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Commission notice

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

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Assessment of plans and projects in relation to Natura 2000 sites

Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

Contents

1. INTRODUCTION

1.1. Purpose and nature of the document

The purpose of this document is to provide methodological guidance on the application of Article 6(3) and (4) of the Habitats Directive[1]. This guidance is intended to assist authorities and national agencies in the Member States 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 presents the views of the European Commission and is not legally binding; only the Court of Justice of the European Union (CJEU) is competent to authoritatively interpret Union law.

The guidance must be read in conjunction with the directives and national legislation, and with the advice set out in the Commission notice 'Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC'[2] (referred to in this document as the 'Article 6 Guide'), which is the starting point for interpreting the key terms and concepts contained in the Habitats Directive. For ease of reading, this guidance cites the relevant parts of the Article 6 Guide.

The Commission has also adopted several sector specific guidance documents for different policy areas such as energy, including renewables, mining, inland water transport, developments in ports and estuaries, agriculture and forestry[3]. These documents often analyse in more detail the specificities of plan or project assessments in these particular sectors. They can therefore be used to supplement the present general guidelines with practical sector specific considerations.

Under the principle of procedural autonomy, it is for individual Member States to decide how to put in place the procedural requirements deriving from the directive. It is the responsibility of the competent authority in each Member State to make the key decisions contained in the Article 6(3) and (4) assessments. In this guidance document, the term 'assessment' describes the whole process by which information is collected by plan or project developer, authorities, nature conservation and other agencies, non-governmental organisations (NGOs), and the public, and provided to the competent authority for consideration and evaluation.

[1] Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).

[2] European Commission, 2019. Commission notice 'Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC' (2019/C 33/01), available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1555085968125&uri=CELEX:52019XC0125(07)

[3] https://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

The competent authority then determines the outcomes of the assessment and reaches a decision on whether or not to approve the plan or project, and if so, under which conditions. This process recognises that the assessments required under Article 6(3) and 6(4) relies on the collection of reliable information and data by multiple stakeholders, as well as on consultations with and between them.

This document is an update of the previous methodological guidance on Article 6(3) and (4) of the Habitats Directive[4,5]. It draws on experience in implementing the Habitats Directive and on related case-law of the CJEU, as well as on a review of EU guidance and literature, case study material, feedback and suggestions following consultation with EU Member State authorities and stakeholders. The preparation of this guidance document was supported by ATECMA S.L. and Adelphi consult GmbH, under a contract with the European Commission[6].

1.2. Structure

This document is made up of three main parts and an annex.

- The first section explains the general approach and principles underpinning the guidance. It includes the flow chart from the Article 6 Guide to illustrate how the Article 6(3) and 6(4) assessments should be structured and how the various stages of the assessments relate to the requirements of Article 6(3) and (4).
- The next section contains the main stage-by-stage methodological guidance. Each stage contains methods and tools, examples and suggestions on how to complete the assessments. This is supported by the use of checklists, matrices and step-by-step instructions for each stage of the assessment. It should be noted, however, that these are for illustrative purposes only and cannot cover all situations.
- The third section includes a chapter on strategic planning and the assessment procedure for plans in particular. This section also explores the links with other environmental assessments required under EU legislation.
- The annex provides examples of methods and further guidance and tools that can be used to implement Article 6(3) and 6(4) procedures (e.g. checklists or formats).

[4] Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2002.

[5] The update is one of the deliverables of the 'Action Plan for nature, people and the economy', COM(2017) 198 final, (Action 1).

[6] EU Service contract Nr. 07.0202/2017/770634/SER/ENV.D.3 for technical and scientific support in relation to the delivery of the "Action Plan for nature, people and the economy – Actions 1, 2 and 13.

2. GENERAL APPROACH AND PRINCIPLES

2.1. The stages of the Article 6(3) and 6(4) procedure

Article 6, paragraphs (3) and (4), states 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.'*

Article 6(3) and (4) sets out a *step-by-step procedure* for assessing plans or projects that are likely to have impact on Natura 2000 sites. This involves three main stages:

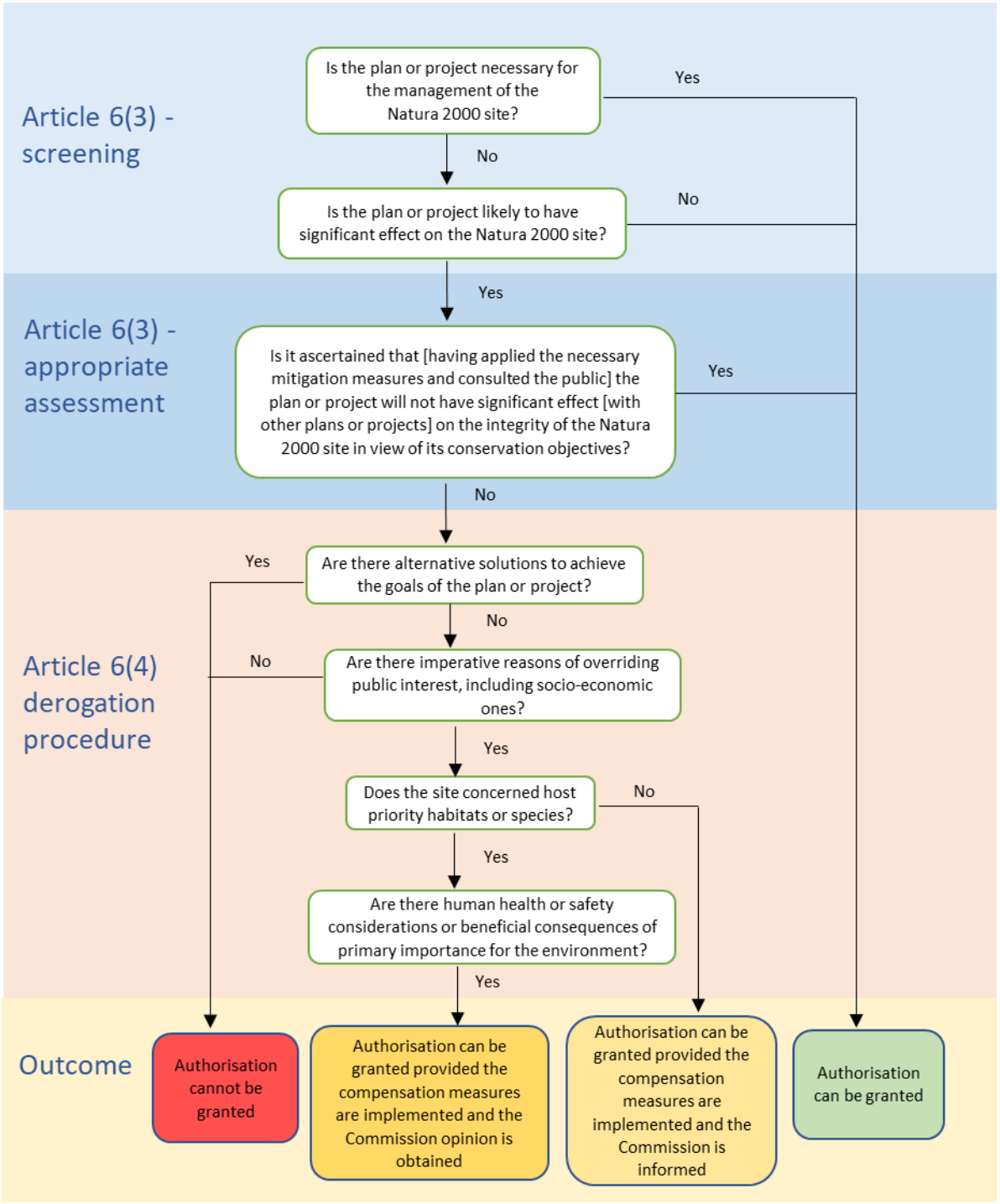
- ***Stage one: screening***. The first part of the procedure consists of a pre-assessment stage ('screening') to ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site, and, if this is not the case, then whether it is likely to have a significant effect on the site[7] (either alone or in combination with other plans or projects) in view of the site's conservation objectives. Stage one is governed by the first part of the first sentence of Article 6(3).
- ***Stage two: the appropriate assessment***. If likely significant effects cannot be excluded, the next stage of the procedure involves assessing the impact of the plan or 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. It will be for the competent authorities to decide whether or not to approve the plan or project in light of the findings of the appropriate assessment. Stage two is governed by the second part of the first sentence and the second sentence of Article 6(3).

[7] In practice, more than one site may need to be considered.

- ***Stage three: derogation from Article 6(3) under certain conditions***. The third stage of the procedure governed by Article 6(4). It only comes into play if, despite a negative assessment, the developer considers that the plan or project should still be carried out for imperative reasons of overriding public interest. This is only possible if there are no alternative solutions, the imperative reasons of overriding public interest are duly justified, and if suitable compensatory measures are adopted to ensure that the overall coherence of Natura 2000 is protected.

Each stage of the procedure is influenced by the previous one. The order in which the stages are followed is therefore essential for applying Article 6(3) and (4) correctly. Figure 1 gives a flow chart of this procedure.

Figure 1. **Assessing plans and projects in relation to the Natura 2000 sites; three stages of the Article 6(3) and (4) procedure**



2.2. Approach to decision making

Like all EU environmental legislation, the Habitats Directive is based on the **precautionary principle**[8], i.e. that 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.

When adverse effects on the integrity of a site are either certain or cannot be excluded, the plan or project can still be authorised by way of exception under Article 6(4) on condition that there are no alternatives, it is justified for imperative reasons of overriding public interest and sufficient compensatory measures are put in place to protect the overall coherence of the Natura 2000 network. The precautionary principle may also have some applications in such cases, particularly in relation to the extent of the compensatory measures to be applied (see section 3.3.3).

The Habitats Directive explicitly refers to the 'site's conservation objectives' as a basis for applying Article 6(3). The CJEU, in its judgment in Case C-849/19, Commission v Greece, confirmed that conservation objectives must be formally established and that these must be site specific, refer to the specific values present in the site, and be precise.[9]

Furthermore, the Court has repeatedly held that it is in the light of the conservation objectives that the scope of the obligation to carry out an appropriate assessment of the effects of a plan or a project on a protected site should be determined.[10] In other words, the decision as to whether the plan or project is likely to have significant impact on a Natura 2000 site should be taken in view of the site's conservation objectives (see section 3.1 'Screening'). **It is therefore essential that site specific conservation objectives are set without delay for all Natura 2000 sites and that these are made publicly available**.

As explained in section 3.2.2 below, site specific conservation objectives must be set for all protected habitats and species that are significantly present on the site (i.e. habitats and species with A, B or C, but not D, site assessment in the Standard Data Form for the site[11]). The

[8] Article 191 of the Treaty on the Functioning of the European Union.
[9] Paragraphs 58-59.
[10] Paragraph 51.
[11] See Box 4 'Sources to use to identify impact on a Natura 2000 site' in section 3.1.3 of this guide.

conservation objectives must specify targets to be achieved for each of the attributes or parameters that determine the conservation condition of the protected features.

The assessments must be reviewed – at both the screening and the appropriate assessment stages - if the plan or project is modified or further developed during the preparation process. For example if, during the screening phase, it cannot be excluded that there is a likelihood of significant effects, the plan or project developer may decide to revise the plan or project design in order to exclude the risk of possible significant effects. In such cases, the modified plan or project should be screened again to determine whether or not it is still likely to have a significant effect on the site.

Box 1: Making a decision on the basis of the appropriate assessment

It is the responsibility of the competent authorities, in the light of the conclusions of the appropriate assessment on the implications of a plan or project for the Natura 2000 site concerned, to decide whether or not to approve the plan or project. Approval can be given only after they **are certain that the proposed plan or project will not adversely affect the integrity of the Natura 2000 site**. That is the case where no reasonable scientific doubt remains as to the absence of such effects[12].

The focus is therefore on demonstrating the absence of adverse effects rather than their presence, reflecting the precautionary principle[13]. The appropriate assessment must therefore be sufficiently detailed and substantiated to demonstrate the absence of adverse effects, **in light of the best existing scientific knowledge in the field**[14].

The same level of certainty is required if the decision is made during the screening stage; also at this stage there should no reasonable doubt as to the absence of likely significant effects

[12] Case C-127/02, para. 59.
[13] Case C-157/96 para. 63.
[14] Case C-127/02 para. 61.

3. THE ARTICLE 6(3) AND 6(4) METHODOLOGY

3.1. Stage 1: Screening

This first stage examines the **likelihood of a plan or project having significant effects** upon a Natura 2000 site, either alone or in combination with other plans or projects. If likely significant effects cannot be excluded beyond any reasonable doubt, the plan or project will have to undergo a full appropriate assessment under Article 6(3).

The terms 'plan' and 'project' should be understood broadly.

*A **project** can involve construction works, installations and other interventions in the natural environment, including regular activities aimed at utilising natural resources.*

*The term **plan** has also, for the purposes of Article 6(3), a potentially broad meaning, including land-use or spatial plans and sectoral plans (e.g. for transport, energy, waste management, water management, forest management, etc.).*

*The Directive does not limit the scope of either a plan or a project to particular categories. The key trigger is whether they are **likely to have a significant effect on a Natura 2000 site**.*

See further details in the Article 6 Guide – sections 4.4.1 and 4.4.2.

As a pre-assessment stage, screening can normally be based on already existing information, including expert opinions (e.g. of competent environmental authorities) or published material (e.g. habitat maps or species inventories), rather than requiring detailed new evidence to be collected. However, where sufficient information e.g. on the presence of protected habitats and species in the area potentially affected by a plan or project does not exist or is outdated, further data may have to be collected and analysed in order to determine whether or not there are likely to be significant effects. If the information does not exist, then the assumption has to be that there is a likelihood of significant effects and that an appropriate assessment is required.

Screening needs to be carried out at an early stage, normally before all the details of a plan or project have been fixed, for instance when the location and general nature of a project are known but where the design process has not yet commenced. **Early screening** has several benefits:

- It can reduce the risk of delays and additional costs later on, when the plan or project is submitted for development consent.
- It allows early consultation and exchange of information between plan or project promoters, competent authorities and other stakeholders who have relevant data and expertise.
- It enables the developer of a plan or project to better gauge the next steps that may be required, without investing a significant amount of time and money.
- It makes it possible to identify and anticipate potential risks, both to Natura 2000

sites and to the plan or project itself, for example by highlighting the need for an alternative location or design for the plan or project to avoid any risk of damage, or by collecting further data to facilitate a timely assessment. Although key aspects of the initial planning should be clear, there should be also scope to adjust the plan or project.

When a plan or project is screened at an early stage, the screening may need to be reviewed at a later stage when more details of the plan or project become available. The scope of the screening analysis may differ for plans and projects, depending on the scale of the development and the likely effects.

The analysis comprises four steps:

1. ascertaining whether the plan or project is directly connected with or necessary to the management of a Natura 2000 site;
2. identifying the relevant elements of the plan or project and their likely impacts;
3. identifying which (if any) Natura 2000 sites may be affected, considering the potential effects of the plan or project alone or in combination with other plans or projects;
4. assessing whether likely significant effects on the Natura 2000 site can be ruled out, in view of the site's conservation objectives.

The following sections present each of the four steps in further detail, along with the outcome of screening and related documentation.

Table 1 below sets out the key differences between the screening and the appropriate assessment stages under Article 6(3) of the Habitats Directive.

Table 1: Differences between the screening stage and the appropriate assessment

Screening	Appropriate assessment
Ascertains whether significant negative effects on a Natura 2000 site are likely as a result of implementing the plan or project in view of the site's conservation objectives.	Assesses the likely effects on the Natura 2000 site in view of the its conservation objectives and assesses whether adverse effects on the integrity of the site will or might occur.
If the occurrence of significant effects cannot be excluded with certainty, the plan or project has to undergo an appropriate assessment.	The plan or project can be authorised only if adverse effects on the integrity of the Natura 2000 site can be excluded.
Typically based on existing data, available knowledge and experience, and expert opinion.	Requires a detailed examination, often field surveys, expert advice, and an expert assessment of the specific case.
Mitigation measures cannot be considered[15].	Assesses mitigation measures to eliminate or reduce adverse effects.

[15] Case C-323/17

3.1.1. Step 1: Ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site

This step ascertains whether the plan or project is connected with, or necessary for, the management of a site, i.e. if it contributes to achieving the site's conservation objectives.

The term 'management' refers to the conservation management of a site, i.e. it is to be understood within the meaning for which it is used in Article 6(1). Thus, if an activity is directly connected with, and necessary for, fulfilling the conservation objectives, it is exempt from the requirement for an assessment.

Plans or projects directly connected with, or necessary to, the conservation management of Natura 2000 sites should generally be excluded from the provisions of Article 6(3), but their non-conservation components may still require an assessment.

See further details in the Article 6 Guide – section 4.4.3.

A non-conservation component of a plan or project which includes conservation management among its objectives may still require an appropriate assessment. For example, this could apply to timber harvesting that forms part of a conservation management plan for a woodland designated as a Natura 2000 site. The part of the activity, which is not necessary to the site's conservation management, should be subject to an appropriate assessment[16].

There may also be circumstances where a plan or project directly connected with, or necessary for, the management of one site (the target site) may have a negative effect on another site. For example, to improve the flood management of a target site, the plan may propose to build a barrier in another site, which may have a significant adverse effect on that site. Therefore, the plan or project should be the subject of an assessment of the potentially significant effects on the other site.

Consequently, the plans or projects that will be directly related or necessary to the management of the Natura 2000 sites under the Birds and Habitats Directives should be plans or projects that aim to, and will contribute to, preserving or, where appropriate, restoring the protected habitats and species in these sites to a favourable conservation condition.

[16] The technical report "Natura 2000 and Forests" (2015) (chapter 4.6) provides examples of how to avoid conflicting goals between forest- and Natura 2000 management: http://ec.europa.eu/environment/nature/natura2000/management/docs/Final%20Guide%20N2000%20%20Forests%20Part%20I-II-Annexes.pdf

Box 2: Examples of criteria for ascertaining whether a plan or project is directly connected with or necessary to the management of the Natura 2000 site

- measures envisaged in the plan or project are included in the management plan of the Natura 2000 site concerned or are proposed as part of other statutory, administrative or contractual measures required for maintaining and restoring (if necessary) the site, its habitat types and species in good state of conservation;
- there is a substantiated statement from the statutory body responsible for managing the Natura 2000 site that the activity is directly related to, and necessary for the management of the target site, and that it is clearly related to maintaining or improving the conservation status of habitat types or species in the site.

3.1.2. Step 2: Description of the plan or project and its impact factors

When describing the plan or project, it will be necessary to identify all aspects that have a potential to affect the Natura 2000 site, either alone or in combination with other plans or projects.

All phases of the project have to be taken into account including construction, operation and decommissioning.

For plans, appropriate details about the activities carried out within the plan need to be collected and analysed to see if individually or collectively they may have significant impact on the Natura 2000 sites, including in combination with other plans or projects.

Box 3 lists the key parameters of the plan or project to be identified. These elements are indicative only, to be adapted or complemented to suit each case. For some projects or plans, it may be necessary to identify parameters separately for the construction, operation and decommissioning phases.

Box 3: Examples of elements of the plan or project to be considered during screening

- size (e.g. in relation to direct land-take);
- overall affected area including the area affected by indirect impacts (e.g. noise, turbidity, vibrations);
- physical changes in the environment (e.g. modification of riverbeds or morphology of other water bodies, changes in the density of forest cover);
- changes in the intensity of an existing pressure (e.g. increase in noise, pollution or traffic);
- resource requirements (e.g. water abstraction, mineral extraction);
- emissions (e.g. nitrogen deposition) and waste (and whether they are disposed of on land, water or in the air);
- transportation requirements (e.g. access roads);
- duration of construction, operation, decommissioning, etc.;
- temporal aspects (timing of the different stages of a plan or project);
- distance from Natura 2000 sites and in particular from their designating features;
- cumulative impacts with other projects and plans.

3.1.3. Step 3: Identify which Natura 2000 sites may be affected by the plan or project

Identifying the Natura 2000 sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any Natura 2000 sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives.

In particular, it should identify:

- any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;
- any Natura 2000 sites within the likely zone of influence of the plan or project. Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly 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;
- Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);
- Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project.

The range of Natura 2000 sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a plan or project can affect water flows, fish migration and so forth, even at a great distance. Emissions of pollutants may also have effects over a long distance.

Some projects or plans that do not directly affect Natura 2000 sites may still have a significant impact on them if they cause a barrier effect or prevent ecological linkages. This may happen, for example, when plans affect features of the landscape that connect Natura 2000 sites or that may obstruct the movements of species or disrupt the continuity of a fluvial or woodland ecosystem.

To determine the possible effects of the plan or project on Natura 2000 sites, it is necessary to identify not only the relevant sites but also the habitats and species that are significantly present within them, as well as the site-specific conservation objectives.

Box 4 lists examples of the data sources that can be used for this purpose.

Box 4: Sources to use to identify impact on a Natura 2000 site

- the Natura 2000 standard data form for the site;
- site-specific conservation objectives (set out in the special areas of conservation (SAC) designation acts or in the special protection area (SPA) classification acts, or in the site management plan, or in a separate act);
- site management plans (e.g. that identify pressures and threats on the site);
- existing surveys and monitoring data on relevant species and habitat types, their distribution in and around the site, conservation status, pressures and threats on them;
- current and past maps of the site;
- land-use and other relevant existing plans;
- existing site survey material;
- existing data on hydrogeology;
- existing data on relevant substances (e.g. nitrogen deposition, composition of discharged waste waters) ;
- environmental impact assessments for similar projects or plans;
- relevant state of the environment reports;
- maps and geographical information systems;
- site history files, etc.

The information provided in the Natura 2000 standard data form[17] is the starting point for identifying the habitat types and species that are significantly present on the site and that could be affected by the plan or project, as well as any existing pressures and impacts on the site. Other information at site-level can be obtained from sources such as the Natura 2000 site management plan, lists of operations that may cause damage or deterioration, the results of monitoring surveys of habitat and species inside the site, as well as sources outside the Natura 2000 site at biogeographic, national and local level.

It is important that this data and information is made publically available e.g. through a central database or through online portals and websites from national or regional authorities, and regularly updated, so that all stakeholders and authorities concerned can easily have access to them.

Box 5: Key information sources on the designating features of the Natura 2000 sites

A standard data form is available for each Natura 2000 site. It contains information on the EU protected species and habitat types present on the site and provides a broad assessment of the condition of each species or habitat type on that site (scored from A to D). It provides information about the surface area, representativeness and conservation status of the habitats present in the site, and gives an overall assessment of the value of the site for conservation of the natural habitat types concerned. For the species present in the site, the form provides

[17] See: Explanatory notes in the Commission Implementing Decision 2011/484/EU of 11 July 2011 concerning a site information format for Natura 2000 sites (Decision setting format of the Standard Data Forms).

information on their populations, status (resident, breeding, wintering, migratory) and on the site's value for the species in question.

The form also includes contextual information about the site, including:

- General site characteristics, quality and importance;
- vulnerability (pressure on the site from human and other influences and the fragility of habitats and ecosystems);
- impacts related to human activities and natural processes that may have an influence, either positive or negative, on the conservation and management of the site as well as the proportion of the area of the site affected;
- management body responsible for the site;
- site management plans and practice, including traditional human activities;
- map of the site.

Conservation measures and management plans

For special areas of conservation, Member States must draw up conservation measures that correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the site (Article 6(1) of the Habitats Directive). This can involve, if need be, management plans specifically designed for the sites or integrated into other development plans, and/or other statutory, administrative or contractual measures.

Similarly, special protection areas must also be the subject of targeted conservation measures. Where available, Natura 2000 management plans can provide information about the sites' conservation objectives, the location and status of the species and habitats occurring in the site, their threats and the conservation measures required to improve their conservation condition on the site. All of this can be useful for the screening stage and for the appropriate assessment.

The Commission's website provides data and maps for all Natura 2000 sites in the EU via the Natura 2000 viewer and the Natura 2000 public database: http://ec.europa.eu/environment/nature/natura2000/data/indexen.htm. Most Member States also have publically available information on Natura 2000 sites and their features. Geographical information systems (GIS) can also aide in the understanding of the relationship between aspects of a plan or project and the specific features of the Natura 2000 site.

Practical tools and information systems are available in different countries to help identify potential impacts from different types of projects and plans on Natura 2000 sites. Box 6 gives some examples of such tools.

Box 6: Examples of information systems to identify potential impact from different types of projects and plans on Natura 2000 sites

Germany

The information needed to assess the potential negative effects of nearly all types of projects is provided by the information system FFH-VP- Info, produced by the Federal Agency for Nature Conservation. It hosts an extensive database on potential impacts and effects on specific habitat types and species that can be used for the screening and appropriate assessment. It provides detailed information on the sensitivity and potential effects of the impact factors for nearly all habitats and species protected under the nature directives that are present in Germany. It also includes checklists with assessments of the severity / relevance of each impact on habitat types and species.

See: http://ffh-vp-info.de/FFHVP/Page.jsp.

Ireland

A GeoTool application is available in Ireland to support the data collection process in Stage 1 (screening) and Stage 2 (the appropriate assessment). It allows the user to select a point on the map and then search for SACs and SPAs within a set distance from the point, which the user can select depending on the level of potential environmental impact from a plan or project. The information given for each Natura 2000 site located in the selected range includes the list of habitats and species for which the sites are designated and a link to the conservation objectives for each site.
See: https://gis.epa.ie/EPAMaps/AAGeoTool

The Netherlands

The Dutch government has produced a tool to quickly assess the potential impact of a project during the initial phase. It describes the procedural steps needed if an assessment of the effects on Natura 2000 sites or protected species is part of the procedure for obtaining a permit. It helps identify potential impacts on individual species and habitat types and provides information about the sensitivity of species and habitat types to different activities.

See: www.natura2000.nl (under "*routeplanner beschermde natuur*" and "*effectenindicator Natura 2000-gebieden*").

Belgium

To assess acidification and eutrophication through aerial deposits (deposition of NOx and NH_3 linked to activities such as intensive agriculture, industrial heating and energy processes and mobility), Belgium provides an interactive online application to conduct the first screening. It is a quick scan tool to identify potential impacts. If the scan gives a green light, no harmful impact is to be expected. If the tool gives a red light, there may be a harmful impact that merits closer examination via an appropriate assessment.

See: https://www.milieuinfo.be/voortoets/

See further details on information and practical tools to support the screening and the appropriate assessment in the annex to this guidance document (Section 1.1).

3.1.4. Step 4: Assess whether likely significant effects can be ruled out in view of the site's conservation objectives

The next step of the screening stage is to assess the likelihood and potential significance of the impacts identified in the previous step, taking into account potential cumulative impacts with other plans or projects.

Assessing the likelihood of significant effects

A likely significant effect is, in this context, any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or projects.

It should be recalled here that if likely significant effects cannot be excluded beyond reasonable doubt, the plan or project will have to undergo a full appropriate assessment under Article 6(3) (see section 3.2.2.b for further details on assessing potential impacts).

Significance of the effects will vary depending on factors such as the magnitude of impact, the type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

Box 7 lists examples of indicators to quantify the significance of these effects.

Box 7: Examples of significance indicators

Impact type	**Significance indicator**
Loss of habitat area	Hectares of habitat lost, percentage of the habitat lost.
Degradation	Area (in absolute terms and percentage) where the attributes used to determine the conservation status of the species or habitat has worsened as well as the scale of degradation for each of the attributes.
Disturbance	Degree of intensity, duration or permanence of the disturbance factor, its distance from breeding areas
Fragmentation	Change in comparison with the original and desired states (e.g. creation of several small habitat patches instead of one large one, hectares of habitat exposed to the edge effect)
Indirect effects:	Degree to which the area is opened to other threats (invasive alien species, human and animal penetration, additional developments).

Sources of information to assess the significance of effects include evidence from similar operations affecting sites with similar designated features in a similar conservation condition or with similar conservation objectives, and expert judgement based on available evidence. However, as each case is necessarily different, consideration must be given to the local circumstances. The assessment must therefore always be done on a case by case basis.

As stated in the Article 6 Guide, what may be significant for one site may not be significant for another. For example, a loss of a hundred square metres of habitat may be significant for a small rare orchid site, while a similar loss in a large steppe site may be insignificant if it does not affect the site's conservation objectives.

In case of plans, depending on the level of definition and details of the various aspects and components of the plan, it may be difficult to assess the magnitude and significance of all potential effects on individual sites at this stage. Nevertheless, the ***likelihood*** of significant effects on Natura 2000 site can still be assessed for instance in light of the type of plan or project and its potential zone of influence.

Plans must therefore be screened with a sufficient degree of caution (beyond reasonable doubt), and in light of the precautionary principle, to avoid ruling out components or actions with a potential impact on a Natura 2000 site and excluding them from further scrutiny in the appropriate assessment.

As regards the assessment **of mitigation measures**[18] in implementing the Article 6(3) procedure, the Court has ruled that "in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site" (Case C-323/17).

However, project developers can sometimes design projects in a way to avoid or minimise potential impacts from the outset. This can be done by using best available technologies or by applying pre-emptive measures, including statutory measures (e.g. no go zones) prescribed e.g. in sector-specific regulations, Natura 2000 management plans or in spatial/zoning plans

Such generic components of the project can be considered in the screening, contrary to the plan- or project-specific mitigation measures that must not be taken into account at this stage. These components should be clearly identified in the project description. Specific mitigation measures e.g. construction of green bridges to allow migration of species for protection of which the site has been designated, particularly if imposed by the competent authority, should only be considered during the appropriate assessment, as described in section 3.2.5.

[18] See: http://curia.europa.eu/juris/liste.jsf?language=en&num=C-323/17

Assessing possible cumulative impacts with other plans and projects

During screening, the assessment of the likelihood of potentially significant effects should be done of the plan or project, *either alone or in combination with other projects or plans*. The assessment of such **cumulative impacts** is often less detailed at the screening stage than in the appropriate assessment. But there is still a need to identify all other plans or projects that could give rise to cumulative impacts with the plan or project in question.

The 'in combination' screening requires the identification of other plans and projects that can have potential effects on the same Natura 2000 sites and then assessing their capacity to cause significant effects when considered together with the plan or project under assessment. If this analysis cannot reach definitive conclusions, it should at least identify any other relevant plans and projects that should be scrutinised in more detail during the appropriate assessment.

Assessing cumulative effects at the screening stage

A series of individually low-level impacts may, in combination, produce a significant impact. When determining likely significant effects, the combination with other plans and/or projects should also be considered to take account of cumulative impacts during the assessment of the plan or project.

The in-combination provision concerns other plans or projects that have been already ***completed, approved but uncompleted, or proposed*** *(i.e. for which an application for approval or consent has been submitted). In addition, it is important to note that the assessment of cumulative effects is* ***not restricted to the assessment of similar types of plans or projects*** *covering the same sector of activity. All types of plans or projects that could, in combination with the plan or project under consideration, have a significant effect, should be included during the assessment.*

Similarly, the assessment should look at the cumulative effects, not just between projects or between plans but also ***between projects and plans (and vice versa)****. For example, a new project to build a major motorway may on its own not adversely affect the site, but when considered in combination with an already approved housing development plan for the same area, the impacts may become significant enough to adversely affect the site. By contrast, a plan may have no significant impact on Natura 2000 sites on its own but may be assessed differently if considered in combination with an already proposed or authorised major development project not included in that plan.*

See further details in the Article 6 Guide – section 4.5.3

Obtaining information on other plans and projects that can combine to generate cumulative impacts on the Natura 2000 site can be challenging. It is very useful to have databases or information systems that can provide this information in a selected area, as some countries already have or are in the process of developing[19]. Existing databases to inform the public about SEA and EIA of plans and projects may also be used to identify possible cumulative effects[20].

In any case, the competent authorities (environmental or sectoral) should be consulted and should be able to provide information about other plans/projects to consider during the screening.

[19] For example, in Germany the database and information system on FFH compatibility tests in North Rhine-Westphalia: http://ffh-vp.naturschutzinformationen.nrw.de/ffh-vp/de/start

[20] For example, in Czechia there is an information system with a database of plans and projects that have gone through the EIA and SEA, including those subject to an appropriate assessment: https://portal.cenia.cz/eiasea/view/eia100cr; https://portal.cenia.cz/eiasea/view/SEA100koncepce

Table 2 outlines the key steps for assessing cumulative effects on a Natura 2000 site.

Table 2: Cumulative impact assessment

Steps in the assessment	Activity to be completed
Define geographic boundaries and the timeframe for assessment	Define boundaries for examining cumulative effects; note these will be different for different types of impact (e.g. effects upon water resources, noise) and may include remote (off-site) locations.
Identify all projects/plans that could act in combination	Identify all possible sources of effects from the plan or project under consideration, together with other sources in the existing environment and other possible effects from other proposed projects or plans; timing and phasing of projects or plans.
Impact identification	Identify the types of impact (e.g. noise, water resource reduction, chemical emissions) that can affect the structure and functions of the site vulnerable to change.
Pathway identification	Identify potential cumulative pathways[21] (e.g. via water, air; accumulation of effects in time or space). Examine site conditions to identify where vulnerable aspects of the structure and function of the site are at risk.
Prediction	Predict the magnitude/extent of identified likely cumulative effects.
Assessment	Explain whether or not the potential cumulative impacts are likely to be significant, taking into account information collected during the '*assessing significance*' step.

When a protected habitat or species in the site is already in an unfavourable condition or when critical thresholds of impacts for the habitats' or species' specific attributes are being exceeded (or if the site is subject to cumulative effects that will lead to either of these states), any additional plan or project which, either alone or in combination, adds further impacts to these levels is likely to have a significant effect on the Natura 2000 site.

3.1.5. Conclusions: decision based on the outcome of the screening

Deciding whether a plan or project is likely to have significant effects on a Natura 2000 site will have practical and legal consequences. Plans and projects that are considered not likely to have significant effects beyond reasonable doubt can be processed without reference to the subsequent steps of Article 6(3).

[21] A source-pathway-reception model may be useful for this task.

Just like the appropriate assessment stage, the screening stage must conclude with a written substantiated decision by the competent authority in order to provide a record of the reasons for reaching this conclusion. The opinion of the management body of the Natura 2000 site should also be taken into consideration in drafting the conclusions.

The decision should also be made publically available. Although the text of the directive makes no explicit reference to this, the Court has recognised that public participation is required also in the screening phase of Article 6(3) (case C-243/15, paras 46-49). In addition, the Court has recognised the right for NGOs to challenge the screening decision taken by the authorities (case C-243/15, paras 56-61).

As the mere possibility of there being a significant effect on the site will trigger the need for an appropriate assessment, this decision can be taken either after a thorough examination of the plan or project, or on the basis of a simple analysis where it is already anticipated that there are likely to have significant effects (due to the type, size or scale of the plan or project, the characteristics of the Natura 2000 site or because of a high risk of combined effects with other plans or projects). This will enable the appropriate assessment to start as soon as possible.

In case of doubt, i.e. if it cannot be excluded, on the basis of available information, that a plan or project can have a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects, the plan or project must be subject to an appropriate assessment.

The screening decision should also ideally provide some guidance on the scope of the appropriate assessment that is to follow and on likely significant impacts to be studied[22]. In the case of a plan, this should also cover all Natura 2000 sites which could be affected by the plan.

Box 8 provides a screening analysis template.

Box 8: Screening analysis template

Summary description of the plan or project and main aspects likely to cause impacts

Objectives of the plan or project and its main characteristics/activities during different phases (e.g. construction, operation and decommissioning, if appropriate).

Summary description of the Natura 2000 sites and their key features

Habitats and species for which the sites have been designated and their conservation objectives.

[22] See section 3.2.1 on scoping.

Description of individual aspects of the plan or project that could generate impacts on Natura 2000 sites including:

- size and scale;
- distance from the Natura 2000 sites;
- land-take (direct/indirect);
- resource requirements (e.g. water abstraction, soil/mineral excavation);
- emissions (disposal to land, water or air);
- transportation requirements;
- duration and timing of construction, operation, decommissioning;
- range of impact factors (e.g. noise, nitrogen deposition, turbidity).

Description of likely effects on the Natura 2000 sites in view of the specific conservation objectives set out for the designating features, including:

- reduction of habitat area, habitat degradation or fragmentation;
- disturbance to species, reduction in species populations and density;
- changes in ecological functions and/or features that are essential for the ecological requirements of habitats and species (e.g. water quality and quantity);
- interference with the key relationships that define the structure and function of the site.

Description of likely impacts in combination with other plans or projects:

- impact factors to be considered for cumulative effects;
- list and description of projects that may contribute to cumulative effects;
- assessment of the extent and significance of cumulative effects in view of the site specific conservation objectives.

Criteria for assessing significance, indicators of significance, in view of the site specific conservation objectives e.g.:

- degree of habitat loss (absolute, relative), changes in habitats structure;
- risk of species populations' displacement, level of disturbance, reduction of species home range, feeding area, refuge areas, alteration of favourable condition for breeding;
- importance of the habitats and species affected, e.g. representativeness, local variety;
- importance of the site (e.g. limit of distribution area for certain habitats and species, stepping stone, important for ecological connectivity);
- disruption or alteration of ecological functions;
- changes to key ecological features of the site (e.g. water quality).

Conclusions: Description, based on the above information, of the aspects of the plan or project, or combination of aspects, that are likely to cause significant impacts and the ones in relation to which the character or magnitude of impacts is not known.

Likely significant effects: □ No □ Yes or uncertain

3.2. Stage 2: Appropriate assessment

The purpose of the appropriate assessment is to assess the implications of the plan or project against 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.

Article 6 Guide – section 4.6.1.

The appropriate assessment applies both to projects and plans. It can be coordinated with, or integrated into, other environmental assessments, such as the environmental impact assessment (EIA) for projects, the strategic environmental assessment (SEA) for plans and programmes and assessments done in the context of the Water Framework Directive (see Section 5.2).

As in the EIA and SEA processes, the plan or project developer usually submits an appropriate assessment report to the competent authority for scrutiny. If the assessment identifies negative impacts, or the likelihood of such effects, the developer may also bring in mitigation measures at this stage to reduce the impact.

It is then the competent authority's responsibility to ascertain whether the plan or project will adversely affect the integrity of the site concerned or not, and so whether the plan or project can be approved or not. The competent authority can also set conditions for approval and, if appropriate, obtain the opinion of the general public beforehand. Further information about consultation in the context of the appropriate assessment is provided in section 3.2.7.

The assessment process will include collecting and assessing information from multiple stakeholders, including national, regional and local nature conservation authorities, scientific experts and NGOs. The competent authority can also use the information submitted by the plan or project developer to consult with internal and external experts and other stakeholders.

There will be occasions where the competent authority may need to request further information to ensure that the final assessment is as comprehensive and objective as possible. It should be recalled that appropriate assessment must be sufficiently detailed and substantiated to demonstrate *the absence* of adverse effects, in light of the best existing scientific knowledge in the field.

In summary, an appropriate assessment involves the following steps:

1. collecting information on the project and on the Natura 2000 site concerned;
2. assessing the implications of the plan or project in view the site's conservation objectives, individually or in combination with other plans or projects;
3. ascertaining whether the plan or project can have adverse effects on the integrity of the site;
4. considering mitigation measures (including their monitoring).

These steps may need to be implemented iteratively, with some steps revisited in response to the results of subsequent steps. Each step is described in the following sections. Further aspects, such as public consultation and ensuring the quality of appropriate assessments, are covered at the end of this chapter.

3.2.1. Step 1: Collect information on the project and on the Natura 2000 sites concerned

The information required for the appropriate assessment includes a description of the Natura 2000 sites likely to be affected, the species and habitats significantly present on the site (so called designating features) and their conservation objectives, as well as a description of the plan or project and its possible effects on the site's conservation objectives. Part of this information may already have been collected during the screening phase, but usually the information will need to be more detailed for the appropriate assessment.

Pursuant to Article 5(2) of the EIA Directive and Article 5(4) of the SEA Directive, at the request of the developer, the competent authority should establish the scope of the environmental impact assessment **(scoping)**. The purpose of scoping is to identify those elements that should be covered in the environmental assessment report prepared by the developer and submitted to the competent authority. In particular, the scoping exercise should help to identify the most important elements to be studied so that these can be addressed in greater detail.[23]

The scoping will vary depending on the plan or project and the sites concerned. However, normally it will include a description of the site, a description of the plan or project and the identification of its potential impacts on the site, in view of the sties conservation objectives. Irrespective of whether the appropriate assessment is integrated into the EIA/SEA or not, the scoping should indicate the baseline conditions within the site (i.e. the conditions of protected habitats and species significantly present on the site, the site-specific conservation objectives as well as of other elements that determine its integrity and the importance of the site for the coherence of the network) that will need to be identified and studied during the appropriate assessment, the level of detail of the analysis, the methods, criteria for the evaluation of significance, types of mitigation measures and alternatives to be analysed, etc.

[23] European Commission, Environmental Impact Assessment of Projects, Guidance on Scoping, 2017.

Article 5(2) of the EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU)

Where requested by the developer, the competent authority, taking into account the information provided by the developer in particular on the specific characteristics of the project, including its location and technical capacity, and its likely impact on the environment, shall issue an opinion on the scope and level of detail of the information to be included by the developer in the environmental impact assessment report in accordance with paragraph 1 of this Article. The competent authority shall consult the authorities referred to in Article 6(1) before it gives its opinion.

Member States may also require the competent authorities to give an opinion as referred to in the first subparagraph, irrespective of whether the developer so requests.

Article 5(4) of the SEA Directive (Directive 2001/42/EC)

The authorities referred to in Article 6(3) shall be consulted when deciding on the scope and level of detail of the information which must be included in the environmental report.

The extent and level of detail required for data collection, surveys and investigations will differ depending on the project and the site(s) affected. It must therefore be decided on a case-by-case. It may depend, for instance, on the complexity of the project and of the site, as well as the site's importance for the species and habitats for which it has been designated. It will also depend on the data that is already available on the site and the species and habitats significantly present, as well as on information from previous assessments, etc.

Harmonised and high quality geographic information usually facilitates the work of the developers, authorities and stakeholders and is of particular importance in the context of transboundary projects and impacts. For example, in the case of a project affecting a cross-border river or an installation which can potentially create transboundary pollution, it is very important that common standards are used to identify, assess and mitigate these impacts. The EU directive 'INSPIRE' (INfrastructure for SPatial InfoRmation in Europe) aims to make such standardised data available and used.[24]

Table 3 provides an indicative checklist of baseline information required for the appropriate assessment, while Table 4 gives an example of information to collect when assessing the effects of plans and projects on Natura 2000.

[24] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), OJ L 108 25.4.2007, p. 1.

Table 3. Indicative checklist of baseline information required for the appropriate assessment

Baseline information about Natura 2000 sites and their features	**Information sources**	**Available at/from**
Conservation objectives of the Natura 2000 sites. Conservation measures established for the sites. Land use, prohibited and permitted activities in the sites. Main threats and pressures identified in the sites. Maps of Natura 2000 sites (showing site boundaries and location of relevant features)	Natura 2000 standard data forms Statutory acts to designate an SAC or SPA Management plans and other site management documents/instruments (regulations, contracts, agreements,)	National/regional online portals Official journals Conservation authorities/agencies Natura 2000 viewer[25] Natura 2000 database[26] National databases
The habitat types and species present and their condition on the sites: conservation degree, representativeness, etc. Importance of the sites to the habitats and species present. Main ecological requirements, vulnerability and sensitivity of the habitat types and species.	Natura 2000 standard data forms Site management plans Designating acts Statutory plans and policies for nature conservation at national/regional/local level Species and habitats conservation action plans Current and historical maps, surveys, etc. Expert-based information	National/regional online portals Natura 2000 viewer Natura 2000 database National databases Competent authorities Available literature Scientific institutions
Conservation status of habitats and species, trends, main threats and pressures on them (in the biogeographic region and at national level).	National reports on conservation status under Article 17 of the Habitats Directive and Article 12 of the Birds Directive	Online reports[27]

[25] http://natura2000.eea.europa.eu/

[26] The European database on Natura 2000 sites consists of a compilation of the data submitted by Member States to the European Commission. This European database is generally updated once a year to take into account updates to the content of Member States national databases. It is available at: https://www.eea.europa.eu/data-and-maps/data/natura-10

[27] https://nature-art17.eionet.europa.eu/article17/

Baseline information about the project / plan	***Information sources***	**Available at/from**
Full characteristics of the plan or project: total area affected by the project, project activities, emissions, natural resources use, phases, time planning, etc. Relationship (e.g. key distances or pathways) between the plan or project and the Natura 2000 site.	Plan or project documents (blueprint, maps, etc.) Maps, GIS	Project/plan promoter Natura 2000 viewer
Characteristics of other plans or projects (implemented, approved or proposed) that may cause in-combination or cumulative effects with the project being assessed on Natura 2000 sites.	Databases, e.g. on SEA, EIA, appropriate assessments of plans/projects, regional or municipal plans, local authority planning applications	Competent authorities Online platforms
Information about other assessments required for project consent or plan approval.	National legislation	Competent authorities Official journals
Organisations involved in/concerned by the sector/activity of the plan or project.	Sectoral organisations/associations	Project/plan developer Competent authorities
Assessments of similar plans or projects.	EIA and SEA statements, appropriate assessment reports and other documentary evidence from similar plans or projects assessed in the past	Official journals Competent authorities, relevant agencies and other bodies

Table 4. Information to collect when assessing the effects of plans and projects on Natura 2000 sites (guidelines in Spain)			
Elements		**Scope**	**Information to collect**
Natura 2000 sites	**Habitats**	General	▪ code, name, priority character; ▪ characteristic species; ▪ relevant variables of structure and function and ecological requirements.
		Biogeographical region (country level)	▪ conservation status of the habitat in the biogeographical region (national); ▪ role and importance of the site for the habitat conservation.
		Natura 2000 site	▪ conservation degree and representativeness of the habitat in the site; ▪ conservation objective set for the habitat in the site; ▪ habitat distribution area in the site (including mapping), % of total area (country/region); ▪ pressures, threats and impacts affecting the habitat in the site; ▪ vulnerability to the project potential impacts.
	Species	General	▪ code, name, priority character, protection status in the region/country; ▪ ecological requirements and factors that influence the species population dynamics.
		Biogeographical region (country level)	▪ conservation status of the species in the biogeographical region (national); ▪ role and importance of the site for the species conservation.
		Natura 2000 site	▪ conservation condition of the species in the site; ▪ conservation objective set for the species in the site; ▪ species distribution area and use of the site (including mapping); ▪ population and trends in the site; % of total population in the country/region; ▪ existing pressures and threats on the species in the site; ▪ species vulnerability to potential impacts (e.g. sensitivity to disturbance);
Landscape features that are important for the coherence of the Natura 2000 network		Biogeographical region (country level)	▪ type (ecological corridor, stepping stone, etc.); ▪ Natura 2000 and other areas connected or ecologically related (including mapping); ▪ species (or habitats) for which it is important, and importance for their conservation; ▪ pressures, threats and impacts affecting the feature; ▪ vulnerability to the project and potential impact.

Adapted from: Recommendations on the information to include in the appropriate assessment of projects on the Natura 2000 network in the EIA documents of the national administration in Spain (Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente, 2018). Available at: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/evaluacion-ambiental/guias-directrices/

3.2.2. Step 2: Assessing the implications of the plan or project in view the site's conservation objectives, individually or in combination with other plans or projects

The appropriate assessment should include a comprehensive identification of all the potential effects of the plan or project likely to be significant on the site, taking into account cumulative and other effects likely to arise as a result of the combined action of the plan or project under assessment with other plans or projects.

(The Article 6 Guide – section 4.6.2)

The appropriate assessment should ensure that all structural and functional aspects that contribute to site integrity are considered in full, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and any residual impacts after mitigation measures have been applied.

Step 2 includes the following activities:

- identifying the conservation objectives of the Natura 2000 sites affected by the plan or project;
- identifying and assessing the impacts of the plan or project against the sites' conservation objectives;
- considering cumulative effects with other plans and projects.

a) Identifying the conservation objectives of the Natura 2000 sites affected by the plan or project

In the appropriate assessment, the effects of a plan or project must be assessed against the conservation objectives set for the protected habitats and species present in the Natura 2000 sites.

Competent authorities must set conservation objectives for each site. The objectives must be established for all species and habitat types of Community interest under 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 bird species.

Site-level conservation objectives are a set of specified objectives to be met in a site in order to make sure that the site contributes in the best possible way to achieving favourable conservation status at the appropriate level (taking into account the natural range of the respective species or habitat types).

Site-level conservation objectives should define the desired conservation condition of the species and habitat types on the site for maximising its contribution to achieving FCS [favourable conservation status] *at the appropriate level. They are sometimes defined as a set of targets to be achieved over a certain period of time. These targets should be set in function of the conservation assessment of each species and habitat type on the site as recorded in the SDF* [standard data form].

See further details in the Article 6 Guide – section 2.3.1, and the Commission Note on setting conservation objectives (available at: https://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm)

The conservation objectives for a Natura 2000 site are usually set in the management plans or relevant management instruments, or in other documents published for the sites (e.g. designation acts published in official journals). They should also be publically available.

Conservation objectives for each of the habitat types and species present in the site should be related to their ecological requirements and set with reference to the parameters used for determining its conservation condition on the site (e.g. their area, structure and functions or populations). They should specify targets to be achieved for each of these attributes / parameters. They should also include targets/limits for the ecological functions and processes on which the habitats and species depend (e.g. defining the required water quality and quantity for aquatic species).

The conservation objectives must be:

- ***specific*** *– i.e. relate to a particular feature (species or habitat type) and define the condition(s) required to meet the conservation objective;*
- ***measurable and reportable*** *– i.e. include quantitative targets (possibly supplemented by qualitative ones, such as a description of good condition of a habitat or a population structure), enabling monitoring to assess whether the conservation objectives are being met and for the purposes of Article 17 of the Habitats Directive;*
- ***realistic*** *- i.e. given a reasonable timeframe and application of resources;*
- ***consistent in approach*** *- i.e. the structure of conservation objectives should, as far as possible, be the same across all sites, and at sites supporting the same feature, use similar attributes and targets to describe favourable conditions; and*
- ***comprehensive*** *- i.e. the attributes and targets should cover the properties of the feature necessary to describe its condition as either favourable or unfavourable.*

The objectives must also specify whether they aim to ***"restore" or "maintain"*** *the conservation status of the given feature of the site (the level of ambition predetermining the necessary conservation measures).*

Adapted from "Commission Note on setting conservation objectives" (available at: https://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm)

The lack of site-specific conservation objectives or the establishment of conservation objectives, which are not in line with the standard described above, jeopardises compliance with the requirements of Article 6(3).

Box 9 gives examples of site conservation objectives.

Box 9. Examples of conservation objectives for habitat types and species in Natura 2000 sites

Reefs *(1170)*

- the permanent habitat area (xx ha) is stable or increasing, subject to natural processes;
- the distribution of reefs is stable or increasing (map provided);
- the following community types are conserved in a natural condition: exposed intertidal reef community complex (xx ha); exposed subtidal community complex (xx ha) (a description of each of the community types is provided).

Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') (2120)

- the habitat area (xx ha) is stable or increasing and there is no decline in its distribution (map provided), subject to natural processes;
- the natural circulation of sediment and organic matter is maintained, without any physical obstructions (e.g. physical barriers);
- the presence of species-poor communities dominated by *Ammophila arenaria* is maintained
- negative indicator species (including non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat) represent less than 5% cover.

Dry heaths (4030)

- the current surface area (xx ha) and distribution of the habitat within the site is increased by x% (map provided);
- the abundance of typical species is maintained (list provided);
- a low cover of scattered native trees and scrub (<10% cover) is maintained;
- at least 1% but not more than 10% cover of the area of the habitat consists of bare ground;
- nitrogen deposition is maintained below critical load values defined for the site (e.g. 10-20 kgN/ha/yr).

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (6410)

- the current surface area (xx ha) and distribution of the habitat within the site is increased by x% (map provided);
- the vegetal composition is improved: at least xx positive indicator species present, including one 'high quality' species, negative indicator species cover collectively not more than 20% cover, with cover by an individual species less than 10%, and cover of non-native species not more than 1%;
- the vegetal structure is improved: cover of woody species and bracken (*Pteridium aquilinum*) is not more than 5%, broadleaf herb component of vegetation is between 40 and 90%. At least 30% of sward is between 10 and 80 cm tall;
- the physical structure is maintained: not more than 10% bare soil.

Active raised bogs (7110)

- the area of the habitat in the site is extended (e.g. increase the current area by 10% - from xx ha to yy ha) and its condition improved (e.g. by increasing the cover level of characteristic bog mosses –*Sphagnum* species to a minimum of x %);
- appropriate water levels are restored throughout the site (mean water level to be near or above the surface of bog lawns for most of the year; seasonal fluctuations should not exceed 20 cm, and should only be 10 cm below the surface, except for very short periods of time);
- soil pH and appropriate nutrient levels are maintained (relevant nutrients and their natural ranges are provided for the site);
- cover of scattered native trees and shrubs is less than 10%.

Beech forests *Luzulo-Fagetum* (9110)

- the current conservation status is maintained (fav);
- the current surface area of the habitat in the site: xx ha is maintained;
- characteristic tree species are maintained: at least 70% of canopy level composed of *Picea abies*, *Fagus sylvatica ssp. sylvatica, Abies alba* in various proportions, with rare presence of *Betula pendula, Sorbus aucuparia*, with an 80–90% cover and 22–30 m height for spruce and fir, 18–24 m for beech at 100 years age;
- characteristic species for herb layer are maintained: Herb layer with at least three species/ 1000 m^2 of the following acidophilous species *Calamagrostis arundinacea, Luzula luzuloides, Vaccinium myrtillus, Hieracium rotundatum, Athyrium filix-femina, Digitalis grandiflora, Dryopteris filix-mas, Festuca drymeia, Galium odoratum, Galium schultesii, Lamium galeobdolon, Luzula luzuloides, Oxalis acetosella, Poa nemoralis, Pteridium aquilinum, Veronica officinalis;*
- invasive and allochtonous tree species, including not-corresponding ecotypescover less than 20%; retention trees: at least three trees/ha; deadwood volume: at least 20 m3/ha.

Asperulo-Fagetum beech forest (9130)

- the current surface area (xx ha) and distribution of the habitat within the site is increased by x% (map provided);
- the habitat quality (in terms of ecological structure and function) is improved by ensuring that: at least 95% of canopy forming trees are locally native species such as beech, ash and oak site, with at least 50% being *Fagus sylvatica;* approximately 10% of the canopy includes a dynamic shifting pattern of gaps encouraging natural regeneration of tree species of all ages; at least X mature trees/ha and at least X relevant ground flora species/ha (list of relevant species provided);
- dead wood, standing and fallen, is increased where possible to provide a habitat for invertebrates, fungi and other woodland species (fallen trees and branches, dead branches on living trees or standing dead trees, all > 20 cm in diameter; minimum volume indicated).

Otter *(Lutra lutra)*

- the current population (xx individuals) is maintained;
- the ecological quality of freshwater (river) habitat is improved (over xx km);
- the number of couching sites and holts (number provided) is maintained and there is no significant decline in the fish biomass available (xx kg);
- connectivity with other otter populations along the river is improved.

Harbour porpoise *(Phocoena phocoena)*

- the current population of the species in the site is maintained (xx individuals).
- underwater noise to maximum is limited to xx dB.
- species range within the site is maintained by ensuring there are not artificial barriers that could restrict site use.
- the availability and density of prey within the site is maintained(e.g. including sand eel, whiting, herring and sprat).
- by-catch of harbour porpoise in fishing gears in the site is prevented.

Lesser Horseshoe Bat *(Rhinolophus hipposideros)*

- the population is maintained, with a minimum number of xx bats for the summer roost;
- the number and condition of summer and auxiliary roosts is maintained;
- the extent of potential foraging habitat (xx ha) and linear features xx (km), is maintained with no significant decline or loss within 2.5 km of the roost (map provided);
- there is no significant increase in artificial light intensity adjacent to the roost or along commuting routes within 2.5 km of the roost.

In the absence of conservation objectives[28], the appropriate assessment should assume as a minimum that the objective is to ensure that the habitat types or habitats of species significantly present on the site do not deteriorate below the current level (at the time of the assessment) and that the species are not significantly disturbed, in line with the requirements of Article 6(2)[29].

Although the focus of the assessment should be on the birds and the species and habitat types of Community interest significantly present on the site, it should not be forgotten that these target features also interact with other species, habitat types and with the natural environment in complex ways. In this regard, other species can also be relevant when looking at the potential effects on protected habitats if they constitute typical plant and animal species of the habitat type in question[30] or play a significant role in the food chain on which the Natura

[28] Member States have six years from the time the site has been listed on the EU list to adopt site specific conservation objectives and designate the SCI as an SAC. For SPAs, appropriate site-specific conservation objectives must be in place as from the date of their classification.

[29] The Court confirmed this position in case C-127/02: '*Authorisation of a plan or project necessarily assumes that it is considered not likely to adversely affect the integrity of the site concerned and, consequently, not likely to give rise to deterioration or significant disturbances within the meaning of Article 6(2)*' (para 36).

[30] For an explanation of specific terms, see "Interpretation Manual of European Union Habitats - EUR28" at http://ec.europa.eu/environment/nature/legislation/habitatsdirective/indexen.htm#interpretation

2000 site's target feature depend. This will be reflected in the site's conservation objectives and the appropriate assessment should also look at the possible impacts of the plan or project on these other species where relevant.

Landscape features that contribute to the ecological coherence of the network, including to its connectivity, should also be considered, where appropriate, in the assessment of the effects of plans and projects on Natura 2000 (see Table 4).

b) Identifying and assessing the impacts of the plan or project in view of the site's conservation objectives

All aspects of the plan or project that can, either individually 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.

The appraisal of effects must be based on objective and, if possible, quantifiable criteria. Impacts should be predicted as precisely as possible, and the basis of these predictions should be made clear and recorded in the appropriate assessment report.

See further details in the Article 6 Guide - section 4.6.

The assessment must cover the impact of the entire plan or project in question, with all the activities it comprises, and during all phases (preparation, construction, operation and, where relevant, decommissioning or reconditioning). The assessment must identify and differentiate the various types of impact, including direct and indirect effects, temporary or permanent effects, short- and long-term effects and cumulative effects

The assessment typically includes the analysis of the following possible impacts:

- ***Direct 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.
- ***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.
- ***Disturbance***: 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, changes in species behaviour, or the risk of morbidity or mortality.
- ***Fragmentation:*** leading to 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.

- ***Other indirect effects:*** indirect change to the quality of the environment (resulting for example from a change in availability of nutrients and light, or an increase in the vulnerability of the site to other new threats such as invasive alien species, human and animal penetration).

These effects should be analysed in view of the site-specific conservation objectives, which implies that the analysis needs to be done not only in relation to the current condition of the habitats and species significantly present within the site but also in relation to their desired condition as defined by the conservation objectives (e.g. an increase in population size or habitat coverage by x%).

An analysis of effects in view of the site-specific conservation objectives must also therefore be done on the basis of the specific attributes or parameters that determine the conservation condition of the protected features (e.g. range, habitat, structure and function, population size, future prospects).

Each aspect of the plan or project should be examined in turn and its potential effects considered against the site's conservation objectives. Then the effects on all the affected habitats and species should be looked at together, and in relation to each other, so that the interactions between them can also be taken into account.

Different methods can be used to predict the potential impact of plan or projects. Box 10 lists some examples of methods that can be used to predict the impacts as well as the scale of the impact.

Box 10. Examples of impact prediction methods

Direct measurements, for example size of area of habitat lost or affected, can identify proportionate loss from species' populations, habitats and communities.

Flow charts, networks and systems diagrams identify chains of impact resulting from direct and indirect impacts, in line with how they are caused, illustrating interrelationships and process pathways.

Quantitative predictive models provide mathematically derived predictions based on data and assumptions about the force and direction of impact. Models may extrapolate predictions that are consistent with past and present data (trend analysis, scenarios, analogies which transfer information from other relevant locations) and intuitive forecasting. Some commonly used models predict the dispersal of pollutants in air, soil erosion, sediment loading of streams, and oxygen sag in polluted rivers.

Geographical information systems (GIS) can be used to produce models of spatial relationships, such as constraint overlays, or to map sensitive areas and locations of habitat loss. GIS are a combination of computerised cartography, storing map data, and a database management system, storing attributes such as land use or slope. GIS enable the variables stored to be displayed, combined, and analysed at speed.

Information from previous similar projects may be useful, especially if quantitative predictions were made initially and have been monitored during operation.

Expert opinion and judgement can be derived from previous experience and consultations.

Table 5 gives an example of a systematic cross-analysis between project elements and the protected features in a Natura 2000 site.

Table 5. Example of systematic cross-analysis between project components and protected features on a Natura 2000 site - simplified example for a fish farm

Project phase	Project component	Habitat 1 River	Habitat 2 Riverine forests	Habitat 3 Wet heaths	Species 1 Fish	Species 2 Invertebrates	Species 3 Birds
Construction	Ponds	Riverbed and river flow modification (xx m -length)	Loss of area (xx m^2)	Loss of area (xx m^2)		Changes in species communities	Disturbance, displacement of individuals. Loss of breeding habitat
	Buildings			Loss of area (xx m^2)		Habitat loss and deterioration	
	Roads		Local changes in water flow	Loss of area (xx m^2)		Habitat loss and deterioration	
Operation	Fish feeding and treatments	Water pollution by organic and chemical products			Habitat quality alteration due to water pollution		Disturbance, displacement of individuals
	Water abstraction	Habitat alteration due to flow reduction		Habitat degradation due to flow reduction	Habitat degradation due to flow reduction		
	Lighting					Disturbance, displacement of individuals	Disturbance, displacement of individuals
	Noise						Displacement of individuals

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 plan or project under assessment, and their conservation condition.

A prior desk study may be useful to review available knowledge and identify the information needs that warrant further field survey work. For instance, this can be useful practice when the desk study indicates that there are vulnerable habitats present which have an associated rare assemblage of flora and/or fauna, or that the area to be affected hosts species critical for the conservation objectives of the site.

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. For the field data to be complete, a sufficient timeframe has to be set, e.g. a one or more -year study that covers a whole vegetation cycle, taking into account the seasonality of the wildlife, or faunal surveys that may need to be repeated to confirm populations and trends over a period of time.

For major developments such as motorways, railways, windfarms, ports, waterways, etc., which due to their scale and nature are expected to have significant effects on a site, field studies are almost always required. They will need to include detailed mapping of protected habitats or of breeding or resting places of species etc. (unless some of these surveys and studies have already been carried out recently, for example during the preparation or updating of a management plan or while assessing another major development project in the area).

The **impact should be quantified or recorded using parameters** that make it possible to assess the scale and severity of the impact on the specific conservation objectives of the habitats and species significantly present on the site (see also box 7 in section 3.1.4 for indicators of significance) . This could include, for instance, parameters such as:

- Area of the habitat or habitat of the species permanently lost (e.g. by clearing of vegetation or removal of suitable breeding/nesting sites) assessed against the habitat area on the site, at regional, national and biogeographical level (percentage of habitat area lost) and against the target set in the site-specific conservation objective (which may include a target for restoration);
- Area of the habitat or habitat of the species affected (e.g. by pollution, noise, deterioration of other ecological conditions) assessed against percentage of the habitat area on the site, at regional, national and biogeographical level (percentage of habitat area affected) and against the target set in the site-specific conservation objective (which may include a target for restoration);

- Size of resident and migratory species populations affected, assessed against the local, regional, national and international populations (percentage of population affected) and against the target set in the site-specific conservation objective (which may include a target for an increase in population size within the site);
- Scale of impact (e.g. by pollution, noise, deterioration of other ecological conditions) on the quality of the habitat or habitat of the species or the survival of species affected, in view of their ecological requirements in the site as defined in the site-specific conservation objective (which may include a target for restoration).

As already mentioned in the points above, when assessing possible adverse effects, the assessment should not only consider negative changes in the current status, but also changes that can prevent the achievement of the conservation objectives in so far as they require improvement of the current conditions.

c) Assessing cumulative effects with other plans and projects

Cumulative impacts can result from the successive, incremental, and/or combined effects of a development (plan, project) when added to other existing, planned, and/or reasonably anticipated developments (see also section 3.1.4, table 2 on the key steps for assessing cumulative effects on a Natura 2000 site). Examples of cumulative impacts include:

- increased pollutant concentrations (particularly in water and soil), beyond levels compatible with the ecological requirements of the habitat or species protected in the site;
- reduction of water flow in a watershed due to multiple withdrawals, below the level which is compatible with the ecological requirements of the habitat or species protected in the site;
- interference with migratory routes or wildlife movement;
- increased pressure on habitats and species in an ecosystem from different developments.

Cumulative impacts encompass a broad spectrum of impacts on different geographical scales and timeframes. In some cases, cumulative impacts occur because a series of *projects of the same type* are being developed. Prime examples are:

- when several hydroelectric projects are constructed or planned on the same river or within the same watershed;
- when multiple oil and gas projects or mineral extraction projects are developed in close proximity; or
- when a number of wind farms are constructed or planned within the same flyway or region.

In other cases, cumulative impacts occur due to the combined effects of different types of projects in the same area, such as the development of a mineral extraction site, access roads,

transmission lines, and other adjacent land uses. In some situations, different components of the same development are implemented and assessed separately, meaning that the cumulative impacts from these components should also be subject to a cumulative impact assessment.

Other plans or projects that could, in combination with the plan or project under investigation, have a significant effect on a site must be taken into account during the appropriate assessment. For example, a proposed road will pass some distance from a Natura 2000 site and the disturbance it will generate (e.g. noise) will not significantly affect bird species protected in the site. However, if there are other existing or proposed projects or plans (e.g. a road on the other side of the Natura 2000 site), then the total noise levels from all these projects combined may cause a significant level of disturbance for those bird species (noise levels above what it compatible with the ecological requirements of the species).

To note also that cumulative impacts could occur where impacted areas interact. An example of this would be where a proposed project is likely to reduce water levels in a Natura 2000 site. Although that resource reduction in itself may not be significant, if existing fertiliser and pesticide residues reach the site from a nearby intensive farming area, the lower water levels may mean higher concentrations of pollutants when run-off occurs, to an extent that the combined effect becomes significant, i.e. concentrations of pollutants beyond the levels which are compatible with the ecological requirements of the habitat or species protected in the site.

'In-combination' effects should already have been investigated at the screening stage (Section 3.2), and any other plans and projects that can act in combination should have been identified. The assessment at the screening stage may have been simplified, but, at the appropriate assessment stage, the identified impacts of other projects or plans that can act in combination with the plan or project being assessed should be properly evaluated. This requires quantifying and/or qualifying the magnitude of these other impacts and identifying the affected features of the Natura 2000 sites.

As stated in section 3.1.4, the in-combination provision concerns **other plans or projects that have been already completed, approved but not yet completed, or submitted for consent**.

In addition to the effects of the plans or projects that are the main subject of the assessment, it may be appropriate to consider the effects of already completed plans and projects, including those preceding the date of transposition of the directive or the date of designation of the site. The effects of such completed plans and projects would typically form part of the site's baseline conditions which are considered at this stage.

Plans and projects that have been approved in the past but have not yet been implemented or completed should also be included in the in-combination provision. As regards other proposed plans or projects, in the interest of legal certainty it would be appropriate to restrict the in-combination provision to plans that have been actually proposed, i.e. for which an application for approval or consent has been submitted. At the same time, it must be evident that, when assessing a proposed plan or project, Member States do not create a presumption in favour of other not yet proposed plans or projects in the future.

See further details in the Article 6 Guide – section 4.5.3

The **geographical scope** to use when looking at cumulative effects will depend on the type of plan or project and the habitats and species significantly present on the site. It could be, for instance, within a certain radius, on a catchment area basis, or along a bird migration route. It should however cover the entire geographic area in which all plan or project activities and their cumulative effects are likely to have implications on the conservation objectives of the Natura 2000 sites in question.

Plan level assessments are particularly suitable for assessing cumulative and synergistic effects since they can pre-empt problems further down the line at the project stage, e.g. in the case of plans for specific sectors such as transport, energy, water management, as well as regional plans and strategies, land use plans, etc. In this context, it can be particularly useful to consult the environmental assessments of other existing plans and projects affecting the same area (SEA and appropriate assessment where available).

The appropriate assessment carried out on these plans may also determine the scope for the appropriate assessment of individual components of the plan (projects) in terms of their cumulative effects. For example, when scoping the appropriate assessment of a mineral extraction plan, it may be useful to determine the range or extent to which the wider network of access roads to extraction sites may contribute to the cumulative impacts, e.g. in relation to habitat fragmentation affecting populations of species.

Table 3 illustrates the sources that can provide information on other plans and projects that can give rise to cumulative effects. Tools to collate cumulative impacts, like **databases** recording the projects and plans to be considered, are helpful to streamline the assessment of cumulative effects. For instance, getting an overview of different activities is greatly facilitated if there is an up-to-date national or regional database, preferably including a dynamic map, which enables users to search all projects, including those still in the planning phase. In order for those databases to be useful for the appropriate assessment, competent authorities should aim to maintain the relevant documents online (e.g. impact assessment, mitigation measures introduced or conditions set for approval) also after permits are granted.

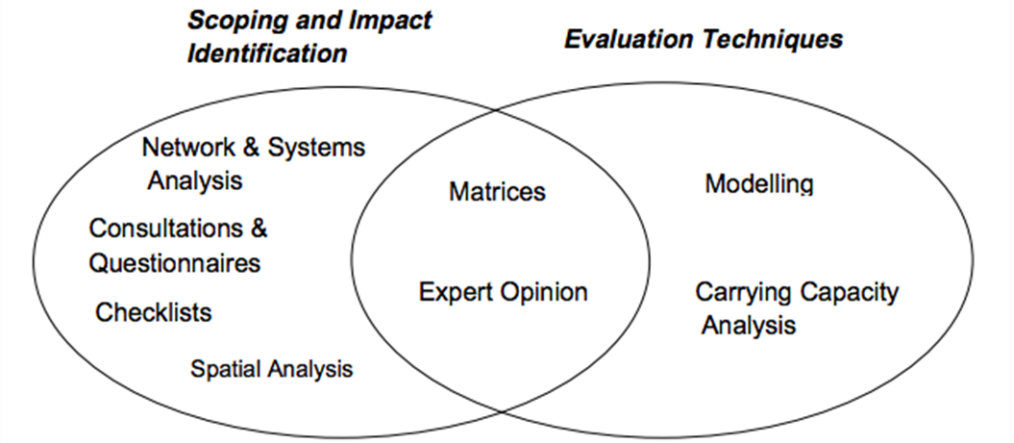
Competent authorities (nature conservation, sectoral) should be consulted in order to collect information about the other plans/projects that should be considered during the assessment. Competent authorities can also contribute or support the assessment of cumulative impacts, as they have the best overview and knowledge about other activities across wider areas. They can also collect all relevant information and provide this to the project developers and consultants.

The assessment of cumulative impacts may draw on information from a variety of **sources** including environmental studies and programmes, strategic, sectoral, and regional environmental assessments, project level environmental assessments, cumulative impact

assessments from similar situations and targeted studies on specific issues. Expert advice can also be a good source of information on cumulative effects.

A wide variety of **methods and tools** can be used to assess cumulative impacts, which usually also includes a scoping and an evaluation phase (see Figure 2 below).

Figure 2. Methods and tools to assess cumulative impacts and impact interactions



Source: European Commission, 1999. Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

Consultations, checklists, overlay maps, network and systems analysis can be suitable tools in the scoping exercise, which will identify the potential impacts to be looked at further in the cumulative impacts assessment.

- *Network and systems analyses* are based on the concept that there are links and interaction pathways between individual features of the environment, and that when one element is specifically affected, it will also have an effect on other features that interact with it.
- *Spatial analyses* use geographical information systems (GIS) and overlay maps to identify where the cumulative impacts of a number of different actions may occur, and identify impact interactions. It can also overlay a project's effect on selected receptors, features or resources to identify where the impact would be greatest.
- *Sensitivity mapping* can also be useful, as it may help predict potential cumulative impacts of certain activities on natural features that are vulnerable

to the effects of those activities (see further details in section 4.2.2 of this guidance document)[31].

- *Expert panels* can be formed to identify and assess cumulative impacts. Matrices can be used to evaluate impacts and to consider the cumulative impacts of multiple actions on a site or feature as well as interactions between impacts.
- *Modelling* provides an analytical tool to quantify cause-and-effect relationships by simulating environmental conditions. This can range from air quality or noise modelling, to the use of a model representing a complex natural system.
- *Carrying capacity[32] analyses* look at the accumulation of impacts against thresholds. However it may not always be possible to set the threshold or carrying capacity for a particular feature or receptor.

Whatever methods are chosen, they should be adjusted to the information available for the analysis and provide, whenever possible, a quantitative estimate of cumulative impact. If qualitative estimates of cumulative impact are to be developed, they should be based on a consensual estimate of a panel of independent experts rather than on the opinion of an individual expert. A panel may also be useful and even necessary, for instance where cumulative effects to be assessed come from different projects, e.g. hydropower construction, dredging and irrigation on the same river.

The method chosen does not need to be complex. The aim should be to present the results in a way that can be easily understood by the developer, decision-maker (i.e. competent authority) and the public. Governments can play a significant role by providing and implementing enabling frameworks to guide this work and help identify and manage cumulative impacts.

Box 11 sets out an example of a step-by-step process for cumulative impact assessment. The process must be applied in a flexible way, i.e. the steps can be taken out of sequence and may need to be implemented iteratively, with some steps revisited in response to the results of others.

[31] An example of an Environmental Sensitivity Mapping online tool to support environmental assessment processes in Ireland is available at: http://airo.maynoothuniversity.ie/mapping-resources/airo-research-maps/environmental-research-projects/environmental-sensitivity

[32] In ecology, carrying capacity is measured as the maximum load of an environment. The physical features present in the environment act as limiting factors (e.g. food, water, competition, etc.). https://www.biologyonline.com/dictionary/carrying-capacity

Box 11. Example of a process for carrying out the cumulative impact assessment (CumIA)

Step 1. Scoping

- Identify the geographical boundaries and the timeframe of the CumIA;
- Identify the protected habitats and species significantly present on the site and ecological processes to consider;
- Identify other existing and planned 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' site-specific conservation objectives — 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).

3.2.3. Step 3: Ascertain the effects of the plan or project on the integrity of the Natura 2000 site

The information collected and the predictions made about the degree and level of intensity of the impacts and changes that are likely to result from the different stages of the plan or project should now make it possible to assess the extent of the effects of the plan or project on the integrity of site.

The description of the site's integrity and the impact assessment should be based on the parameters that determine the conservation objectives and that are specific to the habitats and species of the site and their ecological requirements. This can also be useful for the subsequent monitoring of the impact of the plan or project during implementation.

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.

See the Article 6 Guide – section 4.6.4

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). 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.

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.

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

(e.g. identifying certain thresholds or limits of change, like for instance allowing a certain level of temporary turbidity due to the maintenance works on rivers or other water bodies).

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.

Assessing the effects on the integrity of the site may be relatively straightforward in small sites with just one or a few habitats or species and clear ecological functions. But it will be more difficult to assess in large sites with complex ecosystems and ecological functions, which host many habitats and species.

To assess the effects on the integrity of the site in a systematic and objective manner, it is important to have established thresholds and targets for each of the attributes that define the conservation objectives for the habitat types and species protected in the site. In order to help determine whether the integrity of a Natura 2000 site is affected, Box 12 below provides an indicative checklist reflecting the parameters used to define the conservation objectives for the habitats/species protected in the sites.

Box 12. Assessing the effects on the integrity of the site: a checklist example

Does the plan or project have the potential to:

- hamper or cause delays in progress towards achieving the site's conservation objectives?
- reduce the area, or quality, of protected habitat types or habitats of protected species present on the site?
- reduce the population of the protected species significantly present on the site?
- result in disturbance that could affect the population size or density or the balance between species?
- cause the displacement of protected species significantly present on the site and thus reduce the distribution area of those species in the site?
- result in a fragmentation of Annex I habitats or habitats of species?
- result 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)?
- disrupt 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?
- interfere with the balance, distribution and density of species that are the indicators of the favourable conditions of the site?

3.2.4. Step 4: Mitigation measures

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 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.

See the Article 6 Guide - section 4.6.6

Mitigation measures may be proposed by the plan or project developer or required by the competent national authorities in order to remove, pre-empt or reduce the impacts identified in the appropriate assessment to a level where they will no longer affect the integrity of the site.

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). Examples are given in table 6 below:

Table 6. Examples of types of mitigation measures

Avoiding impact:
▪ technical solutions to prevent negative effects of the plan or project (e.g. noise or light or dust suppression devices); ▪ placing of project elements to avoid sensitive areas (entire Natura 2000 sites or key areas within or connecting Natura 2000 sites); ▪ protective fences and other measures to prevent damage to vegetation or wildlife; ▪ avoidance of works during sensitive periods (e.g. breeding season of species); ▪ optimisation of coordination of works to avoid cumulative impacts.
Reducing impact:
▪ emission controls; ▪ noise barriers such as screens; ▪ pollutant interceptors; ▪ controlled access to sensitive areas during construction/operation; ▪ wildlife crossings (e.g. bridges, tunnels and 'eco-ducts'); ▪ adapting impact-generating actions to reduce effects to the extent possible (eg from noise, light, dust …).

At the level of plans, mitigation measures may include e.g. re-locating or removing components of the plan identified as having significant adverse effects on the site integrity. The proposed measures can be fine-tuned throughout the assessment process. At a high level of planning (e.g. in national/regional plans), mitigation could imply setting out potential measures to be worked out in more detail at a lower level, in line with the ecological, locational, timeframe, legal and financial parameters to be met as part of any planning application.

Mitigation measures **must not be confused with compensatory measures** which are only considered under the Article 6(4) procedure (see section 3.3.3 of this document).

Mitigation measures *are measures that aim to minimise, or even eliminate, the negative impacts likely to arise when a plan or project is implemented so that the site's integrity is not adversely affected. These measures are considered in the context of Article 6(3) and are an integral part of the specifications of a plan or project or conditional to its authorisation.*

Compensatory measures *are independent of the project (including any associated mitigation measures). They are intended to offset the residual negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 network is maintained. They can only be considered in the context of Article 6(4).*

See the Article 6 Guide – section 5.4.1.

Specifically, 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[33]) 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.

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 following aspects must be indicated:

- The impacts concerned that the mitigation measures aim to address, including information on relevant parameters (e.g. the area of the habitats of Community interest subject to deterioration and their conservation degree in the site, the species population subject to disturbance).
- The expected results from implementing the proposed mitigation measures, with reference to each parameter (e.g. habitat area, species population numbers or structure and functions).

[33] See CJEU judgement C-521/12.

- Technical-scientific feasibility and degree of effectiveness expected of the proposed measures.
- The person or body in charge of implementation.
- The management of the area where the mitigation measures will be implemented (methods, duration).
- The location and timing of the measures with relation to the plan or project.
- The methods for checking implementation of the measures.
- The financing of the measures.
- The monitoring programme to verify the effectiveness of the measures, and adapt them if necessary.

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. The following checklist can be used to assess effectiveness:

Box 13. Assessing the effectiveness of mitigation measures

- Are mitigation measures feasible within the plan or project under evaluation?
- Do mitigation measures clearly target the impacts identified in the appropriate assessment? Are they effective in reducing these impacts below a level of significance?
- Are there the sufficient means and resources foreseen to implement the mitigation measures?
- Are there records of successful prior implementation of the mitigation measures proposed?
- Is there an indication of limiting factors and rates of success or failure of the proposed measures?
- Is there a comprehensive plan on how to implement and sustain the mitigation measures (including monitoring and evaluation where needed)?

Monitoring mitigation measures is crucial to check their successful and timely implementation and to detect any unexpected impacts requiring additional measures.

The effectiveness of mitigation measures must be demonstrated before the plan or project 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. Table 7 gives an example of a matrix for presenting information on mitigation measures.

The expected results of implementing the mitigation measure in terms of preventing or reducing the impacts identified in the assessment should be properly documented.

Table 8 gives an example of a matrix to present the outcome of the assessment after the mitigation measure.

Table 7. Information on mitigation measures proposed for a plan or project

Adverse effects identified (list)	**Description of the measures, details on implementation, effectiveness, monitoring**				
Effect #1	**Measure #1**				
Name/ description	Explain how the measure will contribute to avoiding/reducing the effects on the integrity of the site	Explain how it will be implemented and by whom	Demonstrate its effectiveness (e.g. based on scientific evidence / expert rationale)	Provide a timescale of implementation, relative to the plan or project	Set out the proposed monitoring scheme and reporting requirements, including how any possible unexpected impacts will be addressed
	Provide details of the mitigation measure, explaining the elements that will address the adverse effects	*This may include details of legally binding agreements that should be completed in advance of plan or project authorisation*	*This may include evaluation: (i) reports or evidence from similar projects or plans; (ii) statements from relevant experts; or (iii) support from the relevant nature conservation agency*	*Some mitigation may be integrated into the plan or project; in some cases, it will be an additional measure that needs to be in place either before plan or project authorisation or shortly after it*	*This may be done through legally binding agreements in advance of plan or project authorisation*

Table 8. Summary results of the assessment after implementation of mitigation measures

Relevant features in the site	Summary description of impacts/adverse effects	Importance/magnitude of the effects	Description of the proposed mitigation measures	Expected results regarding the mitigation of effects
Habitats • …….. • …….				
Species • ……. • ……				
Other natural elements of importance for the integrity of the site				

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For the Secretary-General

Martine DEPREZ
Director
Decision-making & Collegiality
EUROPEAN COMMISSION