JASPERS approach to Appropriate Assessment for water, wastewater, floods, and disaster risk management projects

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This Guidance which includes examples from Member States is without prejudice to any action the EC takes on the quality of the transposition of the directives or their implementation.

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ABBREVIATIONS

AA	Appropriate Assessment
Birds Directive	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
BES	Biodiversity and ecosystem services
CC	Climate change
CBA	Cost-benefit analysis
CJEU	Court of Justice of the European Union
DNSH	Do No Significant Harm
DWTP	Drinking Water Treatment Plant
EC	European Commission
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EQS	Environmental Quality Standards
EU	European Union
FCS	Favourable Conservation Status
FS	Feasibility Study
GIS	Geographical Information Systems
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
IROPI	Imperative reasons of overriding public interest
MS	Member State
MP	Management Plan
NbS	Nature-based Solutions
NNL	No Net Loss
NPI	Net Positive Impact
P/P	Plans/Projects
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SCI	Site of Community Importance
SDF	Natura 2000 Standard Data Form
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SSCO	Site-specific conservation objective
TFEU	Treaty on the Functioning of the European Union
WFD	Water Framework Directive
WSS	Water Supply System
WWTP	Wastewater Treatment Plant
ZoI	Zone of Influence

1. BACKGROUND

1.1 Purpose and scope

The European Commission announced in 2019 The European Green Deal – a roadmap for making the EU sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all, with further movement toward carbon neutrality and green recovery. The European Green Deal provides a roadmap with actions to boost the efficient use of resources by moving to a clean, circular economy and stop climate change, revert biodiversity loss and cut pollution. Climate change and environmental degradation present an existential threat to Europe and the world. Biodiversity loss and the climate crisis are interdependent and they exacerbate each other.

Though the EU Nature Directives (Birds Directive and Habitats Directive) have already a long history since their adoption, there are still challenges in their implementation at the EU countries level. The EU Biodiversity Strategy 2030 adopted as part of Green Deal package aims the putting the EU back on way of biodiversity and ecosystems recovery.

One of the objectives of the EU Biodiversity Strategy 2030 is to strengthen the implementation of the EU Nature Directives through:

- effective management of all protected areas;
- definition of clear conservation objectives and measures;
- monitoring;
- implementation and enforcement.

Among others, the above needs to translate into projects compliant with the requirements of the EU Birds and Habitats Directives. In other words, projects should be made subject to assessments in line with Article 6(3) and (4) of the Habitats Directive in view of defined and compliant Site-Specific Conservation Objectives (SSCOs).

The purpose of this guidance is to help the Member States (MSs) to meet the challenges and strengthen their capacity for the Appropriate Assessment (AA) of projects, based on JASPERS experience and the guidelines published by the EC in the last years.

This document aims to support the AA process for projects for the development of water and wastewater infrastructure and projects for floods prevention and disaster risk management **(hereafter called "water-related projects")**.

1.2 Structure

This document does not intend to duplicate the guidance from the Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (Commission Notices C(2018)7621 and C(2021)6913). Instead, it adds value and provides examples and suggestions for how to approach the required tasks at each stage of the project life cycle. The guidance is structured in the following way:

- Section 1: Background;
- Section 2: Key concepts and conceptual framework;
- Section 3: Water-related projects;
- Section 4: AA stages;
- Section 5: Links with the WFD and the EIA;
- References and Annex.

1.3 Relevant regulations, directives and Commission guidance

The **Birds Directive** is one of the oldest pieces of EU legislation on the environment and one of its cornerstones. Concerned with the decline of wild bird species, Member States unanimously adopted the Directive 79/409/EEC in April 1979. The Directive also brought a new dimension to wildlife conservation, based on the protection and management of habitats as well as species. Until then most initiatives tended to focus on the conservation of a few iconic species. Yet, it was becoming increasingly evident that, in order to save a species, one also had to conserve its habitat[1]. Consolidated in 2009, it became Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. Habitat loss and degradation are the most serious threats to the conservation of wild birds. The Directive therefore places great emphasis on the protection of habitats for endangered and migratory species. It establishes a network of Special Protection Areas (SPAs) including all the most suitable territories for these species. Since 1994, all SPAs are included in the Natura 2000 ecological network, set up under the **Habitats Directive**.

Adopted in 1992, the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right. It forms the core of Europe's nature conservation policy with the Birds Directive and establishes the EU wide **Natura 2000 ecological network of protected areas**, safeguarded against potentially damaging developments[2].

SACs, SCIs and SPAs are all collectively referred to as Natura 2000 sites. SPAs are Natura 2000 sites that have been designated under the Birds Directive while SCIs and SACs are sites designated under the Habitats Directive. An SCI and SAC concern the same site. The only distinction between the two is in their level of protection. SCIs are sites that have been officially adopted by the European Commission

[1] European Commission, Directorate-General for Environment, *The Birds Directive: 40 years of conserving our shared natural heritage*, Publications Office, 2019, https://data.europa.eu/doi/10.2779/622146
[2] The Habitats Directive - Environment - European Commission (europa.eu)

and are therefore subject to the protection provisions or Article 6(2), 6(3) and 6(4). SACs are SCIs that have been designated by the Member States through a legal act and for which the necessary conservation objectives and measures are applied to ensure the conservation of the species and habitat types of EU importance present[3].

The Habitats Directive sets out the need for the **Appropriate Assessment**, as an instrument for legal protection.

Article 6(3) and (4) of the Habitats Directive sets out the stages of the AA for plans or projects that are likely to have impacts on Natura 2000 sites, following three main stages: screening, appropriate assessment, derogation from Article 6(3) under certain conditions (Article 6(4)).

In order to provide methodological guidance on the application of Article 6(3) and (4) of the Habitats Directive, the EC published in 2021 the revised Guidance on **Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC** (EN.pdf (europa.eu)). The guidance is intended to assist authorities and national agencies in the MSs and in candidate countries, as well as developers, consultants, site managers, practitioners and other stakeholders in the application of obligations stemming from these provisions.

This document must be read in conjunction with the EU Birds and Habitats Directives and with the advice set out in the **Commission notice C(2018) 7621 Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC** (EN_art_6_guide_jun_2019.pdf (europa.eu)).

In addition, the available EC guidance and the Directive should be read together with the case-law developed by the Court of Justice of EU (CJEU), which is the EU institution having the power to provide legally-binding interpretation of EU law (CURIA - Home - Court of Justice of the European Union (europa.eu)).

[3] Source: F.A.Q. - Environment - European Commission (europa.eu)

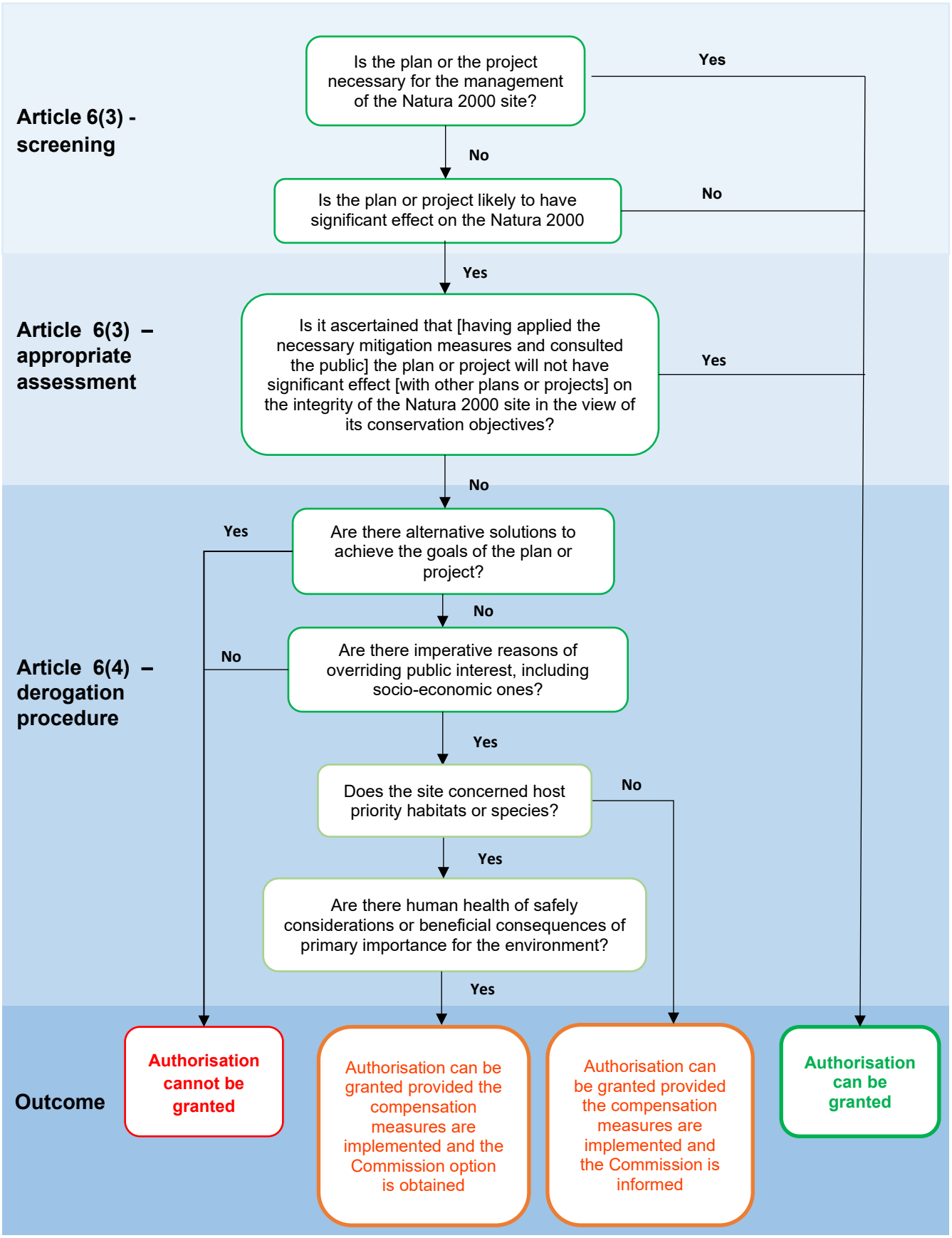


Figure 1 The three stages of the Article 6(3) and (4) procedure for assessing plans and projects in relation to the Natura 2000 sites (Source: Commission notice C(2021)6913)

Further Guidance:

Commission notice C(2021)6913, 28.09.2021. Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC

Commission Notice C(2018) 7621 final, Brussels, 21.11.2018. Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2002

Link between impacts on habitats/species and climate - EC Guidance document on Climate change and Natura 2000: Guidelines on climate change and Natura 2000 - Publications Office of the EU (europa.eu)

EIA Directive. https://ec.europa.eu/environment/eia/eia-legalcontext.htm

EC Guidance (2013). Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment

2. KEY CONCEPTS AND CONCEPTUAL FRAMEWORK

2.1 Interpretation of key concepts

Article 6(3) and (4) of the Habitats Directive are governing the **Appropriate Assessment (AA) procedure**, stating the following:

"(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

Table 1 Terms and definitions

Term	Definition
Appropriate Assessment	In compliance with Article 6(3) of the Habitats Directive, the purpose of the AA is to assess the implications of the plans and projects (not directly connected to the management of the site) against the site's conservation objectives, either individually or in combination with other plans or projects. If likely significant effects cannot be excluded in the screening stage, the next stage of the procedure involves assessing the impact of the project (either alone or in combination with other plans or projects) against the site's conservation objectives and ascertaining whether it will affect the integrity of the Natura 2000 site, taking into account any mitigation measures. The focus of the AA is therefore specifically on the species and/or the habitats for which the Natura 2000 site is designated. The conclusions should enable the competent authorities to ascertain whether the project will adversely affect the integrity of the site concerned. It will be for the competent authorities to decide whether or not to approve the project in light of the findings of the AA. The purpose of the appropriate assessment is to assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in combination with other plans or projects. The conclusions should enable the competent authorities to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus of the appropriate assessment is therefore specifically on the species and/or the habitats for which the Natura 2000 site is designated[4].
AA Step-by-step process	The AA, set out in Article 6(3) and (4) of the Habitats Directive, is a process performed in several steps which are logically connected and follow one after the other: 1. Under Article 6(3) of the Habitats Directive: i) identification of the Natura 2000 sites likely to be affected by the project; ii) identification of the habitats and species likely to be affected by the project; iii) identification of the impacts at the level of each parameter defined for the conservation objectives of the habitats and species; iv) assessment of the cumulative impact;

[4] https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_._nov_2018_endocx.pdf

Term	Definition
	v) quantification of impacts generated by all project's interventions and during the entire lifetime of the project, considering the in-combination impacts (where the case); vi) assessment of imacts' significance; vii) proposal of mitigation (prevention, avoidance and reduction) measures for the assessed impacts and of a monitoring programme for their implementation; 2. Under Article 6(4) of the Habitats Directive for plans and projects with adverse impacts on the integrity of Natura 2000 sites: i) identification of alternative solutions (if the significant impact cannot be avoided or mitigated); ii) assessment of the identified alternatives, following the same methodology as for the initial assessment; iii) identification of compensatory measures (if the residual impact is significant and no alternative solutions can be identified).
Alternatives	Different ways of carrying out a project in order to meet the agreed objective. Alternatives can take diverse forms and may range from minor adjustments to the project, to a complete reimagining of the project.
Assessment based on the opinion of multiple experts	Involvement of multiple experts (with different field of expertise regarding taxonomic groups or analysed pressures) is beneficial for the AA process. These can be members of the team preparing the assessment or can be only consulted. Consultations can take place at any time during the assessment process. Consultations with experts can significantly reduce subjectivity in the assessment.
Assessment of impact significance	Impact significance is assessed at the level of each parameter (of the SSCOs) likely to be affected and for each habitat and species of Community interest. The likely significant impacts can occur as a result of activities located inside or outside the Natura 2000 site, or as a result of cumulation with other plans or projects which affect the same parameter of the specific SSCOs. The analysis of impact significance must use a precautionary approach, which requires that the emphasis is on demonstrating the absence of adverse effects rather than their presence.
Case-by-case assessment	There are no two identical AAs. The information sources for the assessment of impact significance include proofs from similar interventions which can affect sites designated for the protection of similar components, which are in a similar state from the conservation point of view, or sites with similar conservation objectives, as well as the opinion of the expert, based on the available information. However, considering that each case is different, it is necessary to consider the local circumstances. Therefore, the assessment should always be done case by case.

Term	Definition
	Quantification of the effects and impacts. Taking into consideration that SSCOs should include quantified targets, **the assessment of the impact on these objectives should be done with quantification**. Quantification of the effects and impacts is necessary to ensure the credibility of the conclusions of the assessment. The quantifications performed must be based on the best available practices in the field, take into account the most recent data and information, be verifiable and use solutions that are adequate to the aspects necessary to be assessed.
Conservation status of a natural habitat	The sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2 of the Habitats Directive (Article 1(e) of the Habitats Directive).
Conservation status of a species	The sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2 of the Habitats Directive (Article 1(i) of the Habitats Directive).
Habitat of a species	An environment defined by specific abiotic and biotic factors, in which the species lives at any stage of its biological cycle.
Natural habitats	Terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural.
Precautionary principle	The precautionary principle enables decision-makers to adopt precautionary measures when scientific evidence about an environmental or human health hazard is uncertain and the stakes are high. At the European level, the precautionary principle was enshrined in the Maastricht Treaty in 1992. It is now included in Article 191 of the Treaty on the Functioning of the European Union (TFEU) among the principles underpinning EU environmental policy. According to the EU Court of Justice, "the precautionary principle can be defined as a general principle of Community law requiring the competent authorities to take appropriate measures to prevent specific potential risks to public health, safety and the environment, by giving precedence to the requirements related to the protection of those interests over economic interests"[5]. "Competent authorities" refers to European institutions involved in preparing and applying secondary legislation, as well as Member States when acting within the scope of EU law.
Precautionary approach	As emphasised in the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, *"the Habitats Directive is based on the precautionary principle, which*

[5] Judgment in the case of Artegodan v. Commission of 26 November 2002 (T-74/00), paragraph 184

Term	Definition
	implies that the absence of scientific evidence on the significant negative effect of an action cannot be used as justification for approval of this action. When applied to Article 6(3) procedure, the precautionary principle implies that the absence of a negative effect on Natura 2000 sites has to be demonstrated before a plan or project can be authorised. *In other words, if there is a lack of certainty as to whether there will be any negative effects, then the plan or project cannot be approved. In practical terms, this means that the burden of proof lies with the plan or project developer to demonstrate - and for the competent authority to confirm – without reasonable doubt that:* • *In stage 1 (screening) – likely significant effects can be excluded; or* • *In stage 2 (appropriate assessment) – adverse effects on the integrity of a Natura 2000 site can be excluded."* The burden of proof lies on the competent authorities which should ascertain that the project shall not have significant impacts on the conservation objectives (AA screening) and adversely affect the integrity of a Natura 2000 site (full AA). The burden of proof thus concerns the absence of harmful effects rather than their occurrence, which reflects the precautionary principle. It follows that the AA must be sufficiently detailed and justified to demonstrate the absence of adverse effects in the light of the best available scientific knowledge in the field[6]. This is, therefore, a high priority for a safe professional basis.
Screening	It represents the first part of the procedure consisting of a pre-assessment stage to ascertain whether the project is directly connected with, or necessary to, the management of a Natura 2000 site, and, if this is not the case, then whether it is likely to have a significant effect on Natura 2000 sites (either alone or in combination with other plans or projects) in view of the site's conservation objectives. This stage is governed by the first sentence of Article 6(3) of the Habitats Directive.
Site of Community Importance (SCI)	Article 1(k) of the Habitats Directive: a site which, in the biogeographical region or regions to which it belongs, contributes significantly to the maintenance or restoration at a favourable conservation status of a natural habitat type in Annex I or of a species in Annex II and may also contribute significantly to the coherence of Natura 2000 referred to in Article 3 of the Habitats Directive, and/or contributes significantly to the maintenance of biological diversity within the biogeographic region or regions concerned. For animal species ranging over wide areas, sites of Community importance shall correspond to the places within the natural range of such species which present the physical or biological factors essential to their life and reproduction.

[6] The application of the precautionary principle is confirmed by the Court of Justice of the EU: Judgement on Case C-127/02, paragraphs 57-61

Term	Definition
Site-specific conservation objectives (SSCOs)	The site-level specification of the conservation target to be achieved for a species or a habitat type for which a site is designated, in order for the site to contribute to maintaining or reaching favourable conservation status (FCS) of the habitats and species concerned, at national, biogeographical or EU level[7].
Site integrity	According to the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, the "integrity of the site" can be usefully defined as *the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated*. The integrity of a site thus relates to the site's conservation objectives, its key natural features, ecological structure and function. It also concerns the main ecological processes and factors that sustain the long-term presence of the species and habitats in a Natura 2000 site.
Special Area of Conservation (SAC)	Article 1(m) of the Habitats Directive: a site of Community importance designated by the Member States through a statutory, administrative and/or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated.
Special Protection Area (SPA)	A site selected to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, or certain regularly occurring migratory species[8,9].

[7] Slide 1 (europa.eu)
[8] Overview of the EU Nature Law and Policy (europa.eu)
[9] Special Protection Areas (SPAs) | NatureScot

2.2 Conceptual framework

The general conceptual framework proposed in this approach to the AA process is based on the investigation of **cause-effects-impacts relationships**, generated by the proposal of a project. A schematic representation of the conceptual framework can be found in Figure 2.

The conceptual framework proposes a differentiation between the concept of "**effect**" and that of "**impact**". For the needs of this document:

- the **effects** refer to the changes caused to the physical environment as a direct consequence of the causes (interventions/activities) generated by the project (during all its life-stage). The effects mainly include: modification of topography, modification of edaphic conditions, modification of hydrological flows, emissions of pollutants, waste, etc.

- the **impacts** include, at structural level or at functional level, changes at the level of the sensitive receptors, respectively of the Natura 2000 habitats and species for which protection the Natura 2000 were designated.

The forms of impact considered in the appropriate assessment are:

- Habitat **loss**: reduction of habitat coverage as a result of its physical destruction (e.g., due to its removal or to the deposition of construction materials or sediments); loss of breeding, foraging, resting areas for species;

- Habitats **alteration/degradation**: deterioration of habitat quality, leading to a reduced abundance of characteristic species or an altered community structure (species composition). This can be caused by changes in abiotic conditions (e.g., water levels or an increase in suspended sediments, pollutants or dust deposition); deterioration of breeding, foraging, resting areas for species;

- Habitats **fragmentation**: an alteration of distribution patches of relevant habitats and species, e.g., through the creation physical or ecological barriers in areas that are physically of functionally connected, or splitting them into smaller more isolated units;

- **Disturbance** of species activity: a change in existing environmental conditions (e.g., increased noise or light pollution, a greater frequentation of people and vehicles). Disturbance may cause, inter alia, the displacement of species individuals and changes in species behaviour;

- **Reduction of population size**: this form of impact can be generated both directly, as a result of direct mortality of individuals of fauna species (e.g., due to the collision with traffic or due to some structures that can be traps for some species of fauna, due to modification of the oxygen regime in the water), and indirectly, as a result of all the above forms of impacts (e.g., the direct loss of habitat for a species leads to the reduction of the total favourable habitat and, as a consequence, the capacity of the habitat to sustain the same population size is lost). For the sake of clarify this form of impact is presented separately from the disturbance of species.

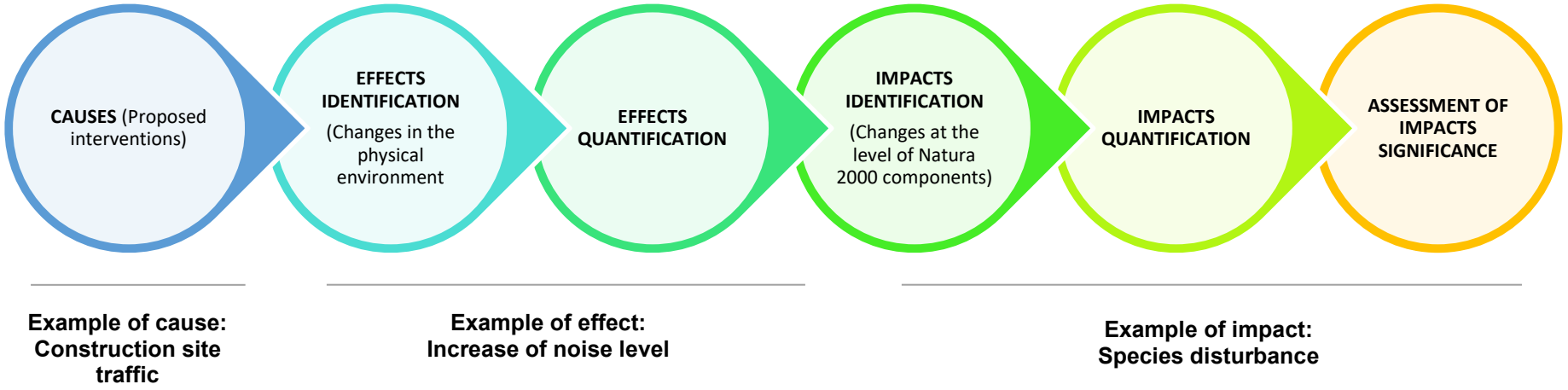


Figure 2 The general conceptual framework proposed for the AA screening and for the full AA

3. WATER-RELATED PROJECTS

3.1 Life cycle of a water-related project

As presented in Section 1.1 above, this approach is prepared for **water-related projects**:

- for the development of water and wastewater infrastructure (water/wastewater projects);
- projects for floods prevention and disaster risk management.

Such projects are usually complex ones, which need significant period for preparation and implementation.

The development of a water-related project usually undergoes the following six life cycle stages:

1. identification and assessment of the needs and prioritisation (done at strategy or master plan level);
2. conceptual designs and feasibility study;
3. design and action planning;
4. implementation;
5. operation and maintenance;
6. decommissioning or rehabilitation.

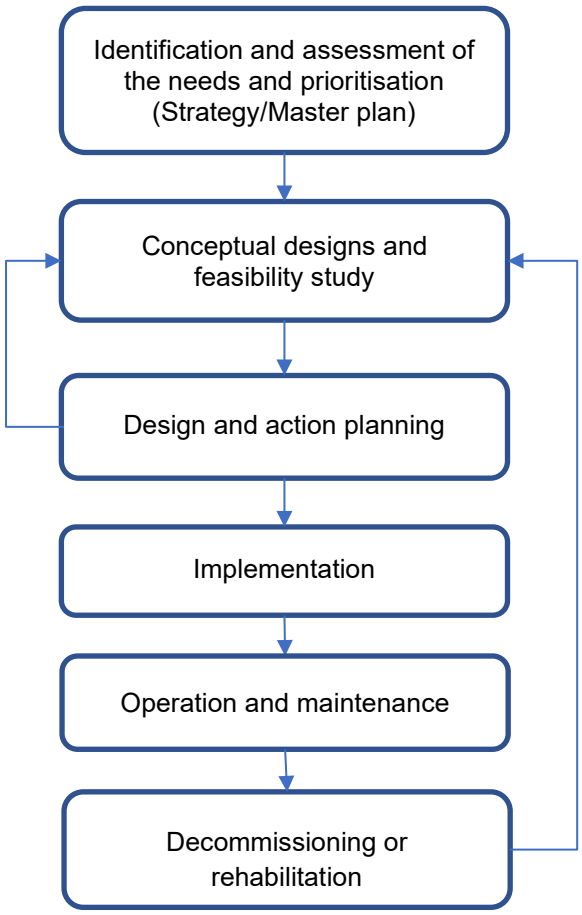


Figure 3 Life cycle stages of a water-related project

Examples of tasks that are performed during the life stages of the project are presented in Table 1.

Approximate typical durations of water-related projects life stages are illustrated in Figure 4.

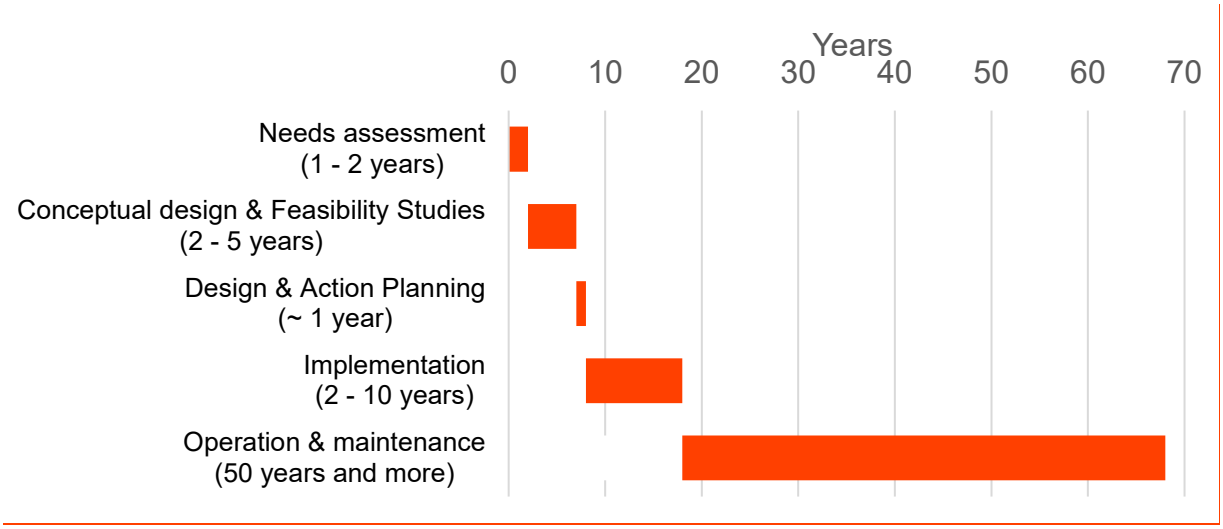


Figure 4 Approximate typical duration of water-related projects life stages

Environmental aspects and constraints, including the relation to the Natura 2000 network, need to be integrated in all projects' life stages, with particular attention on the planning and feasibility stages.

Table 2 Examples of tasks that are performed during the life stages of the project

Identification and assessment on the needs (strategic level)	Conceptual designs and feasibility study	Design and action planning	Implementation	Operation and maintenance	Decommissioning or rehabilitation
• Determining the demand for services (water/ wastewater projects) • Identification of areas with flood risks (flood prevention) • Gathering information on social, environmental, cultural, economic, technical constraints (literature review, site visits, modelling, interviews, etc) • Strategic planning • Stakeholders engagement	• Detailed analysis of the baseline situation • Consideration of parameters for system operation and maintenance • Performing field studies and investigations • Consideration of multiple options for design • Option analysis (technical, environmental including climate change, social, economic criteria) • Selection of the most appropriate options • Cost-benefit analysis • Permitting of the project (in line with the applicable environmental legislation)	• Finalisation and detailing of the chosen options • Revision of permitting (if changes occur compared to the Feasibility study) • Detailed costs estimations of the project components • Elaboration of the Technical specifications and Terms of reference for tendering • Preparation of the action plan for the project implementation • Procurement procedures	• Procurement procedures • Site preparation • Construction activities • Monitoring of the construction activities (including environmental monitoring) • Technical testing	• Daily operation of the systems • Routine maintenance • Breakdowns/ accidents and interventions in case of breakdowns/ accidents • Monitoring of the activities (including environmental monitoring) • Adaptative management	• Tasks for Feasibility study of rehabilitation • Tasks for detail design of rehabilitation • Procurement • Demolition or rehabilitation activities • Site rehabilitation • Monitoring (including environmental monitoring)

3.2 Critical analysis of the project

The presentation of the analysed project is important for ensuring a good understanding of the components and interventions proposed through it. The description must present in a very clear way all the components and interventions of the project that have any connection with the Natura 2000 sites, even if this is an indirect one.

Several aspects considered important in relation to projects for the development of water and wastewater infrastructure, as well as for floods prevention projects, which needs to be considered in the AA screening reports, AA reports and EIA reports, are:

- The description of the project has to cover all the stages of the project: construction/execution, operation and decommissioning;
- The description of the project has to include all types of interventions proposed by the project, including, for example, the demolition works necessary in order to implement the project (where the case);
- The description of the project has to include all the information necessary for the impact assessment, like:
    - Projects for the development of water and wastewater infrastructure: the width of the trenches for positioning of the water and wastewater pipelines (and not only the location of the pipelines axis), the width of the working corridors for positioning of the water and wastewater pipelines, the depth of the proposed water wells, the depth of the existing water wells, existing surface water sources, proposed surface water sources and their type and technical details (e.g., transversal barrier or not), locations of the WWTPs, their discharge pipelines and discharge points, works necessary for the discharge point construction (e.g., bank stabilisation and protection), etc. The AA for the project should cover the entire cycle: from the abstraction of raw waters to the discharge of the treated effluent and the management of the sludge;
    - Floods prevention projects: technical characteristics of the proposed dikes (type of materials, length, height, occupied area), description of the works necessary in the river bed and on the banks (e.g., banks protections, regularisation/channelling of the river, maintenance of river channels, dredging), necessary works at existing structures (e.g., the necessity of increase and enhance an existing bridge, relocation of existing buildings from the flood zone), creation of reservoirs, afforestation works, etc;
    - For Nature-based Solutions (NbS) to flood risk management, such as room for the river, floodplain restoration, leaky barriers, and catchment-based runoff measures, the description of the measures should include details on the natural processes that they restore, facilitate or maintain, as well as how they can contribute to the achievement of Natura 2000 SSCOs, management plans or enhance the connectivity to the Natura 2000 network if located outside of Natura 2000 site boundaries;
- In the case of projects for the development of water and wastewater infrastructure, the solutions adopted for the sewage sludge management should be clearly presented in the AA screening report and in the AA report and assessed in relation to Natura 2000 sites, as this component is an integral part of the project. If the chosen solution is the spread on agricultural fields and the locations of these fields are known, these locations need to be presented and further assessed within the AA screening report and the AA report;

- When presenting information regarding the connection to the existing infrastructure, the AA screening report and the AA report should clearly present the auxiliary works necessary for the project, like access roads and power supply. This information is needed especially for the new facilities, such as those located outside the inhabited areas of the localities or in areas without existing infrastructure (e.g., the sites of the new WWTPs). Quantification of these works should be provided (e.g., approximate length and location of new aerial power lines). Such components have to be considered when identifying the Natura 2000 sites likely to be affected by the project and the assessment of their impacts has to be considered in the AA screening report and in the AA report;

- The AA screening report and the AA report should avoid duplications between different chapters when describing the entire life cycle of the project., as this poses risks of mistakes and inconsistencies. It is, therefore, recommended to provide the information once and then where necessary refer to it in other parts of the reports.

The correct and complete description of the project's works/interventions and activities during all its stages allows a complete identification of the effects generated by the project and then of the impacts on Natura 2000 habitats and species.

The project description must also present the coherence with planning documents and, where the case, with the SEA procedure performed at the strategy/plan/programme level. If the SEA procedure has led to the proposal of prevention, avoidance and mitigation measures, which have to be implemented at the projects' level, the description has to present how these measures where respected or integrated into the analysed project.

4. AA STAGES

4.1 AA Screening for water-related projects

4.1.1 Identification of Natura 2000 sites likely to be affected by the projects

The identification of Natura 2000 sites likely to be affected by a project is a key step in the AA process.

This step has to take in consideration four criteria, in line with the recommendations of the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC:

1. Natura 2000 sites **intersected by the project**;

2. Natura 2000 sites within the **likely Zone of Influence (ZoI) of the project**, as well as Natura 2000 sites located in the surroundings of the project (or at some distance) that could still be affected by aspects of the project, including as regards the use of natural resources (e.g., water) and various types of waste, discharge or emissions of substances or energy;

3. Natura 2000 sites in the surroundings of the project (or at some distance) which host **fauna that can move to the project area**;

4. Natura 2000 sites whose **connectivity or ecological continuity** can be affected by the project.

4.1.1.1 Identification of the Natura 2000 sites intersected by the project

The analysis is carried out on the basis of the available information regarding the project' interventions:

Table 3 Types of projects and non-exhaustive list of components

Type of project	Examples for interventions
For water/wastewater projects	• route of the pipelines (main trunks, drinking water distribution, sewer pipes and collectors, etc.)
	• locations of water sources
	• water storage facilities
	• location of DWTPs, WWTPs, pumping stations
	• location of points of discharge of the treated effluent
	• other objectives/interventions (including auxiliary works), etc.
For floods protection projects	• location of the new/rehabilitated dikes
	• location of the bank protection works
	• location of the regularisation/channelling works
	• location of floodplain restoration areas
	• location of flood storage areas
	• location of structures required for operation of flood risk management infrastructure;
	• location of areas where afforestation is proposed, etc.

A precautionary approach must be used in cases where, in the screening phase, only the routes of the pipelines are precisely known, represented by lines. In this case, the analysis will take into account a width of the trenches and working corridors large enough to include the final configuration of the project, as well as the additional land that will be affected during the construction stage (e.g., areas for temporary storage of soil, areas for temporary storage of materials and equipment, areas for temporary access). It is assumed that for the sites where the constructions are proposed, the limit of the sites will be available as a GIS polygon.

The main forms of impact considered here are the loss of habitats and the alteration/degradation of habitats both for Natura 2000 habitats and habitats of species of Community interest (including bird species). The experience shows that these impacts mainly occur during the construction works and during some maintenance/replacement temporary activities. In addition, the intersection of Natura 2000 sites generates disturbance of species activity, fragmentation, reduction of population size.

Water abstraction is an example of a project that may affect the conservation objectives of a Natura 2000 site, even if the project is carried out outside the Natura 2000 site as such an activity has the potential to change the hydrological conditions of a Natura 2000 site with natural habitats such as springs, or other surface and groundwater bodies.

4.1.1.2 Identification of the Natura 2000 sites within the likely zone of influence of the project

The zone of influence of the project will depend on its technical characteristics, its interventions and activities, during its entire life cycle, which determine the distances where effects may occur.

The ZoI (zone on direct influence) is the area where the effects generated by the project are felt, such as water pollutants, modifications of the water levels, noise, vibrations, atmospheric pollutants, artificial lighting, the dispersion of invasive species, and others. It also needs to be assessed if there are areas where effects generated by other activities may appear, activities modified as a result of the implementation of the analysed project, which represents the zone of indirect influence. For example, in a flood prevention project a new dyke is proposed, adjacent to an existing one. The construction of the new dyke requires the occupation of a surface on which there is currently a road. The relocation of the road will bring it closer to the natural habitats inside a Natura 2000 site. The area of effects associated with the cars traffic, on the future location of the road, represents the zone of indirect influence of the project.

The main forms of impact that can occur in the Natura 2000 sites located within the ZoI of a project are represented by the alteration of habitats (degradation of habitats) and/or the disturbance of species activity and/or fragmentation. Alteration of habitats can lead over time to secondary impacts, such as habitat loss or reduction of population size.

The ZoI can be defined spatially by one of the two options below:

1. **More precise determination**: through numerical modelling with the input and analysis of all the necessary data. The ZoI is thus determined by including all areas possibly affected by one or more of the effects generated by the project;

2. **Precautionary estimation** (when there are uncertainties regarding the spatial distribution of the effects): by using a set of minimum values for the pipelines' routes and any of the project locations, based on data from similar projects or from the scientific literature in the field. In this case, a precautionary approach has to be considered, in order to ensure that all the likely affected Natura 2000 sites are identified. When there are uncertainties related to the spatial extension of the effects of the project, it is necessary to adopt the most unfavourable situation and include in the subsequent stages of the assessment all Natura 2000 sites considered likely to be affected.

   The distances used in the analysis have to be justified and explained in the reports and supported by maps with an adequate quality. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a project can affect water flows, fish migration and so forth, even at a great distance. The analysis has to include up- and/or downstream effects.

   Special attention needs to be paid to the WWTPs discharges and their dispersion, correlated with the characteristics of the receiving water body. Emissions of pollutants may also have effects over a long distance. When discharges are in question, the assessment should consider both new WWTPs and existing WWTPs which will accept and treat larger volumes of wastewater due to newly connected consumers. The same approach should be considered for existing water sources, where it should be assessed if the additional planned water quantities may have impacts on protected habitat types and species for which Natura 2000 sites have been designated (if applicable). Therefore, the location of the surface and groundwater sources (new or extended through the project), that are going to supply the proposed investments, in relation to Natura 2000 sites should be considered when defining the list of the likely to be affected Natura 2000 sites.

In the case of flood protection projects, interventions such as dikes can generate an extended ZoI, which can be equal to the floodable area corresponding to the baseline conditions. This is due to the fact that the construction of the dikes will lead to the modification of the hydrological regime on this entire surface, potentially affecting the habitats/habitats of the species dependent on the natural flooding regime.

Attention must be paid to possible differences between the zone/zones of direct influence during construction, during operation or decommissioning stage of the project's life cycle. A precautionary approach involves the creation of a single ZoI, which includes the differences that appear in the different stages of the project.

4.1.1.3 Identification of the Natura 2000 sites which host species with mobility that can reach the area of the project

For this criterion, the aim is to identify all Natura 2000 sites that include fauna species, located at distances that allow them to reach the area of the project. These distances depend on the project locations and its characteristics and the ecological characteristics of the fauna species from the neighbouring Natura 2000 sites.

The main form of impact considered here is the reduction of the population size as a result of the increase in the mortality rate.

4.1.1.4 Identification of the Natura 2000 sites whose connectivity or ecological continuity can be affected by the project implementation

The analysis here aims to identify those Natura 2000 sites whose connectivity (within the site or to the rest of the Natura 2000 network) or ecological continuity can be interrupted by the appearance of barriers at the level of the ecological corridors. The main form of impact considered here is the fragmentation of Natura 2000 habitats and habitats of species of Community interest. The analysis covers all Natura 2000 sites, not only those where migratory species are protected.

Any possible change (structural or functional) in the ecological corridors (terrestrial or aquatic), generated by a water-related project, must lead to the selection of the Natura 2000 sites connected by them and their inclusion in the list of likely affected sites.

As a precautionary approach, all watercourses will be considered potential ecological corridors. For example, if the project will include interventions that propose transversal barriers of the watercourses (irrespective of their height), the list of likely affected sites will include all Natura 2000 sites that host fish species of Community interest, connected to the affected watercourse, located at distances of up to 30 km, upstream or downstream from the location of the project proposal. Depending on the characteristics of the physical barrier, other water-dependent species can be affected. This can occur both in the case of longitudinal and lateral interruption of connectivity. For example, a bank protection can interrupt the movement of amphibians between the aquatic and terrestrial habitats.

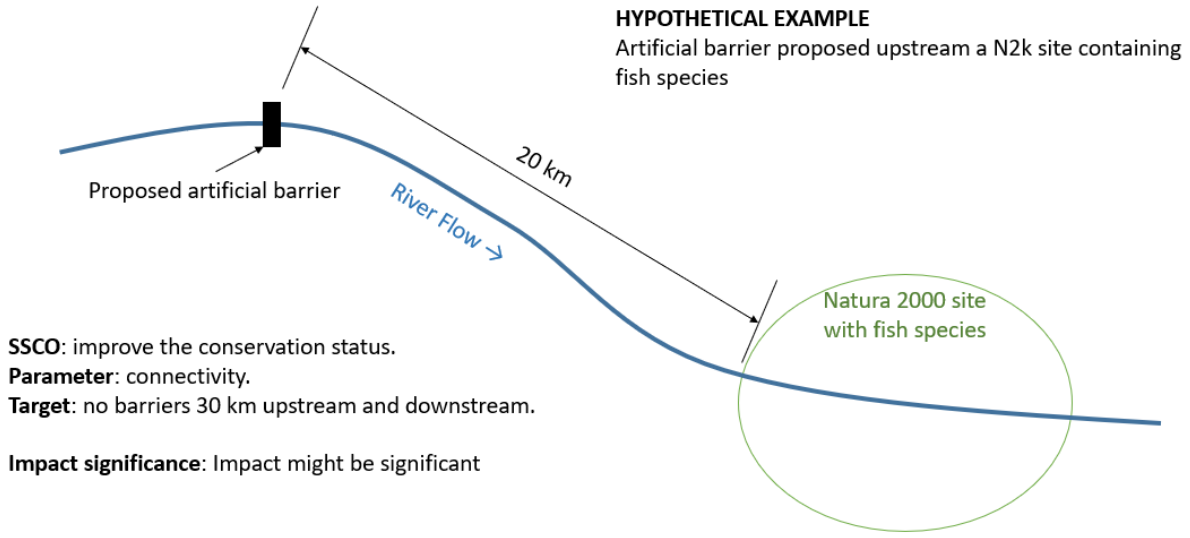


Figure 5 Schematic representation for the aquatic connectivity analysis

The analysis will also include the terrestrial ecological corridors existing in the project area. Depending on the project interventions, if these intersect the ecological corridors or may affect them, the list of likely affected Natura 2000 sites will include the sites connected (intersected) by the identified ecological corridors.

4.1.1.5 Summary of identifying Natura 2000 sites likely to be affected by the projects

The analysis for criteria 2, 3 and 4 must also consider the identification of Natura 2000 sites likely to be affected on the territory of the neighbouring countries (**transboundary impacts**).

The analysis for the identification of Natura 2000 sites likely to be affected by the project must be carried out with the help of **spatial analysis** (such as using GIS).

After going through the four analysis criteria, a unique list of Natura 2000 sites likely to be affected by the project is elaborated. The analysis and the final list of likely affected Natura 2000 sites has to be done in consultation with the competent authorities for environment protection and for the management of the Natura 2000 sites.

Depending on the details regarding the project, in the screening stage the analysis for the identification of Natura 2000 sites likely to be affected by the project can be carried out with a minimum set of data and information, such as: project location, Natura 2000 sites limits, water body limits and ecological corridors' location. In this case, the analysis should be revised in later stages of the appropriate assessment procedure as new data and information regarding the project, Natura 2000 site boundaries and/or ecological corridors become available.

4.1.2 Restrictions and limitations imposed by the management of Natura 2000 sites

According to Article 6(1) of the Habitats Directive, *"For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites".*

In the initial stages of the project preparation or at the latest at the screening stage, it is necessary to identify the restrictive measures included in the Management Plans (MP) and/or in normative and administrative acts for the Natura 2000 sites likely to be affected by the project implementation, which may lead to the modification of the project or its non-implementation in the proposed form. For some of the Natura 2000 sites, such documents may not be available. Early consultations with the authorities responsible for the management of the Natura 2000 sites are necessary in such cases in order to identify any potential restrictions and/or limitation for the project.

In the case of water-related projects, which are generally complex and include multiple components and built structures, the analysis will not be limited to the identification of restrictions that directly target these types of projects, but to the analysis of all the measures that could have connection with any of the interventions proposed by the project. For example, if for a Natura 2000 site a management measure stipulates that no structures will be built on water courses that lead to the interruption of longitudinal connectivity or lateral connectivity, the works proposed in the project will have to comply with these requirements and will be taken into account from the beginning in the design of technical solutions.

In order to ensure that the project complies with the measures included in the MPs or in the in normative and administrative acts of the Natura 2000 sites likely to be affected, the project beneficiary will carry out his own analysis of these measures during the design of the technical solutions/interventions for the execution, operation and, as the case may be, the decommissioning of the project and will demonstrate their compliance in the subsequent stages of the AA procedure.

The process of identification of restrictive measures and the adaptation of the project to these measures should be performed in consultation with the authorities responsible for the management of the Natura 2000 sites.

Additional guidance is provided in Section 5.2 of this document below.

4.1.3 Identification of habitats and species likely to be affected by the project in view of the Site-Specific Conservation Objectives (SSCOs) for Natura 2000 sites

4.1.3.1 What are SSCOs?

A **conservation objective** is the specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching Favourable Conservation Status (FCS), of the habitats and species concerned, at the national, the biogeographical or the European level.

Site-level conservation objectives are a set of specified objectives and define the condition to be achieved by species and habitat types within the respective sites in order to maximise the contribution of the sites to achieving FCS at the national, biogeographical or European level, taking into account the natural range of the respective species or habitat types.

According to the *Commission Note on Setting Conservation Objectives for Natura 2000 Sites* (SETTING CONSERVATION OBJECTIVES FOR (europa.eu)), site-level conservation objectives should be set for all species and habitat types of Community interest of the Habitats Directive and bird species of the Annex I of the Birds Directive that are significantly present on a Natura 2000 site, as well as for regularly occurring migratory species. Site-level conservation objectives should be based on the ecological requirements of the natural habitat types and species. They should reflect the importance of the site for the maintenance or restoration, at a favourable conservation status of the habitat types and species present on the site and for the coherence of Natura 2000 and address the threats of degradation or destruction to which the habitats and species on the site are exposed. Conservation objectives for Natura 2000 sites need to be as clear and straightforward as possible and allow to put in place operational conservation measures in practice. They need to be specified in concrete terms and wherever possible be quantifiable in numbers and/or size. In other words, the definition of site level conservation objectives must not be ambiguous, vaguely formulated, unverifiable or involve unclear responsibilities with regard to the corresponding establishment of specific conservation measures.

Requirements for compliant SSCOs:

- **Site-specific**: set at site-level (but may need to be supplemented by a broader set of conservation targets at higher levels, e.g., national, regional or biogeographical);
- **Specific**: relate to a particular interest feature (habitat/species) and define the conditions required to satisfy the conservation objective;
- **Quantified**, **measurable** and **reportable**: quantitative targets, possibly to be supplemented by qualitative ones, enabling monitoring to be undertaken to determine whether the conservation objectives are being met and for the purposes of Article 17 of the Habitats Directive;
- **Realistic**: established for a reasonable time-frame considering a reasonable allocation of resources, e.g., for the validity of the site management plan - the objective should be achieved by that time;
- **Consistent in approach**: the structure of conservation objectives should, as far as is possible, be the same across all sites, and at sites supporting the same interest feature, use similar attributes and targets to describe favourable condition;

- **Comprehensive**: set for all habitats/species with significant presence as per the Standard Data Form (SDF) (other than "D" in SDF). The attributes and targets should cover the properties of the interest feature necessary to describe its condition as either favourable or unfavourable;
- Reflect the **importance of the site** for the maintenance or restoration, at a favourable conservation status of the habitat types and species present on the site and for the coherence of Natura 2000;
- **Be clear on whether "restoring" or "maintaining" the condition of the relevant feature** in the site is envisaged.

Adapted from the "Commission Note on Setting Conservation Objectives for Natura 2000 Sites of November 2012" (SETTING CONSERVATION OBJECTIVES FOR (europa.eu)) and Vassen Frank, European Commission, DG ENV D3 - Nature Protection 3rd Natura 2000 seminar for the Mediterranean biogeographical region, 4–7 May 2021, *Introduction: Site-specific Conservation Objectives for Natura 2000:* Slide 1 (europa.eu)

Further Guidance:

Commission Notice C(2018) 7621 Managing Natura 2000 sites — The provisions of Article 6 of the Habitats Directive 92/43/EEC (europa.eu)

Commission Note on Setting Conservation Objectives for Natura 2000 Sites, November 2012, SETTING CONSERVATION OBJECTIVES FOR (europa.eu)

Annex I of this document presents a few examples on setting SSCOs across the EU.

4.1.3.2 Assessment conducted at the level of each parameter of SSCOs

Assessing the impact on SSCOs, at the level of each parameter defined for each habitat and species, represents the core process of AA. It:

- Relies on:
  - A careful and thorough analysis of the proposed project;
  - A good understanding of the location, activity and structural/functional relationships between Natura 2000 components. The key information on the Natura 2000 sites and their designated features (please see Section 4.2.1 below) should be well know at the AA screening stage to be able to assess, beyond any reasonable doubt, that likely significant effects can be excluded. The lack or insufficient level of detail (especially related to the distribution of habitats/ species, their area or population size, the conservation status) may lead to uncertainties at the AA screening stage, therefore leading to the necessity of a full AA.
- Includes several steps:
  - Clarification of the **spatial positioning** of the project in relation to habitats and species. A correct understanding of the location of a habitat or the species' resting, breeding or

feeding habitats is essential for understanding how the analysed project may affect these components of Community interest (e.g., does the project overlap with the habitat's area? Does the project's area of influence overlap with species' habitat? Does the project intersect the ecological corridor of a species? The distance between the project and species' habitats allows for individuals to reach the project area during construction or operation?, etc.). Where necessary (e.g., in case of missing data, gaps or uncertainties), field surveys may be conducted in order to clarify any uncertainty related to habitats and species distribution;

- Analysis on the **likelihood of affecting** each habitat/ species by the interventions proposed by the project in all of its stages. Practically, any potential physical, chemical or biological change at the level of a parameter of the SSCO indicates that the habitat/ species is likely to be affected. A justification needs to be provided if the habitat/ species is considered affected and if not;
- **Quantification of the impacts**. The analysis aims to quantify the changes that could occur in the target value of each parameter (how much of the target value is affected by the implementation of the project?);
- Assessing the **significance of impacts**. Impacts on target values (of each parameter) are classified as significant, non-significant or uncertain (please see section 4.1.5). A justification needs to be provided for each choice, particularly detailed in the case of non-significant impacts.

- Allows for:
  - A more **in-depth spatial analysis** of the relationship between the project and Natura 2000 sites (including the identification of long-distance and indirect impacts);
  - A better **quantitative assessment** of impacts significance;
  - The consideration of all parameters relevant for the **conservation status** in the assessment of the impact;
  - A better integration of the role of the analysis regarding the **structural and functional relations** in the identification and evaluation of the impacts (the analysis of the interdependencies between water bodies - biotope - habitats - species);
  - A more structured (and quantified) approach in assessing the **cumulative (in-combination) impacts**.

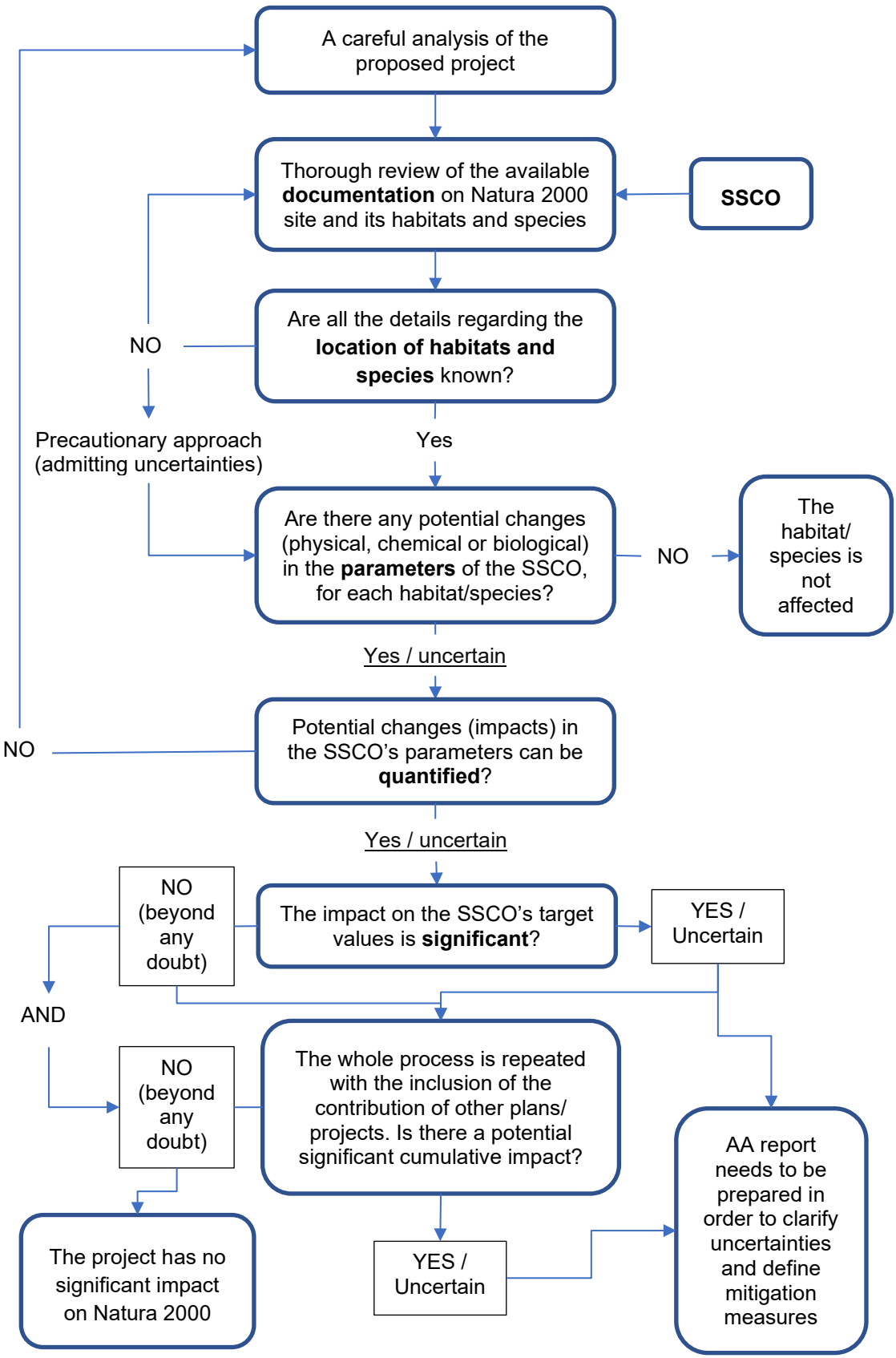


Figure 6 Main stages in the assessment of impacts on SSCOs parameters at the AA screening phase

A structured tool for supporting the assessment of impacts on SSCO's parameters is presented in the box below.

Good Practice – Example of the structure of the assessment table on SSCOs, proposed by Romania for the interrupted projects

Recently Romania went through a process of improving the AA for large infrastructure projects implemented with EU co-financing. During the approval process the EC stressed on the need to demonstrate compliance with the EU law, including:

- Definition of compliant SSCOs for the Natura 2000 sites likely to be affected by the projects;
- Carrying out the AA screening and the full AA in view of the defined compliant SSCOs and presenting an adequate assessment taking into account the likely cumulative impacts.

During this process, a tool was proposed in order to support the assessment in view of the SSCOs defined for the Natura 2000 sites. It is not an exercise on filling in a table with pre-existing data and information, but a synthesis of a careful, in-depth evaluation based on SSCOs parameters and targets.

N2k site	N2k component	Code / Scientific name	Presence type (only for birds)	Location in regards to the project (meters if not specified otherwise)	Annex 1 (only for birds)	Source of spatial data	Information sources	Conservation status (only from SCO)	Conservation objectives

Parameters	Measure unit	Actual (Minimum)	Actual (Maximum)	Targets	Likely to be affected by the project?	Explanation for likelihood to be affected	Quantification of impacts (m.u.)	Potential impact (without a & m measures)	Reasoning for the estimated impact	Measures adopted to ensure nonsignificant residual impacts	Residual impact

*** The last two columns are filled-in only in the case of the AA report. In the screening stage, the mitigation measures are not taken in consideration.**

Column name	Completion instructions
Natura 2000 Site	Code and name of the Natura 2000 site
Natura 2000 component	One of the following options: Habitats/ plants/ invertebrates/ fish/ amphibians/ reptiles/ birds/ mammals
Natura 2000 code/Scientific name	Habitat/species code according to the Natura 2000 classification (as provided in the SDF) / Name of the habitat or scientific name of the species (as provided in the SDF)
Presence type (only for birds)	One of the following options: P = permanent, R = reproducing, C = concentration, W = wintering (according to the SSCOs or the SDF)

Location in relation to the project	The description of habitats/species locations against the project components/ interventions/ activities is a crucial stage in order to identify correctly any potential effects. A correct understanding of all project components and activities, in all its stages, is necessary. When identifying the locations of the habitats/ species habitats against the project, a precautionary approach should be used, especially when habitats mapping is not available. In this column, it needs to be specified whether the habitat/ species habitat is intersected by the project or whether the project is in the vicinity of the habitat/ species habitat, indicating also if it is located upstream or downstream of the project components/activities. All the presence locations of the habitats/ species habitats need to be identified. For species, beside the location of the favourable habitats, the points of presence of the species have to be presented distinctly (where applicable/ possible). The minimum distances between different components/ interventions/ activities of the project and the location of the habitats/ species habitats have to be clearly presented. Information on the location of habitats/species will be identified using the following hierarchy as sources: Natura 2000 site management plan (or similar administrative document), support studies for the Natura 2000 site management plan elaboration, other studies developed for the Natura 2000 site, Romania's reporting under Article 17 of the Habitats Directive and Article 12 of the Birds Directive, publications in scientific journals, online databases. The results of field surveys performed for the project can also be used to clarify uncertainties regarding the location of habitats and species. However, they cannot substitute the official data existing in the Natura 2000 site Management plan.
Annex I (only for birds)	Options: "Species listed in Annex 1 of the Birds Directive" or "Species with regular migration"
Source of spatial data	Only the sources for spatial information are mentioned here. SDF is not a source of information for this column. As the case may be: Natura 2000 site management plan and its supporting inventories and mapping studies, other studies including spatial information, Romania's reporting under Article 17 of the Habitats Directive or Article 12 of the Birds Directive, field activities etc.
Information sources	Other sources of information than the spatial information: Natura 2000 site management plan, SSCOs, SDF, field activities performed for the elaboration of the AA report, other studies, public databases, scientific articles, etc.
Conservation status	According to SSCOs: Favourable/ Unfavourable-Inadequate/ Unfavourable-Bad/ Unknown (Not assessed).
Conservation objectives	According to SSCOs: Maintaining the conservation status/ Improving the conservation status/ Maintaining or improving the conservation status.
Parameters	All parameters defined for a habitat/species are listed according to the SSCOs.

Unit of measure of the parameter	Measurement unit set for each parameter according to the SSCOs.
Actual (minimum)	The current minimum value of the parameter, according to the SSCOs, set based on the data from the Management plan and its support studies or from other studies. For example, the minimum estimated area of a habitat or the minimum population size of a species.
Actual (maximum)	The current maximum value of the parameter, according to the SSCOs, set based on the data from the Management plan and its support studies or from other studies. For example, the maximum estimated area of a habitat or the maximum population size of a species.
Target value	The target value set for each parameter, according to the SSCOs. If a target is not defined for a parameter, it is stated "not yet defined" or "to be defined in X years".
Likely to be affected by the project?	Screening on each parameter regarding the likelihood to be affected by the project, in any of its phases. Options: Yes / No - without further details Examples of guiding questions for screening: **Natura 2000 features likely to be affected:** **1.** The habitat is **intersected** or located **in the vicinity** of the project and **the project can induce changes on the habitat** (including habitats that are located at larger distances upstream/downstream of the project)? **2.** The **species habitat is intersected** and/or the **individuals are likely to occur** in the area of the project? **3.** Though the habitat, the species habitat and/or individuals are located at greater distances, can **the project affect ecological functions** on which they depend (e.g., ecological connectivity: terrestrial and aquatic)? **Parameters likely to be affected (for any of the previous questions where the answer was "yes"):** **4.** Can a **cause-effect relationship** occur between **the project** and **the analysed parameter** (e.g., physical or chemical interactions)?
Explanation for likelihood to be affected	The explanation for the likelihood to be affected (or not) has to be done for each parameter and it has to be sufficiently detailed. It needs to be identified if the works/ activities proposed within the project can induce changes at the level of the parameter. It is not enough to state that the parameter is or is not affected by the project; it is mandatory to specify the reasons why it can be or not affected by the project. If in the previous column it was selected the "No" option, the explanations cannot be based on measures proposed to avoid/ reduce the impact. Impact significance is not estimated in this column. All the effects generated by the project, in all its phases, need to be considered when assessing the likelihood of a parameter to be affected.

Quantification of impacts (m.u.)	Quantitative elements only, expressed in the same unit of measure as the parameter likely to be affected. For example: Area lost from the habitat/favourable habitat of the species (how many ha/m2?); Estimates of the number of accidental victims (number of individuals/ number of pairs).
Potential impact (without mitigation measures)	Significance of the likely impact, without considering mitigation measures. Options: 1. **Significant**; 2. **Non-significant**; 3. **Uncertain** – only in the AA screening phase.
Reasoning for the estimated impact significance	It requires a detailed explanation, especially in the case of non-significant impacts. It is based on a case-by-case assessment, considering quantitative and qualitative arguments, the consideration of ecological functions and the expert opinion. The precautionary principle has to be applied. There are no predefined thresholds for impact significance. If such thresholds are taken into consideration, they need to be carefully explained and justified. It needs to be clearly explained if cumulative impacts were considered in the assessment and, if the case, what is the project's contribution. Examples of guiding questions for assessing impact significance: What are the quantitative and qualitative elements considered for the appreciation of significance? Have thresholds of significance been established? Can the target value of the parameter still be reached? Can the conservation objective still be achieved? The project implementation results in a loss or reduction of key features, natural processes or resources that are essential for the maintenance or restoration of relevant habitats and species in the site? The project implementation disrupts the factors that help maintain the favourable conditions of the site or that are needed to restore these to a favourable condition within the site? In this column, it should not be repeated what has already been mentioned in the previous columns (e.g., for the explanations on the likelihood of the parameter to be affected). Here only the arguments for the impact significance are necessary (why the impact is non-significant or significant?). The reasoning for the estimated impact must be presented and justified for each parameter. Merging of cells is not accepted.
Measures adopted to ensure non-significant residual impacts	Here it is needed to consider only those measures that can: • Prevent the impact to occur; • Avoid the appearance of a significant impact; • Reduce a significant impact to a non-significant one (the target can be reached; the conservation objective can be reached). The measures must be clear, complete and formulated in a SMARTEE manner.
Residual impact	Significance of the likely residual impact (considering mitigation measures). Options: **1. Significant; 2. Non-significant.**

As a general rule, when the competent authority determines that the project is not likely to have significant impacts on the conservation objectives of the Natura 2000 site(s), this is happening **without** consideration of project-specific mitigation measures (unless the measures are an integral part of the original project itself and are not imposed by competent authority in the screening decision)[10].

It is understood that mitigation measures can apply at the AA screening stage:

- Only in case the mitigation measures do not reduce the significant impact to non-significant[11];
- The mitigation measures are not habitat/species specific;
- Examples:
  - compliance with existing legislation;
  - application of good construction practices;
  - use of high-performance equipment;
  - prohibition to work inside Natura 2000 sites, etc. of similar general nature.

4.1.4 Cumulative impacts on Natura 2000 sites

This Section deals with the pressures and threats to Natura 2000 sites, the identification of other Plans and Projects (P/Ps) affecting the SSCOs parameters.

During screening, the assessment of the likelihood of potentially significant impacts of the project have to include also an identification of potential cumulative impacts. Such impacts are generated by the analysed project in combination with other P/Ps. The rationale is that a non-significant impact generated by a project may, in combination with other P/Ps, produce a significant impact. The AA screening report should present an assessment of the impacts the P/P is likely to generate individually or cumulatively with other P/Ps.

At the screening stage, the cumulative impact assessment can be less detailed than in the AA report. However, it is necessary to identify even from this stage all other P/Ps that could have cumulative (in-combination) impacts with the analysed project. The following P/Ps should be considered in the assessment of cumulative impacts:

- P/Ps that have been already completed;
- P/Ps approved but uncompleted;
- P/Ps proposed (for which an application for approval has been submitted).

In case of extensions of existing projects the cumulative impact assessment should include the impacts from the existing part of the project (existing water abstraction or discharges in cases when new inhabitants/p.e. is connected to water supply/wastewater collection and treatment services).

The cumulative impact assessment should consider any P/P having the potential to generate cumulative impacts on Natura 2000 sites with the analysed project. The assessment should **NOT** be restricted to:

- Similar types of P/Ps;
- P/Ps located in close proximity with the analysed project;

[10] For reference see Section 3.1.4 on page 20 of the EC Methodological Guidance on Article 6(3) and (4): Nature and biodiversity - Library (europa.eu)
[11] For reference Judgment on Case 323/17, paragraph 40

- P/Ps implemented in the same time frame with the analysed project.

Cumulative impacts must be assessed considering each habitat and species likely to be affected, in view of the parameters defined for the SSCO. Under these conditions, any P/P that can affect a habitat or a species likely to be affected by the analysed project, in the same Natura 2000 site, must be taken into account in the cumulative impact assessment. As a result, the geographical area to be considered when identifying other P/Ps should include the entire surface of the Natura 2000 site likely to be affected.

The existing pressures identified for each Natura 2000 sites should also be taken in consideration when assessing the cumulative impacts. Usually, the pressures can explain, at least partially, the conservation status of the habitats and species. When the analysed project and other P/Ps, are adding a supplementary impact to the existing pressure, it is more likely that this will result in a deterioration of the conservation status and the impossibility to achieve the SSCO.

The following situations are more likely to result in a cumulative significant impact:

- Two or more P/Ps are proposing changes with high magnitudes affecting the same parameter of a habitat/species (e.g., direct loss for the same habitat or population reduction of the same species);
- Cumulative impacts are affecting a priority habitat or species;
- Cumulative impacts are affecting habitats/habitats of species with small areas or species with small population size;
- Cumulative impacts are affecting habitats/species with unfavourable conservation status or for which high pressures were already identified (in the SDF or MP/other normative document).

Most of the information on other P/Ps can be collected from public available sources, like online databases, project owners' webpages or the published text of the plans and programmes. However, it is necessary to consult the competent authorities in order to collect updated information about other P/Ps to consider during the screening.

4.1.5 Identifying uncertainties and use of precautionary principle when assessing impact significance in view of the SSCOs

This Section looks at the classification of the significance of impacts as:

- Significant;
- Insignificant (non-significant);
- Uncertain.

The critical element of the AA screening stage consists in identifying the likely significant impacts on Natura 2000 sites generated by the project, alone or in combination with other plans or projects.

At this stage, the likely affected Natura 2000 sites are known and therefore the SSCOs of the habitats and species of Community interest in these sites are available. The proposed interventions of the project, in all its stages, are also known sufficiently (depending on the complexity of the project and the moment in the project development process when the AA procedure was initiated), so that the cause (project interventions) - effects - impacts relationship can be analysed.

A likely significant impact represents any impact that may reasonably be predicted as a consequence of the project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 sites likely to be affected by the project.

This can result from either on-site or off-site activities, or through combinations with other plans or projects. Deterioration of the conservation status or preventing the achievement of a favourable conservation status, by the project alone or in combination with other plans/projects (in other words: failure to achieve the conservation objectives) represents a significant impact.

There are no pre-defined significance thresholds for a certain type of habitat or for a certain species. Significance thresholds can be discussed, but through a case-by-case analysis (for each habitat/species in each Natura 2000 site). A loss of a certain surface of a small area habitat can be a significant impact. The same habitat loss in a site where the habitat area is large can be considered insignificant. The Court of Justice of the EU in the Judgment on Case C-258/11 (paragraph 46) stated that a small, but lasting and irreparable reduction of a priority habitat may constitute a significant impact and thus be regarded as a damage to the integrity of a Natura 2000 site.

Thresholds of significance can however be found in the MPs/other normative documents for the Natura 2000 sites. Some MPs may indicate that "any loss" of the surface of a habitat or losses greater than certain percentage of the surface of a certain habitat are not acceptable. Any project that proposes losses (alone or in combination with other plans/projects) greater than those accepted by the MP (or a similar document) will be considered to have a significant impact on the Natura 2000 site.

A precautionary approach involves considering a significant impact whenever the occurrence of an accidental victim is possible for a species with small population size (e.g., a few individuals) or for any direct loss of the habitat surface when this habitat is represented in the Natura 2000 site by a small area (e.g., a few hectares).

Additional information on the assessment of the impact significance can be found in the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. An example for setting thresholds to determine significant adverse effects in Germany is presented in the Annex of the EC Guidance (Annex: examples of practices, case studies, methods and national guidance). The starting premise for the standard proposed in Germany is that, in general, a permanent loss of habitat types and habitats for species, which are part of the conservation objectives in a Natura 2000 site, should be considered a significant adverse effect on integrity of the site. A certain level of loss could nevertheless be treated as insignificant for some habitat types and species under certain conditions. These standards were developed by scientific research and development projects and then discussed and evaluated through broad expert participation procedure during a six-year period. The thresholds values included in these standards are specific to Germany and cannot be transposed to other countries.

In line with the precautionary principle, if likely significant impacts cannot be excluded beyond reasonable doubt, the project will have to undergo a full AA under Article 6(3) of the Habitats Directive. Therefore, if the decision is taken at the screening stage, there should be no reasonable doubt as to the absence of likely significant impacts. It should be noted that at the screening stage certainty of the occurrence of significant impacts is not required, as the mere likelihood or risk of a significant impact is sufficient to trigger the full AA. If there is no risk of damaging the conservation objectives of a site, there is no significant impact. In case of doubt as to whether there are significant impacts on the integrity of the Natura 2000 site, an impact assessment must be carried out[12].

All cases of uncertainties must be indicated. It is normal to have uncertainties at the screening stage. All uncertainties must be addressed later on during the elaboration of the AA report.

[12] For reference Judgment on Case C-127/02, paragraphs 41-49

4.2 Appropriate assessment for water-related projects

In line with the precautionary principle, a plan or project can only be approved if the competent authorities have ascertained that it is not likely to adversely affect individually or in combination with other plans and projects the integrity of a Natura 2000 site. Such will be the case 'where, from a scientific point of view, it can be established without reasonable doubt that there are no such effects'.

The CJEU in Judgment on Case C-127/02 (paragraph 61) has stated that *"an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field... That is the case where no reasonable scientific doubt remains as to the absence of such effects."*

Therefore, the assessment must contain 'complete, precise and final findings and conclusions capable of dispelling any reasonable scientific doubt'. According to EU case law, the assessment shall be made on the basis of the best scientific data available at the time of the decision, which is sufficiently up-to-date and credible[13]. The requirement of secure documentation implies that the authority must refuse to authorise a plan or project when there is uncertainty as to whether there will be effects detrimental to the integrity of the Natura 2000 site concerned[14]. In accordance with general principles of administrative law, an authority must assess the specific need for further investigations and additional information for each specific case, as ultimately, it is the authority which decides whether the case is sufficiently informed or not.

All aspects of a plan or project which, either individually or in combination with other plans and projects, are deemed to be likely to harm species and habitats for which the Natura 2000 site was designated, must be included in the AA.

It is important to distinguish between the SSCOs set for the specific Natura 2000 and the overall objective set out in Article 1(e) of the Habitats Directive, namely achieving a favourable conservation status for the Annex I protected habitat types and the Annex II protected species. The overall conservation objective is to ensure or restore a favourable conservation status for the species and habitats for which the sites have been designated, in accordance with Article 2 of the Habitats Directive. Assessment of the impact of a plan or project on the integrity of an affected Natura 2000 site must be based on the SSCOs set for the specific Natura 2000 site. All aspects that may affect the conservation objectives of a Natura 2000 site must be taken into account. The impact assessment must therefore relate specifically to whether the desired plan or project harms the SSCOs for the habitats and species protected in the respective Natura 2000 site.

[13] For reference Judgment on case C-43/10, paragraph 117
[14] For reference Judgment on Case C-258/11, paragraphs 40-44

4.2.1 Necessary information for the Natura 2000 sites affected by the projects

4.2.1.1 Key information on Natura 2000 sites and their designating features

This Section lists the key information on the Natura 2000 sites and their designated features that need to be included in the AA report.

The key information on the Natura 2000 sites and their designated features should be well presented in the AA report and should include the relevant information in the impact assessment process, both at the Natura 2000 sites level and at the level of each habitat and species of Community interest for which protection the Natura 2000 sites likely to be affected by the project were designated (designating features). Such information is also necessary for the AA screening stage. The lack or insufficient level of detail may lead to uncertainties at the AA screening stage, therefore leading to the necessity of a full AA.

The key information which must be included in the description of **each Natura 2000 site** likely to be affected by the project are:

- The name and code of the site;
- The name of the institution responsible for the management of the site;
- The existence of a Management Plan or another normative or administrative document for the management of the Natura 2000 site;
- Site-specific conservation objectives;
- Conservation measures established for the site;
- Prohibited and permitted activities in the site, other restriction and limitations;
- The biogeographic region/regions in which the site is located, specifying the area in each region;
- The importance of the site to the habitats and species present;
- The types of ecosystems present on the surface of the site;
- Main ecological requirements, vulnerability and sensitivity of the habitat types and species;
- Main threats and pressures identified in the site;
- The overlapping with other Natura 2000 sites and/or other types of natural protected areas, protected under national or international legislation (e.g., under the Ramsar Convention);
- The role of the site within the Natura 2000 network and the ecological corridors on which it depends;
- The relations of the site with other neighbouring Natura 2000 sites or within the same biogeographical regions;
- Any other particularities of the site.

The key information which must be included in the description of **all the habitats and species** of Community interest for the protection of which the Natura 2000 sites likely affected by the implementation of the project have been designated are:

- **For habitats:**
    - Code, name, priority character;
    - Characteristic species;
    - Relevant variables of structure and function and ecological requirements;
    - Conservation degree and representativeness of the habitat in the site;

- Role and importance of the site for the habitat conservation;
- Habitat distribution area in the site (including mapping), percentage of total area;
- Pressures, threats and impacts affecting the habitat in the site;
- Conservation status of the habitat in the site and at the biogeographical region level;
- Conservation objective set for the habitat in the site;
- Trends regarding the area of the habitat and conservation status at biogeographical region level, based on official published data, and at the site level, if available;
- Sensitivity/vulnerability to any of the types of effects generated by the analysed project (e.g., the habitat can be affected by the intrusion of invasive species; the habitat is sensitive to water level variations);
- Any known perspectives on the area and quality of the habitat as a result of climate change.

- **For species:**
  - Code, name, priority character;
  - Ecological requirements and factors that influence the species population dynamics;
  - Role and importance of the site for the species conservation;
  - Species distribution areas in the site and use of the site (including mapping);
  - Area for each type of habitat used by the species (for breeding, foraging, resting), percentage of total area;
  - The size and type of population (in passage, nesting, wintering, resident);
  - Percentage of total population in the country;
  - Quantified information regarding the presence of individuals (e.g., density of individuals, signalling frequency), where available;
  - Data on the population trends (the numerical evolution of the populations) within the site, where inventories are available in different years;
  - Trends regarding the population size and conservation status at biogeographical region level, based on official published data;
  - Information on species ecology (feeding, moving requirements, day/night activity, and others);
  - Pressures, threats and impacts affecting the species in the site;
  - Conservation status in the site and at the biogeographical region level;
  - Conservation objective set for the species in the site;
  - Sensitivity/vulnerability to any of the types of effects generated by the analysed project (e.g., the habitat of the species is sensitive to water level variations; the species presents a high risk of collision with vehicles traffic; the nocturnal activity of the species can be modified by the presence of the lighting system of the buildings; other sensitivities);
  - Any known perspectives on the area and quality of species habitats or the species population size as a result of climate change.

In order to understand the landscape features that are important for the coherence of the Natura 2000 network, a broader analysis needs also to be performed. The relation with ecological corridors and stepping stones, as well as the connections with other Natura 2000 sites and ecologically important areas have to be mapped and analysed.

As regards climate change, as described in the EC Guidelines on climate change and Natura 2000[15], this has both direct and indirect impacts on species and ecosystems. Direct impacts on species include, for instance, changes of plant and animal life cycle events (the start/end of growing seasons or breeding seasons may alter), and that co-dependencies across and between species may change (predator-prey interactions or symbiotic relationships). Also, increased temperatures and higher CO_2 levels impact the physiology of species with increased levels of photosynthesis and respiration. Other impacts of climate change for species are indirect, through changes in the abiotic conditions of habitats: these include, changes in the ground or surface water tables or increased erosion. As a result of climate change, the area where species find suitable climate conditions may change. Impacts of climate change will often interact with already existing pressures: for example, eutrophication may be enhanced by increased fluctuations in water tables. Changes in geographical distribution of species as a response to climate change will be limited by habitat fragmentation and the availability of habitat in new areas that are climatically suitable. All these separate impacts will lead to changes in the species composition and functioning of ecosystems and eventually to species loss. Furthermore, changes in the use of land and resources as society adapts to climate change may be of greater concern than the direct impacts and indirect impacts mentioned, due to their scale, scope and speed. How species and ecosystems in a specific Natura 2000 site respond to climate change depends on the species or ecosystem in question, the geographical location of the site in Europe and the land use in the surrounding landscape. As a result, an assessment is complex and, to some extent, unpredictable. However, it is possible to indicate which species and habitats are relatively vulnerable for a changing climate due to their sensitivity, differences in exposure, or constraints in their adaptive capacity.

In all cases when assessments are available at the country level or at the level of the Natura 2000 sites regarding the impacts of climate change on habitats and species, they need to be considered in the AA.

For all the data and information presented in this section, the source needs to be mentioned. Priority will be given to official data sources, published/made available by institutions with responsibilities in the management of the Natura 2000 sites.

Examples of sources of information that can be used for the baseline description of the Natura 2000 sites likely to be affected by the project and their designating features

- Natura 2000 SDF;
- Statutory acts for the Natura 2000 sites designation;
- Site management plans;
- Other site management documents (e.g., regulations, agreements);
- Species and habitats conservation action plans;
- National reporting on conservation status under Article 17 of the Habitats Directive and Article 12 of the Birds Directive;
- National/regional databases, online viewers, online portals;
- Current and historical maps.

[15] European Commission, Directorate-General for Environment, *Guidelines on climate change and Natura 2000: dealing with the impact of climate change, on the management of the Natura 2000 network of areas of high biodiversity value*, Publications Office, 2014, https://data.europa.eu/doi/10.2779/29715

Spatial data and **GIS mapping** for habitats and species distribution are essential elements for the analysis of the Natura 2000 sites likely to be affected by the project and their designating features, in order to further understand the relation with the project's interventions and the generated effects. Spatial data are a minimum prerequisite in order to ensure a quantified assessment of impacts. This information should be obtained from the institutions with responsibilities in the management of the Natura 2000 sites and completed, where necessary, by field surveys.

Good Practice – Example of online available data for habitats and species distribution

Environmental Sensitivity Mapping Tool in Ireland

This web-tool is a collaborative public sector data project between the UCD School of Geography (concept and design) and the All-Island Research Observatory (AIRO) at Maynooth University (analytics and mapping). The research project is funded and supported by the Environmental Protection Agency (EPA) and hosted by the Ordnance Survey Ireland (OSI) on GeoHive, the State Geospatial DataHub.

The ESM webtool has been developed as a support tool for environmental assessment processes in Ireland. This tool contains an environmental mapping Viewer and an ESM Widget to allow instant environmental sensitivity analysis.

The ESM webtool is designed to facilitate multiple data interaction. Its purpose is to enable geographical exploration of environmental considerations onshore, and to combine relevant environmental datasets to produce environmental sensitivity maps in support of Strategic Environmental Assessment (SEA).

The ESM Webtool is fully reliant on existing and publicly available spatial datasets from third party sources. Data included in the ESM are static, representing data available in a given point in time (the last data update took place in December 2016). So certain datasets (i.e., those that are regularly updated such as ecological designations) could be out-dated when applying the Webtool and Widget, affecting the validity of the outputs.

The ESM outputs should be treated as indicative rather than definite.

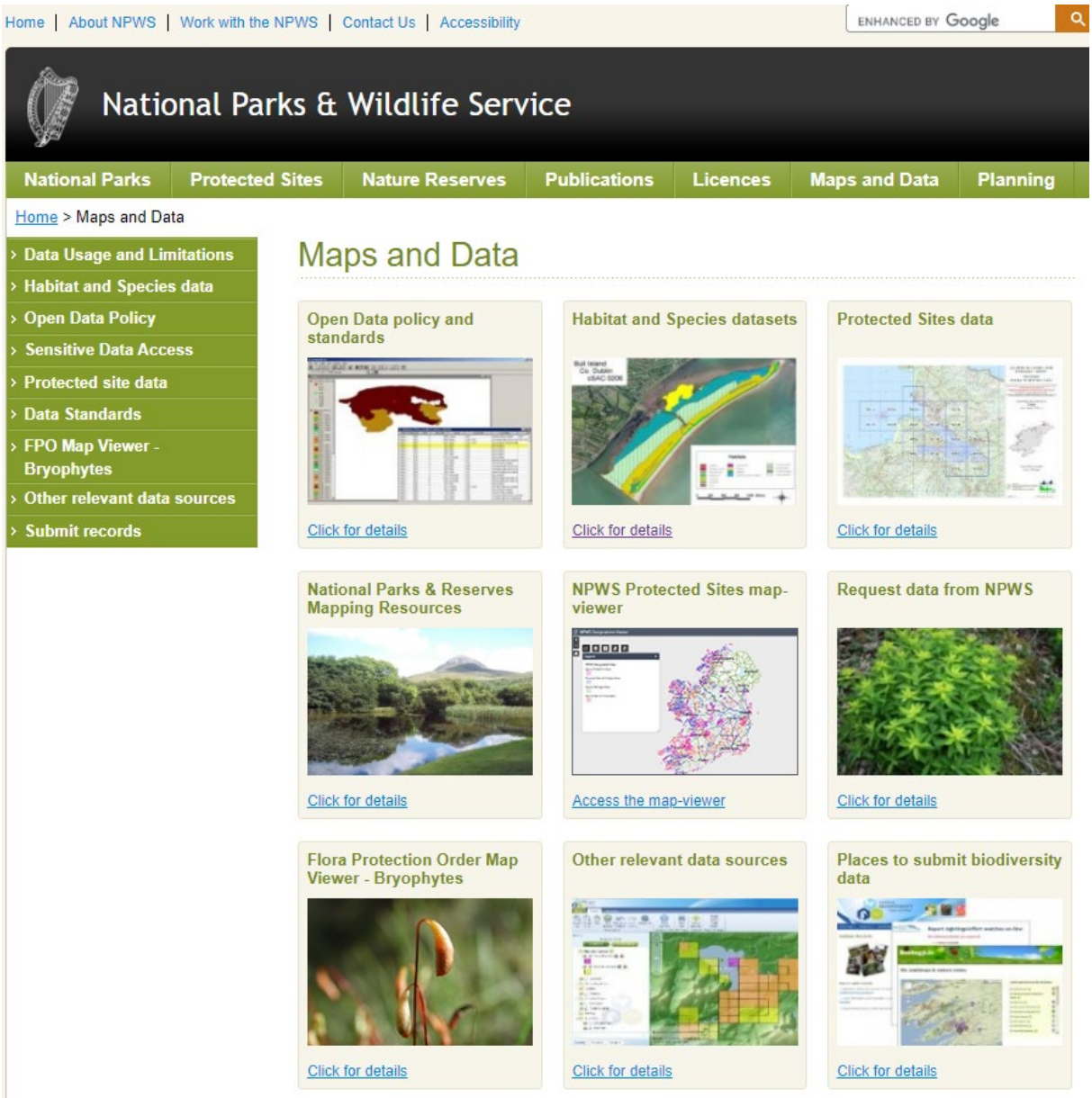
Nevertheless, it can also inform the developers of projects on the sensitivity of the area where a project is intended to be implemented.

Example of mapping of the Annex I habitats distribution

Further information: https://airomaps.geohive.ie/ESM/

Online maps and data publicly available

The NPWS (National Parks & Wildlife Services) and Department of Housing, Local Government and Heritage encourage the free dissemination of biodiversity data and aims to publish its data holdings into the future, where possible, as Open Data.



Further information: https://www.npws.ie/maps-and-data

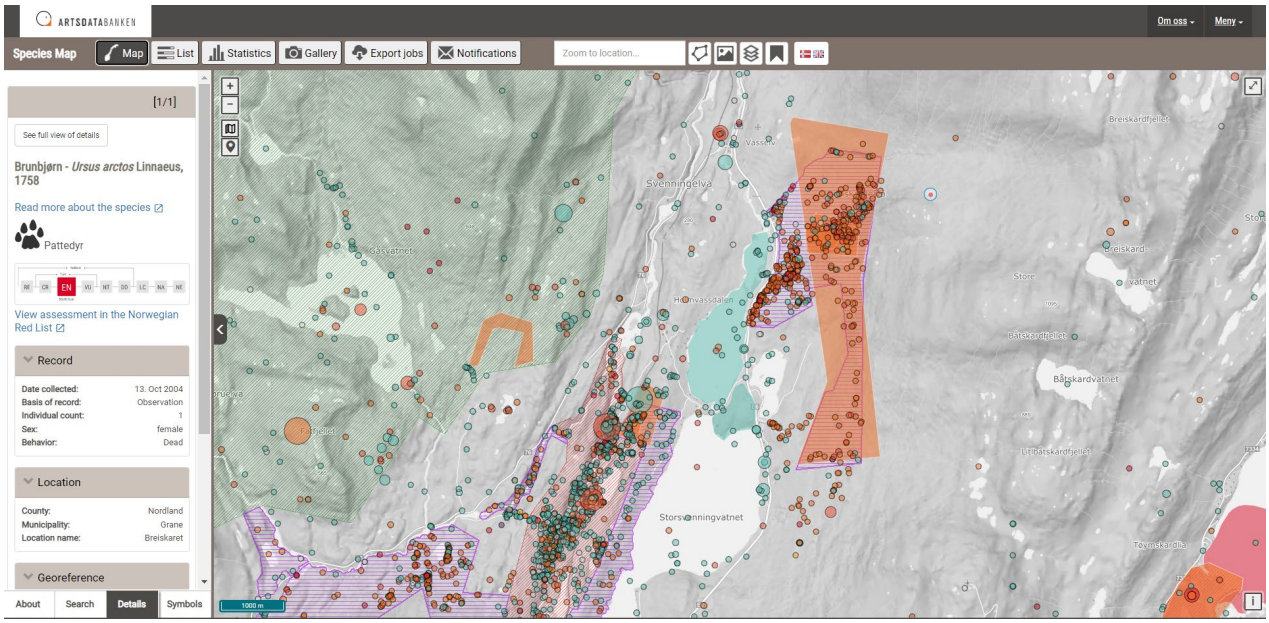
Good Practice – Example of online available data for habitats and species distribution

Norway Species Map Service

With more than 23 million records representing more than 34,200 species, the English-language version of the Species Map Service offers users from across the globe a comprehensive tool for locating Norway's flora and fauna.

The service is composed of verified species occurrence data from all of Norway's participating institutions and organizations, collected on one and the same map interface. The information is searchable by geographic area, county or municipality. Search facilities for specific species and species groups are also available. All of the search choices allow to show on the map which species have been reported within a selected area. The map interface also allows to focus the search on collection or observation data, define different time spans and select data providers.

Species Map Service is based on the data standard Darwin Core and NBIC is cooperating with GBIF-Norway. All the data are downloadable and are shared under the same or compatible licenses as the data sharing agreements used by GBIF.



Example of species occurrence in the Species Map Service

Further information: Norwegian Biodiversity Information Centre (NBIC)
https://www.biodiversity.no/Pages/135494/Norway_s_Species_Map_Service?Key=1575543865

4.2.1.2 Structural and functional relationships

The analysis of structural and functional relationships is crucial for the correct identification and assessment of the impacts on habitats and species of Community interest, as these contribute to the site integrity.

In the case where the structural and functional relationships are described and analysed in the Site management plan or in any other national statutory document, the analysis must be based on this information. In the absence of this information, the AA report must identify and analyse the relevant structural and functional relationships from the perspective of the integrity of the Natura 2000 site, as well as from the perspective of the impacts generated by the type of the analysed project.

The identification of structural and functional relationships for water-related projects should include:

1. Identification of the dependency relationships between Natura 2000 habitats and existing surface and underground water bodies in the site area;

2. Identification of the dependency relationships between species of Community interest and Natura 2000 habitats. Where appropriate, it will be identified the dependency of species on other types of habitats than those of Community interest or other geological, geomorpho-logical, landscape, altitudinal, climatic characteristics, which ensures the presence and maintaining of species;

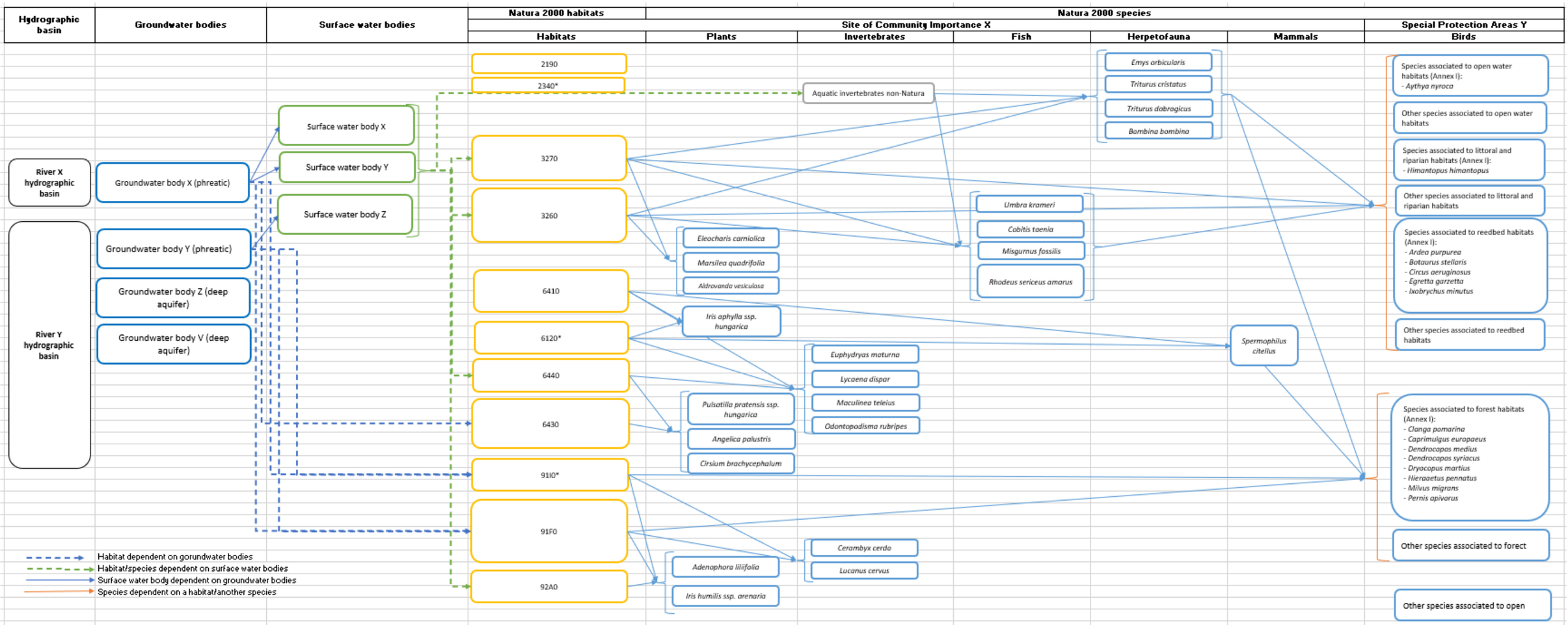
3. Identification of the relationships established between species of Community interest (predation[16], competition[17], mutualism[18], commensalism[19], parasitism[20], amensalism[21]), as well as between them and species without conservation status.

It is recommendable to present the results of the process of identifying structural and functional relationships in a table form or in a diagram.

When more Natura 2000 sites overlap (e.g., overlap of SPA with SCI/SAC), a unitary analysis needs to be carried out for the sites.

[16] Predation – the killing by one living organism of another for food.
[17] Competition – relationship between organisms that strive for the same resources in the same place.
[18] Mutualism – an interaction between individuals of different species that results in benefits for both species.
[19] Commensalism – relationship between individuals of two species in which one species obtains food or other benefits from the other without either harming or benefiting the latter.
[20] Parasitism – nonmutual relationship between two organisms in which one benefits at the expense of the other.
[21] Amensalism – type of biological interaction where one species causes harm to another organism without any cost or benefits to itself.

Good practice example - schematic representation of Structural & functional relationship identification (necessary to identify SSCOs parameters likely to be affected)



The analysis of structural and functional relationships contributes to the identification of:

1. Any possible changes (secondary/"cascading" impacts) which may occur on one or more species as a result of the affecting of the physical environment, habitats or species with which they establish relationships;

2. Any possible change in processes and ecological factors/functions that could lead to affecting the site integrity.

The identification and analysis of structural and functional relationships should also take into account the results of the field activities performed for the scope of the analysed project, which aim to clarify the uncertainties regarding the habitats and species of Community interest in the project area (e.g., distribution of habitats and species, species activity, ecological processes, ecological factors that ensure the presence of habitats and species in the site).

The process of identification and analysis of structural and functional relationships have to include those ecological processes and ecological factors that could be affected by the project, in any of its life cycle stages.

For water-related projects, special attention should be paid to the dependency of habitats and species with surface and underground water bodies. More in-depth analysis can be performed in order to understand how the analysed project can affect directly and indirectly the habitats and species present in the Natura 2000 site. An example is provided in the following figure.

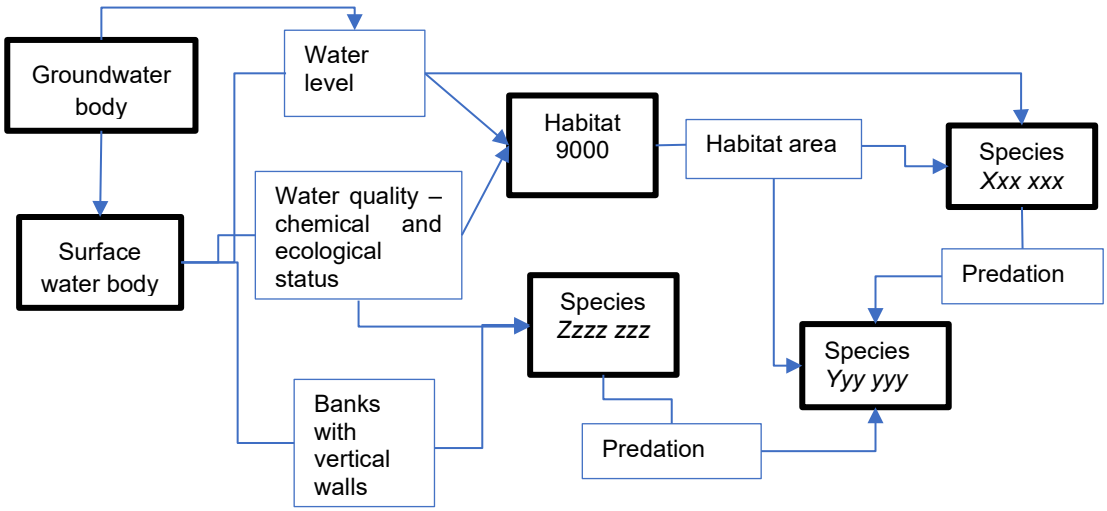


Figure 7 Exemplifying fragment of a schematic analysis of structural and functional relationships for a water-related project

A water-related project may affect any of the ecological factors included in Figure 7 and therefore, may affect directly and indirectly the habitats and species present in the Natura 2000 site. For example:

- The water level may be affected due to the interruption of the lateral connectivity of a surface water body as a result of dikes construction or banks protection in a flood management project. It can result even in the lack of water in certain areas of the habitat dependent on the water body. The lack of water or the change of the natural flooding regime can directly affect the Natura 2000 habitat, as well as other species of Community importance. Possible losses from the Natura 2000 habitat surface due to water absence or water level reduction can also lead to losses in the species of Community importance habitats;

- Groundwater level can be lowered by proposed abstractions (including extending numbers/volumes of existing sources). Changes in the groundwater level may affect water-dependant habitats, generating habitat alteration or even habitat loss;

- The water quality (chemical and ecological status) may be affected due to the discharge of treated wastewater from a proposed WWTP. Even if the effluent respect the legal requirements regarding its quality, it may not be correlated with the needs of the water-dependent Community importance habitats and species. Small changes in the water quality conditions may lead to mortality of some sensitive species and therefore to the reduction of the population size. Further on, such reduction may affect other species that are predating the affected species;

- The banks with vertical wall may be affected due to construction works (e.g., bank stabilisation for the discharge point from a WWTP, regularisation/channelling of the river in a flood prevention project). The modifications of the banks may lead to habitat loss for some bird species which are using these areas for nesting.

Direct habitats loss, habitats degradation and mortality of individuals of water dependent species can have repercussions for the entire food-chain. As a result, even species which are not water-dependent may experience declines in population numbers as a result of changes in prey species populations.

4.2.1.3 Features that ensure the integrity of the Natura 2000 sites

According to the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, the **'integrity of a site'** relates to the SSCOs, its key natural features, ecological structure and function. **Site 'integrity'** also concerns the main ecological processes and factors that sustain the long-term presence of the species and habitats in a Natura 2000 site. This will normally be covered by the SSCOs (e.g., to improve the quality of a habitat or extend the range of a species within the site). An impairment of these factors may jeopardise achievement of these objectives and have an adverse effect, even if the species or habitats are not directly impacted. For instance, the hydrological regime of a river, fluvial morphology processes, erosion, sediment transport and accumulation are crucial factors for conserving river habitats and species, reflected in their conservation objectives. Influencing these processes could have an impact on the site's integrity, even if known patches of natural habitats and localities with confirmed species presence are not directly impacted.

As regards the connotation or meaning of 'integrity', this clearly relates to ecological integrity. This can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation.

The 'integrity of the site' can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.

A site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required.

Commission notice C(2018) 7621 final "*Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*": ART. 6 INTERPRETATION GUIDE (europa.eu).

4.2.1.4 Field surveys

The activities for collecting data and information from the field are carried out to address the **uncertainties** identified in the screening stage. In this sense, the field activities programme must be able to generate relevant information for the assessment of the impacts on the Natura 2000 sites likely affected by the implementation of the project.

As the EC Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC is emphasising, the assessment must be based on the best available scientific knowledge in the field. This means that the information must be complete and up-to-date. For this reason, it is often necessary to carry out field surveys in order to fill information gaps and collect precise data. This may involve, for example, prospecting the area (using sampling methods, censuses, inventories, etc.) to identify or confirm the precise location and distribution of natural features in relation to the planned activities of the project under assessment, and their conservation condition. Data obtained from field surveys should provide an objective basis for the assessment process, which has to be carried out in view of the site-specific conservation objectives.

Field surveys should be performed for any water-related project for which an AA report is necessary. The approach for the volume and duration of the field surveys will depend on the data and information already available for the Natura 2000 sites likely to be affected by the project (e.g., inventory and mapping studies carried out recently, during the preparation or updating of the site Management plan or other national statutory documents for the Natura 2000 sites or during the periodic monitoring activities performed by the institutions with responsibilities in the management of the Natura 2000 sites) and on the characteristics of the proposed project.

The approach for the field surveys may also differ between the different zones of influence of the project. For example, in the project area and in its direct zone of influence, field activities should be mandatory. In the indirect zone of influence, field activities may be necessary if the existing data (e.g., site management plan or other national statutory documents for the Natura 2000 sites, information from publicly available databases, information form scientific literature) do not allow the clarification of uncertainties. For other areas inside the Natura 2000 sites likely to be affected, located outside the project's zones of influence, field surveys may be very limited or will not be performed and only existing information from recognised sources will be used.

The field surveys design has to consider at least the following elements:

- Spatial-temporal correlation of field activities with habitat preferences and optimal study periods for habitats and species subject to protection in Natura 2000 sites likely affected by the project implementation. The field surveys should be carried out at the time of the year in which the habitats and the species are visible, and any changes in life during the year should also be taken into account. For example, the presence of amphibians should be investigated in the active part of the year and not during the winter period. For habitats, it is important that the study is done when the typical species are present. It is important that the studies take into account needs at all stages of the life cycle of species.

- A sufficient timeframe in order to catch all the periods necessary for the habitats and species protected in the sites. The duration of the field surveys is determined by the sum of the optimal study periods for each Natura 2000 component likely to be affected by the project (e.g., if a Natura 2000 sites is designated for the protection of migratory bird species, as well as wintering bird species, the field surveys need to be conducted in autumn, winter and

spring; if nesting bird species are also protected in the site, a full year survey is needed in order to provide information for all species likely to be affected);

- The observations and sampling methods on habitats and species of Community interest have to be in accordance with recognised monitoring methodologies;
- Consideration of measurements and sampling for laboratory analysis for the physical-chemical parameters relevant to the effects of the analysed project and SSCO's parameters.

The field activities have to be able to provide verifiable evidence (e.g., photos, video recordings, audio recordings, GPS tracks) regarding the dates and duration of the field trips, as well as regarding the results obtained.

4.2.2 Identification and quantification of the effects generated by the projects

This Section presents some key effects a water-related project may generate, their quantification and spatial distribution.

As previously indicated, in this guidance, the term „effects" refers to the changes produced in the physical environment (changes in water quality, air quality, noise level etc.) by the project's interventions. In contrast, the term "impact" was used to describe the changes in the receptors (habitat loss, habitat deterioration, habitat fragmentation, disturbance, reduction of population size for habitats and species of community importance).

Projects are generating effects throughout their entire lifecycle. Physical changes as well as physical, chemical and biological contaminants are generated in each stage of the project implementation.

An example for the identification of cause – effects – impacts within a water related project are presented in the table below.

Table 4 Examples of causes, effects and impacts (the list is not exhaustive)

Project stage	Causes	Effects	Impacts
Construction	Embankments works	Vegetation removal	Habitat loss
		Soil compaction	
		Changes in air quality	Habitat degradation
		Increasing the noise level	Disturbance
	Demolition works	Birds nest destruction	Reduction of population size
		Bats roosts destruction	Habitat loss
			Reduction of population size
	Hydrological works	Interruption of lateral and/or longitudinal connectivity	Habitat fragmentation
Operation	Groundwater intake	Lowering groundwater level	Habitat degradation → Habitat loss (?)
	Surface water intake	Lowering surface water level	
	Wastewater treatment	Changes in air quality	Habitat degradation
		Odours emissions	Disturbance
		Artificial lightning	
	Discharge of treated wastewater	Increase the pollutants concentrations in surface waters	Habitat degradation
			Reduction of population size
Decommissioning	Conventionally similar to construction stage		

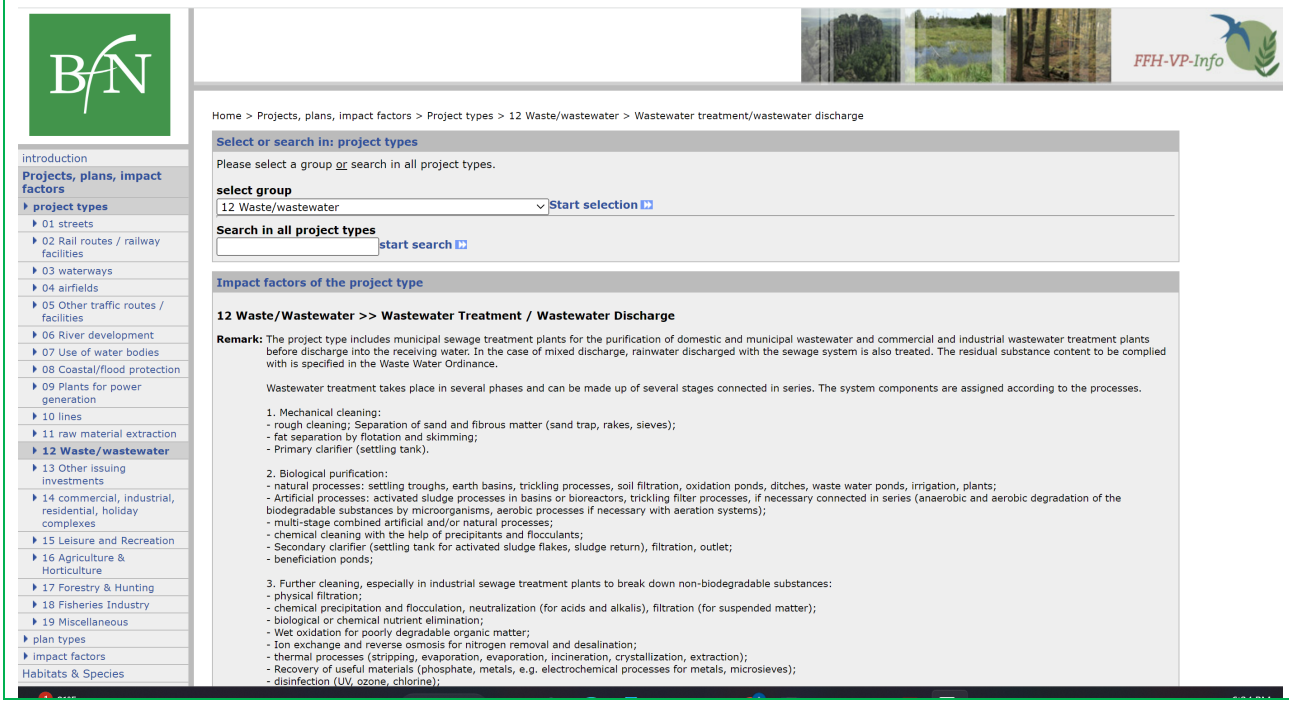
The area where the presence of the effects is identified represents the project ZoI. Impacts occur where the zone of influence overlaps with the territory of habitats and species.

Good Practice – Database and Information system of the Federal Agency for Nature Conservation (BfN) for appropriate assessments

The Federal Agency for Nature Conservation (BfN) in Germany developed an information system to support the AA process - *FFH-VP-Info* (https://ffh-vp-info.de/FFHVP/Page.jsp). The system includes necessary information on potential negative effects for nearly all project types and plans, as well as an extensive database of possible effects and impacts with respect to specific habitat types and species that can be used for screening and appropriate assessments.

The main objective of *FFH-VP-Info* is to function as a central platform providing information on impact factors that have to be considered for the screening (stage 1) and appropriate assessments (stage 2) of plans or projects, and to provide information on potential effects and impacts on specific habitats and species under the Habitats Directive and the Birds Directive. Overall, *FFH-VP-Info* aims at providing best scientific knowledge, facilitating expert assessments and their scrutiny by the permitting authorities.

The screening tool provides data on about 140 project types assigned to 19 groups. This includes an estimation of possible relevance as regards 36 different impact factors. A checklist and a report are available for each project type, with short individual explanations of the relevance ratings of impact factors. For each impact factor an explanatory page is linked to a short definition and detailed descriptions on the potential effects of the respective factor.



impact factors	relevance
1 Direct area withdrawal	
1-1 overbuilding / sealing	2
2 Change in habitat structure / use	
2-1 Direct change of vegetation / biotope structures	2
2-2 loss/change of characteristic dynamics	0
2-3 Intensification of agricultural, forestry or fishing use	0
2-4 Short-term abandonment of habitat-shaping use/maintenance	0
2-5 (longer) ongoing task of habitat-shaping use / maintenance	0
3 Change in abiotic site factors	
3-1 Changes in soil or subsoil	2
3-2 Change in morphological relationships	2
3-3 Change in hydrological / hydrodynamic conditions	1
3-4 Change in the hydrochemical conditions (structure)	2
3-5 Change in temperature conditions	1
3-6 Change in other location-related, especially climate-related factors	1
4 Barrier or trap effect / loss of individuals	
4-1 Construction-related barrier or trap effect / mortality	1
4-2 Installation-related barrier or trap effect / mortality	1
4-3 Operational barrier or trap effect / mortality	1
5 Non-material impacts	
5-1 Acoustic stimuli (sound)	1
5-2 Optical triggers / movement (without light)	1
5-3 light	1
5-4 shocks / vibrations	1
5-5 Mechanical impact (wave impact, kick)	2
6 Material influences	
6-1 Nitrogen and phosphate compounds / nutrient input	2
6-2 Organic Compounds	1
6-3 heavy metals	1
6-4 Other pollutants resulting from combustion and production processes	1
6-5 salt	2
6-6 deposits with structural effects (dust / airborne and sediments)	1
6-7 Olfactory stimuli (scents, also: attraction)	2
6-8 endocrine disruptors	1
6-9 Other substances	1
7 radiation	
7-1 Non-Ionizing Radiation / Electromagnetic Fields	0
7-2 Ionizing / Radioactive Radiation	0
8 Targeted influencing of species and organisms	
8-1 Management of Native Species	0
8-2 Promotion / Spread of Alien Species	1
8-3 Control of organisms (pesticides, etc.)	1
8-4 Release of genetically engineered new or modified organisms	0
9 Miscellaneous	
9-1 Miscellaneous	0

Report: Project profile with explanation of impact factor relevance classification

up

Relevance of the impact factor

0 (usually) not relevant
1 where relevant
2 regularly relevant

Information about relevance ratings

Example of information on effects and impacts for water and wastewater projects (automatic translation from German)

The core of the information system is represented by the database and datasheets to the habitats and the species of the Habitats Directive and the Birds Directive. It provides detailed information on the sensitivity and potential impacts for nearly all German habitats and species of Community importance. Once the subject is chosen, the relevance of the different impact factors with respect to a particular habitat or species is displayed in a table.

When selecting further the effects of an impact factor, one or more pages open up to display excerpts of scientific findings, expert knowledge and estimates contained in the database. There is a possibility to read or print selective or comprehensive reports of these data.

The relevance ratings are based on scientific sources that have been evaluated and extracted. Where such sources are not available the ratings are suggestions for orientation, comparable to the relevance ratings for project types.

Knowledge base on 36 impact factors assigned to 9 groups with specific definitions and detailed descriptions about possible effects on habitats and species. These impact factors are the common link between projects and habitats/species. They can also be read or printed as reports.

Home > Habitats and species > FFH habitat types (Appendix I FFH-RL) > 3 freshwater habitats > Rivers with mud banks

1. LRT groups | 2. Habitat Types | 3. Impact Factors | 4. Impairments

Overview of impact factors: FFH habitat types

Rivers with mud banks with vegetation of Chenopodion rubri pp and Bidention pp

Natura 2000 code: 3270

Please select an impact factor to get to the "Detailed data on impairments".

impact factors	Relevance of the impact factor	Number of records	1. Sensitivities / Effects	2. Regenerative ability	3. Forecasting methods	4. Relevance Threshold	5. Materiality threshold
			Qualification of the sources (Only the best rating is displayed.)				
1 Direct area withdrawal							
1-1 Overbuilding / Sealing [Def.]	**3**	8th	A	A	E	E	D
2 Change in habitat structure / use							
2-1 Direct modification of vegetation/biotope structures [Def.]	**2**	16	A	C	E	E	E
2-2 Loss/change of characteristic dynamics [Def.]	**3**	15	A	E	E	E	E
2-3 Intensification of agricultural, forestry or fishing use [Def.]	**1**	19	A	E	A	E	E
2-4 Short-term abandonment of habitat-shaping use/maintenance [Def.]	**0**	1	E	-	-	-	-
2-5 (longer) ongoing task of habitat-shaping use / care [Def.]	**0**	1	E	-	-	-	-
3 Change in abiotic site factors							
3-1 Change in soil or subsoil [Def.]	**1**	11	A	E	E	E	E
3-2 Change in morphological conditions [Def.]	**1**	8th	A	A	E	E	E
3-3 Change in hydrological / hydrodynamic conditions [Def.]	**3**	18	A	E	E	E	E
3-4 Change in hydrochemical conditions (structure) [Def.]	**1**	8th	D	E	E	E	E
3-5 Change in temperature conditions [Def.]	**1**	12	D	E	E	f	f
3-6 Changes in other location-related, especially climate-related factors [Def.]	**1**	8th	A	E	E	D	D
4 Barrier or trap effect / loss of individuals							
4-1 Construction-related barrier or trap effect/mortality [Def.]	**1**	2	D	-	-	-	-
4-2 Conditional barrier or trap effect/mortality [Def.]	**1**	7	A	-	-	-	-
4-3 Operational barrier or trap effect/mortality [Def.]	**1**	3	C	-	-	-	-
5 Non-material impacts							
5-1 Acoustic stimuli (sound) [def.]	**1**	1	E	-	-	-	-
5-2 Visual stimuli/movement (no light) [Def]	**1**	2	D	-	-	-	-
5-3 Light [Def]	**1**	4	D	-	-	-	-
5-4 Shocks / Vibrations [Def.]	**1**	1	E	-	-	-	-
5-5 Mechanical impact (wave impact, kick) [Def.]	**2**	12	A	E	C	E	E
6 Material influences							
6-1 Nitrogen and phosphate compounds / nutrient input [Def.]	**2**	23	A	E	E	E	E
6-2 Organic compounds [def.]	**1**	10	D	E	A	E	E
6-3 heavy metals [def.]	**1**	25	B	E	A	E	E
6-4 Other pollutants arising from combustion and production processes [Def.]	**1**	13	C	E	A	E	E
6-5 salt [def.]	**1**	24	A	E	A	E	E
6-6 Structural Impact Depositions (Dust / Airborne and Sediments) [Def]	**1**	18	B	E	E	E	E
6-7 Olfactory stimuli (scents, also: attraction) [def.]	**1**	2	D	-	-	-	-
6-8 Endocrine Disruptors [Def.]	**1**	15	D	E	A	E	D
6-9 Other Substances [Def.]	**1**	2	D	-	-	-	-
7 radiation							
7-1 Non-Ionizing Radiation / Electromagnetic Fields [Def.]	**1**	2	D	-	-	-	-
7-2 Ionizing/Radioactive Radiation [Def.]	**1**	3	C	E	-	-	-
8 Targeted influencing of species and organisms							
8-1 Management of native species [def.]	**1**	8th	D	E	E	E	E
8-2 Promotion/spread of alien species [def.]	**1**	49	A	E	C	E	E
8-3 Control of organisms (pesticides, etc.) [Def.]	**1**	24	B	E	A	A	A
8-4 Release of genetically new or modified organisms [Def.]	**1**	8th	D	-	-	-	-
9 Miscellaneous							
9-1 Miscellaneous [def.]	**0**	1	E	-	-	-	-

Qualification of sources for FFH habitat types

A generalizable evidence documented in the literature for this special habitat type
B evidence documented in the literature for this particular habitat type, but possibly exceptional
C Evidence documented in the literature for similar or associated habitat types that is classified as transferrable
D Reference documented in the literature for this special habitat type or similar or associated habitat types
E Own assessment or statement by third parties, without documented evidence/indication in the literature (expert assessment)
f no literature available / evaluation or assessment with current processing status not yet carried out

Example of information for habitat of Community importance

Quantification should be provided for each identified effect. Such quantifications can be estimated if the project characteristics are minimally known. The table below present an example of several effects quantification during construction works, based on a single input information: the length of a pipeline.

Table 5 Examples of effects quantifications

Available information	Estimation of interventions	Sources characterisation	Pollutants estimation	Effects estimation
Pipe length	Volumes of earthworks	Area source for air pollutants	Particulate matter (PM_{10}) based on emission factors, (g/m^2)	Air quality (PM_{10}, NOx) based on calculations or specialised software (mg/m^3)
	Number of machines	Mobile sources	PM_{10}, NOx based on emission factors (g/m x s)	
	Duration of works		Noise emissions for each machine (dB(A))	Noise level (dB(A)) at different distances from the sources, based on calculations or specialised software

Effects quantification is critical in order to support the quantification of impacts.

Knowledge of the spatial distribution of effects is necessary in order to define the project zone of influence. Such analysis is difficult to be performed without the support of specialised software, such as GIS and/or pollutants dispersion modelling software. Where such tools are not available, the zone of influence should be established precautionary, based on the results of similar projects where effects were quantified. For example, in the case of noise or air quality during construction a precautionary approach would involve considering that the zone of influence extends to cover the area where the effects can be observed (this could be at least 1 km or more) from the project location. **The ZoI is to be determined separately for each type of effects.**

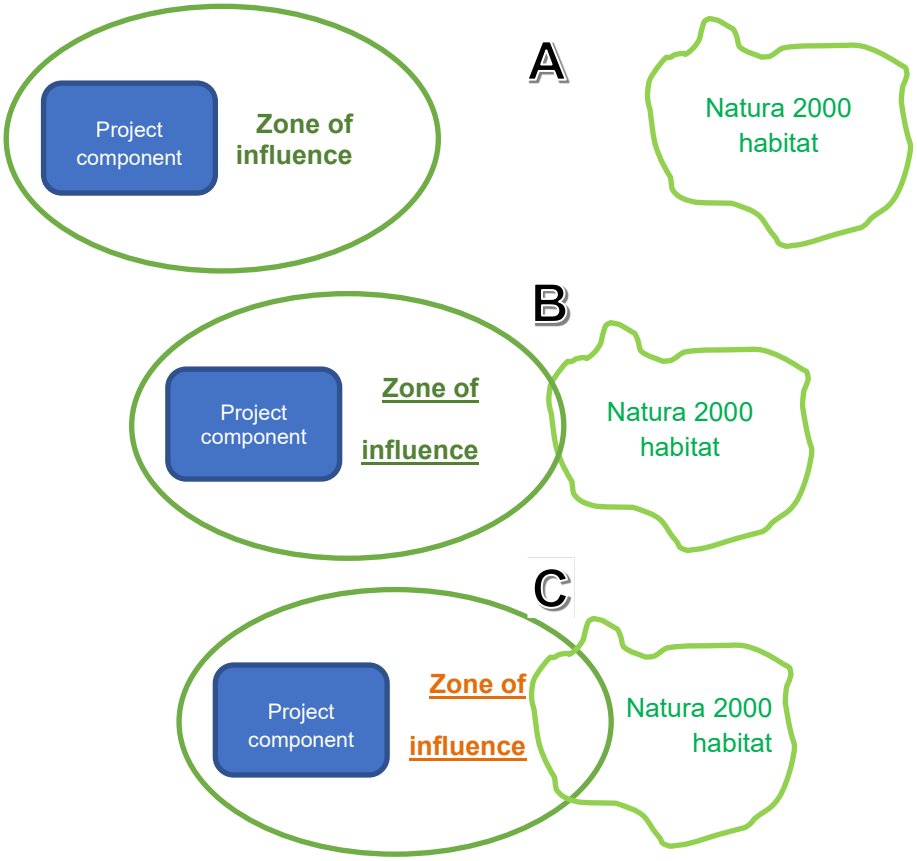


Figure 8 Relation between „zone of influence" and the Natura 2000 feature. A - The Natura 2000 habitat is unlikely to be affected; B - Natura 2000 habitat is likely to be affected; C - potential significant impact on Natura 2000 habitat

When determining the zone of influence, threshold values for each type of effect and potentially affected species must be taken into account. Of course, the limit values provided by the legislation for the protection of human health must be avoided. For example, when determining the zone of influence of noise in relation to the presence of some bird species characteristic of meadows, the threshold value that can be taken into account is only 42 dB(A). If the zone of influence delimited on the basis of the 42 dB(A) isoline does not intersect the favourable habitat of the meadow bird species, it is less likely that they will be affected by the noise generated by the analysed project.

Particular attention must be paid to species with high mobility. In their case, the spatial analysis between the zone of influence and the location of their favourable habitat is insufficient to appreciate the occurrence of an impact. Individuals of the species may be affected as a result of moving within the zone of influence even if it does not overlap with their favourable habitat (see also the next section).

The ZoI can have a spatial and temporal dynamic. For example, noise can vary significantly over time depending on the volume of activity on site. Also, an effect such as the penetration and spread of invasive species can experience an increase in spatial extent over time. A precautionary approach will take into account these spatial-temporal changes and will lead to the inclusion in the ZoI of the most unfavourable situation.

In some cases, project implementation can lead to indirect effects which needs to be identified and eighter included in a separate "indirect zone of influence" or within the "zone of influence", together with the direct effects. An example is the increase in riverbed erosion processes as a result of the regularization of the upstream course and the increase in the water flow speed.

4.2.3 Identification and quantification of the impacts generated by the projects

This Section deals with the level of analysis: SSCO's parameters, measuring units, spatial and temporal distribution of impacts.

Impacts represent those changes at the level of Natura 2000 habitats and species that may affect their conservation status. Such changes include:

- loss of habitat,
- habitat alteration/degradation,
- habitat fragmentation,
- disturbance of species activity and
- reduction of population size.

Impacts may be direct and indirect. For example, in the case of a fish species, the construction of a transversal barrier on the course of a river has a direct impact on the fragmentation of the species' habitat. Over time, this interruption of longitudinal connectivity can have an indirect impact on the loss of the upstream habitat as well as the reduction of the population of the species. Another example of indirect impact is the reduction of population size of a predator species due to the reduction of population size of the prey species, if the last one is to be generated by the analysed project. In the case of a water/wastewater project, a relevant example would be the installation of pipelines on the surface of a habitat of Community interest. Habitat alteration produced by such intervention is most likely to be non-significant. However, in the long-term and without any control measures, invasive species may install and spread along the route of the pipelines and in the neighbouring areas of the habitat, resulting in a much larger area affected or even potential habitat loss.

The identification of impacts involves a process of analysing all the interventions of a project, the effects generated by it, as well as the changes occurring at the level of habitats and species of Community interest, regardless of whether they are direct or indirect, temporary or definitive, reversible or irreversible, on a scale small or large. The identification process should be documented and highlighted in the AA report (an example is provided in the following table).

Table 6 Exemplification of impact identification process for a bat species

Type of impact	Project stage	Causes	Effects	Impacts	Quantification of impacts	Ssco's parameter affected
Habitat loss	Construction	Embankments works	Vegetation removal and soil compaction	Losses of feeding habitat	~ 1 ha	Habitat surface
		Demolition works	Bats roosts destruction	Losses of roosting habitat	One of the 5 roosting locations identified	Number of roosts
	Operation	Surface water intake	Lowering surface water level	Losses of feeding habitat	~ 0.5 ha	Habitat surface

Most of the identified impacts are affecting one or more SSCOs' parameters. As presented in the above example, the correlation between the type of impact and the corresponding SSCO's parameter should be part of the impact identification process.

Quantification is an essential stage that must also accompany the impact identification process. As each of the SSCOs' parameters should have a quantified target, the impact assessment cannot be done in the absence of impact quantification. When quantifying the impact, the measuring unit considered should be similar with the measuring unit of each parameter's target.

Quantification should relay on the use of:

- Available methodologies and tools (including spatial or numerical modelling);
- Monitoring results of similar projects (including articles published in scientific journals);
- Consultation with panels of experts.

The most critical aspect in the process of impact identification and quantification is the coherence of the assessment. Particular attention should be paid to the following aspects:

- The use of **structural and functional relationship** analysis results in order to identify adequately the indirect impacts. For example, if a prey species is affected by the proposed project, it is most likely that the predator species is also affected;
- The forms of **impacts are interrelated**. For example, a loss of the habitat of a species may also affect population's related parameters such: distribution pattern of the species (as a result of individuals' displacement within the site) or the population size (displacement outside the site or impossibility to sustain the same population size).

According to the established case-law and the Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, the AA report must be based on the best available scientific knowledge in the field and on a complete and up-to-date set of information. Field surveys are necessary to be conducted in order to fill information gaps and collect precise data, particularly where uncertainties exist on habitats' location, species distribution and activity in relation to the planned activities of the project under assessment.

Additional guidance on the assessment of the impacts is presented in Section 5.2 of the document below.

4.2.4 Assessment of cumulative impacts

Other plans or projects that could, in combination with the analysed project, have a significant impact on the habitats and species of a Natura 2000 site must be taken into account during the elaboration of the AA report.

The cumulative impact assessment in the AA report takes into account and details the similar assessment performed in the screening stage.

Examples of cumulative impact for water related project can include:

- The lowering of the groundwater level, in the area of a Natura 2000 habitat dependent on underground water, as a result of multiple water abstractions or in combination with other factors such as the extraction of non-energy aggregates, the execution of consolidation works for a transport infrastructure project, or/and the contribution of climate change;
- The reduction of water flow in a surface water body due to multiple withdrawals (e.g., for water supply, energy generation or irrigation) and climate change, below the target value set for the parameters of water dependent habitats and species protected in the site;
- Multiple sources for discharging water contaminants (e.g., WWTPs, other sources) are proposed upstream or in the area of a habitat/habitat of a species sensitive to changes in water quality;

- Proposed damming works together with other existing or proposed physical barriers can lead to the fragmentation of the habitats of some species, significantly affecting the SSCO parameters related to the mobility of individuals between different types of habitats (feeding, resting, reproduction).

The crucial aspect in assessing cumulative impact is the level of assessment. The analysis should be carried out at the level of the SSCO's parameter, which benefit from the highest degree of specificity as well as a quantification ensured by the target. An impact from a project on a SSCO's parameter alone may be insignificant, but when the cumulative impacts are taken into account the impact can become significant. Analysis conducted at the level of each SSCO's parameter allows the identification and quantification of the cumulative contribution of the analysed project + other P/Ps + existing pressures (+ where the case, contribution of climate change). The cumulative contribution is analysed towards the significance thresholds in order to assess if the identified cumulative impacts are likely to be significant.

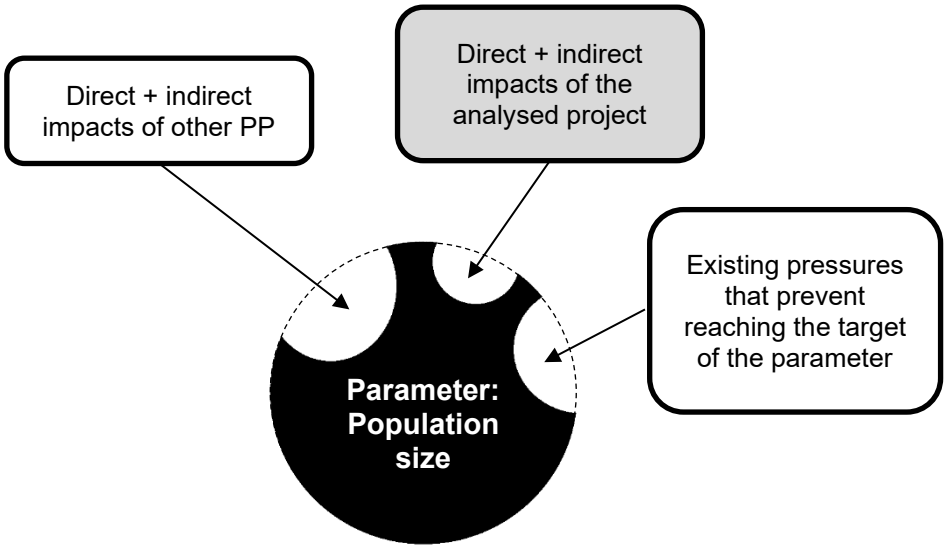


Figure 9 Schematic representation of the cumulative impact on SSCOs parameters

As parameters and their targets are set for each habitat and species at the site level, the assessment of cumulative impact on the parameters have to consider the entire area of the site. Therefore, any P/P which generates impact on the Natura 2000 site should be considered, independently if located inside or outside the limits of the Natura 2000 site.

The example provided in the next figure emphasize the need to consider all types of impacts (direct and indirect) on the same habitat or species, independently of the P/Ps' location in relation to the Natura 200 site. Therefore, the cumulative impact on habitat "X" is not represented only by the combination of impacts between the "analysed P/P" and "P/P2". The assessment should include also the contributions of "P/P3" and "P/P4" (see figure below).

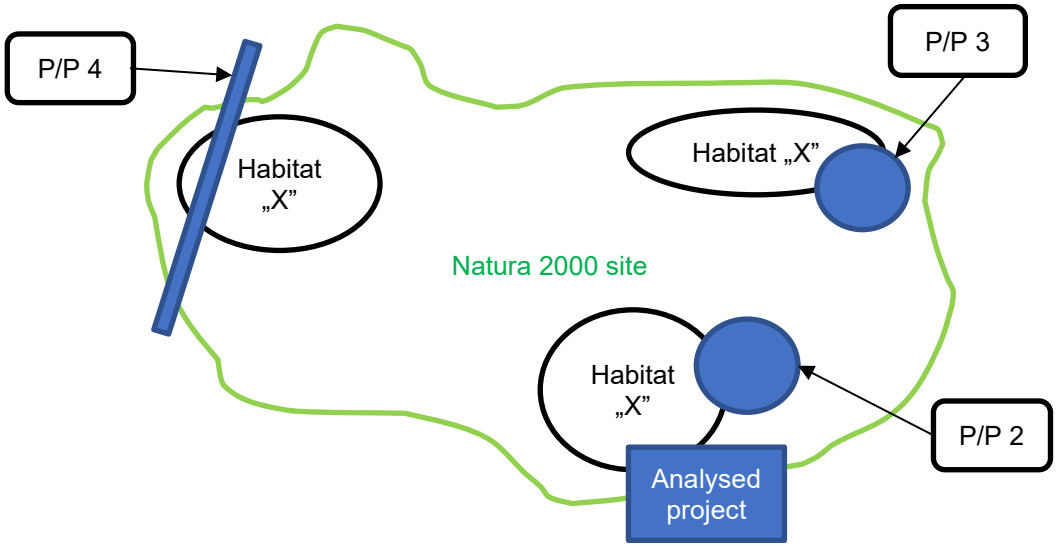


Figure 10 Identification of other P/Ps generating impact on the same Natura 2000 feature (“habitat X”)

Whenever possible, the cumulative impact has to be quantified. Therefore, the quantified information related to other P/P needs to be extracted from existing SEA Reports, EIA Reports or AA reports prepared for the plans/programmes and projects or estimated based on similar situations or expert opinion. According to the Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, in the case of expert opinion it is preferable “a consensual estimate of a panel of independent experts rather than on the opinion of an individual expert”. Consultations with authorities and public could also support the experts in developing their opinions.

The following box is presenting an example of an iterative process (some steps revisited in response to the results of others) necessary to conduct a cumulative impact assessment.

Further guidance: Example of an iterative process for conducting a cumulative impact assessment (Source: Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Commission Notice C(2021) 6913)

Step 1. Scoping

- Identify the geographical boundaries and the timeframe of the Cumulative Impact Assessment (CumIA);
- Identify the protected habitats and species significantly present on the site and ecological processes to consider;
- Identify other existing and planned (implemented/permitted or planned[22]) plans and projects (and human activities) that do/would affect the natural features to be included in the CumIA;
- Identify natural environmental drivers that also impact the condition of the features considered in the CumIA.

Step 2. Assess cumulative impacts on the protected habitats and species

- Collect available information on the impact of other plans, projects, activities and natural drivers on the site-specific conservation objectives set for the natural features in the site;
- Estimate the cumulative impact on the protected features' SSCOs — i.e., the total impact on the protected features when the impacts of the plan or project under investigation are combined with other plans or projects.

Step 3. Assess the significance of anticipated cumulative impacts

- Assess the significance of the anticipated cumulative impacts on the natural features considered, taking into account its conservation objectives. For example, when the cumulative impact on the condition of the natural features approaches or exceeds a threshold for a certain attribute defined in the conservation objective of that feature, the impact is significant.

Step 4. Managing cumulative impacts

- Identify, when necessary, additional mitigation measures to reduce an estimated cumulative impact on the protected features (carrying out the tasks described in steps 2 and 3 will be necessary to assess the value of such additional mitigation).

[22] Planned project: a project for which a notification under the EIA and/or Habitats Directive has been submitted.

4.2.5 Assessment of the significance of the impacts on habitats and species in view of the SSCOs for Natura 2000 sites, individually and in combination with other plans and projects (cumulative impacts)

This Section shows approaches on how to assess impacts as significant or non-significant and how to deal with uncertainties.

In the AA report, the impacts generated by a plan or project (alone or in combination with other P/Ps) must be assessed against the SSCOs set for the protected habitats and species present in the Natura 2000 sites. The assessment of impact significance is to be conducted, case-by-case, at the level of each parameter of the conservation objectives.

The AA report must address all uncertainties identified in the screening stage. The AA report achieves this by collecting data from the field, better documentation of data and information sources, performing calculations, numerical modelling and spatial analysis or consulting with expert panels.

For the significance of the impacts, two classes ca be used at this stage used: **non-significant** and **significant**. Effort does not necessarily lead to the clarification of all uncertainties. All aspects that cannot be clarified in the stage of the AA report (e.g., regarding the project interventions, the effects and impacts generated by them) will have to be considered as potential significant impacts.

Any impact that is considered non-significant requires a very detailed justification. Such justification must be able to provide quantitative and qualitative arguments to prove that the implementation of the project, alone or in combination with other plans and projects, will allow the achievement of the targets set for each parameter of the conservation objectives defined for each of the habitats and species previously identified as likely to be affected. When assessing the impact significance, both quantitative and qualitative criteria should be considered:

- **Quantitative criteria**. Quantitative predictions based on direct measurements, predictive models, spatial analysis, previous similar projects or expert opinion (preferably supported by the results of previous monitoring programmes or consultations). Quantifications are carried out for each of the conservation status parameters and are expressed in the units of measure established (by the conservation objectives) for the target of each parameter. The quantitative assessment of the significance of the impact involves reporting the predictions to the target defined for the conservation status parameter. The impact can thus be expressed as a share of the target parameter (e.g., % loss of the habitat area, % of victims of the population size, etc.). If significance thresholds have been established in the site management plan or in any other national statutory document, the quantitative interpretation of the impact is made by referring to them. If the AA report proposes significance thresholds, they must be adequately justified (e.g., a loss of 1% of the area of habitat Y will not lead to deterioration of the conservation status given the large area it occupies in the site; a number of victims summing up to approx. 2% of the population size will not lead to the deterioration of the conservation status of the species because this percentage is lower than the annual increase of the population size of the species);

Good practice:

There are several widely accepted and widely used modelling tools that can be used to assess the impact of targeted water bodies when dealing with Natura 2000 cases.

This applies, for example, to model tools for carrying out discharge and dispersion calculations, water level and water flow calculations, stowage calculations, flood analyses, etc. Examples of these model tools are VASP, PROKA, MIKE 3, MIKE 11, MIKE 21, MIKE Urban and MIKE Flood.

The use of modelling tools in accordance with their purpose can help to carry out a professionally consolidated assessment of the impact of targeted water bodies and on the integrity of the Natura 2000 site.

When using a model tool, the authority shall consider, inter alia, whether there is sufficient safety margin included in the model so that the modelled impact or load scenarios provide sufficient certainty in relation to the assessment of, for example, possible exceedances of the applicable environmental quality requirements. It is also important that the Authority assesses whether the model's results can be verified as necessary. In addition, the authority must decide on a case-by-case basis whether there is a need for further assessments and analyses than mere modelling.

The Nature and Environment Complaints Board (now the Environmental and Food Complaints Board) has in several cases concerning the establishment of marine use119 dealt with the use of model tools. In the cases, the Board found that the MIKE 3 model can generally be used to predict the environmental effects of emissions from e.g., marine aquaculture, and that the MIKE 3 model or similar models can be used as part of the basis for assessing whether the release of a given amount of nutrients and organic matter from a marine farm can affect the environmental conditions of the recipient. Thus, the use of model tools cannot stand alone, but can be used in assessing compliance with water planning and in the concrete materiality assessment.

The Habitat Guide. Guidelines on the application of Order No 1595 of 6 December 2018 on the designation and administration of international nature conservation areas and the protection of certain species, Denmark, 2020: Habitatvejledningen (retsinformation.dk)

- **Qualitative criteria**. At least the following aspects must be considered:
    - Conservation status at the biogeographical region level;
    - If the habitat/species is present in other Natura 2000 sites;
    - If the habitat/species is at the limit of their distribution range;
    - If the project affects the core/edge of the habitat;
    - If the ecological connectivity is maintained;
    - If the critical physical and chemical parameters are maintained.

The precautionary approach must accompany any assessment of the significance of the impacts. At least in the following situations an impact should be considered significant, especially when information is missing or significance thresholds cannot be defined to guarantee the maintenance/achievement of long-term conservation objectives:

- For small area habitats/species' habitats;
- For species with small population size;
- For habitats/species with unfavourable conservation status (in the Natura 2000 site likely to be affected or at the biogeographical region level).

Mitigation measures are implicitly linked to the existence of a significant impact. As a last verification regarding the significance of the impacts, it should be considered that when the authors of the

appropriate assessment consider that it is necessary to implement a measure/s, it is very likely that they have identified a significant impact.

4.2.6 Assessment of the impact on the integrity of the Natura 2000 sites

As said above in Section 4.2.1.3, based on the EC Guidance on Article 6 of the Habitats Directive, the Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC reads that "the **'integrity of a site'** thus relates to the site's conservation objectives, its key natural features, ecological structure and function. If the site's conservation objectives are not undermined by the proposed plan or project (alone and in-combination with other plans and projects) then the site's integrity is not considered to be adversely affected. Site 'integrity' also concerns the main ecological processes and factors that sustain the long-term presence of the species and habitats in a Natura 2000 site. This will normally be covered by the conservation objectives for the site (e.g., to improve the quality of a habitat or extend the range of a species within the site). In other words, the question of whether there can be damage to the integrity of the Natura 2000 site is linked to the question how the plan or project may affect the Natura 2000 SSCOs[23]. An impairment of these factors may jeopardise achievement of these objectives and have an adverse effect, even if the species or habitats are not directly impacted. When a permanent loss of a part of a habitat or a species population significantly present on the site, or a long-lasting deterioration of the site ecological structure, function and processes are identified as an impact resulting from the project or plan, it can be concluded that the plan or project will cause an adverse effect on the integrity of the site. Conversely, if the AA shows beyond reasonable doubt that the protected species and habitat types on the basis in the Natura 2000 site can continue to be in favourable conservation status or move towards it, in accordance with SSCOs, a number of activities could be carried out without these being considered a lasting damage to the integrity of the Natura 2000 site.

Nevertheless, it has also to be considered that the capacity for self-repair or resilience could in some cases allow the ecological structure and functions of the site to recover within a relatively short period of time, e.g., a community or a species population could recover naturally after some temporary disturbance. If so, it might be considered that the development would have no adverse effects on the integrity of the site. The capacity for self-repair would be normally reflected in the conservation objectives of the protected features. The degree of temporary adverse effects can determine whether an adverse effect on the site can be concluded. If the time needed for the habitat to recover is estimated in days, weeks or even a couple of months, it might be considered that there will be no adverse effects on the integrity of the site. A short period of disturbance, while affecting some habitats or species, might thus not cause an adverse effect on the integrity of the site. However, this must be carefully analysed on a case-by-case basis, having regard to the cycles of the ecosystems in the particular site, the structure of the communities, ecological functions and the processes in the site."

Examples of situations in which water-related projects can generate significant impacts on SSCOs and therefore on the integrity of Natura 2000 sites are presented below:

1. When the project hamper or cause delays in progress towards achieving the site's conservation objectives;
2. When the project generates losses from those habitats for which the site management plan or any other national statutory document has established that no habitat surfaces can be lost;

[23] For reference Judgment on Case C-258/11, paragraphs 30-39

3. When the project generates losses that cannot be considered negligible from habitats/habitats of species that do not have a favourable conservation status (at the level of the site or at the level of the biogeographical region);
4. The habitat loss generated by the project cumulates with losses generated by other P/Ps and the value of the cumulative impact is not negligible;
5. The project implementation may favour the dispersion of invasive species into a habitat sensitive to the presence of invasive species and which is not in a favourable conservation status;
6. The project generates the interruption of longitudinal connectivity in an area where the conservation objectives do not allow the appearance of fragmentation elements;
7. The project is implemented in an ecological corridor area where there are already barriers to the movement of species of Community interest or their prey species;
8. The mortality rate generated by the project on a species exceeds the annual numerical increase of the population in the affected Natura 2000 site;
9. The mortality rate generated by the project, together with other P/Ps, on a species exceeds the annual numerical increase of the population in the affected Natura 2000 site;
10. The disturbance generated by the project, alone or in combination with other P/Ps, may lead to the modification of the distribution pattern of the species in the site;
11. The disturbance generated by the project, alone or in combination with other P/Ps, may lead to the displacement of some individuals from the site, in the conditions when the population size is already small;
12. The project implementation results in a loss or reduction of key features, natural processes or resources that are essential for the maintenance or restoration of relevant habitats and species in the site (e.g., tree cover, tidal exposure, annual flooding, prey, food resources);
13. The project implementation affects the stepping-stone role of the site in the Natura 2000 network, although the species for which protection the site was designated will not be significantly affected;
14. The project implementation disrupts the factors that help maintain the favourable conditions of the site or that are needed to restore these to a favourable condition within the site;
15. The project implementation interferes with the balance, distribution and density of species that are the indicators of the favourable conditions of the site.

The identification of potential significant impacts does not mean that the project cannot be approved. It means that it cannot be approved in its initial form. According to the EC Guidance on Article 6 of the Habitats Directive, “depending on the degree of impact identified, it may be possible to apply mitigation measures to avoid these impacts or reduce them to a level where they will no longer adversely affect the integrity of the site”. Therefore, the identification of likely significant impacts leads to the necessity of identifying and implementing the most appropriate measures of preventing, avoiding and reducing the impacts (mitigation measures). If after considering these measures, the significance of the residual impact remains significant, it needs to be decided if the provisions of Article 6(4) can be applied to the project.

4.2.7 Mitigation measures

4.2.7.1 Preventive action principle

The **Preventive action principle** has a long historical background. The principle was introduced as Principle 21 of the Stockholm declaration from 1972 and it was adopted by principle 2 of the Rio Declaration on Environment and Development. Prevention has since then been introduced in a number of international Conventions and also in EU law; sometimes the application of the principle is restricted to cases where significant damage may occur[24]. Article 192 of the TFEU mentions the principles without defining though its modalities of application. Numerous secondary legislation is based on this principle, as the EIA Directive, WFD Directive, Industrial Emissions Directive, Seveso Directive, etc. This principle allows action to be taken to protect the environment at an early stage. It is not only a question of repairing damages after they have occurred, but to prevent those damages occurring at all[25]. The preventive approach tries to anticipate possible (probable) negative effects and uses instruments to avoid that damage will occur. There can be differentiated measures to prevent pollution/harm and to reduce/ minimize the consequences if damage has nevertheless occurred.

4.2.7.2 Mitigation hierarchy

The **mitigation hierarchy** is the sequence of actions to anticipate and *avoid*, and where *avoidance* is not possible, *minimize*, and, when impacts occur, *restore*, and where significant residual impacts remain, *offset* for biodiversity-related risks and impacts on affected communities and the environment. The mitigation hierarchy is therefore a framework for managing risks and potential impacts related to biodiversity. It is used when planning and implementing development projects, to provide a logical and effective approach to protecting and conserving biodiversity and maintaining important ecosystem services. It is also a tool to aid in the sustainable management of living, natural resources, which provides a mechanism for making explicit decisions that balance conservation needs with development priorities.[26]

Further Guidance: Extract A cross-sector guide for implementing the Mitigation Hierarchy (csbi.org.uk), 2015**. *A cross-sector guide for implementing the mitigation hierarchy***

Preventive measures

Avoidance, the first component of the mitigation hierarchy, is defined by the CSBI as 'Measures taken to anticipate and prevent adverse impacts on biodiversity before actions or decisions are taken that could lead to such impacts.'

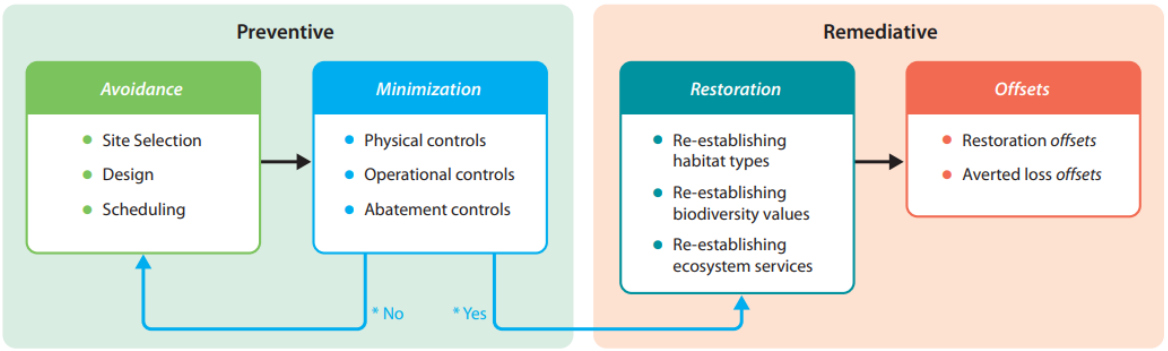
Avoidance is often the most effective way of reducing potential negative impacts. Its proper implementation requires biodiversity and ecosystem services to be considered in the pre-planning

[24] Law and Governance Policy - Library (europa.eu)
[25] prevention principle — European Environment Agency (europa.eu).
[26] CSBI (2015). *A cross-sector guide for implementing the mitigation hierarchy*. Prepared by the Biodiversity Consultancy on behalf of IPIECA, ICMM and the Equator Principles Association: Cambridge UK. Available at: http://www.csbi.org.uk/our-work/mitigation-hierarchy-guide/

stages of a project. When avoidance is considered too late, after key project planning decisions have been taken, cost-effective options can easily be missed.

Minimization, the second component of the mitigation hierarchy, is defined by the CSBI as 'Measures taken to reduce the duration, intensity, significance and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible'. Well-planned minimization can be effective in reducing impacts to below significance thresholds.

Figure 1 *Schematic diagram showing the implementation of the mitigation hierarchy*



Restoration measures and offsets

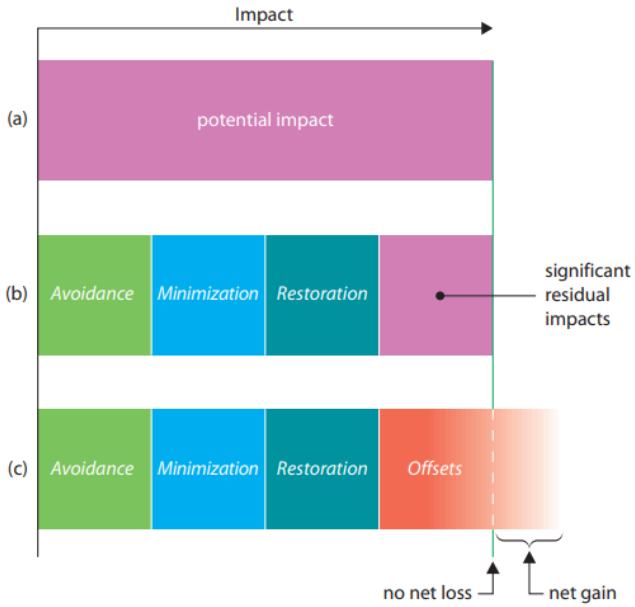
Restoration is used to repair BES features of concern that have been degraded by project activity. It involves measures taken to repair degradation or damage to specific BES features of concern - which might include species, ecosystems/habitats or priority ecosystem services - following project impacts that cannot be completely avoided and/or minimized. In the context of the mitigation hierarchy, restoration should focus on the BES features identified as targets for mitigation. Restoration is usually carried out on-site and to repair impacts caused (directly or indirectly) by the project. Implementation of offsets (see below) may also involve restoration activities carried out off-site to repair impacts not caused by the project. These different kinds of restoration activities should not be confused.

Offsetting forms the final component of the mitigation hierarchy. Offsets are defined by the CSBI as 'Measurable conservation outcomes, resulting from actions applied to areas not impacted by the project, that compensate for significant, adverse project impacts that cannot be avoided, minimized and/or rehabilitated/restored'. Offsets should have a specific and preferably quantitative goal that relates directly to residual project impacts. Often (but not necessarily) this is to achieve no net loss or a net gain of biodiversity. Offsetting is a measure of last resort after all other components of the mitigation hierarchy have been applied.

Offsets can be complex, expensive and uncertain in outcome. The need for offsets should therefore be reduced as far as possible through considered attention to earlier components in the mitigation hierarchy.

In the example shown in Figure 2, a project's potential impact (a) is reduced by taking measures to avoid, minimize and restore impacts (b) but a significant residual impact remains; this can be remediated via an offset (c), which in this case leads to a net gain in biodiversity.

Figure 2 *Application of the mitigation hierarchy components*



CSBI (2015). *A cross-sector guide for implementing the mitigation hierarchy*. Prepared by the Biodiversity Consultancy on behalf of IPIECA, ICMM and the Equator Principles Association: Cambridge UK.

Further Guidance: COMMISSION STAFF WORKING DOCUMENT SWD(2019) 305 final "*EU guidance on integrating ecosystems and their services into decision-making*": SWD_2019_305_F1_STAFF_WORKING_PAPER_EN_V2_P1_1042629.PDF (europa.eu)

Action 7 of the EU biodiversity strategy aims to ensure no net loss of biodiversity and ecosystem services[27]. This can be achieved by adhering to a mitigation hierarchy to address potential adverse impacts on ecosystems and their services, in the following order of priority.

- **Avoidance**: measures to identify and completely avoid detrimental impacts from the outset, such as careful spatial placement of infrastructure.
- **Minimisation**: measures to reduce the duration, intensity and/or extent of detrimental impacts (including direct, indirect and cumulative impacts) that cannot be completely avoided.
- **Rehabilitation/restoration**: measures to rehabilitate degraded ecosystems or restore cleared ecosystems following impacts that could not be completely avoided and/or minimised.
- **Offsetting**: measures to compensate for residual, significant, adverse impacts that could not be avoided, minimised or restored. Measures to over-compensate for losses can also lead to net societal gains by their contribution to well-being and prosperity.

Actions within the mitigation hierarchy should be selected with careful thought, and in a transparent manner to permit scrutiny by environmental authorities and stakeholders.

[27] Note that any potential negative impacts on protected habitats and species in Natura 2000 sites are subject to the rules laid out in Article 6(3) and Article 6(4) of the Habitats Directive.

European Commission (2019). COMMISSION STAFF WORKING DOCUMENT SWD(2019) 305 final "EU guidance on integrating ecosystems and their services into decision-making": pdf (europa.eu).

The Habitats Directive does not include clear requirements regarding the measures to be applied to avoid or reduce the impacts. Additional clarifications and requirements are included in the Commission's Notices related to the implementation of Article 6 of the Directive. The most important aspects are included in the following box.

Further Guidance

Commission Notice C(2018) 7621 Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

If adverse impacts on the site's integrity have been identified during the appropriate assessment or cannot be ruled out, the plan or project in question cannot be approved. However, depending on the degree of impact identified, it may be possible to introduce certain mitigation measures that will avoid these impacts or reduce them to a level where they will no longer adversely affect the integrity of the site.

Mitigation measures must be directly linked to the likely impacts that have been identified in the appropriate assessment and can only be defined once these impacts have been fully assessed and described in the appropriate assessment. Thus, mitigation measures can only be considered at this stage and not at the screening stage.

Mitigation measures, which aim to avoid or reduce impacts or prevent them from happening in the first place, must not be confused with compensatory measures, which are intended to compensate for any damage that may be caused by the project. Compensatory measures can only be considered under Article 6(4) if the plan or project has been accepted as necessary for imperative reasons of overriding public interest and where no alternatives exist.

For the competent authority to be able to decide if the mitigation measures are sufficient to remove any potential adverse effects of the plan or project on the site (and do not inadvertently cause other adverse effects on the species and habitat types in question), each mitigation measure must be described in detail, with an explanation based on scientific evidence of how it will eliminate or reduce the adverse impacts which have been identified. Information should also be provided of how, when and by whom they will be implemented, and what arrangements will be put in place to monitor their effectiveness and take corrective measures if necessary.

Mitigation measures may be proposed by the plan or project proponent and/or required by the competent national authorities in order to avoid the potential impacts identified in the appropriate assessment or reduce them to a level where they will no longer adversely affect the site's integrity.

The identification of mitigation measures, like the impact assessment itself, must be based on a sound understanding of the species and habitats concerned and must be described in detail. Well designed and implemented mitigation measures will limit the extent of any necessary compensatory measures, if applicable in the context of Article 6(4), by reducing the residual impacts which require compensation.

Commission notice C(2021)6913 *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

In practice, the need for mitigation measures is often acknowledged at an early stage in the design or inception stages of a plan/project (for example at a 'pre-application' discussion between the developer/applicant and the nature conservation advisers) and included as part of the application for authorisation. Although mitigation measures cannot be taken into consideration when screening the plan or project, the fact that they have been identified as necessary can greatly assist the efficient, effective and timely execution of the appropriate assessment stage, and hence the decision on whether the plan/project can be authorised under Article 6(3).

The hierarchy of mitigation measures suggests first avoidance (i.e., preventing significant impacts from happening in the first place) and then reduction of impact (i.e., reducing the magnitude and/or likelihood of an impact).

Each mitigation measure must be described in detail, specifying how it will eliminate or reduce the adverse impacts identified, and how, when and by whom it will be implemented.

The **effectiveness of mitigation measures** needs to be demonstrated, e.g., with reference to successful implementation in other similar developments, and monitored, and by putting in place a system to monitor results and take corrective measures where failures are detected.

Therefore, in order to propose the measures, it is necessary to follow the hierarchy of the measures, whereby the prevention measures are prioritized. If this is not possible, it is necessary to prioritize the measures to avoid the impacts, the reduction measures being necessary to be proposed only in the situation where prevention or avoidance measures are not possible. Compensatory measures are a last resort that can be applied strictly under the conditions set by the Habitats Directive and EC guidelines.

Table 7 Types of measures that can be proposed within the AA report

Type of measure	Explanation for the type of measure
Prevention	The impact will not occur.
Avoidance	The impact will occur, but it will not be a significant one.
Reduction	A significant impact becomes an insignificant residual impact.
Compensatory	The significant impact will occur but it is offset by the extent of the losses.

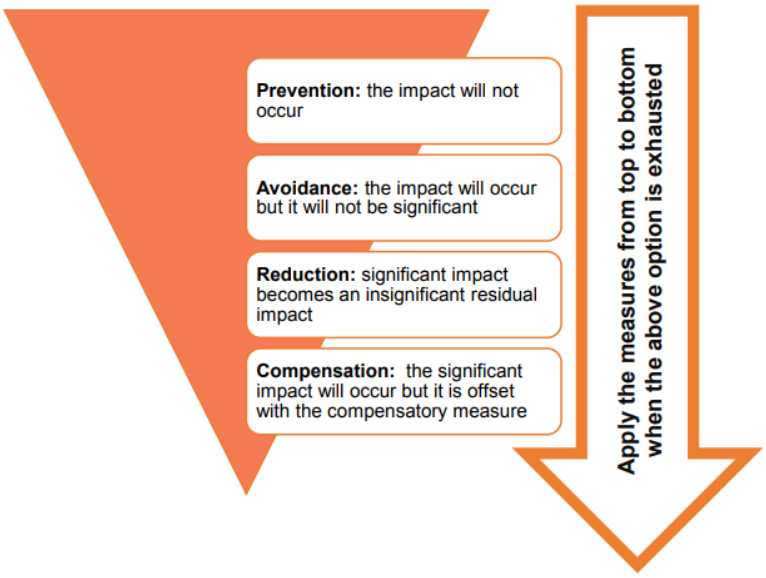


Figure 11 The mitigation hierarchy

The proposal of the mitigation measures (prevention, avoidance and reduction measures) must include the following preliminary steps:

- Location of the areas where the identified impacts are generated;
- Identification of all the spatial data necessary for the correct location of the proposed measures.

The development of the mitigation measures must be carried out mainly for the significant impacts identified in the assessment of the impacts' significance. Setting-up mitigation measures for insignificant impacts may also be necessary depending on the specific case.

4.2.7.3 SMARTEE approach

The mitigation measures must be elaborated using a **SMARTEE** approach. Therefore, the measures must be: **S**pecific, **M**easurable, **A**pplicable/**A**chievable, **R**elevant, **T**ime-bound, **E**fficient and **E**ffective.

Key elements for mitigation measures

The proposed mitigation measures must explain very clearly:

- What must be done by the one who implements the measure?
- Who is implementing the measure?
- How the measure is to be implemented?
- Where the measure is to be implemented?
- When the measure is to be implemented?
- What is the purpose of the proposed measure (which form of impact is it addressed to)?
- What are the expected results from implementing the measure?
- What is the technical-scientific feasibility and degree of effectiveness expected from the measure?

The following table presents an example of a checklist for verifying if the proposed mitigation measures follow the SMARTEE approach.

Table 8 Example of checklist for SMARTEE mitigation measures

Mitigation measure attribute	Key question	Yes/No
Specific	Does the measure addresses to a certain habitat/ a certain species?	
	Does the measure addresses to a certain parameter from the SSCOs?	
	Does the measure addresses to a significant impact identified for the project?	
	Is the measure clearly located or is it clearly explained where the measure must be implemented?	
	Can the measure be also useful to other habitats/species?	
Measurable	Are there defined the constructive elements of the measure (e.g., length, width, height)?	
	Can the contribution to impact reduction be quantified?	
	The measurement unit is defined in accordance to the measurement unit of the affected SSCOs parameter?	
	Does the quantification method allow the establishment of an indicator that can be monitored during the application of the measure?	
Applicable/**A**chievable	Is there evidence regarding the practical possibility of achieving/implementing the measure?	
	Is there evidence of the application and functioning of the measure in the past?	
	Can the measure be implemented without disproportionate costs?	
	Are there the sufficient means and resources foreseen to implement the mitigation measures? Are these included in the project form the technical and financial point of view?	
Relevant	Is this the best measure applicable for the identified impact?	
	Can the measure lead to a non-significant residual impact?	
Time-bound	Is it clearly mentioned the stage of the project in which the measure is implemented/ carried out?	
	Is it clearly mentioned the stage of the project in which the expected results are achieved? Is there a certain time-frame in which the expected results are achieved?	
	If the measure needs to be implemented in a specific period for the habitats or the species (e.g., nesting period for a certain bird species), is this period clearly presented (e.g., from 15th of May to the end of August)?	

Mitigation measure attribute	Key question	Yes/No
Efficient	Is there an indication of limiting factors and rates of success or failure of the proposed measures?	
Effective	Is there a comprehensive plan on how to implement and sustain the mitigation measures (including monitoring, evaluation and adaptation, where needed)?	

Example of a SMARTEE mitigation measure (hypothetical example)

On a river it is proposed a sill (or weir) with a height of more than 1 m, located at a distance of 5 km downstream from a Natura 2000 site. The site was designated for several fish species, including benthic species (e.g., *Cottus gobio*). The "degree of longitudinal fragmentation" is a parameter of the SSCOs set for all fish species. The measurement unit is "the number of fragmentation elements (both inside the limits of the Natura 2000 site and upstream and downstream from the limits of the site, on a distance of minimum 30 km)" and the target is "0". The proposed sill will lead to the interruption of the longitudinal connectivity and therefore a significant impact was assessed on the SSCOs parameter "degree of longitudinal fragmentation" for all fish species. The project includes a "fish ladder", but without providing technical characteristics.

The mitigation measure that can be proposed, in a SMARTEE manner, is: "The "fish ladder" will be replaced with a "fish by-pass", which ensures a better passage for the fish species protected in the Natura 2000 site. The solution that will be adopted in the case of the passage for ichthyofauna proposed for the sill on river X must ensure both upstream-downstream and downstream-upstream movement for all fish species. The fish by-pass will be adapted to the requirements of benthic fish species and will not include "steps" that will exceed 18 cm[28]. Also, the whole set of parameters of the passage for ichthyofauna (water speed, water depth, slope, substrate) will be adapted to the requirements of the species for which protection the site was designated. Based on the species requirements and the evidences provided in article Y and Z and in project T, the water speed on the by-pass will not exceed 0.5 m/s, the water depth will not be less than 0.3 m, the slope will not exceed 3% and the substrate will be hard (gravel/cobble/pebble). The fish by-pass will be built and will be operational before the construction of the sill".

[28] According to Utzinger et al (1998), the species *Cottus gobio* cannot pass over obstacles higher than 18-20 cm.

Example of a fish by-pass

4.2.8 Assessment of the residual impacts' significance

The residual impact assessment has the role of identifying whether the proposed measures are really effective in preventing, avoiding or reducing the impacts. The assessment of the residual impact must be carried out in a similar way to that used in the assessment of the impacts without the implementation of the measures, using the same methodology, in view of the SSCOs.

For the assessment of the residual impacts' significance, taking into account the changes that the measures bring to the quantitative and qualitative considerations from the initial assessment of the significance, the same categories will be used: significant and non-significant.

In order to assess the residual impact, it is necessary to carry out:

a. Quantification of residual impact forms, in the same way as the initial quantification, but taking into account the proposed measures. This may mean re-running of air quality or noise level modelling, recalculating collision rates, etc.;

b. Assessment of the significance of the residual impacts, taking into account the changes that the measures bring to the quantitative and qualitative considerations taken into account in the initial assessment of the impact significance.

It needs also to be reminded that any additional impact that might be generated by a proposed mitigation measure on a qualifying element of the Natura 2000 site has to be also analysed. This is needed in order to ensure that the mitigation measures proposed for a certain habitat and species, especially when they are including constructive elements, will not adversely impact other habitats or species of Community interest for which protection the Natura 2000 site was designated.

4.2.9 Monitoring programme

The monitoring programme proposed in the AA report must be correlated with the proposed mitigation measures (each monitoring indicator addresses one or more of the prevention, avoidance and reduction measures). Monitoring of the mitigation measures is essential to verify their successful and timely implementation and to identify any unexpected impacts that requires adaptation of the measures. It is mandatory to include in the monitoring programme the measures proposed to avoid significant impacts and/or to reduce the significant impacts to non-significant residual impacts. For the mitigation measures proposed for non-significant impacts, a case-by-case analysis on the necessity to include some of them in the monitoring programmes needs to be performed. Ultimately, it is on the competent authority to decide on the scope of the required monitoring, including for the prevention and mitigation measures targeting insignificant impacts.

Monitoring of the impacts that the execution, operation and decommissioning of water-related projects will have on the components of Community interest has the role to confirm or invalidate the quantifications of the residual impacts made in the AA report before the implementation of the project, to quantify the effectiveness of prevention, avoidance and reduction measures and to identify, as the case may be, the necessity to adapt the measures or implement them in new locations.

According to the Commission notice C(2021) 6913, “the effectiveness of mitigation measures must be demonstrated before the P/P is approved. In addition, when the effectiveness of mitigation depends on the presence of stable natural conditions or natural processes that could change (e.g., due to floods, droughts, storms, or other events), monitoring should also be used to verify the expected results and detect any possible changes warrantying the adaptation or reprogramming of the measures. The results of monitoring should be shared with the competent authorities to help formulate suitable response options, if needed e.g., to address any apparent failure in the mitigation measure or to respond to unexpected impacts or to effects for which only a risk was identified”.

The monitoring programme needs to include at least:

- The components of Community interest (habitats and/or species) to which it addresses;
- Monitoring indicators and their measurement units;
- Monitoring locations/points;
- Duration of monitoring;
- Monitoring frequency.

The monitoring programme must include clear, quantifiable and relevant indicators for the mitigation measures (prevention, avoidance and reduction measures) proposed in the AA report. All the data and information collected during the implementation of the monitoring programme needs to be expressed quantitatively, with a clear specification of the measurement units, the size of the investigated surfaces, the applied methods and the time periods (including hourly intervals) in which the field activities were performed. The information needs to be presented both in the form of raw data (e.g., tabular) and in graphic form (representation on maps of all collected data). Each set of data must be accompanied by the interpretation of the results, as well as by qualitative and quantitative assessments regarding the trends recorded and the perspectives of changes of the monitored indicators. Also, the monitoring reports need to include quantitative and qualitative assessments regarding the effectiveness of the implemented mitigation measures.

The monitoring programme must include monitoring indicators for:

- Verification of areas of habitats loss, for all situations in which this form of impact occurs;
- Quantification of all areas of altered habitats, with the identification of the causes and the level of effects that generate the alteration;
- In case of disturbance of species activity, the effectiveness of the implemented measures (the level of effects after the implementation of the measures) and the presence and extension of the disturbances generated by the project (displacement of individuals, change in the distribution pattern) are both monitored;
- In the case of reduction of population size, accidental victims are monitored in all stages of project implementation, as well as the effectiveness of the implemented measures;
- In case of fragmentation of habitats, the degree of use by the target species (as the case may be, species of Community interest and/or their prey species) of the implemented measures is monitored.

4.3 Procedure under Article 6(4) – Alternative solutions and Compensatory measures for water-related projects

4.3.1 Alternative solutions

According to Article 6(4) of the Habitats Directive, “if, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected”.

If the appropriate assessment for a project could not conclude that it will not affect the integrity of the sites concerned, the project may only be approved by the competent authorities if a derogation is sought in accordance with the provisions of Article 6(4). The first step is to examine whether there are feasible alternative solutions to reach the project aims and then to assess these alternatives to the same level of detail as the initial proposal. Therefore, the assessment of the alternative solutions will also be carried out against the species and habitats for which the site has been designated and the established SSCOs, using the same steps and the same methodology for assessing the significance of the impacts as in the case of the initial proposal.

It is on the competent national authorities to ensure that all feasible alternative solutions that meet the project aims have been explored to the same level of detail.

The assessment of the alternative solutions needs to demonstrate that the alternative proposed for approval is the least damaging for habitats and species and for the integrity of the Natura 2000 site, and that no other feasible alternative exists that would not adversely affect the integrity of the site. The assessment of the alternative solutions needs to include the “do nothing” alternative (the “0” alternative), which provides the baseline for comparison of alternatives.

As exemplified in the Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, for floods protection projects nature-based solutions (as opposed to traditional ‘grey infrastructure’) can often be equally viable and less detrimental to Natura 2000 sites. For example, restoring a more natural river bed with adjacent wetlands can ensure similar or better flood protection than artificial dykes and/or reservoirs, while at the same time exerting significantly less impact on protected habitats and species or even improving their condition. Hence, such alternatives should be given due consideration during the analysis of available options.

In the choice of alternative solutions, other criteria such as social considerations and the economic cost of the alternatives analysed may be considered. Nevertheless, as emphasized in the EC Guidance on Article 6 of the Habitats Directive, "the economic cost of the steps that may be considered in the review of alternatives cannot be the sole determining factor in the choice of alternative solutions. In other words, a project developer cannot claim that alternatives have not been examined because they would cost too much".

Once the assessment of alternative solutions is complete, a record should be made of all the alternatives that have been considered, the results of their assessment and the agencies and other bodies that were consulted. If it can be reasonably and objectively concluded that there are no other feasible alternatives, it will be necessary to proceed to the next step in the Article 6(4) procedure.

If there are no other feasible alternatives or alternatives less damaging, their absence must be demonstrated, before proceeding with the examination of whether the project is necessary for imperative reasons of public interest.

Further Guidance:

Commission notice C(2021)6913 Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC

Commission Notice C(2018) 7621 final, Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2002

4.3.2 Imperative reasons of overriding public interest (IROPI)

The concept of 'imperative reason of overriding public interest' (IROPI) is not defined in the Directive. However, Article 6(4) mentions human health, public safety and beneficial consequences of primary importance for the environment as examples of such imperative reasons of overriding public interest.

As regards the 'other imperative reasons of overriding public interest' of social or economic nature, it is clear from the wording that only public interests, irrespective of whether they are promoted either by public or private bodies, can be balanced against the conservation aims of the Habitats Directive. Thus, projects developed by private bodies can only be considered where such public interests are served and demonstrated (EC Guidance on Article 6 of the Habitats Directive).

Further Guidance

Commission Notice C(2018) 7621 Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

Having regard to the structure of the provision, in the specific cases the competent national authorities have to make their approval of the plans and projects in question subject to the condition that the balance of interests between the conservation objectives of the site affected by those initiatives and the above-

mentioned imperative reasons weighs in favour of the latter. This should be determined according to the following considerations:

a) There must be an **imperative reason** for implementing the plan or project;

b) The public interest must be **overriding**: it is therefore clear that not every kind of public interest of a social or economic nature is sufficient, in particular when seen against the particular weight of the interests protected by the Directive (see for instance recital 4, which refers to 'Community's natural heritage');

c) In this context, it seems also reasonable to assume that the public interest can only be overriding if it is a **long-term interest**; short term economic interests or other interests yielding only short-term benefits for the society would not appear to be sufficient to outweigh the long-term conservation interests protected by the Directive.

It is reasonable to consider that the 'imperative reasons of overriding public interest, including those of social and economic nature' refer to situations where plans or projects envisaged prove to be indispensable:

- within the framework of actions or policies aiming to protect fundamental values for the citizens' life (health, safety, the environment);
- within the framework of fundamental policies for the State and the society;
- within the framework of carrying out activities of an economic or social nature, fulfilling specific obligations of public service.

It is for the competent authorities to weigh up the imperative reasons of overriding public interest of the plan or project against the objective of conserving natural habitats and wild fauna and flora. They can only approve the plan or project if the imperative reasons for the plan or project outweigh its impact on the conservation objectives.

Commission notice C(2021)6913 Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC

When determining **IROPI**, a competent authority must consider all of the elements, i.e., whether it is:

- **imperative**: the plan or project serves an essential public interest, rather than private interests;
  - **overriding**: the interest served by the plan or project outweighs the harm (or risk of harm) to the integrity of the site as identified in the appropriate assessment;
  - **of public interest**: for instance, it is a fundamental part of public policies for the State and society.

Public interests can occur at national, regional or local level, but, whatever the level, the other elements of the test must also be met. In practice, plans and projects which are consistent with national or regional strategic plans or policies (e.g., identified within a national infrastructure plan) are more likely to be of public interest. However, consideration would still need to be given to whether, in a specific case, that interest outweighs the harm that will be done to the affected sites and therefore whether IROPI can be demonstrated. Plans or projects that fall outside national strategic plans, including those at a lower geographic scale, may also be able to show IROPI.

IROPI must be assessed on a case-by-case basis in light of: (i) the objective of the particular plan or project; and (ii) its particular impact on the Natura 2000 sites affected as identified in the appropriate assessment.

The more important or vulnerable the conservation values of the site affected, the more restrictive the scope will be for IROPI to be considered acceptable and for the damage to the site, as determined by the appropriate assessment, to be justifiable.

Where a priority natural habitat type or a priority species is affected, the only considerations which may be raised as IROPI under Article 6(4) of the Habitats Directive are those relating to human health or public safety, or to beneficial consequences of primary importance for the environment. If other IROPI are evoked, a Commission opinion is required.

The consideration of IROPI may be inherent to the strategic planning of certain policy areas (e.g., flood risk management), which are relevant to human health, public safety or the protection of public goods. For activities likely to be justified for IROPI, the need to consider alternatives and compensation can thus be taken into account at an early stage in the planning process.

4.3.3 Compensatory measures

Once it has been fully ascertained and documented that there are no alternatives less harmful to the site and that IROPI is justified, all compensatory measures to ensure the protection of the overall coherence of the Natura 2000 network must be taken.

It is important not to confuse mitigations measures with compensatory measures. **Compensatory measures** are independent of the project (including any associated mitigation measures). They are intended to offset the residual negative effects, which persist after the implementation of the mitigation measures, of the plan or project so that the overall ecological coherence of the Natura 2000 network is maintained.

Measures which are not functionally part of the project, such as habitat improvement and restoration (even if contributing to a net increase of the habitat area within the affected site) or creation and improvement of breeding or resting places for the species, should not be considered as mitigation as they do not reduce negative impact of the project as such. This type of measures, if they are outside the normal practice required for the conservation of the site, meet rather the criteria for compensatory measures.

It should be noted that compensatory measures under Article 6(4) of the Habitats Directive are not included in the definition of the Do No Significant Harm (DNSH) criterion for the objective the protection and restoration of biodiversity and ecosystems provided in Appendix D of Delegated Regulation (EU) 2021/2139 establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives[29]. In its Draft Notice on the interpretation and implementation of certain legal provisions of the EU Taxonomy Climate Delegated Act establishing technical screening criteria for economic activities that contribute substantially to climate change mitigation or climate change adaptation and do no significant harm to other environmental objective[30] with regards to projects triggering the application of Article 6(4) of the Habitats Directive the EC is stating clearly that ***"Such***

[29] Link to Delegated Regulation (EU) 2021/2139: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R2139

[30] Link to the Draft Note: DRAFT COMMISSION NOTICE on the interpretation and implementation of certain legal provisions of the EU (europa.eu)

projects do not fulfil the criteria for DNSH to biodiversity and are therefore not Taxonomy-aligned".

Further Guidance

Commission notice C(2021)6913 Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC

Compensatory measures in the context of Article 6(4) of the Habitats Directive should: (i) be specific to the plan or project under consideration; and (ii) go beyond the measures required for the designation, protection and management of Natura 2000 sites, as set out in the conservation objectives for the site.

The following cannot be considered as compensatory measures: (i) the implementation of a management plan for the site; (ii) measures for improving the conservation status of a habitat type on a site that are already planned irrespective of the plan/project; or (iii) the designation as special area of conservation of an area already identified as being of Community importance. Instead, compensatory measures should be additional to the conservation measures that need to be established and implemented in a Natura 2000 site and additional to other protection provisions required by the Habitats and Birds Directives or obligations laid down in EU law.

The possibility of designing and implementing effective compensation measures will vary in function of the different habitats and species concerned and local conditions.

When there is no guarantee of the effective restoration or reinstatement of damaged habitats and species, compliance with Article 6(4) is not ensured. In these situations, however, it may still be possible, as a compensatory measure, to designate, protect and manage a new site hosting a suitable area of the same habitat(s) affected.

The main aim of compensatory measures under Article 6(4) is to maintain the overall coherence of the Natura 2000 network. Consequently, two aspects that determine the design and implementation of compensatory measures must be addressed: proportionality and ecological functionality.

These two principles set the scope and level of ambition of the measures required to compensate the plan or project's adverse effects. Compensation measures should also aim to outweigh the worst-case scenarios of likely adverse effects.

Time is a crucial dimension in the planning of **compensatory measures as they should be in place, fully operational and effective before the damage on the site occurs.**

To comply with the obligation to maintain the coherence of the Natura 2000 network, the programme of compensatory measures under Article 6(4) must demonstrate their effectiveness and provide documentation for this. The design and implementation of the compensatory measures must be **comprehensive and scientifically sound**.

The delivery of effective compensation should be verified through adequate **monitoring**. The monitoring and evaluation of compensatory measures must also allow for the possibility to factor in adverse negative effects on Natura 2000 sites that could not be foreseen in the appropriate assessment. Moreover, if the compensatory measures turn out not to be sufficient to outweigh these new impacts, they may need to be amended so that the ultimate aim of ensuring the overall coherence of the Natura 2000 network remains feasible.

Monitoring of compensation measures should be closely coordinated with the overall monitoring of impacts and mitigation measures. This approach is consistent with the requirement in EU policy to

coordinate monitoring programmes arising from different pieces of legislation, for an improved efficiency in their administration.

Further Guidance:

Commission notice C(2021)6913 Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC

Commission Notice C(2018) 7621 final, Brussels Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2002

5. LINKS WITH THE WFD AND THE EIA

As mentioned in the Guidance on Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. Several pieces of EU legislation contain provisions on environmental assessment procedures. Besides Article 6 of the Habitats Directive, this is in particular the case of the Environmental Impact Assessment (EIA) Directive, the Strategic Environmental Assessment (SEA) Directive and Article 4(7) of the Water Framework Directive (WFD). The integration and coordination of the environmental assessment requirements of these directives can greatly contribute to improving the efficiency of environmental permitting procedures. The EIA Directive includes provisions on streamlining the assessment procedures related to environmental issues required under various EU directives, including the Habitats Directive and the Water Framework Directive. It requires specifically that Member States, where appropriate, ensure that coordinated and/or joint procedures fulfilling the requirements of that Union legislation are provided (Article 2(3) of the EIA Directive). Provisions for coordinated or joint environmental assessment procedures arising simultaneously from the SEA Directive and other EU legislation are also set out in Article 11(2) of the SEA Directive. They aim to avoid duplication of assessments, without prejudice to the specific requirements of each directive.

Nevertheless, each directive has its own purpose and neither procedure can override the other. Even if the appropriate assessment is integrated with the **EIA** procedure, the information and conclusions relevant to the appropriate assessment must be distinguishable and differentiated from those of the EIA.

5.1 Links between the EIA and the AA

It also needs to be bear in mind that the EIA shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on biodiversity in general, even if it requires particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC. Therefore, the EIA has to assess the impacts of a project on all biodiversity components (habitats and species), with or without a protection status, in all areas affected by the project (outside and inside natural protected areas, including Natura 2000 sites).

For the AA procedure, the assessment should be made in view of the Natura 2000 site's conservation objectives (which relate to the species/ habitat types for which the site was designated). The impacts should be assessed to determine whether or not they will adversely affect the integrity of the site concerned. The EIA needs to assess also the impact of the project on other biodiversity components existing in the Natura 2000 sites, which are not qualifying features for the Natura 2000 site (although though in some cases they may be of importance for parameters set for the Community interest species – e.g., prey species for Community interest species).

The EIA needs also to assess the impact on animal species of Community interest, protected under the Habitats Directive, living outside the limits of Natura 2000 sites. The provisions on the protection of species (Articles 12-16 of the Habitats Directive) apply across the entire natural range of species within the Member States, both within and beyond Natura 2000 sites. These provisions are complementary to those governing Natura 2000 sites, which focus on protecting natural habitats and core areas of habitats of protected species listed in Annex II of the Directive. Similar provision can also be found in Article 5-9 of the Birds Directive. The EIA should also assess the impact of the project on habitats and species protected at national and local level, as well as on species and habitats included in different conventions (e.g., Bern Convention, Bonn Convention) and Red Lists. In view of ensuring compliance with the Revised EIA Directive, the EIA report should present an assessment of all these protected habitats and species.

The EIA and AA needs to be closely related, as the EIA should support the AA with the quantifications of the effects (e.g., modelling of noise levels, modelling of air pollutants dispersion, modelling of water pollutants dispersion) and helps to better understand the relationships between different environmental factors. Streamlining AA and EIA helps to avoid duplication of assessments and contributes to making more efficient use of resources needed to carry out the assessments.

5.2 Links between the WFD and the AA

The Water Framework Directive aims at achieving ambitious and comprehensive protection of rivers, lakes, coastal waters and groundwater bodies in order to ensure good ecological and chemical status in aquatic environments, good quantitative and chemical status of groundwater bodies and the sustainable use of water resources. The protection is realised by planning (namely through the required River Basin Management Plans) and efforts to achieve the set targets for the good status of the water bodies and by ensuring that there is no deterioration of the current status of the water bodies and that the water bodies are not prevented from achieving the required environmental objectives. The measures to achieve the objectives set by the RBMPs are set in the so called Programmes of Measures (PoM). The surface and groundwater bodies on which Natura 2000 sites are protected benefit from protection under the WFD and the Habitats/Birds Directives. The objectives set in the RBMPs and in the Natura 2000 site management plans should be coherent. The experience shows that the achievement of the objectives under the WFD is essential for the achievement of the conservation objectives of the water-dependent Natura 2000 sites.

As regards the links of the Habitats Directive with the WFD, they are both applicable, at least in part, to the same environment – that of aquatic ecosystems and terrestrial ecosystems and wetlands directly dependent on them. They also have broadly similar ambitions in that they aim to ensure the non-deterioration of aquatic ecosystems and to enhance their ecological condition.

Like the Habitats Directive, the WFD lays down specific provisions for assessing the effects of new developments on water bodies. Under Article 4(7) of the WFD, exemptions can be approved by the authorities for new modifications and sustainable human development activities that: (i) result in the deterioration of the status of the water body; or (ii) prevent the achievement of good ecological status or potential, or good groundwater status under certain conditions. Under Article 4(8) of the WFD, Member States are required – when applying Article 4(7) of the WFD – to ensure that the application is consistent with the implementation of other EU environmental legislation.

However, each assessment has a different focus: the WFD assessment will assess if the project is likely to compromise the primary objectives of the WFD, while the AA will assess whether the project will adversely affect the integrity of a Natura 2000 site. If a project is significantly affecting a Community interest fish species, which is the qualifying feature of a Natura 2000 site, this does not mean automatically that the ecological status of the water body will be affected. Each assessment has its own methodology for assessing the impacts, considering the objectives of each Directive and the way the status (conservations status under the Nature Directives and ecological status/ chemical status under the WFD) is defined and evaluated. It is important to ensure that the competent authorities are ensuring that the project meets the requirements for:

- non-deterioration of the ecological status
- protection of the integrity of the Natura 2000 sites.

The experience shows that deterioration of the status of a water body is in principle incompatible with the conservation objectives of water-dependent Natura 2000 site. Conversely, in cases when there will be no deterioration of the ecological status would lead to the conclusion that the project is not affecting negatively the SSCOs of the Natura 2000 site. Both cases should be assessed and confirmed by the competent authorities.

Good practice:

For the targeted surface water bodies – rivers, lakes and coastal waters – the objective “good status” implies that both the chemical status and ecological status of the water body must be good.

The ecological status is determined by assessments of, in particular, biological quality elements such as the scope and nature of flora and fauna in surface water bodies in accordance with standards laid down in the Ordinance on the establishment of environmental objectives and in the Order on monitoring of surface water, groundwater and protected areas and on nature monitoring of international nature protection areas (over- monitoring order).

However, the ecological condition is also dependent on the physical and chemical conditions in the surface area. It follows from the Ordinance on requirements for the discharge of certain pollutants into watercourses, lakes, transitional waters, coastal waters and marine waters that there is a requirement for national setting of environmental quality standards for environmentally hazardous pollutants discharged in significant quantities and for which an environmental quality standard has not yet been established. These requirements are also laid down in the Order on the setting of environmental targets. This means that compliance with nationally established EQS for certain substances may be decisive for the status of the surface water body.

For the target groundwater bodies, the requirement of good status implies that both the chemical status of groundwater and its quantitative status must be good. The chemical status is determined by whether the EU-established groundwater quality standards or the Danish established threshold values for the content of pollutants in groundwater are exceeded and the use of the presence or its importance for targeted surface water bodies or Natura 2000 areas is therefore significantly affected.

The quantitative status of the groundwater body shall be determined by assessments of the occurrence's water balance and any negative impact on associated targeted surface water bodies and significant groundwater dependent terrestrial ecosystems, see Order on the establishment of environmental targets and the monitoring order.

It should be emphasised that those Environmental Quality Standards (EQS), groundwater quality standards and threshold values serve as criteria for determining when the concentration of a pollutant in the aquatic environment is above a level that prevents good status in the target bodies of water. The levels are set conservatively so that there is a good guarantee that the aquatic environment, including organisms in the environment, are not negatively affected.

[EQS, groundwater quality standards and thresholds are set in line with the WFD, the EQS Directive and the Groundwater Directive. These requirements/values act as criteria for when the concentration of a pollutant in the aquatic environment does not have a level that prevents good status in the target bodies of water. The levels are set conservatively so that there is good assurance that the aquatic environment, including organisms in the environment, is not adversely affected.]

There may be cases where environmental requirements have not yet been established and may not be set for specific substances that are intended to be discharged. In those cases, the assessment must be based on the indicative ecotoxicological criteria laid down in HELCOM and OSPAR, in conjunction with the background load of the specific body of water, including the natural fluctuations in the presence of, for example, heavy metals, which are often affected by natural influx from the sea.

When assessing the impact of discharges on the body of surface water, the calculation shall ensure that the relevant quality requirements/thresholds for pollutants in the affected body of water can be maintained. The calculations shall include any pre-existing concentrations of the substances in the body of water (cumulation).

In this context, it is important to bear in mind that there may be situations where compliance with quality requirements/thresholds is not sufficient to safeguard the integrity of the Natura 2000 site. This may, for example, be in relation to specific occurrences of species or, for example, nutrient-sensitive habitats within Natura 2000 sites, which may be negatively affected by a specific discharge. This must be assessed on a case-by-case basis.

The Habitat Guide. Guidelines on the application of Order No 1595 of 6 December 2018 on the designation and administration of international nature conservation areas and the protection of certain species, Denmark, 2020

Further Guidance:

- Commission notice C(2021)6913, 28.09.2021. Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- Commission notice C(2021)7301, 12.10.2021. Guidance document on the strict protection of animal species of Community interest under the Habitats Directive
- Commission Notice C(2018) 7621 final, Brussels, 21.11.2018. Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC
- Commission notice 2016/C 273/01. Commission guidance document on streamlining environmental assessments conducted under Article 2(3) of the Environmental Impact Assessment Directive (Directive 2011/92/EU of the European Parliament and of the Council, as amended by Directive 2014/52/EU)

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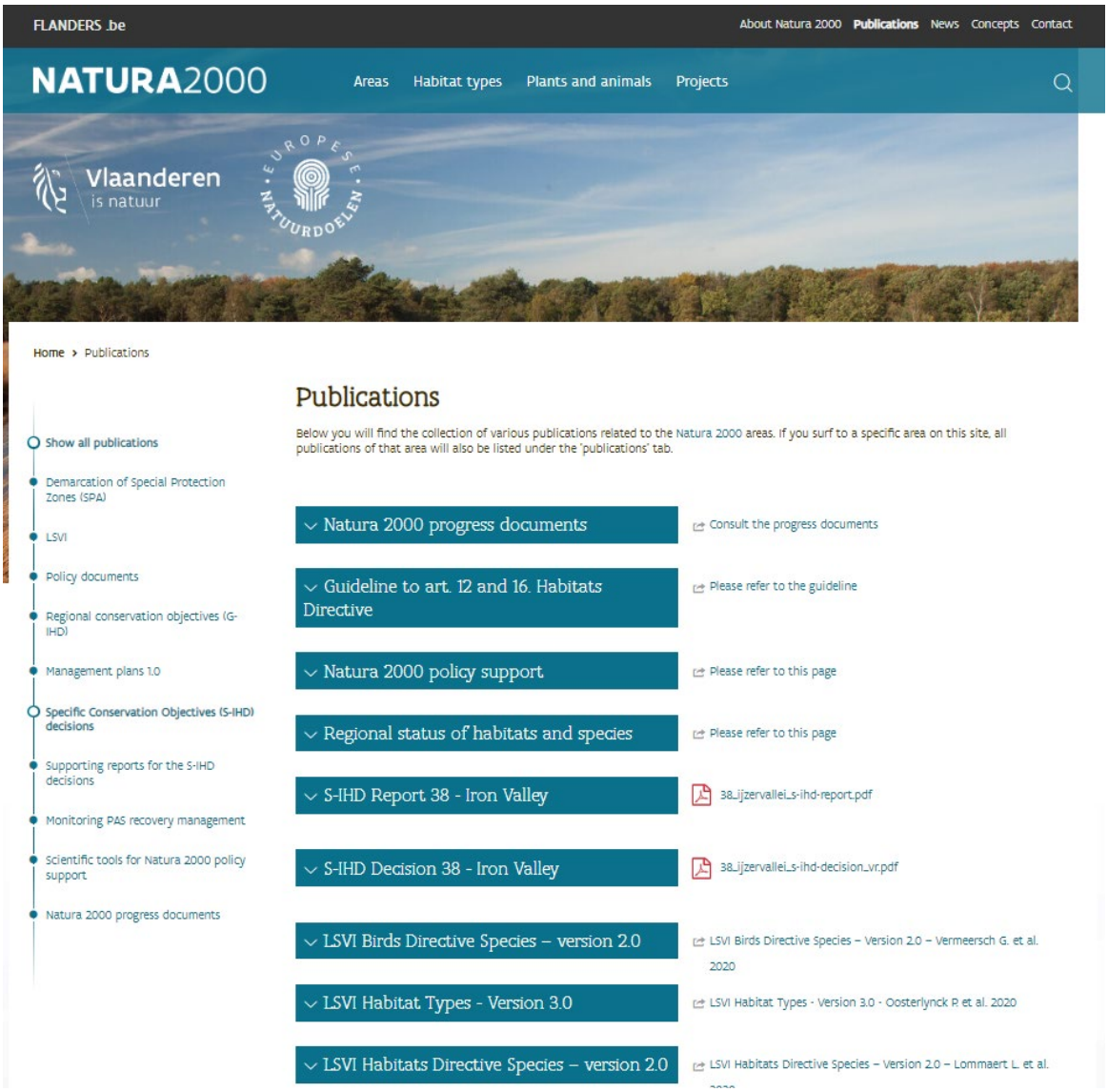
ANNEX

Examples of SSCOs in the EU (the countries are presented in alphabetical order)

- **Belgium**

Good Practice – Example of SSCO for sites designated under the Habitats and Birds Directives in Belgium

In Belgium, it is the Regions which are mainly responsible for environmental protection, each Region being subordinated to the Public Federal Service (https://www.health.belgium.be/fr). If people are particularly interested in the state of the environment in a specific region, they can access the regional websites devoted to this information: Brussels-Capital (https://environnement.brussels/citoyen/nos-actions/projets-et-resultats/quels-sont-les-sites-natura-2000-et-les-habitats-dimportance-communautaire-bruxelles), Flanders (https://natura2000.vlaanderen.be/publicaties), Wallonia (http://biodiversite.wallonie.be/fr/biotopes-habitats.html?IDC=833).



Main database for Conservation objectives for Natura 2000 sites in Flanders

Doelstellingen voor de habitats

Beekdalmozaïek	***Oppervlaktedoelstelling***		***Kwaliteitsdoelstelling***	
Habitat	*Doel*	*Toelichting*	*Doel*	*Toelichting*
6230 - Soortenrijke heischrale graslanden op arme bodems van berggebieden (en van submontane gebieden in het binnenland van Europa) *Subtype droog heischraal grasland*	↑	Doel: Actueel: 0,15 ha –Toename naar 1 ha (alle subtypes samen) Toename door omvorming in deelgebied 7, in een mozaïek met de grote kern van blauwgraslanden (6410).	↑	Doel: Het habitattype moet een korte vegetatie bevatten (< 25 cm) met een bedekking van >30% van de sleutelsoorten en <5% verruiging. Het habitat is bij voorkeur zonbeschenen en er is geen strooisellaag (of bladval) op het grasland aanwezig. De graslanden zijn gebufferd tegen externe invloeden. Er moet vermeden worden dat dit habitattype jaarlijks onder water komt te staan (voor de delen in mozaïek met 6410 en 6510)
6230 - Soortenrijke heischrale graslanden op arme bodems van berggebieden (en van submontane gebieden in het binnenland van Europa) *Subtype heischraal grasland met kalkminnende soorten*	↑	Doel: Actueel: zeer beperkt (kennislacune) Toename naar 1 ha (alle subtypes samen) Toename door omvorming in deelgebied 2 – Vallei van de Nieuwzouw te Bilzen (in een mozaïek met kalkrijk kamgrasland van het type 6510_huk).	↑	Doel: Het habitattype moet een korte vegetatie bevatten (< 25 cm) met een bedekking van >30% van de sleutelsoorten en <5% verruiging. Het habitat is bij voorkeur zonbeschenen en er is geen strooisellaag (of bladval) op het grasland aanwezig. De graslanden zijn gebufferd tegen externe invloeden.
6410 - Grasland met Molinia op kalkhoudende, venige of lemige kleibodem (Molinion caerulea) *Subtype veldrustype en blauwgrasland*	↑	Doel: Actueel: 1,76 ha (excl. deelgebied 6) Toename naar 7 ha Toename door omvorming in deelgebied 7 – Pomperik - Dorpsbeemden en deelgebied 1 Molenbeemd – Klein Membruggen.	↑	Doel: De habitat bestaat uit mesotrofe graslanden met een vegetatie <50 cm en een bedekking van lage schijngrassen die hoger is dan 30%. De bedekking van de sleutelsoorten is >30% en, indien aanwezig heeft de strooisellaag en de verruiging een bedekking <10%. De graslanden zijn gebufferd tegen externe invloeden (vb. bij landbouwactiviteit bovenop

*Example of conservation objectives for the habitats in a SAC - BE2200041 Jekervallei en bovenloop van de Demervallei (*Further information: https://natura2000.vlaanderen.be/sites/default/files/6_jekervallei_s-ihd-besluit_vr.pdf*)*

I.1. Objectifs de conservation quantitatifs et qualitatifs relatifs aux types d'habitat naturel d'intérêt communautaire pour lesquels des sites doivent être désignés.

Pour les types d'habitat naturel d'intérêt communautaire pour lesquels des sites doivent être désignés, les objectifs de conservation quantitatifs consistent, au sein du réseau Natura 2000, à maintenir ou restaurer les superficies d'habitat suivantes :

RBG	HIC	Nom du biotope HIC	Surface actuelle Art. 17 - RW	Surface actuelle Natura 2000	OC Aire	OC Surface Natura 2000	OC qualitatif Natura 2000
Atl	2330	Pelouses pionnières sur sables acides	16 ha	10 ha	=	+ 10 ha	+
Atl	3130	Végétation des eaux stagnantes oligo-mésotrophes	7 ha	2 ha	+	+ 2 ha	+
Atl	3140	Végétation des eaux stagnantes oligo-mésotrophes calcaires	5 ha	1 ha	+	+ 5 ha	+
Atl	3150	Végétation des eaux stagnantes eutrophes	1 160 ha	280 ha	=	+ 20 ha	+
Atl	3160	Végétation des eaux stagnantes dystrophes	Non présent en région atlantique	Sans objet	Sans objet	Sans objet	Sans objet
Atl	3260	Végétation des eaux courantes	4 500 ha	DD	=	+ 0 ha	+
Atl	3270	Végétation des berges vaseuses des grandes rivières	Non présent en région atlantique	Sans objet	Sans objet	Sans objet	Sans objet
Atl	4010	Landes humides	14 ha	10 ha	=	+ 10 ha	+
Atl	4030	Landes sèches	47 ha	35 ha	=	+ 50 ha	+

Example of conservation objectives for habitats in region Wallonia, from a Decree of the Walloon Government setting the conservation objectives for the Natura 2000 network

English Translation:

I.1. Quantitative and qualitative conservation objectives relating to the types of natural habitat of Community interest for which sites must be designated.

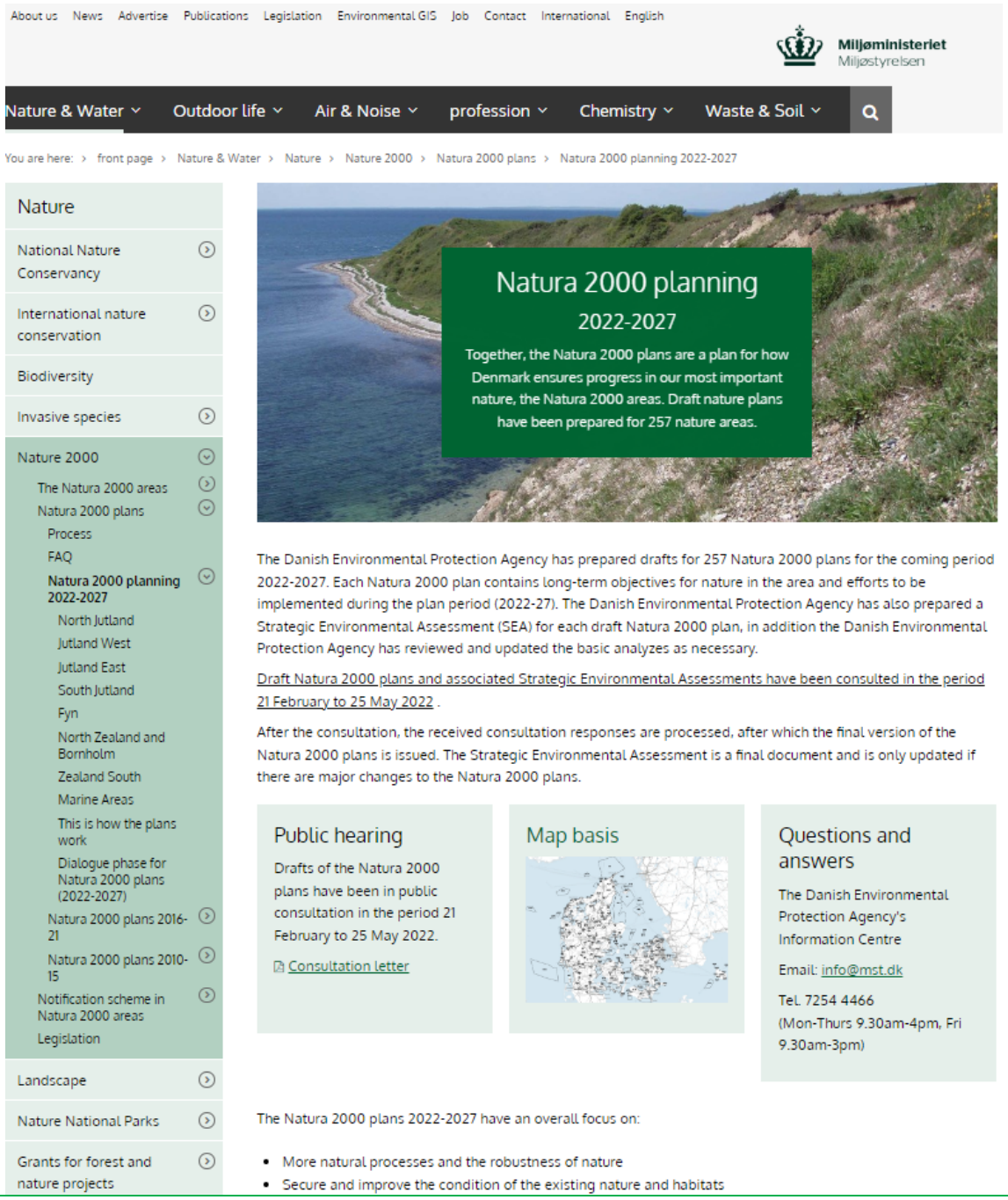
For the types of natural habitat of Community interest for which sites must be designated, the quantitative conservation objectives consist, within the Natura 2000 network, of maintaining or restoring the following areas of habitat:

BGR	HCI	HCI biotope name	Current area Art. 17-RW	Current area Natura 2000	CO Area	CO Surface Natura 2000	Qualitative CO Natura 2000
Atl	2330	Pioneer lawns on acid sands	16 ha	10 ha	=	+ 10 hectares	+
Atl	3130	Vegetation of oligo-mesotrophic stagnant waters	7 ha	2 ha	+	+ 2 hectares	+
Atl	3140	Vegetation of calcareous oligo-mesotrophic stagnant waters	5 ha	1 ha	+	+ 5 hectares	+
Atl	3150	Vegetation of eutrophic stagnant waters	1,160 hectares	280 hectares	=	+ 20 hectares	+
Atl	3160	Dystrophic standing water vegetation	Not present in the Atlantic region	Not applicable	Not applicable	Not applicable	Not applicable
Atl	3260	Running water vegetation	4,500 hectares	DD	=	+ 0 hectares	+
Atl	3270	Vegetation of muddy banks of large rivers	Not present in the Atlantic region	Not applicable	Not applicable	Not applicable	Not applicable
Atl	4010	wet moors	14 ha	10 ha	=	+ 10 hectares	+
Atl	4030	dry moors	47 hectares	35 ha	=	+ 50 hectares	+

- **Denmark**

Good Practice – Example of SSCO for sites designated under the Habitats and Birds Directives in Denmark

The conservation objectives set for the Natura 2000 sites in Denmark are published within the Management plans on the EPA (Environmental Protection Agency) web page, which is subordinated to the Ministry of Environment in Denmark, together with other available information for each site.



Nature National Parks

Grants for forest and nature projects

Marine nature national parks

News about nature

The Natura 2000 plans 2022-2027 have an overall focus on:

- More natural processes and the robustness of nature
- Secure and improve the condition of the existing nature and habitats
- Combat invasive species

Planning documents for the period 2022-2027 currently include draft Natura 2000 plans, Strategic Environmental Assessments and revised baseline analyses. The documents can be found under relevant parts of the country below.

Planning documents 2022-2027

North Jutland

Jutland West

Jutland East

South Jutland

Fyn

North Zealand and Bornholm

Zealand South

Marine areas

Supplementary material

- Frequently asked questions and answers (FAQ) - updated 23/2 2022
- Summary of the Natura 2000 plans 2022-27
- Technical accompanying note for Natura 2000 plans
- This is how the plans work
- Dialogue process
- Note on basic analyzes 2022-27
- Image material for the press

Relevant links

- Legislation
- NOVANA monitoring

Process and schedule

In the drop-down menu below, you can read more about the individual phases in connection with the preparation of Natura 2000 plans. Here you can also see related documents and references.

Basic analyses

Dialogue phase

Proposals for Natura 2000 plans

During 2020-2021, the Danish Environmental Protection Agency has prepared a draft for Natura 2000 plans and associated SMEs. Draft Natura 2000 plans are sent out for consultation for 12 weeks. The draft Natura 2000 plans had to be sent for consultation no later than 1 year after the basic analyzes were published. However, the draft has been delayed.

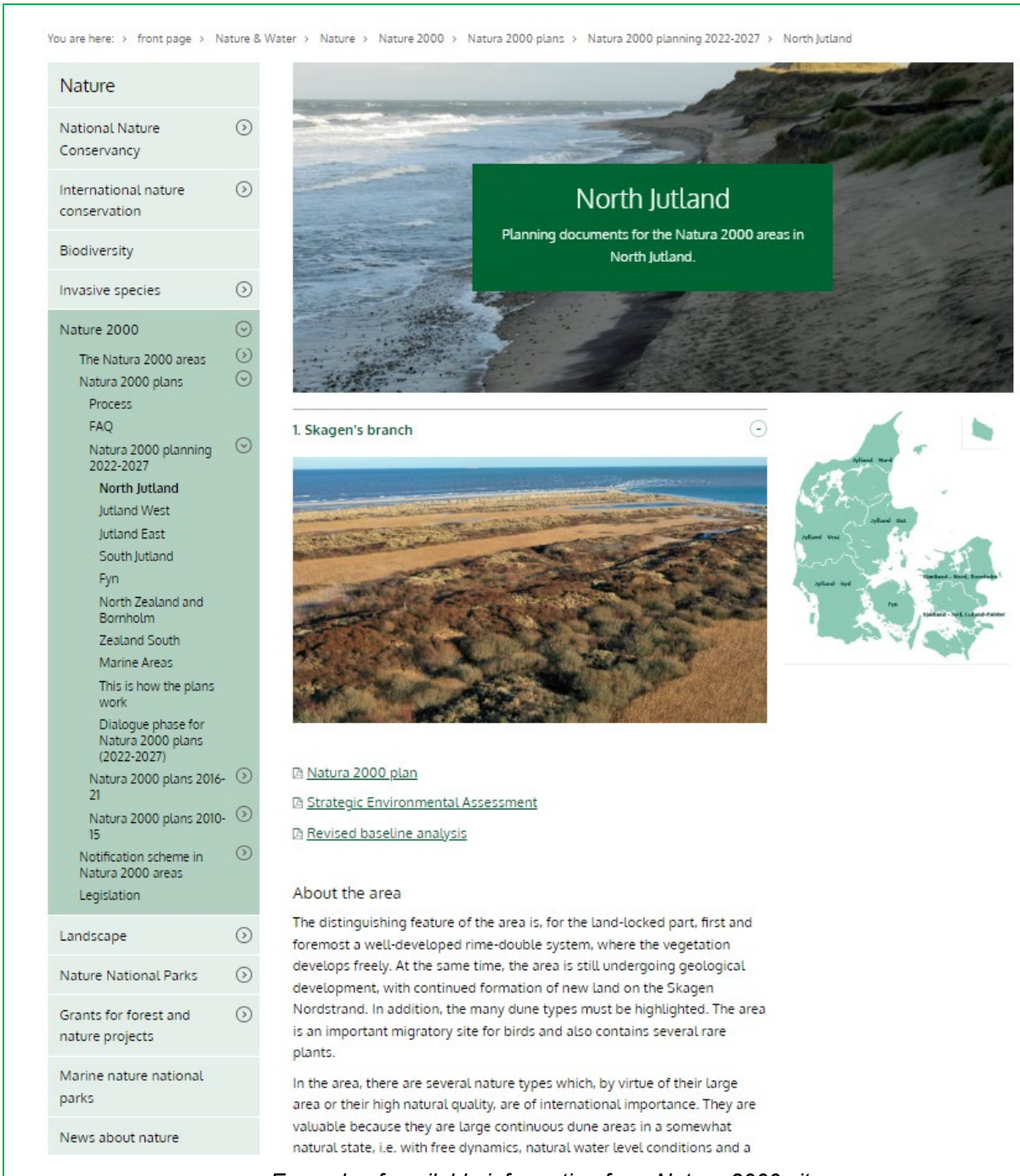
At the same time as draft Natura 2000 plans and SMEs are sent out for consultation, the revised basic analyzes are also published.

Consultation of proposals for Natura 2000 plans

Final Natura 2000 plans

Strategic Environmental Assessment

Main database for Conservation objectives for Natura 2000 sites



Example of available information for a Natura 2000 site

3.2 Specific objectives for habitat types and species

In the area there must be scope for management that allows for greater variation in nature and, if possible, more natural conditions for different species. In the context of management, account must be taken of whether habitat types or species on the basis of designation may be sensitive to such management, e.g. those mentioned under the overall objectives.

The specific objectives are based on groupings of habitat types and habitat species. See Annex 1 for an overview of the habitat types and species contained in the different groups.

In general
The total presence of natural habitats and species' habitats in the Natura 2000 area, regardless of whether they are mapped, must be stable or prosper if the natural conditions permit.

Terrestrial habitat nature
Approximately 263 ha of terrestrial habitat types have been mapped in the area. Of these, around 204 ha are categorised as habitats linked to predominantly dry soil, 9 ha as habitats linked to predominantly wet soils, about 32 ha as salt-tolerant habitats and about 18 ha as habitats linked to fly sands.

- For habitat types with a condition assessment system, there must still be at least 120 ha of dry bottom habitat types, at least 4 ha of wet bottom habitat types, 21 ha of salt-tolerant habitat types and 4 ha of habitat types on flying sand in condition class I-II. Nature types in class III-V must progress towards condition class I-II, if the natural conditions allow for this.

Species of species

- For species with a status assessment system, the objective shall be that the condition and total area of habitats in Classes I to II are stable or prosperous. Habitats of Classes III to V shall be in progress against Classes I to II, provided that natural conditions so permit.
- For species without a status assessment system, the objective is to contribute to achieving favourable conservation status at biogeographical level. The condition of habitats (assessed in terms of occurrence and distribution) and the total area must be stable or prosperous.

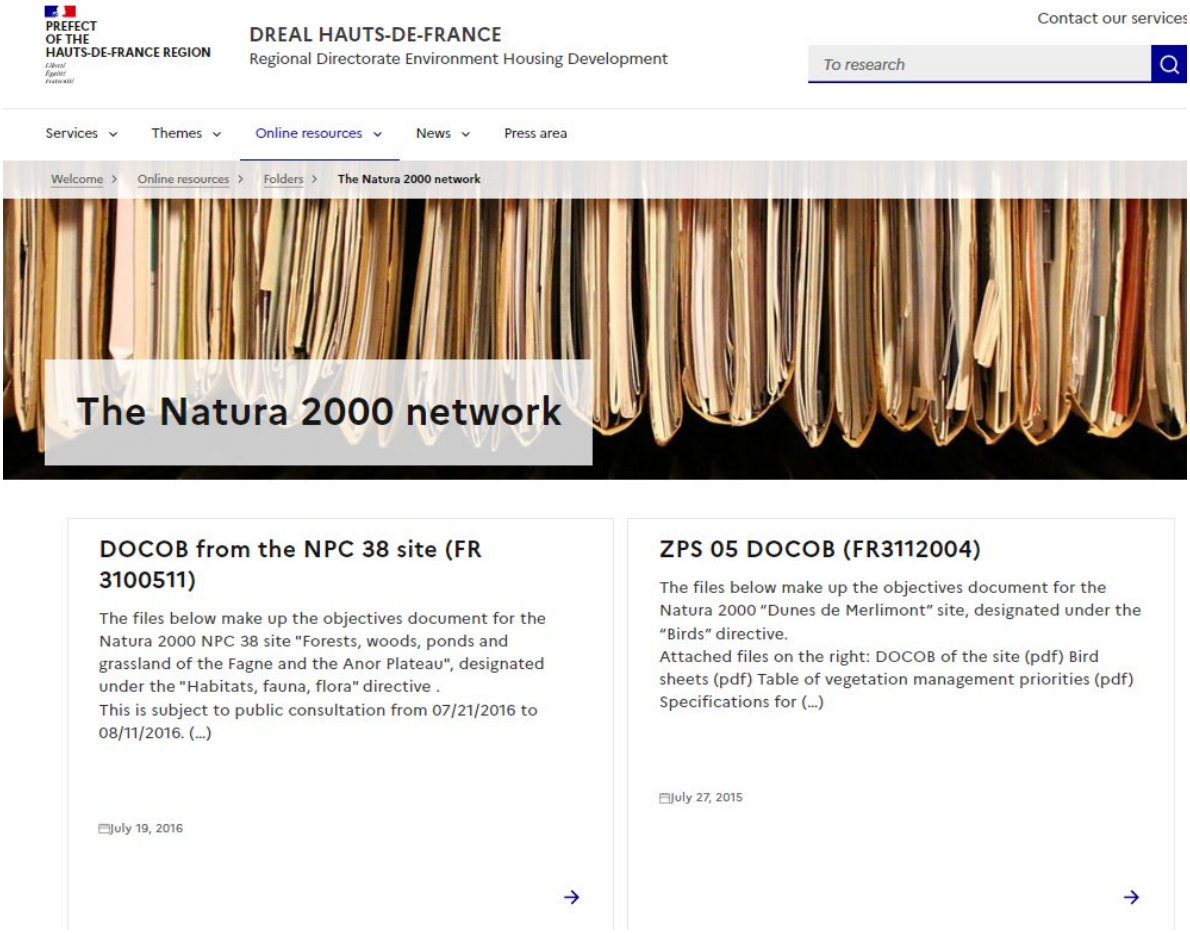
Example of conservation objectives for the habitats and species of DK00DX151 Begtrup Vig og kystområder ved Helgenæs

Further information: https://mst.dk/natur-vand/natur/natura-2000/natura-2000-planer/natura-2000-planlaegning-2022-2027/jylland-oest/

- **France**

Good Practice – Example of SSCO for sites designated under the Habitats and Birds Directives in France

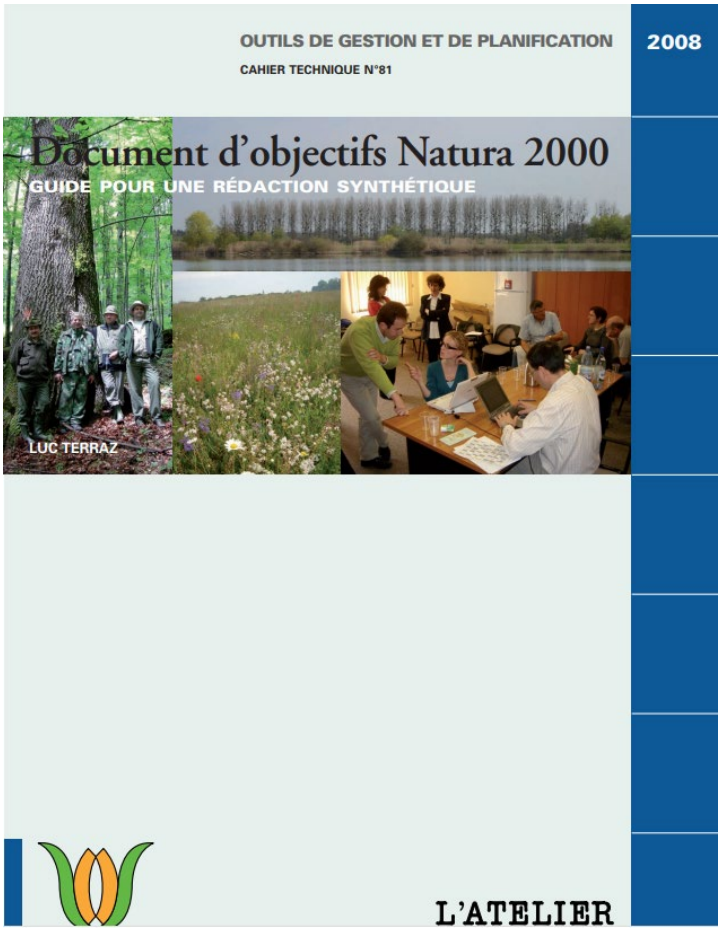
The Regional Directorate for the Environment, Planning and Housing (DREAL) is a state service. Placed under the authority of the regional prefect and the departmental prefects, it implements and coordinates the public policies of the Ministries of Ecological and Inclusive Transition and Territorial Cohesion. There is a website for each prefecture, which contains information regarding the Natura 2000 sites.



One example of a database on one prefecture website for Conservation objectives for Natura 2000 sites

The management of a Natura 2000 site is based on a Management plan, called Document d'Objectifs, or Docob, which also should contain the conservation objectives for SCIs and SPAs. The first step is to draft it, in consultation with the site's socio-economic partners. A structure can carry out this Docob development mission, thus becoming the operating structure. More information about the implementation of a Docob can be found here: https://www.natura2000.fr/documentation/references-bibliographiques/guide-methodologique-elaboration-documents-objectifs

There is also a guide with a synthetic presentation of how the conservation objectives should look like: http://ct81.espaces-naturels.fr/sites/default/files/documents/ct81/cahier_technique_81__guideredactionsynthetiquedocob.pdf



The Guide for a synthetic writing of the Natura 2000 objectives document elaborated in 2008

Fragment from the guide for a synthetic writing of the Natura 2000 objectives document:

Tableau 7 : Habitats naturels de l'annexe I de la directive 92/43
(ce tableau ne concerne que les sites en ZSC)

Habitats naturels d'intérêt communautaire identifiés dans le FSD [1]	Code européen Natura 2000 de l'habitat naturel	Surface couverte par l'habitat (ha) et % par rapport au site	Structure et fonctionnalité	État de conservation à l'issu de l'inventaire	État de conservation à l'échelle biogéographique	Origines des données Structures ressources
Nom de l'habitat (une ligne par habitat et par état de conservation)	Code officiel de l'habitat Noter « * » pour un habitat prioritaire	Surface totale ou « donnée non disponible » Id	Commentaire à rédiger ou « sans objet » ou « donnée non disponible »	Favorable Défavorable inadéquat Défavorable mauvais Inconnu	Favorable Défavorable inadéquat Défavorable mauvais Inconnu	
Nom de l'habitat (une ligne par habitat et par état de conservation)	Id		Id	Id	Id	

[1] Nom d'après directive 92/43, annexe I

Si un habitat présente plusieurs types d'états de conservation, écrire pour le même habitat autant de lignes que d'états de conservation en indiquant à chaque fois la surface de l'habitat concerné.

English translation:

Table 7: Natural habitats from Annex I of the Directive 92/43 (this table only concerns sites in the Special Zone of Conservation - SAC)

Natural habitats of interest community identified in the FSD(1)	Natura 2000 European code of the natural habitat	Surface covered by habitat (ha) and % relative to the area of the site	Structure and functionality	State of conservation at the end of inventory	State of conservation at biogeographic scale	Data origins Resource structures
Habitat name (one line per habitat and by conservation state)	Official code of habitat To note " * " for a priority habitat	Total surface or "data not available"	Comment to write or "not applicable" or "data not available "	Favourable Unfavourable inadequate Unfavourable bad Unknown	Favourable Unfavourable inadequate Unfavourable bad Unknown	
Habitat name (one line per habitat and by conservation state)	Id	Id	Id	Id	Id	

(1)Name according to Directive 92/43, Annex I

If a habitat has several types of conservation status, write for the same habitat as many lines as conservation status by indicating each time the surface of the habitat concerned.

Fragments from the guide for a synthetic writing of the Natura 2000 objectives document:

Tableau 8 : espèces d'intérêt communautaire de l'annexe II de la directive 92/43 (ce tableau ne concerne que les sites en ZSC)

Nom des espèces d'intérêt communautaire identifiées dans le FSD [1]	Nom commun de l'espèce	Code européen Natura 2000 de l'espèce	Estimation de la population [2]	Structure et fonctionnalité de la population. Habitat de l'espèce	État de conservation à l'issu de l'inventaire	État de conservation à l'échelle biogéographique	Origines des données Structures Ressources
Nom latin de l'espèce	Nom français de l'espèce	Code officiel de l'espèce Noter « * » pour une espèce prioritaire	Effectifs ou « donnée non disponible »	Commentaire à rédiger ou « sans objet » ou « donnée non disponible »	Favorable Défavorable inadéquat Défavorable mauvais Inconnu	Favorable Défavorable inadéquat Défavorable mauvais Inconnu	
Nom latin de l'espèce	Id	Id	Id	Id	Id	Id	

[1] Nom d'après la directive 92/43 annexes II
[2] Préciser l'unité

Tableau 9 : espèces d'oiseaux de l'annexe I de la directive 79/409
(ce tableau ne concerne que les sites en ZPS)

Nom des espèces d'oiseaux d'intérêt communautaire identifiées dans le FSD [1]	Nom commun de l'espèce	Code européen Natura 2000 de l'habitat naturel	Estimation de la population [2]	Structure et fonctionnalité de la population Habitat de l'espèce	Statut de conservation à l'issu de l'inventaire	Origines des données Structures Ressources
Nom latin de l'espèce	Nom français de l'espèce	Code officiel de l'espèce	Effectifs ou « donnée non disponible »	Commentaire à rédiger ou « sans objet » ou « donnée non disponible »	Favorable Défavorable inadéquat Défavorable mauvais Inconnu	
Nom latin de l'espèce	Id	Id	Id	Id	Id	
Nom latin de l'espèce	Id	Id	Id	Id	Id	

[1] Nom d'après la directive 79/409 annexe I
[2] Préciser l'unité

Synthèse des trois tableaux (7, 8, 9)

Quand il s'agit d'un Docob sur une ZSC, seuls les tableaux 7 et 8 sont concernés par la rédaction d'une synthèse. S'il s'agit d'une ZPS, seul le tableau 9 est à traiter.

Habitat sur site Natura 2000 de Belfort. Photo : Luc Terraz.

Habitat 3150-3 sur le site Natura 2000 tourbière des Cerneux-Gourinots et zones humides environnantes.
Photo : Espace Naturel Comtois / Sylvain Moncorge.

2

Tableaux 7, 8 et 9 : Habitats naturels et espèces d'intérêt communautaire

Les tableaux 7, 8 et 9 décrivent dans le détail les données scientifiques relatives aux habitats naturels et espèces ayant justifié la désignation du site. Ils concernent les habitats de l'annexe I et les espèces de l'annexe II de la directive « Habitats, faune et flore » et les espèces de l'annexe I et les espèces d'oiseaux migrateurs de la directive « Oiseaux ». Dans ces tableaux figurent des noms, des codes, des chiffres, des informations, des statuts de conservation et des commentaires précis qui permettent de décrire la qualité écologique du site Natura 2000. Cette partie s'appuie sur les données du FSD qui peuvent être détaillées si nécessaire. On ajoute autant de lignes qu'il existe d'habitats naturels et d'espèces d'intérêt communautaire liés au site. On y adjoint l'état de conservation pour chaque habitat ou espèce au niveau de la région biogéographique à partir des résultats de l'état des lieux de l'année de référence (2007).

A la suite des 3 tableaux, une synthèse commune est prévue. Si les données le nécessitent, une synthèse par tableau est envisageable.

- Pour le tableau 7 sur les habitats naturels : colonne « structure et fonctionnalité »

Cette colonne permet de préciser le fonctionnement écologique plus global (ou le dysfonctionnement le cas échéant) des habitats naturels en question. On notera préférentiellement toutes les informations liées à la viabilité des habitats naturels dans un environnement plus large : réseau écologique d'habitats naturels, continuités et corridors écologiques, isolats géographiques, discontinuités des habitats, fragmentations, etc. On note des commentaires courts, d'un mot ou de quelques mots, sans phrases. Les informations importantes sont reprises dans la synthèse.

- Pour les tableaux 8 et 9 sur les espèces : colonne « structure et fonctionnalité de la population, habitat de l'espèce »

Cette colonne permet de préciser le statut biologique de l'espèce, le fonctionnement ou le dysfonctionnement écologique plus global (des populations de l'espèce considérée). On notera préférentiellement toutes les informations liées à la viabilité des populations dans un environnement plus large : réseau écologique d'habitats naturels, continuités et corridors écologiques, isolats géographiques, discontinuités des habitats, fragmentations des populations, etc. On pourra également noter les habitats préférentiels dans lesquels l'espèce est présente au cours des différentes phases de son cycle biologique.

English translation:

Table 8: species of Community interest in Annex II of the Directive 92/43 (this table only concerns sites in SACs)

Name of species of interest community identified in the FSD(1)	Common name of the species	Natura 2000 European Code of the species	Estimate of the population(2)	Structure and Population functionality. Habitat of the species	State of conservation at the end of inventory	State of conservation at biogeographic scale	Data origins Resource structures

Latin name of the species	French name of the species	Official code of the species To note " * " for a priority species	No. of individuals or "data not available "	Comment to write or "not applicable" or "data not available "	Favourable Unfavourable inadequate Unfavourable bad Unknown	Favourable Unfavourable inadequate Unfavourable bad Unknown	
Latin name of the species	Id	Id	Id	Id	Id	Id	

(1)Name according to Directive 92/43, Annex II

(2) Specify the unit

Table 9: bird species listed in Annex I of Directive 79/409 (this table only concerns sites in SPAs)

Species name of birds of interest community identified in the FSD (1)	Common name of the species	Natura 2000 European Code of the natural habitat	Estimate of the population(2)	Structure and Population functionality. Habitat of the species	State of conservation at the end of inventory	Data origins Resource structures
Latin name of the species	French name of the species	Official code of the species	No. of individuals or "data not available "	Comment to write or "not applicable" or "data not available "	Favourable Unfavourable inadequate Unfavourable bad Unknown	
Latin name of the species	Id	Id	Id	Id	Id	
Latin name of the species	Id	Id	Id	Id	Id	

(1) Name according to Directive 79/409, Annex I

(2) Specify the unit

Summary of the three tables (7, 8, 9): When it comes to a Docob on a SAC, only Tables 7 and 8 are involved in writing a summary. If it is a SPA, only Table 9 needs to be processed.

Tables 7, 8 and 9: Natural habitats and species of Community interest

Tables 7, 8 and 9 describe in detail the data from scientific studies relating to natural habitats and species having justified the designation of the site. They concern the habitats of Annex I and the species in Annex II of the “Habitats, Fauna and Flora” Directive and Appendix I species and migratory bird species in the Birds Directive. In these tables are names, codes, numbers, information, conservation status and specific comments that describe the quality nature of the Natura 2000 site. This part is based on data of the FSD which can be detailed if necessary. We add as many lines that there are natural habitats and species of Community interest related to the site. We add the state of conservation for each habitat or species at the level of the biogeographic region based on the results of the inventory for the reference year (2007).

Following the 3 tables, a common summary is provided. Whether the data requires it, a summary by table is conceivable.

For table 7 on natural habitats: column “structure and functionality”

This column is used to specify the ecological functioning more global (or the dysfunction, if any) of the natural habitats in question. We will preferentially note all the information related to the viability of natural habitats in a wider environment: ecological network of natural habitats, continuities and ecological corridors, geographical isolates, habitat discontinuities, fragmentation, etc. We note short comments, one word or a few words, without sentences. Important information is included in the summary.

For Tables 8 and 9 on species: column "structure and functionality of the population, habitat of the species"

This column is used to specify the biological status of the species, the more global ecological functioning or dysfunction (of the populations of the species under consideration). We will note preferably all information related to the viability of the populations in a larger environment: ecological network of natural habitats, continuities and ecological corridors, geography isolates, discontinuities of habitats, fragmentation of populations etc. We can also note the preferred habitats in which the species is present during the different phases of its biological cycle.

Example of a DOCOB for the habitats and species of a SCI (FR 2402001 Sologne)

21 - Tourbières boisées*

Boulaies tourbeuses de plaine à Bouleau pubescent		
Phytosociologie : Alliance : *Alnion glutinosae* Sous-alliance : *Sphagno-Alnion glutinosae* Association : *Sphagno fimbriati-Betuletum pubescentis*		
Code Natura 2000 :	**91D0*-1**	
Code Corine biotope :	**44.A1**	*Photo : CRPF. - M. Laporte (droits réservés)*

- **Description et caractéristiques stationnelles**

Stations dominées par le Bouleau pubescent (*Betula pubescens*), parfois associé à quelques rares Aulnes glutineux (*Alnus glutinosa*), avec quelques Saules (*Salix sp.*) en sous-étage, surtout en lisière. Le peuplement ligneux est relativement dense, mais bas et tortueux.
On observe un fort tapis spongieux de Sphaignes (*Sphagnum sp.*) et de mousses avec quelques centimètres à quelques décimètres de tourbe blonde (tourbe de sphaignes).
Les Sphaignes forment souvent un manchon à la base des troncs des Bouleaux.
Cet habitat nécessite un microclimat frais, un faible pouvoir évaporant de l'air et une forte humidité du substrat tourbeux dont le pH oscille, à 10 cm de profondeur, entre 3,7 et 5,7.
Les eaux sont très pauvres en éléments nutritifs et en particulier en carbonates.

Le sol (sous la tourbe) présente une certaine aération en raison de la circulation de l'eau ou de l'intermittence de l'engorgement. Les Fougères sont le plus souvent localisées en périphérie de l'habitat (pentes).

Cet habitat se localise au niveau de :
- dépressions humides très acides (parfois dans des vallées, en annexe des cours d'eau) ;
- zones alimentées par des eaux de source oligotrophes ou de pluie (replats sur versants) ;
- queues d'étangs oligotrophes (eaux acides) ;
- petits vallons très encaissés.

Les quelques observations fragmentaires effectuées dans le Sud-Est de la Sologne montrent que les formes typiques sont probablement rares mais que l'habitat existe au moins sous forme de microstations au sein de Bétulaies (Corine biotope 41b112).

Dynamique évolutive naturelle
Milieu pratiquement stable tant que les conditions hydriques perdurent.

- **Tendances évolutives liées à la gestion et menaces potentielles**

Facteurs défavorables au maintien de l'habitat

Modification du régime des eaux, en particulier drainage.
Modification des caractéristiques physico-chimiques.
Amendement, fertilisation.
Exploitation de la tourbe.
Plantation de résineux.
Coupe à blanc.
Feux.
Circulation d'engins lourds.

- La coupe à blanc des Bouleaux peut conduire au retour d'un milieu ouvert avec reconstitution difficile de la Boulaie (peu de rejets sur les vieilles souches). Dans un secteur où sont présents des Pins sylvestres, cette exploitation peut induire une colonisation par des semis de cette espèce, prélude au dessèchement partiel de la station.
- L'eutrophisation de l'eau fait évoluer le milieu vers une Aulnaie eutrophe.
- Le drainage peut provoquer une évolution de la végétation vers la Chênaie pédonculée acidiphile à Molinie.
- L'incendie s'avère très destructeur dans ce milieu. Il conduit à l'apparition d'une Bétulaie pubescente à Molinie.

NB : apparition de Ronciers fréquente en cas de coupe à blanc et de drainage (minéralisation de la matière organique).

- **Objectifs de conservation**

Le faible nombre de localités connues justifie la conservation d'un maximum de stations.
Toute opération de transformation de cet habitat est à proscrire, en particulier d'éventuelles plantations résineuses qui n'auraient pas d'intérêt économique sur ces terrains très pauvres et engorgés.
S'il est en bon état, cet habitat se prête bien à la non-intervention.

- **Bonnes pratiques de gestion**

Règles générales de préservation des milieux marécageux

C'est la gestion globale des complexes marécageux qu'il faut prendre en compte. Ces milieux sont très sensibles aux perturbations et il est impératif de préserver au mieux leur intégrité.

- Établir un diagnostic préalable à toute action éventuelle (pas de mise en œuvre directe des mesures de restauration).

- Respecter l'alimentation en eau, maintenir ou restaurer le niveau de la nappe.

Ce point constitue une règle fondamentale de préservation d'autant qu'en général le bassin versant collecté (impluvium) est de faible étendue.
Dans certains cas, le maintien ou la restauration de complexes marécageux passe donc par une restauration hydraulique permettant de remonter le niveau de la nappe.
Ne pas drainer la station.

- Maintenir les caractéristiques physico-chimiques du milieu.

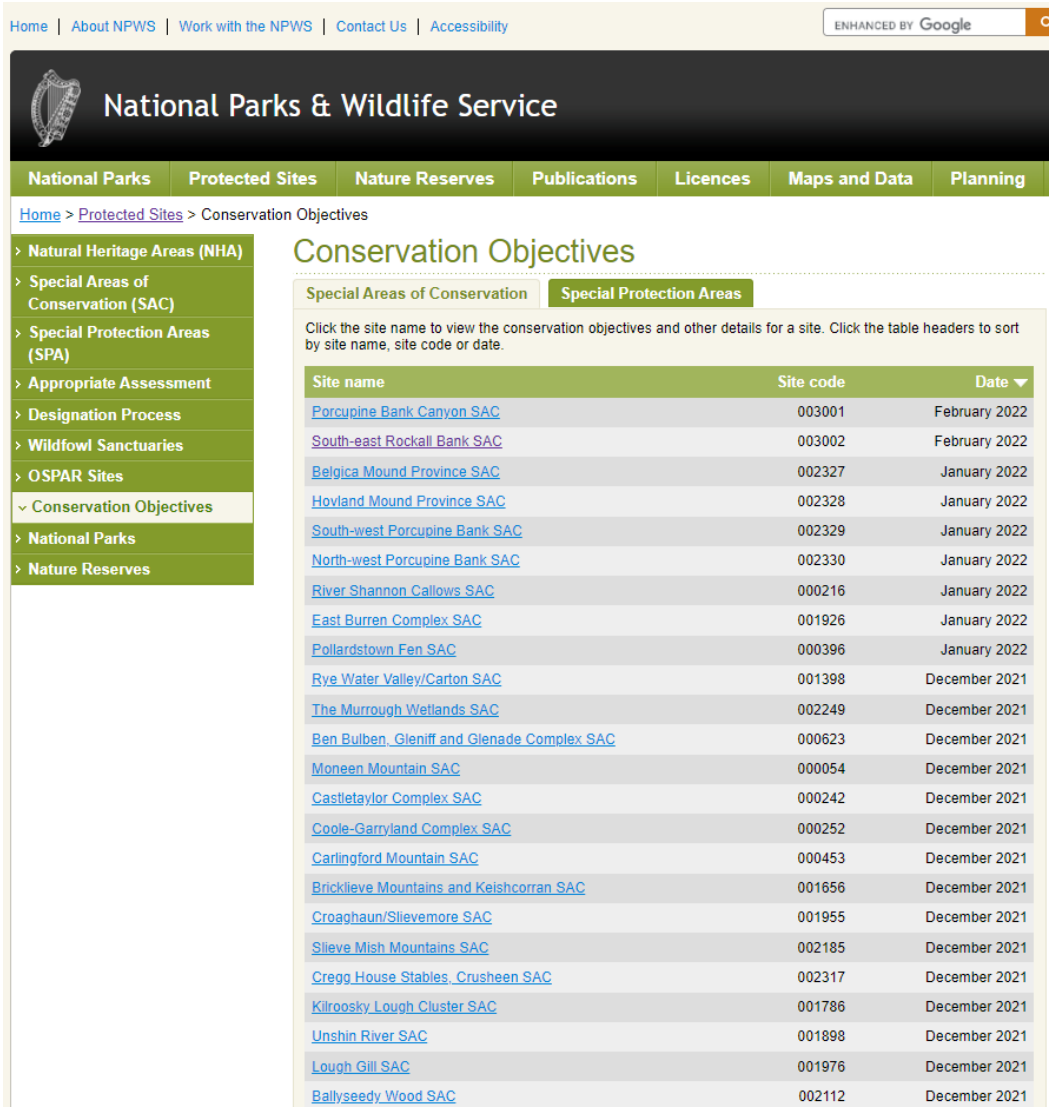
On exclura en particulier tout apport de calcaire, y compris de manière indirecte dans le bassin versant d'alimentation.

Example of conservation objectives for habitat 91D0-1 in FR 2402001 Sologne*

- **Ireland**

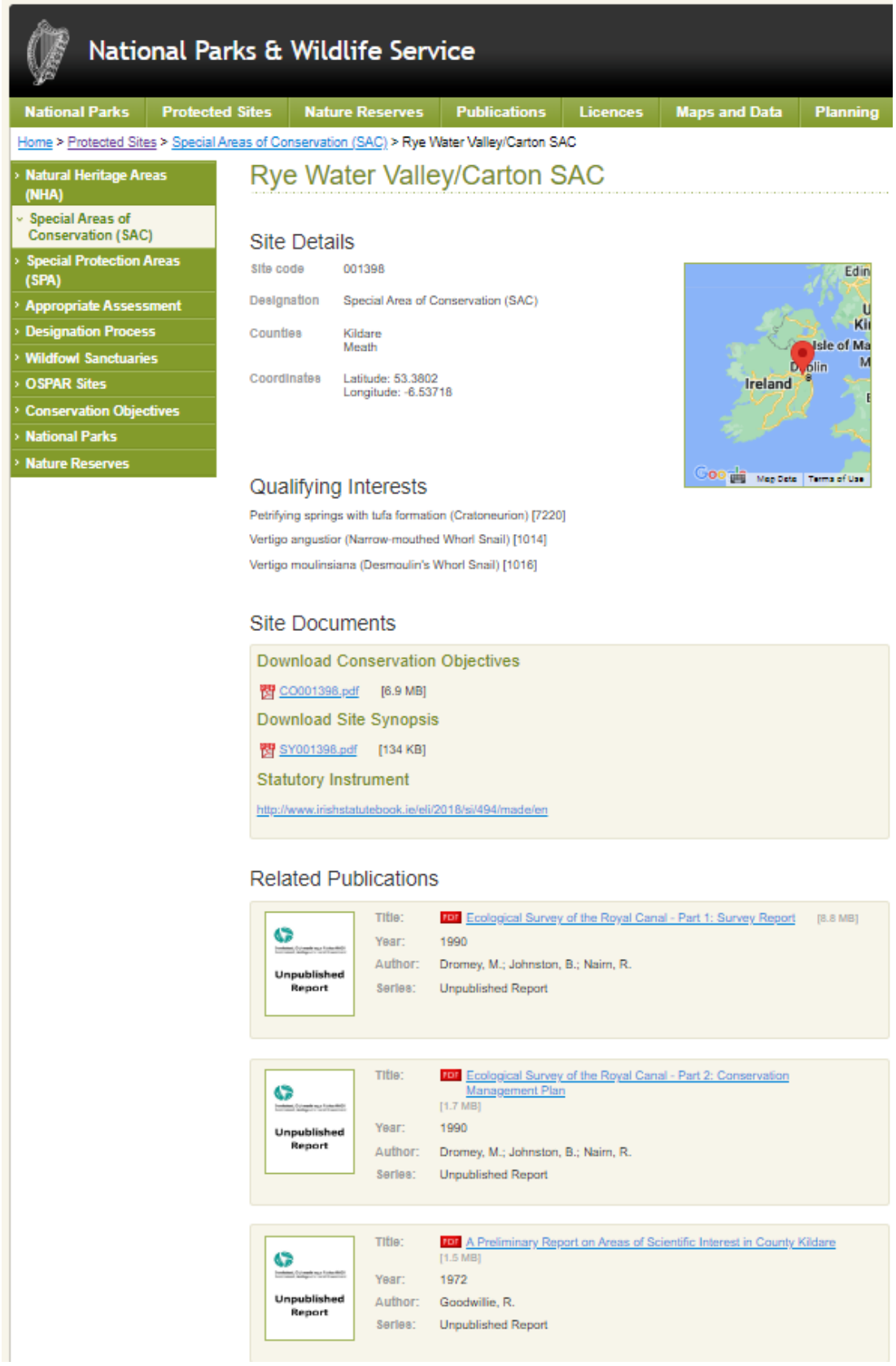
Good Practice – Example of SSCO for site designated under the Habitats and Birds Directives in Ireland

The conservation objectives set for the Natura 2000 sites in Ireland are published on the NPWS (National Parks & Wildlife Services) web page, together with other available information for each site.



Site name	Site code	Date
Porcupine Bank Canyon SAC	003001	February 2022
South-east Rockall Bank SAC	003002	February 2022
Belgica Mound Province SAC	002327	January 2022
Hovland Mound Province SAC	002328	January 2022
South-west Porcupine Bank SAC	002329	January 2022
North-west Porcupine Bank SAC	002330	January 2022
River Shannon Callows SAC	000216	January 2022
East Burren Complex SAC	001926	January 2022
Pollardstown Fen SAC	000396	January 2022
Rye Water Valley/Carton SAC	001398	December 2021
The Murrough Wetlands SAC	002249	December 2021
Ben Bulben, Gleniff and Glenade Complex SAC	000623	December 2021
Moneen Mountain SAC	000054	December 2021
Castletaylor Complex SAC	000242	December 2021
Coole-Garryland Complex SAC	000252	December 2021
Carlingford Mountain SAC	000453	December 2021
Bricklieve Mountains and Keishcorran SAC	001656	December 2021
Croaghaun/Slievemore SAC	001955	December 2021
Slieve Mish Mountains SAC	002185	December 2021
Cregg House Stables, Crusheen SAC	002317	December 2021
Kilroosky Lough Cluster SAC	001786	December 2021
Unshin River SAC	001898	December 2021
Lough Gill SAC	001976	December 2021
Ballyseedy Wood SAC	002112	December 2021

Main database for Conservation objectives for Natura 2000 sites



Example of available information for a SAC

Conservation Objectives for : Rye Water Valley/Carton SAC [001398]

1016 Desmoulin's Whorl Snail *Vertigo moulinsiana*

To maintain the favourable conservation condition of Desmoulin's Whorl Snail (*Vertigo moulinsiana*) in Rye Water Valley/Carton SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Number of occupied 1km squares	No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid square N9936. See map 3	Desmoulin's whorl snail (*Vertigo moulinsiana*) is known from one site in Rye Water Valley/Carton SAC, at Louisa Bridge, within the 1km grid square N9936. See details for the site Louisa Bridge (site code VmCAM05) in Moorkens and Killeen (2011), Long and Brophy (2019) and Brophy and Long (2019)
Occurrence in suitable habitat	Percentage positive records in a representative number of samples	No decline, subject to natural processes. A baseline figure of 50% positive samples is set	Desmoulin's whorl snail (*Vertigo moulinsiana*) should be present in 50% of samples taken across the site. This attribute should be assessed following the methodology in Long and Brophy (2019) taking a representative number of samples in suitable habitat across the site
Density within habitat	Number of adults per sample	No decline, subject to natural processes; at least 25% of samples should have more than 10 individuals	At least 25% of samples should have at least 10 individuals of Desmoulin's whorl snail (*Vertigo moulinsiana*). This attribute should be assessed following the methodology in Long and Brophy (2019) taking a representative number of samples in suitable habitat across the site
Habitat area	Hectares	Area of suitable habitat stable or increasing, subject to natural processes; no less than 0.2ha of at least sub-optimal habitat	The baseline figure for the amount of habitat in at least sub-optimal condition for this site is 0.2ha. Optimal and sub-optimal habitat is defined in Moorkens and Killeen (2011) and given in Long and Brophy (2019) and Brophy and Long (2019)
Habitat quality: occupied patches in at least sub-optimal condition	Percentage	No decline, subject to natural processes. A baseline of 50% is set	Suitable habitat that is at least sub-optimal is patchy on the site. The baseline target is that at least 50% of the occupied habitat patches should be in at least sub-optimal condition. This is derived from Moorkens and Killeen (2011), Brophy and Long (2019) and Long and Brophy (2019) where optimal and sub-optimal habitat is also defined
Habitat quality: soil wetness	Soil wetness criteria	No decline, subject to natural processes	The baseline is that 50% of the site should meet the soil wetness criteria (classes 3-5) that is defined and assessed according to the definitions and methodology given in Moorkens and Killeen (2011), Brophy and Long (2019) and Long and Brophy (2019)

Example of conservation objectives for an invertebrate species in a SAC

Further information: https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives

- **Romania**

Good Practice – Example of SSCOs for site designated under the Habitats and Birds Directives in Romania

The SSCOs for Natura 2000 sites designated under the Habitats and Birds Directives in Romania include:

- Code and name of the habitat or species;
- Short description of the feature of interest, including information on the surface or population size, conservation status, specific conservation objective;
- Parameters;
- Measurement units;
- Target value;
- Additional information.

The SSCOs in Romania are elaborated by the National Agency for Natural Protected Areas (Romanian abbreviations: ANANP), the institution in charge for the management of natural protected areas in Romania.

Excerpt from SSCOs for a forest habitat:

91E0* - Păduri aluviale cu Alnus glutinosa şi Fraxinus excelsior - Alno- Padion, Alnion incanae, Salicion albae

Suprafaţa acestui habitat în situl Natura 2000 ROSCI0050 Crişul Repede amonte de Oradea este de aproximativ **254,58 ha** şi are o stare de conservare **favorabilă (din punct de vedere al suprafeţei ocupate şi al structurii şi funcţiilor specifice)**. Obiectivul de conservare specific sitului pentru acest habitat este **menţinerea stării de conservare** definită prin următorii parametri şi valori ţintă:

Parametru	**Unitatea de măsură**	**Valoare ţintă**	**Informaţii adiţionale**
Suprafaţa habitatului	ha	254,58	Toate tipurile apar pe soluri grele în general bogate în depozite aluviale, inundate periodic de creşterea nivelului râului sau pârâului cel puţin o dată pe an, însă altfel bine drenate şi aerate în perioada în care debitul apei este scăzut.
Specii caracteristice lemnoase	Procent/1000mp	Cel puţin 60%	*A. glutinosa, Salix sp.*
Acoperirea speciilor caracteristice	Procent/1000mp	Cel puţin 70%	Conform rezultatelor proiectului LIFE05 NAT/RO/000176.
Specii caracteristice de plante	Nr. de specii /1000 mp	Cel puţin 3	Angelica sylvestris, Carex acutiformis, Carex pendula, Carex remota, Carex strigosa, Carex sylvatica, Cirsium oleraceum, Equisetum telmateia, Equisetum spp, Filipendula ulmaria, Geranium sylvaticum, Geum rivale, Lycopus europaeus, Lysimachia nemorum, Rumex sanguineus, Stellaria nemorum, Urtica dioica
Abundenţa specii invazive, ruderale, nitrofile şi alohtone,	Procent/1000 mp	Cel mult 20%	Conform rezultatelor proiectului LIFE05 NAT/RO/000176

English translation:

91E0* - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

The surface of this habitat in the Nature 2000 site ROSCI0050 Crisul Repede upstream of Oradea is about 254.58 ha and has a **favourable conservation status** (from the point of view of the occupied surface and of the structure and specific functions). The site-specific conservation objective for this habitat is **maintaining** the conservation status defined through the following parameters and target values:

Parameter	Measurement unit	Target value	Additional information
Habitat surface	ha	254.58	All types appear on heavy soils, generally rich in alluvial deposits, periodically flooded by the increase in the level of the river or stream at least once a year, but otherwise well drained and aerated during the period when the water flow is low.
Characteristic wood species	Percent/1000 sqm	At least 60%	*A. glutinosa*, *Salix sp.*
Coverage of characteristic species	Percent/1000 sqm	At least 70%	According to the results of the LIFE05 NAT/RO/000176 project
Characteristic plant species	No. of species/1000 sqm	At least 3	*Angelica sylvestris, Carex acutiformis, Carex pendula, Carex remota, Carex strigosa, Carex sylvatica, Cirsium oleraceum, Equisetum telmateia, Equisetum spp, Filipendula ulmaria, Geranium sylvaticum, Geum rivale, Lycopus europaeus, Lysimachia nemorum, Rumex sanguineus, Stellaria nemorum, Urtica dioica*
Abundance of invasive, ruderal, nitrophilous and non-native species	Percent/1000 sqm	At most 20%	According to the results of the LIFE05 NAT/RO/000176 project

Our commitment to quality is deeply rooted in our culture and is a fundamental part of who we are. That's why EIB-JASPERS is recognised as a 5-star organisation using the EFQM Model.