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**EU4Environment**  
Green Economy in Eastern Partner Countries

# Guidelines for Developing Management Plans for Emerald Sites in Armenia



Action implemented by:





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# Acronyms and abbreviations

CoE	Council of Europe
EU	European Union
EU4Environment	European Union for Environment
FE	Forest enterprise
MoE	Ministry of Environment
MP	Management plan
NGO	Non-governmental organization
	Organisation for Economic Co-operation and Development
SDF	Standard data form
SNCO	State non-commercial organization
SPNA	Special protected natural areas

# 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> Measurable indicators that are linked to concrete species and habitats and can be used for further monitoring. These objectives should include the following:

- Conservation or growth of the species population
- Conservation or growth of the area's habitat types
- Conservation or enhancement of species habitat quality (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:** 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:** A cross-border geographical space, determined on a managerial and scientific basis, that contains a combination of ecosystems characterized by relief forms and plantation cover and is of importance for the protection of biodiversity and landscapes.

**Ecological character of an Emerald Network site:** 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:** The implementation of the necessary conservation measures, either active or passive, to maintain or increase species population sizes or quality and area of habitats. All other aspects of Emerald site management are also important, but they must all be aligned with and adjusted to this primary objective.

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<sup>1</sup> Evans and Arvela 2011

<sup>2</sup> European Commission, Directorate-General for Environment 2019

# Executive Summary

The purpose of the Guidelines for Developing Emerald Sites Management Plans in Armenia is to support the Armenian authorities in developing management plans for Emerald sites. Informed Emerald site management plans are crucial for protecting the species and natural habitats listed in Resolution 4 (1996) and Resolution 6 (1998) of the Bern Convention on the Conservation of European Wildlife and Natural Habitats, and for ensuring that they are subject to appropriate conservation measures for satisfactory conservation levels. The objectives of these guidelines are to:

- **Provide guidelines for developing the management plans** of Emerald sites in Armenia.
- **Provide designated authorities and management planning authorities with a methodology for developing comprehensive Emerald site management plans (MPs).** The main coordinating body for special protected natural areas (SPNAs) in Armenia is the Ministry of Environment and its local state non-commercial organizations.

These guidelines also offer proposed structures and short guidance notes for different scenarios, including:

- **Emerald sites primarily included in a special protected natural area:** If at least 70 percent of an Emerald site is included in an SPNA and falls under the SPNA MP, the Emerald MP should be added as an annex to the SPNA MP. This addition creates an integrated plan that combines the SPNA and Emerald management components. If less than 70 percent of the Emerald site is included in the SPNA, a standalone Emerald MP is recommended.
- **Emerald sites primarily included in a forest enterprise:** Similar to the SPNA scenario, if at least 70 percent of an Emerald site is included in a forest enterprise (FE) and falls under the FE MP, the Emerald MP should be added as an annex to the FE MP. This addition creates an integrated plan, combining the FE and Emerald management components. If less than 70 percent of the Emerald site is included in the FE, a standalone Emerald MP is recommended.
- **Emerald sites located on other lands, such as state, community, or private lands:** In these cases, a standalone Emerald MP is recommended, 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 recommended.

The guidelines briefly address the process for developing a full-scale, standalone Emerald MP. This process includes five preparation phases: pre-planning, preparatory, situation analysis, adaptive management plan, and monitoring and review of the implementation of measures. The guidelines will be tested at two Emerald MP pilot sites as part of the EU4Environment Program. The following policy recommendations are proposed measures to improve the preparation and approval process of Emerald MPs in the country and address national-level needs for Emerald advancement:

- **Streamline and expedite Emerald site MP preparation and approvals.** Implementing the guidelines would simplify the process of developing and approving Emerald MPs in the country.
- **Emphasize the monitoring and review of MP measures.** A crucial component of Emerald MP performance is the regular monitoring and review of management measures. This ongoing evaluation allows for their effectiveness to be assessed and to identify any necessary adjustments to ensure that conservation objectives are met. Regular monitoring and reviews also enable adaptive management, where strategies are modified based on new information or changing circumstances.
- **Implement regular updates of MP documents.** Following the practice of the EU, it is recommended that Emerald MPs 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.

# Overview

The Emerald Network is a network of ecological sites that has been established to ensure the long-term survival of species and habitats. It is a conservation tool launched in 1989 by the Council of Europe as part of its work under the Bern Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), which came into force on June 1, 1982.

These “Guidelines for Developing Emerald Sites Management Plans in Armenia” were developed to support the Armenian authorities in developing effective management plans for these 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 conservation efforts in Armenia.

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

These guidelines were developed under the EU4Environment (European Union for Environment) program, funded by the European Union (EU).

The guidelines offer:

- A structure and guidance for the development of management plans for Emerald sites in Armenia
- A methodology for developing and implementing management plans for Emerald sites in Armenia to equip the designated and management planning authorities—especially Armenia’s Ministry of Environment (MoE) and its local state non-commercial organizations (SNCOs)—with methodological elements for developing and implementing management plans for Emerald sites in Armenia.<sup>3</sup>

The outline below represents a methodology and structure for a full-scale, standalone Emerald sites management plan (MP). This report also includes the proposed structure and concise guidance notes for cases where:

- **Most of the Emerald sites (at least 70 percent) are included in a SPNA and fall under its MP.** In this case, the Emerald MP prepared should be added to the SPNA MP as an annex. This addition will create an integrated plan (the SPNA and Emerald sites integrated plan). However, in cases where less than 70 percent of the Emerald site is included within an SPNA, a full-scale, standalone Emerald MP is recommended.
- **Most of the Emerald sites (at least 70 percent) are included in a forest enterprise and fall under its MP.** In this case, an Emerald MP should be added to the FE MP as an annex. This addition will create an integrated plan (the FE and Emerald sites integrated plan). However, in cases where less than 70 percent of the Emerald site is included within an FE, a full-scale, standalone Emerald MP is recommended.
- **Emerald sites are located on other lands, such as state, community, and/or private lands.**
- **Emerald sites are characterized by their small size and/or a limited number of target species and habitat types and/or the presence of umbrella species that benefit target species.**

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<sup>3</sup> Coordination of the Aragats Alpine sanctuary falls under the responsibility of the A. I. Alikhanyan National Scientific Laboratory, also known as the Yerevan Physics Institute, operating under the auspices of the Ministry of Education, Science, Culture, and Sports of the Republic of Armenia.



It would be the responsibility of the Emerald MP consultants to justify the fulfillment of the selection criteria within the MP. In any other case—for example Emerald sites including FE, SPNA, and/or private lands—a full-scale, standalone Emerald MP is recommended.

The sub-cases presented above aim to expedite the preparation and approval of Emerald MPs in Armenia, contributing to the national-level advancement of Emerald needs. No transboundary cases are included in this context because they fall outside the scope of work.

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

# Proposed Plan Contents and Planning Process

The main objectives of Emerald site MPs are to protect the species and natural habitats listed in Bern Convention Resolutions 4 (1996)<sup>4</sup> and 6 (1998)<sup>5</sup> that are present at each site. They do so by implementing appropriate conservation measures to safeguard these species and habitats from external threats, while ensuring a satisfactory level of conservation.

The conservation measures implemented in an Emerald site should align with the site's conservation objectives regarding species (as listed in Resolution 6 of 1998) and habitats (as identified in Resolution 4 of 1996) that are present at the site. When establishing conservation measures, the socioeconomic activities within the site should also be considered. The measures adopted can be active or passive (non-interventionist).

This chapter sets out the proposed contents for four types of Emerald site management plans, described in greater detail below:

- Full-scale, standalone Emerald site management plans
- Emerald MPs that are added as annexes to SPNA or Emerald FEs
- Emerald MPs on other lands (for example, state, community, or private-owned lands)
- Emerald MPs for very small Emerald sites.

## Proposed contents for a full-scale, standalone Emerald management plans

Proposed contents for a full-scale, standalone Emerald site MP based on the European Union's (EU's) experience and guidelines—while also considering the 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.

### **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, biotic, and 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

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<sup>4</sup> Council of Europe (CoE) 1996

<sup>5</sup> CoE 1998 (revised list o

<sup>6</sup> CoE 2015

- 4.2 Resources required to carry out activities: (i) human, (ii) time, and (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 RAISING AWARENESS**

### **ANNEX**

- Annex I. Maps
- Annex II. Optional

## **Proposed contents of an Emerald management plan (as an annex to the SPNA and Emerald Integrated Management Plan / FE and Emerald Integrated Management Plan)**

### **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) (Resolutions 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, and (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 RAISING AWARENESS**

### **ANNEX**

- Annex I. Maps
- Annex II. Optional

## **Proposed contents of an Emerald management plan located on other lands, such as state, community, and/or private lands**

### **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) (Resolutions 4 and 6)
- 1.4 Land use, including current status and ownership, and factors affecting the protected object(s) (abiotic, biotic, and 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 RAISING AWARENESS**

### **ANNEX**

Annex I. Maps

Annex II. Optional

## **Proposed contents of management plans for very small Emerald sites**

### **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) (Resolutions 4 and 6)

1.4 Land use, including current status and ownership, and factors affecting the protected object(s) (abiotic, biotic, and 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 RAISING AWARENESS**

### **ANNEX**

Annex I. Maps

Annex II. Optional

## **Management plan development, review, and renewal**

The proposed process for developing a standalone, full-scale Emerald MP consists of the phases illustrated and briefly addressed below.

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



Source: World Bank.



## Pre-planning phase

The pre-planning phase would likely be the MoE's responsibility.

### *Selection procedure of Emerald Network site(s) subject to planning*

The following criteria could be used to prioritize Emerald Network sites for the elaboration of an Emerald MP:

- SPNA overlapping the Emerald site has an active MP.
- Several stakeholders (such as farmers) are active in the area.
- Urgent conservation problems that need to be solved.
- The plan has expired and needs to be reviewed.
- Funding is available for the elaboration of the plan.
- Select representative sites of all biogeographical regions in the country to ensure a balanced approach.

### *Legislative background and existing MP*

Any relevant updated legislation under which the MP will be subject and aligned should be considered. Any other plans that may be in force in the Emerald site and its immediate vicinity, such as regional planning or renewable energy source (RES) planning, should also be considered.

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

Local administration, competent authorities and institutions, and partner organizations responsible for the development, approval, implementation, and monitoring of the MP should be identified.

## Preparatory phase

The preparatory phase would most probably be the responsibility of the scientific community under the supervision of the MoE and an advisory body (Environmental Agency). If the Emerald site overlaps with an SPNA or FE, the local SNCO should also be included as a key stakeholder.

### *Brief description of the Emerald site characteristics (screening)*

A quick assessment of the main elements of the site should be undertaken. The Emerald sites adopted by the Standing Committee to the Bern Convention should be described using the Emerald site standard data form (SDF), which includes information about their boundaries. When analyzing the information on 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.

## Participatory stakeholder approach

All stakeholders should have a clear understanding of their responsibilities, as well as the timing, duration, and financial sources available for the development of the Emerald site's MP. To aid this process, the MP should be simple, realistic, concise, and focused. For a holistic and inclusive management approach, a diverse range of professionals may be involved, including those outside the fields of biology and conservation.

Lack of information, poor communication, and low involvement by stakeholders can be a major source of conflict. Therefore, it is advised to involve stakeholders in the planning process from the outset. This will support the achievement of long-term conservation objectives and enable sustainable natural resource

management.<sup>7,8</sup> Of course, the participatory process is strongly based on the initiatives of active stakeholders and their willingness to engage with the project.

In Armenia, there is a mechanism in place for stakeholder engagement and public opinion.<sup>9</sup> However, it appears that this mechanism is not currently active for the MPs of protected areas. As mentioned above, the EU Twinning project has recommended improvements to the laws surrounding specific aspects of MP processes, including the ensuring that authorities and agencies are capacitated, establishing procedures for the creation and protection of Emerald sites, the holding of public discussions when establishing Emerald sites, and so on.

It is crucial to thoroughly prepare for and carefully manage any open participation and consultations on Emerald site MPs. Previous experience has shown that, depending on their values, stakeholders will differ in their desire to participate in various activities. Some stakeholders, such as environmental NGOs, may be more focused on nature values and conservation activities, while industry-oriented stakeholders (such as farmers, foresters, and landowners) may prioritize practical actions and their benefits for their respective industries. Ultimately, it is beneficial to address all stakeholders by presenting a draft MP and inviting comments and suggestions during a public hearing.

According to international best practices, a successful consultation process is one that considers the following elements:

- **Key stakeholder identification.** A careful analysis of the key stakeholders is essential for devising an optimal stakeholder involvement strategy. Resources should be targeted towards the needs of each stakeholder group, especially those most likely to influence the process positively or negatively.
- **Early involvement.** As a general rule, the earliest possible involvement of the smallest number of key stakeholders will likely lead to the best results in the field—or at least help avoid conflicts linked to a lack of consultation.
- **Trust.** Awareness-raising activities of the MoE 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. Essential components of a trust-building communication strategy are transparency, clarity, personal informal contact, openness, and time.

Figure 2 provides an overview of the stakeholder engagement process. Steps 2 and 4 are advisable in a participatory stakeholder approach.

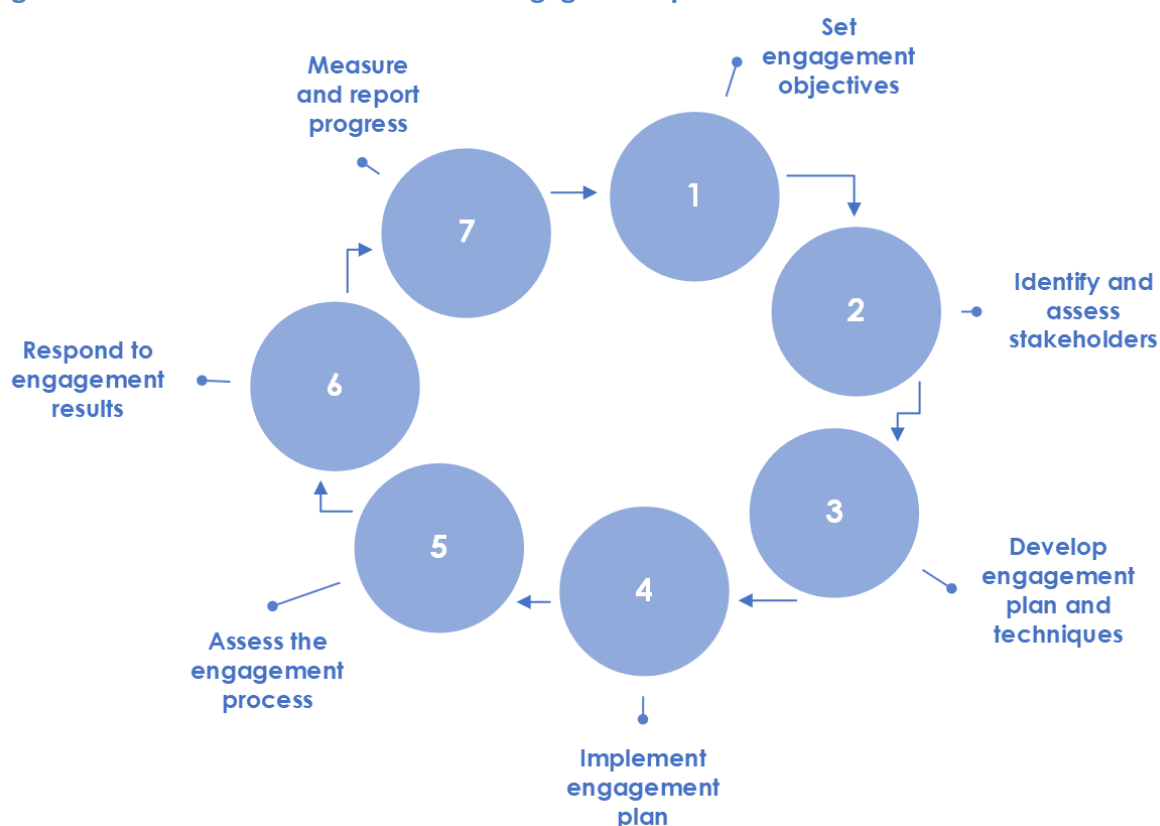
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<sup>7</sup> Gleason et al. 2010

<sup>8</sup> Bryson 2004

<sup>9</sup> The MoE's mechanism is called the "civil council", which includes different NGOs and civil society organizations as members. The minister usually convenes council meetings at the request of the NGOs, but the dynamic largely depends on the ministers and on how active the civil council is.

**Figure 2. Overview of the stakeholder engagement process**



Source: Jaansoo 2019.

### *Considerations when engaging landowners and land users*

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 an MP far more effective and pertinent but will also increase the goodwill of stakeholders and their sense of ownership of the protected areas MP.<sup>10,11,12,13</sup>

Several important points are discussed in Emerald (and EU Natura 2000) recommendation documents providing guidance for landowners and supporting farming systems.<sup>14,15,16</sup>

The following is therefore advised during MP preparation:

- Ensure that Emerald site landowners, including farmers, are aware of the location and/or important features of the site
- Provide landowners with practical conservation recommendations to, for example, adapt organic farming principles in accordance with the farming system (intensive or traditional)
- Assess the case of proposing a “management agreement” between the MoE and the farmers’ association or individual farmers that includes a compensation scheme or an alternative incentive
- Integrate Emerald site conservation objectives in agricultural funding.

<sup>10</sup> Leach and Pelkey 2001

<sup>11</sup> Leach et al. 2002

<sup>12</sup> Reed 2008

<sup>13</sup> Luyet et al. 2012

<sup>14</sup> European Commission, Directorate-General for Environment 2018

<sup>15</sup> CoE 2016

<sup>16</sup> CoE 2019

### *Considerations when engaging government agencies*

For government agencies, several meetings will need to be held to report on project progress and ensure that it complies with relevant regulations and laws. Collaborative work will be carried out with these agencies to identify any potential conflicts or concerns, and to develop solutions to address them. Introductory MP presentation and review workshops may also be required as per the needs of the planning phase.

### *Situation analysis*

The situation analysis phase will likely be the responsibility of the scientific community under the supervision of the MoE and an advisory body (Environmental Agency). This advisory body will most probably be established in line with the proposals of the EU Twinning project. If the Emerald site overlaps with an SPNA or FE, the SNCO could also be included as a key stakeholder.

### *Data gathering*

Apart from the information contained in the Emerald site SDF, the Emerald MP consultants and experts should gather data in two categories:<sup>17</sup> the abiotic features of the site and the biotic features of the site.

The following list of requested information is indicative and, depending on the site, should be further tailored to the specific target habitats and species mentioned in Resolution 4 and Resolution 6, based on the critical assessment by 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:

#### *General information*

- The physical geographical location of the site and its borders
- Existing land use of the site and its surrounding areas, including adjacent settlements; main activities, such as tourism and industry; roads and road networks in and around the site; the main water courses; and so on
- Ownership of the site and relevant stakeholders, such as local pastoralists
- Existing projects related to the use of the site's resources as well as other activities on the site's territory, such as urban projects, municipal development plans, and so on
- Existing biodiversity strategies for species and habitat conservation, if any
- Existing policies for combating invasive species and diseases
- Active management plans and policies and existing fire prevention measures.

#### *Information on the site's abiotic features that influence the target habitat types and species of Resolution 4 or Resolution 6*

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

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<sup>17</sup> CoE 2015



### Information on the biotic features of the site

- Natural habitats and species in the revised Annex I of Resolutions 4 (1996) and 6 (1998) of the Bern Convention, including a field inventory (complementary to the SDF information)
- Other habitats that are important for the species in Resolution 6 but are not listed in Resolution 4.

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

### Data sources

Table 1 summarizes relevant sources that could be used by consultants while preparing an Emerald MP.

**Table 1. Relevant sources for consultants preparing an Emerald site management plan**

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 the Institute of Botany (A.L. Takhtajyan)
Conclusions of the biogeographical evaluation seminars	Birds <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> , Non-avian animals <a href="https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-animal-species-from/1680779ed7">https://rm.coe.int/detailed-final-conclusions-on-the-representation-of-animal-species-from/1680779ed7</a> , Plants <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> , Habitats <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> <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> (see 3.2 Phase II: Sufficiency Index) <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>
Emerald sites spatial data – Shapefiles	<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>
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 any)	<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 (from, for example, Google Earth)
Biological Information on Resolution 4 and 6 habitats and species	Universities and research centers such as the 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>

BirdLinks Armenia NGO's 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/prime-butterfly-areas.html">https://www.butterfly-conservation-armenia.org/prime-butterfly-areas.html</a>
Annotated checklist to the Birds of Armenia (updated on March 1 of 2020)  Checklist of Birds of Armenia (updated 2022)	<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> (2020 edition) <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 (in Armenian)	<a href="http://www.env.am/karmir-girg">http://www.env.am/karmir-girg</a>
A Field Guide to the Birds of Armenia	Adamian MS and Klem D, Jr. 1997. <i>A Field Guide to the Birds of Armenia</i> . Oakland, CA: American University of Armenia. <a href="https://www.acopiancenter.am/field-guide-boa-orders.asp">https://www.acopiancenter.am/field-guide-boa-orders.asp</a>
A Handbook of the Birds of Armenia	Adamian MS and Klem D, Jr. 1999. <i>Handbook of the Birds of Armenia</i> . Oakland, CA: American University of Armenia.
Atlas of Freshwater Key Biodiversity Areas in Armenia	Freyhof J, Khorozyan I, and Fayvush G. 2015. <i>Freshwater Ecosystems and Biodiversity: Atlas of Freshwater Key Biodiversity Areas in Armenia</i> . Yerevan, AR: WWF-Armenia. <a href="https://www.panda.org/wwf_news/?287671/Atlas-of-Freshwater-Key-Biodiversity-Areas-in-Armenia">https://www.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 MV, Bauer H-G, and Foppen RPB. 2020. "European Breeding Bird Atlas 2: Distribution, Abundance and Change." Beek, Netherlands: European Bird Census Council and Barcelona, Spain: Lynx Edicions.  H
Examples of management measures for Emerald sites	CoE (Council of Europe). 2015. "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>

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

An important step in the Emerald site management planning process is assessing the status of its identified habitats and species. This assessment will provide the necessary information to define conservation objectives and set adequate conservation measures. It will also help set conservation priorities, seeing as conservation problems can rarely be addressed simultaneously, especially in larger sites.

Regarding the conservation status of habitat types, the assessment for each habitat type should be done considering the following criteria:<sup>18</sup>

- Area of natural habitat per site and overall area in Armenia
- Habitat-specific structure and functions
- Status of the typical species in the habitat.

To complement the information from the Emerald site SDF and prior species assessment, an inventory and mapping of all significant species with conservation value are recommended.

The assessment for each species and/or species group should be made by considering the following indicative criteria:<sup>19</sup>

<sup>18</sup> CoE 2015

<sup>19</sup> CoE 2015

- Population size and dynamics of targeted species, as well as the number of targeted species, within the site
- Long term population trend for specific species that may have significant natural fluctuations in their population sizes such as migratory birds and songbirds
- Systematic mapping of each species' localities within the site
- Size, quality, and other aspects of the habitat that are important for the survival of the species populations, including habitat stability/instability and vulnerability, specific structures and features presence, quality of the feeding base, human pressure, and existing and future threats.

#### *Threats and acting pressures analysis*

Each protected object may experience various pressures (P) and threats (T). The pressures refer to the risks that the protected object currently faces, while threats refer to the risks that it may face in the next six or 12 years. The official list of pressures and threats is categorized and assigned unique codes. Examples of these categories include agriculture; forestry; extraction of resources such as minerals, peat, and non-renewable energy resources; development; construction; and use of residential, commercial, industrial, and recreational infrastructure. For each pressure or threat, the degree of impact is defined (low, medium, or high). From the records of the pressures and threats and their severity, the future trend of structure and functions emerges as follows:

- **Favorable conservation degree (or Excellent):** no pressures (P) or threats (T) of high importance and up to one of medium importance, or the number and importance of positive impacts outweigh those of the pressures (P) or threats (T)
- **Good conservation degree (or Good):** up to three pressures (P) or threats (T) of medium importance, or the number and importance of positive impacts outweigh those of the pressures (P) or threats (T)
- **Moderate conservation degree (or Limited):** at least one threat (T) or pressure (P) of high importance and/or more than three pressures (P) or threats (T) of medium importance without positive impacts being able to balance them.

#### **Major climate change threat and pressures aspects (optional)**

Further key features to assess the threats and/or pressures that major climate change aspects present to Emerald site habitats and species,<sup>20</sup> especially in fragile ecosystems. The major aspects to consider are:

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

After their identification, the assessment addressing the climate change threats and/or pressures should be prioritized according to their impact level.

#### *Site-level conservation objectives*

After completing the data gathering and assessments, it is important to formulate and present the conservation objectives, which will form the base for the management regimes and norms. To identify site-level 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 degree of conservation.

For habitat types, these targets could include:

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<sup>20</sup> CoE 2015

- Maintaining or increasing habitat type extent (for example, increasing the area by a set number of hectares, or a growth of total extent by 20 percent)
- Increasing the presence of typical species (for example, increasing the number of individuals or pairs by a set amount, or their population size by 20 percent)
- Improving the structure of the habitat type (for example, in a forest habitat type, woody species that are taller than 5 meters cover more than a set number of hectares, or 75 percent of the total area measured)
- Improving the functions of the habitat type (for example, at least three different bird species are found in a reed bed)
- Improving the degree of conservation of the habitat type (for example, under Article 17 of the Habitats Directive,<sup>21</sup> from B to A).

Conservation targets should be carefully considered for each species. These could include:

- Maintaining or increasing the population of the target species (for example, maintaining or increasing a set number of individuals or pairs, or a total population increase by 10 percent)
- Improving the degree of conservation of the species' habitat (for example, the degree of conservation of the habitat type(s) in which the species nests/feeds)
- Maintaining or increasing the extent of the species' habitat (for example, increasing the extent by a set number of hectares, or a total habitat area growth of 10 percent)
- Improving the conservation status of the species (for example, under Article 17 of the Habitats Directive,<sup>22</sup> from B to A).

#### **Box1. Examples of site-level conservation objectives<sup>1</sup>**

1. Site X has been designated due to its importance for the semi-natural grasslands (6210) habitat type. According to the standard data form (SDF), the habitat type has a poor conservation condition—marked as class C (poor). 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 unfavorable conservation status within the region. The necessary conservation has been designed to achieve that objective.

2. Site Y has been designated because it harbors a large area of active raised bog (7110). According to the SDF, this habitat type is in excellent condition—marked as class A (excellent) 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 unfavorable 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 condition.

In principle, conservation objectives should be set for each site and for all species and habitat types significantly present therein. The objectives should be based on the ecological requirements of the contained species and habitats and should define their desired conservation condition. The conservation assessment of each species and habitat type recorded in the SDF should form the basis of the site's conservation objectives that, in turn, should reflect the importance of the site for the coherence of Emerald site.

<sup>21</sup> Evans and Arvela 2011

<sup>22</sup> Evans and Arvela 2011



## Adaptive management plan

This phase outlined below would most likely be the responsibility of the scientific community and executed under the supervision of the MoE and an advisory body (Environmental Agency). In case the Emerald site overlaps with an SPNA or FE, SNCOs should also be included as key stakeholders.

An adaptive MP requires regular reviews of conservation success and continuous monitoring and correction of the conservation measures if problems arise.

### *Conservation measures*

The conservation measures should be distinguished according to those at Emerald site level and those at Emerald network level, the latter being case-specific.

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

In Annex 1 of the Draft Guidelines on Managing the Emerald sites,<sup>23</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: (i) reducing existing pressures; (ii) enhancing ecosystems and species resilience; (iii) accommodating natural landscape forming processes; (iv) ensuring the required abiotic conditions; (v) managing extreme events; and (vi) controlling 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, implementing management at the network level is recommended. For the successful implementation of management at network level, the following should be addressed:<sup>24</sup>

- Selecting priority habitats that would help species movement
- Improving connectivity by developing corridors.

### *Implementation of the conservation measures*

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 MoE are being held to determine the competent authorities and agencies that should be involved in each case. Factors being considered are whether the Emerald site completely overlaps with an SPNA, if part of it is located within an FE, or if it is situated on other lands such as state, community, or private land.

All stakeholders involved in the MP should 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 for competent authorities and officers on the protection of endangered species in an Emerald site and alternative models for regional development
- Raising public awareness of the protection of endangered species in an Emerald site and alternative models for regional development
- Promoting ecologically sustainable economic activities such as organic farming.

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<sup>23</sup> CoE 2015

<sup>24</sup> CoE 2015

### *Monitoring and review of the conservation measure implementation*

Monitoring and reviewing the measures' implementation would likely be the responsibility of the scientific community and executed under the supervision of the MoE and an advisory body (Environmental Agency). If the site overlaps with an SPNA or FE, SNCOs should also be included as key stakeholders. The competent authorities should schedule regular reviews of conservation success, incorporating adaptive management principles. These reviews should be based on monitoring efforts and should enable making necessary corrections to conservation measures if any issues arise.

Monitoring activities in Emerald sites must be closely linked with the conservation objectives and implemented (or not-implemented) conservation measures. Conservation measures not implemented due to technical or financial reasons should still be taken into account during the review process. A monitoring plan should have two purposes:<sup>25</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 Draft Guidelines on Managing the Emerald Sites,<sup>26</sup> monitoring should be carried out on three interrelated levels:

- Baseline monitoring of key biodiversity indicator elements and how far the current values are from conservation objectives
- Monitoring of management interventions (that is, the conservation measures)
- Routine and event monitoring.

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

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<sup>25</sup> CoE 2014

<sup>26</sup> CoE 2015

# Proposed structure for management plans of Emerald sites in Armenia (for a full-scale, standalone Emerald management plan)

The current chapter will provide brief explanations and guidelines on how each content point should be filled and their 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 site MPs in Armenia.

## 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 site SDFs,<sup>27</sup> including their borders. The information contained in the Emerald site SDFs should be completed with the various data described below, compiled, and used when planning the management measures. Thus, information gathering should be preceded by first closely examining the SDF and the quality and completeness of its information.

Additionally, building a field inventory is recommended while collecting information on the natural habitats and species listed in the revised Annex I of Resolution 4 (1996) and Resolution 6 (1998) of the Bern Convention. This field inventory will complement the existing site SDF.

The explanations provided below are dependent on both the specific site and the target species/habitat types. The associated team of experts and consultants responsible for preparing the Emerald MP should further develop the plan by prioritizing aspects that are highly relevant to the target habitats and species of Resolution 4 and 6. For instance, 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>27</sup> CoE 2013

## 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. These include the assigning and/or contracting authority and the contract details, such as the contract number, the contracting parties, the supervisory committee, other engaged authorities and parties, and the project team.

##### 1.1.2. Protection history

The protection history of the area - if any - is briefly mentioned, with a simple chronological reference to identification studies and 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 MP.

The following data are provided for the study area:

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

The information could be provided in the form of a table:

Geographical location	<b><i>[Central coordinates (obtainable from SDF)]</i></b>
Administrative affiliation	<b><i>[Region and Regional unit]</i></b>
Area	<b><i>[Obtainable from SDF]</i></b>

#### 2.2 Abiotic environment

A short 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 criteria for characterizing the area, defining protection zone(s), and defining the conditions and restrictions on land uses and activities, to achieve the conservation objectives for natural habitats and species listed in Resolutions 4 (1996) and 6 (1998).

The discussion of the abiotic environmental elements should be brief and focused only on those that have an impact on natural habitats and species listed in Resolutions 4 (1996) and 6 (1998) as determined by the expert team and stated in the MP. If they do affect the habitat types and/or species mentioned in these resolutions, such abiotic elements and their examples may include:

- **Geomorphology and landscape.** Description of relief and landscape or various landscape units
- **Geology, mineral resources/deposits, and soil types.** Identification of areas of erosion, desertification, and/or degraded soils
- **Hydrology and water quality.** Location of surface waters, land uses and activities related to surface water, and surface water quality data
- **Air quality and noise level.** Sources of air pollution and the level of noise disturbance observed
- **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, biotic, and human activities)**

This chapter presents the main characteristics of land uses and activities that may affect the protected object(s) directly, such as through the use of the flora and fauna species or occupation or destruction of their natural habitats, as well as indirectly, such as the degradation of these natural habitats as a result of pollution, for example.

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

This chapter refers to the specific element or elements within the area that are essential for the protection and preservation of the species and natural habitats that are present on the site and listed in Resolutions 4 (1996) and 6 (1998).

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 4 (1996), along with information on their extent and the degree of conservation, if relevant data is available. This section examines the existence and state/degree of conservation of the examined habitat types in the various locations of the study area, as well as their relationship with the vegetation and abiotic characteristics of the wider area.

The pressures and threats to these habitat types are analyzed and documented, 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.

### **2.5.2. Species**

Important fauna species are presented, which includes the species listed in Resolution 6 (1998), 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 their estimated abundance and population sizes in the study area. The section comments on the existence and status/degree of conservation of the populations of the important species by category (mammals, birds, reptiles, amphibians, fish, and 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 to these species 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)**

In this section, emphasis is placed on outlining the conservation objectives, which should be linked to the management measures proposed. To identify 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.

For the habitat types, these targets could include:

- Maintaining or increasing habitat type extent (for example, increasing the area by a set number of hectares, or a growth of total extent by 20 percent)
- Increasing the presence of typical species (for example, increasing the number of individuals or pairs by a set amount, or their population size by 20 percent)

- Improving the structure of the habitat type (for example, in a forest habitat type, woody species that are taller than 5 meters cover more than a set number of hectares, or 75 percent of the total area measured)
- Improving the functions of the habitat type (for example, at least three different bird species are found in a reed bed)
- Improving the degree of conservation of the habitat type (for example, under Article 17 of the Habitats Directive,<sup>28</sup> from B to A).

Conservation targets for each species could include:

- Maintaining or increasing the population of the target species (for example, maintaining or increasing a set number of individuals or pairs, or a total population increase by 10 percent)
- Improving the degree of conservation of the species' habitat (for example, the degree of conservation of the habitat type(s) in which the species nests/feeds)
- Maintaining or increasing the extent of the species' habitat (for example, increasing the extent by a set number of hectares, or a total habitat area growth of 10 percent)
- Improving the conservation status of the species (for example, according to Article 17 of the Habitats Directive,<sup>29</sup> from B to A).

### **3.2 Assessment and evaluation of potential conflicts between the conservation of the natural environment and economic activities and their 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 landscapes. These pressures and threats are then examined in relation to existing land 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 and land uses, development plans, and pressures and threats is specified within the area, emphasizing their spatial relevance to major ecosystem types.

In addition, the 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).

## **CHAPTER 4. IMPLEMENTATION**

### **4.1 Action plan aims, objectives, and priority actions**

Based on the conservation objectives in Chapter 3.1, this section proposes appropriate conservation/management measures, which are associated with specific species and/or habitat types that are part of the protected object(s) of the area. These targeted management measures could include:

- Specific proposals for immediate actions and interventions, as long as the cause of the problem - and how to deal with it - has been established
- Proposals for pilot applications of a specific measure, based on the hypothesis of the cause of the problem
- 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 (for example, where a pasture MP or an eco-touristic carrying capacity study is needed).

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<sup>28</sup> Evans and Arvela 2011

<sup>29</sup> Evans and Arvela 2011

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-, medium-, or long-term. The potential degree of synergy between each measure and the others is assessed, considering the measures with which they are compatible. 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, or 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>30</sup> which 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, and (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.

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

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

This section 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 surveys, data to be collected, analyses to be applied, and reporting format. The result from the monitoring is used to determine whether existing management tools must be changed (and, if so in what ways) as part of the periodic review process of the management process (that is, adaptive management).

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

##### **5.2.1. Monitoring of management interventions<sup>31</sup>**

The results of specific management actions are evaluated and compared to their expected outcomes. These actions may be specified in an MP (for example, restoration of floodplain forests and wetlands) or they may arise from the results of the baseline monitoring described above (for example, 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 (for example, an SNCO) or external specialists, as required (for example, from academic or research centers, or specialized companies on biodiversity).

##### **5.2.2. Routine and event monitoring**

This section involves the systematic reporting and logging of casual observations made by the responsible management body and others. Such observations could include, 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 (geographic information system) layer will be developed. Another aspect of the routine and event monitoring plan is to report incidents that may have management consequences. These could include floods, fires, storm damage in forests, dumping of waste, and diseases outbreaks.

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<sup>30</sup> CoE 2015

<sup>31</sup> Monitoring of management interventions has two purposes: (i) to assess if and how the implemented conservation measures are leading towards reaching conservation objectives for the site, and (ii) to assess the efficacy of employed conservation methods and approaches.

### **5.3 Plan Review**

By considering the monitoring results, this section establishes and presents a time period during which the plan needs to be reviewed.

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

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

### **ANNEX**

Annex I. Maps (Consult Annex A for thematic map standards and Annex B for thematic map examples).

Annex II. Optional

# References

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# Annexes

## Annex A: Thematic maps standards

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 biotic information in the Emerald MP, whether obtained through desktop research or field work, **depends on the availability of data, site location, and relevance to protected object(s)**. All map layers proposed are dependent on **both site and target species/type**, and it is up to the associated team of experts and consultants who prepare the Emerald MP to further these layers based on their importance and relevance to the target habitats and species of Resolutions 4 and 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 type of Resolution 4 or species of Resolution 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.**

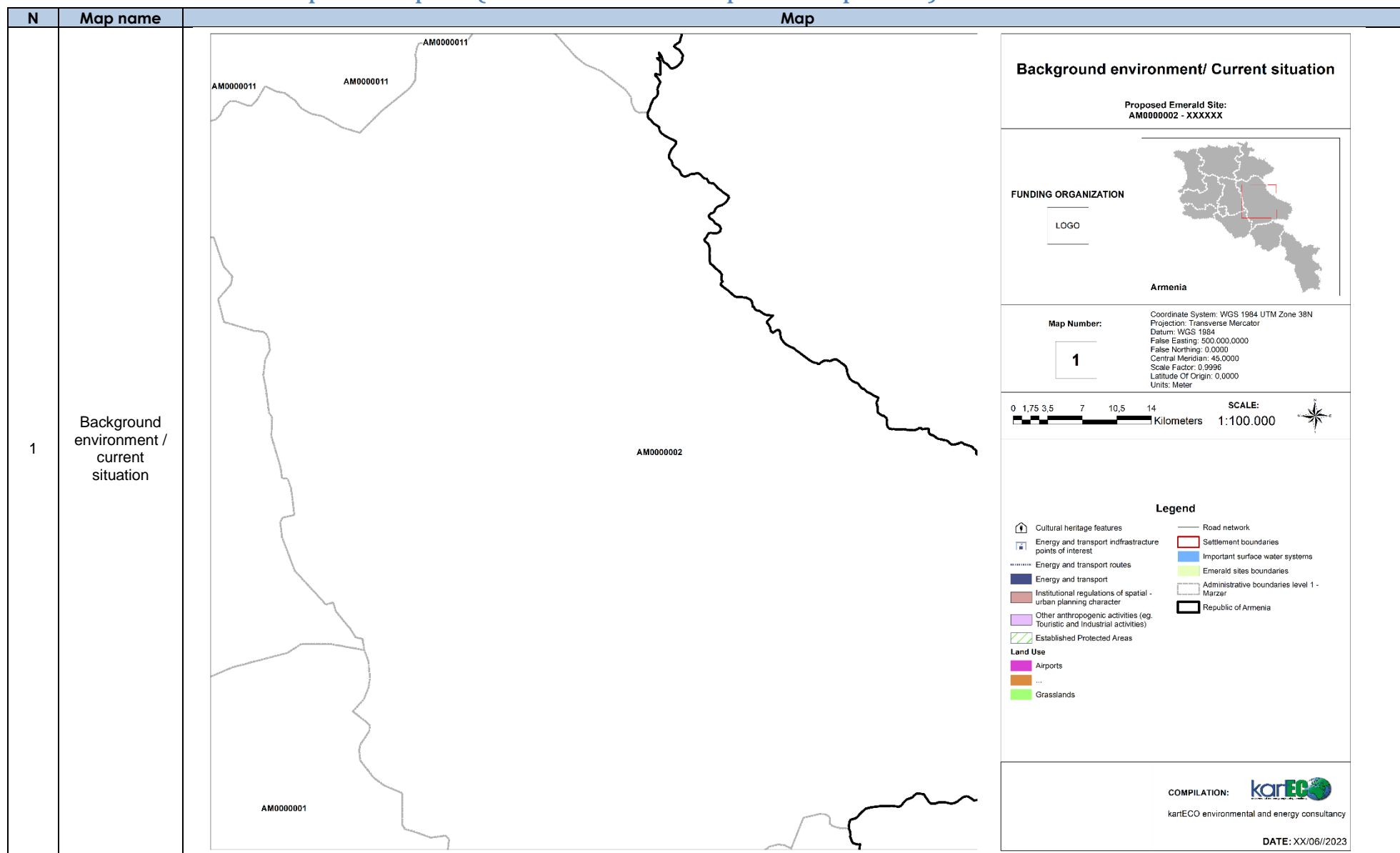
The following are common layers for all maps prepared in the Emerald MP:

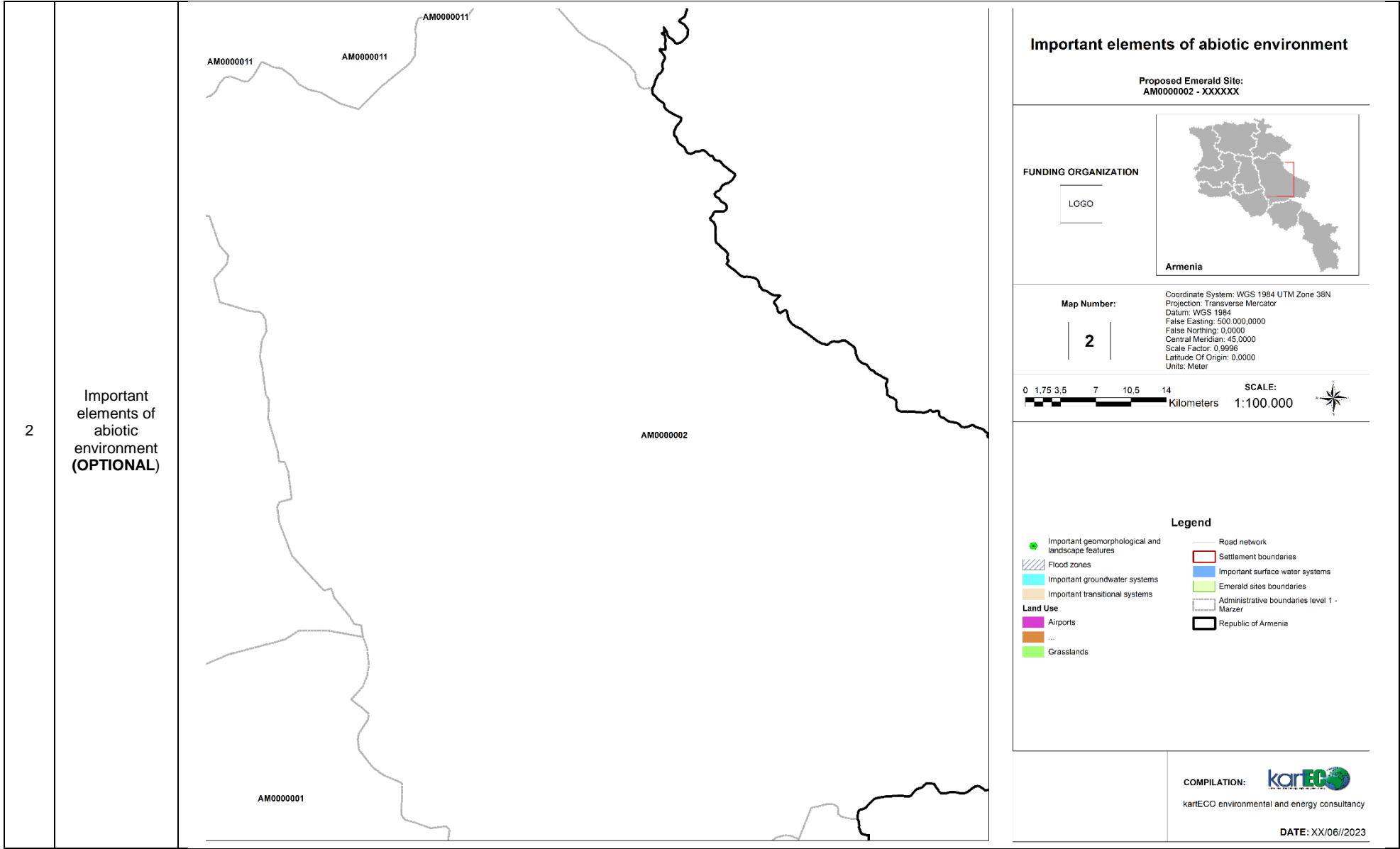
- Country borders
- Administrative borders (first level being Armenian provinces, or *marzer*)
- Emerald site boundaries
- Road network
- Important surface water systems
- Settlement boundaries

N	Map category	Map name	Map description	Map layers (indicative)
1	Introduction	Background environment / current situation	Spatial information regarding the background environment of the study area and the main characteristics of the abiotic and anthropogenic environment and activities.	<ul style="list-style-type: none"> <li>• Institutional regulations on spatial and urban planning characteristics</li> <li>• Land use coverage</li> <li>• Established protected areas, such as special protected natural areas</li> <li>• Cultural heritage features</li> <li>• Energy and transport infrastructure (polygon, polyline, and/or point features)</li> <li>• Other anthropogenic activities, such as touristic and industrial activities.</li> </ul>
2	Description of protected objects	Important elements of abiotic environment <b>(OPTIONAL)</b>	Visualization of the study area's abiotic environment, such as the hydrographic network, geomorphology, geology, and so on. <b>(OPTIONAL and ONLY IF they impact and are directly linked with a specific habitat of Resolution 4 or species of Resolution 6).</b>	<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>
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 the revised Annex I of Resolutions 4 and 6 of the Bern Convention.	<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. This includes the fauna species listed in revised Annex I of Resolution 6 (1998) of the Bern Convention and important species in the Red Book of Plants and Animals of the Republic of Armenia 2010.	<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 in the Red Book of Plants and Animals of the Republic of Armenia 2010</li> <li>• Land use coverage.</li> </ul>
5		Habitats and populations of important avifauna species of	Distribution range of important avifauna found in the Emerald site. This includes the avifauna species listed in revised Annex I of Resolution 6 (1998) of the Bern Convention and	<ul style="list-style-type: none"> <li>• Distribution of most important (red-listed, sensitive) avian species.</li> </ul>

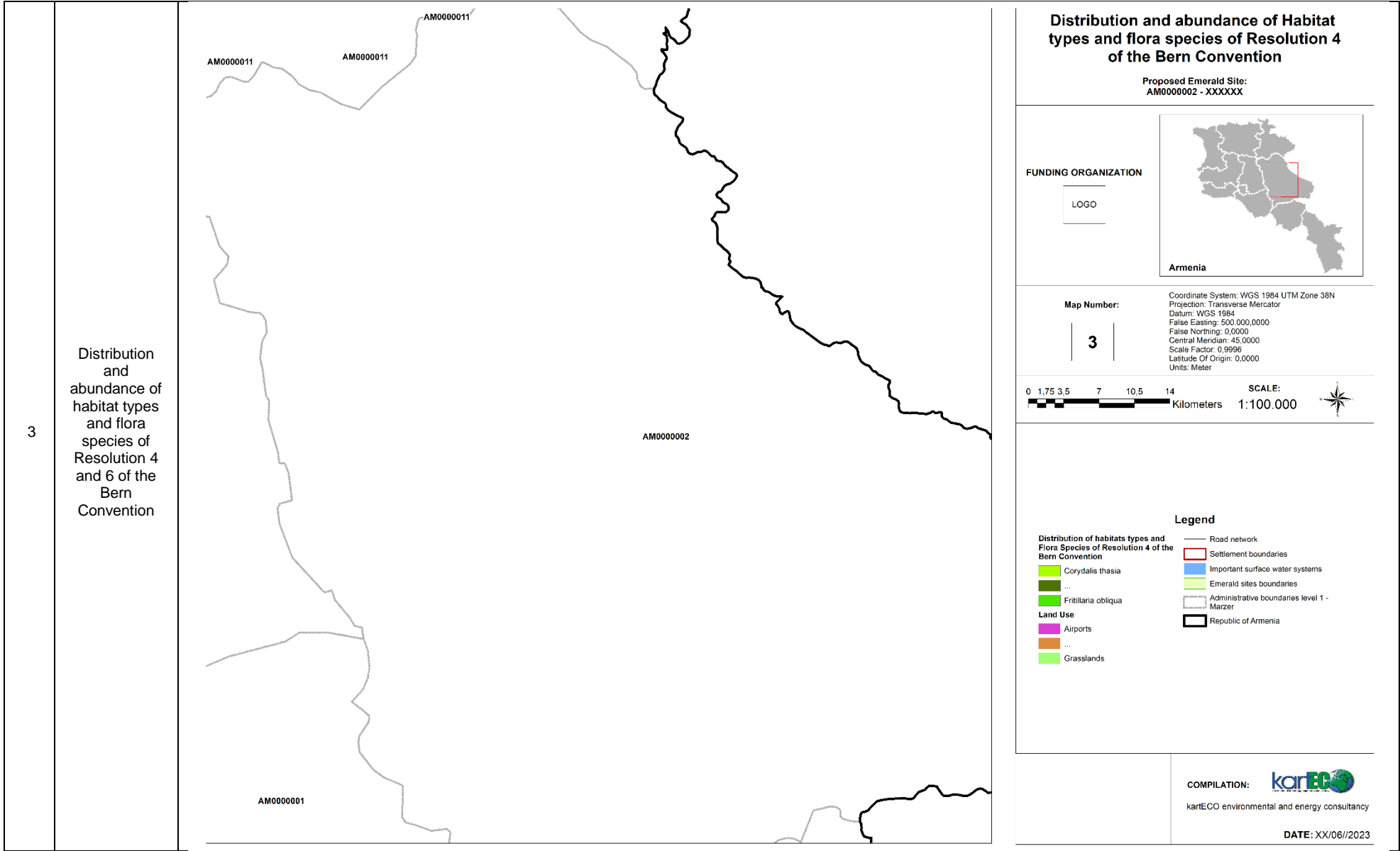
		Resolution 6 of the Bern Convention	important species in the Red Book of Plants and Animals of the Republic of Armenia 2010).	
6		Pressures/threats to protected objects	Areas where identified activities pressure, or could pose a threat to, the protected objects/features of the study areas in the future.	<ul style="list-style-type: none"> <li>• Threats to protected objects</li> <li>• Pressures on protected objects.</li> </ul>
7		Demarcation of protected objects <b>(OPTIONAL)</b>	Illustrated 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.	<ul style="list-style-type: none"> <li>• Established protected areas, such as special protected natural areas</li> <li>• Ecological corridors</li> <li>• Regional protection zones</li> <li>• Proposed protected areas other than Emerald sites.</li> </ul>
8	Management of Emerald site and protected objects	Management measures	Mapped areas for the implementation of management measures presented in the Emerald management plan.	<ul style="list-style-type: none"> <li>• Proposed management measures.</li> </ul>

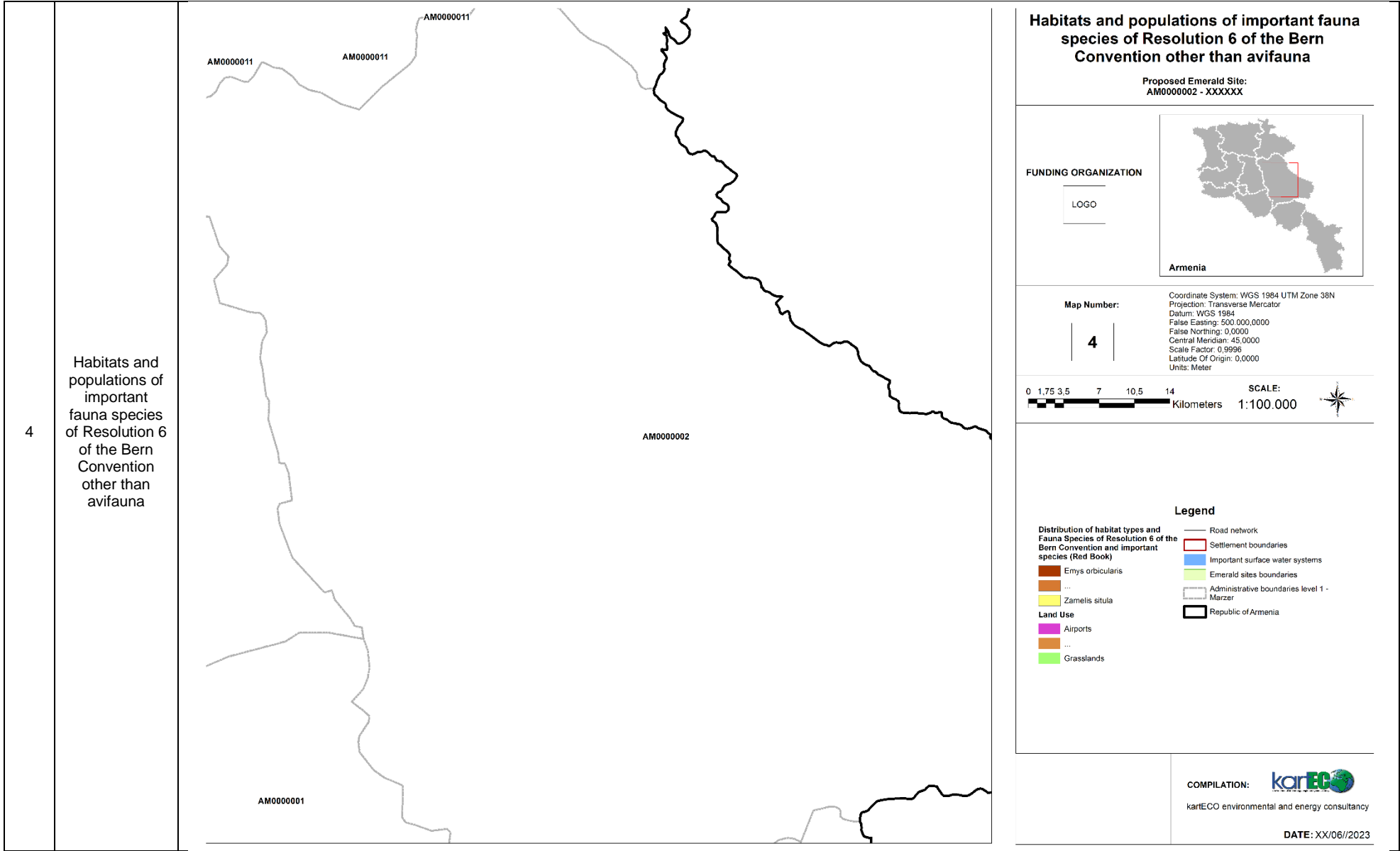
## Annex B: Thematic maps examples (demonstration maps in Shapefiles)





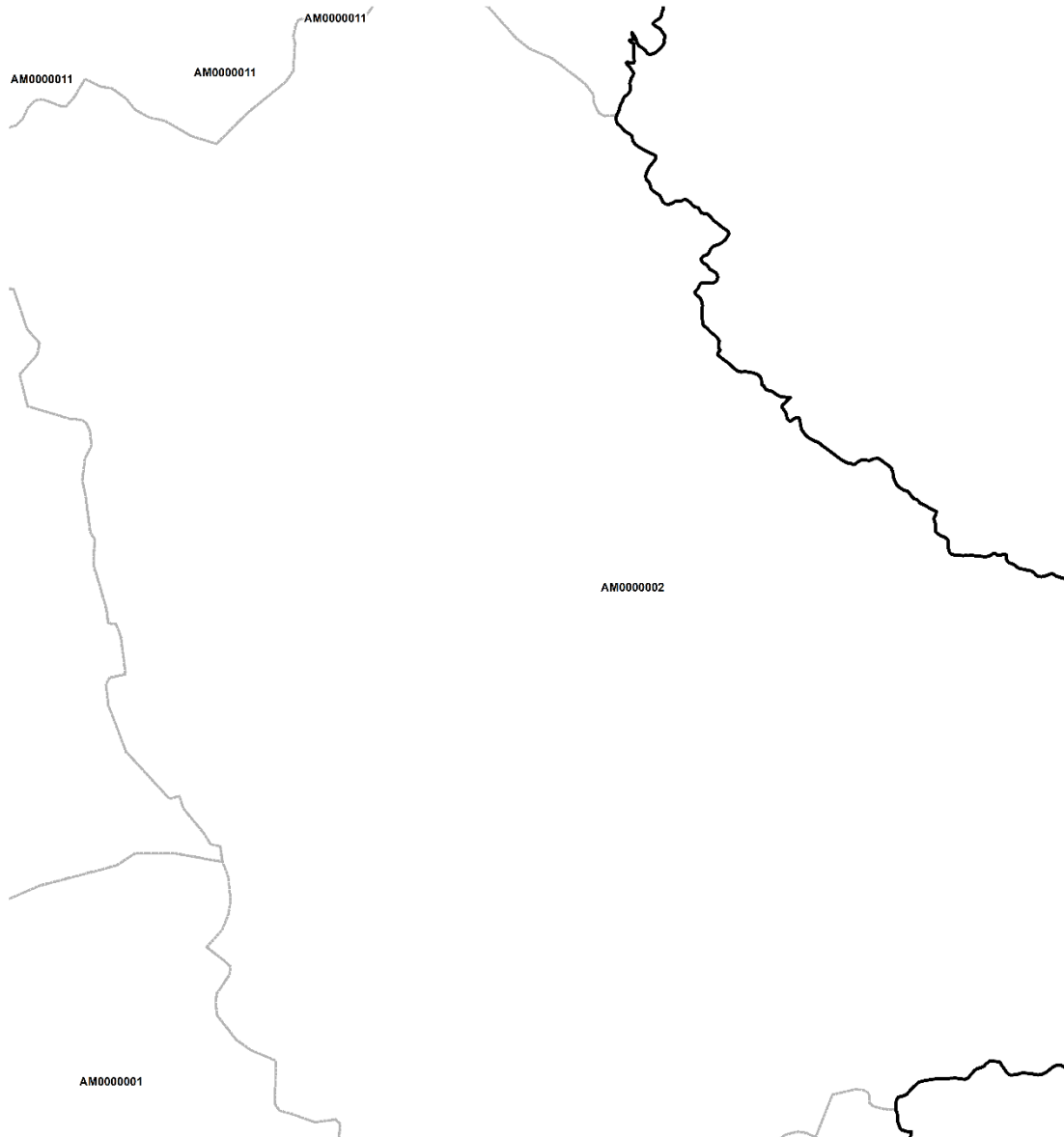






5

Habitats and  
populations of  
important  
avifauna  
species of  
Resolution 6 of  
the Bern  
Convention

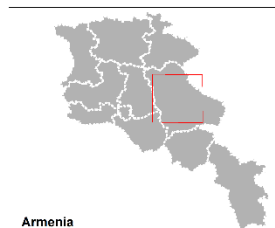


## Habitats and populations of important avifauna species of Resolution 6 of the Bern Convention

Proposed Emerald Site:  
AM0000002 - XXXXXX

FUNDING ORGANIZATION

LOGO



Armenia

Map Number:

5

Coordinate System: WGS 1984 UTM Zone 38N  
Projection: Transverse Mercator  
Datum: WGS 1984  
False Easting: 500,000,000  
False Northing: 0,000  
Central Meridian: 45,000  
Scale Factor: 0,9996  
Latitude Of Origin: 0,000  
Units: Meter

0 1,75 3,5 7 10,5 14  
Kilometers

SCALE:  
1:100,000



### Legend

Distribution of most important (red-listed, sensitive) avian species listed in revised Annex I of Resolution 6

Aquila fasciata  
...  
Falco peregrinus

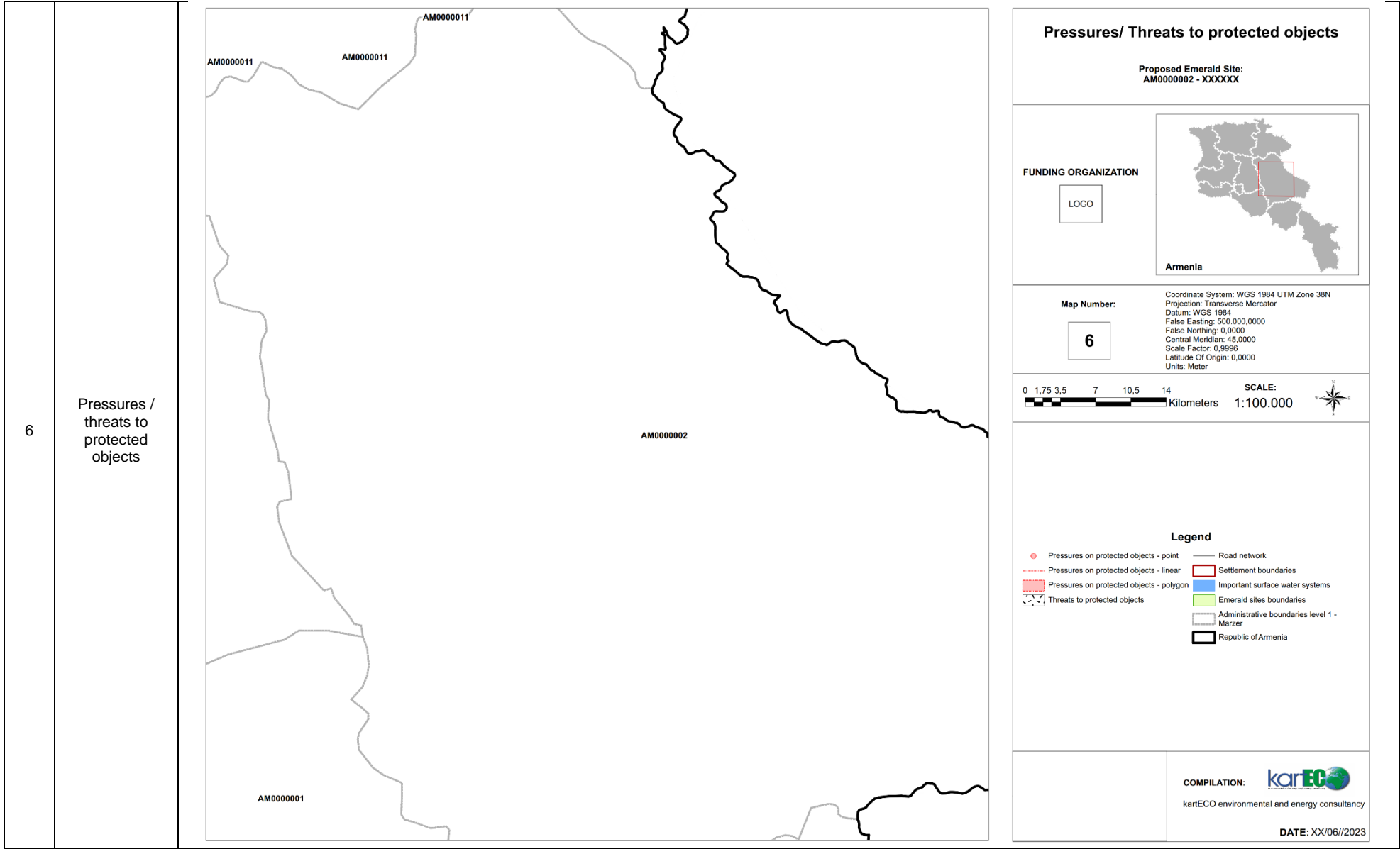
Road network  
Settlement boundaries  
Important surface water systems  
Emerald sites boundaries  
Administrative boundaries level 1 - Marzer  
Republic of Armenia

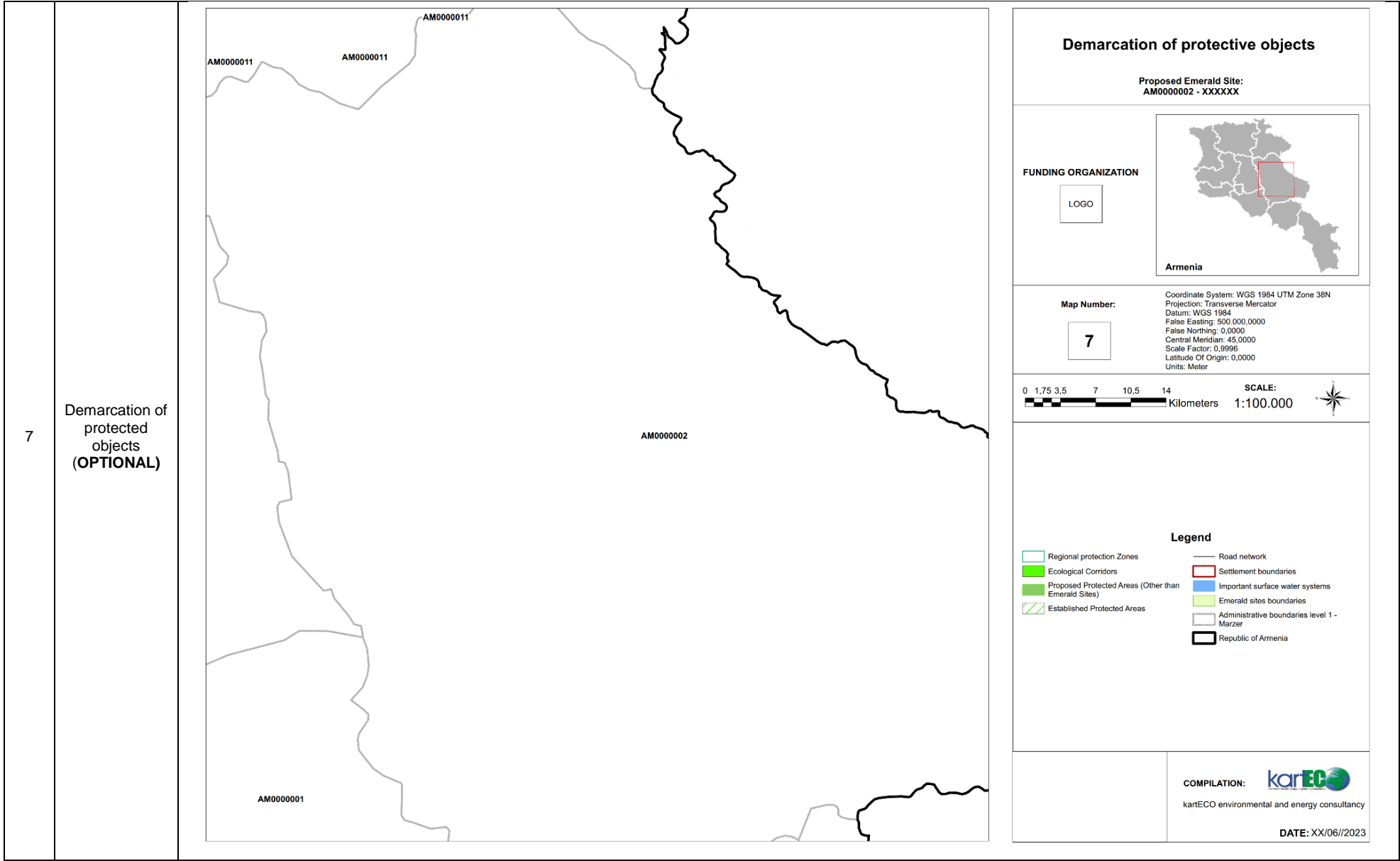
COMPILATION:

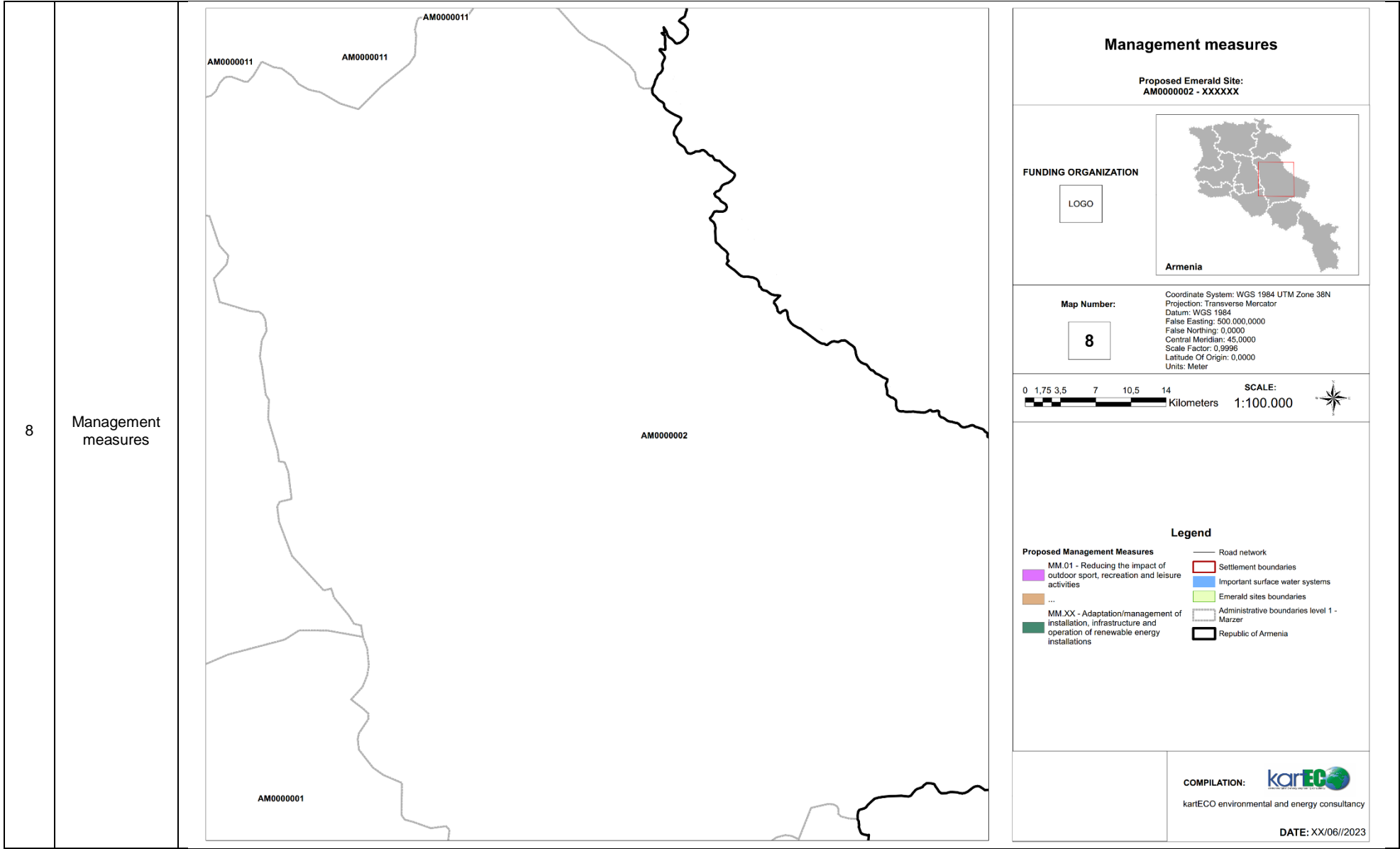


kartECO environmental and energy consultancy

DATE: XX/06/2023









## Annex C: Example of an action plan framework to allocate activities per year

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			

## Guidelines for Developing Management Plans for Emerald Sites in Armenia

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"Guidelines for Developing Management Plans of Emerald Sites in Armenia" aim to support 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 and offers guidance for different scenarios, including sites within special protected natural areas, forest enterprises, 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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**Programme website:**

[www.eu4environment.org](http://www.eu4environment.org)

Action implemented by: