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Green Economy in Eastern Partner Countries

# Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia

November 2023

Action implemented by:



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## Acronyms and abbreviations

Abbreviations - Acronyms	Definition
ASCIs	Areas of Special Conservation Interest
CEPA	Comprehensive and Enhanced Partnership Agreement between Armenia and the EU
CITES	Convention on International Trade in Endangered Species
CWP	Country Work Plan
DNP	Dilijan National Park
EU	European Union
EU4Environment	"European Union for Environment" Program
FE	Forest Enterprise
IoB	Institute of Botany
KPIs	Key Performance Indicators
MP	Management Plan
MUPAs	Management Units for Protected Areas
NAP	National Action Plan
NECCA	Natural Environment and Climate Change Agency
NGO	Non-Governmental Organization
PAF	Prioritized Action Framework
RA	Republic of Armenia
SES	Special Environmental Studies
SNCO	State non-commercial organization
SPNAs	Specially Protected Nature Areas
SACs	Special Areas of Conservation
SCIs	Sites of Community Importance
SPAs	Special Protected Areas
ToR	Terms of Reference
WB	World Bank

## Definitions

- ✓ **Conservation degree**<sup>1</sup>: The result of an evaluation of the status of a species or habitat type at the local scale (i.e., protected area or country)
- ✓ **Conservation status**: The result of an evaluation of the status of a species or habitat type at biogeographical scale
- ✓ **Conservation objectives**<sup>2</sup> **linked to concrete species and habitats and measurable in order to be assigned as indicators for further monitoring. They should include the following:**
  - Conservation or increase the species population
  - Conservation or increase of the area habitat types
  - Conservation or enhancement of species habitat (thus improving the degree of conservation of one or more habitat types)
  - Maintaining or improving the degree of conservation of a habitat type
- ✓ **Conservation measures** can be defined as the actual mechanisms and actions to be put in place for an Emerald site with the aim of achieving the site's conservation objectives. The measures can be active and passive (non-intervention).
- ✓ **Cross-border ecological corridor** is a geographical space containing a combination of ecosystems characterized by relief forms, plantation cover, determined on managerial and scientific basis, which are of importance for the protection of biodiversity and landscape.
- ✓ **Ecological character** of an Emerald Network site is defined as the combination of ecosystem components, processes and other ecological features or characteristics that contribute to the quality and functioning of the site.
- ✓ **Emerald site management** is the implementation of the necessary conservation measures, either active or passive, to maintain or increase populations of species or quality and area of habitats. All other aspects of Emerald site 'management' are also important, but they all must be aligned and adjusted to this primary objective.

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<sup>1</sup> Evans, D. & Arvela, M. 2011. Assessment and reporting under Article 17 of the Habitats Directive - Explanatory Notes & Guidelines for the period 2007-2012 – Final Draft. European Topic Centre on Biological Diversity, <https://circabc.europa.eu/sd/a/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17-Guidelines-final.pdf>

<sup>2</sup> Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. <https://op.europa.eu/en/publication-detail/-/publication/11e4ee91-2a8a-11e9-8d04-01aa75ed71a1> (2.3.1. Setting site-level conservation objectives)

### Executive summary

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The purpose of the Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia is to assist the Armenian authorities in developing management plans for Emerald sites. These management plans are crucial for protecting the species and natural habitats listed in Resolutions no. 4 (1996) and no. 6 (1998) and ensuring they are subjected to appropriate conservation measures to achieve satisfactory conservation levels.

The specific objectives of these Recommendations are as follows:

- ✓ Develop the structure and guidelines for the management plans of Emerald sites in Armenia
- ✓ Provide the designated authorities and management planning authorities with the methodological elements required for drawing management plans: The main coordinating body for Special Protected Natural Areas (SPNAs) in Armenia is the Ministry of Environment, along with its local State Non-Commercial Organizations (SNCOs).

The Guidelines provide a methodology and structure for developing a comprehensive Emerald Management Plan (MP). Additionally, they offer proposed structures and short guidance notes for different scenarios, including:

- ✓ Emerald sites primarily included in a Special Protected Natural Area (SPNA): If at least 70% of an Emerald site is included in an SPNA and falls under the SPNA Management Plan (MP), the Emerald MP will be added as an Annex to the SPNA MP. This creates an Integrated Plan, combining the SPNA and Emerald management components. If less than 70% of the Emerald site is included in the SPNA, a standalone Emerald MP is required.
- ✓ Emerald sites primarily included in a Forest Enterprise (FE): Similar to the SPNA scenario, if at least 70% of an Emerald site is included in a FE and falls under the FE MP, the Emerald MP will be added as an Annex to the FE MP. This creates an Integrated Plan, combining the FE and Emerald management components. If less than 70% of the Emerald site is included in the FE, a standalone Emerald MP is required.
- ✓ Emerald sites located on other lands, such as State, community, or private lands: In these cases, a standalone Emerald MP is required regardless of the percentage of the site included.
- ✓ Very small Emerald sites: For Emerald sites that are small in size or have very few target species or habitat types, a standalone Emerald MP is also required.

The Guidelines briefly address the process for developing a standalone full-scale Emerald MP, which includes five preparation phases: Pre-planning, Preparatory, Situation analysis, Adaptive management plan, and Monitoring and review of the measures' implementation.

These proposed guidelines will be tested in two Emerald MP pilot sites as part of the EU4Environment Program.

## **D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia**

The following policy recommendations are proposed measures to improve the preparation and approval process of Emerald management plans in the country and address national-level needs for Emerald advancement:

1. Streamline and expedite Emerald management plan preparation and approvals: The implementation of the Guidelines will simplify and accelerate the process of developing and approving Emerald management plans in the country.
2. Emphasize monitoring and review of management plan measures: A crucial component of Emerald management plan performance is the regular monitoring and review of the proposed measures. This ongoing evaluation allows for the assessment of their effectiveness and the identification of any necessary adjustments to ensure the conservation objectives are met. Regular monitoring and review also enable adaptive management, where strategies can be modified based on new information or changing circumstances.
3. Implement regular updates of management planning documents: Following the practice of the European Union, it is recommended that Emerald management plans be updated every 10 years. This periodic update ensures that the plans remain relevant and aligned with evolving conservation practices and priorities. Regular updates also provide an opportunity to incorporate new scientific knowledge and address emerging threats or challenges.

### 1. Overview

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The Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia have been developed by the consortium of Karteris A - Karteris M OE – Greece (kartECO - Env. & Energy Eng. Cons.) and Institute of Botany after the name A. Takhtajyan NAS RA - Armenia, with international and local experts.

The assignment is part of the “European Union for Environment” EU4Environment Program, funded by the European Union.

The specific assignment is part of the thematic area of work / Result Area: Ecosystem services and livelihoods (Result 4) implemented by the World Bank.

The objectives of the Recommendations are the following:

- ✓ develop the structure and guidelines for the management plans of the Emerald sites in Armenia.
- ✓ equip the designated authorities and management planning authorities, specifically the Ministry of Environment of Armenia and its local state non-commercial organizations (SNCOs) with the necessary methodological elements for developing and implementing management plans for Emerald sites in Armenia<sup>3</sup>.

The outline presented below represents a methodology and structure for a full-scale stand-alone Emerald Management Plan (MP). In addition, the current report includes a proposed structure and concise guidance notes for the following sub-cases. It is the responsibility of the Emerald MP consultants to justify the fulfillment of the selection criteria within the MP:

- ✓ Most of the Emerald sites i.e., at least 70% are included in an SPNA and fall under the SPNA MP. The Emerald MP prepared will be added to the SPNA MP as an Annex and forming an Integrated Plan known as the SPNA and Emerald Integrated Plan. However, in other cases where less than 70% of the Emerald site is included within an SPNA, a full-scale stand-alone Emerald Management Plan (MP) is required (Chapter 3.2).
- ✓ Most of the Emerald sites i.e., at least 70% are included in a FE and fall under the FE MP. The Emerald MP prepared will be added to the FE MP as an Annex and forming an Integrated Plan known as the FE and Emerald Integrated Plan. However, in other cases, where less than 70% of the Emerald site is included within a FE, a full-scale stand-alone Emerald Management Plan (MP) is required (Chapter 3.2).
- ✓ Emerald sites located on other lands, i.e., state, community and/or private lands (Chapter 3.3).
- ✓ Very small Emerald sites characterized by their small size and/or a limited number of target species and habitat types (which serve as an umbrella for the target species) (Chapter 3.4).

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<sup>3</sup> It is important to note that coordination of the Aragats Alpine sanctuary falls under the responsibility of the Ministry of Education, Science, Culture and Sports of RA (“National Scientific Laboratory after A. I. Alikhanyan” (Yerevan Physics Institute).



## **D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia**

In any other case e.g. Emerald sites including FE, SPNA and/or private lands, a full-scale stand-alone Emerald Management Plan (MP) is required.

The sub-cases presented above aim to streamline and expedite the preparation and approval of Emerald management plans within the country, contributing to the national-level advancement of Emerald needs. It is important to note that no transboundary cases are included in this context, as they fall outside the scope of work.

The proposed contents of the MPs for Emerald sites have been discussed and reviewed by the Ministry of Environment of Armenia.

## 2. Introduction

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### 2.1. Purpose of Emerald site Management Plans

The main objectives of site management plans (MPs) are to protect the species and natural habitats listed in Resolutions no. 4<sup>4</sup> (1996) and no. 6<sup>5</sup> (1998) that are present on each site. This is achieved by implementing appropriate conservation measures to safeguard them from external threats and ensure a satisfactory level of conservation.

The conservation measures implemented in an Emerald site should align with the site's conservation objectives. These measures should be linked to the species listed in Resolution No. 6 (1998) and the habitats identified in Resolution No. 4 (1996) that are present at the site. When establishing conservation measures, the socio-economic activities within the site should also be considered. The measures can be active and passive (non-intervention).

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<sup>4</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Resolution No. 4 (1996) listing endangered natural habitats requiring specific conservation measures, <https://rm.coe.int/16807469e7>

<sup>5</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Resolution No. 6 (1998) listing the species requiring specific habitat conservation measures, <https://rm.coe.int/1680746afc>

### 3. Proposed plan contents and planning process

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#### 3.1. Proposed contents of full-scale standalone Emerald Management Plans

Proposed contents for a full-scale standalone Management Plan built on EU experience and guidelines, considering also results of the EU Twinning project, Emerald sites management guidelines<sup>6</sup>, and the existing context of the Armenian Protected Areas MPs, are presented below. Explanatory notes are presented in Chapter 3.5 and Chapter 4.

#### CHAPTER 1. INTRODUCTION

1.1 General information and definitions

#### CHAPTER 2. DESCRIPTION OF THE EMERALD SITE

2.1 Emerald site

2.2 Abiotic Environment

2.3 Biotic Environment (Habitats, Flora, and Fauna)

2.4 Land use, including current status and ownership, and factors affecting the protected object(s) (Abiotic, Biological, Human activities)

2.5 Protected object(s) (Resolution 4 and 6)

#### CHAPTER 3. OVERALL EVALUATION AND COMPOSITION OF ELEMENTS

3.1 Setting site-level conservation objectives

3.2 Assessment and evaluation of potential conflicts between the conservation of the natural environment and economic activities and its development potential

#### CHAPTER 4. IMPLEMENTATION

4.1 Action Plan (aims and objectives) and priority actions

4.2 Resources required to carry out activities: i. Human, ii. Time, iii. Finance

#### CHAPTER 5. MONITORING, SURVEILLANCE AND OBSERVATION RECORDING

5.1 Monitoring conservation degree in relation to conservation objectives

5.2 Observation recording actions and their effects

5.3 Plan review

#### CHAPTER 6. COMMUNICATION, EDUCATION AND AWARENESS RAISING

#### ANNEX

ANNEX I. Maps

ANNEX II. Optional

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<sup>6</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft Guidelines on managing the Emerald Sites, including Climate Change Adaptation and Mitigation, <https://rm.coe.int/16807465b6>

**3.2. Proposed contents of an “Emerald Management Plan” (as an Annex in the “SPNA and Emerald Integrated Management Plan” or “FE and Emerald Integrated Management Plan”)**

Proposed contents are presented below:

**CHAPTER 1. INTRODUCTION**

1.1 General information and definitions

**CHAPTER 2. DESCRIPTION OF THE EMERALD SITE AND TERMS OF EXTENSION**

2.1 Emerald site within the SPNA/FE location

2.2 Protected object(s) (Resolution 4 and 6)

**CHAPTER 3. OVERALL EVALUATION AND COMPOSITION OF ELEMENTS**

3.1 Setting site-level conservation objectives

3.2 Assessment and evaluation of potential conflicts between the conservation of the natural environment and economic activities and its development potential

**CHAPTER 4. IMPLEMENTATION**

4.1 Action Plan (aims and objectives) and priority actions

4.2 Resources required to carry out activities: i. Human, ii. Time, iii. Finance

**CHAPTER 5. MONITORING, SURVEILLANCE AND OBSERVATION RECORDING**

5.1 Monitoring conservation degree in relation to conservation objectives

5.2 Observation recording actions and their effects

5.3 Plan review

**CHAPTER 6. COMMUNICATION, EDUCATION AND AWARENESS RAISING**

**ANNEX**

ANNEX I. Maps

ANNEX II. Optional

**3.3. Proposed contents of an “Emerald Management Plan” located on other lands, i.e., State, community and/or private lands**

Proposed contents are described below:

**CHAPTER 1. BACKGROUND INFORMATION**

1.1 Introduction

1.2 General information of the Emerald site

1.2.1 Abiotic Environment

## **D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia**

1.2.2 Biotic Environment (Habitats, Flora and Fauna)

1.3 Protected object(s) (Resolution 4 and 6)

1.4 Land use, including current status and ownership, and factors affecting the protected object(s) (Abiotic, Biological, Human activities)

### **Chapter 2. ACTION PLAN**

2.1 Threats analysis

2.2 Action plan (aims and objectives) and priority actions

### **CHAPTER 3. MONITORING, SURVEILLANCE AND OBSERVATION RECORDING**

3.1 Monitoring conservation degree in relation to conservation objectives

### **CHAPTER 4. COMMUNICATION, EDUCATION AND AWARENESS RAISING**

### **CHAPTER 5. CONCLUSIONS**

### **ANNEX**

ANNEX I. Maps

ANNEX II. Optional

### **3.4. Proposed contents of “Very Small Emerald Sites” Management Plans**

Proposed contents are described below:

#### **CHAPTER 1. BACKGROUND INFORMATION**

1.1 Introduction

1.2 General information of the Emerald site

1.2.1 Abiotic Environment

1.2.2 Biotic Environment (Habitats, Flora and Fauna)

1.3 Protected object(s) (Resolution 4 and 6)

1.4 Land use, including current status and ownership, and factors affecting the protected object(s) (Abiotic, Biological, Human activities)

#### **Chapter 2. ACTION PLAN**

2.1 Threats analysis

2.2 Action plan (aims and objectives) and priority actions

#### **CHAPTER 3. MONITORING, SURVEILLANCE AND OBSERVATION RECORDING**

3.1 Monitoring conservation degree in relation to conservation objectives

#### **CHAPTER 4. COMMUNICATION, EDUCATION AND AWARENESS RAISING**

#### **CHAPTER 5. CONCLUSIONS**

## ANNEX

ANNEX I. Maps

ANNEX II. Optional

### 3.5. Process of Management Plan development, review and renewal

The proposed process for developing a standalone full-scale Emerald MP consists of the following phases and is briefly addressed in the following section as illustrated below.



**Figure 3-1. Proposed phases for the development of management plans**

#### 3.5.1. Pre-planning phase

This phase outlined below (3.5.1) would be most probably a responsibility of MoE.

##### 3.5.1.1. Selection procedure of the Emerald Network site(s) subject to planning

The following criteria could be used to prioritize which Emerald Network sites will be chosen first for the elaboration of an Emerald Management Plan:

- ✓ Active SPNA (overlapping the Emerald site) Management Plans.
- ✓ Several stakeholders (e.g. farmers) are active in the area.
- ✓ Urgent conservation problems to be solved.
- ✓ The plan has expired – calls for a review.
- ✓ Funding available for the elaboration of the plan, financial constraints.
- ✓ Balanced approach to all biogeographical regions.

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### *3.5.1.2. Legislative background and existing MP*

Presenting any relevant updated legislation, under which the MP will be subject to and aligned to. In addition, presenting of any other plans (e.g., Regional Planning or RES Planning) that may be in force in the Emerald site (and very close vicinity).

### *3.5.1.3. Administrative background and MP approval and implementations*

Identifying local administration, competent authorities and institutions and partner organizations responsible for the development, approval, implementation, and monitoring of the MP.

### *3.5.2. Preparatory phase*

This phase outlined below (3.5.2) would be most probably a responsibility of the scientific community under the supervision of MoE and the advisory body (Environmental Agency) . In case the Emerald site overlaps with an SPNA or FE the SNCO should be also included as a key stakeholder.

#### *3.5.2.1. Brief description of the Emerald site characteristics (Screening)*

A quick assessment of the main elements of the site must be provided. The Emerald sites adopted by the Standing Committee to the Bern Convention will be described using the Emerald Standard Data Form, which includes their information about their boundaries. When using and analyzing the information in the Emerald site SDF, it is important to consider the potential limitations in data quality and reliability concerning the occurrence and distribution of species and habitat types and habitat types.

#### *3.5.2.2. Stakeholders participatory process*

It is crucial for all stakeholders involved in the MP to have a clear understanding of their responsibilities, as well as the timing, duration, and financial sources involved. The MP should be designed to be simple, realistic, concise, and focused, ensuring that it is easily understandable. A diverse range of professionals may be involved, including those outside the fields of biology and conservation. but representing a broad range of professions).

Lack of information, communication, and involvement of stakeholders can be a major source of conflict. Therefore, it is advised to involve stakeholders in the planning process from the outset, to achieve long-term conservation objectives and enable sustainable natural resource management (Gleason et al., 2010<sup>7</sup>; Bryson 2003<sup>8</sup>). Of course, participatory

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<sup>7</sup> Gleason, M., McCreary, S., Miller-Henson, M., Ugoretz, J., Fox, E., Merrifield, M., ... & Hoffman, K. (2010). Science-based and stakeholder-driven marine protected area network planning: a successful case study from north central California. *Ocean & Coastal Management*, 53(2), 52-68.

<sup>8</sup> Bryson & J., Humphrey, H. (2004). What to do when stakeholders matter: A guide to stakeholder identification and analysis techniques.

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process is strongly based on the willingness and initiatives of active stakeholders and their willingness to get engaged in the project.

In Armenia, there is a mechanism in place for stakeholder engagement and public opinion<sup>9</sup>, as reported by the local team. However, it appears that this mechanism is currently not active for Protected areas MPs. As mentioned above, improvements on the Law have been recommended by the EU Twinning project including specific aspects regarding MPs processes such as, Competent authorities and Agency, Emerald site establishment procedures, procedures for the establishment and protection of Emerald sites, public discussion on Emerald establishment, etc. Awareness raising activities of the Ministry of Environment and its SNCOs, are prepared according to the Communication Strategy (2022) on Implementation of Biodiversity Legislation and Institutional Development in the Field of Nature and Biodiversity Conservation.

The team strongly emphasizes the importance of thorough preparation and careful management of any open participation and consultations on Emerald site management plans. Based on experience, not all stakeholders will be interested in participating in all activities. Some stakeholders such as nature NGOs and enthusiasts, may be more focused on nature values and conservation activities, while others like farmers, foresters, and other landowners may prioritize practical actions and the benefits that these actions will bring. Nevertheless, it is beneficial to briefly address all stakeholders by presenting a draft MP and inviting comments and suggestions during a public hearing.

According to international practices, for a successful consultation process it is important to consider the following elements:

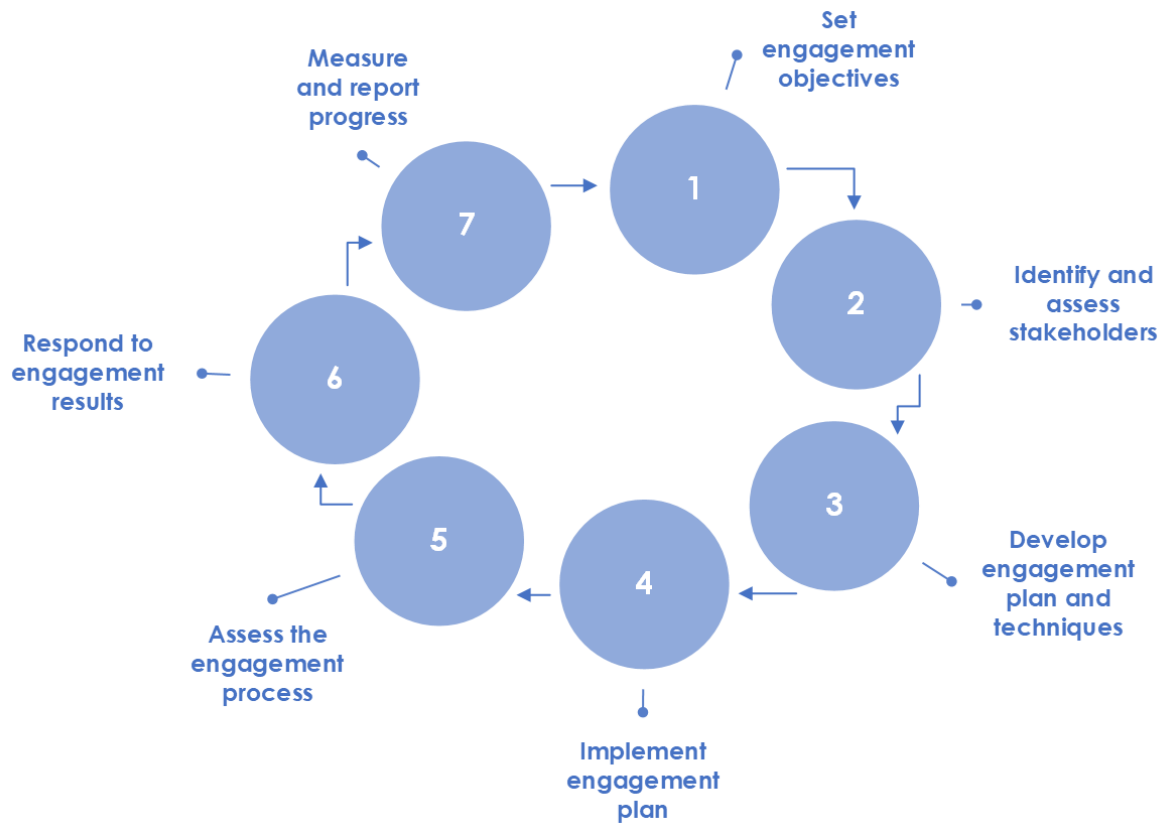
- 1) Identify key stakeholders** A careful analysis of the key stakeholders is essential to devise a better stakeholder involvement strategy. Resources should be targeted towards the needs of each stakeholder group, and, in particular, on those most likely to influence the process (in a positive or negative way).
- 2) Early involvement:** As a general rule, the earliest possible involvement of the smallest number of key stakeholders in the process is likely to lead to the best results in the field, or at least avoid conflicts linked to a lack of consultation.
- 3) Building trust:** Essential components of a trust-building communication are transparency, clarity, personal informal contact, openness, and time.

An overview of a full step overall Stakeholder engagement process is presented in the following Figure. In the current approach it is advisable to follow steps 2 and 4.

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<sup>9</sup> The Minister of Environment does has a mechanism, which is called "Civil Council" where different NGOs and civil society organizations are a member of. The Minister usually convenes the council meetings at the request of the NGOs, but the dynamic largely depends on the ministers and how active the civil council is.





**Figure 3-2. Overview of the Stakeholder engagement process (Jaansoo, 2019)<sup>10</sup>**

3.5.2.3. Land owners (e.g. Farmers)

Local community members, landowners, and land users possess valuable knowledge and experience in managing natural resources. The use of this knowledge will not only make the process of developing a Management Plan far more effective and pertinent, but it will also increase the goodwill of the stakeholders and their sense of ownership of the protected areas management plan (Reed, 2008<sup>11</sup>; Leach et al., 2002<sup>12</sup>; Leach and Pelkey, 2001<sup>13</sup>; Luyet et al., 2012<sup>14</sup>).

<sup>10</sup> Jaansoo, A. on behalf of the Association of European Border Regions (AEBR) (2019). METHODOLOGY FOR STAKEHOLDER ENGAGEMENT within the project Inter Ventures.

<sup>11</sup> Reed, M. S. (2008). Stakeholder participation for environmental management: a literature review. *Biological Conservation* 141: 2417-2431.

<sup>12</sup> Leach, W. D., Pelkey, N. W., & Sabatier, P. A. (2002). Stakeholder partnerships as collaborative policymaking: Evaluation criteria applied to watershed management in California and Washington. *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management*, 21(4), 645-670.

<sup>13</sup> Leach, W. D., & Pelkey, N. W. (2001). Making watershed partnerships work: a review of the empirical literature. *Journal of water resources planning and management*, 127(6), 378-385.

<sup>14</sup> Luyet, V., Schlaepfer, R., Parlange, M. B., & Buttler, A. (2012). A framework to implement stakeholder participation in environmental projects. *Journal of environmental management*, 111, 213-219.

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Several important points are discussed in Emerald (and EU Natura 2000) recommendations documents regarding guidance for landowners and supporting farming systems<sup>15,16,17</sup>.

Thus, it is advised during MP preparation:

- ✓ To ensure that Emerald site landowners e.g., farmers unit, are aware of the location and/or important features of the Emerald site.
- ✓ Provide them practical conservation recommendations eg., adapt organic farming principles, depending on the farming system i.e., Intensive or traditional etc.
- ✓ Assess the case of proposing a “Management agreement” (between MoE and the farmers’ association or individual farmers) with a compensation scheme or other alternative incentive if possible.
- ✓ Integrating Emerald site conservation objectives in agricultural funding

### 3.5.2.4. Participatory approach

For government agencies, two or more series of meetings will also be held to inform them about the project progress and ensure that it is in compliance with relevant regulations and laws. There will be collaborative work carried out with these agencies to identify any potential conflicts or concerns and develop solutions to address them. One or two introductory, MP presentation and review workshops may be required according to the planning phase needs.

### 3.5.3. Situation analysis

This phase outlined below (3.5.3) would likely -be the responsibility of the scientific community under the supervision of MoE and the advisory body (Environmental Agency), particularly for Emerald sites. It is highly probable that this advisory body will be established in line with the proposals of the EU Twinning project. In case it overlaps with an SPNA or FE the SNCO should be also included as a key stakeholder.

#### 3.5.3.1. Data gathering

The data that should be gathered by the Emerald MP consultants and experts, apart from the information contained in the Emerald site SDF, could be divided into two categories.<sup>18</sup>  
A. of the abiotic features and B. of the biological features.

The comprehensive list below includes indicative general information. It is important to note that the list of requested information is indicative and should be further refined, modified,

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<sup>15</sup> Farming for Natura 2000. Guidance on how to support Natura 2000 farming systems to achieve conservation objectives, based on Member States good practice experiences. 2019. <https://op.europa.eu/en/publication-detail/-/publication/2e55717e-9185-11e9-9369-01aa75ed71a1/>

<sup>16</sup> The Emerald Network: A Network of Areas of Special Conservation Interest for Europe Explanatory document and compilation of relevant texts, 2016,. <https://rm.coe.int/168074669d>

<sup>17</sup> Draft Recommendation on detecting, reporting, assessing and responding to changes in the ecological character of Emerald Network sites. 2019.

<sup>18</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

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and tailored to the specific target habitats and species mentioned in Resolution 4 or Resolution 6, based on the critical assessment of the Emerald MP team of experts.

### Comprehensive list of indicative information needed

The first category of indicative information includes general information and information on the abiotic features as follows:

#### A) General information:

- ✓ The physical-geographical location of the site and its borders.
- ✓ The site's borders, and existing land use including adjacent settlements, the main existing activities eg. tourist and industrial sites, the road network around and in the site, the main water courses etc.
- ✓ Ownership and relevant stakeholders eg. local pastoralists.
- ✓ Existing projects related to the use of resources and other activities on the site's territory, such as urban projects, municipal development plans, etc.
- ✓ Review of existing biodiversity strategies for conservation of species and habitats – if any-.
- ✓ Review of existing policies for combating invasive species and diseases.
- ✓ Review of existing fire prevention, management plans and policies.

#### B) Information on the abiotic features of the site (only in the case that target habitats and species of Res. 4 or species of Res. 6 are influenced):

- ✓ The local climatic zone and climate conditions, typical for the site.
- ✓ Geology and geomorphology.
- ✓ Special processes crucial for habitats creation and maintenance, such as Eolian processes for dunes, erosion & sedimentation for river habitats, etc.
- ✓ The basic hydrologic and hydro-graphic characteristics.
- ✓ The distribution and characteristics of the soil types and the soil processes.

The second category of the biological information includes the following:

- ✓ Information on natural habitats and species belonging to the revised Annex I of Resolution 4 and Resolution 6 (1996) of the Bern Convention, including a field inventory (complementary to the SDF information).
- ✓ Other habitats (only when they are important to Res. 6 species but not listed in Res 4 themselves).

If necessary, field research can be conducted to map the locations of natural habitats and species mentioned in Resolution 4 and 6. This research will involve collecting the data needed to identify the habitats, determine their spatial boundaries, and understand their distribution areas.

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### 3.5.3.2. Data sources

Relevant sources that could be used by consultants while preparing an Emerald MP, are the following:

**Table 3-1: Relevant sources that could be used by consultants while preparing an Emerald MP**

Type of bibliography and/or data	Source and/or link
Emerald Network Reference Portal	<a href="https://www.coe.int/en/web/bern-convention/emerald-network-reference-portal">https://www.coe.int/en/web/bern-convention/emerald-network-reference-portal</a>
Emerald Network General Viewer and Emerald site boundaries	<a href="https://emerald.eea.europa.eu/">https://emerald.eea.europa.eu/</a>
EEA Emerald Network Barometer table	<a href="https://tableau-public.discomap.eea.europa.eu/views/EmeraldBarometerdashboard/Barometertable?%3AshowAppBanner=false&amp;%3Adisplay_count=n&amp;%3AshowVizHome=n&amp;%3Aorigin=viz_share_link&amp;%3AisGuestRedirectFromVizportal=y&amp;%3Aembed=y">https://tableau-public.discomap.eea.europa.eu/views/EmeraldBarometerdashboard/Barometertable?%3AshowAppBanner=false&amp;%3Adisplay_count=n&amp;%3AshowVizHome=n&amp;%3Aorigin=viz_share_link&amp;%3AisGuestRedirectFromVizportal=y&amp;%3Aembed=y</a>
Emerald sites SDFs	<a href="https://emerald.eea.europa.eu/">https://emerald.eea.europa.eu/</a> and Institute of Botany (A.L. Takhtajyan)
Conclusions of the biogeographical evaluation seminars	<p><b>Birds</b> <a href="https://rm.coe.int/birds-final-conclusions-budapest-october-2019/168098e636">https://rm.coe.int/birds-final-conclusions-budapest-october-2019/168098e636</a>,</p> <p><b>Non-avian animals</b> <a href="https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-animal-species-fro/1680779ed7">https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-animal-species-fro/1680779ed7</a>,</p> <p><b>Plants</b> <a href="https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-plant-species-from/1680779ed9">https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-plant-species-from/1680779ed9</a>,</p> <p><b>Habitats</b> <a href="https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-habitats-from-res-/1680779ed8">https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-habitats-from-res-/1680779ed8</a></p> <p><a href="https://rm.coe.int/proposal-of-a-monitoring-framework-to-monitor-the-implementation-of-th/16809f8777">https://rm.coe.int/proposal-of-a-monitoring-framework-to-monitor-the-implementation-of-th/16809f8777</a></p> <p>Counted based on <a href="https://www.coe.int/en/web/bern-convention/conclusions-of-the-biogeographical-seminars">https://www.coe.int/en/web/bern-convention/conclusions-of-the-biogeographical-seminars</a></p>
Emerald - Spatial data – Shapefile	<a href="https://cdr.eionet.europa.eu/am/bc/emerald/">https://cdr.eionet.europa.eu/am/bc/emerald/</a>
Administration units	<a href="https://data.humdata.org/dataset/cod-ab-arm">https://data.humdata.org/dataset/cod-ab-arm</a>
Meteorologic data	<a href="http://armsis.cas.am/layers/?limit=5">http://armsis.cas.am/layers/?limit=5</a> , <a href="https://www.worldclim.org/">https://www.worldclim.org/</a>
Geological-Soil data and maps	<a href="http://armsis.cas.am/layers/geonode:Soil_map0">http://armsis.cas.am/layers/geonode:Soil_map0</a>
Current SPNA and/or FE MP files if such exists	<a href="http://www.mnp.am/en/environment/general-information">http://www.mnp.am/en/environment/general-information</a> , MoE, SNCOs
Satellite images	Landsat and Sentinel images, high resolution images (e.g., Google Earth)
Biological Information on Res 4 and Res 6 Habitats and species	Universities/research centers e.g. Institute of Botany (A.L. Takhtajyan)
Habitats of Armenia	<a href="https://www.researchgate.net/publication/303689840_Habitats_of_Armenia">https://www.researchgate.net/publication/303689840_Habitats_of_Armenia</a>
Contribution of Emerald ecological network to biodiversity and habitats conservation: Case study of Armenia	<a href="https://www.researchgate.net/publication/334494897_Contribution_of_Emerald_ecological_network_to_biodiversity_and_habitats_conservation_Case_study_of_Armenia">https://www.researchgate.net/publication/334494897_Contribution_of_Emerald_ecological_network_to_biodiversity_and_habitats_conservation_Case_study_of_Armenia</a>
Bird Links Armenia NGO: National Bird Monitoring Database	<a href="https://armenian-bird-census.weebly.com/">https://armenian-bird-census.weebly.com/</a>
Butterfly Conservation Armenia	<a href="https://www.butterfly-conservation-armenia.org/agarak.html">https://www.butterfly-conservation-armenia.org/agarak.html</a>
Annotated checklist to the Birds of Armenia, updated on March 1 of 2020	<a href="https://www.researchgate.net/publication/340081697_Annotated_checklist_to_the_Birds_of_Armenia_updated_on_March_1_of_2020">https://www.researchgate.net/publication/340081697_Annotated_checklist_to_the_Birds_of_Armenia_updated_on_March_1_of_2020</a> ,
Checklist of Birds of Armenia updated 2022	<a href="https://en.wikipedia.org/wiki/List_of_birds_of_Armenia">https://en.wikipedia.org/wiki/List_of_birds_of_Armenia</a> <i>The Clements Checklist of Birds of the World</i> , (2022 edition)
The Red Book of Plants and Animals of the Republic of Armenia, 2010	<a href="http://www.env.am/karmir-gira">http://www.env.am/karmir-gira</a> (in Armenian)

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A Field Guide to the Birds of Armenia	Adamian, M.S. and Klem, D. Jr. 1997. A Field Guide to the Birds of Armenia. Oakland: American University of Armenia Corporation. Online version: ( <a href="https://www.acopiancenter.am/field-guide-bog-orders.asp">https://www.acopiancenter.am/field-guide-bog-orders.asp</a> )
A Handbook of the Birds of Armenia	Adamian, M.S. and Klem, D. Jr. 1999. Handbook of the Birds of Armenia. Oakland: American University of Armenia Corporation
Atlas of Freshwater Key Biodiversity Areas in Armenia	Freshwater Ecosystems and Biodiversity: Atlas of Freshwater Key Biodiversity Areas in Armenia, WWF Armenia, 2015 ( <a href="https://wwf.panda.org/wwf_news/?287671/Atlas-of-Freshwater-Key-Biodiversity-Areas-in-Armenia">https://wwf.panda.org/wwf_news/?287671/Atlas-of-Freshwater-Key-Biodiversity-Areas-in-Armenia</a> )
European Breeding Bird Atlas 2	Keller, V., Herrando, S., Voříšek, P., Franch, M., Kipson, M., Milanese, P., Martí, D., Anton, M., Klvaňová, A., Kalyakin, M.V., Bauer, H.-G. & Foppen, R.P.B. (2020). European Breeding Bird Atlas 2: Distribution, Abundance and Change. European Bird Census Council & Lynx Edicions, Barcelona. <a href="https://ebba2.info/">https://ebba2.info/</a>
Examples on management measures for Emerald sites	In Annex 1 Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <a href="https://rm.coe.int/16807465b6">https://rm.coe.int/16807465b6</a>

### 3.5.3.3. Assessment of the conservation degree of habitats and species identified in the site

A very important step for the management planning process is the assessment of the status of habitats and species identified in its Emerald site. This assessment will provide the necessary information to define conservation objectives, set the adequate conservation measures and will help to set priorities, because often not all conservation problems at a site (especially if it is a very large one) can be addressed at once.

Regarding the conservation status of habitat types, the assessment for each habitat type should be done considering the following criteria<sup>19</sup>:

- ✓ Area of natural habitat per site and overall, in AM (in brief).
- ✓ Its structure and specific functions.
- ✓ Status of its typical species.

To complement the SDF information and prior species assessment, it is recommended to conduct an inventory and mapping of all significant species with conservation value. The inventory should include the species belonging to Resolution No. 6 (1996) of the Standing Committee of the Bern Convention and possibly Annexes I, II and III of the Bern Convention.

The assessment for each species and/or species group, should be made by considering the following criteria (indicative)<sup>20</sup>:

- ✓ Population size and dynamics of targeted species and number of targeted species within the site.
- ✓ Long term population trend for specific species that may have significant natural fluctuations of their populations e.g., migratory birds, songbirds etc.
- ✓ Systematic mapping of each of the localities of the species within the territory of the site.

<sup>19</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

<sup>20</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

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- ✓ Size and quality of the habitat that ensures the survival of the species populations area, e.g. stability/instability, vulnerability, specific structures and features presence, quality of the feeding base, human pressure, existing and future threats.

### 3.5.3.4. Threats and acting pressures analysis

For each protected object there can be various pressures (P) and threats (T). The pressures refer to the risks that the protected object faces today, while the threats refer to the risks that it may face in the next six or even twelve years. The official list of pressures and threats is categorized and assigned unique codes. Examples of these categories include Agriculture, Forestry, Extraction of resources (minerals, peat, non-renewable energy resources), and Development, construction, and use of residential, commercial, industrial, and recreational infrastructure. For each pressure or threat, the degree of impact is defined (low, medium high). From the records of the pressures and threats and their severity, the Future Trend of Structure and Functions emerges, as follows:

- ✓ Favorable conservation: No P or T of high importance and up to 1 of medium importance or positive impacts balance higher number or importance of P or T
- ✓ U1 (Good conservation degree): Up to 3 P or T of medium importance or positive impacts balance higher number or importance of P or T
- ✓ U2 (At least 1 T or P of high importance and/or more than 3 P or T of medium importance without positive impacts being able to balance them)

### Major climate change threat and pressures aspects (Optional)

It is significant to assess the impact that major climate change aspects have on Emerald habitats and species<sup>21</sup> especially in fragile ecosystems. The major aspects to be considered are:

- ✓ Significant average temperature fluctuations (if applicable).
- ✓ Changing precipitation patterns and evapotranspiration regime.
- ✓ Frequency of extreme events.

After their identification and the assessment of their impact level, the threats should be prioritized according to their impact.

### 3.5.3.5. Site-level conservation objectives

After completing the data gathering and assessments, it is important to formulate and present the conservation objectives. These elements will be the base **for formulating management regimes and norms**. For the identification of setting site-level conservation objectives, specific targets can be set for the habitat types and for the species, either on

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<sup>21</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

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an individual level or for the whole population (all target habitats or species) in the Emerald site degree of conservation, such as the following:

(i) for the habitat types:

- (a) maintaining a stable trend or increasing the extent of the habitat type (e.g., increasing the area by XX hectares or the total extent by 20%);
- (b) increasing the presence of typical species (e.g., increasing by a XX number of individuals or pairs or their population size by 20%);
- (c) improving the structure of the habitat type (e.g., in a forest habitat type woody species, which are taller than 5 meters, have a cover of more than XX hectares or 75% of the total area measured);
- (d) improving the functions of the habitat type (e.g., at least 3 different bird species are found in a reed bed);
- (e) improving the degree of conservation of the habitat type [e.g., from B to A, according to Evans & Arvela (2011)<sup>22</sup>].

(ii) for the species (Note: Should be carefully considered from species to species):

- (a) maintaining a stable trend or increasing the population of the target species (e.g., maintaining or increasing an XX number of individuals or pairs or a total population increase by 10%);
- (b) improving the degree of conservation of their habitat (e.g., the degree of conservation of the habitat type or types in which the species nests/feeds etc.);
- (c) maintaining or increasing the extent of the species' habitat (e.g., increasing the extent by XX hectares or the total area measured by 10%);
- (d) improving the conservation status of the species [e.g., from B to A, according to Evans & Arvela (2011)<sup>23</sup>]

### *Examples of site-level conservation objectives<sup>24</sup>*

*1. Site x has been designated in view of its importance for the habitat type: semi-natural grasslands (6210). According to the SDF, the habitat type has a poor conservation condition (marked as class C in the SDF). The conservation objective for this site may therefore have been set to improve the conservation of the habitat type to class A - excellent - within 10 years, considering that the habitat type has a very unfavourable conservation status within the region. The necessary conservation has been designed to achieve that objective.*

<sup>22</sup> Evans, D. & Arvela, M. 2011. Assessment and reporting under Article 17 of the Habitats Directive - Explanatory Notes & Guidelines for the period 2007-2012 – Final Draft. European Topic Centre on Biological Diversity, <https://circabc.europa.eu/sd/a/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17-Guidelines-final.pdf>

<sup>23</sup> Evans, D. & Arvela, M. 2011. Assessment and reporting under Article 17 of the Habitats Directive - Explanatory Notes & Guidelines for the period 2007-2012 – Final Draft. European Topic Centre on Biological Diversity, <https://circabc.europa.eu/sd/a/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17-Guidelines-final.pdf>

<sup>24</sup> Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. <https://op.europa.eu/en/publication-detail/-/publication/11e4ee91-2a8a-11e9-8d04-01aa75ed71a1> (2.3.1. Setting site-level conservation objectives)

2. Site *y* has been designated because it harbors a large area of active raised bog (7110). According to the SDF, the habitat type is in excellent condition (marked as class A in the SDF). The conservation objective for that site has therefore been set simply to maintain this condition, even though the habitat types have an unfavourable conservation status within the region. No conservation measures have been established under Article 6(1) since the site does not require any active management measures to maintain this condition. In principle conservation objectives should be set for each site and for all species and habitat types significantly present on each site. They should be based on the ecological requirements of the species and habitats present and should define the desired conservation condition of these species and habitat types on the site. They should be established in function of the conservation assessment of each species and habitat type as recorded in the Standard Data Form. The conservation objectives should also reflect the importance of the site for the coherence of Emerald site.

### 3.5.4. Adaptive management plan

This phase outlined below would most probably be a responsibility of the scientific community under the supervision of MoE and the advisory body (Environmental Agency). In case it overlaps with an SPNA or FE the SNCO should also be included as a key stakeholder.

An adaptive MP requires regular reviews of conservation success, based on monitoring, and correcting the conservation measures if something goes wrong.

#### 3.5.4.1. Conservation measures

The conservation measures should be distinguished in:

- ✓ Conservation measures at Emerald site level.
- ✓ Conservation measures at Emerald network level (OPTIONAL-case specific).

Conservation measures should be justified based on their contribution to achieving conservation objectives. Therefore, it is crucial to establish a clear connection between measures and both short-term and long-term conservation objectives during the preparation of this subchapter (Chapter 3.5.3.5). The management measures should have a long-term vision (20 -50 years).

In Annex 1 of the Guidelines on managing the Emerald sites<sup>25</sup> consultants can find examples of management measures for implementation at Emerald site level. These are just a sample of possible measures given for each of the following six management categories: (1) reducing existing pressures, (2) enhancing ecosystems and species resilience, (3) accommodating natural landscapes forming processes, (4) ensuring the required abiotic conditions, (5) managing extreme events and (6) the control of invasive alien species.

The implementation of conservation measures at network level is difficult to apply in small and isolated sites. On the contrary, for large sites connected to others, it is recommended

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<sup>25</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>



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to implement management at the network level. For the successful implementation of management at network level the following must addressed<sup>26</sup> (optional):

- ✓ Selection of priority habitats that would help species movement.
- ✓ Improving connectivity by developing corridors.

### 3.5.4.2. *Implementation of the conservation measures*

It is important to highlight that the Introduction of effective conservation measures and management for an Emerald site is a great challenge that requires the participation of all stakeholders involved and/or affected by it.

Ongoing and necessary discussions with the Ministry of Environment (MoE) are being held to determine the competent authorities and agencies that should be involved in each case, based on factors such as whether the Emerald site completely overlaps with a Protected Area (PA), if part of it is located within a Forest Estate (FE), or if it is situated on other lands such as State, community, or private land.

It is crucial for all stakeholders involved in the MP to have a clear understanding of their responsibilities, as well as the timing, duration, and financial sources involved. The MP should be designed to be simple, realistic, concise, and focused, ensuring that it is easily understandable. A diverse range of professionals may be involved, including those outside the fields of biology and conservation.

Important actions are:

- ✓ Training and capacity building regarding the protection of endangered species in an Emerald site and regarding alternative models for regional development.
- ✓ Raising public awareness regarding the protection of endangered species in an Emerald site and regarding alternative models for regional development.
- ✓ Promoting ecologically sustainable economic activities such as organic farming and other.

### 3.5.4.3. *Monitoring and review of the measures' implementation*

This phase outlined below (3.5.4.3) would be most probably a responsibility of the scientific community under the supervision of MoE and the advisory body (Environmental Agency). In case it overlaps with an SPNA or FE the SNCO should also be included as a key stakeholder. The competent authorities should establish a regular timeplan for reviewing the conservation success, incorporating adaptive management principles. This review should be based on monitoring efforts and should include the ability to make necessary corrections to conservation measures if any issues arise.

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<sup>26</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

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Monitoring activities in Emerald sites must be closely linked with the conservation objectives and implemented (or not-implemented) conservation measures. Monitoring plan should have two purposes<sup>27</sup>:

- ✓ To assess if and how the implemented conservation measures are leading towards reaching conservation objectives for the site.
- ✓ To assess the efficacy of employed conservation methods and approaches.

According to the guidelines on managing the Emerald sites<sup>28</sup> monitoring should be carried out on three inter-related levels:

- ✓ Baseline monitoring of key biodiversity indicator elements and how far the current values are from conservation objectives.
- ✓ Monitoring of management interventions i.e., conservation measures.
- ✓ Routine and Event Monitoring.

In addition, the MPs should be updated (according to EU practice every 10 years). Lack of up-to-date management planning documents leads to insufficient understanding of basic nature conservation principles, weak protection, and absence of active management approach.

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<sup>27</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Towards management of Emerald sites: Guidance document, [https://pjp-eu.coe.int/emerald-network/images/pa08e\\_2014\\_management\\_emerald\\_sites\\_final.pdf](https://pjp-eu.coe.int/emerald-network/images/pa08e_2014_management_emerald_sites_final.pdf)

<sup>28</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Draft guidelines on managing the Emerald sites, including climate change adaptation and mitigation, <https://rm.coe.int/16807465b6>

## **4. Structure for Management Plans of Emerald Sites in Armenia (for a full-scale standalone Emerald Management Plan)**

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The current chapter will provide brief explanations – guidelines, how each content point should be filled in, i.e., to define an expected level of detail.

The aim is to achieve a uniform standardized way of presentation across all sites in Armenia, so that each MP is not substantially different from the others. Also, maps and standards are prepared to facilitate the work of future consultants and specify what is expected by the competent authorities related to Emerald MP in AM.

### **4.1. General instructions**

All Emerald sites adopted by the Standing Committee to the Bern Convention and subject to the present Guidelines, are already thoroughly described through their Emerald Standard Data Form<sup>29</sup> including their borders. The information contained in the Emerald site SDF should be used and completed with the various data described below, compiled, and used during the planning of the management measures. Thus, it is recommended to initiate by closely examining the SDF, the quality and completeness of the information.

Additionally, it is recommended to include a field inventory as part of the information collection process for natural habitats and species listed in the revised Annex I of Resolution 4 and Resolution 6 (1996) of the Bern Convention. This field inventory will complement the existing Species Distribution Framework (SDF) information.

It is important to note that the explanations provided below are dependent on both the specific site and the target species/types. The associated team of experts and consultants responsible for preparing the Emerald Management Plan (MP) should further develop it, prioritizing aspects that are highly relevant to the target habitats and species of Resolution 4/Resolution 6. For instance, considerations such as geology, geomorphology, and soil aspects may only be relevant in Emerald sites where these factors are directly linked to a specific habitat of Resolution 4 or species of Resolution 6. If the information is not relevant to the subject being examined, it is sufficient to provide a concise description or justification for why the information was not provided.

The explanations provided below are indicative and should be subject to further refinement, modification, and alignment based on the critical assessment of the Emerald MP team of experts.

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<sup>29</sup> Convention on the Conservation of European Wildlife and Natural Habitats, Emerald Network Standard Data Form [Revised Annex 1 to Resolution No. 5 (1998)] , <https://rm.coe.int/1680746bfa>

## **4.2. Proposed structure**

### **CHAPTER 1. INTRODUCTION**

#### **1.1 General information and definitions**

##### 1.1.1. Study assignment details

The details of the assignment of the specific study are presented: Assigning/contracting Authority, Contract Details (contract no., contracting parties, supervisory committee, etc., Project Team).

##### 1.1.2. Protection history

A brief mention of the protection history of the area, if there is, with a simple chronological reference to identification studies, any administrative acts and other actions aimed exclusively or primarily at the preservation of nature in the area.

### **CHAPTER 2. DESCRIPTION OF THE EMERALD SITE**

#### **2.1 Emerald site**

The Emerald site (or the study area) is defined as the area geographically covered by the Emerald areas that are the subject of the specific management plan.

The following data are provided for the study area:

- ✓ Geographical position
- ✓ Central coordinates, administrative affiliation, nearest urban center(s)
- ✓ Extent, Boundaries and Character
- ✓ Area estimation, brief description of boundaries with reference to the respective administrative level

The information should be provided in the form of a table. Geographical location: Central coordinates (from SDF), Administrative affiliation: Region and Regional unit, Area: from SDF, etc.

#### **2.2 Abiotic Environment**

A concise description of the abiotic elements in the area that are important for the conservation of the protected object(s) is provided. These elements may serve as a criterion for characterizing the area, the definition of protection zone(s) and the definition of conditions and restrictions on uses and activities, in order to achieve the conservation objectives for natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998).

The presentation of abiotic environmental elements will be provided briefly, focusing only on those that have an impact on natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998), as determined by the expert team and stated in the management plan (MP). Such abiotic elements may be the following:

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- ✓ Geomorphology, landscape e.g., Description of relief and landscape or the various landscape units only in case it affects natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998).
- ✓ Geology, mineral resources/deposits and soil types e.g., Identification of areas of erosion / desertification / degraded soils only in case it affects natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998).
- ✓ Hydrology and water quality e.g., Locating surface waters. uses and activities related to surface water, surface water quality data, only in case it affects natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998).
- ✓ Air quality and noise level e.g., Sources of air pollution, as well as for noise disturbance observed and only in case it affects natural habitats and species listed in Resolutions no. 4 (1996) and no. 6 (1998).
- ✓ Meteorological characteristics and bioclimatic conditions especially when these may affect proposals for zonation.

### **2.3 Biotic Environment (Habitats, Flora and Fauna)**

Habitats, Flora, and Fauna are briefly presented.

### **2.4 Land use, including current status and ownership, and factors affecting the protected object(s) (Abiotic, Biological, Human activities)**

2.4.1. Land uses and factors affecting the protected object(s) (Abiotic, Biological, Human activities)

In this chapter, the main characteristics of land uses/activities that may affect the protected object(s) directly, i.e., either by direct use of the species of flora and fauna, or by occupying or destroying the natural habitats and habitats of the species, and/or indirectly by degradation of the latter, e.g., with pollution, should be presented.

### **2.5 Protected object(s) (Resolution 4 and 6)**

The reference is made to the specific element or elements within the area that are essential for the protection and preservation of the species and natural habitats listed in Resolutions no. 4 (1996) and no. 6 (1998), and that are present on the site.

The information of the Emerald site SDF is thoroughly presented and compiled.

#### **2.5.1. Natural habitat Types**

A table is provided listing all habitat types mentioned in Resolution no. 4 (1998), along with information on their extent and the degree of conservation (if relevant data is available). In the text the existence and state/degree of conservation of the examined habitat types in the various locations of the study area are presented, as well as their relationship with the vegetation and abiotic characteristics of the wider area.

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The analysis and documentation of pressures and threats are followed by the estimation and evaluation of their potential effects. This assessment aims to propose management measures that align with the conservation objectives, which will be discussed in the following chapters.

### **2.4.2. Species**

The presentation of important fauna species includes species listed in Resolution no. 6 (1996), as well as other species classified as rare, vulnerable, or endangered, as indicated in Red Books and similar references.

The above are listed in a table, along with an estimate of their abundance and population sizes in the study area. The text comments on the existence and status/degree of conservation of the populations of the important species by category (mammals, birds, reptiles, amphibians, fish, invertebrates) in the different locations of the study area as well as their relationship with the vegetation and abiotic features of the wider area.

The analysis and documentation of pressures and threats are followed by the estimation and evaluation of their potential effects. This assessment aims to propose management measures that align with the conservation objectives, which will be discussed in the following chapters.

## **CHAPTER 3. OVERALL EVALUATION AND COMPOSITION OF ELEMENTS**

### **3.1 Conservation objectives of the protected object(s)**

Emphasis should be made on outlining the conservation objectives, which should be linked to management measures proposed. For the identification of the conservation objectives, specific targets can be set for the habitat types and for the species, either on an individual level or for the whole population (all target habitats or species) in the Emerald site, such as the following:

(i) for the habitat types:

- (a) maintaining or increasing the extent of the habitat type (e.g., increasing the area by XX hectares or the total extent by 20%)
- (b) increasing the presence of typical species (e.g., increasing by a XX number of individuals or pairs or their population size by 20%)
- (c) improving the structure of the habitat type (e.g., in a forest habitat type woody species, which are taller than 5 meters, have a cover of more than XX hectares or 75% of the total area measured)
- (d) improving the functions of the habitat type (e.g., at least 3 different bird species are found in a reed bed)

(e) improving the degree of conservation of the habitat type (e.g., from B to A, according to Evans & Arvela (2011)<sup>30</sup>);

(ii) for the species:

(a) maintaining or increasing (e.g., maintaining or increasing an XX number of individuals or pairs or a total population increase by 10%) the population of all target species (no need to specify which) of the Emerald site

(b) improving the degree of conservation of their habitat (e.g., the degree of conservation of the habitat type or types in which the species nests/feeds etc.);

(c) maintaining or increasing the extent of the species' habitat (e.g., increasing the extent by XX hectares or the total area measured by 10%)

(d) improving the conservation status of the species (e.g., from B to A e.g. from B to A, according to Evans & Arvela (2011)<sup>31</sup>)

### 3.2 Assessment and evaluation of potential conflicts between the conservation of the natural environment and economic activities and its development potential

This chapter discusses **the primary pressures and threats** that have been identified and listed for the protected habitats, significant flora and fauna species, geological formations, and landscape. These pressures and threats are then examined in relation to existing uses, practices, and activities.

Pressures and threats are evaluated and assessed in terms of their intensity, duration, temporary or permanent nature and the possibility to counter them.

The next step in the assessment process should answer the question "*Which pressures/threats within the Emerald site need to be addressed and where, as a priority?*".

The spatial relationship between existing activities/uses, development plans, and pressures/threats is specified within the area, emphasizing their spatial relevance to major ecosystem types.

In addition, development potential of the study area is identified, including methods of utilizing natural resources and the potential of economic development of the Emerald site through the exploitation and promotion of biological diversity and the landscape. These methods should be compatible with the conservation of the protected object(s).

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<sup>30</sup> Evans, D. & Arvela, M. 2011. Assessment and reporting under Article 17 of the Habitats Directive - Explanatory Notes & Guidelines for the period 2007-2012 – Final Draft. European Topic Centre on Biological Diversity, <https://circabc.europa.eu/sd/a/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17-Guidelines-final.pdf>

<sup>31</sup> Evans, D. & Arvela, M. 2011. Assessment and reporting under Article 17 of the Habitats Directive - Explanatory Notes & Guidelines for the period 2007-2012 – Final Draft. European Topic Centre on Biological Diversity, <https://circabc.europa.eu/sd/a/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17-Guidelines-final.pdf>

## **CHAPTER 4. IMPLEMENTATION**

### **4.1 Action Plan (aims and objectives) and priority actions**

Based on the conservation objectives (Chapter 3.1), appropriate conservation/management measures are proposed, which are associated with specific species and/or habitat types that are part of the protected object(s) of the area. Proposed management targeting a conservation objective measure may be one of the following:

- a) Specific proposals for immediate actions and interventions, as long as the cause of the problem has been established and the way to deal with it is known.
- b) Proposals for pilot application of a specific measure, based on the hypothesis of the cause of the problem
- c) Proposals for the preparation of a specialized study, from which the proposals for specific actions will arise, if the causes cannot be determined in the context of an MP (e.g. need of a pasture MP or an eco-touristic carrying capacity study).

For each of the proposed measures, the expected benefit is qualitatively assessed and categorized as high, moderate, or low. Additionally, the expected time frame for the effectiveness of each measure is evaluated and classified as short-term, medium-term, or long-term. The potential degree of synergy between each measure and other measures is assessed, considering which measures they are compatible with. The degree of synergy is qualitatively assessed and categorized as high, moderate, or low.

The type of the proposed measure is also determined (administrative, legal, regulatory, financial, informational, intervention in the form of a project, others), the approximate cost of its implementation is estimated and the bodies associated with its implementation are listed. Examples of management measures are listed in Annex 1 and 2 of the Draft guidelines on managing the Emerald sites<sup>32</sup>, that is proposed to be consulted by the Emerald MP team of experts.

An illustrative example of a ready-to-use Action Plan table, which can be further developed by the MP consultants/experts, is provided in Annex C. This example showcases an Action plan framework for allocating activities per year.

### **4.2 Resources required to carry out activities: i. Human, ii. Time, iii. Finance**

This chapter provides a description of the planning elements for implementing the conservation/management measures, also known as the work program. It addresses key aspects such as the specific actions to be taken, their locations, prioritization, time sequence, responsible parties, cost estimation, and funding sources.

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<sup>32</sup> <https://rm.coe.int/16807465b6>



## **CHAPTER 5. MONITORING, SURVEILLANCE AND OBSERVATION RECORDING**

### **5.1 Monitoring conservation degree in relation to conservation objectives**

This involves assessments of the status of important habitats and species according to protocols developed by the relevant national management body. The protocols will specify the methods to be used, frequency of survey, data to be collected, analyses to be applied, and reporting format. The result from the monitoring is used to determine whether existing management tools have to be changed (and if so in what ways) as part of the periodic review process of the Management process (so-called adaptive management).

### **5.2 Observation recording actions and their effects**

This includes the following:

- ✓ Monitoring of management interventions<sup>33</sup>

This involves evaluating the actual results of specific management actions against the expected outcomes for them. The actions may be specified in a Management Plan (for example, restoration of floodplain forests and wetlands) or arise from the results of baseline monitoring described above (e.g., translocating a species or removing a new threat), or from an event (see below). The monitoring may be carried out by the competent Management Body (e.g. SNCO) or external specialists as required (e.g. from Academic or Research Centers or specialized companies on biodiversity).

- ✓ Routine and Event Monitoring

This involves the systematic reporting and logging of casual observations made by responsible Management Body and others, for example the occurrence of a rare migratory bird, unusual behavior of an animal, or early flowering of a plant. For this purpose, a data form and special GIS layer will be developed. Another aspect of the routine and event monitoring is to report incidents that may have management consequences, for example floods, fires, storm damage in forests, dumping of waste and outbreaks of diseases.

### **5.3 Plan review**

Establish and present a time span when the plan needs to be reviewed considering monitoring results.

## **CHAPTER 6. COMMUNICATION, EDUCATION AND AWARENESS RAISING**

This chapter provides a concise presentation of the implemented participation program, accompanied by relevant photographic material.

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<sup>33</sup> 1. To assess if and how the implemented conservation measures are leading towards reaching conservation objectives for the site. 2. To assess the efficacy of employed conservation methods and approaches

**ANNEX**

ANNEX I. Maps (Check D2-Annex A Thematic map standards and Annex B Thematic map examples)

ANNEX II. Optional

## Annex A: Thematic maps standards

N	Map Category	Map name	Map Description	Map layers <sup>34</sup>
				Common background layers in all maps <sup>35</sup> :
1	Introduction	Background environment/ Current situation	Contains spatial information regarding the background environment of the study area and the main characteristics of the abiotic and anthropogenic environment and activities.	<p><b>INDICATIVE layers depending on available information-data, site location and if important to protective objects</b></p> <ul style="list-style-type: none"> <li>✓ Country borders</li> <li>✓ Administrative borders, first level - Marzer</li> <li>✓ Emerald site boundaries</li> <li>✓ Road network</li> <li>✓ Important surface water systems</li> <li>✓ Settlement boundaries</li> </ul> <ul style="list-style-type: none"> <li>✓ Institutional regulations of spatial - urban planning character</li> <li>✓ Land use coverage</li> <li>✓ Established Protected Areas (e.g. SPNAs)</li> <li>✓ Cultural heritage features</li> <li>✓ Energy and transport infrastructure (Polygon, Polyline or/ and point feature)</li> <li>✓ Other anthropogenic activities (e.g. Touristic and Industrial activities)</li> </ul>
2	Description of protective objects	Important elements of abiotic environment <b>(OPTIONAL)</b>	Focuses on the visualization of the abiotic environment of the study area such as hydrographic network, geomorphology, geology, etc.	<p><b>INDICATIVE layers depending on available information-data and location and protective objects</b></p> <ul style="list-style-type: none"> <li>✓ Flood Zones</li> <li>✓ Important groundwater systems</li> <li>✓ Important transitional systems</li> <li>✓ Important geomorphological and landscape features</li> </ul>

<sup>34</sup> The proposed map layers are indicative and should be further refined, modified, and oriented, based on the critical input of the Emerald MP team of experts. The inclusion of background abiotic and/or biological information in the Emerald MP, whether obtained through desktop research or field work) **depends on availability of data, site location and relevance to protected object(s)**. All map layers proposed are **both site and target species / types dependent**, and it is up to the associated team of experts and consultants who prepare the Emerald MP, to further refine them considering what is top priority and most relevant to the target habitats and species of Res. 4/Res. 6. For example, geological, geomorphological and soil aspects may be relevant only in Emerald sites where these factors are directly linked to a specific habitat of Res. 4 (or species of Res. 6). **If these aspects are not relevant to the subject under examination, they can be omitted, provided that a brief justification for the absence of information is provided in the MP.**

<sup>35</sup> These are common layers for all maps prepared in the Emerald MP

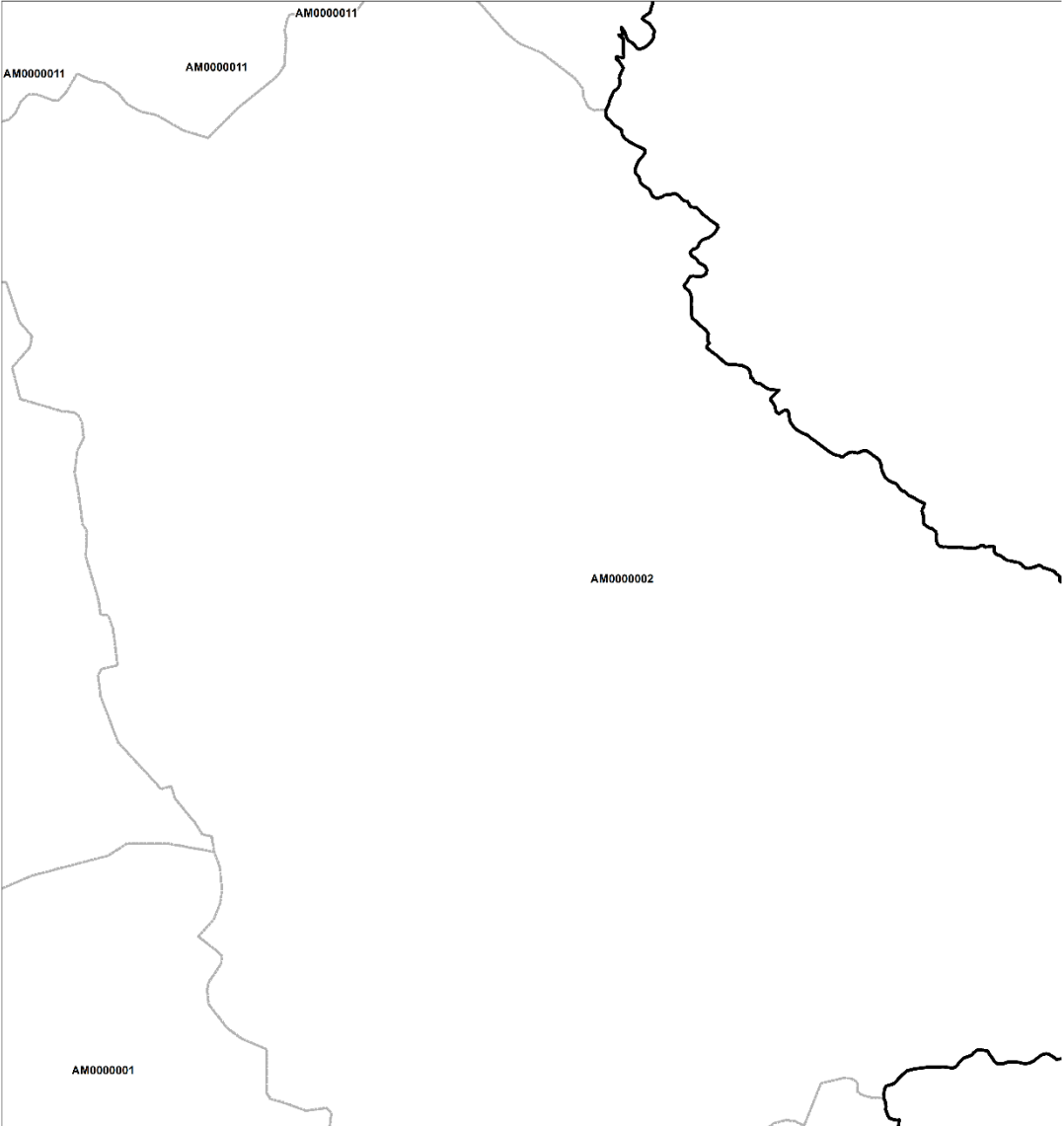
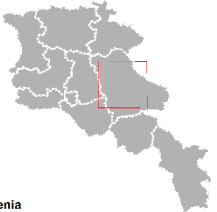
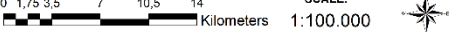

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			<b>[OPTIONAL and ONLY IN CASE they cause an impact and are directly linked with a specific habitat of Res. 4 (or species of Res. 6)]</b>	
3		Distribution and abundance of Habitat types and flora species of Resolution 4 and 6 of the Bern Convention	Distribution range of habitat types and important flora species listed in Annex I of Resolution 4 and 6 of the Bern Convention	<b>INDICATIVE layers depending on available information-data and location and protective objects</b> <ul style="list-style-type: none"> <li>✓ Distribution of habitat types and Flora Species of Resolution 4 and 6 of the Bern Convention</li> <li>✓ Land use coverage</li> </ul>
4		Habitats and populations of important fauna species of Resolution 6 of the Bern Convention other than avifauna	Distribution range of important fauna species other than avian species found in the Emerald site. The fauna species listed in revised Annex I of Resolution 6 (1996) of the Bern Convention and are complemented by important species (Red Book)	<b>INDICATIVE layers depending on available information-data and location</b> <ul style="list-style-type: none"> <li>✓ Distribution of habitat types and Fauna Species of Resolution 4 and 6 of the Bern Convention and important species (Red Book)</li> <li>✓ Land use coverage</li> </ul>
5		Habitats and populations of important avifauna species of Resolution 6 of the Bern Convention	Distribution range of important avifauna found in the Emerald site. The avifauna species listed in revised Annex I of Resolution 6 (1996) of the Bern Convention and are complemented by important species (Red Book)	<b>INDICATIVE layers depending on available information-data and location and protective objects</b> <ul style="list-style-type: none"> <li>✓ Distribution of most important (red-listed, sensitive) avian species</li> </ul>
6		Pressures/ Threats to protective objects	Illustrates the areas where activities are identified that are considered to be pressuring, or could pose a threat to, the protective objects/ features of the study areas in the future.	<b>INDICATIVE layers depending on available information-data and location and protective objects</b> <ul style="list-style-type: none"> <li>✓ Threats to protected objects</li> <li>✓ Pressures on protected objects</li> </ul>
7		Demarcation of protective objects <b>(OPTIONAL)</b>	Illustrates the proposals and conclusions on the designation of protected areas and, where appropriate, regional zones and Ecological Corridors. It also shows the delimitation of protection zones that internally divide the protected areas. The protection zones are designated based on Natura 2000 sites framework.	<b>INDICATIVE layers depending on available information-data and location and protective objects</b> <ul style="list-style-type: none"> <li>✓ Established Protected Areas (e.g. SPNAs)</li> <li>✓ Ecological Corridors</li> <li>✓ Regional protection Zones</li> <li>✓ Proposed Protected Areas (Other than Emerald Sites)</li> </ul>

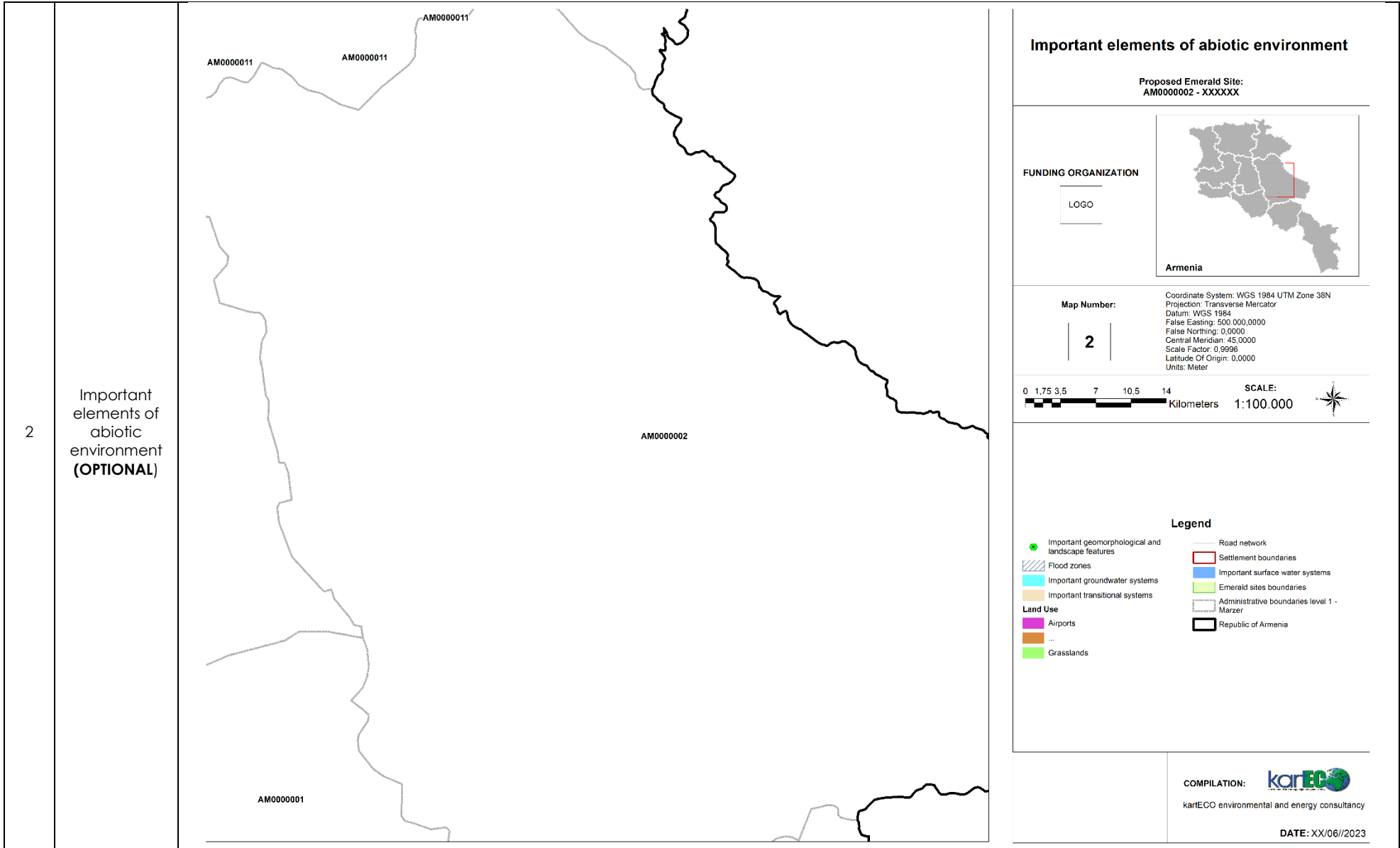
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8	Management of Emerald site and protective objects	Management measures	Mapping of areas for the implementation of management measures presented in the Emerald MP	<b>INDICATIVE layers depending on available information-data and location and protective objects</b>  ✓ Proposed Management Measures
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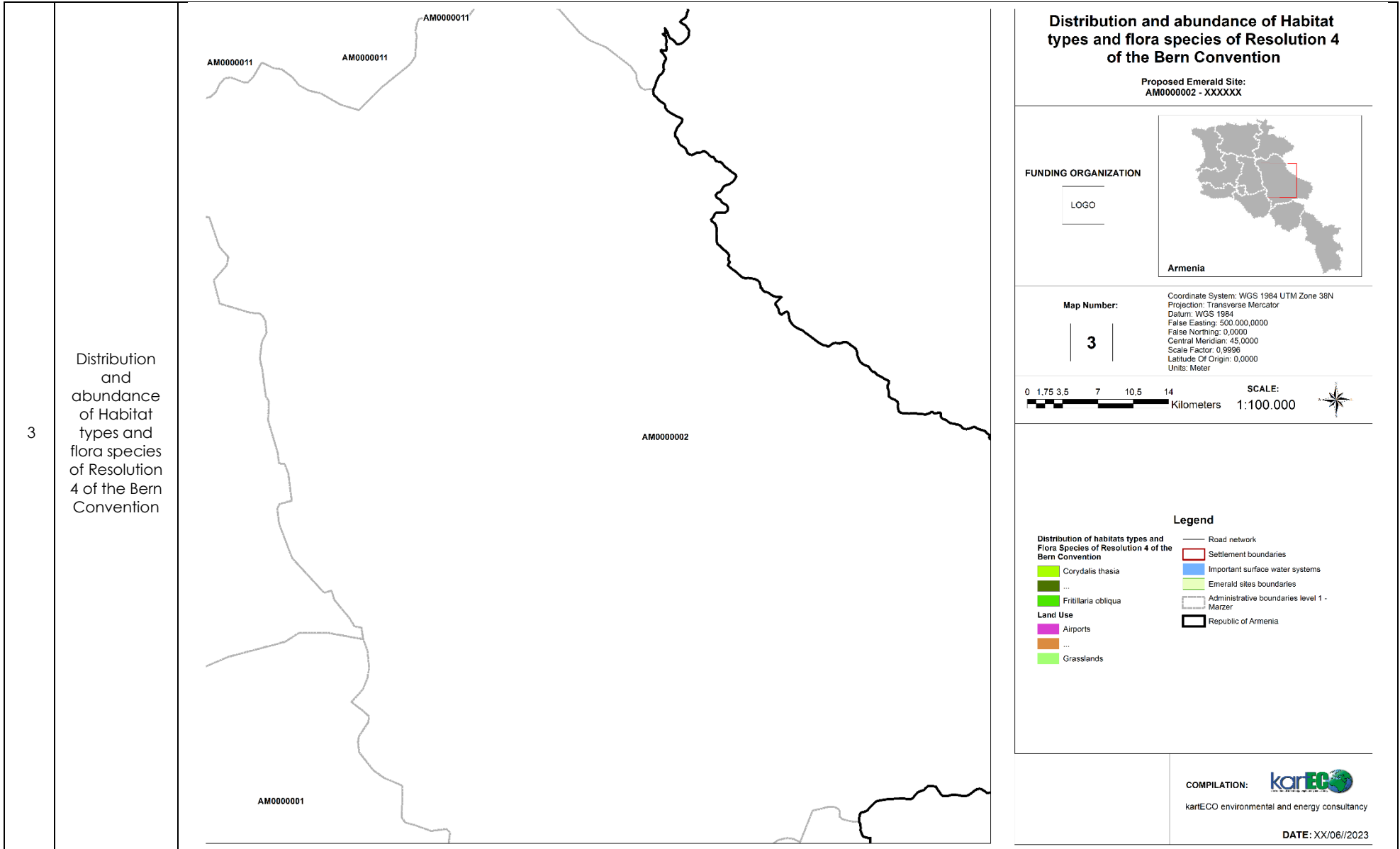
Annex B: Thematic maps examples (demonstration maps in shp files)

N	Map name	Map	Map
1	Background environment / Current situation		<div data-bbox="1525 264 2011 400"> <p><b>Background environment/ Current situation</b></p> <p>Proposed Emerald Site: AM0000002 - XXXXXX</p> </div> <div data-bbox="1525 400 2011 644"> <p><b>FUNDING ORGANIZATION</b></p> <p>LOGO</p>  <p>Armenia</p> </div> <div data-bbox="1525 644 2011 772"> <p><b>Map Number:</b></p> <p>1</p> <p>Coordinate System: WGS 1984 UTM Zone 38N Projection: Transverse Mercator Datum: WGS 1984 False Easting: 500,000,000 False Northing: 0,0000 Central Meridian: 45,0000 Scale Factor: 0,9996 Latitude Of Origin: 0,0000 Units: Meter</p> </div> <div data-bbox="1525 772 2011 836"> <p>0 1,75 3,5 7 10,5 14 <b>SCALE:</b> 1:100.000</p>  </div> <div data-bbox="1525 836 2011 1283"> <p><b>Legend</b></p> <ul style="list-style-type: none"> <li> Cultural heritage features</li> <li> Energy and transport infrastructure points of interest</li> <li> Energy and transport routes</li> <li> Energy and transport</li> <li> Institutional regulations of spatial - urban planning character</li> <li> Other anthropogenic activities (eg. Touristic and Industrial activities)</li> <li> Established Protected Areas</li> <li><b>Land Use</b></li> <li> Airports</li> <li> Grasslands</li> <li> Road network</li> <li> Settlement boundaries</li> <li> Important surface water systems</li> <li> Emerald sites boundaries</li> <li> Administrative boundaries level 1 - Marzer</li> <li> Republic of Armenia</li> </ul> </div> <div data-bbox="1525 1283 2011 1410"> <p><b>COMPILATION:</b> </p> <p>karECO environmental and energy consultancy</p> <p><b>DATE:</b> XX/06/2023</p> </div>

D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia

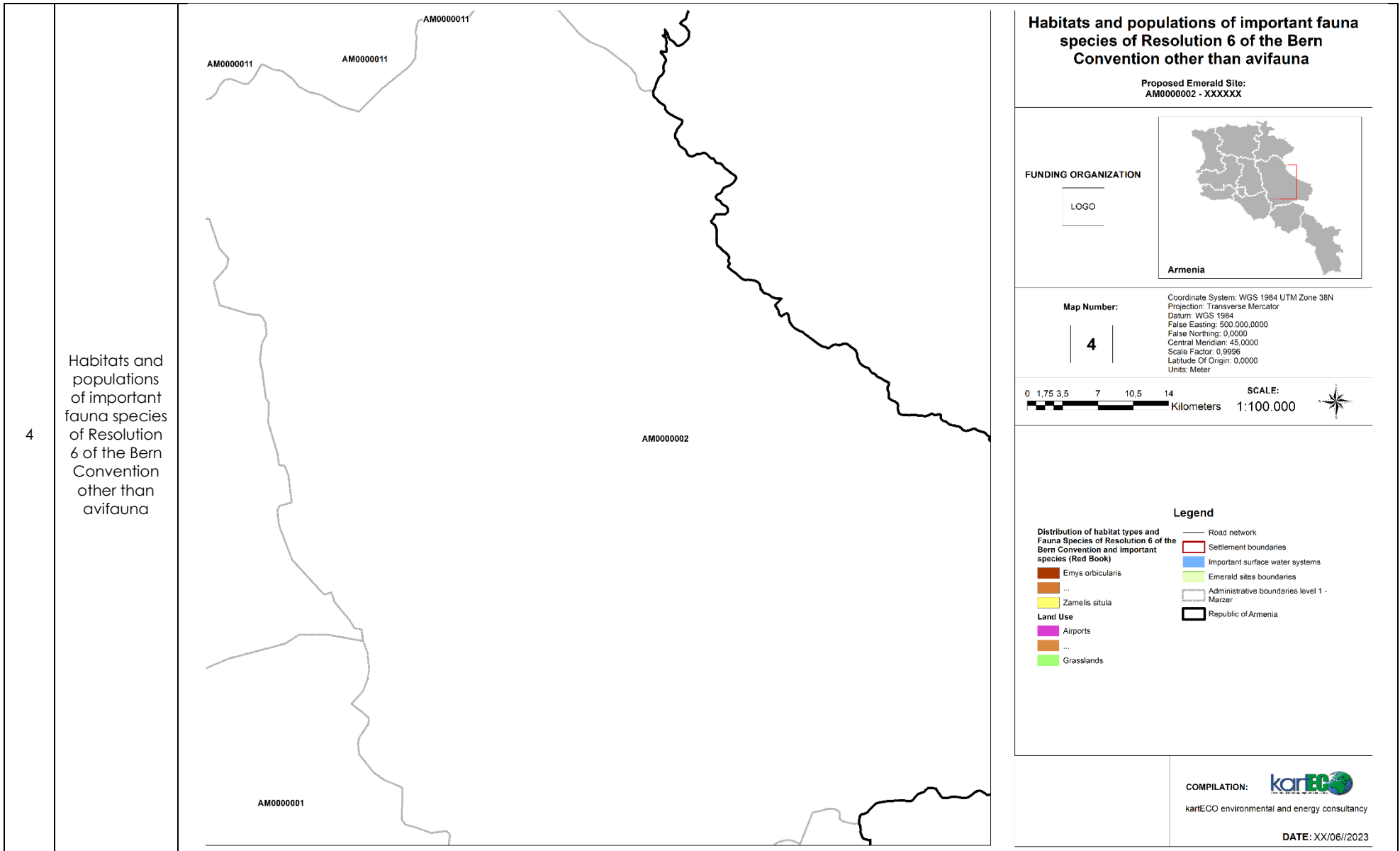


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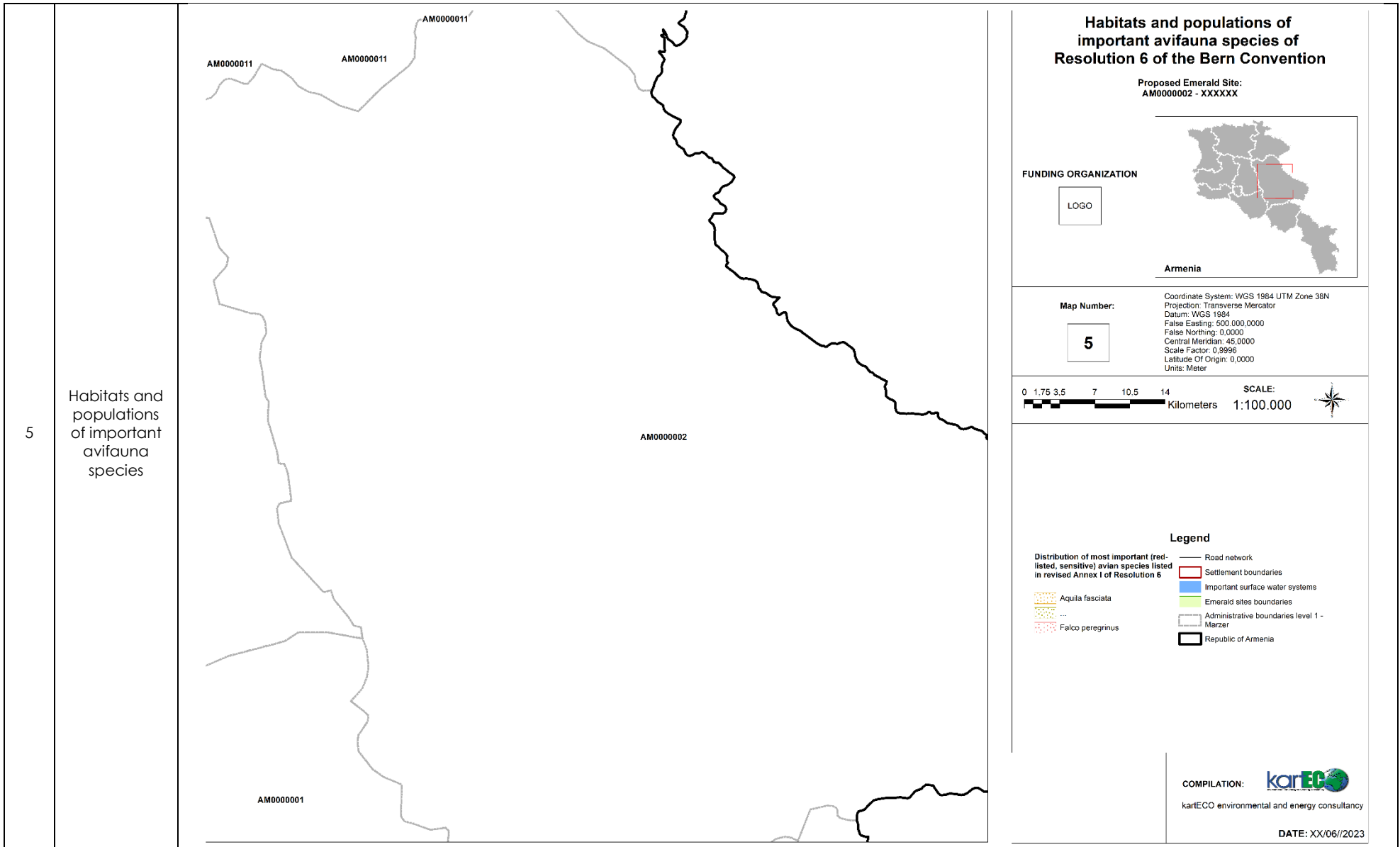




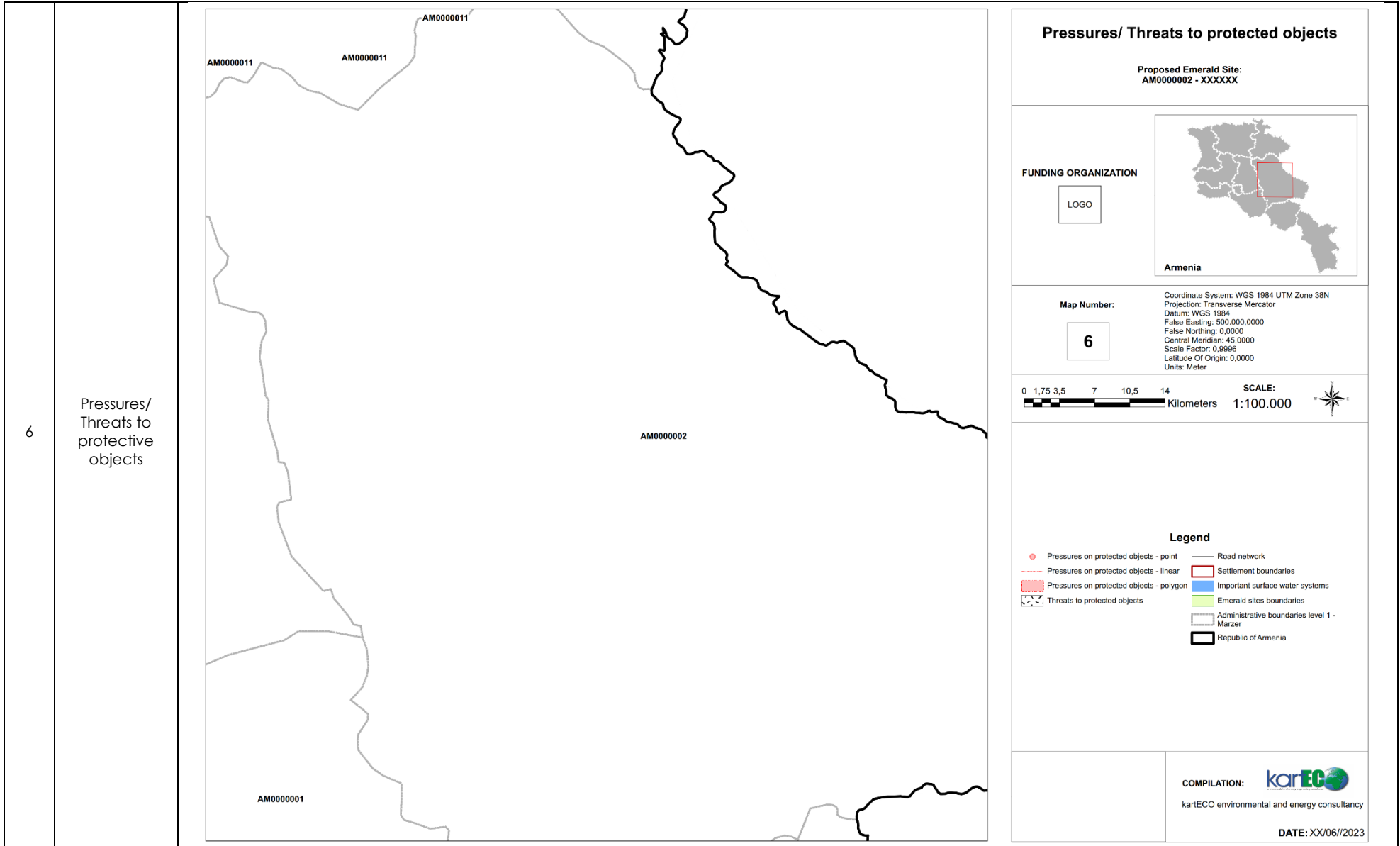
D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia



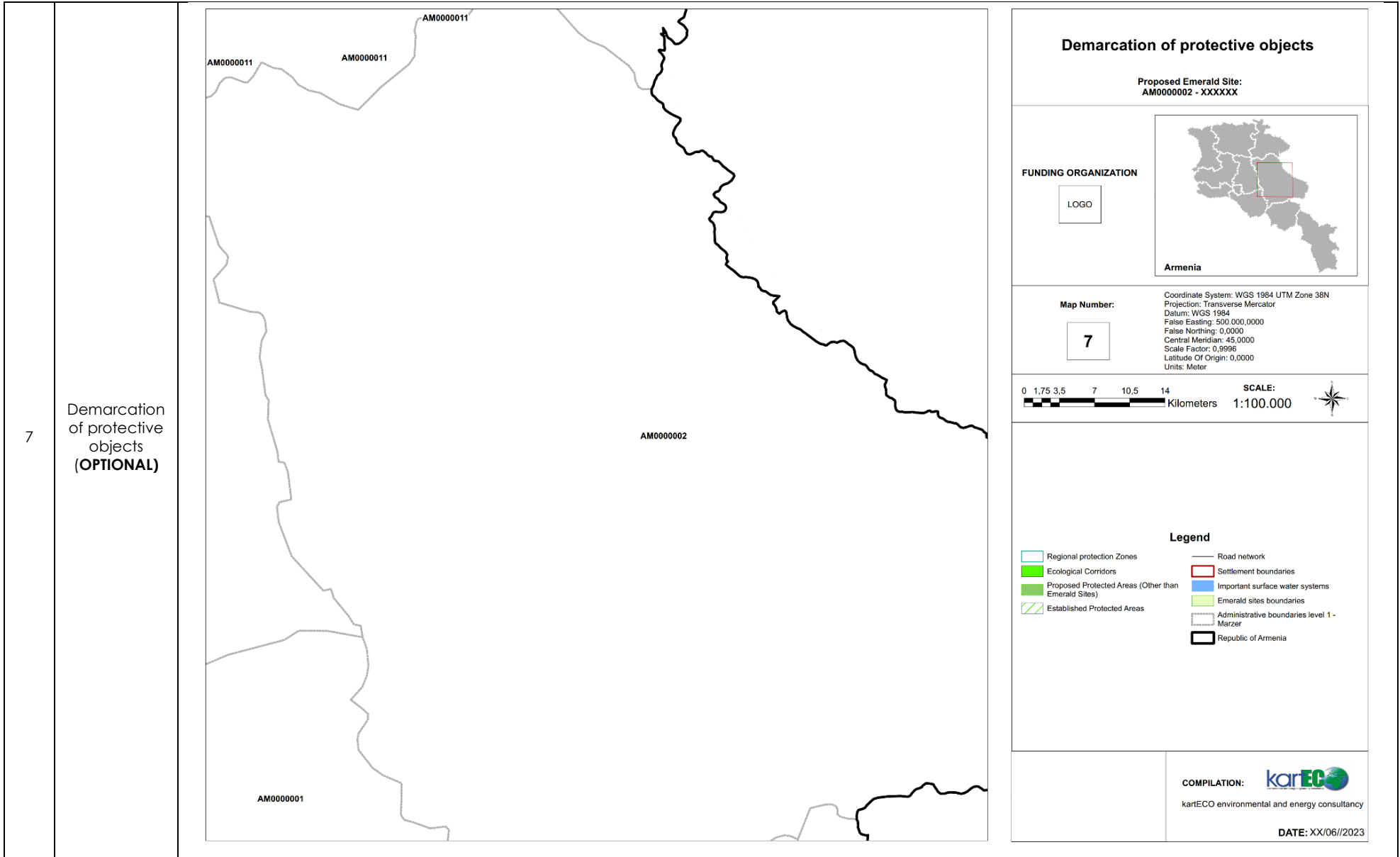
D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia



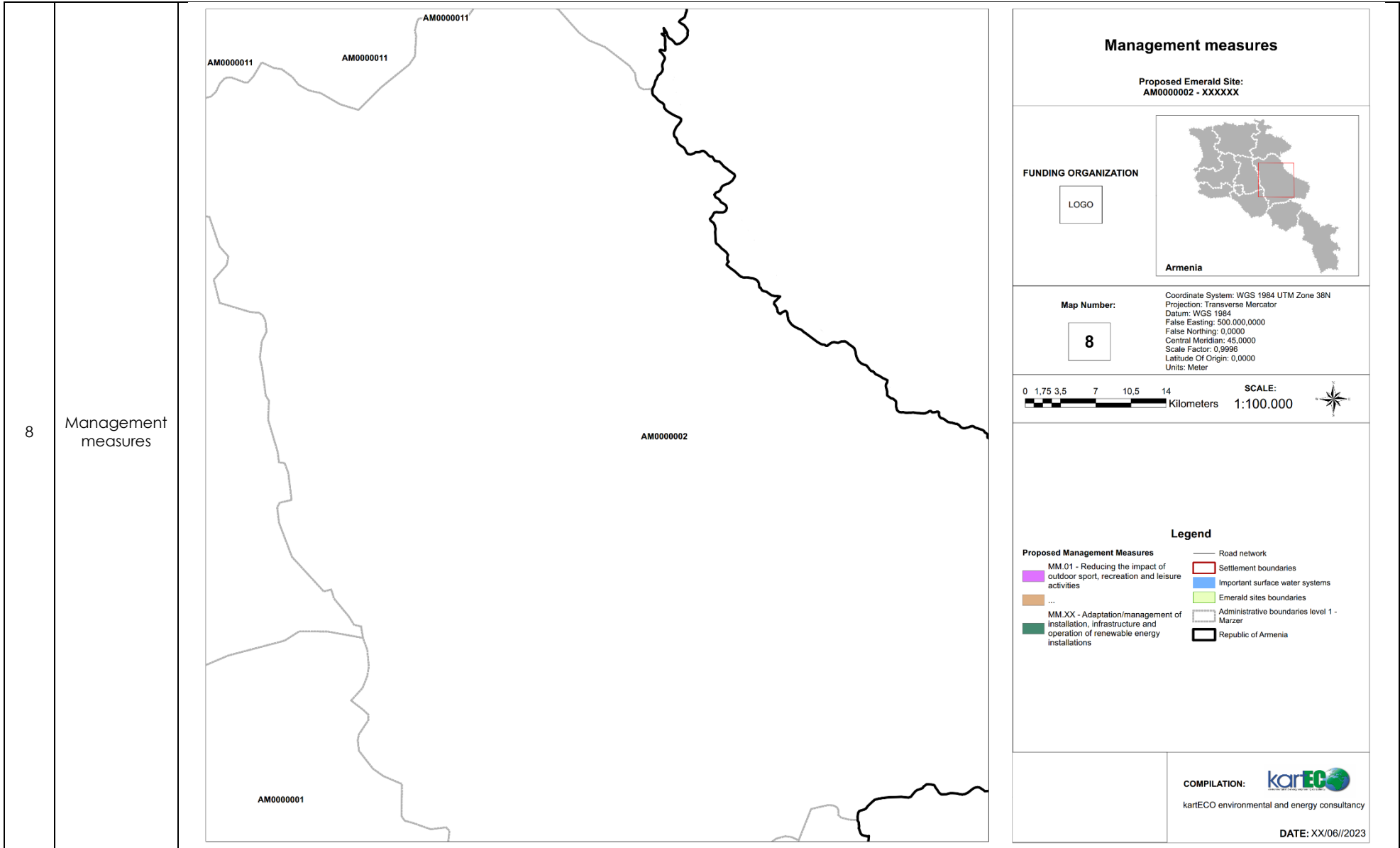
D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia



D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia



D2: Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia



**Annex C: Action plan framework to allocate activities per year (Example)**

Ref code	Short description of measure	Target area types/species/habitats/sites	Monitoring Indicator	Period
ACTIONS FOR PROTECTION AND MANAGEMENT				
1-0-1				
1-0-2				
1-0-3				
ACTIONS FOR MONITORING AND REVIEW				
2-0-1				
2-0-2				
2-0-3				
ACTIONS FOR COMMUNICATION/AWARENESS				
3-0-1				
3-0-2				
3-0-3				
OTHER..				



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## Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia

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The "Recommendations for Guidelines for preparing management plans of Emerald sites in Armenia" are aimed at assisting the Armenian authorities in developing effective management plans for Emerald sites. These plans are crucial for protecting species and natural habitats and achieving satisfactory conservation levels.

The report provides a methodology and structure for developing Emerald Management Plans (MPs) and offers guidance for different scenarios, including sites within Special Protected Natural Areas (SPNAs), Forest Enterprises (FEs), and other lands. It also emphasizes the importance of regular monitoring, review, and updates of management plans to ensure their effectiveness and alignment with evolving conservation practices. The recommendations in this report aim to streamline the preparation and approval process of Emerald management plans, benefiting both the authorities and the conservation efforts in Armenia.

By implementing these recommendations, Armenia can enhance its conservation efforts and protect its valuable species and natural habitats.

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