental impacts from the implementation of the aforementioned Management Plan Program of Measures.
- Informing the public and promoting its active participation, as well as publicizing and public consulting of the Draft Management Plan, six months before its completion, in accordance with Article 14 of Directive 2000/60/EC and Article 15 of Presidential Decree 51/2007.
- Covering the country's reporting and other obligations in the EU regarding the Management Plan, including the WISE (Water Information System for Europe) electronic system, according to the standards established by the European Environmental Agency (EEA).
- Updating the data as well as the results of the Project: "Development of water resources management systems and tools in 13 River Basin Districts of the country", which was completed by the Ministry of Development in December 2008 regarding the section concerning the River Basin District of Eastern Macedonia (EL11).
- The training of staff of the Contracting Authority and the responsible Water Directorates in the fields covered by the deliverables.
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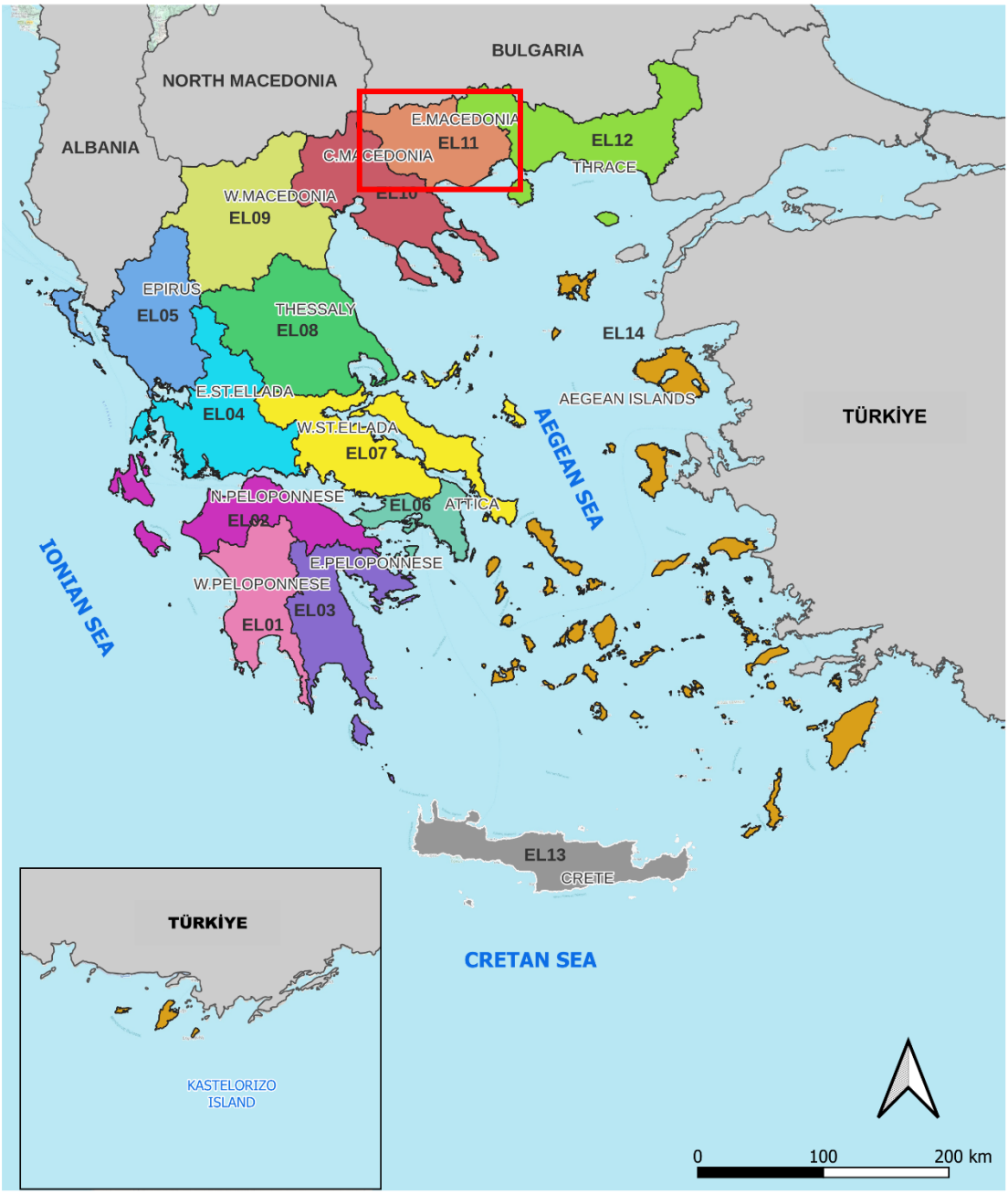


Map 1-1: The 14 River Basin Districts of Greece

1.2.2 Strategic Environmental Impact Assessment

The Strategic Environmental Impact Assessment (SEIA) procedure is followed for the 2nd Update of the River Basin Management Plans of the Country's River Basin Districts, in accordance with the EIA with the Joint Ministerial Decision no. 107017/28.08.2006 for the "Environmental Impact Assessment of certain plans and programs, in compliance with the provisions of Directive 2001/42/EC" (Government Gazette B' 1225/2006, as amended by Ministerial Decision. no. 40238/2017 (Government Gazette B'3759/25.10.2017), M.D.. n° 38181/2695/2022 (Government Gazette 1923/B'/18.4.2022) and M.D. 94750/6235/2023 (Government Gazette 5774/B` 4.10.2023) and is valid.

The approval of the SEIA is made by decision of the Environmental Service responsible for the environmental approval of the Environmental Plan (DIPA/YPEN) [Article 7 of the MD no.107017/2006 (GG B' 1225/5.9.2006) as amended by the MD no. 40238 (GG B' 3759/25.10.2017), M.D.. YPEN/DIPA/38181/2695/2022 (GG B`1923/18.4.2022), repealed by M.D.76515/5170/2022 (G.G B' 3999/29.07.2022) and M.D.no. 94750/6235/2023 (G. G. B' 5774/04.10.2023) and is valid].

1.3 CONSULTATION PROCEDURE

The public consultation process was designed and implemented based on the requirements of the Directive, which provide for a series of actions to ensure the access of citizens and stakeholders to all available information with the aim of actively participating in the formulation of the 2nd Update of the River Basin Management Plan of the River Basin District.

The consultation process on the 2nd Update of River Basin Management Plans started in March 2019 and was completed in November 2023 and included the following:

Phase A:	In March 2019, the scope of the planned work for the preparation of the 2nd Update of the RBMP as well as the detailed timetable of the work was posted on the website of the Ministry of Environment (http://wfdver.ypeka.gr/el/consultation-gr/) for public information.
Phase B:	In September 2019, information on the important water resources management issues in each Rier Basin was posted on the website of the Ministry of Environment and Natural Resources, including a summary of the results of the National Network for the monitoring of the water status of the country's waters for the River Basin District, the main pressures, the identification and listing of the competent authorities and stakeholders involved in the consultation.
Phase C:	In May 2023, the Preliminary Draft River Basin Management Plan of the Eastern Macedonia River Basin District was posted on a special website of the Ministry of Environment (http://wfdver.ypeka.gr). The launch of the consultation of the Draft in accordance with the provisions of the Water Framework Directive (2000/60/EC) was also announced on the website of ADMTH (m-t.gov.gr) through which the Draft and its supporting documents were accessible. In order to encourage the active participation of stakeholders and the public during the 2nd Update process, the following were implemented: In July 2023, a Workshop was organised by the DAMT in Serres with the main purpose of presenting the progress of the implementation of the measures of the

	1st Update and the under-development Program of Measures of the 2nd Update and exchange of views with the local implementing agencies and stakeholders. (Meeting 06/07/2023). 36 participants attended. In October 2023, the DAMT organized an open workshop in Serres (19.10.2023), on the topic *Consultation of the 2nd Update of the River Basin Management Plan of the Eastern Macedonia RBD (EL11)*, in order to inform the public and the authorities of the River Basin District. The consultation was hybrid, allowing the opportunity to follow the consultation as well as to express opinions and submit comments either by physical presence or online, through the platforms of youtube and facebook.
	In December 2023, a **workshop** was organized by the GWA of the Ministry of Environment and Energy with all the Water Administrations of the country, during **7-8 December 2023,** on the finalization of the Programs of Measures of the 2nd Update of the Water Management Plans of the River Basin Districts of the country, which took place in Athens, at the amphitheatre of the Ministry of Environment and Energy (Messoghion Av. 19).
⇨	**The foreseen six-month period for the public consultation process was completed in November 2023, while the whole process was completed by approving the SEIA on 18.04.2024 (M.D.no. 113103/7348/18.04.24).**

The hosting of Public Consultation Days combined with the distribution of Information Leaflets, the provision of access to the Draft and the Documentation, as well as the encouragement for the expression of views and comments **ensured the 3 requested levels of Participatory Process**:

Access to information ⇒ Expression of interest ⇒ Active participation

A separate procedure was followed for the publication and consultation of the Strategic Environmental Impact Study, which started in November 2023.

Διαβούλευση της ΣΜΠΕ	The text of the SEIA has been uploaded to: http://wfdver.ypeka.gr/el/project/consultation-el11-410-2revision-smpe-gr-v01/ **The publication of the Strategic Environmental Impact Assessment (SEIA) of the 2nd Update of the River Basin Management Plan (RBMP) of the Eastern Macedonia River Basin Districttict (EL11) was announced to the public with a relevant declaration on the website of the Decentralized Administration of Macedonia and Thrace (m-t.gov.gr) on 22.11.2023. In the same announcement, the River Basin Districts of Central Macedonia and Eastern Macedonia - Thrace of the Decentralized Administration of Macedonia and Thrace invited the relevant public to express their views in written form and/or electronically, and in any case sufficiently documented, to them and to the Ministry of Environment, within a period of thirty (30) days from the publication of this announcement.** By the M.D. no. 120983/7885/21.11.2023 document of the Ministry of Environment, the opinion on the SEIA of the responsible authorities was requested.
⇨	**The public consultation process of the SEIA was completed with the approving decision on 18.04.2024**

In summary, the changes/completions/additions included in the 2nd Update of the RBMP as a result of the consultation relate to:

- updating data based on information made available and/or indications taken into account during the consultation. These data mainly concern issues related to pressures, the state of Hydrological Systems (HS) and
- the Reform of the Program of Measures which includes:
    - the recasting of specific measures regarding the specification / specification of restrictions and actions defined there in.
    - The correction of the implementing bodies of the measures
    - the differentiation in the description of certain measures to include actions already planned by the implementing bodies and/or available financial instruments.
    - the introduction of targeted supplementary measures to achieve specific and important management objectives, enhance existing knowledge and improve environmental and water conditions.

It is reported that the final Program of Measures of the RBD of Eastern Macedonia (EL11) was reformed considering comments and opinions received in the context of consultation of both this River Basin District and the other River Basin Districts of the country.

2 DIFFERENCES COMPARED TO THE 1ST UPDATE OF RIVER BASIN MANAGEMENT PLAN

For the 2nd Update of the River Basin Management Plans of all River Basin Districts of the country, the common specific methodological approaches were updated on some critical issues of implementation of Directive 2000/60/EC.

The update of the national methodologies took place in the context of the implementation of the 2nd RBMP Update and concerned the following methodologies:

- Final development of a national methodology for the determination of the ecological flow of river water bodies.
- Update of the analytical methodology for the analysis of anthropogenic pressures and their impacts on surface and groundwater bodies.
- Update of the analytical methodology developed by the Responsible Authority "Determination of the "exceptions" of paragraphs 4 to 6 of Article 4 of Directive 2000/60/EC (4.4 – 4.6)", by reviewing the specifications for the application of the exemptions of Article 4.5
- Update of the analytical methodology developed by the AA "Determination of "exceptions" of paragraph 4.7, article 4 of Directive 2000/60/EC.
- Update of the Methodology for the Classification of Ecological, Chemical and Overall Status of Surface Hydrological Systems.

All the above detailed methodologies are available on http://wfdver.ypeka.gr/ relevant website.

The table below summarizes the differences identified in each individual subject of the Revised Management Plan in relation to the 1st Update of the Management Plan, based on the above-mentioned and the results obtained.

Table 2-1: Differences under the 2nd Update compared to the 1st Update of the RBMP

SUBJECT MATTER OF REVISED RBMP/ACTIVITY	DIFFERENTIATION FROM THE 1ST UPDATE OF THE RBMP	SUMMARY OF RESULTS
RESPONSIBLE AUTHORITIES	The responsible authorities are amended in accordance with the provisions of Law 5037/2023	The corresponding chapter presents a list of the key authorities/entities involved in Water Management as derived from the existing institutional framework and in accordance with the requirements of the new guideline text for reporting to the EU (GD Reporting 2022).
DESIGNATION OF SURFACE WATER BODIES – TYPOLOGY	The methodology for the definition and typology of Surface Water Body (SWB) does not differ from the 1st Update of the Management Plan. However, during the update of the Management Tools, which includes the use of hydrological simulation models with the incorporation of rainfall until the year 2020, the naturalized flows of the river HS are differentiated	There is no change in the number and types of Surface Water Bodies. The variations concern the hydrological characteristics of the water bodies and especially the runoff of the river WBs for the evalution of the pressures. Regarding the geometry of the Surface Water Bodies (SWBs), the EL1106R0002060109N-Lakkos was adjusted based on the relief and modified in terms of length, while the boundaries of the subbasins affected by the above-mentioned modication, SWB EL1106R0002060109N-Lakkos and EL1106R0002060108N-Aggitis, were adjusted. Improvements to the geometry of the subbasin boundaries based on relief were made to the following SWB: EL1106R0002100246H and EL1106R0002100247N-Krousovitis, EL1106R0002060420H. Doxatou R., EL1106R0002060007N-Aggitis R. and EL1106R0002200068N, EL1106R0002200069N-Xeropotamos R.
DESIGNATION OF BODIES OF GROUNDWATER	The number of GWB's and the definition of their boundaries are reviewed based on new data from the monitoring network, individual specific studies carried out since the adoption of the 1st Update and comments submitted to the public consultation.	The Asprovalta Groundwater Body (GWB) was redefined and given a new code, in order to include a small section at the SE edge of the EL10 RBD, which was not included in a Groundwater body, taking into account the geological structure of this section. For the rest, the delimitation/zoning of the other fourteen (14) GWB of the 1st Update is accepted.The results are summarized in Chapter 4.2 of the present document and in detail in the Detailed Text of Documentation "Characterization and evaluation/classification of the status of groundwater bodies".
HEAVILY MODIFIED WATER BODIES (HMWB) AND ARTIFICIAL WATER BODIES (AWB)	The Heavily Modified Water Bodies defined in the 1st Update of the RBMP are reviewed based on the current methodology and the data of the National Monitoring Network as defined by the Directive.	The application of the Initial and Final Identification Methodology for Heavily Modified Water Bodies (HMWB) and Artificial Water Bodies (AWB) in combination with the Methodology for Identification and Criteria for the Assessment of Hydromorphological Alterations and the latest data of the National Monitoring Network in relation to the ecological status of the water bodies did not change the number of HMWB and AWB identified during the 1st Update. The results are

SUBJECT MATTER OF REVISED RBMP/ACTIVITY	DIFFERENTIATION FROM THE 1ST UPDATE OF THE RBMP	SUMMARY OF RESULTS
		summarised in Chapter 4.3 of this document and detailed in the Detailed Text of Documentation "Final Determination of Heavily Modified and Artificial Water Bodies".
PROTECTED AREAS	The Register of Protected Areas established during the 1st Update is developed based on: (a) the new Natura 2000 sites proposed by the Ministry of Environment and Energy based on the provisions of the Birds (2009/147/EC) and Habitats (92/43/EEC) Directives. (b) the results of bathing water monitoring in accordance with the Bathing Water Directive (2006/7/EC) and the revision of the bathing water quality monitoring network (circular MEE .190856/1-08-2013). (c) other directives for the protection of waters with stricter objectives such as the Directives on drinking water (80/778/EEC, as amended by Directive 98/83/EC repealed and 2020/2184/EU in force), on shellfish (2006/113/EC), on freshwater fish (2006/44/EC), on protection against nitrates (91/676/EEC) and on urban wastewater treatment (91/271/EEC). (d) latest information arising from the adoption of the 1st Update and the relevant EU Guidance Texts.	Surface water and groundwater associated with protected areas shall be declared. The differences compared to the 1st Update of the Management Plan concern a) the addition of a zone vulnerable to nitrate pollution, but without the inclusion of new HS in the register, b) the removal of a protection area for aquatic species of economic importance, c) variations in Natura 2000 sites resulting from the Update of a national list of sites of the European Ecological Network Natura 2000.The results are summarized in Chapter 4.4 hereof and in detail in the Detailed Text of Documentation "Updated Register of Protected Areas".
PRESSURES AND IMPACTS	The assessment of pressures and impacts is based on the updated common methodology developed and the latest evidence that emerged from the adoption of the 1st Update of the RBMP. An important difference is the fact that in the current management cycle, data from registers and databases are utilized, which have been developed, either because of the implementation of the program of measures of the previous Management Plans, or as a result of the implementation of other national and European policies and guidelines.	In the RBD of Eastern Macedonia, the methodological approaches followed in the 1st Update of the RBMP are largely similar to those of the 2nd Update. The differences that arise mainly stem from the newer data available and relate to a more complete picture of cultivated and irrigated areas, the establishment of new activities and in general, a better mapping of activities in the RBD. The pressures and loads resulting from the recorded pressures are linked to the water body to optimise the linking of measures to them. Regarding the pressures due to hydromorphological characteristics of the water bodies, they are assessed more fully and used to identify, on the one hand, the HMWB and, on the other hand, the appropriate measures to achieve the GEP or to better address their impacts. The results are summarised in Chapter 5 of this document and presented in detail in the Detailed Text of

SUBJECT MATTER OF REVISED RBMP/ACTIVITY	DIFFERENTIATION FROM THE 1ST UPDATE OF THE RBMP	SUMMARY OF RESULTS
		Documentation "Analysis of anthropogenic pressures and their effects on surface water bodies and groundwater bodies".
CLASSIFICATION OF THE STATUS OF SURFACE WATER BODIES	During the Update, the classification of the status of surface water body is implemented based on the latest data of the National Water Monitoring Network. The classification methodologies have been updated in relation to the 1st Update. For the SWBs that are not monitored, their status classification is done by grouping based on their typology and estimated pressures.	The 2nd Update includes a fuller and more reliable depiction of the state of surface water body (SWB). The results are summarized in Chapter 6.1 of the present document and in detail in the Detailed Text of Documentation "Characterization, typology, typo-characteristic conditions and assessment/classification of the status of all surface water bodies".
CLASSIFICATION OF GROUNDWATER BODY STATUS	During the 2nd Update of the RBMP the method for setting new upper accepted values (UAV) was modified due to increased natural background values in some GWB and due to the availability of more monitoring data. Also, based also on the new data of the National Monitoring Network, an approach to trend diagnosis - assessment is made to predict, in accordance with Directive 2006/118/EC, significant and sustained upward pollution trends in pollutant concentrations. Based on the existing, non-continuous data, in our country, the trend diagnosis, in WUAs at risk, is considered in the whole management periods in order to ensure a longer-term data series even with intermediate measurement gaps.	The 2nd Update includes an assessment of the status of the GWBs based on the latest monitoring data. A deterioration of the qualitative and quantitative status of the porous GWB of Ofriniou compared to the results of the 1st Update was found. The results are summarised in Chapter 6.2 herein and detailed in the Detailed Text of Documentation "Characterisation and assessment/classification of the status of groundwater bodies".
NETWORK FOR WATER STATUS MONITORING	The 2nd Update includes the results of the National Water Status Monitoring Network of the country for the period 2018-2021 for almost all Biological Quality Data, Physicochemical and Chemical Quality Data as well as hydromorphological qualitative elements of surface Wbs for the period 2018-2020.	The data for the monitoring program that are used, are summarized in Chapter 6.3 of the present and in the Detailed Text of Documentation "Characterization, typology, type-characteristic conditions, references and evaluation/classification of the status of all categories of surface hydrological system" and "Characterization and evaluation/classification of the status of groundwater bodies" for the network of Surface and Groundwater Bodies respectively.
ECONOMIC ANALYSIS OF WATER USES	For the economic analysis of water uses, the instructions of the General Directorate of Water on the general rules for the costing of water services and Law 5037/2023 and the data from the Special Monitoring Information System of the General Directorate of Water of the Ministry of Environment & Energy are followed.	The results are summarized in Chapter 7 of this document and in detail in the Detailed Text of Documentation "Economic analysis of water use and determination of the existing degree of cost recovery for water services (water supply, irrigation and drainage)".

SUBJECT MATTER OF REVISED RBMP/ACTIVITY	DIFFERENTIATION FROM THE 1ST UPDATE OF THE RBMP	SUMMARY OF RESULTS
ENVIRONMENTAL OBJECTIVES – EXCEPTIONS	In the 2nd Update the determination of environmental objectives and exceptions is based on the revised methodological approaches developed in line with EU guidance (see above in chapter 2.2.1) in the 1st Update and updated/refined during the 2nd Update of the RBMPs.	The results are summarised in Chapter 8 hereof and in detail in the Detailed Text of Documentation " Definition of environmental objectives, including "exceptions" to the achievement of the objectives of Directive 2000/60/EC.
PROGRAM OF MEASURES	The program of measures as set out in this Management Plan Review outlines the following approaches: ▪ The specification/rewording of measures of the 1st Update of the RBMP that continue in the current Management cycle. ▪ Developing new measures to address the pressures of the water bodies and the achievement of the objectives (targets) set. ▪ The correlation of measures with specific significant pressures identified in the River Basin District. ▪ The correlation of measures with Key Categories of Measures as defined by the EU and specific indicators for monitoring their progress. ▪ The correlation of measures with national actions for adaptation to Climate Change as defined in the National Strategy for Adaptation to Climate Change (Ministry of Environment and Energy, 2016) and the Regional Climate Change Adaptation Plans that have been implemented.	The new Program of Measures is summarized in Chapter 9 hereof and in detail in the Detailed Text of Documentation "Program of basic and complementary measures, including the analysis of their costs in relation to their efficiency".

3 DESCRIPTION OF THE RIVER BASIN DISTRICT – COMPETENT AUTHORITIES

3.1 RIVER BASINS

The Decision no 706/16-7-2010 (G.G. B' 1383/02.09.2010 & G.G. B' 1572/28.09.2010), of the National Water Commission "on the determination of the River Basins of the country and the designation of the competent Regions for their management and protection" and the approval decisions of the National Water Commission of the 1st RBMPs, defined the forty-six (46) River Basins, which fall under fourteen (14) River Basin Districts (corresponding to the term River Basin Districts of Article 3 of Presidential Decree 51/2007).

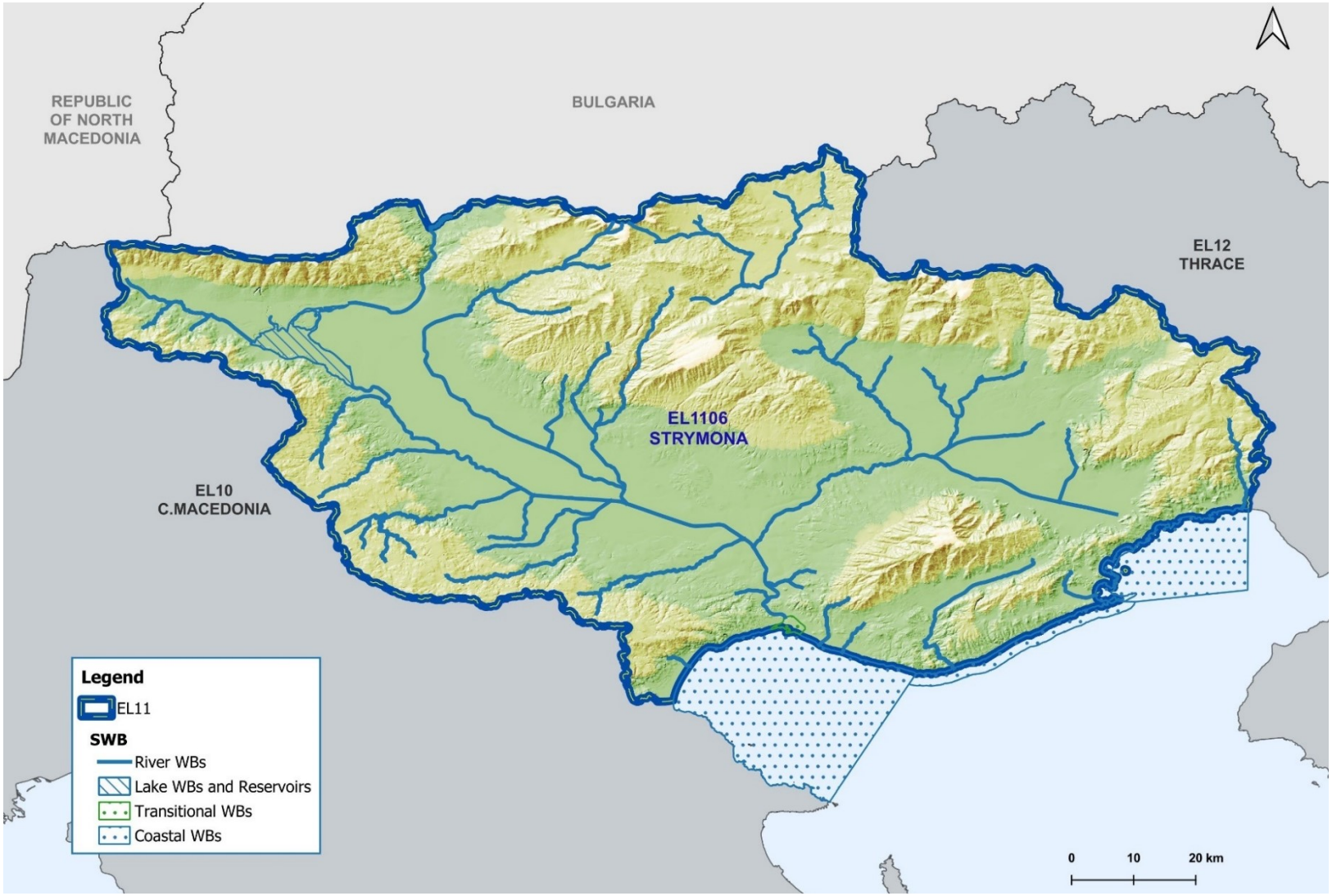
Strymonas River Basin (EL1106)

The River Basin District of Eastern Macedonia (EL11) consists of one (1) river basin, that of Strymonas (EL1106). The boundaries of the Strymonas River basin are identical to those of the River Basin District of Eastern Macedonia. It is generally characterised by a sufficient supply of water, but it is important to note that a very large part of this supply, as far as surface waters are concerned, comes from transboundary waters. The physical characteristics of the basin are presented in Table 3-1 below. The geographical extent and morphology of the RBD of Eastern Macedonia (and the Strymonas River basin) are presented in Map 3-1. A more detailed description of the river basin is given in the following section 3.2.

Table 3-1: River basin of the Eastern Macedonia RBD (EL11)

RB/RBD	NAME RB	AREA [1] (km^2)	ALTITUDE (m)		
			Average	Maximum	Minimum
EL1106	RB STRYMONA	7.319	403	2.200	0
EL11	**TOTAL RBD EL11**	**7.319**			

Note [1]: Refers to the terrestrial area of the RBD. Excludes coastal WBS, the area of which is 733 km^2.



Map 3-1: Boundaries and morphology of the RBD of Eastern Macedonia (EL11) and the Strymon River Basin (EL1106)

3.2 NATURAL CHARACTERISTICS

The River Basin District, with an area of **7.319 km²**, ranks **12th in size in the country**, in terms of area, larger only than the River Basin Districts of Western Peloponnese (EL01) and Attica (EL06).

The River Basin District of Eastern Macedonia includes extensive mountains between which hilly and lowland areas of inland or coastal character develop. This image (Map 3 1) is the result of the complex geodynamic processes that have taken place in RBD of Eastern Macedonia. The River Basin District is mostly lowland with 41% of its area located at an altitude of less than 200 m and the plains of Serres and Drama occupying a significant part of the department. The rest of the RBD is semi-mountainous and mountainous, with 10% of its area having an altitude of over 1,000 m. The RBD of Eastern Macedonia has as boundaries to the north the mountain range of Beles, the mountains Kerdylia, Vertiskos, Krousia and Beles to the west, Falakro and the Basin Mountains to the east - southeast, the Bays of Orfanos (or Strymoniko) and Kavala to the south. The morphology of the coasts of the district is particularly smooth and includes the open bays of Orfanos (or Strymoniko) to the west and Kavala to the east, as well as many small bays.

The average annual temperature in the RBD during the period 1980-2020 is 14,35°C with large fluctuations spatially but also between summer and winter. Spatially, the average r annual temperature varies from about 16,0°C in the coastal and lowlands, to about 6,0°C in the northern mountains. Regarding seasonal variation, it is indicatively mentioned that the maximum annual thermometric range exceeds 21°C with an average annual range of about 18°C. The hottest month is July and the coldest is January.

The average annual height of atmospheric precipitation in RBD 11 is estimated at 874mm, for the 40-year period 1980-2020. Precipitation heights increase from the west (sub-basin of Strymon) to the east (sub-basin of Aggitis) and from the lowest to the highest altitudes. The highest percentage of precipitation concerns the winter and spring period, while sporadic rains are observed throughout the year. Compared to southern River Basin Districts of the country, increased participation in annual precipitation occurs in the rains of the summer season. Snowfall is common, especially in the mountains and takes place during the period September-April. Hailstorms are rare.

3.3 ANTHROPOGENIC CHARACTERISTICS

3.3.1 Administrative structure and population

The River Basin District of Eastern Macedonia (EL11) falls under the responsibility of the Decentralized Administration of Macedonia – Thrace, while it occupies areas of the Regions of Eastern Macedonia & Thrace and Central Macedonia. The RBD of Eastern Macedonia occupies, from the Region of Central Macedonia, the entire Regional Unit of Serres, as well as areas of the Regional Areas of Thessaloniki (7.9%) and Kilkis (5%), and from the Region of Eastern Macedonia and Thrace, areas of the Regional Units of Kavala (63.8%) and Drama (52.7%).

The administrative affiliation of the River Basin District, according to Law 3852/4.6.2010 (Government Gazette A' 87) "New Architecture of Local Government and Decentralized Administration – Kallikratis Program", appears in the maps below.

Map 3-2: Administrative Division RBD EL11 at municipal level

Within the boundaries of the RBD EL11 region there are 18 municipalities and **366 settlements** with a total actual population of 336.802 inhabitants (estimate based on 2021 census data) which ranks it **11th in population of the country**; surpassing only the River Basin Districts of Western and Eastern Peloponnese (EL01, EL03) and Western Central Greece (EL04). Compared to the **population of 2011, there is a decrease in population of 11.43%.** The majority of settlements (54%) have a population of less than 500 inhabitants and account for only 9% of the population of the RBD. 29 settlements with a population of more than 2 000 inhabitants account for 57% of the population of the RBD. Finally, a significant number of settlements (138) with a population size of 500 to 2 000 inhabitants are found in the RBD, accounting for 34% of the population.

3.3.2 Land Use

As presented in Figure 3-1, the main land uses in the RBD EL11, as derived from the OPEKEPE's Land Parcel Identification System (LPIS, 2021), are forests and semi-natural areas, which occupy 38.86% of the RBD area (2,843km²), and agricultural areas, which occupy 38.61% (2. 825 km²). This is followed by pasture land, occupying 16.67% (1,219 km²), while water surfaces (2.78%), artificial surfaces (1.31%), urban areas (1.38%) and the road network (0.32%) cover a small percentage of the surface area of the RBD. A negligible percentage (0.06%) relates to unregistered areas.

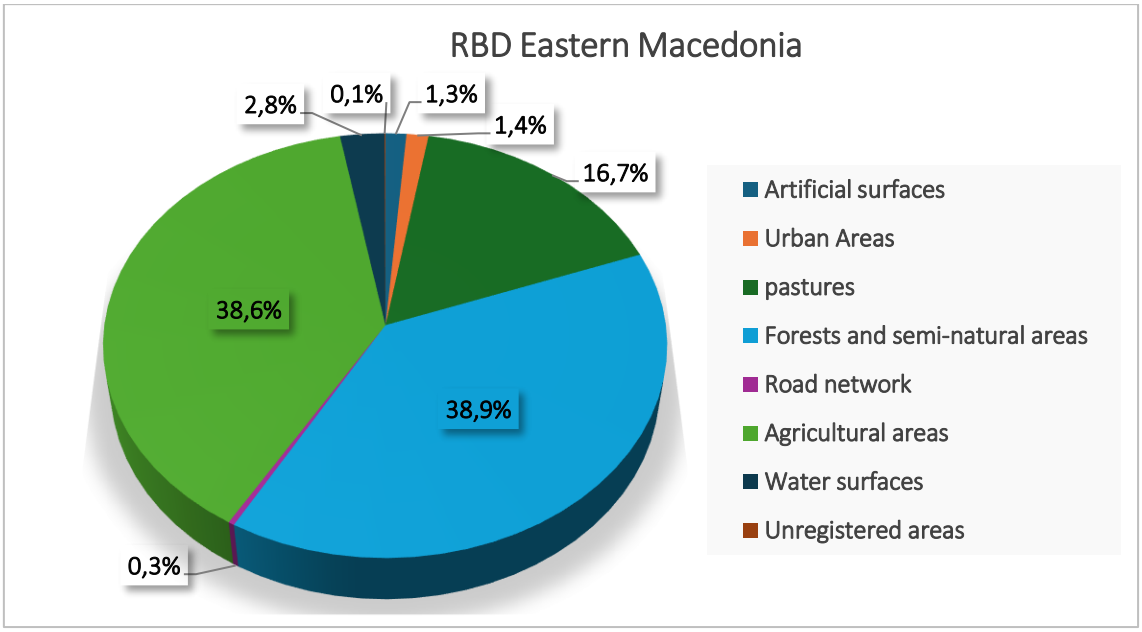
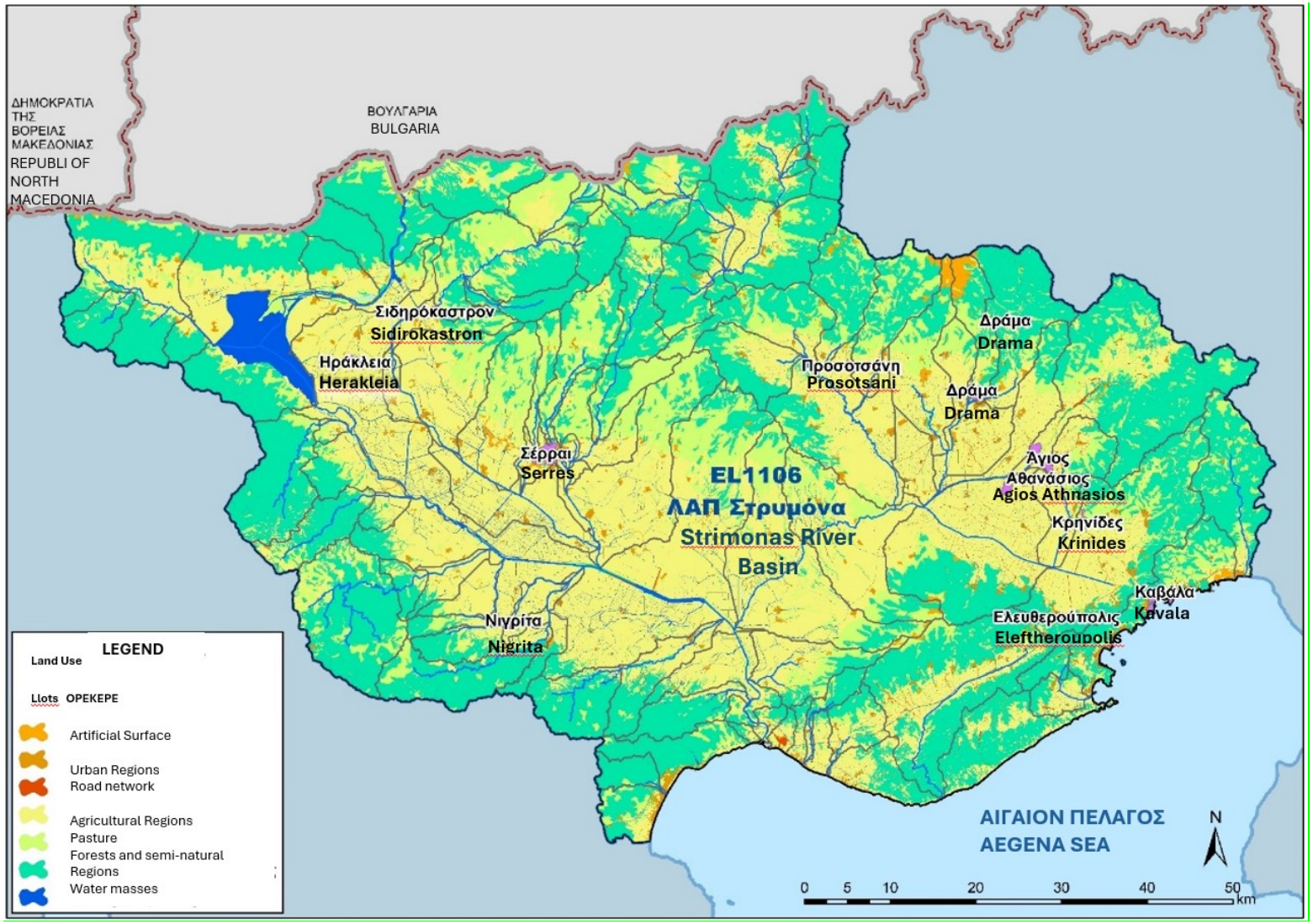


Figure 3-1: Distribution of land use in the RBD Eastern Macedonia region (EL11) (PCAGGCA, 2021)

The distribution of land use of the River Basin District of Eastern Macedonia (EL11) and the Strymonas River Basin (EL1106), based on PCAGGCA data (2021) is presented in the map (Map 3-4) below.



Map 3-3: Land use of the RBD Eastern Macedonia (EL11) and the Strymona RB (EL1106) (Payment and Control Agency for Guidance and Guarantee Community Aid (PCAGGCA), 2021)

3.3.3 The demand and main usages of water

The total average annual demand from anthropogenic uses is 815,9 hm^3, with the highest demand being found in the lowland parts of the hydrological system. Irrigation is the main water use in the basin, with irrigation water demand amounting to 762.7 hm^3 (93.5 %). Water supply comes second, with a relative demand of 45.4 hm^3 (5.6 %), while industry and livestock are minor contributors, with a demand of 4.2 hm^3 (0.5 %) and 3.6 hm^3 (0.4 %), respectively. Figure 3-2 below shows the distribution of demand in the RBD for the different uses.

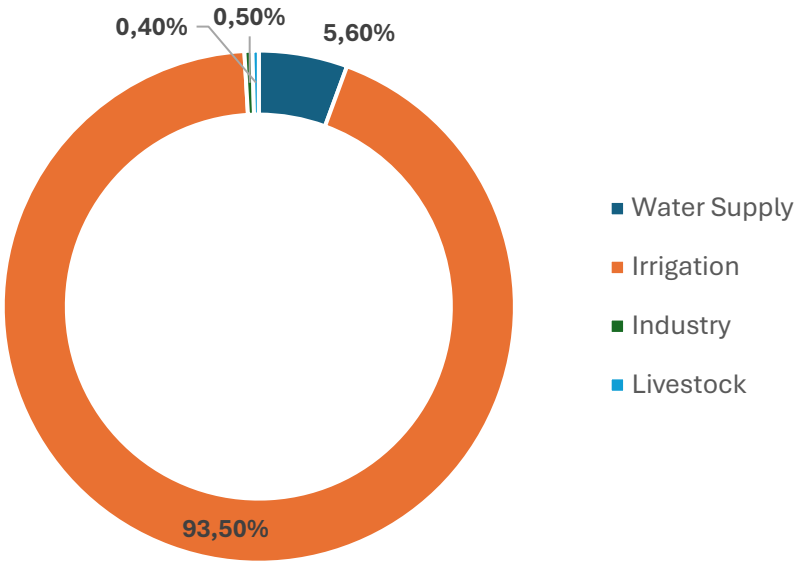


Figure 3-2: Percentage distribution of water demand among the different usages in the RBD 11

-30% of the total demand in RBD 11 is covered by Surface Water Bodies while the 70% is covered by Groundwater Bodies.

3.3.4 Socio-economic importance of the main water uses

Water is a vital and renewable natural resource. It is a social asset. Economic development is inextricably linked to the availability and quality of water resources. The need for water arises from a multitude of social and economic activities in which it is used, and which are essential for the existence and development of human societies. Given the fact that usable water is of limited availability, it has an economic value and is therefore also an economic asset.

However, the water is not evenly distributed. Moreover, overexploitation of the resource by human activity is exacerbating the already degraded state of water resources.

The analysis of socio-economic importance consists of its two main parameters,

- The access of all water uses to adequate and good quality water, as identified in the analysis of anthropogenic pressures, and
- The estimation of the supported Gross Value Added (GVA) per cubic meter of water for the main water usages.

The supported GVA per m^3 of water is a spatial and temporal representation of the economic value of water for longitudinal and spatial comparisons and rankings. It indicates to some extent the rational or non-rational use and efficiency of water. It is not a measure for guiding the productive and economic activity of water users, as this depends on several parameters.

In the entirety of the RBD, averaged over all uses, the supported GVA is estimated at 5 €/m^3. The lowest supported GVA is for the agricultural sector (0.6 €/m^3) which covers its needs from agricultural water and the highest for industry (107 €/m^3). The water for water supply covering the needs of domestic and other uses supports a GVA of 65 €/m^3.

3.4 COMPETENT AUTHORITIES

3.4.1 Identity of Competent Authority

The competent authorities for the implementation of Directive 2000/60/EC have been designated in accordance with **Law 3199/2003** (Government Gazette 280A΄/9.12.2003), as amended and in force, for the Protection and Management of Waters.

In particular, the following applies regarding the responsible authorities:

According to article 26 of Law 5037/2023 (Government Gazette A΄ 78), as of 28.03.2023, the National Water **Committee** is the Minister of Environment and Energy, subject to more specific provisions. The Ministry of Environment and Energy shall formulate the policy for the protection and management of water and monitor its implementation.

- The General Directorate of Water of the Ministry of Environment and Natural Resources (Article 4 of Law 3199 /2003), inter alia, coordinates the departments and state bodies and participates in the responsible EU bodies on all issues related to water protection and management, recommends general rules on water pricing and invoicing and monitors compliance with them, recommends legislative and administrative measures for water protection and management, monitors the quality and quantity of water at national level in cooperation with the Water Directorates of the Decentralised Administrations and ensures the development and management of water resources.

In addition, the following Ministries are involved in the implementation of Directive 2000/60/EC at national level: Ministry of Foreign Affairs, Ministry of Rural Development and Food, Ministry of Infrastructure and Transport, Ministry of Finance, Ministry of Development and Investment, Ministry of Health, Ministry of Maritime and Island Policy, Ministry of Interior.

<u>At regional level the responsible authorities are:</u>

- The **Water Council of Decentralized Administration (WCDA),** which is established in each Water Department that extends within the administrative boundaries of one or more Decentralized Administrations and is a body for social dialogue and consultation on water protection and management issues.
- The **Water Directorates of the Decentralised Administration**, through which the responsibilities of the Decentralised Administration for water protection and management are exercised. Following the reorganization of local government services because of the administrative reforms of the "Kallikrates" plan, the Water Directorates of the former state regions are now under the respective Decentralized Administrations.

In addition, in matters concerning the implementation of Directive 2000/60/EC, the first and second level Local Government Organizations are involved at regional level.

The table below (Table 3-2) provides a summary of the nature of the role played by each responsible authority by thematic area in the context of water management and protection.

Table3-2: Roles of Competent Authorities by thematic area in the context of water management and protection

Competent Authority	Main Roles												
	Pressure and impact analysis	Economic analysis	Surface water monitoring	Groundwater monitoring	Assessment of surface water status	Groundwater status assessment	Preparation of RBMPs	Training of AM	Assessment of surface water status	Public participation	Regulation enforcement	Coordination of implementation	Reporting to the European Commission
General Directorate of Water of the Ministry of Environment & Energy	B	B	B	B	B	B	B	B	B	B	B	B	B
Water Directorate of Decentralized Administration	B	B	S	S	S	S	B	B	B	B	B	B	-
Ministry of Foreign Affairs	-	-	-	-	-	-	-	-	-	-	B	-	-
Ministry of Rural Development and Food	-	-	-	-	-	-	-	-	B	-		-	-
Ministry of Infrastructure and Transport	-	-	-	-	-	-	-	-	B	-	S	-	-
Ministry of Development	-	-	-	-	-	-	-	-	S	-	B	-	-
Ministry of National Economy and Finance	-	-	-	-	-	-	-	-	S	-	B	-	-
Ministry of Health	-	-	-	-	-	-	-	-	B	-	S	-	-
inistry of Maritime Affairs and Insular Policy	-	-	-	-	-	-	-	-	-	-	B	-	-
Ministry of Interior	-	-	-	-	-	-	-	-	S	-	B	-	-
Municipalities of the RS	-	-	-	-	-	-	-	-	B	-	S	-	-
B: Key Role ; S: Supplementary Role , - : No Role													

- Supplementary Responsibilities

By means of Decision No. 706/16.07.2010 of the National Water Commission (Government Gazette B΄1383/02.09.2010) and in particular, in Annex II thereof, as corrected by Government Gazette B΄1572/28.09.2010, the responsible State / Regions per River Basin, were defined in each River Basin District of the country. Thus, for the Strymona River Basin District (EL1106) of the Eastern Macedonia RBD and in accordance with the provisions of Law 3852/2010, the only responsible Decentralized Administration is the Decentralized Administration of Macedonia-Thrace.

4 PRESSURES AND IMPACTS

This section includes all specific pollution sources producing conventional pollutants (BOD, N, P) that have been examined in the Documentation "Analysis of anthropogenic pressures and their effects on surface and groundwater bodies", as pressures. The list of categories of such pressures shall include:

- Wastewater Treatment Plants (WWTPs)
- Discharge of sewerage networks to a natural recipient
- Large hotel units
- Industrial units
- Livestock Facilities
- Aquaculture
- Leaks from illegal landfills and landfills

From the above individual sources of pollution, the final annual loads BOD, N and P produced in the study area are estimated.

In Strymon River Basin (EL1106), the total annual loads resulting from the sum of the individual specific pressures are 921.2 tn/year BOD, 451.8 tn/year N and 93.3 tn/year P. The total loads generated by the individual point sources of pollution are given in the table and histogram below.

Table4-1: Total annual loads of BOD, N and P generated by specific pollution sources in the Strymon River Basin (EL1106)

POINT SOURCES OF POLLUTION	BOD (tn/year)	N (tn/year)	P (tn/year)
Industrial units	35,6	6,3	1,2
ILLEGAL LANDFILL / LANDFILL	0,0	0,0	0,0
WWTP	213,4	164,8	36,0
Discharge of sewerage networks to a natural recipient (*)	385,6	77,1	16,1
Large Hotel Units	0,18	0,14	0,03
Aquaculture	51,8	64,0	9,0
Livestock units	234,7	139,5	31,0
TOTALS	921,2	451,8	93,3

(*) Approximately 90% concerns cargoes from the settlements of Doxato and K. Nevrokopi for which during the preparation of the present the WWTP were under construction with an outlook of operation in 2022-2023. With the start of operation of the WWTPs, the above loads are reduced accordingly.

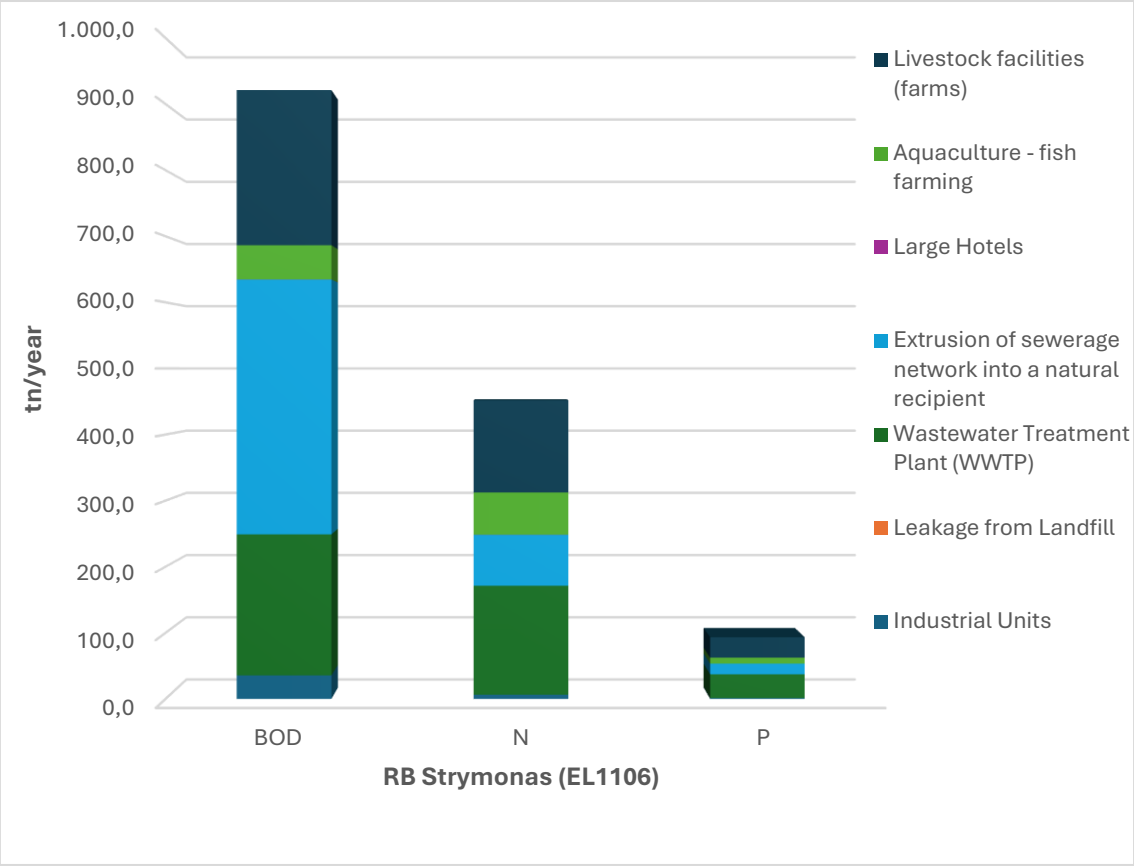


Figure 4-1: Total annual loads of BOD, N and P produced in the Strymona River Basin (EL1106) of the RBD of Eastern Macedonia (EL11) from specific pollution sources

4.1 DIFFUSE SOURCES OF POLLUTION

This section includes all non-point (diffuse) sources of pollution producing conventional pollutants (BOD, N, P) and have been examined in the Detailed Documentation Text – "Analysis of anthropogenic pressures and their effects on surface and groundwater bodies as pressures". The list of categories of such pressures shall include:

- agricultural activity,
- municipal wastewater from settlements not served by sewerage networks / Wastewater Treatment Plant,
- livestock farming,
- other diffuse sources of pollution due to atmospheric deposition as well as natural land use, such as pastures and forests, urban areas, roads-water, abandoned industrial or other facilities, etc.

In Strymon River Basin (EL1106), the total annual loads resulting from the sum of the individual diffuse pollution pressures are **5,114.3 tn/year BOD, 5,965.4 tn/year N** and **1,415.1 tn/year P**.

Table 4-2: Total annual loads of BOD, N and P generated from diffuse sources in Strymon River Basin (EL1106)

DIFFUSE SOURCE OF POLLUTION	BOD (ton/year)	N (ton/year)	P (ton/year)
Urban waste water	1.833,2	523,8	109,2
Agriculture	0,0	3.912,8	1.037,6
Livestock farming	3.281,1	991,7	252,0
Other Sources	-	537,1	16,3
TOTALS	**5.114,3**	**5.965,4**	**1.415,1**

From the above individual sources of pollution, the final annual loads BOD, N and P that end up in the surface water bodies of the study area are derived and are presented in the figure below.

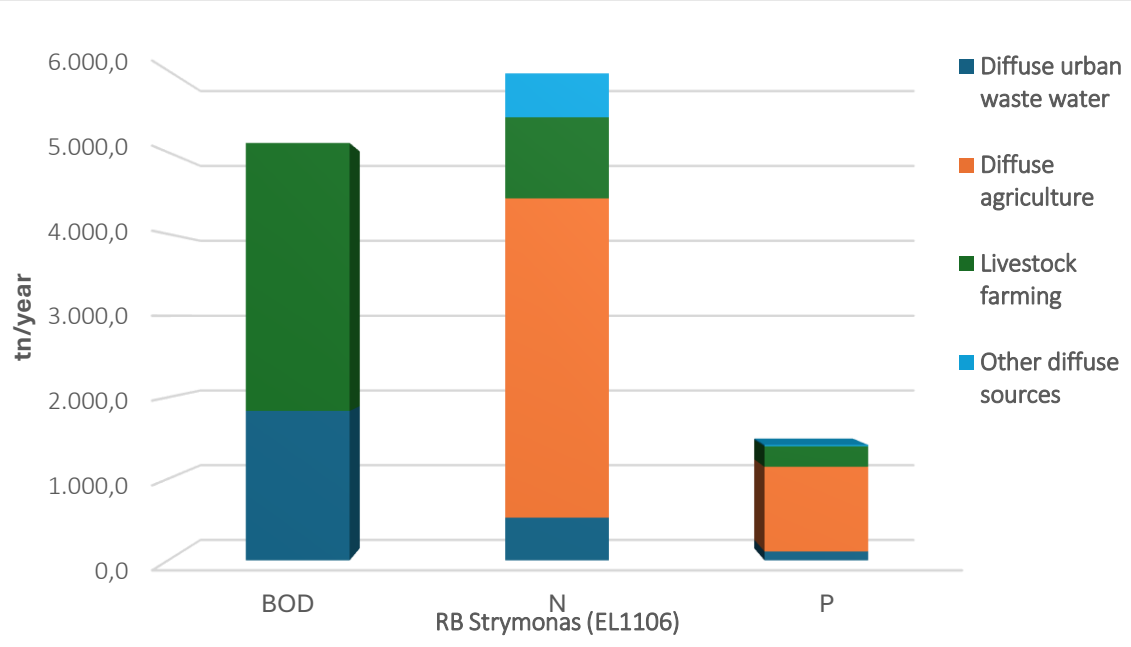


Figure 4-2: Total annual loads of BOD, N and P produced in the Strymonas River Basin (EL1106) of the RBD of Eastern Macedonia (EL11) from diffuse pollution sources

4.2 HYDROMORPHOLOGICAL PRESSURES

Interventions with flow regulation projects, storage projects and transversal projects in watercourses, transitional lakes and coastal WBs are examined and evaluated on the basis of the criteria detailed in the Guidance Paper entitled "Methodology for the determination and evaluation criteria of hydromorphological alterations", which is available on the website of the General Public Health Directorate.

The overall assessment of hydromorphological pressures in the SWBs of River Basin District 11 is given in Table 4-3 (A to D).

Table 4-2: Assessment of hydromorphological pressures of the SWB of RBD 11

A. WB Rivers

WB Code	WB Name	Pressure Characterization
EL1106R0002100248N	KROYSOBITHS R.	Negligible
EL1106R0002100253N	MAVROPOYLI R.	Negligible
EL1106R0002100249N	MAVROREMA R.	Negligible
EL1106R0002100250N	MAVROREMA R.	Negligible
EL1106R0002160065N	SKAPANIS R.	Negligible
EL1106R0004020085N	BATHYREMA R.	Negligible
EL1106R0007010091N	BRYSH R.	Negligible
EL1106R0002080030N	EZIOBHS R.	Negligible
EL1106R0004010077N	MAKROPOTAMOS S.	Negligible
EL1106R0004040081N	MYLOREYMA R.	Negligible
EL1106R0002200069N	XIROPOTAMOS R.	Negligible
EL1106R0002000003N	STRYMONAS R.	Negligible
EL1106R0B02240094N	AGGISTROY R.	Negligible
EL1106R0001010001N	ANONYMO R.	Negligible
EL1106R0002060112N	ARCHANGELOU R.	Negligible
EL1106R0002100251N	AXLADITHS R.	Negligible
EL1106R0002100133N	PATERA R.	Negligible
EL1106R0004020127N	PIGON AKRINOY R.	Negligible
EL1106R0002060109N	LAKKOS R.	Tolerated
EL1106R0002100137N	KOKKINOREMA R.	Tolerated
EL1106R0004020084N	BATHYTOPOY R.	Tolerated
EL1106R0002060007N	AGGITIS R.	Tolerated
EL1106R0002140062N	ANONYMO R.	Tolerated
EL1106R0002100135N	EPTAMYLOI R.	Tolerated
EL1106R0002220074N	KERKINITIS RIVER	Tolerated
EL1106R0002040005N	AGHIAS PARASKEVIS R.	Tolerated
EL1106R0004020083N	. BATHYTOPOY R.	Tolerated
EL1106R0002080029N	EZIOBHS R.	Tolerated
EL1106R0004010076N	MAKROPOTAMOS R.	Tolerated
EL1106R0004000079N	MYLOREYMA R.	Tolerated
EL1106R0002220175N	XEROPOTAMOS R.	Tolerated
EL1106R0002060423N	XEROPOTAMOS R.	Tolerated
EL1106R0009010092N	ASPROXOMA R.	Tolerated
EL1106R0002200068N	XEROPOTAMOS R.	Tolerated
EL1106R0002180067N	STRYMONIKOS R.	Tolerated
EL1106R0B02250072N	STRYMONAS R.	Tolerated
EL1106R0002120157N	XRYSOROHS R.	Tolerated
EL1106R0002100134N	KOKKINOREMA R.	Tolerated

WB Code	WB Name	Pressure Characterization
EL1106R0002060108N	AGGITIS R.	Tolerated
EL1106R0002100247N	KROYSOBITHS R.	Tolerated
EL1106R0002120260N	MEGALO R.	Tolerated
EL1106R0003010087N	PHGADOYLI R.	Tolerated
EL1106R0002220073N	KERKINITIS R.	Tolerated
EL1106R0002060006N	AGGITIS R.	Moderate
EL1106R0005010089N	MARMARA R.	Moderate
EL1106R0002060416N	PIGON. AG. BARBARAS R	Moderate
EL1106R0002060326N	DOXATOY R.	Moderate
EL1106R0002060421N	XEROPOTAMOS RIVER	Moderate
EL1106R0002020004N	KASTROLAKKAS R.	Moderate
EL1106R0002100132N	AGION ANARGYRON R.	Moderate
EL1106R0003010088N	PLATAMOREMA R.	Moderate
EL1106R0002100241N	ERYTHROREMA R.	Moderate
EL1106R0002060219N	KEFALARI R.	Moderate
EL1106R0002060110N	XEROPOTAMOS R.	Moderate
EL1106R0002160064N	SKAPANIS R.	Moderate
EL1106R0002180066N	STRYMONIKOS R.	Moderate
EL1106R0002010002N	STRYMONAS R.	Moderate
EL1106R0002100136N	KOKKINOREMA R.	Moderate
EL1106R0002060414N	PYGON MYLOPOTAMOY R. -Z.PIGIS R.	Moderate
EL1106R0002140061H	ANONYMO R.	Strong
EL1106R0007010090H	BRYSH R.	Strong
EL1106R0002120054H	MEGALO R.	Strong
EL1106R0002060420H	DOXATOY S.	Strong
EL1106R0002160063H	SKAPANIS R.	Strong
EL1106R0002100238H	MPELITSAS R.	Strong
EL1106R0002100246H	KROYSOVITIS R.	Strong
EL1106R0002250071H	STRYMONAS R.	Strong
EL1106R0002060325H	DOXATOY S.	Strong
EL1106R0002100031H	AG. IOANNOY R.	Strong
EL1106R0002000028H	STRYMONAS R.	Strong
EL1106R0002100239H	ERYTHROREMA R.	Strong
EL1106R0004020082H	BATHYTOPOU R.	Important
EL1106R0002060218H	KEFALARI R.	Important
EL1106R0004030078H	MYLOREYMA R.	Important
EL1106R0002100242H	MPELITSAS R.	Important
EL1106R0002120156H	XRYSOROHS R.	Important
EL1106R0004040080H	MYLOREYMA R.	Important
EL1106R0002100245H	MPELITSAS R.	Important
EL1106R0002100244H	MPELITSAS R.	Important
EL1106R0002060422H	XEROPOTAMOS R.	Important

WB Code	WB Name	Pressure Characterization
EL1106R0002250070H	STRYMONAS R.	Important
EL1106R0002060217A	FILIPPON CANAL	It concerns AWB
EL1106R0002060293A	FILIPPON CANAL	It concerns AWB

B. Transitional WB

WB Code	WB Name	Χαρακτηρισμός Πίεσης Pressure Characterization
EL1106T0001N	STRYMON RIVER DELTA	Negligible

C. Lake HMWB-AWB and Reservoirs

WB Code	WB Name	Pressure Characterization
EL1106L000002H	KERKINI RES.	Important
EL1106RL004040001H	LEFKOGIA RES.	Reservoir

D. Coastal WB

WB Code	WB Name	Pressure Characterization
EL1106C0001N	STRYMONIKOS KOLPOS	Negligible
EL1106C0002N	AKTES SYMVOLOU	Negligible
EL1106C0003N	NEA PERAMOS	Tolerated
EL1106C0004N	DYT. KOLPOS KAVALAS	Tolerated

4.3 WATER DISCHARGES

This section includes data on total annual water withdrawals for all activities and uses. Detailed calculations of water demand and abstractions are included in the Analytical Documentation document 'Analysis of anthropogenic pressures and their effects on surface and groundwater systems'. The categories of activities and uses considered include:

- Water supply
- Irrigation
- Livestock
- Industry

The aggregated data on water abstractions in the Water Region from the above individual categories of activities and uses are presented in the table below (Table 4 4). It should be noted that part of the abstractions covering water supply comes from the Mountains Basin Hydrological Reserve (EL1200070) belonging to the Thrace Hydrological Reserve (EL12).

Table 4-3: Total abstractions by use, from surface and groundwater bodies (m^3/year)

RB	Water Bodies Category	Water supply	Irrigation	Livestock	Industry	With drawals from non-RBD water bodies*	Total withdrawals
EL1106	Surface Wbs	-	569.158.293	-	-	-	569.158.293
	Groundwater Bodies	34.669.442	193.507.181	3.607.841	4.230.000	10.685.134	246.699.599
Total		34.669.442	**762.665.473**	**3.607.841**	**4.230.000**	**10.685.143**	**815.857.891**

** Refers to pumping for water supply from the Mountains Basin Water Supply System (EL1200070).*

4.4 OTHER PRESSURES

Other pressures include:

- Runoff from mining activities (mining, quarrying) - not found in the River Basin District.
- Desalination plants - not located in the RBD.
- Ports - Marinas - Navigation - four (4) ports are found in the coastal water bodies of the RBD.
- Artificial groundwater recharge - not found in the RBD
- Alteration of groundwater levels and groundwater quantity due to underground operations or construction of major underground works - not found in the RBD.

4.5 ASSESSMENT OF IMPACTS AND EVALUATION OF THE RISK OF NON-ACHIEVEMENT OF OBJECTIVES

4.5.1 Assessment of impacts on surface water bodies

When assessing the impacts and characterizing the Hydrological System based on the likelihood of achieving the environmental objectives of the Directive, the following are assessed for each water body:

- The intensity of pressure from pollution sources and discharges: high (H), medium (M), low (L)
- The available data and the results of the monitoring program.
- Judgement of the researcher when no data are available.
- From the set of criteria, the water hydrological systems were ranked in relation to whether or not they are likely to achieve the environmental objectives of Directive 2000/60/EC and the summary results are presented in the following table.

Table 4-4: Statistical data for the risk assessment of non-attainment of objectives for surface river basins in EL1106 of the River Basin District of Eastern Macedonia.

Type of WB	Risk assessment categories*								Total
	NR		PNR		PAR		AR		
	Number of WB	Percentage of the number of WB (%))	Number of WB	Percentage of the number of WB (%)	Number of WB	Percentage of the number of WB (%)	Number of WB	Percentage of the number of WB (%)	Number of WB
River WBs	30	36 %	13	16 %	10	12 %	30	36 %	83
Lake WBs	-	-	-	-	-	-	2	100%	2
Coastal WBs	1	25%	-	25%	3	75%	-	-	4
Transitional WBs	-	-	-	100%	1	100%	-	-	1
Total	31	34 %	13	14 %	14	16 %	32	36 %	90

4.5.2 Assessment of impacts on groundwater bodies

As a quantification of the pollution discharged into groundwater from the above-mentioned pressures, only the databases of changes in the quality (chemical) status of groundwater at specific monitoring sites (monitoring network) are available. Out of the 15 groundwater bodies (GWB) delineated in the River Basin District, two (2) are in poor qualitative and quantitative status due to over-pumping and agriculture. Compared to the 1st Update, a deterioration of the qualitative and quantitative status is recorded in the GWB of Ofriniou (EL1100150), whereas, in the other GWBs, no variation is observed.

Table 4-6 presents the qualitative and quantitative status of the groundwater systems in the GWB of RBD Eastern Macedonia (Strymona River Basin).

Table 4-5: Table of qualitative and quantitative status of groundwater bodies in the Strymona River Basin (EL1106)

No	GWB	Name of GWB	Quantitative situation	Level drop trend	Quality condition	Exceedances of quality parameters	Pollutant voltage
1	EL1100010	SERRES SYSTEM	Good	No	Good	NO_3, NH_4: agricultural livestock activity. NH4, SO4: physical background (geothermal fluids, gypsum) and/or anthropogenic activities. Salinization due to overpumping (bibliographic references) Electrical conductivity EC, Cl, Na: physical background (trapping of brackish phases during sedimentation of neogene sediments). Mn, Fe, Ni: natural background: presence of ferrous – manganese deposits of metamorphic rocks As: physical background (geothermal fluids, gypsum)	Significant downward trend in NO_3 at the hydropoint EL11011132
2	EL110B020	AGGISTROU SYSTEM	Good	No	Good	No	Not diagnosed, no exceedances recorded
3	EL110B030	FALAKROU SYSTEM	Good	No	Good	No	Not diagnosed, no exceedances recorded
4	EL1100040	MENIKIOU - AGGITI SYSTEM	Good	No	Good	No	Not diagnosed, no exceedances recorded
5	EL1100050	DRAMA SYSTEM	Good	No	Good	NO_3: agricultural livestock activity. NH_4: anthropogenic pressure (organic substances: waste water of all kinds) and/or physical background (residues of organic substances, geothermal fluids). Mn, Fe: natural background: presence of ferrous – manganese deposits of metamorphic rocks. Al: more recordings needed	Significant upward trend in NH4 at the hydropoint EL11051103
6	EL1100060	PAGGAIOU SYSTEM	Good	No	Good	As: cannot be evaluated with certainty, given the very small number of observations	Not diagnosed, no exceedances recorded
7	EL1100070	ΣΥΣΤΗΜΑ ΜΑΡΜΑΡΑ	Good	No	Good	Fe, Cu: natural background and/or anthropogenic activity	Not diagnosed, no exceedances recorded

No	GWB	Name of GWB	Quantitative situation	Level drop trend	Quality condition	Exceedances of quality parameters	Pollutant voltage
		MARMARAS SYSTEM					
8	EL11FB080	ANO PORION – BELES SYSTEM	Good	-	Good	SO_4, electrical conductivity (EC): physical background (geothermal field)	Not diagnosed, no exceedances are recorded with the exception of the SO4 parameter, for which more measurements are required
9	EL1100091	ASPROVALTA SYSTEM	Good	-	Good	Hg: cannot be evaluated with certainty, given the very small number of observations. Probably due to natural background. F: physical bedrock (geothermal fluids).	The pollution trend control methodology for the Hg parameter shall not be applied due to: (a) the possible connection with a physical background; and b) particularly limited sampling/measurements;
10	EL1100100	KROUSSION –KERDYLION SYSTEM	Good	-	Good	No	Not diagnosed, no exceedances recorded
11	EL110B110	VRONTOUS SYSTEM	Good	-	Good	No	Not specified in the absence of data
12	EL1100120	NEVROKOPIOU SYSTEM	Good	-	Good	NO_3: agricultural activity. Al: physical background (feldspar alteration).	Not controlled. The available metrics are not a time series with a significant time range
13	EL1100130	SYMBOLOU-KAVALAS SYSTEM	Good	-	Good	No	Not diagnosed, no exceedances recorded

No	GWB	Name of GWB	Quantitative situation	Level drop trend	Quality condition	Exceedances of quality parameters	Pollutant voltage
14	EL1100140	ELEFTHERON – NEA PERAMOS SYSTEM	Bad	No trends examined due to limited number of hydropoints /Marginal Surplus Balance	Bad	Electrical conductivity, Cl, Na: due to anthropogenic activities (overpumping) SO4: possibly due to natural background but limited number of recordings NO3: agricultural activity	Not checked due to low number of recordings
15	EL1100150	OFRINIOU SYSTEM	Bad	Water point EL11151101 (Decreasing level trend/ Deficit balance)	Bad	Electrical conductivity, Cl, Na: due to anthropogenic activities (overpumping, bibliographic reference). SO_4: physical background (reference)	Significant downward trend in NO_3 at the EL11151101 hydropoint

5 DEFINITION AND STATUS OF HYDROLOGICAL SYSTEM OF THE RIVER BASIN DISTRICT

5.1 SURFACE WATER SYSTEMS - TYPOLOGY

In the framework of the 2nd Update of the River Basin Management Plan of the Eastern Macedonia RBD (EL11), no changes in the definition of the Water Bodies (WBs) have been made compared to those that had emerged during the 1st Update.

In the framework of the 2nd Update, the ninety (90) surface water bodies were retained in the River Basin District of Eastern Macedonia (EL11), the distribution of which in the RBD and per river basin is presented in the following table.

***Table** 5-1: Number of Surface Water Bodies in the RBD of Eastern Macedonia (EL11)*

TYPE OF WB	ΛΑΠ ΣΤΡΥΜΟΝΑ (EL1106)	TOTAL HD
WB Rivers	83	83
Lake WBs& Reservoirs [1]	2	2
Transitional WB	1	1
Coastal WB	4	4
TOTAL	**90**	90

Note [1]: The total of all the lake WBs of the River Basin District is for HMWB. Lake Kerkini is a heavily modified lake, as lake WB modified into a reservoir.

The 2nd Update of the Management Plan of the RBD EL11 for the Surface Water Bodies, was based on stations of the National Monitoring Network as follows:

- Thirty-five (35) stations on river WBs, of which twenty-five (25) supervisory and eleven (11) operational stations. Twenty-two stations give measurement data.
- Two (2) stations on Lake WBs and reservoirs. Lake Kerkini and Artificial Lake Lefkoyeia are monitored with one operational station each.
- One (1) monitoring station in coastal water bodies; and
- One (1) operational in the transitional water body "EL1106T001N-Strymon River Delta".

The maps at the end of the subchapter show for all the SWB of the Eastern Macedonia Water Department the ecological, chemical and overall status (Map 5-1, Map 5-2 and Map 5-3, respectively).

5.1.1 River water bodies

The river water bodies of the RBD of Eastern Macedonia (EL11) and, by extension, the Struma River Basin (EL1106), as well as their typology are presented in the following table (Table 5-2). The following table (Table 5-3) also records the chemical and ecological status of the river water bodies of the RBD, their correlation with protected areas, their designation as HMWD/AWS, as well as the differences in ecological and chemical status between the 1st RBMP and its 1st and 2nd Updates, as well as the differences in ecological and chemical status between the 1st RBMP and its 1st and 2nd Updates.

Table 5-2: River water bodies and new typology, according to European Decision 2018/229/EU, in the Strymona River Basin (EL1106) of the Eastern Macedonia RBD (EL11)

No	WB Name	WB Code	Category	Length (km)	Direct River Basin (km^2)	Aggregate River Basin (km^2)	Average Annual Run-off (hm^3)	WB Type
RIVER BASIN STRYMONA (EL1106)								
Y	STRYMONAS R.	EL1106R0B02250072N	NWB	10,18	92,1	10184,5	2098,20	R-L2
2	MAVROREMA R.	EL1106R0002100249N	NWB	6,33	6,72	31,5	7,16	R-M1
3	MPELITSAS R.	EL1106R0002100238H	NWB	16,01	92,63	688,9	113,46	R-M1
4	ERYTHROREMA R.	EL1106R0002100241N	NWB	6,66	28,05	28,05	4,84	R-M1
5	KOKKINOREMA R.	EL1106R0002100136N	NWB	11,32	44,79	116,0	18,88	R-M1
6	STRYMONIKO R.	EL1106R0002180067N	NWB	16,08	59,36	59,36	5,86	R-M1
7	SKAPANIS R.	EL1106R0002160065N	NWB	40,97	161,51	161,51	12,58	R-M2
8	PATERA R.	EL1106R0002100133N	NWB	14,32	82,07	82,07	16,45	R-M1
9	STRYMONAS R.	EL1106R0002000028H	HMWB	63,68	799,9	11342,4	2590,60	R-L2
10	ANONYMO R.	EL1106R0002140061H	HMWB	6,97	31,86	49,7	5,77	R-M1
11	MEGALO REMA	EL1106R0002120260N	NWB	24,66	96,92	96,92	12,25	R-M5
12	EZIOBHS R.	EL1106R0002080030N	NWB	19,25	65,93	65,93	11,49	R-M5
13	AGIAS PARASKEVIS R.	EL1106R0002040005N	NWB	9,37	76,38	76,38	16,02	R-M1
14	KASTROLAKKAS R.	EL1106R0002020004N	NWB	5,72	50,17	50,17	9,22	R-M1
15	ANONYMO R.	EL1106R0001010001N	NWB	3,41	24,74	123,9	3,84	R-M1
16	PLATANOREMA R.	EL1106R0003010088N	NWB	5,90	39,36	39,36	8,48	R-M4
17	BRYSH R.	EL1106R0007010091N	NWB	2,79	39,25	39,25	5,84	R-M1
18	ASPROXHOMA R.	EL1106R0009010092N	NWB	17,21	113,84	113,84	28,96	R-M2
19	XIROPOTAMOS R.	EL1106R0002200069N	NWB	19,57	108,27	108,27	10,72	R-M2
20	MAKPOPOTAMOS R.	EL1106R0004010076N	NWB	6,48	50,79	60,5	14,34	R-M1
21	XEROPOTAMOS R.	EL1106R0002060421N	NWB	13,99	92,72	357,9	42,71	R-M4
22	MARMARA R.	EL1106R0005010089N	NWB	29,16	233,94	233,94	68,39	R-M2
23	MYLOREYMA R.	EL1106R0004040081N	NWB	3,37	21,35	21,35	2,22	R-M4
24	AGGITHS R.	EL1106R0002060007N	NWB	14,52	164,32	2016,03	615,37	R-M4
25	KROYSOBITHS R.	EL1106R0002100247N	NWB	22,87	139,33	239,58	53,43	R-M2
26	AXLADITHS R.	EL1106R0002100251N	NWB	7,21	52,46	61,3	11,02	R-M4
27	MAVROREMA R.	EL1106R0002100250N	NWB	6,02	24,78	24,78	5,80	R-M1
28	KOKKINOREMA R.	EL1106R0002100137N	NWB	12,53	71,24	71,24	6,17	R-M1
29	BATHYTOPOY R.	EL1106R0004020083N	NWB	6,71	27,18	118,8	33,09	R-M1

No	WB Name	WB Code	Category	Length (km)	Direct River Basin (km^2)	Aggregate River Basin (km^2)	Average Annual Run-off (hm^3)	WB Type
30	BATHYTOPOY R.	EL1106R0004020084N	NWB	10,11	43,23	91,6	24,47	R-M1
31	KROUSOBITHS R.	EL1106R0002100248N	NWB	1,30	38,98	38,98	9,05	R-M1
32	BRYSH R.	EL1106R0007010090H	ITYΣ	5,23	6,25	37,1	7,73	R-M1
33	MYLOREYMA R.	EL1106R0004040080H	HMWB	3,73	7,94	7,94	6,41	R-M4
34	MYLOREYMA R.	EL1106R0004030078H	HMWB	11,65	111,77	214,6	111,48	R-M2
35	MYLOREYMA R.	EL1106R0004000079N	NWB	10,16	95,15	103,1	16,98	R-M1
36	BATHYTOPOY R.	EL1106R0004020082H	HMWB	5,40	20,57	139,4	40,99	R-M1
37	STRYMONAS R.	EL1106R0002250070H	HMWB	8,74	44,11	10304,8	2117,92	R-L2
38	KERKINITIS R.	EL1106R0002220073N	NWB	4,55	18,79	237,8	69,83	R-M1
39	STRYMONAS R.	EL1106R0002000003N	NWB	13,49	71,78	15612,1	3281,81	R-L2
40	SKAPANIS R.	EL1106R0002160063H	HMWB	8,67	25,99	207,5	17,78	R-M1
41	ANONIMO R.	EL1106R0002140062N	NWB	5,22	17,8	17,8	1,74	R-M1
42	XRYSOROHS R.	EL1106R0002120156H	HMWB	12,17	21,19	47,1	6,17	R-M5
43	XRYSOROHS R.	EL1106R0002120157N	NWB	7,54	35,6	35,6	3,50	R-M5
44	KROYSOBITHS R.	EL1106R0002100246H	HMWB	2,10	5,68	245,25	54,56	R-M1
45	ERYTHROREMA R.	EL1106R0002100239H	HMWB	7,48	17,89	45,9	6,76	R-M1
46	AGIOY IOANNOY R.	EL1106R0002100031H	HMWB	8,29	182,67	1145,3	190,41	R-M2
47	DOXATOU R.	EL1106R0002060325H	HMWB	8,88	68,26	361,2	87,62	R-M1
48	AGGITHS RIVER	EL1106R0002060006N	NWB	14,66	221,43	2237,5	621,04	R-M4
49	FILIPPON CANAL	EL1106R0002060217A	AWB	17,55	244,39	588,8	160,73	R-M4
50	MPELITSAS R.	EL1106R0002100245H	HMWB	10,95	35,37	312,1	61,93	R-M1
51	MPELITSAS R.	EL1106R0002100244H	HMWB	11,01	132,2	444,3	84,11	R-M2
52	MPELITSAS R.	EL1106R0002100242H	HMWB	7,47	106,03	550,4	96,78	R-M2
53	STRYMONAS R.	EL1106R0002250071H	HMWB	3,35	76,14	10260,7	2109,91	R-L2
54	MAKROPOTAMOS R.	EL1106R0004010077N	NWB	2,28	14,67	65,5	20,24	R-M1
55	STRYMONAS R.	EL1106R0002010002N	NWB	1,55	10,33	15622,4	3283,95	R-L2
56	XEROPOTAMOS R.	EL1106R0002220175N	NWB	6,61	35,12	35,12	10,29	R-M1
57	KERKINITIS R.	EL1106R0002220074N	NWB	19,49	184,36	219,0	64,32	R-M2
58	KOKKINORREMA R.	EL1106R0002100134N	NWB	5,09	62,51	183,2	26,93	R-M1
59	BATHYREMA R.	EL1106R0004020085N	NWB	2,55	4,0	4,0	0,86	R-M4
60	MAVROPOYLI R.	EL1106R0002100253N	NWB	5,96	8,81	8,81	1,58	R-M4

No	WB Name	WB Code	Category	Length (km)	Direct River Basin (km^2)	Aggregate River Basin (km^2)	Average Annual Run-off (hm^3)	WB Type
61	XEROPOTAMOS R.	EL1106R0002200068N	NWB	4,98	8,26	116,53	11,79	R-M1
62	STRYMONIKO R.	EL1106R0002180066N	NWB	4,64	17,07	76,4	7,95	R-M1
63	SKAPANIS R.	EL1106R0002160064N	NWB	5,56	20,16	181,6	14,46	R-M1
64	EZIOBHS STREAM	EL1106R0002080029N	NWB	15,59	59,91	125,8	23,87	R-M5
65	PHGADOULI R.	EL1106R0003010087N	NWB	11,62	21,59	33,9	4,57	R-M4
66	AGION ANARGYRON R.	EL1106R0002100132N	NWB	7,39	8,35	273,7	48,78	R-M1
67	LAKKOS R.	EL1106R0002060109N	NWB	6,86	90,54	90,54	40,97	R-M4
68	AGGITHS R.	EL1106R0002060108N	NWB	32,55	262,88	499,1	211,87	R-M4
69	KEFALARI R.	EL1106R0002060219N	NWB	6,79	70,61	70,61	61,72	R-M4
70	EPTAMYLOI R.	EL1106R0002100135N	NWB	2,90	4,69	4,69	19,50	R-M1
71	XEROPOTAMOS R.	EL1106R0002060423N	NWB	5,42	115,81	115,81	1,61	R-M2
72	XEROPOTAMOS R.	EL1106R0002060422H	NWB	0,83	51,57	167,4	24,45	R-M4
73	KEFALARI R.	EL1106R0002060218H	NWB	6,07	17,02	87,6	19,03	R-M4
74	DOXATOU S.	EL1106R0002060420H	NWB	5,57	44,65	763,78	169,31	R-M4
75	MEGALO REMA	EL1106R0002120054H	NWB	9,18	30,92	184,6	23,93	R-M5
76	FILIPPON CANAL	EL1106R0002060293A	NWB	7,25	256,81	256,81	74,33	R-M4
77	AGGISTROY R.	EL1106R0B02240094N	NWB	3,32	85,43	85,43	15,23	R-M1
78	DOXATOU R.	EL1106R0002060326N	NWB	4,14	292,95	292,95	26,04	R-M2
79	ARCHAGELLOU R.	EL1106R0002060112N	NWB	4,40	68,46	68,46	34,55	R-M4
80	XEROPOTAMOS STREAM	EL1106R0002060110N	NWB	4,81	77,22	77,22	47,03	R-M4
81	PIGON MYLOPOTAMOY - Z. PIGIS R.	EL1106R0002060414N	NWB	11,96	96,01	96,01	21,19	R-M4
82	PIGON AG. VARVARAS R.	EL1106R0002060416N	NWB	1,35	1,81	1,81	63,32	R-M4
83	PIGON AKRINOU R.	EL1106R0004020127N	NWB	3,96	44,42	44,42	12,45	R-M1

NWB: *Natural WB,* ***HMWB:*** *Heavily Modified WB,* ***AWB:*** *Artificial WB*

Table 5-3: Differences in the status of river water bodies between the previous RBMPs and the 2nd Update RBMP in the WFD of Eastern Macedonia (EL11)

No	WB code	WB name	HM WB/ AWB	Link to protected areas	1st RMP		1st Update of the RBMP		2nd Update of the RBMP	
					Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status
1	EL1106R0001010001N	ANONYMO R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
2	EL1106R0002000003N	STRYMONAS R.		√	MODERATE	<GOOD	GOOD	GOOD	GOOD	GOOD
3	EL1106R0002000028H	STRYMONAS R.	√	√	MODERATE	<GOOD	MODERATE	GOOD	<GOOD	GOOD
4	EL1106R0002010002N	STRYMONAS R.		√	MODERATE	<GOOD	GOOD	GOOD	GOOD	GOOD
5	EL1106R0002020004N	KASTROLAKKAS R.			UNKNOWN	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
6	EL1106R0002040005N	AGIAS PARASKEVIS R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
7	EL1106R0002060006N	AGGITHS R.		√	MODERATE	<GOOD	MODERATE	GOOD	POOR	GOOD
8	EL1106R0002060007N	AGGITHS RIVER		√	MODERATE	<GOOD	MODERATE	GOOD	GOOD	GOOD
9	EL1106R0002060108N	AGGITHS RIVER		√	MODERATE	<GOOD	MODERATE	GOOD	MODERATE	GOOD
10	EL1106R0002060109N	LAKKOS R.		√	MODERATE	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
11	EL1106R0002060110N	XEROPOTAMOS R.		√	MODERATE	UNKNOWN	GOOD	UNKNOWN	MODERATE	GOOD
12	EL1106R0002060112N	ARCHANGELOU R.		√	MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
13	EL1106R0002060217A	FILIPPON CANAL	√	√	POOR	<GOOD	MODERATE	GOOD	GOOD	GOOD
14	EL1106R0002060218H	KEFALARI R.	√	√	MODERATE	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
15	EL1106R0002060219N	KEFALARI R.		√	MODERATE	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
16	EL1106R0002060293A	FILIPPON CANAL	√	√	POOR	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
17	EL1106R0002060325H	DOXATOU R.	√	√	POOR	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
18	EL1106R0002060326N	DOXATOU R.		√	POOR	UNKNOWN	MODERATE	GOOD	MODERATE	GOOD
19	EL1106R0002060414N	PIGON MYLOPOTAMOY– Z. PIGIS R.		√	UNKNOWN	UNKNOWN	MODERATE	GOOD	MODERATE	GOOD
20	EL1106R0002060416N	PIGON AG. VARVARAS R.		√	POOR	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
21	EL1106R0002060420H	DOXATOU R.	√	√	POOR	<GOOD	BAD	<GOOD	<GOOD	GOOD
22	EL1106R0002060421N	XEROPOTAMOS RIVER		√	POOR	UNKNOWN	MODERATE	GOOD	POOR	GOOD
23	EL1106R0002060422H	XEROPOTAMOS RIVER	√	-	MODERATE	UNKNOWN	MODERATE	GOOD	<GOOD	GOOD
24	EL1106R0002060423N	XEROPOTAMOS RIVER		√	MODERATE	UNKNOWN	GOOD	GOOD	MODERATE	GOOD

No	WB code	WB name	HM WB/ AWB	Link to protected areas	1st RMP		1st Update of the RBMP		2nd Update of the RBMP	
					Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status
25	EL1106R0002080029N	EZIOBHS R.			MODERATE	UNKNOWN	MODERATE	GOOD	GOOD	GOOD
26	EL1106R0002080030N	EZIOBHS R.			GOOD	UNKNOWN	GOOD	GOOD	GOOD	GOOD
27	EL1106R0002100031H	AGIOU IOANNOU R.	√		MODERATE	UNKNOWN	MODERATE	GOOD	<GOOD	GOOD
28	EL1106R0002100132N	AGION ANARGIRON R.			MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
29	EL1106R0002100133N	PATERA R.			MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
30	EL1106R0002100134N	KOKKINOREMA R.			MODERATE	<GOOD	GOOD	GOOD	MODERATE	GOOD
31	EL1106R0002100135N	EPTAMYLOI R.		√	MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
32	EL1106R0002100136N	KOKKINOREMA R.		√	MODERATE	<GOOD	GOOD	GOOD	MODERATE	GOOD
33	EL1106R0002100137N	KOKKINOREMA R.		√	MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
34	EL1106R0002100238H	MPELITSAS RIVER	√		POOR	<GOOD	MODERATE	GOOD	<GOOD	GOOD
35	EL1106R0002100239H	ERYTHROREMA R.	√		MODERATE	UNKNOWN	MODERATE	GOOD	<GOOD	GOOD
36	EL1106R0002100241N	ERYTHROREMA R.			MODERATE	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
37	EL1106R0002100242H	MPELITSAS RIVER	√		POOR	<GOOD	UNKNOWN	GOOD	<GOOD	GOOD
38	EL1106R0002100244H	MPELITSAS RIVER	√		POOR	<GOOD	UNKNOWN	GOOD	<GOOD	GOOD
39	EL1106R0002100245H	MPELITSAS RIVER	√		POOR	GOOD	UNKNOWN	GOOD	GOOD	GOOD
40	EL1106R0002100246H	KROYSOBITHS RIVER	√		POOR	GOOD	UNKNOWN	GOOD	<GOOD	GOOD
41	EL1106R0002100247N	KROYSOBITHS RIVER			MODERATE	GOOD	GOOD	GOOD	GOOD	GOOD
42	EL1106R0002100248N	KROYSOBITHS RIVER			GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
43	EL1106R0002100249N	MAVROREMA R.			GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
44	EL1106R0002100250N	MAVROREMA R.		√	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
45	EL1106R0002100251N	AXLADITHS RIVER			MODERATE	GOOD	GOOD	GOOD	GOOD	GOOD
46	EL1106R0002100253N	MAVROPOYLI R.		√	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
47	EL1106R0002120054H	MEGALO R.	√	√	MODERATE	UNKNOWN	POOR	GOOD	<GOOD	GOOD
48	EL1106R0002120156H	XRYSOROHS RIVER	√	√	MODERATE	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
49	EL1106R0002120157N	XRYSOROHS RIVER		√	MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
50	EL1106R0002120260N	MEGALO R.			GOOD	UNKNOWN	GOOD	GOOD	GOOD	GOOD
51	EL1106R0002140061H	ANONYMO R.	√		UNKNOWN	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
52	EL1106R0002140062N	ANONYMO R.			UNKNOWN	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
53	EL1106R0002160063H	SKAPANIS R.	√		UNKNOWN	UNKNOWN	POOR	GOOD	<GOOD	GOOD

No	WB code	WB name	HM WB/ AWB	Link to protected areas	1st RMP		1st Update of the RBMP		2nd Update of the RBMP	
					Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status	Ecological status/ potential	Chemical status
54	EL1106R0002160064N	SKAPANIS R.			MODERATE	UNKNOWN	GOOD	GOOD	GOOD	GOOD
55	EL1106R0002160065N	SKAPANIS R.			GOOD	UNKNOWN	HIGH	GOOD	GOOD	GOOD
56	EL1106R0002180066N	STRYMONIKOU R.			UNKNOWN	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
57	EL1106R0002180067N	STRYMONIKOU R.			GOOD	UNKNOWN	GOOD	GOOD	GOOD	GOOD
58	EL1106R0002200068N	XEROPOTAMOS R.			MODERATE	UNKNOWN	MODERATE	GOOD	GOOD	GOOD
59	EL1106R0002200069N	XEROPOTAMOS R.			GOOD	UNKNOWN	GOOD	GOOD	GOOD	GOOD
60	EL1106R0002220073N	KERKINITIS RIVER		√	UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
61	EL1106R0002220074N	KERKINITIS RIVER		√	UNKNOWN	UNKNOWN	MODERATE	GOOD	GOOD	GOOD
62	EL1106R0002220175N	XEROPOTAMOS RIVER		√	UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
63	EL1106R0002250070H	STRYMONAS RIVER	√	√	MODERATE	GOOD	UNKNOWN	GOOD	<GOOD	GOOD
64	EL1106R0002250071H	STRYMONAS RIVER	√	√	MODERATE	<GOOD	UNKNOWN	GOOD	<GOOD	GOOD
65	EL1106R0003010087N	PHGADOYLI R.			GOOD	UNKNOWN	POOR	GOOD	GOOD	GOOD
66	EL1106R0003010088N	PLATANOREMA R.			UNKNOWN	UNKNOWN	GOOD	GOOD	MODERATE	GOOD
67	EL1106R0004000079N	MYLOREYMA R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
68	EL1106R0004010076N	MAKROPOTAMOS R.		√	UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
69	EL1106R0004010077N	MAKROPOTAMOS R.			UNKNOWN	UNKNOWN	POOR	GOOD	GOOD	GOOD
70	EL1106R0004020082H	BATHYTOPOY R.	√		UNKNOWN	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
71	EL1106R0004020083N	BATHYTOPOY R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
72	EL1106R0004020084N	BATHYTOPOY R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
73	EL1106R0004020085N	BATHYREMA R.		√	GOOD	UNKNOWN	GOOD	GOOD	GOOD	GOOD
74	EL1106R0004020127N	PIGON AKRINOU R.			POOR	UNKNOWN	GOOD	GOOD	GOOD	GOOD
75	EL1106R0004030078H	MYLOREYMA R.	√		UNKNOWN	UNKNOWN	POOR	GOOD	<GOOD	GOOD
76	EL1106R0004040080H	MYLOREYMA R.	√		UNKNOWN	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
77	EL1106R0004040081N	MYLOREYMA R.			UNKNOWN	UNKNOWN	<GOOD	GOOD	<GOOD	GOOD
78	EL1106R0005010089N	MARMARA RIVER			MODERATE	UNKNOWN	<GOOD	< GOOD	<GOOD	GOOD
79	EL1106R0007010090H	BRYSH R.	√		UNKNOWN	UNKNOWN	UNKNOWN	GOOD	<GOOD	GOOD
80	EL1106R0007010091N	BRYSH R.			UNKNOWN	UNKNOWN	GOOD	GOOD	GOOD	GOOD
81	EL1106R0009010092N	ASPROXOMA R.			UNKNOWN	UNKNOWN	MODERATE	GOOD	GOOD	GOOD
82	EL1106R0B02240094N	AGGISTROU RIVER		√	MODERATE	< GOOD	GOOD	GOOD	GOOD	GOOD
83	EL1106R0B02250072N	STRYMONAS RIVER		√	MODERATE	< GOOD	MODERATE	GOOD	MODERATE	GOOD

5.1.2 Lake water bodies

The typology and classification of the status of the lake water bodies of the RBD of Eastern Macedonia is presented in the following tables (Table 5-4 and Table 5-5, respectively). The differences in ecological and chemical status between the 1st RBMP and the 1st and 2nd Updates are also recorded.

Table 5-4: Lake WB and reservoirs with new typology in the Strymonas River Basin (EL1106) of the RBD of Eastern Macedonia (EL11)

No	WB Name	WB Code	Category	Area (km²)	Perimeter (km)	Type of WB
	RB STRYMONAS (EL1106)					
1	KERKINI RES.	EL1106L000002H	HMWB	46,1	70,6	GR-SR
2	LEFKOGIA RES.	EL1106RL004040001H	HMWB	1,1	11,9	GR-SR
	NWB: Natural WB, HMWB: Heavily Modified WB, AWB: Artificial WB					

Table 5-5: Differences in the status of the Lake Water Bodies between the previous RBMPs and the 2nd Update of the RBMP in the RBD of Eastern Macedonia (EL11)

WB Code	WB Name	Link to protected areas	1st RBMP		1st Update of RBMP		2nd Update of RBMP	
			Ecological potential	Chemical status	Ecological potential	Chemical status	Ecological potential	Chemical status
EL1106L000002H	KERKINI RES.	√	POOR	<GOOD	POOR	<GOOD	POOR	GOOD
EL1106RL004040001H	LEFKOGIA RES.		MODERATE	GOOD	MODERATE	GOOD	MODERATE	GOOD

5.1.3 Transitional water bodies

The typology and classification of the status of the transitional water systems of the RBD of Eastern Macedonia is presented in the following tables (Table 5-6, Table 5-7, respectively). The differences in ecological and chemical status between the 1st RBMP and the 1st and 2nd Updates are also recorded (Table 5-7).

Table 5-6: Transitional water bodies in the Strymonas RB (EL1106) of the RBD of Eastern Macedonia (EL11)

No	WB Name	WB Code	Category	Land area (km²)	Perimeter (km)	WB Type
	RB STRYMONA (EL1106)					
1	STRYMON RIVER DELTA	EL1106T0001N	NWB	5,94	13,85	TW 2
NWB: Natural WB, HMWB: Heavily Modified WB, AWB: Artificial WB						

Table 5-7: Differences in the status of transitional water bodies between the previous RBMP and the 2nd Update in the RBD of Eastern Macedonia (EL11)

WB Code	WB Name	Link to protected areas	1st RBMP		1st Update of RBMP		2nd Update of RBMP	
			Ecological status	Chemical status	Ecological status	Chemical status	Ecological status	Chemical status
EL1106T0001N	STRYMON RIVER DELTA	√	MODERATE	<GOOD	BAD	GOOD	MODERATE	GOOD

5.1.4 Coastal water bodies

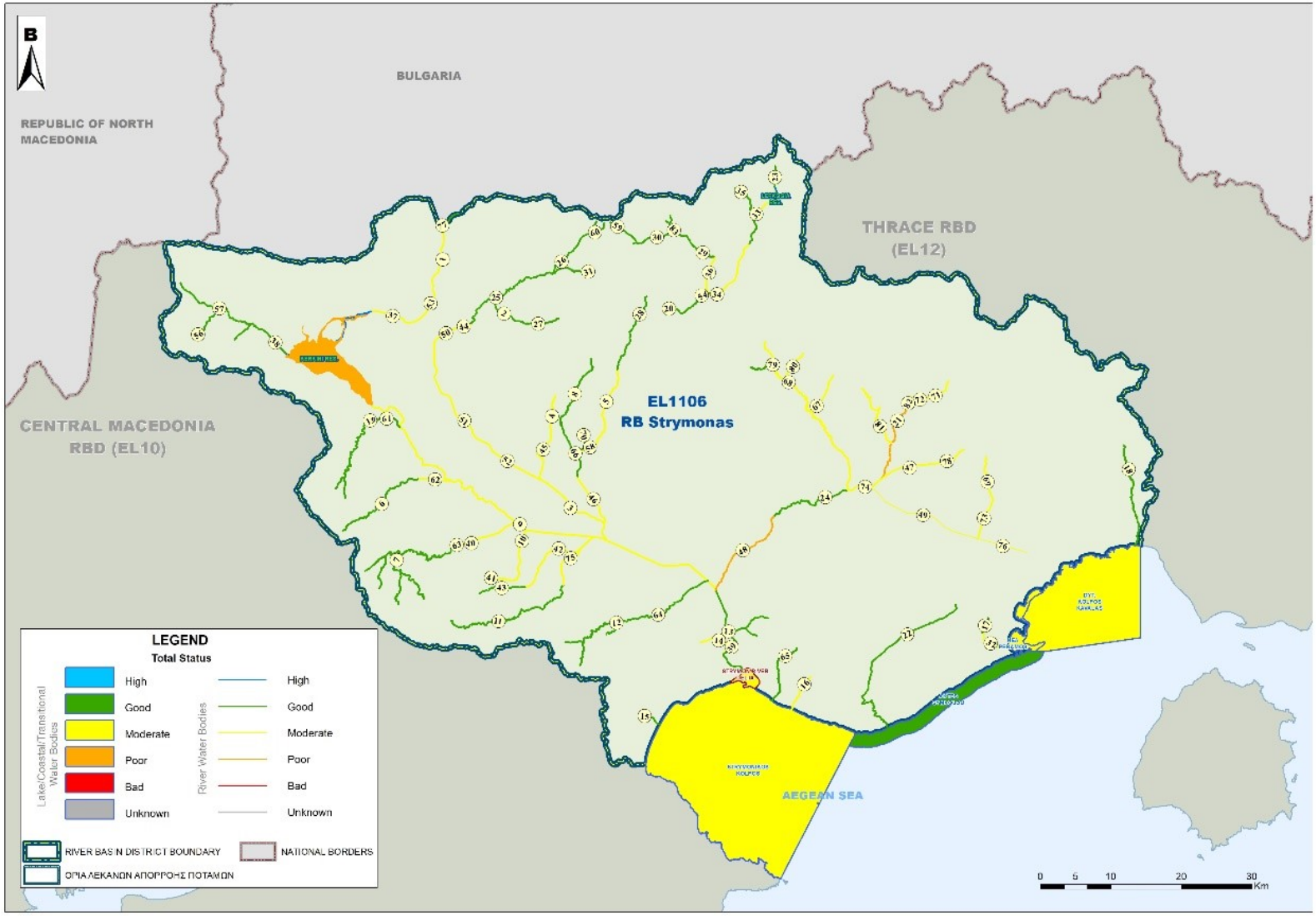
The typology and classification of the status of the lake water bodies of the RBD of Eastern Macedonia is presented in the following tables (Table 5-8, Table 5-9, respectively). The differences in ecological and chemical status between the 1st RBMP and the 1st and 2nd Updates are also recorded (Table 5-9).

Table 5-8: Coastal water bodies in the Strymona RB (EL1106) of the RBD of Eastern Macedonia (EL11)

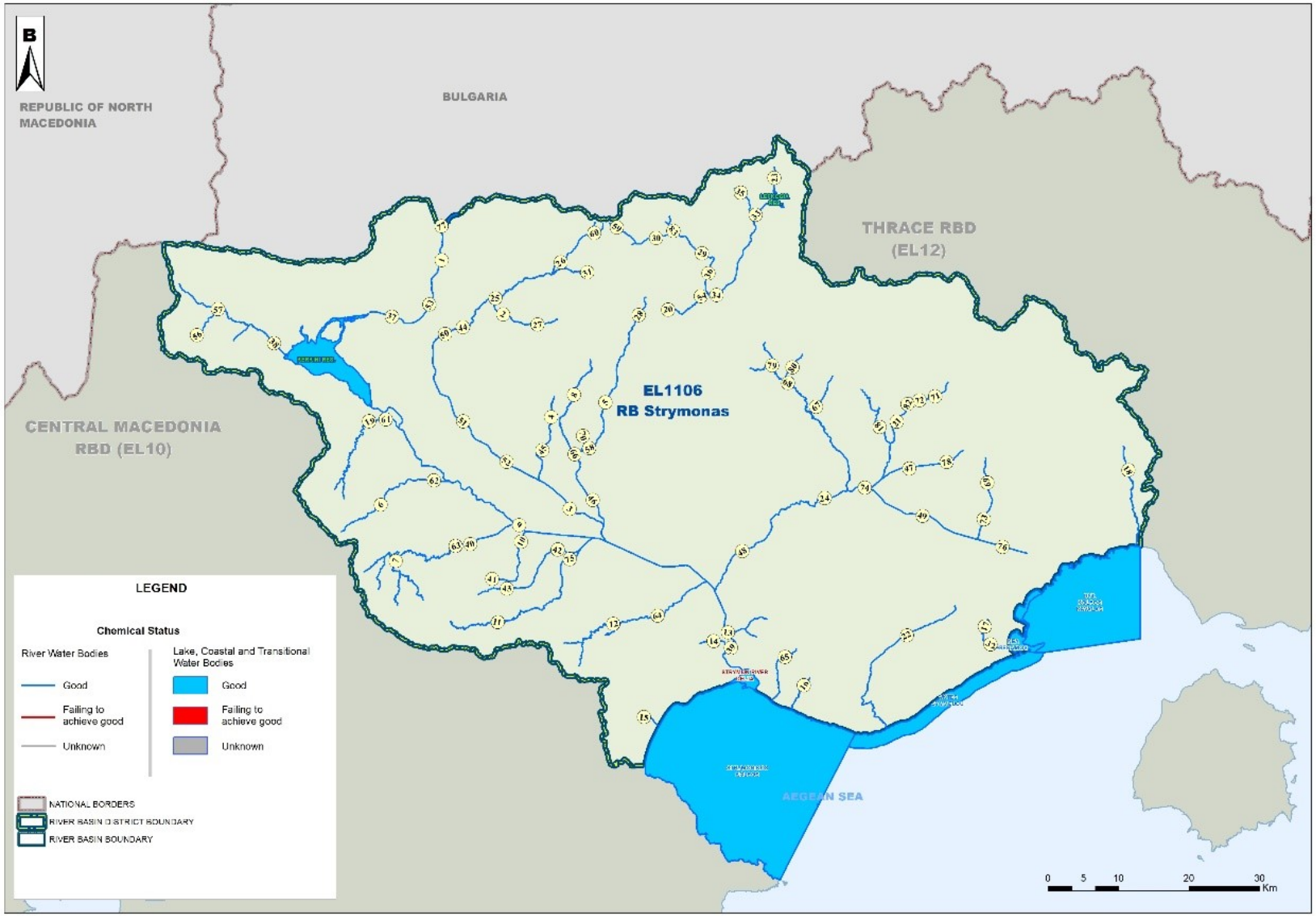
No	WB Name	WB Code	Category	Area (km^2)	Perimeter (km)	Type of WB
RB STRYMONAS (EL1106)						
1	STRYMONIKOS KOLPOS	EL1106C0001N	NWB	482,28	111,39	3E
2	AKTES SYMVOLOU	EL1106C0002N	NWB	55,95	73,39	3E
3	NEA PERAMOS	EL110CT0003N	NWB	12,04	42,18	3E
4	DYT KOLPOS KAVALAS	EL1106C0004N	NWB	183,16	79,48	3E
NWB: *Natural WB,* ***HMWB:*** *Heavily Modified WB,* ***AWB:*** *Artificial WB*						

Table 5-9: Differences in the status of coastal water bodies between the previous RBMP and its 2nd Update in the RBD of Eastern Macedonia (EL11)

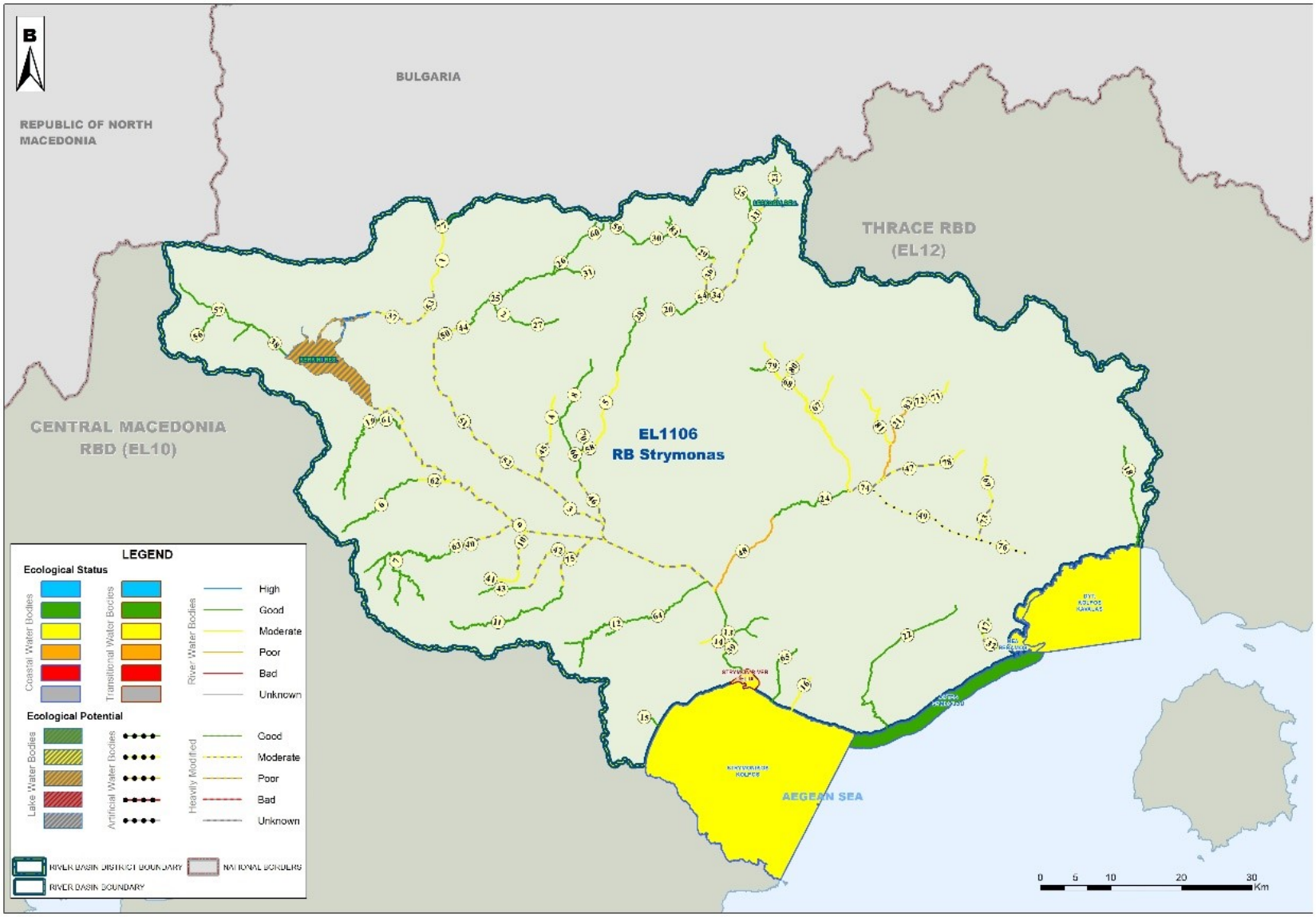
No	WB Code	WB Name	Link to protected areas	1st RBMP		1st Update RBMP		2nd Update RBMP	
				Ecological status	Chemical status	Ecological status	Chemical status	Ecological status	Chemical status
1	EL1106C0001N	STRYMONIKOS BAY	√	GOOD	GOOD	GOOD	GOOD	MODERATE	GOOD
2	EL1106C0002N	SYMVOLOU COASTS	√	GOOD	UNKNOWN	HIGH	UNKNOWN	GOOD	GOOD
3	EL1106C0003N	NEA PERAMOS	√	MODERATE	UNKNOWN	MODERATE	GOOD	MODERATE	GOOD
4	EL1106C0004N	KAVALAS WEST BAY	√	MODERATE	UNKNOWN	MODERATE	GOOD	MODERATE	GOOD



Map 5-1: Map of the ecological status/potential of surface water bodies of the RBD of Eastern Macedonia (EL11)



Map 5-2: Map of the chemical status of surface water bodies of the RBD of Eastern Macedonia (EL11)



Map 5-3 Map of the overall status of surface water bodies of the RBD of Eastern Macedonia (EL11)

5.2 GROUNDWATER BODIES

In the framework of the 2nd Update RBMP of the River Basin District of Eastern Macedonia (EL11), the delimited Groundwater Bodies were reviewed and the boundaries of the ASPROVALTA GWB (EL1100090) were modified, since a small part of the ASPROVALTA GWB (EL1100090) was included in the system, located in the Central Macedonia River Basin District (EL10) and received a new code EL1100091.

The table below (Table 5-10) presents the fifteen (15) GWB of the Eastern Macedonia (EL11) RBD and their areas, after the adoption of the above amendment. Similarly, it is shown how they are delineated on the map below (Map 5-4).

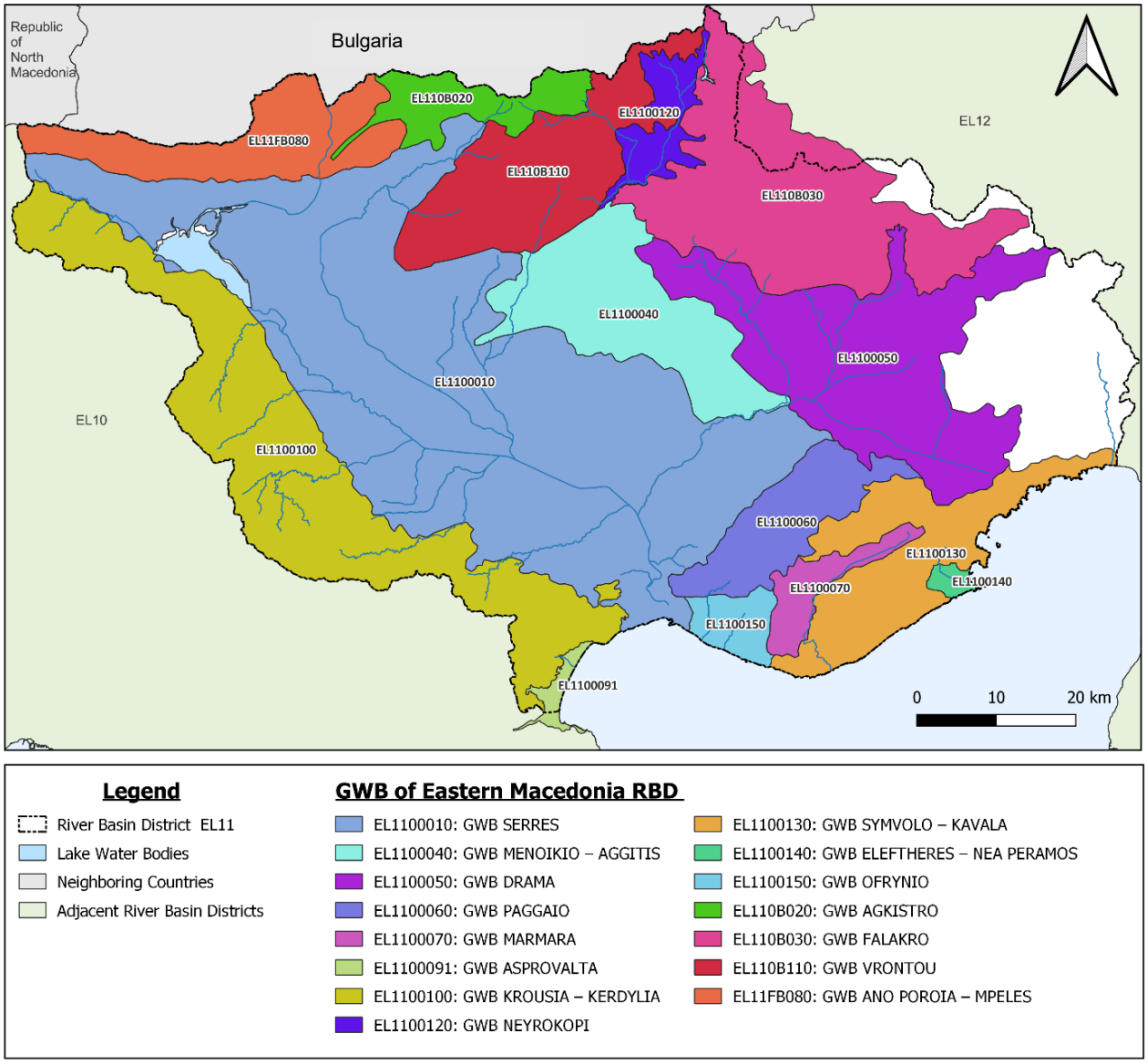
Table 5-10: Groundwater Bodies of the RBD of Eastern Macedonia (EL11) during the 2nd RBMP Update

No	GWB Name	GWB Code	Area (km^2)
1	SYSTHMA SERRON	EL1100010	2.244,91
2	SYSTHMA AGGISTROU	EL110B020	153,75
3	SYSTHMA FALAKROU	EL110B030	722,98
4	SYSTHMA MENOIKIOY-AGGITH	EL1100040	425,28
5	SYSTHMA DRAMAS	EL1100050	736,15
6	SYSTHMA PAGGAIOY	EL1100060	229,23
7	SYSTHMA MARMARA	EL1100070	92,43
8	SYSTHMA ANO POROION – MPELES	EL11FB080	320,20
9	SYSTHMA ASPROVALTA	EL1100091	27,28
10	SYSTHMA KROYSION-KERDYLION	EL1100100	913,33
11	SYSTHMA BRONTOYS	EL110B110	436,83
12	SYSTHMA NEVROKOPIOY	EL1100120	105,83
13	SYSTHMA SYMBOLOY-KAVALAS	EL1100130	376,37
14	SYSTHMA ELEYTHERON-NEAS PERAMOY	EL1100140	19,24
15	SYSTHMA OFRYNIOY	EL1100150	75,53

The 15 GWBs of the Eastern Macedonia RBD relate to

- **4 karstic types:** Angistro (EL110B020), Falakrou (EL110B030), Menoikio-Aggitis (EL1100040), Paggaio (EL1100060).
- **7 alluvial types:** Serres (EL1100010), Drama (EL1100050), Marmara (EL1100070), Asprovalta (EL1100091), Nevrokopi (EL1100120), Eleftheron-N. Peramos (EL1100140) and Ofrinio (EL1100150).
- **4 fractural types:** Ano Poroia-Mpelles (EL11FB080), Kroussia-Kerdilia (EL1100100), Vrontou System (EL110B110), Symbolo-Kavala (EL1100130).

Within the boundaries of the RBD EL11, there is a part of the karstic Mountains Basin GWB (EL1200070), as well as a very small part of the River-Stavroupolis GWB (EL120B090), which belong to the management of the Thrace RBD (EL12), therefore they are characterized and further examined in the framework of the respective RBMP.



Map 5-4: Groundwater Bodies of the Eastern Macedonia RBD (EL11)

5.2.1 Assessment of the status of groundwater bodies

The 2nd Update of the Management Plan of the RBD EL11 was based on seventy-two (72) GWB stations, which, almost in their entirety, recorded data on both the chemical and quantitative status of the GWBs, and relate to twenty-seven (27) Operational and forty-five (45) Monitoring stations.

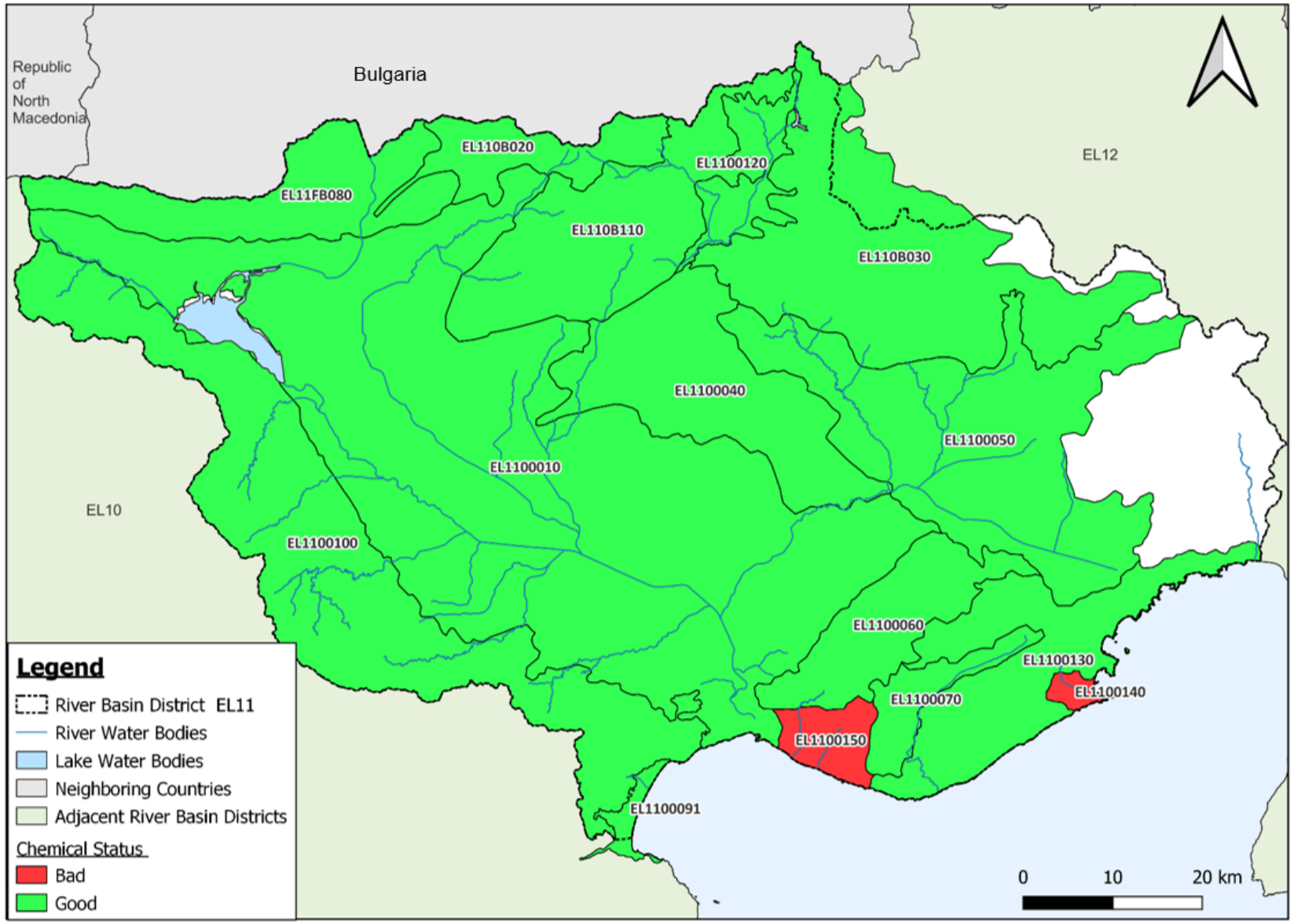
Table 5-11 below presents in detail per GWB of the Eastern Macedonia RBD (EL11), the status and classification data, as obtained during the 2nd Update of the RBMP.

A visual presentation of the qualitative and quantitative status of the GWBs of the Eastern Macedonia RBD (EL11) is given below (Map 5-5 and Map 5-6, respectively).

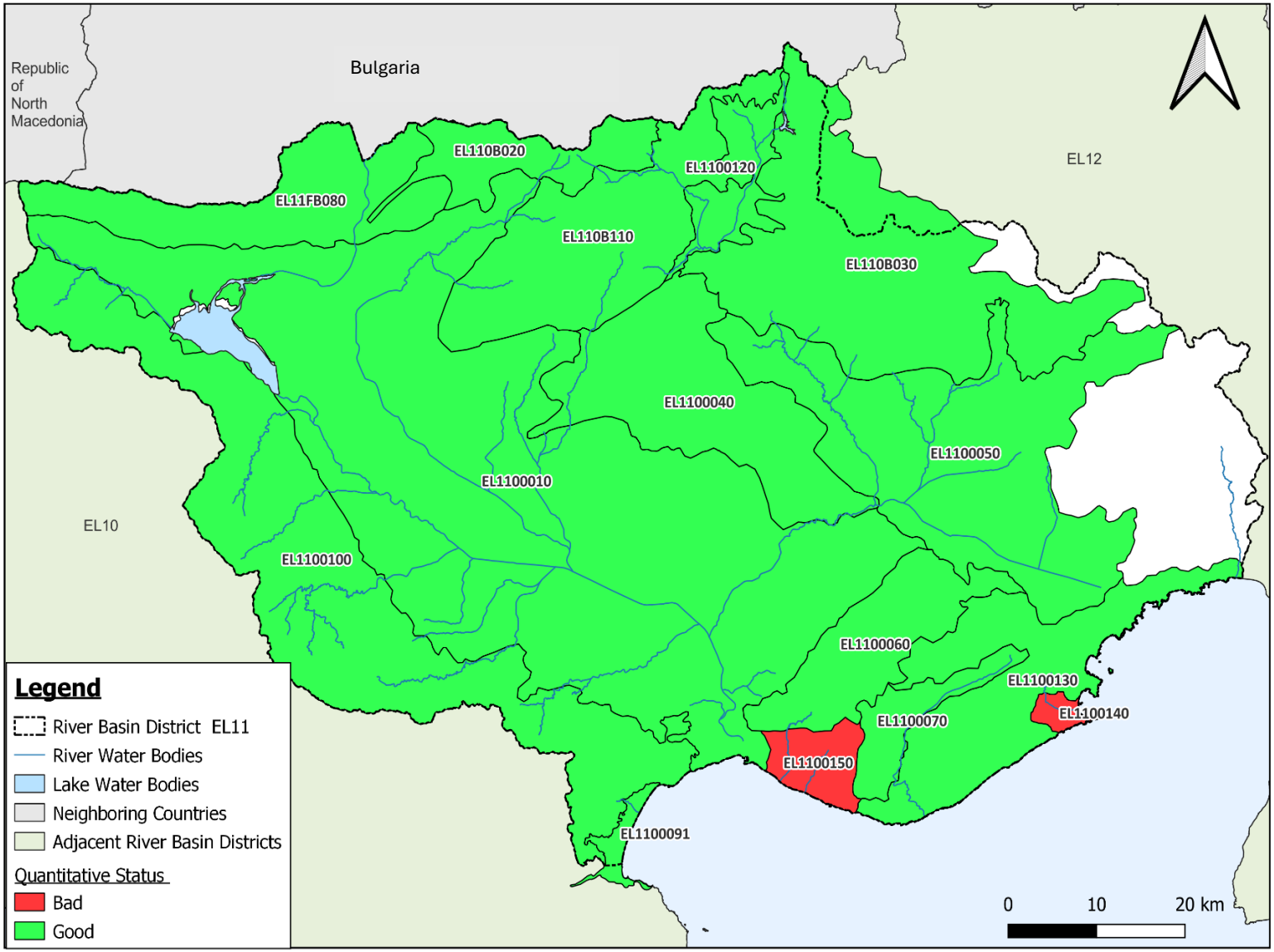
Table 5-11: Qualitative and quantitative status of groundwater bodies in the Eastern Macedonia RBD (EL11)

NO	GWB CODE	GWB NAME	QUALITATIVE STATUS	QUANTITATIVE STATUS	INCREASED PRICES OF ITEMS DUE TO PHYSICAL BACKGROUND	INCREASED VALUES OF ANTHROPOGENIC IMPACT ELEMENTS	MAIN PRESSURES	MARITIME PENETRATION	PROTECTED AREAS (Article 7)
1	EL1100010	SYSTHMA SERRON	GOOD	GOOD	SO4, EC, Cl, Na, Mn, Fe, Ni, As.	NO_3 και NH_4	Agricultural activity, urban wastewater	Cited in the literature	NO
2	EL110B020	SYSTHMA AGGISTROU	GOOD	GOOD	-	-		NO	YES
3	EL110B030	SYSTHMA FALAKROU	GOOD	GOOD	-	-		NO	YES
4	EL1100040	SYSTHMA MENOIKIOY-AGGITH	GOOD	GOOD	-	-I		NO	YES
5	EL1100050	SYSTHMA DRAMAS	GOOD	GOOD	Mn, Fe, Al.	NO_3 και NH_4	Agricultural activity, urban wastewater	NO	NO
6	EL1100060	SYSTHMA PAGGAIOY	GOOD	GOOD	As	-		NO	YES
7	EL1100070	SYSTHMA MARMARA	GOOD	GOOD	Fe, Cu	-		NO	NO
8	EL11FB080	SYSTHMA ANO POROION – MPELES	GOOD	GOOD	SO4, EC			NO	NO
9	EL1100091	SYSTHMA ASPROVALTA	GOOD	GOOD	Hg, F			NO	NO
10	EL1100100	SYSTHMA KROYSION-KERDYLION	GOOD	GOOD	-	-		NO	NO
11	EL110B110	SYSTHMA BRONTOYS	GOOD	GOOD	-	-		NO	NO
12	EL1100120	SYSTHMA NEVROKOPIOY	GOOD	GOOD	Al.	NO_3	Agricultural activity, urban wastewater	NO	NO
13	EL1100130	SYSTHMA SYMBOLOY-KAVALAS	GOOD	GOOD	-	-		NO	NO

NO	GWB CODE	GWB NAME	QUALITATIVE STATUS	QUANTITATIVE STATUS	INCREASED PRICES OF ITEMS DUE TO PHYSICAL BACKGROUND	INCREASED VALUES OF ANTHROPOGENIC IMPACT ELEMENTS	MAIN PRESSURES	MARITIME PENETRATION	PROTECTED AREAS (Article 7)
14	EL1100140	SYSTHMA ELEYTHERON-NEAS PERAMOY	BAD	BAD	SO_4	EC, Cl, Na	Overpumping, level drop, Marginal surplus	YES	NO
15	EL1100150	SYSTHMA OFRYNIOY	BAD	BAD	SO_4	NO_3 EC, Cl, Na	Level drop	YES	NO



Map 5-5: Quality status of the Groundwater Bodies of the Eastern Macedonia RBD (EL11)



Map 5-6: Quantitative status of the Groundwater Bodies of the Eastern Macedonia RBD (EL11)

Comparative results with respect to the 1st RBMP and its 1st UpdateTable 5-12:

Table 5-12: Variation in the status of the GWB between the 1st Management Plan, 1st and 2nd Updates of the RBMP

1 ST RBMP				Code	Name	1st Update		Code	Name	2nd Update	
Code	Name	Qualitative status	Quantitative Status			Qualitative status	Quantitative Status			Qualitative status	Quantitative Status
GR1100010	SYSTHMA SERRON	GOOD	GOOD	EL1100010	SYSTHMA SERRON	GOOD	GOOD	EL1100010	SYSTHMA SERRON	GOOD	GOOD
GR110B020	SYSTHMA AGGISTROU	GOOD	GOOD	EL110B020	SYSTHMA AGGISTROU	GOOD	GOOD	EL110B020	SYSTHMA AGGISTROU	GOOD	GOOD
GR110B030	SYSTHMA FALAKROU	GOOD	GOOD	EL110B030	SYSTHMA FALAKROU	GOOD	GOOD	EL110B030	SYSTHMA FALAKROU	GOOD	GOOD
GR1100040	SYSTHMA MENOIKIOY-AGGITH	GOOD	GOOD	EL1100040	SYSTHMA MENOIKIOY-AGGITH	GOOD	GOOD	EL1100040	SYSTHMA MENOIKIOY-AGGITH	GOOD	GOOD
GR1100050	SYSTHMA DRAMAS	GOOD	GOOD	EL1100050	SYSTHMA DRAMAS	GOOD	GOOD	EL1100050	SYSTHMA DRAMAS	GOOD	GOOD
GR1100060	SYSTHMA PAGGAIOY	GOOD	GOOD	EL1100060	SYSTHMA PAGGAIOY	GOOD	GOOD	EL1100060	SYSTHMA PAGGAIOY	GOOD	GOOD
GR1100070	SYSTHMA MARMARA	GOOD	GOOD	EL1100070	SYSTHMA MARMARA	GOOD	GOOD	EL1100070	SYSTHMA MARMARA	GOOD	GOOD
GR11FB080	SYSTHMA ANO POROION – MPELES	GOOD	GOOD	EL11FB080	SYSTHMA ANO POROION – MPELES	GOOD	GOOD	EL11FB080	SYSTHMA ANO POROION – MPELES	GOOD	GOOD
GR1100090	SYSTHMA ASPROVALTA	GOOD	GOOD	EL1100090	SYSTHMA ASPROVALTA	GOOD	GOOD	EL1100091	SYSTHMA ASPROVALTA	GOOD	GOOD
GR1100100	SYSTHMA KROYSION-KERDYLION	GOOD	GOOD	EL1100100	SYSTHMA KROYSION-KERDYLION	GOOD	GOOD	EL1100100	SYSTHMA KROYSION-KERDYLION	GOOD	GOOD
GR110B110	SYSTHMA BRONTOYS	GOOD	GOOD	EL110B110	SYSTHMA BRONTOYS	GOOD	GOOD	EL110B110	SYSTHMA BRONTOYS	GOOD	GOOD
GR1100120	SYSTHMA NEVROKOPIOY	GOOD	GOOD	EL1100120	SYSTHMA NEVROKOPIOY	GOOD	GOOD	EL1100120	SYSTHMA NEVROKOPIOY	GOOD	GOOD
GR1100130	SYSTHMA SYMBOLOY-KAVALAS	GOOD	GOOD	EL1100130	SYSTHMA SYMBOLOY-KAVALAS	GOOD	GOOD	EL1100130	SYSTHMA SYMBOLOY-KAVALAS	GOOD	GOOD

1 ST RBMP				Code	Name	1st Update		Code	Name	2nd Update	
Code	Name	Qualitative status	Quantitative Status			Qualitative status	Quantitative Status			Qualitative status	Quantitative Status
GR1100140	SYSTHMA ELEYTHERON-NEAS PERAMOY	BAD	BAD	EL1100140	SYSTHMA ELEYTHERON-NEAS PERAMOY	BAD	BAD	EL1100140	SYSTHMA ELEYTHERON-NEAS PERAMOY	BAD	BAD
GR1100150	SYSTHMA OFRYNIOY	GOOD	GOOD	EL1100150	SYSTHMA OFRYNIOY	GOOD	GOOD	EL1100150	SYSTHMA OFRYNIOY	BAD	BAD

5.3 HEAVILY MODIFIED WATER BODIES (HMWB) AND ARTIFICIAL WATER BODIES (AWB)

In summary, the same methodology as in the 2nd Update of Management Plan has been applied in this 2nd Update RBMP with the following improvements:

- Data was collected for projects that were constructed after 2015 and/or will be constructed by 2027
- All surface water bodies (SWB) were examined and all projects/uses were recorded by criteria in a geographic information system (GIS) to allow for subsequent geographical comparison with future projects
- Following a change in the EU guidelines, HMWB resulting from the construction of dams (inland reservoirs) are identified as lake HMWB
- The recent results of the National Monitoring Network (NMN) have been taken into account for the final identification of HMWB.

In this 2nd Update of RBMP, in the **Eastern Macedonia RBD (EL11) twenty-four (24) Further Modified** and **two (2) Artificial Water Bodies** remain in a total of **90 surface Water Bodies** (as Map 5-7).

The table below (Table 5-13) provides a summary of the number and distribution of the Heavily Modified Water Bodies. The coverage rate for the lake and coastal water bodies refers to the total area of lake and reservoir waters and coastal waters of the RBD 11 respectively, while the coverage rate for the river water bodies refers to the total length of river waters of the RBD.

Table 5-13: Surveillance image of the number and coverage of heavily modified water bodies in the RBD of Eastern Macedonia (EL11)

Categories of Water Bodies	HMWB		AWB	
	No of WBs	Area - length coverage (%)	No of WBs	Area - length coverage (%)
Lake HMWB-Reservoird	2	100%	0	0%
River WaterBodies	22	26,8%	2	2,97%
Transitional Water Bodies	0	0%	0	0%
Coastal WaterBodies	0	0%	0	0%

The water bodies that have been definitively identified as heavily modified and artificial by category are listed below.

5.3.1 River Water Bodies

Extensive land reclamation works have been carried out in the River Basin District of Eastern Macedonia for the drainage of soils from marshy areas and their use in agriculture, as well as for flood control purposes. Water withdrawals are also carried out to meet irrigation needs through water abstraction projects which result in modifications to the riverbed. As a result, **22 river HMWB** and **two (2) river AWB** have been identified related to the Philippi trench constructed for the drainage of marshy areas of the Philippi Tenagon (as Table 5-14 and Table 5-15, respectively).

Table 5-14: Heavily Modified Water Bodies in the Eastern Macedonia RBD (EL11)

WB Code	WB Name	Length (Km)	Basin (km²)	«Determined water usage» according to the article 4(3)(α) of WFD
EL1106R0002100031H	AGIOU IOANNOY R.	10,85	182,67	Irrigation, Flood protection
EL1106R0002140061H	ANONYMO R.	6,97	31,86	Irrigation, Flood protection
EL1106R0004020082H	BATHYTOPOY R.	5,4	20,57	Irrigation, Flood protection
EL1106R0007010090H	BRYSH R.	5,23	6,25	Irrigation, Flood protection
EL1106R0002100239H	ERYTHROREMA R.	7,48	17,89	Irrigation, Flood protection
EL1106R0002060218H	KEFALARI R.	6,07	17,02	Irrigation, Flood protection
EL1106R0002100246H	KROYSOBITHS R.	2,1	5,68	Irrigation, Flood protection
EL1106R0002120054H	MEGALO REMA	9,18	30,92	Irrigation, Flood protection
EL1106R0002100238H	MPELITSAS R.	13,44	92,63	Irrigation, Flood protection
EL1106R0002100245H	MPELITSAS R.	10,95	35,37	Irrigation, Flood protection
EL1106R0002100244H	MPELITSAS R.	11,01	132,2	Irrigation, Flood protection
EL1106R0002100242H	MPELITSAS R.	7,47	106,03	Irrigation, Flood protection
EL1106R0004040080H	MYLOREYMA R.	3,92	7,94	Water storage, Irrigation, Tourism
EL1106R0004030078H	MYLOREYMA R.	11,65	111,77	Irrigation, Flood protection
EL1106R0002060422H	XEROPOTAMOS R.	0,83	51,57	Flood protection, Urbanization
EL1106R0002160063H	SKAPANIS R.	8,67	25,99	Irrigation, Flood protection
EL1106R0002000028H	STRYMONAS R.	64,14	799,87	Irrigation, Flood protection
EL1106R0002250070H	STRYMONAS R.	8,74	44,11	Irrigation, Flood protection
EL1106R0002250071H	STRYMONAS R.	3,35	76,14	Irrigation, Flood protection
EL1106R0002060325H	DOXATOU R.	8,88	68,26	Irrigation, Flood protection
EL1106R0002060420H	DOXATOU R.	5,57	44,65	Irrigation, Flood protection
EL1106R0002120156H	XRYSOROIS R.	12,17	21,19	Irrigation, Flood protection, Urbanization

Table 5-15: Artificial River Water Bodies in Eastern Macedonia (EL11)

HMWB Code	WB Name	Length (km²)	Basin (km²)	«Determined water usage» according to the article 4(3)(α) of WFD
RB STRYMONAS (EL1106)				
EL1106R0002060217A	FILIPPON CANAL	17.55	244.39	Irrigation, Flood protection
EL1106R0002060293A	FILIPPON CANAL	7.25	256.81	Irrigation, Flood protection

5.3.2 Lake WB

Two lake-type HMWBs have been identified in the EL11 River Basin District:

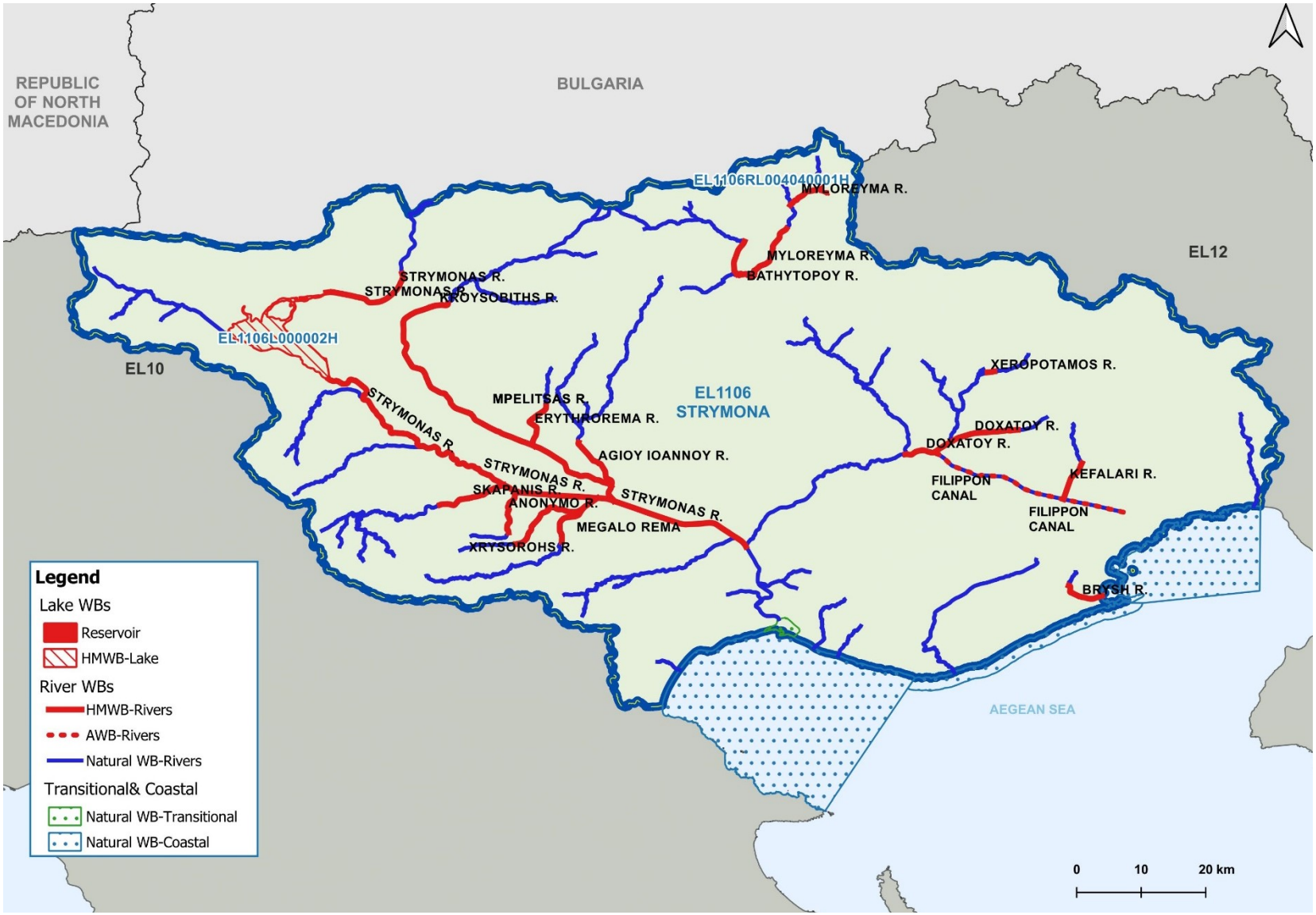
- Kerkini Lake (EL1106L000002H) which is a modification of an existing lake and
- Lefkogeia (EL1106RL004040001H), which is an irrigation reservoir.

Table 5-16: Heavily Modified Lakes and Reservoirs in the Eastern Macedonia RBD (EL11)

HMWB Code	WB Name	TYPE	AREA (Km^2)	BASIN (Km^2)	DEFINED USE
RB STRYMONAS (EL1106)					
EL1106L000002H	KERKINI RES.	GR-SR	46.09	292.17	Flood protection, Water storage: Irrigation
EL1106RL004040001H	LEFKOGEIARE RES.	GR-SR	1.09	31.61	Flood protection-Irrigation

5.3.3 Coastal and Transitional WB

The four (4) coastal areas of the Eastern Macedonia RBD that were examined as well as the only transitional one are still classified as natural during the 2nd Update.



Map 5-7: Heavily Modified and Artificial Water Bodies in the Eastern Macedonia RBD (EL11)

5.4 PROTECTED AREAS

5.4.1 General

The Register of Protected Areas includes, according to Annex V of Presidential Decree 51/2007, all the following types of areas:

a) Areas intended for the abstraction of water for human consumption, in accordance with Article 7 of Presidential Decree 51/2007 (Article 7 of Directive 2000/60/EC),

(b) Areas designated for the protection of aquatic species of economic significance,

(c) Water Bodies designated as recreational waters, including areas designated as bathing waters,

(d) Areas sensitive to the presence of nutrients, including areas designated as vulnerable zones and areas designated as sensitive,

(e) Areas designated for the protection of habitats or species where the maintenance or improvement of water status is important for their protection, including relevant Natura 2000 sites.

5.4.2 Areas designated for the abstraction of water intended for human consumption

In the area of the Eastern Macedonia RBD, surface water is not used for the production of water intended for human consumption, nor is it intended for such use in the future. The production of water intended for human consumption concerns exclusively groundwater and specifically the GWB shown in the map below (Map 5-8).

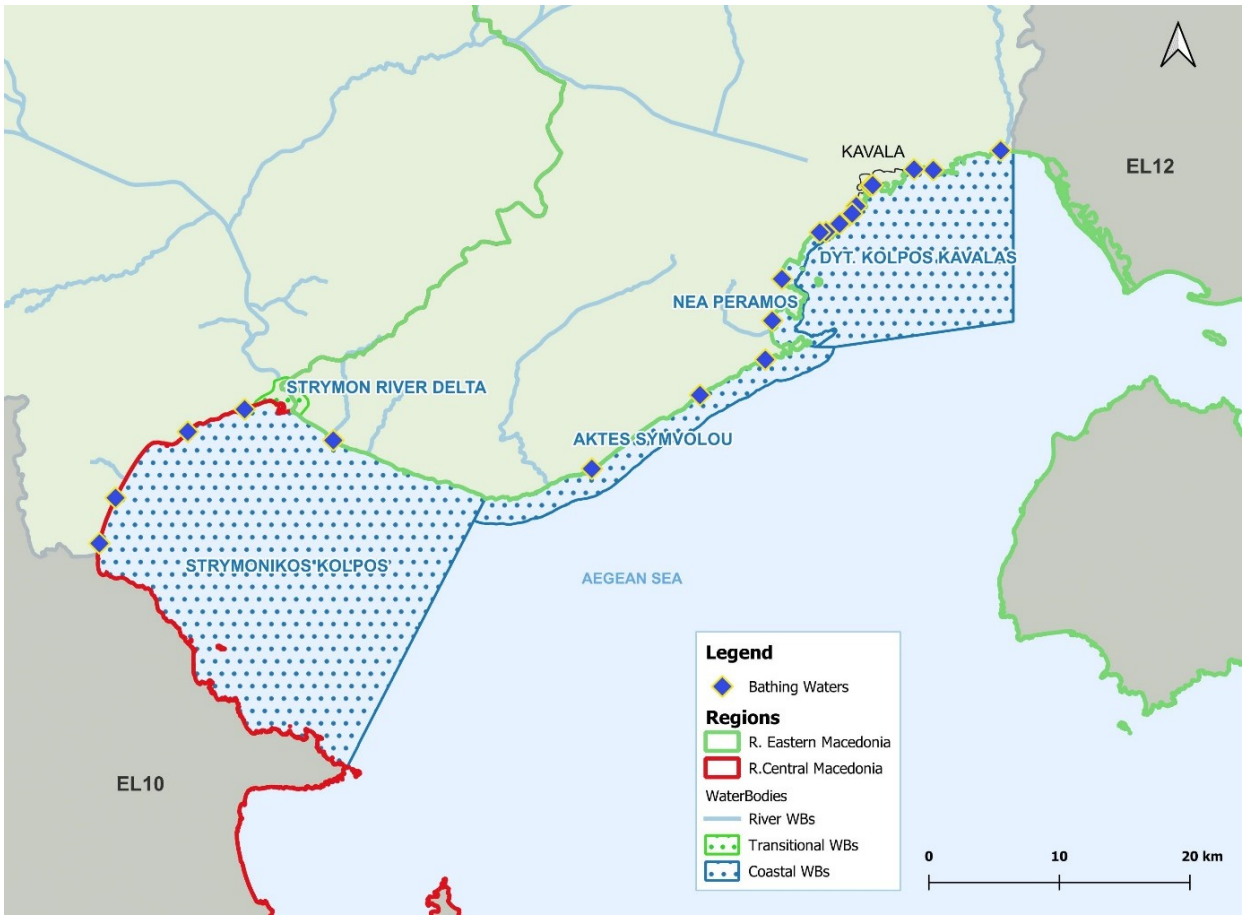
The karstic GWB of the Mountains Basin (EL1200070), which is partly located in the Eastern Macedonia RBD (EL11) and the remaining part in the Thrace RBD (EL12), is used for the abstraction of water for human consumption (springs, boreholes) and is included in the Register of Protected Areas (RPA) of the Thrace RBD.

Map 5-8: GWBs intended for human consumption in Eastern Macedonia River Basin District (EL11)

5.4.3 Water bodies designated as recreational waters

According to Greece's Bathing Water Identification Register, 20 sites have been designated as bathing waters in coastal bodies in the Eastern Macedonia RBD (EL11) as Map 5-9.

In the Eastern Macedonia RBD (EL11) there are no statutory recreational activities in inland waters.



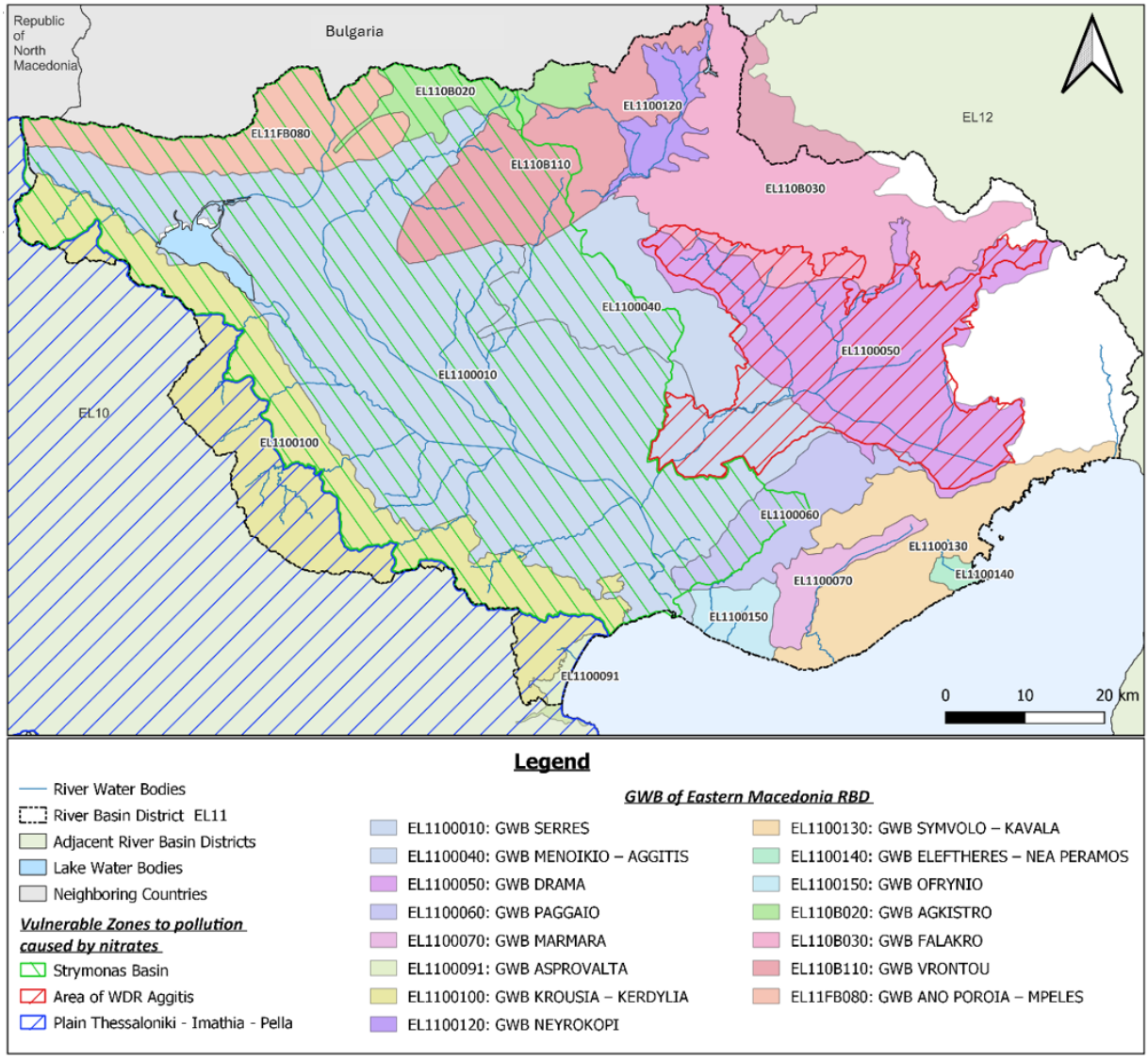
Map 5-9: Bathing Water Areas in the Eastern Macedonia RBD (EL11)

5.4.4 Areas sensitive to the presence of nutrients

The register of protected areas of the present RBMP 2nd Update of River Basin District EL11 includes the following Water Bodies associated with Vulnerable Zones to pollution caused by nitrates of agricultural origin (Directive 91/676/EEC), as Map 5-10:

- GWB SERRES (EL1100010)
- GWB DRAMA (EL1100050)
- 17 Surface Water Body rivers of the institutionalized vulnerable zone of the Basin of P. Aggitis. (see Table 4-20).
- the SWB LAKE KERKINI (EL1106L000002H) of the Strymonas basin (due to eutrophic nature).

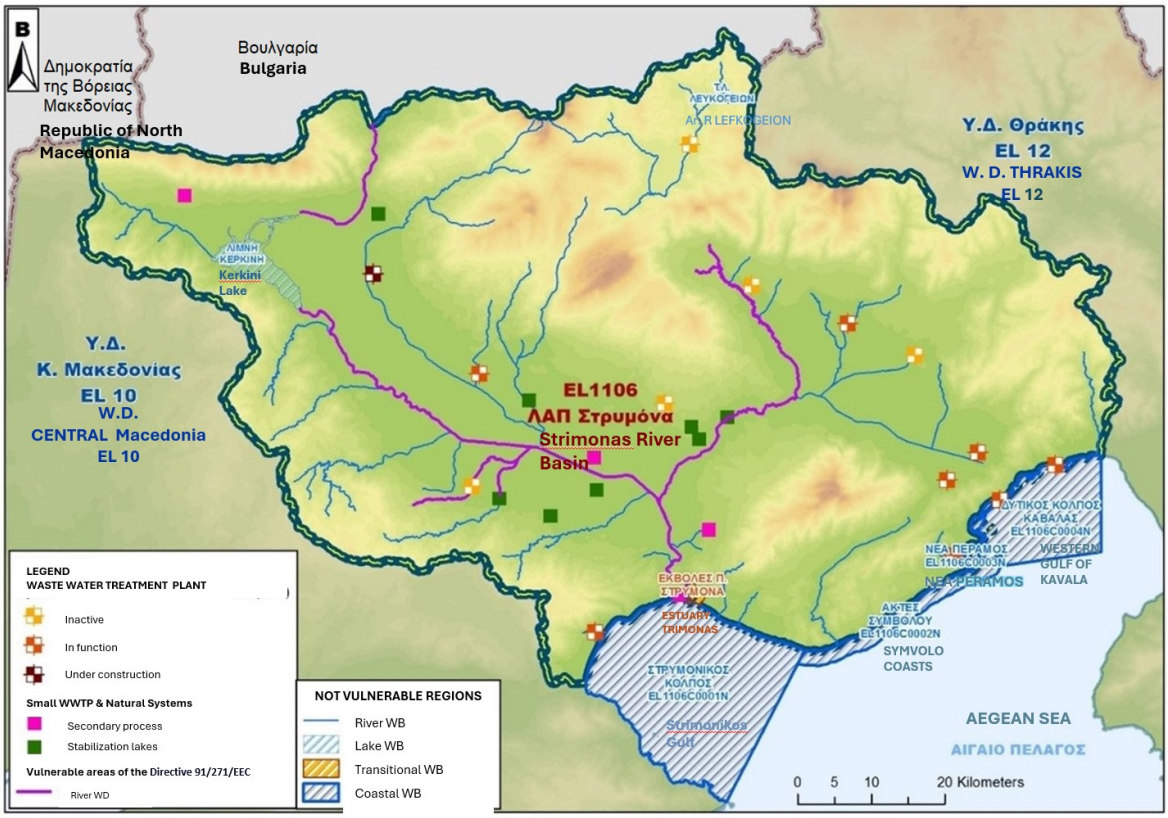
In the context of preparation of the 2nd Update RBMP, there was no need to add a new nitrate vulnerable to the area for the Register of Protected Areas (RPA), in comparison to the 1st Update.



Map 5-10: Statutory Vulnerable Zones in the Eastern Macedonia RBD (EL11)

The following vulnerable areas (as Map 5-11) have been defined in the Eastern Macedonia RBD (EL11), based on Decree 19661/1982/1999 (Government Gazette 1811B'/29.09.1999), as updated and complemented by the Decree 48392/939/2002:

- Strymonas River
- Aggitis River (Tributary of Strymonas River)
- Chrysorroe River (Tributary of Strymonas River)

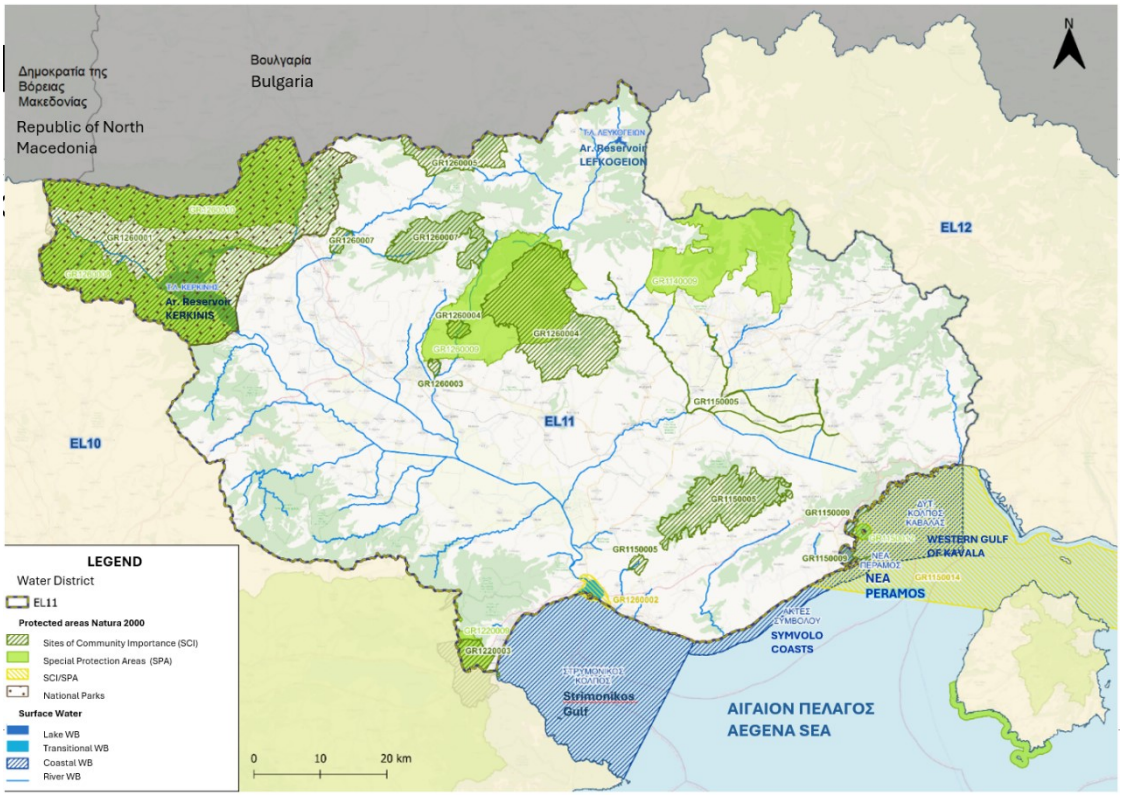


Map 5-11: Vulnerable areas in the Eastern Macedonia RBD (EL11)

5.4.5 Areas designated for the protection of habitats or species

Based on the Update of the national list of sites of the European Ecological Network Natura 2000 that took place after the 1st Update of the RBMP River Basin District EL11, in comparison to its 1st Update, the new site GR1150014, the sites GR1220003 and GR1260004, and GR1220009, due to the extension of the Asprovalta hydrological system, are included in the RPA. As a result, an additional one (1) coastal WB (EL1106C0002N) and two GWB (EL1100040, EL1100091) are associated with network areas, as Map 5-12.

In the Eastern Macedonia RBD (EL11), the **National Park of Lake Kerkini**, which is also a wetland of international importance according to the Ramsar Convention, has been delimited by **Decree 42699/2006** (Government Gazette 98/AAPP/8.9.2006). The Park includes the area of the Ramsar wetland and the Natura 2000 network sites GR1260001 "Lake Kerkini - Kruscia - Tops of Mount Beles, Agistro - Haropo", GR1260008 "Artificial Lake Kerkini - Mount Kruscia" and GR1260010 "Mount Beles". It should be noted that the boundaries of the National Park largely coincide with the boundary of the area GR1260001 "Lake Kerkini - Krushia - Tops of Mount Beles, Agistro - Haropo" and therefore the Surface water Bodies associated with it are included in the RPA.



Map 5-12: Conservation areas of habitats or species included in the RPA in Eastern Macedonia RBD (EL11)

5.4.6 Areas reserved for the protection of aquatic species of economic importance

In the River Basin District of Eastern Macedonia (EL11), the river water body, Kefalari R. (EL1106R0002060219N), and the coastal water body "Strymonikos Kolpos" (EL1106C0001N), are integrated in the RPA as in Map 5-13.

Map 5-13: Protected areas of aquatic species of economic importance in Eastern Macedonia RBD (EL11)

6 ECONOMIC ANALYSIS OF WATER USE

The economic analysis of water uses is carried out in accordance with the legislation in effect and the specific guidelines of the General Directorate of Water.

6.1 FINANCIAL COSTS

The total financial costs of water supply and wastewater treatment services in the EL11 River Basin District for all providers amounts to €35.88 million and the total financial revenues amount to €32.77 million. The recovery of the financial costs of water supply and wastewater services at the level of the RBD is estimated at 91.3%, as identified in the Detailed Documentation "Economic analysis of water uses and determination of the current level of cost recovery for water services".

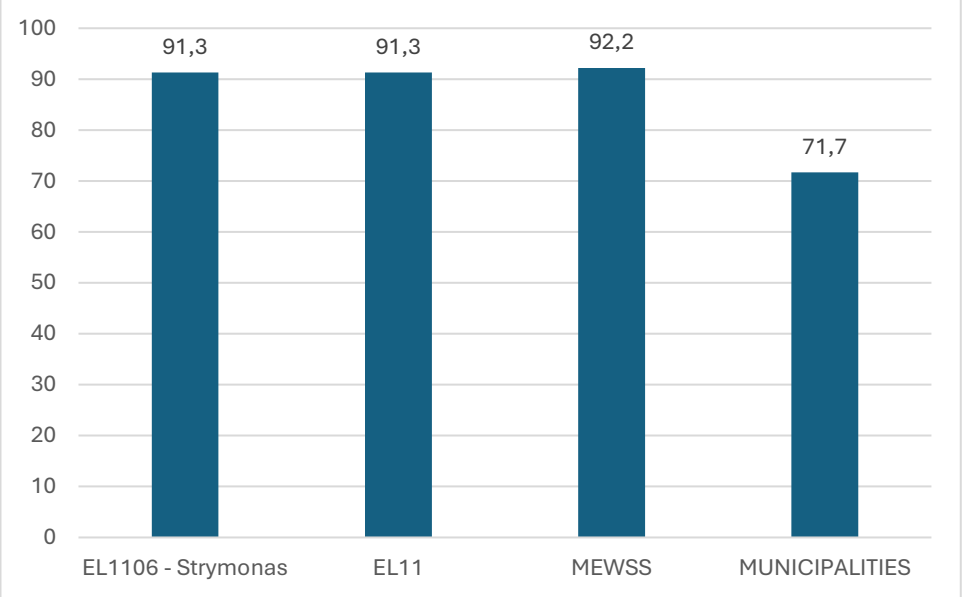


Figure 6 1: Financial cost recovery in the River basin of the Eastern Macedonia RBD (EL11), by provider

Including the private wells for water supply, the recovery of the total financial costs is estimated at 92.5%. The overall degree of financial cost recovery in the Eastern Macedonia RBD (EL11) is considered satisfactory[1]. For the municipalities, among the providers with complete data available, the cost recovery is estimated at 71.7% and for the Municipal Water Supply & Sewerage Companies at 92.2%.

The variation in the level of financial cost recovery between MWSSC's and municipalities results from the way their pricing policies are implemented. In general, the MWSSCs apply pricing policies that take into account the total financial costs (capital, operating and administrative costs) as opposed to the municipalities that price on the basis of their operating costs and do not consider capital and administrative costs to a large extent. This results in an underestimation of costs.

The largest cost recovery is in water supply for other uses[2] 129.3%. The financial cost recovery for water use is estimated at 91.9%.

[1] *In private drilling the recovery of financial costs is considered 100%.*

[2] *Other uses include uses such as tourism, business, public bodies, etc.*

It is noted that the overall recovery rate depends mainly on the use of water for domestic use. This is mainly since domestic use is the main water use and also because there is insufficient data to estimate the recovery rate for other uses. It has been found that in many cases the general water tariff does not distinguish between uses or that industrial use is included in business use.

The total financial cost of water supply for agricultural use in total for the EL11 RBD was estimated at 24.78 million € and the total financial revenue at 17.93 €. The recovery of the financial costs of water supply for agricultural use in the RBD was estimated at 72.4%, as determined in the Detailed Documentation "Economic Analysis of Water Uses and Determination of the Existing Cost Recovery Rate for Water Services". Including private wells for agricultural water supply, the cost recovery for the entire RBD is estimated at 79.5%.

From the existing financial cost and revenue data, the degree of recovery of financial costs of rural water providers is considered satisfactory. In most cases the providers charge for water either through a per hectare levy (usually depending on the type of crop) or in some cases through an hourly charge. However, it should be noted that in many cases, due to the impossibility of metering, the charges do not reflect actual water consumption.

The General Land Improvement Association (GLIO) of the Serres Plain shows a cost recovery of 87.5%, the Site of Community Land Reclamation (SCLR) 70.5% and the municipalities 45.8%. The financial recovery for the supply of water for agricultural use is estimated at 72.4%.

6.2 ENVIRONMENTAL COST ET RESOURCE COST

The annual unit environmental cost at the level of the RBD and River Basin amounts to 305 thousand € linked to the cost of the complementary measures M11Σ0701, M11Σ0801, M11Σ0901, M11Σ1611 mentioned in chapter 8 and relates to agricultural use as it is the main pressure on the Hydrological Systems to which the above measures are applied. The Annual Unit Environmental Cost for agricultural use and for the whole RBD is 0.0004 €/m^3. The environmental cost for other uses is zero.

The annual unit cost of the resource at the level of the RBD and river basin is 37.5 thousand €, linked to the cost of the complementary measures M11Σ1607 and M11Σ1702 and related to agricultural use, as it is the main pressure on the GWB to which the above measures are applied. The resource costs for other uses are zero. The Annual Unit Resource Cost for agricultural use and for the whole RBD is 0.00005 €/m^3.

7 ENVIRONMENTAL OBJECTIVES - EXEMPTIONS

Exemptions are an integral part of the definition of environmental objectives. Articles 4.4, 4.5, 4.6 and 4.7 describe the conditions and procedure for applying these exemptions. Exemptions can range from small-scale, temporary deviations from the 'good status by 2015' rule to medium and long-term exemptions. The exceptions envisaged include:

- The extension of the deadline. Good status must be achieved by 2021 or at least by 2027 (Article 4.4), or after 2027 as soon as natural conditions allow.
- The achievement of less stringent targets under specific circumstances (Article 4.5)
- Temporary downgrading in circumstances arising from natural causes or force majeure (Article 4.6)
- New modifications to the physical characteristics of surface water bodies or changes in the level of groundwater bodies or failure to prevent deterioration from excellent to good status of a surface water system, which are the result of new human sustainable development activities (Article 4.7)

The following tables summarise the status objectives for surface and groundwater hydrological systems. The objectives set for the RBD consider the assessment of the status of the hydrological system of the RBD, the effectiveness of the proposed Program of Measures and the possibility of derogations under specific conditions as provided for in the Directive.

7.1 OBJECTIVES FOR SURFACE WATER BODIES

Table 7-1 summarises the targets set for the 90 surface water bodies in the RBD up to 2027 and beyond.

Table 7-1 Surface water bodies targets for ecological status / potential and chemical status by 2027

OBJECTIVE	Rivers WB	Lakes WB	Transitional WB	Coastal WB	Total number of SWB	Percentage of total SWB
No degradation of good and high ecological status/potential	41	-	-	1	42	47%
No degradation of good chemical status	83	2	1	4	90	100%
Achieving good ecological status/potential	-	-	-	-	-	-
Achieving good chemical status	-	-	-	-	-	-
Determination of ecological status/potential (up to 2027)	-	2	-	-	2	2%
Chemical status determination (by 2027)	-	-	-	-	-	-
Achieving good status after 2027 Compliance with Article 4.4	-	-	-	-	-	-
Achieving good status after 2027 Compliance with Article 4.5	42	2	1	3	48	53%

OBJECTIVE	Rivers WB	Lakes WB	Transitional WB	Coastal WB	Total number of SWB	Percentage of total SWB
Compliance with Article 4.6	-	-	-	-	-	-
Compliance with Article 4.7	1	-	-	-	1	1%

7.2 OBJECTIVES FOR UNDERGROUND WATER BODIES

Table 7-2: Objectives for the status of GWB

OBJECTIVE	NUMBER OF UNDERGROUND UTILITIES	Percentage
No degradation of quality status	13	87%
No degradation of Quantitative status	13	87%
Achieving good quantitative status after 2027 Compliance with Article 4.4	2	13%
Achieving good quality status after 2027 Subject to Article 4.4 due to natural conditions"	2	13%
Achieving good status after 2027 Compliance with Article 4.5	0	0%
Compliance with Article 4.6	0	0%
Compliance with Article 4.7	0	0%

7.3 OBJECTIVES FOR PROTECTED AREAS

The key objectives for each category of protected areas are defined as follows.

Areas intended for the abstraction of water for human consumption

For areas intended for the abstraction of water for human consumption, the following objectives shall be established:

- The quality characteristics of the treated water made available for human consumption comply with the requirements of Directive 98/83/EC on the quality of water intended for human consumption.
- Ensure appropriate protection to avoid deterioration of water quality so to reduce the degree of treatment for the production of drinking water.

The first objective is achieved when the quality standards specified in Directive 98/83/EC, as applicable, are met.

The second objective is achieved by implementing actions to ensure the protection of the quality characteristics of waters intended for human consumption (e.g. defining protection zones for water intakes).

Water bodies classified as recreational waters

The objective for recreational waters identified under the Bathing Water Directive is to protect the environment and public health when bathing, and to maintain, protect and improve the quality of bathing water.

This objective is achieved by meeting the standards of sufficient, good or excellent quality set out in Directive 2006/7/EC.

Areas vulnerable to the presence of nutrients

For nitrate vulnerable zones the general objectives set are:

- the reduction of water pollution from nitrates of agricultural origin,
- avoiding additional pollution. These objectives are achieved by:
▫ the designation of Vulnerable Zones,
▫ the implementation of action programs applicable to them; and
▫ Codes of Good Agricultural Practice (GAPs) providing guidance on nitrate reduction contribute to the achievement of these objectives.

For Vulnerable Areas the main objective, as set out in Directive 91/271/EEC, is to protect the environment from the adverse effects of discharges of urban wastewater and waste water from certain industrial sectors.

The objective is achieved when the disposal limits set in Directive 91/271/EEC for sensitive areas are met.

Areas designated for the protection of habitats or species

The objectives for the Natura 2000 network protection areas are defined in relation to the conservation and protection objectives for the sites identified under the Habitats Directive (92/43/EC as currently in effect). These objectives relate to the protection and, where necessary, the improvement of the aquatic environment to the extent necessary to achieve the conservation objectives for natural habitats and wild plant and animal life in Sites of Community Importance.

The objectives for the sites established in relation to the Wild Birds Directive (2009/147/EC) are to protect, or where necessary improve, the aquatic environment to such an extent that the protection objectives of the Special Protection Areas are achieved.

Where a Natura 2000 network protected area is part of a WBs or where an WB falls within a Natura 2000 site, the objectives of the Water Framework Directive (WFD) for the status of the HS shall apply in addition to the requirements for the desired conservation status.

Some Hydrological Systems falling within protected areas of the Natura 2000 network have been identified as HMWB. In these cases the objective of achieving Good Ecological Potential (GEP), achieved through the implementation of mitigation measures to address hydromorphological alterations, is applied in addition to the objectives for the conservation status of the site.

Areas designated for the protection of aquatic species of economic importance

The objectives for the protection areas for aquatic species of economic importance are set in relation to the objectives identified on the basis of the objectives set in Directives 2006/113/EC on water quality for shellfish for marine waters and 2006/44/EC on freshwater quality.

The objectives set relate to:

- the maintenance of the quality of inland surface waters included in the register of protected areas with regard to the physico-chemical parameters as defined in Annexes I and II of Directive 2006/44/EC44 and monitored in the framework of the National Water Status Monitoring Network,
- the maintenance of the quality of coastal and transitional waters included in the register of protected areas with regard to the parameters listed in Annex I to Directive 2006/113/EC and monitored within the National Water Quality Monitoring Network.

These objectives are achieved through the authorisation procedure for activities that may affect the status of the bodies of water falling within the above categories.

8 PROGRAM OF MEASURES

The Program of Measures is part of the Management Plan and constitutes the "mechanism" for achieving the environmental objectives set out and targeted:

- preventing deterioration, improving and restoring surface hydrological systems, achieving the objective of good ecological and chemical status, and reducing pollution from discharges and emissions of hazardous substances
- protecting, improving and restoring the status of groundwater, preventing its pollution and deterioration with the aim of achieving a balance between abstraction and recharge
- the conservation of protected areas

The measures are divided into Basic and Supplementary measures.

- Basic Measures, according to par. 3 of Article 11 of the Directive, are the minimum requirements that must be met and include:
  - Measures to implement EU and national water protection legislation (Group I).
  - Other Basic Measures (Group II). These basic measures relate to the basic principles of EU and national legislation on water management and relate to the overall application of actions to groups, usually hydrological systems, with the aim of achieving or maintaining good status in them.
- Complementary Measures are measures that are developed and implemented in addition to the Basic Measures in order to achieve the objectives established in accordance with Article 4 of Directive 2000/60/EC. Member States may adopt further supplementary measures for the purpose of additional protection or improvement of waters covered by the Directive.

8.1 PROGRESS IN THE IMPLEMENTATION OF THE PROGRAM OF MEASURES OF THE 1ST UPDATE (2ND RBMP)

The Program of Measures of the 1st Update of the River Basin Management Plan of the Eastern Macedonia RBD (EL11) included 34 Basic Measures and 20 additional measures. The tables below (Table 8-1 and Table 8-2) provide summary information by category of measures on the progress of their implementation.

Table 8-1: Summary presentation of the progress in the implementation of the Key Actions of the Program of Measures (1st Update of RBMP) of the Eastern Macedonia RBD (EL11)

Category of measures	Total number of measures	Number of measures applied	Number of measures to be implemented	Number of measures not implemented
Measures to address negative impacts on the status of surface water bodies in particular from hydromorphological alterations	4	2		2
Measures to implement the principle of cost recovery for water services (Article 9)	4	2	1	1
Measures to protect waters intended for human consumption (Article 7)	4	2	2	
Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	8	4	3	1
Measures on diffuse sources of discharges	3	2		1
Measures for priority and other substances	2	1		1

Category of measures	Total number of measures	Number of measures applied	Number of measures to be implemented	Number of measures not implemented
Measures on point and diffuse sources of discharges	1			1
Measures for point sources of discharges	4	1	1	2
Measures for the control and licensing of artificial enrichment of the GWB	2		1	1
Measures to control surface and groundwater abstraction and surface water storage	2		1	1
TOTAL	34	14	9	11

Table 8-2: Summary of progress in the implementation of the Supplementary Measures of the 1st Update Program of Measures

Category of measures	Total number of measures	Number of measures applied	Number of measures to be implemented	Number of measures not implemented
Restoration and rehabilitation of wetland areas	1	1		
Administrative measures	2	2		
Educational measures	2		2	
Pollutant emission controls	2			2
Control of withdrawals	1	1		
Research, development and demonstration projects	10		1	9
Demand management measures	1	1		
Artificial enrichment of the GWBs	1		1	
TOTAL	20	5	4	11

Progress in the implementation of the measures of the 1st RBMP Update was affected by the following factors:

- Availability of resources (financial and human)
- Funding problems
- Administrative difficulties
- Problems concerning the ranking and prioritisation of measures

The table below (Table 8-3) summarises the progress of actions taking place in RBD to implement existing Directives.

Table 8-3: Stage of completion of the Basic Protection Measures (Group I)

Directive	Planned actions	Implementing Agencies	Implementation phase
Bathing waters (Directive 2006/7/EC)	BO11: Continue monitoring bathing water quality in accordance with Directive 2006/7/EC	GWB, Water Directorates of the Decentralized Administration	Implemented
	BO12: Update of the Swimming Water Identification Register		
Protection of wild birds (Directive 2009/147/EC) and habitats (Directive 92/43/EEC)	BO21: Preparation/institution of Management Plans for protected areas of the Natura 2000 network that are directly dependent on water, with specific reference to water management issues.	MEE, Management bodies of protected areas	To be implemented

Directive	Planned actions	Implementing Agencies	Implementation phase
	BO22: Monitor/assess the conservation status of water-dependent habitats and species in Natura 2000 sites.		
Drinking Water (Directives 98/83/EC, 2015/1787/EU, Directive (EU) 2020/2184/EC	BO31: Παρακολούθησης εφαρμογής της Οδηγίας BO31: Monitoring the implementation of the Directive	Ministry of Health	Implemented
Environmental Impact of Projects/Activities (Directives 2011/92/EU, 2014/52/EU)	BO41: Modification of YA οικ. 170225/2014 (Specification of the contents of the environmental permit dossiers for Category A projects and activities...) so that for specific categories of projects, which should be previously identified, the following become mandatory: Pollutant emissions by category, Calculation of pollution impacts on the water bodies identified in the Management Plans; and Comparison of these concentrations with the MAPs. Preparation of a monitoring program and communication of results to the relevant Water Directorate.	MEE	Implemented
Pollution prevention and control (Directive 2010/75/EU)	BO51: Keeping a register of establishments covered by the provisions of the Directive	Decentralised Administration	To be implemented
Protection from nitrate pollution (Directives 91/676/EEC, 98/15/EC)	BO61: Implementation of the New Action Programs. The study for the drafting of Action Plans in all the Vulnerable Zones of the country has been assigned by the Ministry of Agriculture and Forestry to the Agricultural University and is under preparation.	MRDF	Implemented
	BO62: Systematic monitoring of nitrate levels in water bodies that are or may be subject to nitrate pollution.	SSW, MRDF	Implemented
Plant protection products (Directive 2009/128/EC, Regulation (EC) No 1107/2009, Regulation (EU) No 652/2014)	BO71: Rational use of plant protection products	MRDF	Implemented
Addressing major accident hazards (Directive 2012/18/EU)	BO81: Keeping a register of establishments covered by the provisions of the Directive.	Decentralised Administration	To be implemented
Treatment plant effluent (Directive 86/278/EEC)	BO91: Preparation of a KYA on measures, conditions and procedures for the use of sludge from the treatment of domestic and urban wastewater and certain wastewater,	MEE	To be implemented

Directive	Planned actions	Implementing Agencies	Implementation phase
	in compliance with the provisions of Directive 86/278/EEC and replacing KYA 80568/4225/1991 and promotion of actions related to the safe disposal of treated sludge.		
Urban wastewater treatment (Directive 91/271/EEC)	BO101: Completion of sewerage and wastewater treatment works in agglomerations covered by the Directive (all agglomerations with a population of more than 2,000 inhabitants equivalent).	Region, MWSSC, Municipalities	Implemented
	BO102: Strengthening actions to monitor the efficient operation of existing wastewater treatment and drainage projects.	Region	Implemented

8.2 PROGRAM OF BASIC AND SUPPLEMENTARY MEASURES

8.2.1 Actions under implementation of EU directives (Group I - Basic Measures)

The table below lists the provisions transposing the EU Directives of Annex VI of Directive 2000/60/EC (as amended and in effect) under national law.

Table 8-4: Provisions incorporating the EU Directives into national law

DIRECTIVE	INCORPORATION INTO NATIONAL LAW
Bathing Water Directive (Directive 2006/7/EC)	**JMD 8600/416/E103/23.02.2009 (Government Gazette 356/B/2009)** on "quality and management of bathing water, in compliance with the provisions of Directive 2006/7/EC "on the management of bathing water quality and the repeal of Directive 76/160/EEC" as amended and in force.
Protection of Wild Birds (Directive 2009/147/EC) and Habitats (Directive 92/43/EEC) Natura 2000 Sites	**JMD EP 37338/1807/E103/1.9.2010** (Government Gazette 1495/B/2010) "Determination of measures and procedures for the conservation of wild birds and their habitats/habitats, in compliance with the provisions of Directive 79/409/EEC "On the Conservation of Wild Birds" of the European Council of 2 April 1979, as codified by Directive 2009/147/EC" and its amending **JMD ΗΠ 8353/276/E103/2012 (Government Gazette 415/B/2012).** **JMD 33318/3028/11.12.1998 (Government Gazette 1289/B/1998)** "definition of measures and procedures for the conservation of natural habitats (habitats) and wild fauna and flora" and its amendment **JMD ΗΠ 14849/853/E103/2008** (Government Gazette 645/B/2008) in compliance with the provisions of Directive 92/43/EEC "on the conservation of natural habitats and wild fauna and flora". **Law 3937/2011 (Government Gazette 60/A/2011)** "Conservation of Biodiversity and other provisions" **MD 50743/2017 (Government Gazette 4432/B/2017)** "Update of the national list of sites of the European Ecological Network Natura 2000" **Law 4685/2020 (Government Gazette 92/A/2020)** "Modernization of environmental legislation, incorporation into Greek legislation of Directives 2018/844 and 2019/692 of the European Parliament and of the Council and other provisions"

DIRECTIVE	INCORPORATION INTO NATIONAL LAW
Drinking Water Directive (Directive 2020/2184/EU)	JMD Δ1(δ)/Γ.Π.οικ.27829/15.05.2023 (Government Gazette 3525/B/2023) "Quality of water for human consumption in compliance with the provisions of Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 (L435/1, 23.12.2020)
Environmental Impact Assessment for Projects/ Activities (Directives 85/337/EEC, 2011/92/EU, 2014/52/EU)	Law 4014/2011 (Government Gazette 209/A/2011) "Environmental licensing of projects and activities, regulation of arbitrary acts in connection with the creation of environmental balance and other provisions of the Ministry of Environment" as amended and in force. MD οικ.5688/2018 (Government Gazette 988/B` 21.3.2018) "Modification of the annexes of the law. 4014/2011 (A' 209), in accordance with Article 36A of this law, in compliance with Directive 2014/52/EU "amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment" of the European Parliament and of the Council of 16 April 2014" Law 4936/2022 (Government Gazette 105/A` 27.5.2022) "National Climate Law - Transition to climate neutrality and adaptation to climate change, urgent provisions to address the energy crisis and environmental protection"
Pollution Prevention and Control (Directives 96/61/EC, 2008/1/EC, 2010/75/EU)	MD 36060/1155/E.103/2013 (Government Gazette 1450/B/2013) "Establishing a framework of rules, measures and procedures for the integrated prevention and control of environmental pollution from industrial activities, in compliance with the provisions of Directive 2010/75/EU "on industrial emissions (integrated pollution prevention and control)" of the European Parliament and of the Council of 24 November 2010"
Protection against pollution caused by nitrates from agricultural sources (Directive 91/676/EEC)	JMD 16190/1335/19.05.1997 (Government Gazette 519/B/1997) "Measures and conditions for the protection of waters from nitrate pollution of agricultural origin" MD οικ. 19652/1906/1999 (Government Gazette 1575/B/1999) "Identification of waters subject to nitrate pollution of agricultural origin - List of vulnerable zones, in accordance with paragraphs 1 and 2 respectively of Article 4 of Joint Ministerial Decision No. 16190/1335/1997 "Measures and conditions for the protection of waters from nitrate pollution of agricultural origin" (B 519). Amendment of Articles 3, 4, 5 and 8 of this Decision" as amended by the Ministry of Public Works 20419/2522/2001 (Government Gazette 1212/B/2001), the Ministry of Public Works 24838/1400/E103/2008 (Government Gazette 1132/B/2008), the Ministry of Public Works 106253/2010 (Government Gazette 1843/B/2010), the Ministry of Public Works 190126/2013 (Government Gazette 983/B/2013), the Ministry of Public Works 147070/2014 (Government Gazette 3224/B/2014) and in force. JMD MEE/38552/265/2019 (Government Gazette 1496/B/3-5-2019) Action Program for areas classified as vulnerable zones from nitrate pollution of agricultural origin according to Article 2 of the relevant Decree No. 19652/1906/1999 Joint Ministerial Decision (B'1575), as in force, in compliance with Directive 91/676/EEC "for the protection of waters against nitrate pollution of agricultural origin" of the Council of the European Communities of 12 December 1991, as amended and in force.

DIRECTIVE	INCORPORATION INTO NATIONAL LAW
	MD 1848/278812/2021 (Government Gazette 4855/B` 20.10.2021) "Code of Good Agricultural Practice for the Protection of Waters from Nitrate Pollution of Agricultural Origin (article 10§1)
Sustainable use of pesticides (Directive 2009/128/EC, as amended by 2019/782/EU, Regulation (EC) No 1107/2009, Regulation (EU) No 652/2014)	**Law 4036/27.01.2012 (Government Gazette 8/A/2012)** "Placing of agricultural products on the market, rational use of agricultural products and related provisions" as amended and in force. **Law 4625/2019 (Government Gazette A 139 - 31.08.2019)** "Regulations of the Ministry of Infrastructure and Transport and other urgent provisions" [Article 19 includes the amendment of Annex E of Law 4036/2012 (Government Gazette 8/A/2012), in compliance with Directive (EU) 2019/782 (Articles 1 and 2 of Directive 2019/782/EU)].
Major Accidents (Seveso) Directive (Directive 2012/18/EU)	**JMD 172058/2016 (Government Gazette 354/B/2016)** "Determination of rules, measures and conditions for addressing the risks of major accidents in installations or units, due to the presence of hazardous substances, in compliance with the provisions of Directive 2012/18/EU "on the control of major accident hazards involving dangerous substances and, on the amendment, and subsequent repeal of Council Directive 96/82/EC" of the European Parliament and of the Council of 4 July 2012. Replacement of Decree No 12044/613/2007 (376/B/2007), as corrected (Government Gazette 2259/B/2007)'.
Sewage Sludge Directive (Directives 86/278/EEC, 2018/853/EU, Regulation 2019/1010/EU)	**MD MEE/ΔΔΑ/41828/630/2023 (Government Gazette B' 2692/ 21.4. 2023)** "Measures, conditions and procedures for the use of treated sludge in agriculture and soil remediation - Compliance with the provisions of Council Directive 86/278/EEC of 12 June 1986 "on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture", as amended by Regulation (EU) 2019/1010 of the European Parliament and of the Council of 5 June 2019 and replacing Regulation (EU) No. 80568/4225/1991 (B' 641) Joint Ministerial Decision'
Urban Wastewater Treatment (Directives 91/271/EEC, 98/15/EC)	**JMD 5673/400/05.03.1997 (Government Gazette 192/B/1997)** "Measures and conditions for urban wastewater treatment" and its amending decisions **MD 19661/1982/2.8.1999 (Government Gazette 1811/B/1999), MD 48392/939/28.3.2002 (Government Gazette 405/B/2002) and MD 136843/2022 (Government Gazette B' 7215/31.12.2022).**
Regulation (EU) 2020/741 on minimum requirements for water reuse	The Regulation applies where treated urban wastewater is reused, in accordance with Article 12(1) of Directive 91/271/EEC concerning urban wastewater, for agricultural irrigation.

The table below presents the planned actions for the implementation of EU and national legislation on water protection.

Table 8-5: Actions under implementation of EU Directives

DIRECTIVE	PLANNED ACTIONS	IMPLEMENTING BODIES
Bathing Water Directive (Directive 2006/7/EC)	• **BO11:** Continue monitoring bathing water quality in accordance with Directive 2006/7/EC.	DGW, Water Directorate of the Decentralised Administration
	• **BO12:** Update of the Swimming Water Identification Register	

DIRECTIVE	PLANNED ACTIONS	IMPLEMENTING BODIES
Protection of wild birds (Directive 2009/147/EC) and habitats (Directive 92/43/EEC)	• **BO21:** Preparation/institution of Management Plans for protected areas of the Natura 2000 network that are directly dependent on water, with specific reference to water management issues.	MEE, Management bodies of protected areas
	• **BO22**: Monitor/assess the conservation status of water-dependent habitats and species in Natura 2000 sites.	
Drinking Water (2020/2184/EE)	• **BO31:** Monitoring the implementation of the Directive	Ministry of Health
Pollution prevention and control (Directive 2010/75/EU)	• **BO51:** Keeping a register of establishments covered by the provisions of the Directive	Decentralised Administration (Directorate of Spatial Planning)
Protection from nitrate pollution (Directive 91/676/EEC)	• **BO61**: Systematic monitoring of nitrate levels in water bodies that are or may be subject to nitrate pollution.	DGW, MRDF
Plant protection products (Directive 2009/128/EC, Regulation (EC) No 1107/2009, Regulation (EU) No 652/2014)	• **BO71:** Rational use of plant protection products	MRDF
Major Accidents (Seveso) Directive (Directive 2012/18/EU)	• **BO81:** Keeping a register of establishments covered by the provisions of the Directive.	Decentralised Administration (Directorate of Spatial Planning)
Sewage sludge Directive (Directive 86/278/EEC)	• **BO91**: Preparation of an JMD on measures, conditions and procedures for the use of sludge from the treatment of domestic and urban waste water and certain wastewater, in compliance with the provisions of Directive 86/278/EEC and replacing JMD 80568/4225/1991 and promotion of actions related to the safe disposal of treated sludge.	MEE
Urban Waste Water Treatment (Directives 91/271/EEC and 98/15/EC)/ Regulation (EU) No 2020/741 on minimum requirements for water reuse	• **BO101:** Completion of sewerage and wastewater treatment works in agglomerations covered by the Directive	Region, MWSSC, Municipalities
	• **BO102:** Strengthening actions to monitor the efficient operation of existing wastewater treatment and drainage projects.	Region

8.2.2 Other Key Measures (GROUP II)

The key Group II measures, as developed in the 2nd Update of the RBMP, are set out in table (Table 8-6) below.

Table 8-6: Other Key Measures (GROUP II Key Measures) of the Program of Measures for Eastern Macedonia RBD (EL11)

CODE - NAME OF MEASURE	CATEGORY OF MEASURE	CONSISTENCY WITH 1st UPDATE OF RBMP	IMPLEMENTING BODIES
M11B0204 Training and education of all stakeholders (Decentralized Administrations, Regions and water service providers) on the general rules of costing and pricing of water services	Measures to implement the principle of cost recovery for water services (Article 9)	Ongoing Measure (modification of title and description M11B0204)	MEE (Directorate-General for Water)
M11B0301 Compilation / Update of Water Master Plans (Masterplan)	Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	Ongoing Measure (modification of description) (M11B0301)	Water service providers (MWSSC, Municipalities, etc.) / Decentralised Administration (Water Directorate)
M11B0302 Actions to reinforce, rehabilitate, modernise water supply networks and control leaks	Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	Ongoing Measure (M11B0302) (modification of description)	Water Service Providers / Region / Decentralised Administration (Water Directorate)
M11B0303 Increasing water use efficiency in land improvement infrastructure	Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	Ongoing measure (modification of the description of measure M11B0303)	MRDF, Special Management Service/Agricultural Development Program, Regions
M11B0304 Investments for water saving on farms	Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	Ongoing measure **(M11B0304)**	Individuals/MRDF/Region
M11B0305 Establishment of upper limits for crop irrigation needs for private water abstraction	Measures to promote the efficient and sustainable use of water so as not to compromise the achievement of the objectives of the Directive (Article 4)	Ongoing measure (modification of measure description **M11B0305)**	Decentralised Administration (Water Directorate), Regional Public Works Department of the Region

CODE - NAME OF MEASURE	CATEGORY OF MEASURE	CONSISTENCY WITH 1st UPDATE OF RBMP	IMPLEMENTING BODIES
M11B0401 Protection of water abstraction points/fields for water intended for human consumption from Groundwater Systems	Measures to protect waters intended for human consumption (Article 7)	Ongoing measure (modification of measure description M11B0401, including the obligations of Directive 2020/2184/EU)	Water service providers, Decentralised Administration (Water Directorate for the coordination of the implementation of the measure, Environment and Spatial Planning Directorate)
M11B0402 Protection of GWB included in the register of protected areas for human consumption and definition of an institutional framework for protection	Measures to protect waters intended for human consumption (Article 7)	Ongoing measure (M11B0402)	Decentralised Administration (Water Directorate)
M11B0403 Protection of water intakes intended for human consumption from Surface Water Systems	Measures to protect waters intended for human consumption (Article 7)	Ongoing measure (modification of the description of measure M11B0403 including the obligations of Directive 2020/2184/EU)	Water service providers (MWSSC, Municipalities, etc.), / Decentralised Administration (Water Directorate)/ Public Health Department of Regional Unit
M11B0501 Restrictions, terms and conditions for the construction of groundwater abstraction projects (boreholes, wells, etc.) for new uses, as well as the extension of permits for existing water uses to: (a) WB areas with poor quantitative status; (b) in protection zone II of abstraction projects serving water supply networks operated by water service providers; (c) zones of collective irrigation networks; (d) coastal GWBs with salinisation problems, extensive or local, irrespective of their origin;	Control measures for surface water abstraction and groundwater and surface water storage	Ongoing measure (amendment of measure description M11B0501)	Decentralized Administration (Water Directorate)
M11B0601 Investigation of the conditions for the application of artificial enrichments of underground aquifers as a means of quantitative enhancement and qualitative protection of HSS, with priority given to GWBs with poor condition and treatment of salinization.	Measures for the control and licensing of artificial enrichment of GWB	Ongoing measure **(M11B0601)**	Περιφέρεια, Δήμοι / Αποκεντρωμένη Διοίκηση (Δ/νση Υδάτων) Region, Municipalities / Decentralized Administration (Water Directorate)

CODE - NAME OF MEASURE	CATEGORY OF MEASURE	CONSISTENCY WITH 1st UPDATE OF RBMP	IMPLEMENTING BODIES
M11B0702 Definition of guidelines and development of tools for the effective control of discharges of sewage and industrial wastewater	Measures on point sources of discharges	New measure to replace M11B0702 & M11B1102	MEE (General Directorate for Water), Regions
M11B0704 Conditions for authorising new/extending existing aquaculture units	Measures on point sources of discharges	Ongoing measure (M11B0704)	MEE, Decentralized Administration, Region
M11B0705 Development of sinkhole protection rules	Measures on point and diffuse sources of discharges	Ongoing measure **(M11B0705)**	Decentralized Administration (Water Directorate, regarding the implementation of the Special Hydrogeological Study), Regions (regarding the construction of projects)
M11B0801 Organic agriculture	Measures on diffuse sources of discharges	Ongoing measure (modification of measure description) (M11B0801)	MRDF (Directorate of Quality Systems for Organic Production and Geographical Indications)
M11B0802 Reduction of diffuse pollution from agriculture in the vulnerable zones of Directive 91/676/EEC	Measures on diffuse sources of discharges	Ongoing measure (modification of measure description) (M11B0803)	MRDF / PCAGGCA
M11B0902 Determination of the maximum range of variation of reservoir levels	Measures to address negative impacts on the status of surface water bodies in particular from hydromorphological alterations	Ongoing measure (modification of measure description **M11B0902**)	Project Manager, Decentralized Administration (Water Directorate as regards the coordination of actions) Operational Bodies of the National Monitoring Network, Protected Areas Bodies, other scientific bodies)
M11B0905 Identification of selected areas for the extraction of sediment for the needs of civil engineering works	Measures to address negative impacts on the status of surface water bodies in particular from hydromorphological alterations	Ongoing measure (modification of measure description) (M11B0905)	DGW/Region/State Services P.E.)/Local Municipalities/ Decentralised Administration (Water Directorate, EDSP)
M11B0907 Measures to identify and achieve Good Ecological Potential in Particularly Modified Water Systems	Measures to address negative impacts on the status of surface water bodies in particular from hydromorphological alterations	New measure, following the implemented measure M11B0904 of the 1st Update	They shall be defined, as appropriate, in the table in Annex I to this Regulation

8.2.3 Estimation of the potential to achieve good status by 2027 after implementation of the Key Measures program

The program of basic measures is a tool for the protection and restoration of all hydrological systems. In order to achieve the objectives of the Management Plan, as identified in Chapter 8, the implementation of the basic measures needs to be supported by complementary measures.

Methodologically, it has been chosen to propose complementary measures:

a) To maintain the good status of surface or groundwater systems, as well as to increase knowledge and awareness on specific issues for the rational use of water for targeted users. In this case, the complementary measures are of overall, general application and do not identify the water bodies affected.

b) In hydrological systems which, despite the implementation of the program of basic measures, are estimated not to achieve the good status objective by 2027, and in particular:

- in hydrological systems which, according to measurements of qualitative and quantitative parameters or the new methodological approach to their grouping, are in a status below good status,
- hydrological systems which are in unknown or good status, but where there are clear indications, through the analysis of pressures, that they are at risk of failing to meet their environmental objectives.

The measures in case (b) shall be considered for the calculation of the environmental and/or resource costs presented in Chapter 6 above.

The following table (Table 8-7) lists the hydrological systems in the RBD for which targeted complementary measures are considered necessary.

Table 8-7: WBs of the Eastern Macedonia RBD (EL11) for which targeted complementary measures are deemed necessary

WB Code	WB Name	Ecological status/potential	Chemical status	Main pressure/effect/target
Surface WBs				
EL1106L000002H	KERKINI L.	INCOMPLETE	GOOD	• 2.2 Diffuse – Agriculture / 3.1 – Pumping or diverting flow – Agriculture • UNKN - Unknown type of impact (classification made with expert judgement) • Achieving good condition
EL1106R0002000028H	STRYMONAS R.	< GOOD	GOOD	• 4.1.1 - Change of channel/bottom/riparian area/bank - Flood protection 4.1.2 - Change of channel/bottom/riparian area/ bank - Georgia • HMOC - Habitat alteration due to morphological changes (connectivity included) • Achieving good condition
EL1106R0002000003N	STRYMONAS R.	GOOD	GOOD	

WB Code	WB Name	Ecological status/potential	Chemical status	Main pressure/effect/target
EL1106R0002010002N	STRYMONAS R.	GOOD	GOOD	• Downstream of the Lake. Kerkinis • Maintaining good condition • Downstream of Lake Kerkini • Maintaining good condition
Groundwater WBs				
EL1100010	Serres System	GOOD	GOOD	• NO3, NH4: agricultural livestock activity. • NH4, SO4: physical background (geothermal fluids, gypsum) and/or anthropogenic activities. • Salinization due to overpumping (based on bibliographic references • Electrical conductivity EC, Cl, Na: physical background (trapping of brackish phases during sedimentation of neogene sediments). • Mn, Fe, Ni: natural background: presence of ferrous-manganese deposits of metamorphic rocks • As: physical background (geothermal fluids, gypsum) • Maintaining good condition
EL1100140	Eleftheron System – Nea Peramos System	BAD	BAD	• Marginal surplus balance • Electrical conductivity, Cl, Na: due to anthropogenic activities (overpumping) • SO4: possibly due to natural background but from a limited number of recordings. • Achieving good condition
EL1100150	Ofriniou System	BAD	BAD	• Downward trend / Deficit balance • NO3: agricultural activity • Electrical conductivity, Cl, Na: due to anthropogenic activities (overpumping, bibliographic reference). • SO4: physical background (bibliographic reference) • Achieving good condition

8.2.4 Supplementary Measures

The Supplementary Measures of the 2nd Update of RDMP for the Eastern Macedonia RBD are presented in the following table (Table 8-8).

Table 8-8: Supplementary Measures of Program of Measures for the Eastern Macedonia RBD (EL11)

CODE/NAME OF MEASURE	CATEGORY OF MEASURE	CONNECTION WITH THE 1st UPDATE RBMP	AFFECTED WB	IMPLEMENTING BODIES	COST €
M11Σ0201 **Development of a Monitoring System for the Program of Measures of the RBMP of the River Basin District and provision of support services for the implementation of the Program of Measures of the RBMP of the River Basin District**	Administrative Measure	Continuation of measure M11S0201	All Hydrological Systems and River Basin Districts	Decentralized Administration (Water Directorate of Central Macedonia & Water Directorate of Eastern Macedonia & Thrace)	100.000
M11Σ0701 **Set of measures for the protection of Lake Kerkini**	Restoration and rehabilitation of wetland areas	Continuatation of measure M11S0701	T.L. KEPKINI (EL1106L000002H)	OFYPEKA (preparation of the study), D / Technical Services Department of MKM (provision of necessary data), Decentralized Administration - Water Department of MK (coordination)	60.000
M11Σ0801 **Definition and delimitation of areas of GWBs with localised waterlogging or poor-quality status due to waterlogging**	Controls of withdrawals	Continuation of measure M11S0801	ΥΥΣ ΣΕΡΡΩΝ (EL1100010), ΥΥΣ ΕΛΕΥΘΕΡΩΝ - Ν. ΠΕΡΑΜΟΥ (EL1100140), ΥΣ ΟΦΡΥΝΙΟΥ (EL1100150) SERRES GWS (EL1100010), GWS LIBERTY - N. PERAMOS (EL1100140), HS OFBRUNIA (EL1100150)	Decentralised Administration (Water Departments), Region	750.000
M11Σ0802 **Dealing with artesian boreholes**	Administrative Measure	Continuation of measure M11S0802	Total of Groundwater Systems and River Basin Districts	Water project developer, Decentralised Administration	-
M11Σ0901	Demand management measures	Continuation/specialisation of	T.L. KEPKINI (EL1106L000002H),	Decentralized Administration - Water Directorate KM and AMTH (coordination, data provision,	600.000

CODE/NAME OF MEASURE	CATEGORY OF MEASURE	CONNECTION WITH THE 1st UPDATE RBMP	AFFECTED WB	IMPLEMENTING BODIES	COST €
Monitoring of water levels and inputs, preparation of water balance and water management plan for the Kerkini district		Measure M11Σ0901	STRYMONAS (EL1106R0002000028H) STRYMONAS (EL1106R0002000003H) STRYMONAS (EL1106R0002010002N)	database), Subdirectorate of Technical Works of the Prefecture of Serres/Directorate of Technical Services of the Prefecture of Serres (studies and data provision) - ΤΥΔΡΕ of the Prefecture of Serres (studies and data provision) - OFYPEKA (studies and data provision)	
M11Σ1502 Educational actions to promote the rational management of water resources	Training measures	Specification of measure M11Σ1502	Measure of a general nature	Decentralised Administration (Water Departments)	-
M11Σ1607 Hydrogeological Study for the investigation of alternative measures to address the quantitative degradation of the Eleftheres - Nea Peramos Groundwater System EL1100140	Research, development and demonstration projects	Continuation of measure M11Σ1607	GWS OF ELEFTHERON - N. PERAMU (EL1100140)	Decentralised Administration (Water Department)	120.000
M11Σ1610 Preparation of a special hydrogeological - hydrochemical study for the determination of a hydrological system or parts thereof where chemical elements with high natural background values are present (indicatively Fe, As, B, U, Mg, etc.), when the sections in question are connected to water intake projects	Research, development and demonstration projects	Continuation of Measure M11Σ1610	SERRON GWS (EL1100010), DRAMAS GWS (EL1100050)	Decentralized Administration (Water Department) / Region / Municipalities / Municipalities / DEYA	950.000
M11Σ1611 Determination of minimum level of l. Kerkini	Research, development and demonstration projects	Specification/modification of measure M11B0902	L. Kerkini (EL1106L000002H)	OFYPEKA, Operators of the National Monitoring Network, Decentralised Administration (Water Directorate), DGY/YPEN	60.000
M11Σ1701 Special arrangements for the protection of the quantitative status of the GWS	Other Measures	New Measure	Total of Groundwater systems and River Basin Districts	Decentralised Administration	-

CODE/NAME OF MEASURE	CATEGORY OF MEASURE	CONNECTION WITH THE 1st UPDATE RBMP	AFFECTED WB	IMPLEMENTING BODIES	COST €
M11Σ1702 **Investigation of the possibility of enrichment of aquifers on both sides of the river Struma in areas where local downward trends in groundwater levels occur and/or in areas of coastal alluvial aquifers.**	Other Measures	New Measure	Serres GWS (Locally in areas where downward trends in groundwater levels occur. Concerns mainly the southern part of the GWS) GWS of Ofrini	Technical Services of the Prefectures of Kavala and Serres Decentralized Administration (Water Departments as regards the coordination of the implementation of the necessary actions)	60.000
M11Σ1703 **Configuration of a telemetric network for the monitoring of hydrological parameters (mainly flow and level) and a web-based platform of geographic information systems for the management of telemetric monitoring network data**	Other Measures	New measure	It concerns: • SWB P.E. Drama, • GWB Falakrou • GWB Nefrokopi, • GWB Serres and • GWB Mountains Basin	**Department of Environment & Spatial Planning of East Macedonia (Environment & Water Departments of spatial competence),** Coordination by : Directorate of Water of East Macedonia & Directorate of Water of Central Macedonia	300.000

9 TRANSBOUNDARY COOPERATION

9.1 TRANSBOUNDARY BASIN OF STRYMONAS RIVER

Bulgaria has been divided into four (4) River Basin Districts (RBD) in accordance with Directive 2000/60/EC. Of these, the Bulgarian part of the Strymonas transboundary basin belongs to RBD 'BG4' based in the city of Blagoevgrad.

The transboundary basin is shown on the map below (Map 9-1).

Map 9-1: Transboundary Strymonas Basin

9.2 FRAMEWORK FOR COOPERATION FOR TRANSBOUNDARY BASINS OF THE RIVER BASIN DISTRICT

Bulgaria, as a member of the EU since 2007, has the obligation to fully implement Directive 2000/60/EC. The Directive provides that in cases of transboundary waters between EU Member States, priority should be given to drawing up a Joint Management Plan for the transboundary river basin.

On July 27, 2010, the Joint Declaration of the Minister of Environment, Energy and Climate Change of Greece and the Minister of Environment and Water of Bulgaria "On understanding and cooperation in the field of water resources use in the respective territories of the shared river basins between the Republic of Bulgaria and the Hellenic Republic" was signed. The declaration reaffirms the intention of the two countries to cooperate on water resources management issues in transboundary river basins and provides the establishment of a Joint Expert Working Group on cooperation on water and environmental issues in transboundary basins.

The Joint Working Group met for the first time in Drama on 16 May 2011 and held its second meeting in Sofia on 12 October 2011. The third meeting of the Joint Working Group took place in Thessaloniki on 23 April 2013, the fourth in Athens on 8 May 2015, fifth in Sandanski on 13 May 2016. The last, sixth, meeting of the Joint Working Group took place on 21 June 2017 in Kavala.

The following five (5) meetings of the Bulgarian - Greek Expert Subworking Group on Technical Data have also taken place: in Kavala on 26 April 2012, in Blagoevgrad on 25 and 26 July 2013, in Athens on 23 June 2015, in Sofia on 15 February 2018. The last, 5th meeting, of the Expert Working Group on Technical Data took place online and was hosted by the Bulgarian side on December 1, 2021. The Expert Subgroup exchanged information on the state of implementation of the Water Framework Directive 2000/60/EC (WFD) and progress made so far. Emphasis was placed on coordinating issues related to mid-term reviews of important water management issues, including water balance, pressures and impacts, methodologies applied and their updating.