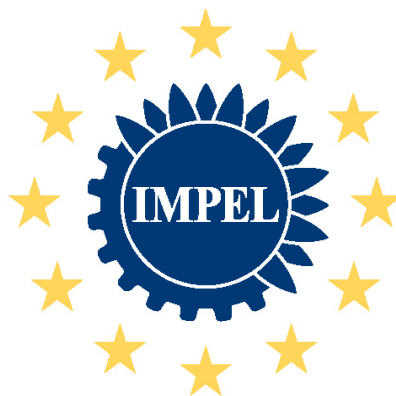


Criteria for the assessment of the Environmental Damage (CAED)

Practical Guide

Report number: 2020/24

Final report: 1 June 2021



European Union Network for
the Implementation and Enforcement
of Environmental Law

Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the EU Member States, acceding and candidate countries of the European Union and EEA countries. The association is registered in Belgium and its legal seat is in Bruxelles, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 6th Environment Action Programme and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its website at:

www.impel.eu

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Executive summary:

Keywords

Environmental Liability Directive (ELD), Environmental Damage, Imminent threat of environmental damage, Determination of environmental damage, Environmental investigations, Environmental incidents, Environmental non-compliance, Environmental offences, Eco-criminal acts, Environmental Crime Directive (ECD)

Target groups

Competent authorities for environmental damage assessment and enforcement, industrial operators, environmental protection agencies, nature protection bodies, environmental inspectorates, environmental guard departments, environmental monitoring and research institutions, technical universities, environmental associations, NGOs, insurance companies and associations, environmental consultants.

As part of its 2016-2020 Strategic Work Programme, the IMPEL Network set up this project in the environmental damage thematic area, concerning the criteria for the determination of the environmental damage and imminent threat of damage, called CAED - Criteria for the Assessment of the Environmental Damage.

The CAED project takes guidance on key terms and definitions of Environmental Damage as a springboard and focuses on the technical/administrative procedures necessary to make determination of environmental damage.

The CAED project has been included in the ELD Multi-Annual Rolling Work Programme (MARWP) 2021-2024 of the EU Commission (as activity 1.3) as one of the activities for capacity building and it has strong links with the European Commission's publication on 25 March 2021, of the Commission Notice C(2021) 1860 final titled "Guidelines providing a common understanding of the term 'environmental damage' as defined in Article 2 of Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage".

The ultimate goal of the project is to produce a guide proving criteria for the assessment of the environmental damage and imminent threat of damage under ELD, based on reference parameters relating to 'evidence' and to 'clue' of environmental damage or imminent threat of damage.

The objective of this year's CAED project was to produce this practical guide including practical tools and a new methodology for the determination of the clues of the environmental damage of which existence provides the reasonable proof for further investigation and assessment of candidate cases of environmental damage under ELD.

The new methodology proposed in this practical guide consists in using a DPSIR (Driver, Pressure, State, Impact and Response) model adapted to environmental damage

assessment while the practical tools consist of decision-making flowcharts and tables of indicators referring to each natural resource protected by ELD.

This practical guide may be used both by practitioners of ELD and non-experts of ELD for the purpose of determination of the clues of the environmental damage, of which existence provides the reasonable proof for further investigation and assessment of cases to determine the environmental damage under ELD.

Finally, in line with activity 1.3 of MARWP 2021-2024, this practical guide and the future work foreseen by the CAED project intend to contribute at improving training and capacity building of practitioners and non-experts in the determination of the clues and evidence of environmental damage and imminent threat of damage under ELD.

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Disclaimer:

1. This report is the result of a project within the IMPEL network. The content does not necessarily represent the view or the official position of IMPEL, the national administrations or the European Commission.
2. This report reflects only the authors' views and the authors themselves are not liable for any use that may be made of the information contained therein.
3. The project team is not liable for the information and facts given in the examples in the Annexes.
4. This report is subject to the Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information.

This project report is intended as a reference document for competent authorities and practitioners. It does not prescribe what a competent authority should do. Instead, it aims to provide information to assist competent authorities in making better decisions about the ascertainment of environmental damage. In this way, it should contribute to improve protection of the environment and promote compliance with the "polluter pays principle".

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1 THE CAED PROJECT

1.1 Purpose

The CAED project aims to provide criteria, methods and useful tools to enhance competent authorities and practitioner's capability in promptly and effectively determining the clues and evidence of environmental damage and imminent threats of damage caused by environmental incidents, non-compliances, offences and criminal actions.

It is anticipated that the success of preventive or remedial measures may be improved, with such a framework of procedures, criteria, methods and planning and assessment tools for the determination of the environmental damage and imminent threat of damage. The purpose of this guide is to provide that framework by providing practical tools to support competent authorities in identifying potential cases of environmental damage under the Environmental Liability Directive (ELD). Early identification of clues of damage can facilitate rapid decision making, saving time, effort and money. The guide therefore focuses on preliminary assessments for the evaluation of potential cases of environmental damage and imminent threat of damage under ELD.

1.2 Scope

The Criteria for the Assessment of the Environmental Damage (CAED) project is primarily concerned with the Environmental Liability Directive 2004/35/CE (ELD) which concerns the environmental liability for the prevention and remediation of environmental damage.

In particular, the CAED project concerns the environmental damage to the natural resources protected by the ELD, namely, protected species and natural habitats (included in Habitat and Birds Directives), waters (under Water Framework and Marine Strategy Directives) and land¹. In addition, the scope includes areas protected by national legislation (such as protected areas, national and regional parks, wetlands) and international conventions (RAMSAR).

The CAED project is framed in the administrative procedure for the determination of environmental damage and imminent threat of damage and it is devoted to the the early stages of environmental

¹ The natural resources protected by the ELD are surface inland and transitional waters, marine and coastal waters, groundwater, habitat and protected species (or national protected areas), land.

damage assessment, referred to as the phase of ‘ascertainment’ or the ‘determination of environmental damage’².

The ascertainment can be divided into three steps of actions:

- 1) The **screening** of cases of potential environmental damage and imminent threat of damage under ELD *(to identify whether there are actual (or potential) adverse effects on natural resources)*³
- 2) The **determination of clues** of environmental damage and imminent threats of damage⁴ for the identification of candidate environmental damage and imminent threat of damage cases under ELD *(to establish whether there may be actual (or potential, in case of imminent threat) significant/sustained adverse effects on natural resources)*
- 3) The **determination of evidence** of environmental damage and threats of damage for the confirmation of cases of significant environmental damage and imminent threat of damage *(to confirm whether there are actual significant adverse effects on natural resources (i.e. confirmed ELD cases for ELD resources))*.

Fig. 1 below shows the three steps:

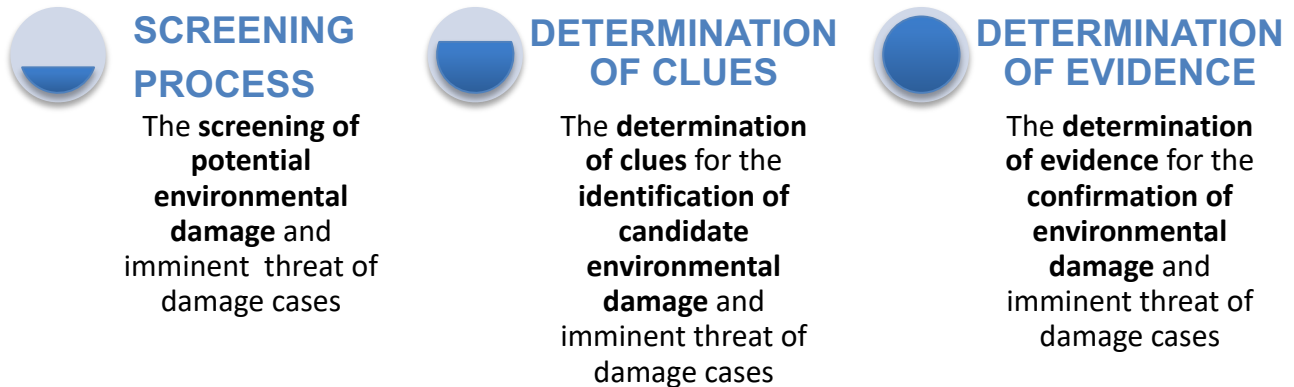


Figure 1 - Three steps of the determination of the environmental damage.

² This phase includes the activation phase (the event is discovered/notified by/to the authority), immediate action phase (the event is investigated by the authority), assessment phase (the imminent threat of damage or/and the damage is determined).

³ For descriptions concerning the screening process and the determination of evidence of environmental damage consult the CAED report (2019) downloadable at: <https://www.impel.eu/projects/criteria-for-the-assessment-of-the-environmental-damage-caed/>

⁴ The identification and evaluation of the clues of imminent threat of damage are not considered in this Practical Guide.

This version of the Practical guide is focused on the identification and determination of clues of environmental damage. The determination of the evidence of environmental damage and the imminent threat of damage under ELD are not included in this version of the Practical guide.

Impacts on land generated by GMOs and MGMOs are not included in this version of the practical guide.

1.3 Background

As part of its 2016-2020 Strategic Work Programme⁵, the IMPEL Network set up the Criteria for the Assessment of the Environmental Damage project (CAED) in the environmental damage thematic area, concerning the criteria for the determination of the environmental damage and imminent threat of damage. This project takes guidance on key terms and definitions of Environmental Damage as a springboard and focusses on the technical/administrative procedures necessary to make determination of Environmental Damage.

The CAED project has been included in the ELD Multi-Annual Rolling Work Programme (MARWP) 2021-2024 of the EU Commission (as activity 1.3) as one of the activities for capacity building and it has strong links with the Commission Notice C(2021) 1860 final titled “Guidelines providing a common understanding of the term 'environmental damage' as defined in Article 2 of Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage” published on 25 March 2021 (hereafter called “EU COM Notice”)⁶.

Moreover, this guide is based on the outcomes of the first year of the CAED project (2019)⁷ and it is linked to the EU COM Notice.

Finally, as Directive 2004/35/CE (ELD) concerns natural habitats and protected species, water and land, other connected directives are considered:

- Directive 79/409/EEC on the conservation of wild birds (Birds Directive).
- Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive).
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive).
- Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy.

⁵ Downloadable at <https://www.impel.eu/publications/multi-annual-strategic-programme-2016-2020/>

⁶ Downloadable at https://ec.europa.eu/environment/pdf/eld/1_EN_ACT_part1_v5.pdf

⁷ Downloadable at <https://www.impel.eu/projects/criteria-for-the-assessment-of-the-environmental-damage-caed/>

- Directive 2006/118/EC on the protection of groundwater against pollution and deterioration.

1.4 Introduction to the new methodology

This is the second year of the CAED project. In Year 1 CAED Report (2019/18) was published. The CAED Report (2019/18) is available at the following link: <https://www.impel.eu/projects/criteria-for-the-assessment-of-the-environmental-damage-caed/>.

The first CAED report contains a proposal for a new approach for the administrative procedure of environmental damage and imminent threat of damage determination, made of three procedural steps: the screening process, the determination of clues, the determination of evidence.

It included a collection of 32 case studies of 'ELD cases' and 'non-ELD cases' across Member States to identify common and different ascertainment and assessment approaches from a regulatory, practical and technological point of view. Case studies were presented showing how the "clues" and the "evidence" of environmental damage and threats of damage are detected, identified and evaluated.

The analysis of the 32 case studies highlighted that there are significant differences between Member States, regarding the way they assess environmental damages that mainly depend either in the implementation (especially in the parts of monitoring and assessments) of the Habitat Directive, Birds Directive, Water Framework Directive and in the existence, or not, of a national law for the protection of land.

The main challenges to implementing the ELD, identified in the report, concern the definition and measurement of "significant adverse effects" and the lack of corresponding criteria or thresholds to make a prompt accurate assessment and an effective remediation.

This Practical Guide is the product of the second year of the project. It was produced by a project team gathered under the European Network for the Implementation and Enforcement of Environmental Law (IMPEL Network). The project team comprised different experienced practitioners, covering the relevant regulations such as ELD and other national legislations, working in various technical fields and having differing professional experiences.

In the second year of the CAED project, the project team collected and analysed existing indicators and flowcharts included in existing EU's and country Guidelines related to ELD, in order to have a complete picture of the content of the current guidances, procedures and supporting tools for the determination of the environmental damage assessment (see References). A new methodological

approach based on a DPSIR (Driver, Pressure, State, Impact and Response) model adapted to environmental damage assessment was proposed. Practical tools such as decision-making flowcharts and tables of indicators to assist in the early stage assessment of potential cases of environmental damage were produced. It is expected that the use of indicators, qualitative or quantitative ones, as well as flowcharts to support and direct the decision-making process, is useful for the determination of the clues by non-expert users, in lieu of the expert judgement (which might intervene when determining evidence of damage).

1.5 Content of the Practical Guide

This Practical Guide is divided into the following main chapters:

- Chapter 1 details the scope, purpose and content of the Practical guide and the background to and method of the CAED project;
- Chapter 2 contains a short description of the scope and relevant content of the EU COM Notice;
- Chapter 3 contains a new methodology and indicators for the determination the clues of environmental damage under ELD;
- Chapter 4 contains decision-making flowcharts for the determination of the clues of damage under ELD;

and the following main Annexes:

- Annex I, II, III provides Practical tables of IMPACT and STATE for natural habitats and protected species (NHPS), water and land;
- Annex IV provides Practical tables of PRESSURE for all natural resources;
- Annex V provides Practical tables of DRIVER for all natural resources.

The Practical Guide is complemented by ready-to-use “Practical Tables” in a separated excel file, containing the DPSIR model applied in tables of IMPACT, STATE, PRESSURE and DRIVER.

The Practical Tables, included in a separate excel file contain:

- A sheet containing the description of clues of environmental damage and the Practical tables
- A sheet containing the procedure for the identification of clues of environmental damage
- A sheet containing explanatory notes for the use of the Practical tables
- A sheet containing the tables of colour codes for the indicators/groups of indicators, as well as for the overall judgement
- A sheet containing the table for the description and judgement of the case
- A sheet containing Practical tables of IMPACT and STATE for natural habitats and protected species
- A sheet containing Practical tables of IMPACT and STATE for water
- A sheet containing Practical tables of IMPACT and STATE for land
- A sheet containing Practical tables of PRESSURE for all natural resources

- A sheet containing Practical tables of DRIVER for all natural resources

5 excel files containing applied examples of the Practical tables broadly based on actual cases, are also provided.

This Practical guide is limited in its scope to the clues of environmental damage, and does not address imminent threat of environmental damage, evidence of environmental damage, or remediation of environmental damage.

1.6 Terminology

Term (alphabetical order)	Definition
Ascertainment	The determination of clues and evidence of environmental damage and imminent threat of damage through information and data collection, analysis and assessment of the event, the effects on natural resources, the environmental quality status ex-ante and ex-post. The ascertainment can be done also by other investigative methods, such as modelling, risk assessment, expert judgement, etc.
Biodiversity	'Natural habitats and protected species'. Moreover, this report concerns both the natural habitats/species protected by the Habitat and Birds Directives and those, including natural areas, protected by the national legislation.
Damage factors⁸	Factors that cause adverse effects to the natural resource protected under ELD. They represent the source of the environmental damage. Note that according to EU COM Notice, until the damage factors have caused environmental damage, they should be called potential damage factors. In this Practical Guide, for simplicity, they will always be called damage factors.
Damaging occurrence⁹	The range of possible occurrences which may cause environmental damage, whether it is an accident, on-going pollution, over-abstraction, killing of animals, etc. Note that according to EU COM Notice, until the damaging occurrence has caused environmental damage, it should be called potential damaging occurrence. In this Practical Guide, for simplicity, it will always be called damaging occurrence.
Determination of clues of environmental damage	The process of evaluation of cases of potential environmental damage that passed the screening

⁸ See EU COM Notice.

⁹ See EU COM Notice.

	<p>phase. This process is preliminary to the determination of the evidence.</p> <p>The purpose of the determination of clues is to identify candidate cases of significant environmental damage and imminent threat of damage and to dismiss non-candidate ones.</p> <p>It involves the collection and evaluation of data, circumstances and other elements of fact or law indicating the possible existence of significant damage or imminent threat of damage in the light of the requirements of the ELD or other legislation on environmental damage. It concerns evaluations on the characteristics of the source of the impact and on the effects on natural resources.</p> <p>For example, clues of environmental damage may concern the exceedance of the screening concentration values for soil potentially contaminated.</p>
Determination of evidence of environmental damage	<p>The process of evaluation of candidate significant environmental damage cases that confirms them as significant environmental damage cases. This process is preliminary to the phase of designing of quantification of damage and definition and designing of remedial, complementary and compensatory measures.</p> <p>The purpose of the determination of evidence is, thus, to confirm the occurrence of significant environmental damage or imminent threat of damage cases in light of the requirements of the ELD or other legislation.</p>
DRIVER	Occupational activity.
ELD case and non-ELD case	<p>ELD case is a case where the environmental damage or imminent threat is found significant in light of the requirements of the ELD.</p> <p>Non-ELD case is a case where the environmental damage under ELD has not occurred or is not found.</p>
Environmental damage	<p>Article 2(1) of the Environmental Liability Directive provides that 'environmental damage' means:</p> <p><i>(a) damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species. The significance of such effects is to be assessed with reference to the baseline condition, taking account of the criteria</i></p>

	<p>set out in Annex I;</p> <p><i>Damage to protected species and natural habitats does not include previously identified adverse effects which result from an act by an operator which was expressly authorised by the relevant authorities in accordance with provisions implementing Article 6(3) and (4) or Article 16 of Directive 92/43/EEC or Article 9 of Directive 79/409/EEC or, in the case of habitats and species not covered by Community law, in accordance with equivalent provisions of national law on nature conservation.</i></p> <p><i>(b) water damage, which is any damage that significantly adversely affects:</i></p> <p><i>(i) the ecological, chemical or quantitative status or the ecological potential, as defined in Directive 2000/60/EC, of the waters concerned, with the exception of adverse effects where Article 4(7) of that Directive applies; or</i></p> <p><i>(ii) the environmental status of the marine waters concerned, as defined in Directive 2008/56/EC, in so far as particular aspects of the environmental status of the marine environment are not already addressed through Directive 2000/60/EC.</i></p> <p><i>(c) land damage, which is any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms.</i></p> <p>Refer to EU COM Notice as regards all aspects of the definition of 'environmental damage'.</p>
EU COM Notice	<p>Commission Notice C(2021) 1860 final titled "Guidelines providing a common understanding of the term 'environmental damage' as defined in Article 2 of Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage" and published on 25 March 2021.</p>
Immediate Management of Damage Factors¹⁰	<p>EU COM Notice defines it as "all practicable steps to immediately control, contain, remove or otherwise manage the relevant contaminants and/or any other damage factors in order to limit or prevent further environmental damage and adverse effects on human health or further</p>

¹⁰ See EU COM Notice.

	impairment of services". Along with the necessary remedial measures they are required to be taken when environmental damage has occurred (see article 6(1)(a) of ELD).
Imminent threat of damage	Art. 2, par. 9, ELD defines it as a 'sufficient likelihood that environmental damage will occur in the near future'.
IMPACT	Adverse effects on reference concepts of a natural resource under ELD.
PRESSURE	Potential damaging occurrences and related potential damage factors giving rise to an IMPACT or to a potential IMPACT on protected natural resources under ELD. In other words, PRESSURE represents potential damaging occurrences and potential damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT.
Reference concepts¹¹	EU COM Notice states: "For all three categories of natural resource, the definition of 'environmental damage' uses a reference concept to determine whether adverse effects are relevant. For protected species and natural habitats, the reference concept is the favourable conservation status of these species and habitats. For water, it is the ecological, chemical or quantitative status or the ecological potential of waters under the Water Framework Directive and the environmental status of marine waters under the Marine Strategy Framework Directive, which have different dimensions. For land, it is risks to human health. The function of these reference concepts is to provide parameters and criteria against which the relevance of adverse effects can be examined. The concepts provide elements in respect of which adverse effects are to be measured."
Screening	A preliminary evaluation of cases to identify potential environmental damage and imminent threat of damage cases and to dismiss non-potential environmental damage and imminent threat of damage cases (from the beginning). The screening phase is the very early stage of the evaluation (before the determination of clues). It is conducted without taking any action of ascertainment/investigation, but it is conducted only in light of the first information/data

¹¹ See EU COM Notice.

	<p>available about the event and its consequences (no effects/impacts evaluated).</p> <p>For instance, screening is conducted on information and data communicated by the operator or by an authority through a notice reporting about the event.</p> <p>For example, the screening can be useful for environmental inspectors to recognise potential/non-potential environmental damages or imminent threat of damages as a result of non-compliances discovered during routine/non-routine inspections of regulated/unregulated sites.</p> <p>Please note: the screening does not only refer to potential ELD cases but also other environmental damage cases under other legislation.</p>
STATE	<p>Baseline conditions of a natural resource, as defined in art. 2, par. 14 of ELD. The EU COM Notice provides some guidance on how to establish the baseline condition.</p>

1.7 Acronyms

ARPA Regional Environmental Protection Agency
 DPSIR Drivers, Pressures, State, Impact and Response
 EA Environment Agency
 ECD Environmental Crime Directive
 EDR Environmental Damage Regulations
 EPA Environmental Protection Agency
 ELD Environmental Liability Directive
 EU European Union
 FCS Favourable Conservation Status
 IED Industrial Emission Directive
 ISPRA National Italian Institute for the Environmental Protection and Research
 MARWP Multi Annual Rolling Work Programme
 MoE Ministry of the Environment
 MS Member State
 NHPS Natural Habitats Protected Species
 SAC Special Area of Conservation
 SCI Site of Community Importance
 SEPA Scottish Environment Protection Agency
 SPA Special Protection Area
 SSSI Site of Special Scientific Interest
 TFEU Treaty on the Functioning of the European Union
 WFD Water Framework Directive

2 EU COM Notice: Guidelines providing a common understanding of the term environmental damage

The ELD was evaluated by the Commission in 2016¹² and one of the challenges identified in the evaluation was the inconsistent application of key concepts by Member States.

To address this issue, the ELD was amended in 2019¹³ requiring the European Commission to develop guidelines to provide a common understanding of the term “environmental damage” as defined in Article 2 of the ELD.

The EU COM Notice takes the form of a Notice which provides an interpretation of many (but not all) of the legal facets of ELD, with a primary focus on the term “environmental damage”. However, they do not provide technical guidance on how to assess cases of environmental damage or imminent threat.

The Notice was prepared under the exclusive responsibility of the Commission, in consultation with stakeholders. The Notice is binding on the Commission but not binding on Member States.

The Court of Justice of the European Union (CJEU) remains solely competent to interpret EU law. Rather than provide a full review, this section highlights details of the EU COM Notice which add to the understanding of the ELD and how it should be applied, providing clarity around the scope of application and understanding of key terms and concepts related to environmental damage which are relevant for the identification, assessment and determination of clues and evidence of environmental damage.

The EU COM Notice should be referred to directly provide context and detail around the topics referenced. As this Practical guide does not address imminent threat of damage, aspects of the EC COM Notice related to imminent threat are not considered in detail here.

2.1 The broader context

The EU COM Notice notes that while the ELD is based on the polluter pays principle, all four of the principles upon which EU environmental policy is based are applicable and relevant in understanding and interpreting the term environmental damage. In addition to the polluter pays principle, there are the principles that preventive action should be taken and that environmental damage should as a priority be rectified at source, the precautionary principle and the proportionality principle. These principles should be borne in mind when considering the clues and

¹² REFIT Evaluation of the Environmental Liability Directive, SWD (2016) 121 Final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2016:121:FIN>

¹³ Regulation (EU) 2019/1010

evidence of environmental damage (or imminent threat of same) and the burden of proof required to reach the thresholds for such environmental damage (and imminent threat of same).

The EU COM Notice introduces a number of new terms/phrases, or provides clarity on terms not defined in the ELD, including the following:

1. Damaging occurrences¹⁴ – occurrences that gives rise to a causal link between an occupational activity and environmental damage. This occurrence may relate to an event or emission arising during either abnormal or normal operations, or as a result of an incident or accident.
2. Damage factors¹⁵ – factors that cause adverse effects (*see below for further information on adverse effects*). These may be:
 - (i) additive, for example, the release of a toxic substance or other such contaminant to the environment, or
 - (ii) subtractive/extractive, such as abstraction from or damming of a river or the felling of trees, or
 - (iii) destructive, such as the deliberate killing of individuals of a protected species.
3. Immediate management of damage factors¹⁶ – the steps that operators are required to take where environmental damage has occurred to control, contain, remove or manage damage factors to limit or prevent further environmental damage.
4. Reference concepts¹⁷ - for all three categories of natural resource, the definition of 'environmental damage' uses a reference concept to determine whether adverse effects are relevant. For protected species and natural habitats, the reference concept is the favourable conservation status of these species and habitats. For water, it is the ecological, chemical or quantitative status or the ecological potential of waters under the Water Framework Directive and the environmental status of marine waters under the Marine Strategy Framework Directive. For land, it is risks to human health. The function of these reference concepts is to provide parameters and criteria against which the relevance of adverse effects can be examined. The concepts provide elements in respect of which adverse effects are to be measured.

¹⁴ Paragraph 17 of the EU COM Notice.

¹⁵ Paragraph 18 of the EU COM Notice.

¹⁶ Paragraph 21 of the EU COM Notice.

¹⁷ Paragraph 46 of the EU COM Notice.

Damaging occurrences and damage factors which may cause adverse effects for each type of environmental damage are included in the PRESSURE table of this Practical Guide.

Reference concepts for each type of environmental damage are included in the IMPACT and STATE tables of this Practical Guide.

2.2 Definition of “Damage”

Damage is defined in ELD as “*measurable adverse change in a natural resource or measurable impairment of a natural resource service with may occur directly or indirectly*”. The occurrence of damage does not trigger obligations, however, according to the EU COM Notice, the understanding of the term damage is material to understanding environmental damage.

The Notice outlines the four concepts in the definition of “damage” as:

1. The material scope of what is affected – a natural resource or service. The natural resources are further defined in ELD as protected species and natural habitats, water and land. Natural resource services means “the functions performed by a natural resource for the benefit of another natural resource or the public”.
2. Adverse effects – adverse change or impairment of the natural resource itself and the natural resource service. Adverse effects for each type of environmental damage are listed in the Notice with reference to certain concepts, referred therein as “reference concepts” (see par 3.1 above), many of which are referred or alluded to in Annex I and Annex II of ELD. The concept of ‘damage’ is not self-standing and needs to be read in the light of the definition of ‘environmental damage’. Hence, for example, the impairment of the services that water provides must, therefore, be accompanied by significant adverse effects on the status of the waters concerned.
3. Scope of the adverse effects – the adverse change or impairment must be measurable.
4. Ways in which the adverse effects occur – directly or indirectly, e.g. the direct application of a pollutant to or into land which results in a significant risk to human health, or the dispersal of an air-borne pollutant to land which then poses a significant risk to human health indirectly.

These reference concepts are included in the relevant tables of IMPACT and STATE of this Practical Guide for assessing the clues of environmental damage.

2.3 Environmental damage and significance

Environmental damage is defined in the ELD in terms of damage to protected species and natural habitats, water damage and land damage. Central to these definitions, and absent from the definition of damage, is the concept of significance. Measures for the immediate management of damage factors, or remedial measures are only required in the ELD where adverse effects are found to be significant. Measures to prevent environmental damage are only required when adverse effects are becoming or are expected to become significant. The EU COM Notice list several considerations which should be applied to ensure a common understanding for the assessment of significance, including the circumstances in which the need for assessment of significance arises, the purpose of the assessment of significance, legal responsibilities regarding the carrying out of the assessment, the context(s) in which the assessment is to be carried out, the focus of the assessment, the carrying out of the assessment and the determination of significance.¹⁸

The Notice states that *“The importance of effects does not necessarily depend on their being present on a large scale. The concept of what is “significant” is related to the notion of measurable adverse changes and impairments found in the definition of “damage”*¹⁹.

Each type of environmental damage, protected species and natural habitats, water and land, is discussed in the Notice in terms of the material and geographical scope of the natural resource or service concerned, reference concepts for adverse effects on that natural resource or service, and the assessment of significance.

It should be noted that an impairment of a natural resource service, in the absence of a significant adverse effect on the natural resource, does not constitute environmental damage under the ELD²⁰.

2.4 The determination of significance

2.4.1 Burden of proof

Where there is an imminent threat of environmental damage or the immediate management of damage factors is necessary, a rapid assessment of potential significance must be completed based on readily available information. As such the assessment may largely be based on reasonable belief around general information about the damage factors, natural resources or services and the adverse

¹⁸ Paragraph 51 of the EU COM Notice.

¹⁹ Paragraph 78 of the EU COM Notice.

²⁰ Paragraph 146 of the EU COM Notice.

effects. Where environmental damage has occurred, and remedial measures are required, a more detailed and site-specific assessment should be completed for the design of remedial measures.

2.4.2 Baseline condition

Assessment of environmental damage is made relative to a baseline condition. The baseline condition is defined in ELD as *“the condition at the time of damage of the natural resource and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available”*.

2.4.3 Scale of assessment

The EU COM Notice states that significance must be *“determined in relation to the actual physical area of land or water or (in the case of protected species) actual populations adversely affected or at risk of being affected, taking account of any pre-existing intrinsic characteristics or dynamic factors that may have been influencing the natural resources concerned independently of the damaging occurrence”*²¹. To this end, the Notice outlines the geographical scale to which the ELD applies for protected species and natural habitats must be meaningful at local level, and for water damage is the waters which have been adversely affected.

2.4.4 Protected species and natural habitats

With respect solely to protected species and natural habitats, it is important to note that Annex I of the ELD includes reference concepts for adverse effects which, at the discretion of Member States, do not have to be determined as significant. These concepts relate to short term adverse effects which are smaller than natural fluctuations, or resulting from normal management of a site, or where a protected species or habitat will recover within a short period of time. These discretions should be interpreted strictly when assessing whether damage is significant or not²².

2.4.5 Water damage – Waters Concerned under the Water Framework Directive

The definition of water damage in the ELD speaks to a significant adverse effect on the status, as defined in the Water Framework Directive, on the “waters concerned”. The Notice states that the waters “concerned” are those affected by damage²³. Therefore, the determination of environmental damage is not limited to the geographical scale of a waterbody as delineated under

²¹ Paragraph 75 of the EU COM Notice.

²² Case C-297/19, *Naturschutzbund Deutschland – Landesverband Schleswig-Holstein eV*.

²³ Paragraph 131 of the EU COM Notice.

the Water Framework Directive. The area where adverse changes are experienced may extend across several of these waterbodies, or may concern only part of a waterbody²⁴. However, in some cases, it may be appropriate to apply the ELD to a delineated waterbody, for example, when the reference concept of relevance is the quantitative status of a groundwater body, where that groundwater body acts as a distinct hydrogeological unit for that purpose.

The status of waterbodies under the WFD is assessed every 6 years. The ELD necessitates a shorter-term identification of a significant adverse effect²⁵ and is not tied to this 6 yearly cycle, with the Notice stating that adverse changes will be significant where there is a measurable gap between the time when the adverse change occurs and the baseline condition is restored²⁶.

From the above it is clear that for an adverse effect to be considered significant, it is not necessary for a change in classification for the purposes of the Water Framework Directive to have occurred – though a change to a lower status classification may be a significant adverse effect requiring action under the ELD²⁷.

3 Methodology and indicators for the determination of the clues of environmental damage under ELD

3.1 Introduction

Environmental damage assessment, in particular the phase of determination of the clues of damage, may benefit from the evaluation of selected qualitative and quantitative indicators (or indexes). These indicators may be derived from those used for the environmental impact assessment, or those included in international standard guides, or in EU's and countries' technical regulations on impacts on natural habitats and protected species, water and land.

A new methodology for the environmental damage under ELD, based on grouping indicators around specific evaluation objectives aligned with the DPSIR (Driver, Pressure, Source, Impact, Response) model, is described below.

3.2 DPSIR Model adapted to environmental damage assessment

The assessment of environmental damage pursuant to the ELD, and the determination of clues of environmental damage, is based on the study of the damaging occurrence and involves the

²⁴ Paragraph 151 of the EU COM Notice.

²⁵ Paragraph 151 of the EU COM Notice.

²⁶ Paragraph 169 of the EU COM Notice.

²⁷ Paragraph 151 and 170 of the EU COM Notice.

verification of the applicability requirements of the directive, the identification and characterization of the damage factors, the determination of the causal link between the damaging occurrence and damage factors and the adverse effects and, above all, the determination of whether the adverse effects with respect to the baseline conditions of the protected natural resource are likely to be significant and sustained.

The determination of the clues of environmental damage may be based on selected indicators describing, firstly, the adverse effects on the baseline conditions of the natural resource and, secondly, the characteristics of the damaging occurrence and the damage factors (hazardousness and magnitude) to establish whether, or not, it is appropriate to proceed with a phase of determination of evidence of environmental damage. A new methodological approach, an adapted DPSIR approach, that can facilitate a straightforward, standardised determination of clues of environmental damage is proposed.

The DPSIR model has been adopted by the European Environmental Agency (EEA) as a general reference for an integrated approach in the reporting processes on the state of the environment, carried out at any European or national level. The model proposes a general reference structure to represent the set of elements and relationships that characterise any environmental theme, putting it in connection with the policies related to it.

The structure of the DPSIR model is made up of various components linked together by causal relationships (see fig. 2):

- DRIVER: actions, both anthropogenic and natural, capable of determining pressures on the environment;
- PRESSURE: pressures exerted on the environment by the determinands;
- STATE: physical, chemical and biological qualities of environmental resources;
- IMPACT: negative effects on ecosystems, human and animal health and economy;
- RESPONSE: responses and government actions implemented to address environmental pressures and impacts.

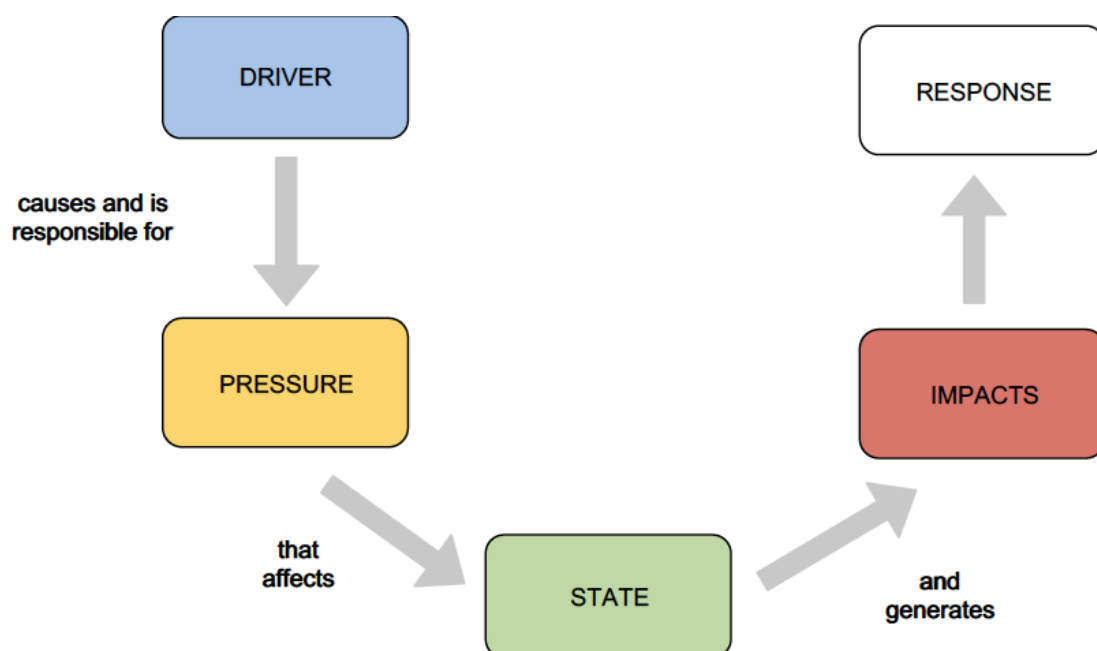


Figure 2 - DPSIR model applied to Environmental Impact Assessment.

To adapt the DPSIR model to the determination of clues of environmental damage, the cycle is reversed, from the IMPACT to the DRIVER, as shown in see fig. 3 and described below:

- IMPACT: adverse effects on the reference concepts of the natural resource, generated by the damaging occurrence and the damage factors;
- STATE: the baseline conditions, in relation to the reference concepts and other characteristics, of the natural resource impacted by the adverse effects of the damaging occurrence and damage factors;
- PRESSURE: the damaging occurrence and damage factors generated by the DRIVER, which may cause potential environmental damage under ELD on the natural resource;
- DRIVER: the occupational activities listed in Annex III of the ELD and other occupational activities (in the event of fault or negligence²⁸) that generate the damaging occurrence and damage factors.

In this project, the RESPONSE component is not included, otherwise it would have been described as follows:

- RESPONSE: the remedial measures that the operator that caused the environmental damage is required to implement in order to restore the natural resource to its pre-damage status

²⁸ In ELD the fault-based liability regime of other activities than those listed in Annex III is only referred to damage to NHPS (see par. 5.3 below). Anyhow, in this practical guide the fault-based liability regime of ELD has been extended to water damage and land damage referring to some national legislation.

(primary remediation) or, if this is not possible, to intervene with complementary and compensatory remediations.

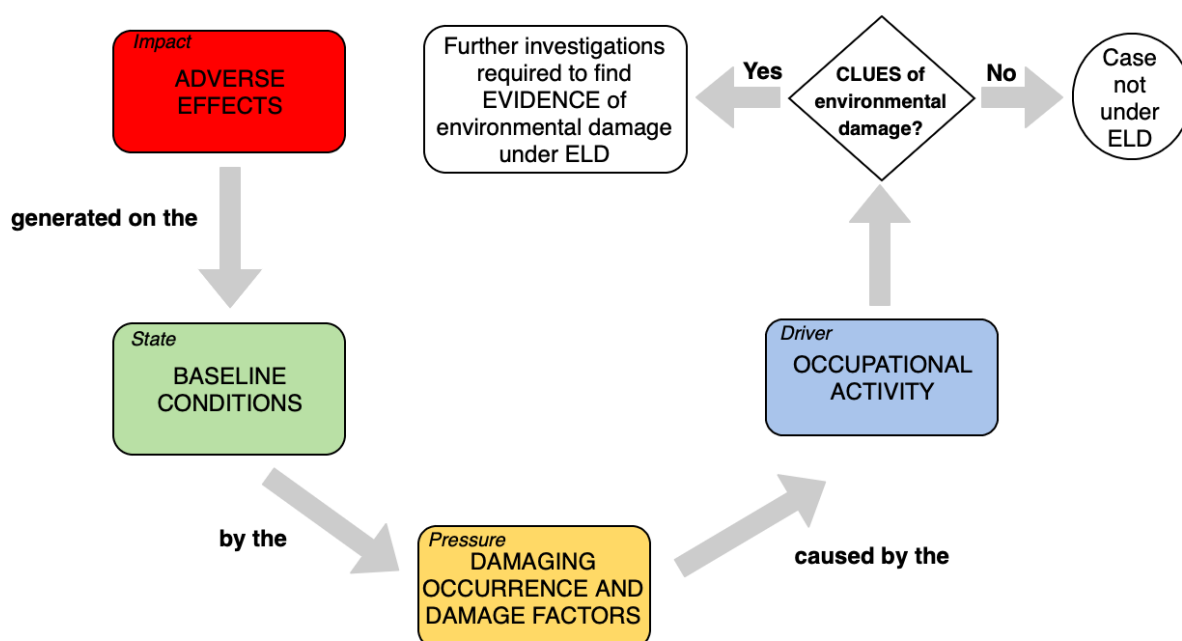


Figure 3 - DPSIR model adapted to Environmental Damage Assessment.

The DPSIR cycle is reversed because, when determining the clues of environmental damage, the most important and primary data and information to collect are related to the adverse effects (IMPACT) on the natural resources compared to their baseline (STATE), even after an incident, where you have knowledge about the damaging occurrence and damage factors, but you may have lack of knowledge about adverse effects on natural resources. Next, the identification and determination of the magnitude and hazardousness of the damaging occurrence and damage factors (PRESSURE) contribute to the identification of clues of environmental damages where there is insufficient data and information on the adverse effects on the natural resources.

Finally, data and information on the damaging occurrence and damage factors (PRESSURE) as well as the adverse effects (IMPACT), compared to the characteristics of the occupational activity (DRIVER) are used to assess the causal link between the occupational activity and the adverse effects. In fact, the DRIVER table includes the indicators that help to identify the responsible occupational activity either in cases where the damaging occurrence is known or is unknown at first. Hence, the adapted DPSIR model (hereafter called “DPSIR”) may therefore be used at an early stage whether information on the occupational activity is known or unknown.

Each component (namely each box in fig. 3) of the DPSIR may “contain” data and information that may be evaluated in order to establish whether further investigation of evidence of environmental damage under ELD, is warranted or not.

Hence, each component of the DPSIR should be described with pre-defined lists of quantitative and qualitative indicators, in order to conduct the determination of the clues of environmental damage on the basis of the evaluation of the values data and information on the indicators.

The indicators that describe the different components of the DPSIR can be also characterised in terms of relevance and significance for the purposes of identifying the clues of environmental damage.

In this first version of the Practical Guide, the criteria for the identification of standalone and combined indicators which may conduct to the determination of the clues of environmental damage have not been included.

3.3 The clues of environmental damage and the Practical Tables (included also in the Practical Tables file)

As already mentioned, to determine the environmental damage it is necessary to verify the evidence of such damage.

The assessment and conclusion on whether environmental damage has occurred can be resource intensive, complex and take an extended period of time. The early identification of clues of environmental damage can be valuable therefore to facilitate a screening of the likelihood of environmental damage having occurred prior to committing these resources.

In practice, it is a matter of pre-defining those elements which, when evaluated in a preliminary phase of investigation, suggest the possible presence of environmental damage and direct the investigation towards the phase of determination of the evidence.

In fact, when there are one or more clues of damage, other investigations are required to confirm the existence of the evidence of damage. On the contrary, if the clues are not found, the environmental damage assessment under ELD may end with the case filing as “non-ELD case”. In addition, when there is insufficient data or information to enable a judgement, the possibility/legitimacy/needs/benefits of collecting/requiring further data/information through further investigations should be evaluated.

By using this Practical Guide, these abovementioned steps of preliminary assessment may be conducted by non-expert users, in lieu of the expert judgement which may intervene later, through

the use of the DPSIR model adapted to environmental damage assessment, accompanied by the use of the Practical tables of pre-defined indicators useful for the assessment of the potential ELD cases.

For each component of the DPSIR model, Practical Tables containing indicators have been developed (see Annexes from I to V and the to-be-filled Practical tables in the excel file) in which the following elements have been defined in columns:

- *OBJECTIVE*: containing the evaluation objective of each group of indicators;
- *INDICATORS*: containing the definition of each indicator;
- *DESCRIPTION/THRESHOLDS*: containing the description of the possible indicator's qualitative/quantitative values (quantitative values may be significance thresholds);
- *NOTES*: containing the indicator's values for the case being investigated;
- *EVALUATION*: containing the evaluation of each group of indicators grouped by objective;
- *OVERALL JUDGEMENT*: containing the overall evaluation of the case being investigated.

Each indicator's value (in NOTES column), if available and relevant, and each group of indicators value (in EVALUATION column), may give indications towards or against the determination of the clues of environmental damage or may provide auxiliary data/information (for a better understanding of the case), depending on the case being investigated.

In fact, depending on the case, indicator's values and group of indicators may be either:

- *FAVOURABLE* to the identification of the clues of environmental damage; or
- *UNFAVOURABLE* to the identification of the clues of environmental damage; or
- *AUXILIARY* data/information; or
- *NOT AVAILABLE* data/information (in this case, the possibility/legitimacy/needs/benefits of collecting/requiring further data/information, for the identification of the clues of environmental damage, might be evaluated and expressed); or
- *NOT RELEVANT* data/information (in this case the indicator should not be considered)

Finally, the Practical tables are non-exhaustive, i.e. case-specific indicators could be added as long as they can be categorised by the objective of the evaluation.

3.4 Procedure for the identification of clues of environmental damage (included also in the Practical Tables file)

The compilation of the Practical tables, on the basis of the available data and information, is preparatory to the identification of the clues of environmental damage.

After compiling the Practical tables for each component of the DPSIR an evaluation is initially made for each evaluation objective. This is followed by an overall judgement, taking into account the relative significance of each evaluation objective to the overall judgement.

The outcome of the overall judgement may be either:

- *CLUES OF DAMAGE IDENTIFIABLE*: the values assumed by the indicators are such as to provide useful data and information for the identification of the clues of environmental damage or rather favourable indicators are determined; or
- *ABSENCE OF CLUES OF ENVIRONMENTAL DAMAGE*: the values assumed by the indicators are such as not to provide useful data and information for the definition of the clues of environmental damage, or rather non-favourable indicators are determined; or
- *DATA/INFORMATION TO IDENTIFY CLUES OF DAMAGE NOT SUFFICIENT*: there is no sufficient data or information which enable to express a judgement. In this case, the possibility/legitimacy/needs/benefits of collecting/requiring further data/information through further investigations should be evaluated and expressed.

It is possible that a judgement on the existence of clues of environmental damage can be reached from the Practical tables of indicators relating to the IMPACT and STATE components alone. In the case that this judgement cannot be achieved due to the lack of sufficient data and information, the table relating to PRESSURE component may be fundamental for identifying the clues of environmental damage. Whereas, as already mentioned, the DRIVER component is useful to identify and verify the causal link of the adverse effects to the occupational activity.

The clues of environmental damage identified and expressed in the overall judgement may be of two types (see fig. 4):

- *CLUES OF NATURAL RESOURCE (CNR)*: based on the identification of possible sustained adverse effects on the natural resources, deriving from the combination of the indicators of the STATE component, which represents the baseline of the resource, and of the IMPACT component, indicative of adverse effects caused by the damaging occurrence and damage factors (PRESSURE);
- *CLUES OF DAMAGING OCCURRENCE AND DAMAGE FACTORS + NATURAL RESOURCE (CDODF+NR)*: based on the identification of the hazardousness and magnitude of the damaging occurrence and damage factors (through the indicators of the PRESSURE component) in combination with a minimum level of information of adverse effects on the natural resources (through the indicators of the IMPACT and STATE components). In such a

case, the combined information level (CDOF+NR) may represent a sufficient level for identifying a clue of environmental damage.

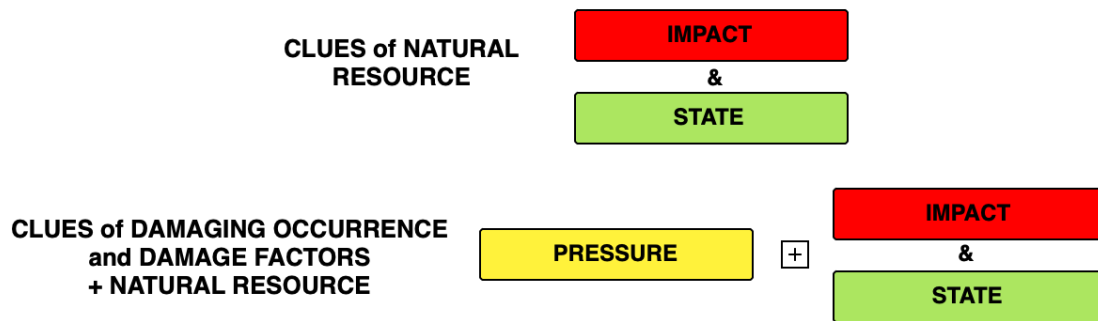


Figure 4 – Types of clues of environmental damage.

The phase of determination of the clues of environmental damage, hence, may be carried out through the investigation on the CNR and/or the CDODF+NR.

When the clues are identified, the investigation would continue, otherwise in absence of clues the case is filed as “Case not under ELD”. The following fig. 5 shows the procedure described.

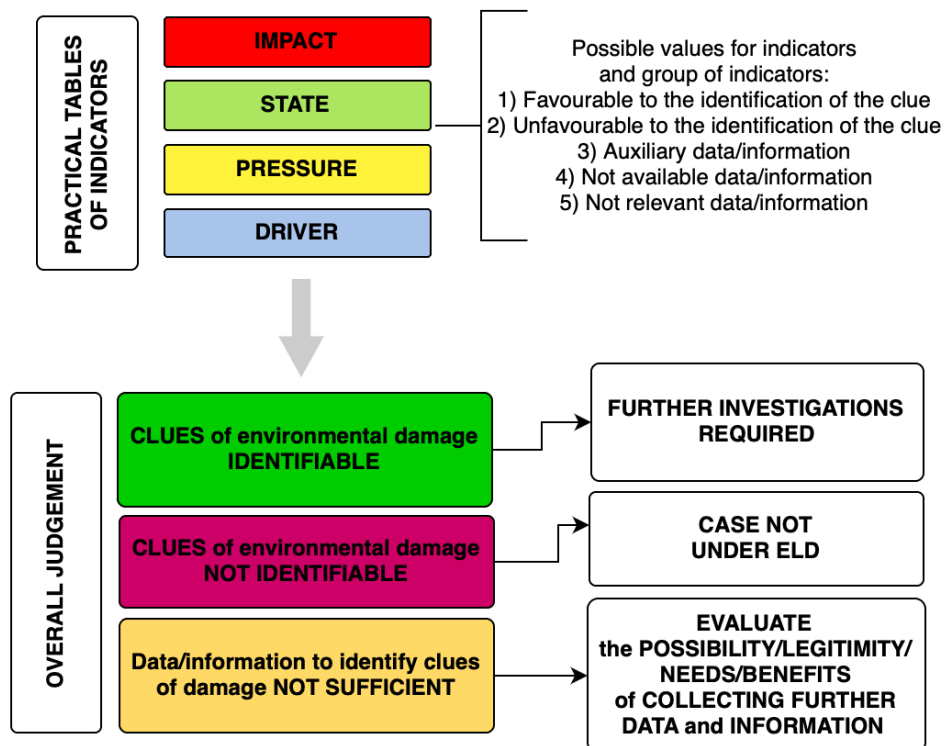


Figure 5 – Procedure for the determination of clues of environmental damage.

3.5 Explanatory notes for the use of the tables of indicators (included also in the Practical Tables)

3.5.1 Imminent threat of damage and evidence of damage not considered

The Practical tables in Annexes from I to V contain indicators to identify the clues of environmental damage. The Practical tables should not be used for the assessment of the imminent threat and evidence of damage.

3.5.2 Preconditions to use the tables

At the beginning of each IMPACT table there are preconditions for the use of the tables. These preconditions refer to the scope of the ELD with reference to the natural resources concerned.

3.5.3 Types of tables

The Practical tables in Annexes from I to V are comprised of a table for the IMPACT component and a table for the STATE component for each natural resource under ELD.

The tables are constituted by general sections followed by specific sections, that contain indicators referred only to a subgroup of natural resources (e.g. coastal and marine waters and groundwater in the tables for Water). In case a specific section of a table does not concern the natural resource under assessment, skip to the next section of the table. Note that in tables for Water, “surface waters” section should be used for evaluating both surface inland waters and coastal and marine waters.

The PRESSURE, except for the specific section “land”, and DRIVER tables are valid for each natural resource.

Moreover, the STATE table for NHPS contains NOTE columns for each level of baseline assessment (European, National, Local/Site level), finally, the IMPACT and STATE tables for NHPS should be completed for each protected species or natural habitat being assessed.

3.5.4 Quality assurance of data and information

When evaluating the potential damage for all types of natural resources, the relevance, quality, and reliability of data and information collected are fundamental. These should be evaluated in the first instance to determine whether there are quantitatively adequate data and information to make a determination of the clues and consequently of the evidence of environmental damage. In this regard, the tables of indicators in Annexes from I to V contain directions, on minimum quality requirements for data and information on each natural resource.

3.5.5 Colour code

The compilation of the Practical tables may be supplemented by using a colour code for the "Notes" and "Evaluation" columns as well as for the "Overall Assessment" columns for a better and easier check of intermediate and final outputs (see par. 3.3 and 3.4).

The following table in fig. 6 represents the colour code proposed for the outputs of the "Notes" and "Evaluation" columns:

Colour code for the "Notes" and "Evaluation" columns
Favourable to the identification of the clue (text box)
Unfavourable to the identification of the clue (text box)
Data/information not available (express the possibility/legitimacy/needs/benefits of collecting/requiring further data/information) (text box)
Auxiliary data/information (text box)
Not available data/information (empty box)
Not relevant data/information (empty box)

Figure 6 – Colour code proposed for the outputs for the "Notes" and "Evaluation" columns.

In addition, the following table in fig. 7 represents the colour code proposed for the outputs for the "Overall Assessment" column:

Colour code for the "Overall Assessment" column
Clues of environmental damage (text box)
Absence of clues of environmental damage (text box)
Data/information to identify clues of damage not sufficient (express the possibility/legitimacy/needs/benefits of collecting/requiring further data/information through further investigations) (text box)

Figure 7 – Colour code proposed for the outputs for the "Overall Assessment" column.

The column “Notes” may be compiled with a flag or description and/or values of the relevant indicator for the case being assessed. Moreover, multiple answers/options in column “Notes” are possible. The column “Evaluation” should be compiled with the evaluation of the group of indicators grouped by evaluation objective.

Note that the colour code is directly adopted by the user of the table, according to his evaluations on for each specific case.

3.5.6 Compilation and output of the Practical tables (included also in the Practical Tables file)

The following table format "Description and judgement of the case" in fig. 8 should contain the relevant information about the case, the overall judgement, as well as the further investigations required:

DESCRIPTION and JUDGEMENT OF THE CASE	
Site/location	
Damaging Occurrence	
Damage Factors	
Natural Resources Impacted	
Adverse Effects on Reference Concepts	
Other Available Data/information	
Overall Judgement	
Further Investigations Required	

Figure 8 – Table format that should contain the relevant information of the case, the overall judgement, and the further investigations required.

In the overall judgement box (fig. 6) the types of clues determined - CLUES OF NATURAL RESOURCE (CNR) or CLUES OF DAMAGING OCCURRENCE AND DAMAGE FACTORS + NATURAL RESOURCE (CDODF+NR) - should be indicated and a brief description of the outcomes should be provided.

The Practical Tables contain the tables of indicators for the IMPACT component and STATE component referred to each natural resource or, in case of the PRESSURE and DRIVER components, referred to all natural resources.

Annexes from I to V contain Practical tables that are provided in the Practical Tables, without the “Notes”, “Evaluation” and “Overall Judgement” columns.

4 Decision-making flowcharts for the determination of the clues of damage

4.1 Applicability of ELD over time

The temporal scope of the ELD is set out in Article 7 of the ELD. There are 3 situations in which the ELD does not apply to cases of damage. These are (see fig. 9):

1. Damage caused by an emission, event or incident that took place before 30 April 2007;
2. Damage caused by an emission, event or incident which takes place subsequent to 30 April 2007 when it derives from a specific activity that took place and finished before 30 April 2007;
3. Damage, if more than 30 years have passed since the emission, event or incident, resulting in the damage, occurred.

However, the domestic legislation in individual Member States may contain additional and different criteria on applicability over time. So, it is important to refer to domestic legislation, in addition to the ELD itself.

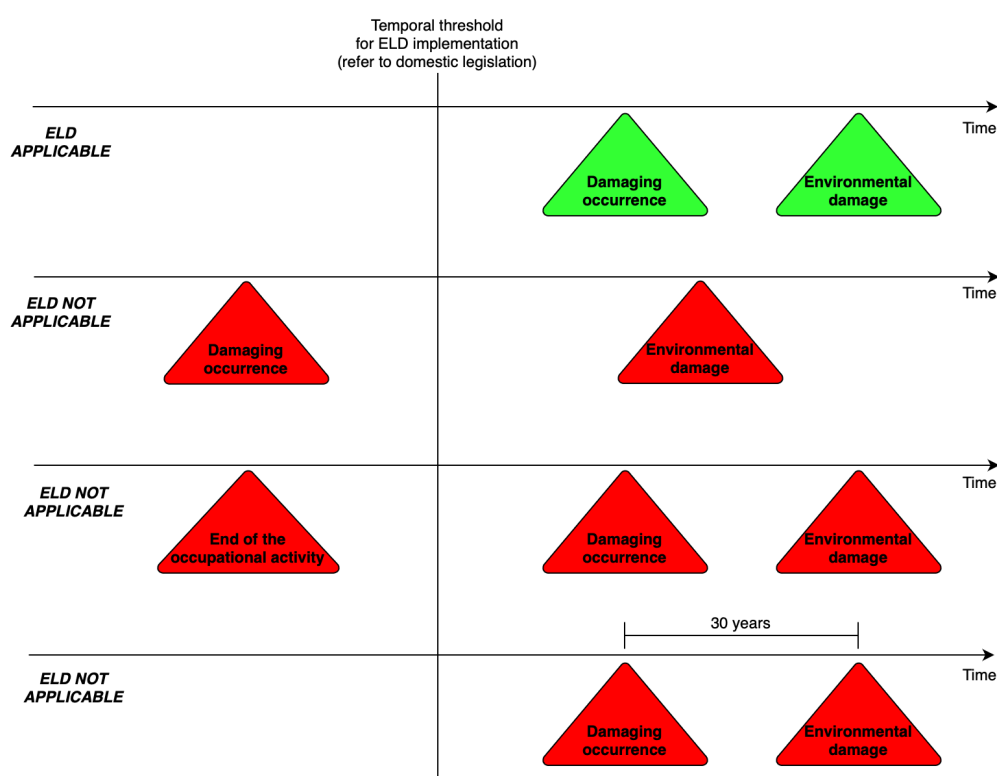


Figure 9 – Temporal scope for the applicability of ELD.

4.2 ELD Liability Regimes

The figure 10 below shows the circumstances in which strict or fault-based liability apply under ELD.

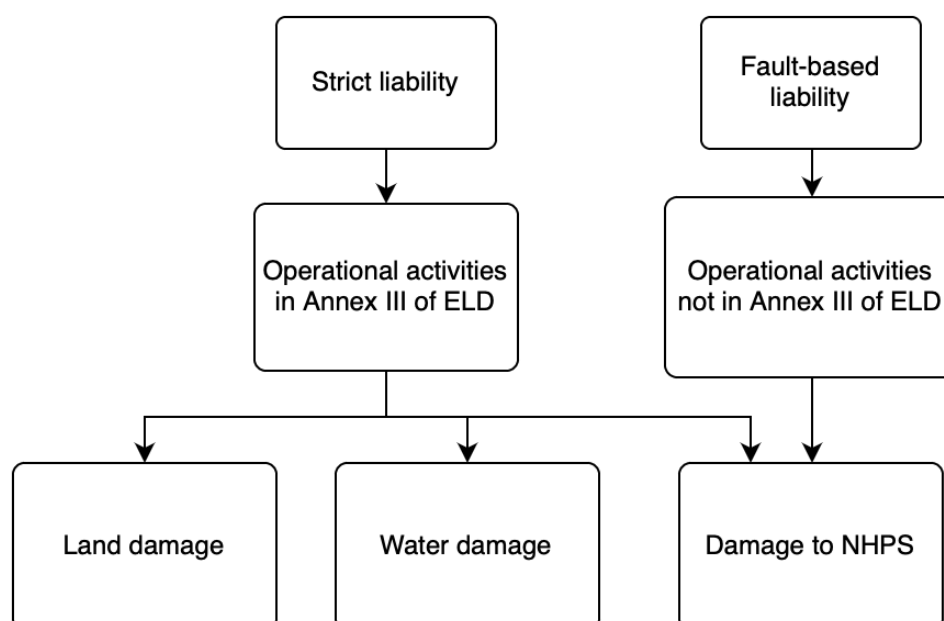


Figure 10 – Applicability of ELD liability regimes.

In ELD the fault-based liability regime of occupational activities other than those listed in Annex III applies only to damage to NHPS.

Some jurisdictions in their national legislation extended the scope of water and land damage beyond Annex III activities where there is fault or negligence. Even in this practical guide, the scope of water and land damage is extended beyond Annex III activities where there is fault or negligence.

4.3 Flowchart for the applicability of ELD

For the ELD to apply, the following pre-conditions must apply:

1. None of the exemptions in Article 4 of the ELD must apply
2. The damage or imminent threat and occupational activity must be within the temporal scope of the ELD
3. There must be damage or an imminent threat of damage to a natural resource protected by the ELD
4. The damage or threat must be caused by an occupational activity

5. For water and land damage, the damage or threat must be caused by an occupational activity listed in Annex III of the ELD.

However, many individual Member States have extended the scope of their Environmental Liability regimes beyond the scope of the ELD. So, it is important to refer to domestic legislation on the above points, in addition to the ELD itself.

Flowchart in fig. 11 provides a screening assessment for damage under ELD. The flowchart can be used either when you are aware of the PRESSURE (STARTING POINT 1), or when you are not yet aware of the PRESSURE but you discover an IMPACT (STARTING POINT 2) on natural resources protected by ELD.

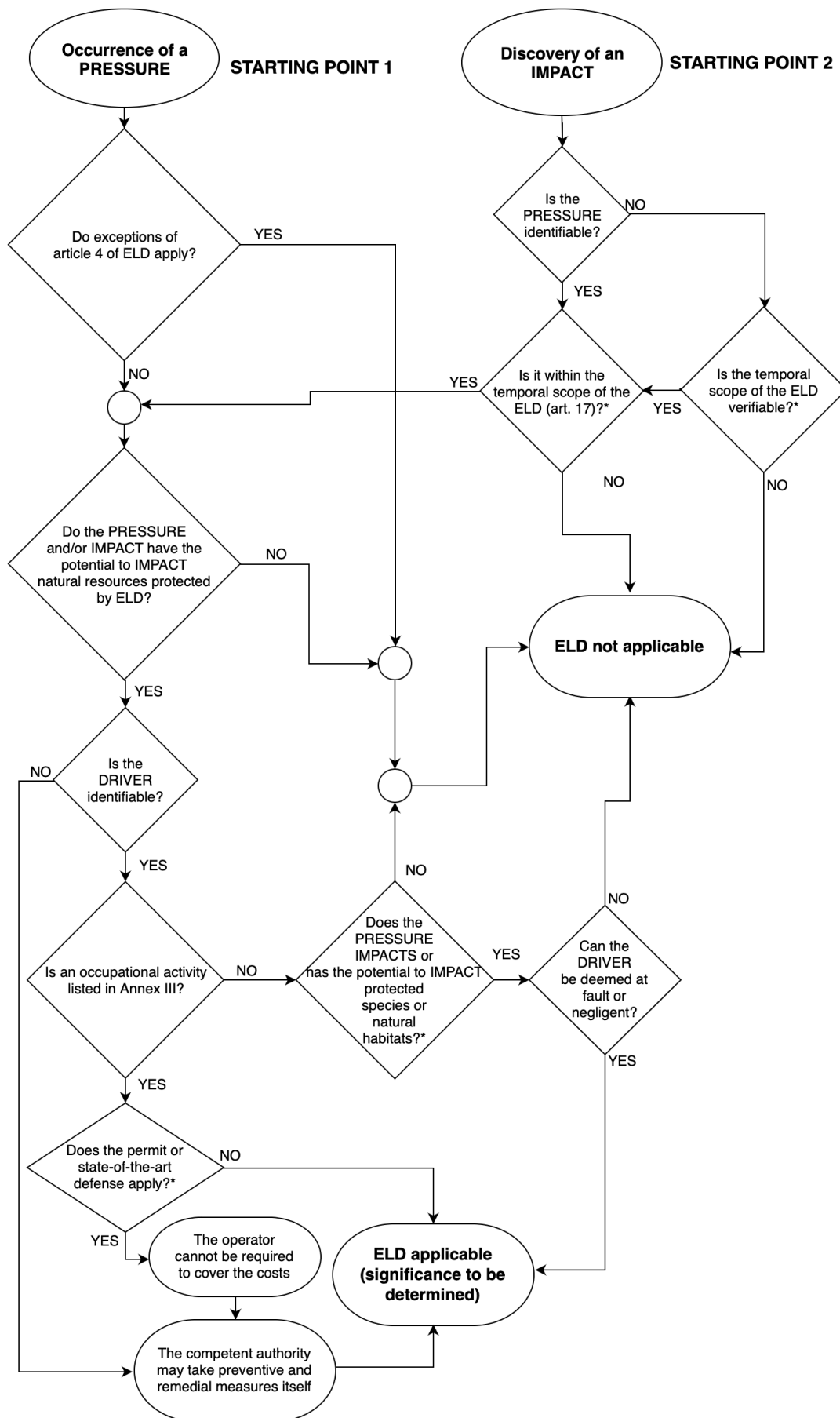


Figure 11 – ELD applicability flowchart.

** Refer to domestic legislation when evaluating:*

- temporal scope of ELD;
- application of strict and fault-based liability regimes to natural resources under ELD (in this practical guide, the scope of water and land damage is extended beyond Annex III activities where there is fault or negligence);
- application of the permit and state-of-the-art defenses.

Moreover, note that:

- "IMPACT" means: adverse effects on reference concepts of a natural resource under ELD;
- "PRESSURE" means: damaging occurrences and damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT;
- "DRIVER" means: occupational activity.

4.4 Explanatory notes for the users of the decision-making flowcharts

The following decision-making flowcharts are consistent with the implementation of the methodology that is proposed in this Practical Guide and may be used for the determination of the clues of environmental damage, but not for imminent threats of damage.

Each flowchart takes either the occurrence of a PRESSURE or the discovery of an IMPACT as a starting point and ends with the classification of a case as either ELD or Non-ELD.

4.5 General decision-making flowchart for the determination of the clues of damage

The following flowchart in fig. 12 provides a decision-making framework from the onset of a potentially damaging occurrence (a potential imminent threat or PRESSURE) through to the determination of whether the case is an ELD case or not.

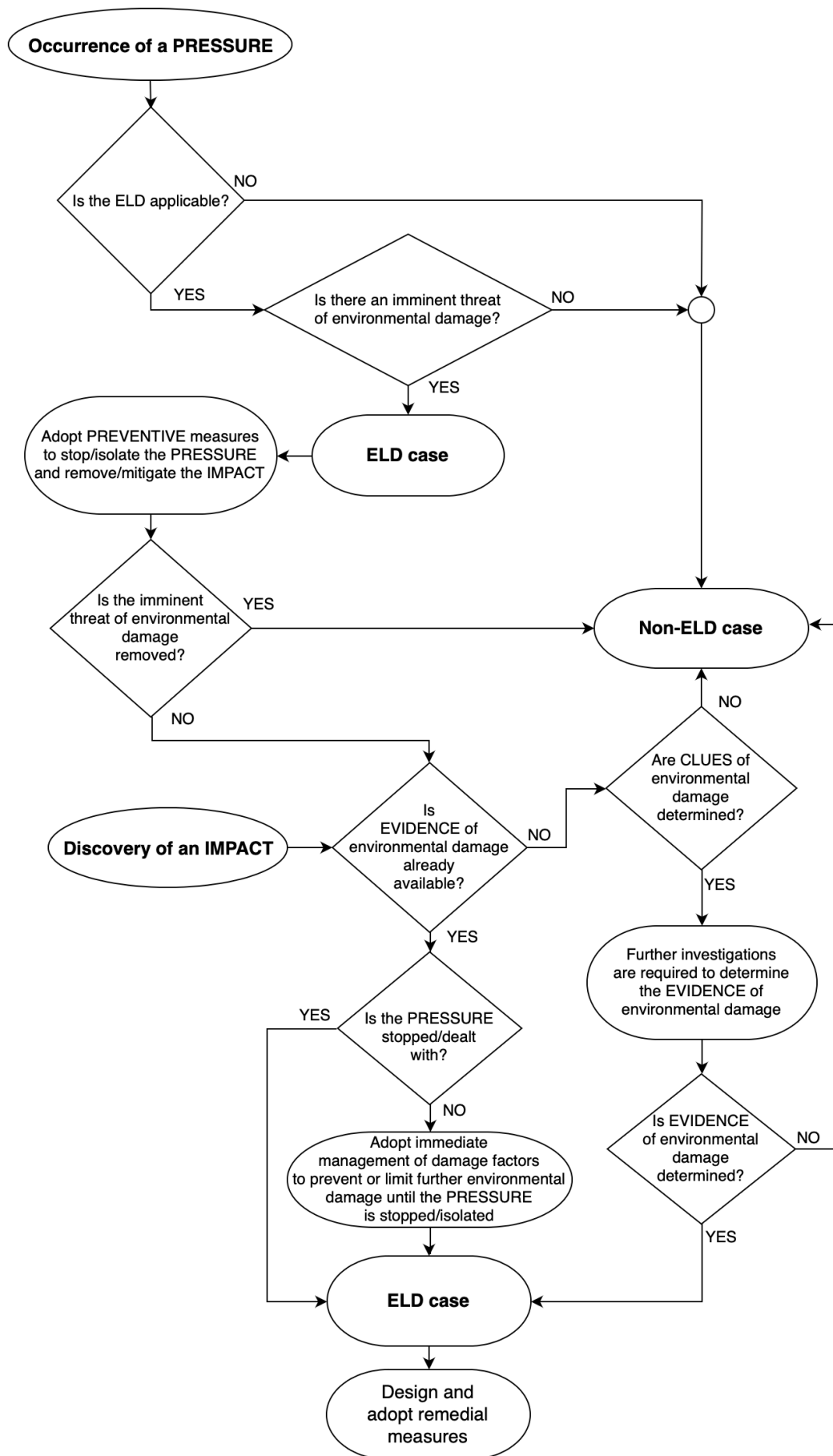


Figure 12 – General decision-making flowchart.

Note that:

- "IMPACT" means: adverse effects on reference concepts of a natural resource under ELD.
- "PRESSURE" means: damaging occurrences and damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT.
- The flowchart can be used either in the case of occurrence of a PRESSURE or in the case of the discovery of an IMPACT.
- There is a duty on the the operator to inform the competent authority, without delay of all relevant aspects of the situation (Article 6(1) of ELD).
- ELD powers of entry and inspection must be used by the competent authority at the outset and competent authority and public bodies time and costs must be recorded for the purposes of cost recovery.
- Data and information on the PRESSURE, DRIVER, IMPACT and STATE must be collected by the operator and/or by the competent authority, as soon as possible to facilitate decisions and assessments of preventive measures, environmental damage and determine remedial measures.

4.6 Decision-making flowchart for the determination of the clues of damage to NHPS

The determination of the clues of damage to NHPS protected by the ELD can be done firstly by considering as STATE the conservation status of the species and/or habitat at the biogeographical / national level, for example on the basis of the Reporting data of the Habitat and Birds Directives^{29 30 31}, using the parameters available for the evaluation of the conservation status³². Secondly, the evaluation should consider the STATE at the local scale (i.e. in the area where the event occurred).

If a Natura 2000 site is involved, the evaluation should consider the standard forms of the European Community for Natura 2000 sites³³ (Special Protection Areas (SPA), Proposed Sites for Community Importance (pSCI), Sites of Community Importance (SCI) and for Special Areas of Conservation (SAC)).

If a Natura 2000 site is not involved, an evaluation should consider the possible deviation from the baseline of the parameters such as the rarity / density of the species, the area covered by the habitat and the resilience (recovery capacity) of species and habitats in the site negatively affected by the damaging occurrence and damage factors.

²⁹ https://cdr.eionet.europa.eu/help/habitats_art17

³⁰ https://cdr.eionet.europa.eu/help/birds_art12

³¹ <https://www.eionet.europa.eu/etcs/etc-bd/activities/reporting>

³² See Annex I of ELD as well as Habitat and Birds Directives.

³³ <https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=GR2520003#2>

Reference should be made to the Practical Tables of IMPACT and STATE for the determination of clues of damage to NHPS. The following fig. 13 represents the decision-making flowchart for the determination of the clues of damage to NHPS protected by ELD:

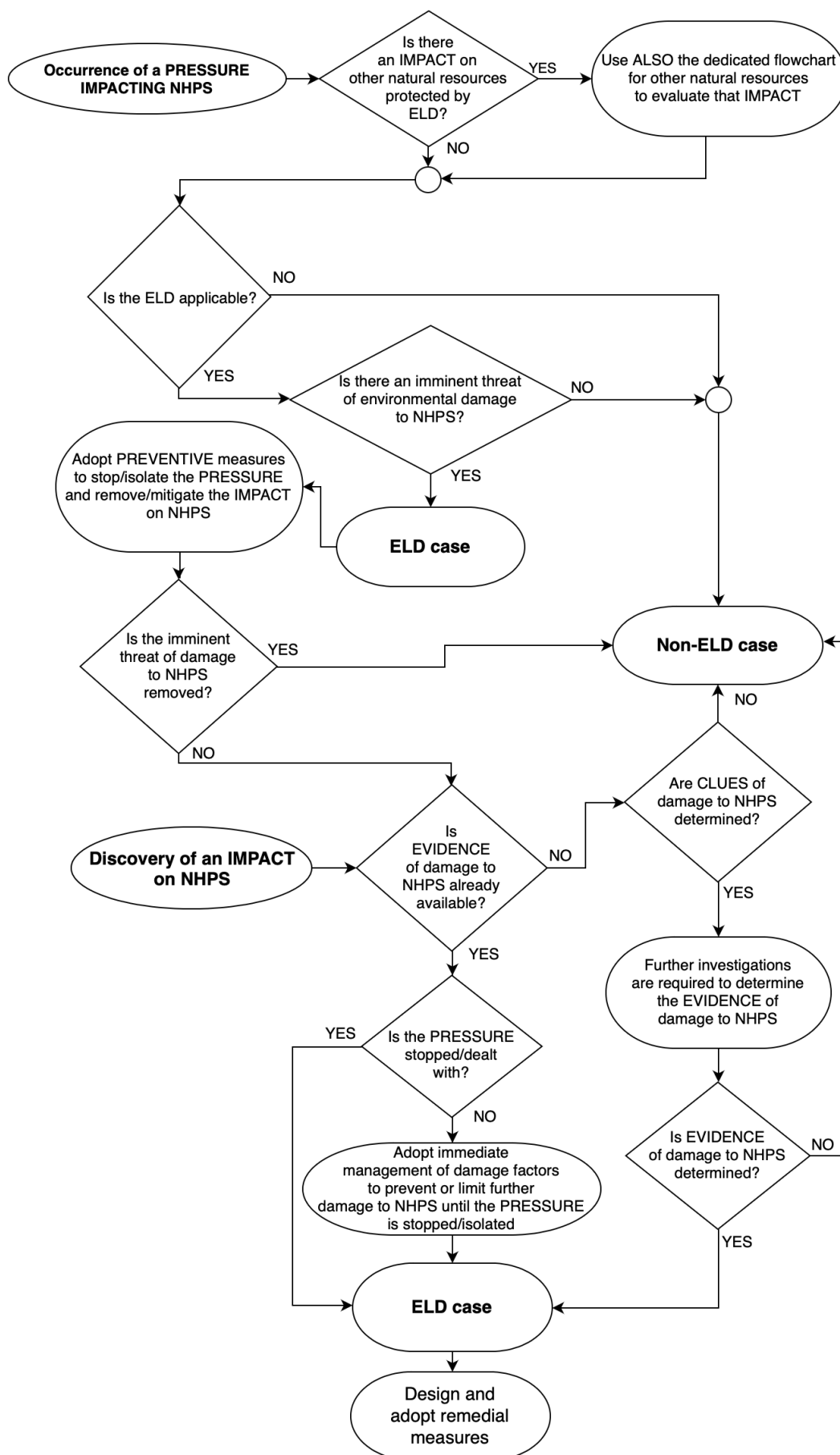


Figure 13 – Decision-making flowchart for the determination of the clues of damage to NHPS.

Note that:

- "IMPACT" means: adverse effects on reference concepts of a natural resource under ELD.
- "PRESSURE" means: damaging occurrences and damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT.

4.7 Decision-making flowchart for the determination of the clues of water damage

The following fig. 14 represents the decision-making flowchart for the determination of the clues of damage to Water:

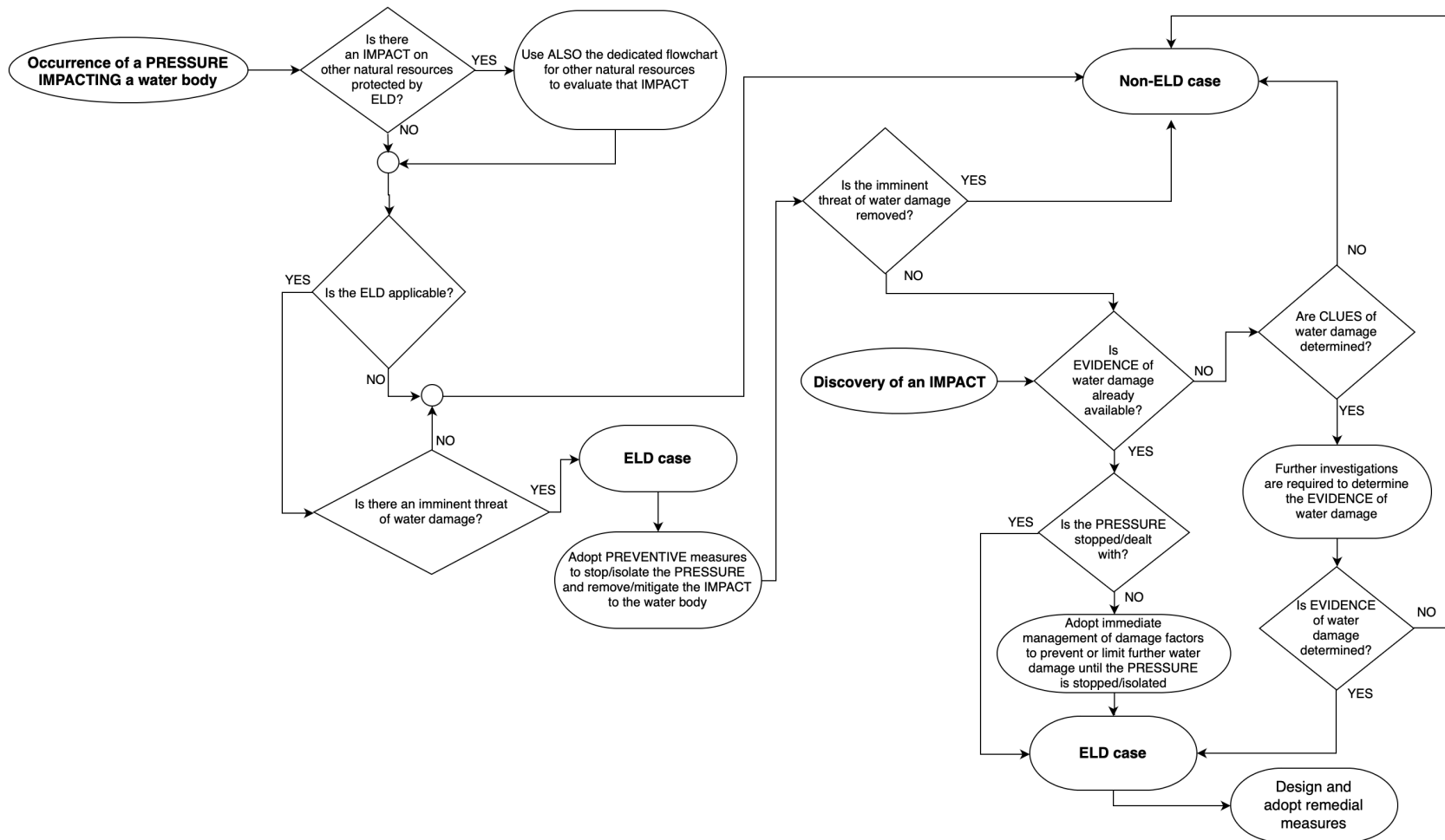


Figure 14 – Decision-making flowchart for the determination of the clues of water damage.

Note that:

- "IMPACT" means: adverse effects on reference concepts of a natural resource under ELD (consider that in some jurisdictions significant risk for human health is considered as reference concept for water damage).
- "PRESSURE" means: damaging occurrences and damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT.
- as "Water body" it is referred to one or more bodies of surface water or/and bodies of groundwater as defined respectively in articles 2(10) and 2(12) of the Water Framework Directive.

4.8 Decision-making flowchart for the determination of the clues of Land damage

The following fig. 15 represents the decision-making flowchart for the determination of the clues of damage to Land:

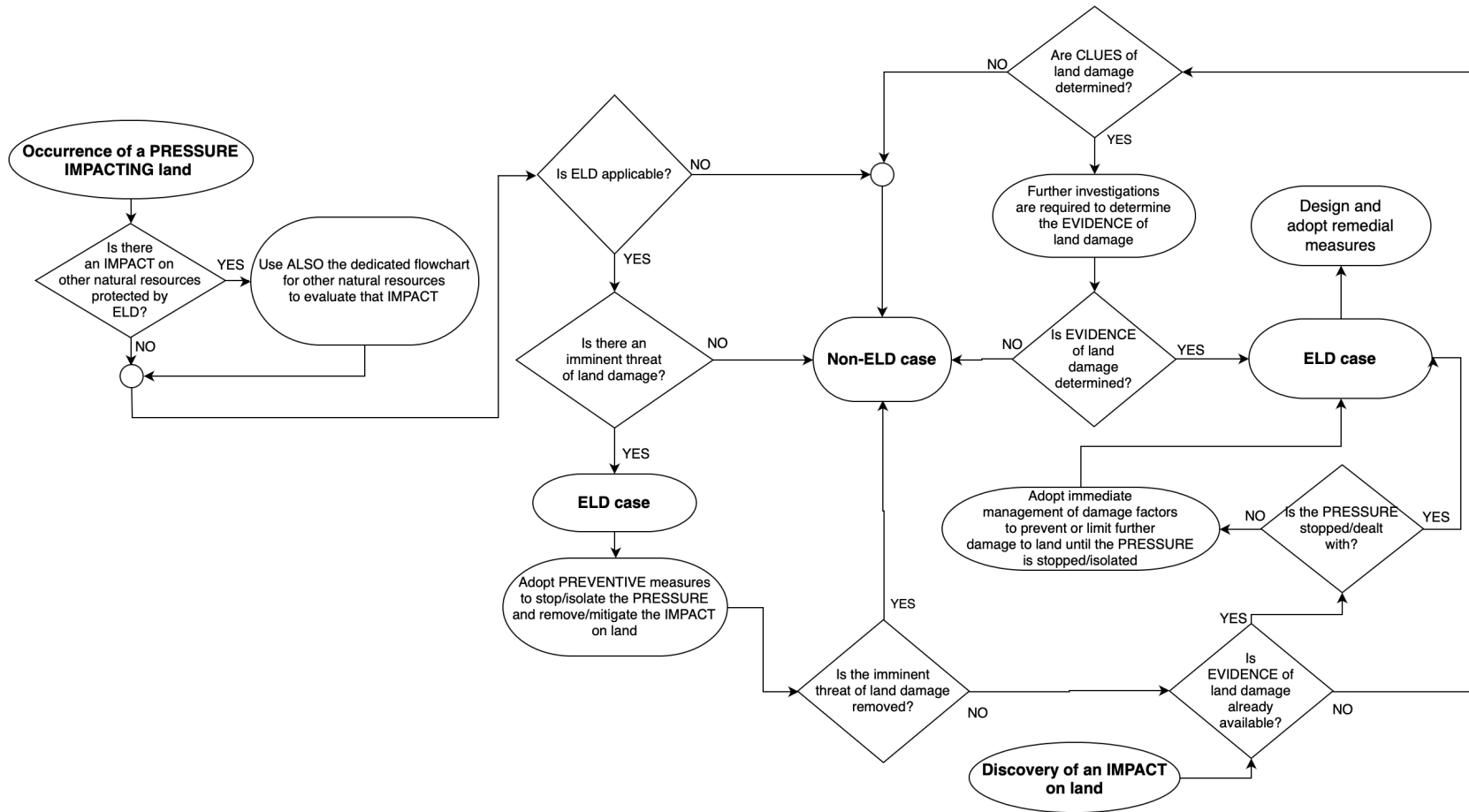


Figure 15 – Decision-making flowchart for the determination of the clues of land damage.

Note that:

- "IMPACT" means: adverse effects on reference concepts of a natural resource under ELD (consider that the reference concept for land damage is 'risks to human health', hence a discovery of an IMPACT means that the land must be potentially contaminated).
- "PRESSURE" means: damaging occurrences and damage factors exposing protected natural resources under ELD to an IMPACT or to a potential IMPACT.
- To evaluate the existence of the imminent threat of damage and to determine the clues of land damage the Source-Pathway-Receptor (SPR) Basic Model may be used. The basic model consists in finding linkage among sourcepathway and human receptors. If the SPR linkage is confirmed, an imminent threat of damage should be considered.
- 'Further investigations' require the adoption of a human health risk assessment.

5 Follow up

The work of this second year of the CAED project has been a preliminary work of the project final goal, which is to develop a practical guide for practitioners on the criteria for the assessment of the environmental damage, focused on the aspects of the ascertainment.

The final version of the practical guide, is expected to contain the definition of criteria for the determination of the clues and the evidence of the environmental damage and imminent threat of damage. The criteria are expected to refer to each natural resource and to the level of significance envisaged by the ELD.

It is envisaged that the follow up of this project year will include the following activities:

- Training and capacity building by sharing practical experience and identifying best practices and lessons learned in the determination of the clues and evidence of environmental damage and imminent threat of damage under ELD.
- Definition of criteria for the assessment of the clues and the evidence of the environmental damage and imminent threat of damage under ELD.
- Development of practical tools for the screening of ELD cases and for the determination of the evidence of environmental damage and imminent threat of damage under ELD.



6 References

Documents are quoted in alphabetical order as: [Author/s, Year, Title, #]

- APA and Ministry of Agriculture, the Sea, the Environment and Territorial Planning, Portugal, 2011, Guide for the Assessment of Imminent Threats and Environmental Damages
- Dutch Government, 2008, Guidelines for Part 17.2 of the Dutch Environmental Management Act (Wm): measures in the event of environmental damage or its imminent threat
- EPA and ASEP (Agency for Spatial and Environmental Planning), Denmark, 2012, ELD Guidelines
- EPA, Ireland, 2011, Environmental Liability Regulations Guidance Document
- EU Commission, Eftec, Stratus Consulting, 2013, Environmental Liability Directive: Training Handbook and Accompanying Slides
- EU Commission, 2021, ELD Guidelines providing a common understanding of the term 'environmental damage' as defined in Article 2 of Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage
- Ministry for the Ecological Transition, Spain, 2019, Guidance Document - Determining the significance of environmental damage in the context of the law 26/2007, of october 23, on environmental responsibility
- Ministry of the Environment, Finland, 2012, Remediation of Significant Environmental Damage - Manual on Procedures
- Scottish Government, 2009, Environmental Liability (Scotland) Regulations, Draft Guidance



Annexes



ANNEX I. Practical tables of IMPACT and STATE for Natural Habitats and Protected Species (NHPS)

IMPACT component (reference concepts, adverse effects, etc.)

(This table should be completed for each protected species or natural habitat affected/ potentially affected)

OBJECTIVE	INDICATORS	DESCRIPTION/THRESHOLDS
Precondition for the use of the tables for NHPS	IMPACT ON “PROTECTED SPECIES AND NATURAL HABITATS”, namely (par. 3, art. 2 of ELD):	
	<p>(a) the species mentioned in Article 4(2) of Directive 79/409/EEC (Birds Directive) or listed in Annex I thereto or listed in Annexes II and IV to Directive 92/43/EEC (Habitat Directive);</p> <p>(b) the habitats of species mentioned in Article 4(2) of Directive 79/409/EEC or listed in Annex I thereto or listed in Annex II to Directive 92/43/EEC, and the natural habitats listed in Annex I to Directive 92/43/EEC and the breeding sites or resting places of the species listed in Annex IV to Directive 92/43/EEC; and</p> <p>(c) where a Member State so determines, any habitat or species, not listed in those Annexes which the Member State designates for equivalent purposes as those laid down in these two Directives;</p>	
Evaluate the relevance, reliability and quality of data / information collected on the adverse effects after the event of potential damage	Type of impacted area	Data/information not available
		Natura 2000 (specify if SPA, SCI, SAC)
		Internationally protected area
		Nationally protected area
		Unprotected area
		Other
	Type of impact	Data/information not available
		Direct (adverse effects on the natural habitat or protected species)



		Indirect (adverse effects on the habitat for protected species or on the species typical for a natural habitat)
	Distance and pathway of the event to the natural habitats, protected species, habitat for species, species typical for a natural habitat	Data/information not available
		Distance to nearest protected species/natural habitat (specify)
		There is a potential for impact or viable pathway between the pressure/driver and the receptor (specify)
		There is not a potential for impact or viable pathway between the pressure/driver and the receptor (specify)
		Not relevant
	Scale of the assessment (multiple assessment scales possible)	Biogeographical/national/European level (Large scale assessment)
		Local/site level (Local scale assessment)
	Adequacy of Quality Assurance and Quality Control principles (considers Data Quality indicators such as: Precision, bias, accuracy, representativeness, comparability, completeness, detectability (which includes sensitivity and specificity))	Adequate (specify why)
		Not adequate (specify why)
		Not relevant
LARGE SCALE ASSESSMENT		
Evaluate the existence of negative impacts on species which may affect maintaining or pursuing a favourable conservation status	Adverse variation of the population of the species	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available



	Adverse variation of other parameters included in the Reporting forms (related to species) on biodiversity of the Habitat Directive	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
Evaluate the existence of negative impacts on bird species which may affect maintaining or pursuing a favourable conservation status	Adverse variation of the population of nesting bird species	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation of the population of wintering, migratory bird species (Specify if in the bird species are in the European/National Red list and if their conservation status is of Vulnerable (VU), Endangered (EN), Critically endangered (CR))	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation of other parameters included in the Reporting forms on biodiversity of the Birds Directive	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
Evaluate the existence of negative impacts on habitats or habitats for the		Yes
		No



species which may affect maintaining or pursuing a favourable conservation status	Adverse variation of the area covered by the natural habitat or habitat for the species (Specify if foraging habitat for species)	Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation of other parameters included in the Reporting forms (related to habitats) on biodiversity of the Habitat Directive	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
LOCAL SCALE ASSESSMENT		
Only Natura 2000 Site		
Evaluate the existence of negative impacts on species/bird species which may affect maintaining or pursuing a favourable conservation status	Adverse variation of conservation classes included in the Natura 2000 site standard form of EC for the habitat for species/bird species (Specify if foraging habitat for species/bird species)	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Downgrading or postponing of the conservation status objectives for the species/bird species	Yes
		No
		Likely
		Unlikely
Not relevant		
Evaluate the existence of negative impacts on habitats or habitats for the	Adverse variation of conservation classes included in the Natura 2000 site standard forms of EC for natural habitats	Yes
		No



species which may affect maintaining or pursuing a favourable conservation status		Likely
		Unlikely
		Not relevant
		Data not available
	Downgrading or postponing of the conservation status objectives for the habitat	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
Inside or outside Natura 2000 Sites		
Evaluate the existence of negative impacts on species/bird species which may affect maintaining or pursuing a favourable conservation status	Adverse variation of the rarity/peculiarity of the species	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation in the resilience (recovery capacity) of species (Specify time expected for recovery to baseline status)	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation of other ecological parameters for the change in condition of the species	Yes
		No
		Likely



Evaluate the existence of negative impacts on habitats or habitats for the species which may affect maintaining or pursuing a favourable conservation status		Unlikely
		Not relevant
		Data not available
	Adverse variation of the estimated area covered by the natural habitat	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation in the resilience (recovery capacity) of the natural habitat (Specify time expected for recovery to baseline status)	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available
	Adverse variation of other ecological parameters for the change in condition of natural habitats and habitat for species (Specify if foraging habitat for species)	Yes
		No
		Likely
		Unlikely
		Not relevant
		Data not available



STATE component (Baseline conditions)

(This table should be completed for each protected species or natural habitat affected/ potentially affected)

OBJECTIVE	INDICATORS	DESCRIPTION/THRESHOLDS
Evaluate the relevance, reliability and quality of data / information collected on the baseline	Scale used for the assessment of the baseline	Bio-Geographical level
		European level
		National level
		Local/site level
	Availability of the conservation status and/or other reference values (specify also whether the data/information is adequate, inadequate, further information needed)	Data not available
		Not relevant
		At Bio-Geographical level
		At European level
		At National level
		At Local/site level
	Availability of monitoring data about the species (specify also whether the data/information is adequate, inadequate, further information needed)	Data not available
		Not relevant
		Size of population
		Trend in recent years
		Natural fluctuation
		Distribution structure
		Recovery capacity
		Level of disappearing risk
	Availability of monitoring data about the habitat and habitat for the species (specify also whether the data/information is adequate, inadequate, further information needed)	Data not available
		Not relevant
		Range (habitat range, foraging range, etc.)
		Covered area



	Adequacy of Quality Assurance and Quality Control principles (considers Data Quality indicators such as: Precision, bias, accuracy, representativeness, comparability, completeness, detectability (which includes sensitivity and specificity))	Structure and functions
		Future prospects
		Adequate (specify why)
		No adequate (specify why)
		Not relevant
Know the pre-existing pressure level on NHPS	Other pre-existing pressures on the natural habitats and protected species	Data not available
		Not relevant
		No other pressures
		Presence of significant anthropogenic pressures (describe the type of pressure, its characteristics and its geographical application)
		Presence of insignificant anthropogenic pressures (describe the type of pressure, its characteristics and its geographical application)
		Natural events (describe the type of pressure, its characteristics and its geographical application)
OBJECTIVE	INDICATORS	DESCRIPTION/THRESHOLDS
Know the baseline of the species	Size of population of the species	Stable
		Increasing
		Decreasing
		Uncertain
		Data not available
		Not relevant
	Trend of population of the species	Stable
		Increasing



		Decreasing
		Uncertain
		Data not available
		Not relevant
	Range of the species	Stable
		Increasing
		Decreasing
		Uncertain
		Data not available
	Consistency of population (relating to the entire distribution range)	Not relevant
		Sparsely populated
		Abundant
		Diffuse
		Data not available
	Population isolation (relating to the entire distribution range)	Not relevant
		(specify it)
		Data not available
	Habitat of the species	Not relevant
		Stable
		Increasing
		Decreasing
		Uncertain
	Future prospects (overall)	Data not available
		Not relevant
		Good
		Poor



		Bad
		Data not available
		Not relevant
	Rarity/Peculiarity of the species	(specify it)
		Data not available
		Not relevant
	Propagation capacity of the species (according to the dynamics specific to the species or population)	(specify it)
		Data not available
		Not relevant
	Vitality of the species	(specify it)
		Data not available
		Not relevant
	Capacity to recover/natural regeneration capacity	In short time (specify the time expected for recovery to baseline status)
		In a medium/long time (specify the time expected for recovery to baseline status)
		Data not available
		Not relevant
	Level of extinction risk for bird species (based on criteria of the International Union for the Conservation of Nature (IUCN))	(specify it)
		Data not available
		Not relevant
	Classification of the bird species based on the level of extinction risk	LC, Least Concern
		NT, Near threatened
		VU, Vulnerable
		EN, Endangered
		CR, Critically endangered



		Specify if the species are included in the National Red List and European Red List
		Data not available
		Not relevant
	Conservation status	Favourable
		Not Favourable
		Partial decay or precarious conservation status
		Data not available
		Not relevant
	Trend of conservation status	Improving
		Deteriorating
		Stable
		Unknown
		Not relevant
Know the baseline of the habitats and habitats of species	Range (habitat range, foraging range, etc.)	Improving
		Deteriorating
		Stable
		Data not available
		Not relevant
	Covered area	Stable
		Increasing
		Decreasing
		Uncertain
		Data not available
		Not relevant
	Structure and functions	Stable



		Increasing
		Decreasing
		Uncertain
		Data not available
		Not relevant
	Future prospects (overall)	Good
		Poor
		Bad
		Data not available
		Not relevant
	Ability to recover/natural regeneration capacity of the habitat (according to the dynamics of the species that characterize it or their populations)	(specify it)
		Data not available
		Not relevant
	Consistency of the habitat	(specify it)
		Data not available
		Not relevant
	Rarity of the habitat	(specify it)
		Data not available
		Not relevant
	Level of disappearing risk (Specify if the habitat or habitat for species is threatened of disappearing)	(specify it)
		Data not available
		Not relevant
	Conservation status	Favourable
		Not Favourable
		Partial decay or precarious conservation status
		Data not available



	Trend of conservation status	Not relevant
		Improving
		Deteriorating
		Stable
		Unknown
		Not relevant
Know the baseline of the habitats and habitats of species in Natura 2000 sites	Representativeness	(specify it)
		Data not available
		Not relevant
	Relative surface	(specify it)
		Data not available
		Not relevant
	Degree of conservation of the structure	(specify it)
		Data not available
		Not relevant
	Degree of conservation of functions	(specify it)
		Data not available
		Not relevant
	Degree of conservation of the habitat elements important for the species	(specify it)
		Data not available
		Not relevant
	Conservation status of the habitat at local scale (specify the Class A, B, or C according to the Natura 2000 Standard Form)	Excellent conservation (class A),
		Good conservation (class B)
		Medium or low conservation (class C)
	Conservation objectives	(specify it)
		Data not available



		Not relevant
	Conservation status of the habitat of species at local scale (specify the Class A, B, or C according to the Natura 2000 Standard Form)	Excellent conservation (class A)
		Good conservation (class B)
		Reduced or limited conservation (class C)
		(specify it)
	Conservation objectives	Data not available
		Not relevant



ANNEX II. Practical tables of IMPACT and STATE for Water

IMPACT component (adverse effects, reference concepts)

OBJECTIVE	INDICATOR	DESCRIPTION
Precondition for the use of the tables for Water	IMPACT ON “Water Bodies” (or areas of water included in the water bodies) delineated by a Member State for the purpose of implementing the Water Framework Directive and the Marine Strategy Framework Directive (for coastal and territorial marine waters)	
ALL WATERS		
Evaluate the relevance, reliability and quality of data / information on the impacts collected after the damaging occurrence	Type of waters in which the adverse effects must be assessed	Inland surface waters
		Transitional waters
		Coastal waters
		Marine waters (territorial)
		Artificial or heavily modified water body
		Groundwater
	Source of post-event data	Data/Information not available
		From the monitoring network used for the classification of the water/groundwater body (WFD)
		From an investigative monitoring (WFD)
		From sampling / monitoring carried out specifically for the damaging occurrence (environmental controls, inspections, sampling in the emergency phase, etc.)



		From other sources (e.g. companies, projects, EIA and IEA obligations, environmental monitoring)
	Relevance of data - Damaging occurrence	Data/Information not available
		They do not refer to substances / parameters linked to the damaging occurrence
		They refer to substances / parameters linked to the damaging occurrence
	Relevance of data - Natural resource	Data/Information not available
		They refer to elements / substances relevant to the definition of the chemical/ecological/ quantitative status of the water/groundwater bodies under WFD (specify whether they refer also to the regulations for drinking and bathing waters: only for jurisdictions where human health is a reference concept for water damage)
		They do not refer to elements / substances envisaged for the definition of the chemical/ecological/quantitative status of the water bodies under WFD
		They refer to elements / substances relevant to the definition of the environmental status of the marine water bodies under MSFD (specify whether they refer also to the regulations for bathing waters: only for jurisdictions where human health is a reference concept for water damage)
		They do not refer to elements / substances envisaged for the definition of the environmental status of the marine water bodies under MSFD
		Data refer to microbiological parameters (only for jurisdictions where human health is a reference concept for water damage)
	Relevance of data - Natural resource service	Data/Information not available
		Not relevant



		They refer to natural resource services provided by WFD water bodies
		They do not refer to natural resource services provided by WFD water bodies
	Time adequacy of the data (time lapse between data acquisition and the damaging occurrence)	Data/Information not available
		Adequate (The acquired data can be temporally associated with the damaging occurrence and the negative adverse effects; Please specify the time interval, the availability of data over time and why data are/should be adequate)
		Not adequate (The acquired data cannot be temporally associated with the damaging occurrence or the negative adverse effects; Please specify the time interval, the availability of data over time and why data are not/shouldn't be adequate)
	Spatial adequacy and representativeness of the data (it must allow the analytical data to be associated with confidence to the damaging occurrence and possibly identify the extent of the impacted area)	Data/Information not available
		Data collected at the source of damage (e.g. downstream to the point of spill/release/discharge, in the mixing zone, in the prevailing vertical/horizontal flow, considering dispersion, etc.)
		Data representative of an area/ volume (data collected at the source of damage + data collected at a considerable distance); (in case of groundwater specify which % of the area/volume of the groundwater body is represented)
		Availability of an "upstream" or background comparison
		Adequate (Specify why)
		Not adequate (Specify why)
	Number of data (possibility of having values averaged over time and space)	Data/Information not available
		Adequate (Specify why; specify the frequency and time intervals)
		Not adequate (Specify why)



	Accuracy and reliability of data including sampling and lab analysis equipment, procedures and methods	Adequate (Specify why: e.g. sampling and analysis compliant with ISO/IEC 17025; in case of groundwater, specify the Level of Confidence of data)
		Not adequate (Specify why)
Evaluate the existence of any negative impacts on the chemical status	Presence of priority/priority hazardous substances (chemical quality elements) found in water/groundwater sampling subsequent to the damaging occurrence (substances selected for the classification of chemical status)	Data/Information not available
		Data and type of impact not relevant
		No match (substances searched but not found)
		Substances considered priority hazardous substances
		Presence of substances considered absent or not detected in the baseline conditions (indicate number of substances and number of sampling points) (temporal baseline)
		Presence of substances that are absent in areas not affected by negative impacts (also identified on the basis of any hydraulic/hydrogeological modelling, upstream-downstream comparison ; indicate number of substances and number of sampling points) (spatial baseline)
		Increase in concentrations compared to baseline data (data collected before the damaging occurrence or through background samples)
		Concentration lower than the limit set for EQS- MAC (in case of groundwater consider possible existing national instantaneous threshold values)
		Concentration higher/considerably higher than the limit set for EQS-MAC (in case of groundwater consider possible existing national instantaneous threshold values)
		Average annual concentration above the limit set for EQS-AA (in case of groundwater also consider national threshold values) for previous substances complying with good chemical status



		Substances with average concentration considerably higher than the average value detected in the baseline conditions previously not complying with good chemical status (to be verified if an adequate number of post-event data is available and if the analytical data of the baseline chemical state of the water/groundwater body are known)
	Presence of priority/priority hazardous substances (chemical quality elements) found in sediment sampling subsequent to the damaging occurrence	Data/Information not available
		Data and type of impact not relevant
		No match (substances searched but not found)
		Presence of substances considered absent or not detected in the baseline conditions (indicate number of substances and number of sampling points)
		Presence of substances that are absent in areas not affected by negative impacts, also identified on the basis of any hydrological modelling)
		Increase in concentrations compared to baseline data (data collected before the damaging occurrence or through background samples)
		Average annual concentration above the limit set for EQS-AA for previous substances complying
		Substances in an average concentration considerably higher than the average value detected in the original conditions (to be verified if an adequate number of post-event data is available and if the analytical data of the baseline chemical state of the water body are known)
		Presence of higher concentration values in the most shallow layers of sediment
		Presence of higher concentration values in the deeper sediment layers
		Data/Information not available



	Presence of priority/priority hazardous substances (chemical quality elements) found in samples taken after the damaging occurrence in the biota	Data and type of impact not relevant
		No match (substances searched but not found)
		Presence of substances not detected in the baseline conditions
		Presence of substances which are absent in populations of biota (e.g. mussels) located in areas of the water body not affected by negative impacts
	Time trend (the trend of the conc. values of the priority substances in the case of multiple samplings over time)	Data/Information not available
		Constant
		Increasing (specify substances and describe the trend)
		Decreasing (specify substances and describe the trend)
	Spatial trend (the trend, with respect to the source, of the concentration values of the priority substances in case of sampling in different points of the water/groundwater body)	Data/Information not available
		Constant
		Increasing (specify substances and describe the trend)
		Decreasing (specify substances and describe the trend)
Evaluate the presence of sources in waters	Presence of substances in separate phase	Data/Information not available
		Not relevant
		Present (specify if DNAPL or LNAPL)
		Absent
SURFACE WATERS (skip this section only in case of groundwater)		
Evaluate the existence of any negative impacts on the ecological status (and ecological potential)	Negative change in index value for the classification of the Biological Quality Elements (ecological status elements proposed in the WFD or national regulation for the evaluation of the ecological status, e.g. macro-invertebrates, macrophytes, microalgae, fish, etc.)	Data/Information not available
		No change
		Index value belonging to a lower class than that assigned to the same index in the baseline conditions



	Negative change in index value for physico-chemical quality (general conditions and specific pollutants)	Data/Information not available
		Not relevant
		No change
		Index value belonging to a lower class than that assigned to the same index in the baseline conditions
		No match (substances searched but not found)
		Presence of specific pollutants considered absent prior to damaging occurrence or not detected in the baseline conditions
		Average concentration above the Limit of Quantification (LOQ) for substances that prior had it below the LOQ
		Average concentration above the EQS for substances that prior had it below the EQS
	Time trend of values of the Biological Quality Elements over time	Value significantly higher than the average value found in the baseline conditions
		Data/Information not available
		Not relevant
		Constant
		Increase
		Decrease
	Spatial trend, with respect to the source, of the values of the Biological Quality Elements	Data/Information not available
		Not relevant
		Constant
		Increase
		Decrease
	Change in index value for the elements of hydromorphological quality	Considerably negative changes compared to the baseline conditions
		Data/Information not available



		No change
		Not relevant
	Other relevant parameters for the hydromorphological aspects (specify the type of data if available)	Index value belonging to a lower class than that assigned to the same index in the last known classification of the water body
		Data/Information not available
		No variation / alteration
		Considerably negative changes compared to the baseline conditions
		No other relevant parameters
COASTAL and MARINE WATERS (skip this section only in case of inland surface waters and groundwater)		
Evaluate the existence of adverse effects on the qualitative descriptors for determining good environmental status under MSFD	Biodiversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions



	All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Permanent alteration of hydrographical conditions does not adversely affect the ecosystem	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Concentrations of contaminants are at levels not giving rise to pollution effects	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
	Properties and quantities of marine litter do not cause harm to the coastal and marine environment	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions



	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment	Provide any data/information available that describes adverse effects on the possible good environmental status of the baseline conditions
Evaluate the existence of adverse effects on the physico-chemical and hydromorphological status	Salinity analysis compared to the average of the area	Data/Information not available
		Data and type of impact not relevant
		Stable
		Lower (indicative of considerable freshwater inputs)
		Superior (indicative of considerable contributions of hypersalted waters)
	Temperature / turbidity / Trophic Index (TRIX)	Data/Information not available
		Data and type of impact not relevant
		No variations
		Worsening of the parameter - or index - monitored with respect to the average values of the water body (if the waters are monitored pursuant WFD, in other case compare with the average of the water bodies present in the same catchment area)
	Morphological alteration of the seabed due to mechanical impact	Data/Information not available
		Data and type of impact not relevant
		No variations
		Worsening - modification of the substrate (shape and / or composition) such as not allowing the restoration of conditions prior to the damaging occurrence, with particular reference to the restoration of site-specific biocenosis
Evaluate the existence of any negative impacts on the extension of coastal priority habitats	Variation in the extension of the grasslands of Posidonia Oceanica due to the changes induced by the presumed environmental damage compared to the baseline condition	Data/Information not available
		Data and type of impact not relevant



		No variations
		Reduction from the extent measured before the damaging occurrence
Evaluate how the status of places has changed	Comparison of video-photographic material between the pre-event situation and the post-event situation	Data/Information not available
		Data and type of impact not relevant
		No considerable changes in the state of the places
		Considerable changes in the state of the places
	Comparison between video-photographic material of the post-event situation and similar sites	Data/Information not available
		Data and type of impact not relevant
		No considerable changes in the state of the places
		Considerable changes in the state of the places
Evaluate anomalous phenomena	Presence of outliers for further physical, chemical and biological parameters (eg Escherichia coli, total suspended solids, etc.)	Data/Information not available
		Data and type of impact not relevant
		No outliers
		Differences found in several samplings carried out over time (indicate parameters and number of samplings)
		Differences found with respect to areas of analytical blank (indicate parameters and number of stations)
	Anomalies	Data/Information not available
		Data and type of impact not relevant
		No anomaly found
Anomalies found (e.g. fish deaths, anomalous colorations of the waters, anomalous odour / taste / colour coming from the abstracted groundwater, etc.)		
GROUNDWATER (skip this section only in case of surface waters)		



Evaluate the presence of underground sources	Presence of substances in separate phase	Data/Information not available
		Data and type of impact not relevant
		Present (specify if DNAPL or LNAPL)
		Absent
Evaluate saline intrusion	Negative change in parameters considered for the assessment of saline intrusion (conductivity, temperature, pH, chlorides, sulphates, etc.)	Data/Information not available
		Data and type of impact not relevant
		Negative change in parameters or contaminants associated with an increased risk of saline intrusion
		Increase saline intrusion or other contaminants associated with saline intrusion
		Absence of abnormal variations
Evaluate the negative adverse effects on the connected surface water bodies and/or terrestrial ecosystems	Variations in the connected surface water bodies/terrestrial ecosystems	Data/Information not available
		Data and type of impact not relevant
		The negative adverse effects on the chemical composition/ the level of groundwater of the groundwater body lead/risk to lead to a considerable deterioration of the ecological or chemical quality of the connected surface water bodies
		The negative adverse effects on the chemical composition/ the level of groundwater of the groundwater body lead/risk to lead to a failure in achieving the environmental objectives referred to art. 4 of the WFD of the connected surface water bodies
		The negative adverse effects on the chemical composition/ the level of groundwater of the groundwater body lead/risk to lead to a considerable damage to groundwater dependent terrestrial ecosystems



		No variation/relevant variation in the connected surface water bodies/ terrestrial ecosystems is expected/detected
Evaluate the existence of negative impacts on the quantitative status	Variation of parameter values (including groundwater level) that cause or risks leading to the reduction of the available resources of the groundwater body or to the deterioration of groundwater chemical status	Data/Information not available
		Data and type of impact not relevant
		Yes (specify the relevant parameters and their variation, the associated risk of groundwater resources reduction, the variation of the quantitative status, the variation of groundwater chemical status, etc.)
		No variation
	Variations in the groundwater flow direction that cause the phenomenon of the intrusion of salt water or other contaminants or indicate a sustained and clearly identified anthropogenically induced trend in flow direction likely to result in such intrusions	Data/Information not available
		Data and type of impact not relevant
		Yes (specify the flow variation and the consequences)
		No variation
Evaluate the existence of negative impacts on the quality of drinking water or on water intended for human use (only for jurisdictions where human health is a reference concept for water damage)	Variation of concentration of substances or parameters referred to groundwater chemical status and to quality of drinking water or water intended for human use	Data/Information not available
		Data and type of impact not relevant
		Exceedance of concentration limits for drinking or human use (referred to substances or parameters considered for groundwater chemical status)
		Variation of concentration of substances or parameters associated with an increased/unacceptable risk for human health
		No variation



STATE component (Baseline conditions)

OBJECTIVE	INDICATOR	DESCRIPTION
ALL WATERS		
Know the classification of the water/groundwater body and the state of the individual elements / parameters that contribute to the definition of the classification under directive 2000/60 in the pre-event situation	Type of waters in which the baseline conditions must be assessed	Surface inland waters (specify e.g. lake, reservoir, stream, river or canal, or part of)
		Transitional waters
		Coastal waters
		Marine waters (territorial)
		Artificial or heavily modified water body
		Groundwater
	Type of classification according to Directive 2000/60 / EC of the water/groundwater body of interest before the damaging occurrence	By monitoring under WFD
		By water/groundwater body grouping
		Other (specify)
		Classified under MSFD (Marine Strategy Framework Directive)
	Classification of the chemical status of the water/groundwater body before the damaging occurrence	Not classified under WFD
		Good (indicate any discrepancies or problems; indicate both the local and the overall status of the water/groundwater body; specify whether it is at risk of maintaining the good status)
		Poor (indicate any discrepancies or problems; indicate both the local and the overall status of the water/groundwater body)
	Consistency of the priority substances selected for the classification of chemical status with the type of damaging occurrence	Not relevant (e.g. MSFD waters)
		No substances related to the damaging occurrence have been monitored by the network under WFD (specify the last monitoring, the annual frequency)



		Substances related to the damaging occurrence have been monitored by the network under WFD (specify the most recent monitoring and the frequency and time intervals of monitoring)
		Not relevant (e.g. MSFD waters)
	Classification of the ecological status/potential of the water body before the damaging occurrence	High/Maximum (indicate any discrepancies or criticalities; indicate both the local and the overall status of the water/groundwater body)
		Good (indicate any discrepancies or criticalities; indicate both the local and the overall status of the water/groundwater body)
		Moderate (indicate any discrepancies or criticalities; indicate both the local and the overall status of the water/groundwater body)
		Poor (indicate any discrepancies or criticalities; indicate both the local and the overall status of the water/groundwater body)
		Bad (indicate any discrepancies or criticalities; indicate both the local and the overall status of the water/groundwater body)
	Consistency of the Biological Quality Elements (ecological status elements proposed in the WFD or national regulation for the evaluation of the ecological status, e.g. macro-invertebrates, macrophytes, microalgae, fish, etc.) monitored for the classification of ecological status with the type of damaging occurrence	The monitored Biological Quality Elements are not consistent with the damaging occurrence and the damage factors
		The monitored Biological Quality Elements are consistent with the damaging occurrence and the damage factors



	Status of the individual elements / parameters that contribute to the ecological status	Indicate element / parameter and its status
	Natural Resource Services provided by the waters concerned	Describe the services
Evaluate the relevance, reliability and quality of data / information of the baseline	Source of baseline data (concentration of substances and/or values of parameters useful to define the chemical/ chemical-physical/ecological/hydro-morphological/quantitative status and/or biological components)	Data not available
		Data from monitoring pursuant to WFD to the reference site
		Data from grouping of water bodies for the purpose of WFD classification
		Disaggregated data of the monitoring carried out pursuant to WFD (EIONET-SOE data)
		Monitoring and sampling of baseline data performed specifically for the damaging occurrence (eg investigation monitoring of baseline conditions to compare to adverse effects)
		From other sources (e.g. environmental controls, authorizations, EIA, IEA, derivation / withdrawal concessions, monitoring for drinking purposes)
	Type of baseline data (temporal)	Baseline based on temporal background data collected by monitoring pursuant to WFD
		Baseline based on temporal background data collected before the damaging occurrence (eg by ante-operam monitoring)
		Baseline based on temporal background data collected after the damaging occurrence with dedicated monitoring
	Type of baseline data (spatial)	Baseline based on spatial background data (collected before or after the damaging occurrence) in areas not affected by any



		adverse effects identified on the basis of hydraulic modelling
		Baseline derived by analogy from water/groundwater bodies with similar characteristics (e.g. in the case of water/groundwater bodies grouping)
	Number of data (possibility of having values averaged over time and space)	Data/Information not available
		Adequate (specify the most recent data and the frequency and time intervals of monitoring)
		Not adequate (Specify why)
	Accuracy and reliability of data including sampling and lab analysis equipment, procedures and methods (for data referable to sources other than institutional ones)	Adequate (Specify why: e.g. sampling and analysis compliant with ISO/IEC 17025; in case of groundwater, specify the Level of Confidence of data)
		Not adequate (specify why)
Evaluate the baseline data deriving from monitoring carried out specifically for the damaging occurrence and damage factors	Presence and compliance of priority /priority hazardous substances (chemical quality elements) linked to the damaging occurrence	Data/information not available
		Data not relevant for the type of baseline identified
		Presence but no exceedances (indicate substances and baseline/background values, matrices, number of samples, monitoring time)
		Presence and exceedances (indicate substances and baseline/background values, matrices and number of exceedances)
	Presence of other contaminants	Data/information not available
		Data not relevant for the type of baseline identified
		Other contaminants not detected



		Presence of contaminants (indicate contaminants and baseline values, matrices, number of samples, monitoring time)
		Data/information not available
		Data not relevant for the type of baseline identified
		No critical issues with respect to the characteristics of the area (indicate the monitored parameters)
	Pre-existing criticalities of Biological Quality Elements (ecological status elements proposed in the WFD or national regulation for the evaluation of the ecological status, e.g. macro-invertebrates, macrophytes, microalgae, fish, etc.)	Presence of criticalities with respect to the characteristics of the area (indicate the monitored parameters and their values; eg for groundwater the presence of Saline intrusion/saline wedge)
Know the pre-existing pressure level in the water body	Other pre-existing pressures on the water bodies	Data not available
		Not relevant
		No other pressures
		Presence of considerable anthropogenic pressures (describe the type of pressure and characteristics)
		Presence of non-considerable anthropogenic pressures (describe the type of pressure and characteristics)
		Natural events (describe the type of pressure and characteristics)
Know the vulnerability of the water body	Protected areas pursuant to WFD and other vulnerabilities	Data/information not available
		Data not relevant for the type of baseline identified
		No protected areas
		Presence of protected area for bathing waters
		Presence of sensitive areas and / or areas vulnerable to nutrients of agricultural origin (e.g. nitrates) and plant protection products



		Presence of protected area for fisheries or shellfisheries
		Presence of Natura 2000 site or other nationally/internationally protected areas in the water body
		Water body included in a Natura 2000 site or other nationally/internationally protected area
		Affected by contaminated areas, identified as requiring remediation
		Presence of areas used or intended for drinking water use
COASTAL and MARINE WATERS (skip this section in case of inland surface waters and groundwater)		
Know the baseline of qualitative descriptors for determining good environmental status under MSFD	Biodiversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions	Provide any data/information available that describes the baseline
	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems	Provide any data/information available that describes the baseline
	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock	Provide any data/information available that describes the baseline
	All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity	Provide any data/information available that describes the baseline
	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters	Provide any data/information available that describes the baseline



	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected	Provide any data/information available that describes the baseline
	Permanent alteration of hydrographical conditions does not adversely affect the ecosystem	Provide any data/information available that describes the baseline
	Concentrations of contaminants are at levels not giving rise to pollution effects	Provide any data/information available that describes the baseline
	Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards	Provide any data/information available that describes the baseline
	Properties and quantities of marine litter do not cause harm to the coastal and marine environment	Provide any data/information available that describes the baseline
	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment	Provide any data/information available that describes the baseline
Know the degree of dispersion of the water body	Geomorphological descriptors of the water body (the geomorphology of the water body affects its dispersion capacity)	Mountainous reliefs
		Terraces
		Coastal plain
		River plain
		Flood plain
		Plain of dunes
		Lagoon
	Stability of the water column	High
		Average
		Low
Know the pre-existing pressure level in the coastal and marine water body	Urbanized surface of the water body (ref. Analysis of pressures on the water body)	Sparsely characterised by urbanisation
		Strongly characterised by urbanisation
	River's mouth in the water body	Absent
		Present (indicate number)



	Presence of ports (ref. Analysis of pressures on the water body)	Absent
		Present
	Ratio between the number of discharges for IPPC-IED and non-IPPC-IED industries in the water body and in the basin relating to the water body and the linear kilometers/miles of coastal stretch relating to the same water body	Data/information not available
		Data not relevant for the type of baseline identified
		<0.9 / km/miles
		≥ 0.9 / km/miles
	Presence of relevant and historically contaminated sediments in the water body	Presence of relevant and historical contaminated sediments in the water body
		Absence of relevant and historical contaminated sediments in the water body
GROUNDWATER (skip this section in case of surface waters)		
Evaluate the baseline data of the quantitative status of the groundwater body	Groundwater level / flow	Data/information not available
		Known (specify)
	Hydrogeological conditions	Data/information not available
		Known (specify)
	Sources and charging trends	Data/information not available
		Known (specify)
	Size of the drainage catchment and of the local trend and regime of the flow of groundwater within the drainage basin	Data/information not available
		Known (specify)
	Impact of abstractions	Data/information not available
		Known (specify)
	Water balance	Data/information not available
		Known (specify)
	Hydrogeological formation	Data/information not available



Know the characteristics of the groundwater body, as well as those that can favour, disadvantage, or mitigate the expected impacts		Water table (specify all relevant characteristics)
		Artesian water table (specify all relevant characteristics)
		Multilayer (specify all relevant characteristics)
	Type of aquifer flow in the negatively impacted area / where the damage factors are present	Data/information not available
		Data not relevant for the type of baseline identified
		Predominantly intergranular flow (deep)
		Predominantly intergranular flow (shallow)
		Combined intergranular/fracture flow
		Considerable surface flow/spring
		Predominantly fracture flow
		Flow exclusively for karst
	Hydraulic conductivity	Data/information not available
		Data not relevant for the type of baseline identified
		High-moderate hydraulic conductivity (specify the value)
		Low hydraulic conductivity (specify the value)
	Transmissivity of the aquifer in the negatively impacted area / where the damage factors are present	Data/information not available
		Data not relevant for the type of baseline identified
		High-moderate transmissivity (specify the value)
		Low transmissivity (specify the value)
	Hydraulic gradients	Data/information not available
		Data not relevant for the type of baseline identified
		High-moderate hydraulic gradients (specify the value)



		Low hydraulic gradients (specify the value)
	Lithology and hydrogeological structure	Data/information not available
		Data not relevant for the type of baseline identified
		Groundwater recharging area (specify)
	Productivity	Data/information not available
		Data not relevant for the type of baseline identified
		Known (specify)
	Facies hydrochemistry	Data/information not available
		Data not relevant for the type of baseline identified
		It is known and excludes that the impact detected is of natural origin
		It is known and does not excludes that the impact detected is of natural origin
		Sulphate-calcium facies
		Chloride-alkaline facies
		Bicarbonate-alkaline facies
		Bicarbonate-calcium facies
		Facies bicarbonate-calcium-magnesium
		Waters devoid of geochemical dominance
	Intrinsic vulnerability	Data/information not available
		Data not relevant for the type of baseline identified
		Very high / high vulnerability to substances / parameters related to the damaging occurrence
		Average vulnerability to substances / parameters of interest related to the damaging occurrence



		Low GWB depth (m from ground level) in the negatively impacted area / where the damage factors are present
		Thickness of overlying deposits, specify
		Medium / high GWB depth (m from ground level) in the negatively impacted area / where the damage factors are present
		Medium / low overlying land permeability in the negatively impacted area / where the damage factors are present
		High permeability of overlying land in the negatively impacted area / where the damage factors are present
		Medium / low aquifer permeability in the negatively impacted area / where the damage factors are present
		High aquifer permeability in the negatively impacted area / where the damage factors are present
		Presence of elements of vulnerability (presence of preferential routes)
		Limited extent / volume of the groundwater body
		Slow recharge of the groundwater body waters
	Volumetric / areal extension of the groundwater body	Data/information not available
		Data not relevant for the type of baseline identified
		Extended (km ² - km ³)
		Medium (km ² - km ³)
		Small (km ² - km ³)



	Connections with surface water bodies and their chemical and ecological status before the damaging occurrence	Data/information not available
		Data not relevant for the type of baseline identified
		Chemical status (good, not good)
		Ecological status (high, good, moderate, poor, bad, unknown)
	Terrestrial ecosystems directly dependent on the groundwater body and their conservation status before the damaging occurrence	Data/information not available
		Data not relevant for the type of baseline identified
		Favourable / unfavourable / bad
Know the baseline qualitative characteristics of the GWB intended for human consumption/use	Groundwater body used or foreseen for the production of drinking water/water for human use	Data/information not available
		Data not relevant for the type of baseline identified
		Yes (specify characteristics)
	Substances or parameters of water used or foreseen for drinking purposes or human use are monitored	Data/information not available
		Data not relevant for the type of baseline identified
		Substances useful to define the baseline for the negatively impacted area are known / monitored by points of the drinking water quality network

ANNEX III. Practical tables of IMPACT and STATE for Land

IMPACT component (adverse effects, reference concepts)

OBJECTIVE	INDICATORS	DESCRIPTION / THRESHOLDS
Precondition for the use of the tables for Land	IMPACT on “Land” that potentially “contaminate” it by the introduction of substances, preparations, organisms or micro-organisms.	
Evaluate the existence (actual or theoretical) of a pathway between the source of potential damage and the human receptors	Horizon of adversely affected land	Topsoil (specify depth)
		Subsoil (specify depth)
		Unsaturated land (specify depth)
		Saturated land (specify depth)
	Permeability land horizons	Not known
		High (specify it)
		Medium (specify it)
		Low (specify it)
	Possibility of migration of contaminants	Not known
		Yes (specify how)
		No (specify why)
	Possibility of contact	Direct (specify, eg. Ingestion/inhalation of land in situ or windblown as dust, skin contact, inhalation of vapours)
		Indirect contact (specify, eg. consumption of vegetables, consumption other contaminated foods (fruit, dairy, meat, fish), ingestion by drinking water or food preparation)
		None

	Land contamination migration/risk of migration to groundwater intended for human consumption	Data/information not available
		Yes (specify it)
		No
	Land contamination transferred to agri-food products intended for human consumption	Data/information not available
		Yes (specify it)
		No
	Presence of human activities/settlements on and around the contaminated land	Data not available
		Yes (specify the type of human activities/settlements (residential buildings, schools, etc.), identify the critical human receptor and their distance from the contaminated land)
		No
	Flow of gases / aeriforms in the ground in concentrations / flows capable to activate the vapor inhalation path	Data not available
		Yes (specify it)
		No
	Containment measures to interrupt the pathway between the source of potential damage and the human receptors	Yes (specify it)
		No
		Unknow
Evaluate the existence of a Source-Pathway-Receptor linkage	Presence of a Source-Pathway-Receptor (SPR) model	Confirmed Source-Pathway-Receptor (SPR) linkage
		Not confirmed Source-Pathway-Receptor (SPR) linkage
Evaluate the existence of harm to human health	Presence in the land of substances with chemical or physical characteristics capable to	Yes (specify it)
		No

(independent of the number of people) and the relevance, reliability and quality of data / information on the impacts	produce risks for human health in relation to the exposure scenario of the site	Unknown
	Accuracy and reliability of data including sampling and lab analysis equipment, procedures and methods	Adequate (Specify why: e.g. sampling and analysis compliant with ISO/IEC 17025)
		Not adequate (Specify why)
	Sensitivity of human receptors based on types of receptors (resident (adult, child), worker, occasional user of land, etc.) and their behaviour pattern	High (specify types of receptors and their behaviour pattern)
		Medium (specify types of receptors and their behaviour pattern)
		Low (specify types of receptors and their behaviour pattern)
		Unknown
	Likely total intake	High (specify it)
		Medium (specify it)
		Low (specify it)
		Unknown
	Possibility of aggregated exposure and aggregated risk	Possible (specify it)
		Not possible
		Unknown
	Presence of a risk analysis	There is no risk analysis
		An existing risk analysis confirms substances or preparations introduced into the ground or on the ground could result in a significant risk of adverse effects on human health
		An existing risk analysis confirms substances or preparations introduced into the ground or on the ground are unlikely to result in a significant risk of adverse effects on human health



	Actual presence or high probability of considerable harm of human health effects caused by the contaminated land	Death, disease, serious injury, genetic mutation, as well as unhealthy condition of the body or part of it and may include cancer, liver dysfunction or extensive skin ailments. Mental dysfunction is included only where it is attributable to the effects of a pollutant on the body of the person concerned.
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STATE component (Baseline conditions)

OBJECTIVE	INDICATORS	DESCRIPTION / THRESHOLDS
Know the baseline of land use, land type and substances/parameters	Source of baseline data	Data not available
		Geological, geochemical, hydrogeological mapping and databases
		From other sources (e.g. remediation verification sampling, company data from authorisation requirements such as EIA, IEA)
		From background samples collected after the damaging occurrence (e.g. geognostic/soil gas investigations)
	Type of classification or use or envisaged use of land (at the time of the damaging occurrence)	Industrial
		Commercial
		Residential
		Recreational
		Agricultural
		Other
		Not classified
	Type of land	Type and description (specify it; e.g. grassland, compacted/fractured or karstic rock, gravel, sand, clay, silt, pebble, etc.)
		Fill or made ground (specify which)
		Reclaimed land
		Unknown
		Data not available
		Known (specify)

	Any background values of the substances involved in the damaging occurrence (assessed or associated for the negatively impacted area)	Not relevant
Evaluate whether known baseline data are useful to demonstrate adverse effects on land	Original concentrations of substances and / or parameter values useful to define the baseline with respect to adverse effects	Data/information not available
		Substances / parameters useful to define the baseline in the area of land adversely affected by the damage factors are known
		Substances / parameters useful to define the baseline are or can be derived by analogy from land with similar characteristics
		No substances / parameters useful to define the baseline in the area of land adversely affected by the damage factors are known or can be derived
Know the pre-existing pressure level on land	Other pre-existing pressures on land	Data not available
		Not relevant
		No other pressures
		Presence of considerable anthropogenic pressures (describe the type of pressure and characteristics)
		Presence of non-considerable anthropogenic pressures (describe the type of pressure and characteristics)
		Natural events (describe the type of pressure and characteristics)

ANNEX IV. Practical tables of PRESSURE for all Natural Resources

PRESSURE component (Source of potential damage, damaging occurrence, damage factors)

OBJECTIVE	INDICATOR	DESCRIPTION
Precondition for the use of the tables for PRESSURE	PRESSURE which complies with the temporal application of ELD (art. 17)	
Describe the general characteristics and evaluate relevance, reliability and quality of data/information on the damaging occurrence and/or damage factors	Type of damaging occurrence <i>E.g. forest cuts, wood/plant fires, collection or removal of fauna/flora, water/groundwater withdrawals, civil works, extraction of quarry material, beach nourishment, discharges/spillages into surface waters/groundwater/land, abandoned/buried hazardous waste, unregulated/uncontrolled landfill, creation of road structures and setting up of renewable energy production plants, etc.</i>	Data/information not available
		Non-compliance with obligations/emission limits, illegal activity (specify it)
		Accident/Incident (specify it)
		Other (specify it)
	Timeline of the damaging occurrence	Data/information not available
		Ceased
		On-going – continuous
		On-going – intermittent
	Natural resource impacted by the damaging occurrence	Data/information not available
		Data not relevant for the type of pressure identified
		Air (specify it)
		Water (specify it)
		On, in, under land (specify it)
		Protected habitats or species
		Other (specify it)

	Location of the damaging occurrence	Data/information not available
		(Specify geographical coordinates and any useful information to demonstrate a connection with the site or route of the occupational activity: e.g. onshore/offshore, upstream, upwind, adjacent with, overlying, etc.)
	Spatial extent of the damaging occurrence and damage factors	Data/information not available
		Localised/Point source (specify it)
		Widespread/Diffuse (specify it)
	Type of adverse effect to the natural resource	Data/information not available
		Direct (specify it)
		Indirect (specify it)
	Accuracy and reliability of data including sampling and analysis, procedures and quality assurance	Data/information not available
		Adequate (Specify why: e.g. sampling and analysis of substances compliant with ISO/IEC 17025, sampling and analysis of hazardous wastes pursuing national/international standards, etc.)
		Not adequate (specify why)
Evaluate the potential harmfulness of the damaging occurrence and/or damage factors	Damaging occurrence and damage factors expected to have adverse effects on reference concepts of natural resources	Data/information not available
		Yes (specify why)
		No (specify why)
		Damaging occurrence and damage factors expected to have adverse effects on water bodies used or foreseen to be used for drinking purposes or human use (only relevant in jurisdictions in which the risk for human health is a reference concept for water damage)
		Data/information not available

	Type of actions that cause adverse effects (e.g. for bird species in Special Protection Areas (SPAs), with the exceptions of authorised hunting and specific purposes: killing or deliberately capturing of bird species, deliberately destroying or damaging nests and eggs and removing nests, collecting the eggs in the natural environment and keeping them even empty, deliberately disturbing bird species in particular during the breeding and dependence period when this has considerable consequences in view of the objectives of the Birds Directive, keeping birds of the species whose hunting and trapping are prohibited.)	Direct/Indirect introduction of substances, preparations, organisms or micro-organisms (specify it)
		Withdrawal of substances, preparations, organisms or micro-organisms (specify it)
		Destruction/reduction of chemicals/inorganic materials/organic materials/nutrients/organisms/microorganisms (specify why; in case of damage to natural habitats and protected species, consider also injury of organisms)
		Chemical/Physical/biological modifications of the natural resource (specify why)
	Type of expected adverse effects	Data/information not available
		Chemical
		Physical
		Biological
	Origin of chemicals/inorganic materials/organic materials/nutrients/organisms/microorganisms	Data/information not available
		Data/information not relevant to the adverse effects identified
		Synthetic origin
		Present in nature/Natural origin
		Combination of synthetic and natural origin
	Physical state	Data/information not available
		Solid
		Liquid
		Gas
	Intrinsic hazard of substances and mixtures / microorganisms introduced	Data/information not available
		Data/information not relevant to the adverse effects identified

		Substances hazardous for the impacted/potentially impacted receptors (natural resources, human beings) according to the classification by ECHA (based on REACH and CLP Directives)
		Waste given hazard classification by EER or by an institutional/public body
		Substances classified as hazardous for the environment (consider only natural resources protected by ELD)
		Substances/parameters considered for land contamination that have international/national intervention values (IV) and/or threshold values potential contamination (TV) (specify it)
		Substances classified as toxic for the aquatic organisms
		Substances classified as hazardous and/or toxic for human health (specify the means of taking)
		Substances classified as hazardous and/or toxic biota
		Persistent and / or bioaccumulative substances (eg POP, vPvB, PBT)
		Carcinogenic / mutagenic / teratogenic substances
		Pathogenic microorganisms
		Flammable, explosive (specify it)
		Safety data sheets available
		Safety data sheets not available
		GMOs (<i>note: clues of environmental damage related to GMOs are not included in these tables and in the Practical Guide</i>)
		Other (e.g. unregulated substances)
	Hazardousness due to the behaviour of substances / microorganisms in the environment	Data/information not available
		Data/information not relevant to the adverse effects identified
		Soluble/miscible in water/leachable (specify it)

		Insoluble/not miscible in water (in case of groundwater, specify if DNAPL or LNAPL; in case of land, specify if substance in discrete or dissolved phase)
		Volatile Substance
		Substance that degrades/transforms in the natural resource (specify the breakdown properties)
	Magnitude (volume/mass/flow rate) of the damaging occurrence and damage factors	Data/information not available
		Data/information not relevant to the adverse effects identified
		Volume/mass/flow rate measured/calculated/estimated (specify the value and the method)
		Considerable (specify why in relation to the negatively affected natural resource)
		Not considerable (specify why in relation to the negatively affected natural resource)
	Temporal relevance (duration and frequency) of the damaging occurrence and damage factors	Data/information not available
		Data/information not relevant to the adverse effects identified
		Unique event (specify hours/days/months/years)
		Continuous event (specify hours/days/months/years)
		Sporadic event (specify hours/days/months/years; specify frequency)
		Considerable (specify why in relation to the adversely affected natural resource)
		Not considerable (specify why in relation to the adversely affected natural resource)
Evaluate the efficiency of	Timing of implementation containment/mitigation measures	Data/information not available
		Data/information not relevant to the adverse effects identified

containment/mitigation measures		Adequate to stop/contain the damage factors and/or mitigate impacts
		Not adequate (specify why)
	Effectiveness of implemented containment/mitigation measures	Data/information not available
		Data/information not relevant to the adverse effects identified
		Effective to stop/contain the damage factors and/or mitigate impacts
		Not effective (specify why)
LAND (this section refers only to Land)		
Evaluate the relevance, reliability and quality of data / information collected on land after the damaging occurrence	Origin of post-event data	Data/information not available
		Geognostic/soil gas investigations, Soilscape mapping
		From environmental inspections and judicial police checks, sampling carried out during or after the damaging occurrence, etc.
	Relevance of the data	Data information/not available
		Data include substances linked to the damaging occurrence
		Data does not include substances linked to the damaging occurrence
		Data refer to parameters / substances relavant to the definition of the land contamination
		Data do not refer to parameters / substances relevant to the definition of the land contamination
		Data refer to Genetically Modified Organisms or/and Genetically Modified Micro-Organisms (impacts on land by the GMOs, GMMOs is not included in this Practical Guide)
	Time adequacy of the acquired data (time elapsed between the acquisition of the data and the damagn g occurrence)	Data information/not available
		The acquired data can be temporally associated with the damaging occurrence

		The acquired data are temporally adequate to identify a negative impact (indicate, if possible, details on the availability of data over time)
		Not adequate
	Spatial representativeness of the data (the source and to establish the extent of the impact)	Data information/not available
		Data collected at the source of damage
		Data representative of an area (data collected at the source of damage + data collected at distance)
		Background data (temporal and/or spatial) to allow comparison
		Adequate
		Not adequate
	Number of data (possibility of having maximum or 95th centile values over time and space)	Data information/not available
		Adequate
		Not adequate
	Location of sampling points	Data information/not available
		Inside installation boundaries (specify it)
		Outside installation boundaries (specify it)
		Other locations (specify it)
		Points useful for identifying the extent of the area of negative impact
		Points not useful for identifying the extent of the area of negative impact
		Points useful for identifying the depth of the area of negative impact
		Points not useful for identifying the depth of the area of negative impact
		Points not useful for identifying a negative impact

	Size of the negatively impacted area	Data information/not available
		Large (m ² , km ² , km ³)
		Medium (m ² , km ² , km ³)
		Small (m ² , km ² , km ³)
	Adequacy of the sampling plan	Data information/not available
		Adequate (the sampling plan is sufficient to test the pollutant linkages in the model including scoping the source area)
		Not adequate (the sampling plan is not sufficient to test the pollutant linkages in the model including scoping the source area)
Evaluate the existence of contaminated or potentially contaminated land	Comparison with IV and/or TV	Data/information not available
		Concentration/values exceeding TV and/or IV (compared to previously compliant substances/parameters where previous data is available)
		Concentrations/values of substances/parameters representative of a considerable adverse effect (compared to previously compliant values/background levels where previous data is available)
		Increase in concentration/values for substances/parameters previously not complying with the TV and/or IV
		Absence of outliers
	Visible and olfactory signs of contamination	Data/Information not available
		Data/information not relevant to the adverse effects identified
		No anomalies
		Anomalies found (e.g. anomalous odour/colour of land, presence of visible unknown material, waste deposits etc.)



ANNEX V. Practical tables of DRIVER for all Natural Resources

DRIVER component (Occupational activity)

OBJECTIVE	INDICATOR	DESCRIPTION
Describe the general characteristics of the occupational activity with respect to the damaging occurrence/damage factors/adverse effects observed	Type of occupational activity	Included in Annex III of the ELD: IPPC / IED plants, Waste management (including landfills and waste incinerators), Discharges to surface waters or groundwater subject to authorisation, Water extraction subject to authorization, Manufacturing / use / storage / transport of hazardous substances, Management of mining waste, Management of carbon dioxide storage sites)
		Not included in Annex III of the ELD: e.g. quarries and mines, building and shipyards, civil works (e.g. tunnels, dams / dams), etc.
		Data/information not available
	Proof that the damaging occurrence was caused with fault or negligence (to be compiled only for occupational activities not included in Annex III)	Yes (specify it)
		No (specify it)
		Data/information not available
		Not relevant
	Risk of the occupational activity for natural habitats and protected species or surface waters or groundwater or land (only affected resources have to be considered)	Occupational activity considered to present a risk for natural habitats and protected species or surface waters or marine and coastal waters or groundwater or land (only affected resources have to be considered)
		Occupational activity not considered to present a risk for natural habitats and protected species or surface waters or marine and coastal waters or groundwater or land (only affected resources have to be considered)



	Location of the occupational activity and connection to the site of the damaging occurrence/damage factors/adverse effects (in case of transportation activity, indicate the location of the damage)	(Specify geographical coordinates and any useful information of the site of the occupational activity to demonstrate a connection with the site of the damaging occurrence/damage factors/adverse effects: e.g. onshore/offshore, upstream, upwind, adjacent with, overlying, etc.)
Evaluate the environmental management performance of the occupational activity with respect to the damaging occurrence/damage factors/adverse effects observed	Current and previous operational status of the equipment/installation which may have caused the damaging occurrence/damage factors/adverse effects observed	In operation (specify it)
		Not in operation (specify it)
		Data/information not available
		Not relevant
	Current and previous maintenance/integrity status of the equipment/installation which may have caused the damaging occurrence/damage factors/adverse effects observed	Good (specify it)
		Poor (specify it)
		Data/information not available
		Not relevant
	Current and previous compliance with pollution prevention measures which may have avoided the damaging occurrence/damage factors/adverse effects observed	Compliant (specify possible relevant claimed criticalities)
		Not compliant (specify relevant non compliances)
		Data/information not available
		Not relevant
	Current and previous incidents/non-compliance/inadequate pollution prevention measures/inadequate treatment or storage capacity/deposits or wastes which may have caused the damaging occurrence/damage factors/adverse effects observed or similar events	Yes (specify it)
		No (specify it)
		Data/information not available
		Not relevant
	Operator required to conduct environmental controls/monitoring of natural habitats and protected species, surface waters, groundwater or land affected by adverse effects observed	Yes (specify it; only affected resources have to be considered)
		No (specify it; only affected resources have to be considered)
		Not known (only affected resources have to be considered)
		Not relevant (only affected resources have to be considered)
	Current and previous compliance with environmental management systems e.g. ISO	Compliant (specify possible relevant claimed criticalities)
		Not compliant (specify relevant non compliances)



	14001, EMAS Regulation with relevance to the damaging occurrence and/or damage factors	Data/information not available
		Not relevant
Evaluate the link between the occupational activity and the adverse effects	Consistency of substances and quantities used / handled / produced by the occupational activity with the damage factors/adverse effects	Consistent with the characteristics of the damage factors/adverse effects
		Not consistent with the characteristics of the damage factors/adverse effects
		No substances used/handled/produced
		Not relevant
		Data/information not available
	Consistency of operations carried out at the occupational activity with the damage factors/adverse effects	Consistent with the characteristics of the damage factors/adverse effects
		Not consistent with the characteristics of the damage factors/adverse effects
		Not relevant
		Data/information not available
	Consistency of waste type, composition and quantities managed / produced with the damage factors/adverse effects	Consistent with the characteristics of the damage factors/adverse effects
		Not consistent with the characteristics of the damage factors/adverse effects
		No waste managed/produced
		Not relevant
		Data/information not available
	Consistency of pumping /diversion/or other surface or groundwater flow modification with the damage factors/adverse effects	Consistent with the characteristics of the damage factors/adverse effects
		Not consistent with the characteristics of the damage factors/adverse effects
		There are no pumping / diversion / or other water flow modifications
		Not relevant



		Data/information not available
	Consistency of type, composition and quantities of discharges to water or land with the damage factors/adverse effects	Consistent with the characteristics of the damage factors/adverse effects
		Not consistent with the characteristics of the damage factors/adverse effects
		There are no discharges to water or land
		Not relevant
		Data/information not available
	Potential exposure of natural habitats and protected species, surface waters, groundwater or land to adverse effects (only affected resources have to be considered)	Yes (specify why)
		No (specify why)
		Data/information not available
		Not relevant
	Presence of other activities which could be associated with the damaging occurrence/damage factors or the type of damage factors/adverse effects	Yes (specify why)
		No (specify why)
		Data/information not available
		Not relevant



ANNEX VI. Examples of the use of Practical tables

See the excel files downloadable at the following link:

<https://www.impel.eu/projects/criteria-for-the-assessment-of-the-environmental-damage-caed/>