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**Agenda item 3. Mediterranean Offshore Guidelines and Standards**

**a) Guidelines for the Conduct of Environmental Impact Assessment (EIA)**

**Mediterranean Offshore Guidelines and Standards: Guidelines for the Conduct of Environmental Impact Assessment (EIA)**

Draft

For environmental and economic reasons, this document is printed in a limited number. Delegates are kindly requested to bring their copies to meetings and not to request additional copies.

UNEP/MAP  
Athens, 2019

## **Note by the Secretariat**

1. Article 23 of the Offshore Protocol provides for the formulation and elaboration of international rules, standards and recommended practices and procedures and the adoption of guidelines in accordance with international practices. In this context, the Mediterranean Offshore Action Plan, adopted by the Nineteenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (COP 19) (Athens, Greece, 9-12 February 2016), provides, in its Specific Objectives 7 and 8, for the development and adoption of regional offshore standards and guidelines.
2. In accordance with the above-mentioned provisions of the Offshore Protocol and Action Plan, REMPEC, in close cooperation with the Secretariat developed the Guidelines for the Conduct of Environmental Impact Assessment (EIA), presented in this document.
3. The overall objective of the present guidelines is to ensure that the Contracting Parties harmonise regional practices for offshore activities in the Mediterranean in line with the Offshore Protocol, taking into consideration different standards and guidelines developed over the years from a wide variety of industry, national, regional and international organisations.
4. In view of developing the present guidelines and be informed about the current status of the conduct of EIA across the region and beyond, a questionnaire was sent to all Contracting Parties for comments. The questionnaire was also sent to International Association for Oil & Gas Producers (IOGP) who, in turn, requested four international oil & gas operators to provide feedback.
5. Concurrently, a study was undertaken reviewing international and national legislation and guidance from areas and countries with a mature offshore oil and gas industry, as well as guidance from industry organisations, in order to identify best practices from around the world.
6. Descriptions of the best practices and guidance documentation reviewed and the rationale underpinning the guidelines presented here is provided in the information document Rationale for the Guidelines for the Conduct of Environmental Impact Assessment (EIA) (UNEP/MED WG.476/Inf.4).
7. The present guidelines were submitted to the Meetings of the REMPEC Focal Points (Malta, 11-13 June 2019) and SPA/BD Thematic Focal Points (Portoroz, Slovenia 18-21 June 2019) for review and comments. They are currently submitted to the Meeting of the Barcelona Convention Offshore Oil and Gas Group (OFOG) Sub-Group on Environmental Impact, which is the competent MAP body to decide on their approval at a technical level and further submission to the Ecosystem Approach Correspondence Group and MAP Focal Points Meetings, as appropriate.

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### **List of Abbreviations / Acronyms**

<b>CHARM</b>	Chemical Hazard and Risk Management
<b>EBS</b>	Environment Baseline Survey
<b>EIA</b>	Environmental Impact Assessment
<b>EIS</b>	Environmental Impact Statement (EIS)
<b>EMP</b>	Environmental Management Plan
<b>HMCS</b>	Harmonised Mandatory Control Scheme
<b>HOCNF</b>	Harmonised Offshore Chemical Notification Format
<b>LSPC</b>	List of Substances of Possible Concern
<b>MEBS</b>	Marine Environment Baseline Survey
<b>OCF</b>	Operator Compliance Factsheets
<b>OCNS</b>	Offshore Chemical Notification Scheme
<b>OFOG</b>	Barcelona Convention Offshore Oil and Gas Group
<b>PEC</b>	Predicted Environmental Concentration
<b>PLONOR</b>	Pose Little or No Risk to the Environment
<b>PNEC</b>	Predicted No-effect Concentration
<b>ROV</b>	Remotely-operated vehicle
<b>RQ</b>	Risk Quotient
<b>SPR</b>	Source-Pathway-Receptor

## **1. Introduction**

1. The aim of this document is to provide guidance on practical methods and approaches to assess impacts and effects of an activity on the environment. The guidelines are not intended to be formal or prescriptive and are designed to support the development of an approach which is appropriate to an individual activity, and to consider subsequent impacts and effects as an integral part of the Environment Impact Assessment (EIA) process. The guidance provides advice on the EIA process and suggests methods and tools for identifying and assessing impacts, effects and risk to the environment.

## **2. EIA Screening – When is an EIA Required?**

2. Screening is the part of the EIA process which determines whether an EIA is required for a particular activity, this is determined by the Competent Authority. The process of screening occurs in the initial development stages of the activity.

3. In general, an EIA is required when a project is considered likely to have significant effects on the environment. Therefore, not all projects will necessarily require a full EIA or may have exemptions for undertaking an EIA.

### **2.1. Obtaining a Screening Opinion**

4. A formal screening opinion may be sought from the Competent Authority concerning the need for an EIA. The Competent Authority will generally identify whether or not a project is likely to have significant effects on the environment. If significant effects are considered likely, then an EIA will be required. Alternatively, an Operator may decide to carry out an EIA in any case.

5. Where a formal screening opinion has been made by the Competent Authority, the screening opinion should be recorded and made available to the public. In most regions there will be provisions within the national legislation for the developer to appeal against the screening opinion.

### **2.2. Project Requirements for full EIA**

6. The following criteria are proposed as minimum thresholds for projects requiring a full EIA, based on similar criteria set out in the EU EIA Directive and the Espoo Convention. It should be noted that similar and/or additional criteria may already be implemented through national legislation within individual countries, which should always take precedence. The criteria below should be used where no specific national criteria have been defined, or in addition to any specific national criteria already in place:

- Large-diameter oil and gas pipelines which have transboundary impacts;
- Offshore hydrocarbon production which have transboundary impacts;
- The extraction of 500 tonnes or more of oil per day or 500,000 m<sup>3</sup> or more of gas per day otherwise than as a by-product of the drilling or the testing of any well;
- The construction of a pipeline for the transportation of petroleum, gas, or chemicals or CO<sub>2</sub> for the purpose of storage, where the pipeline is more than 40 km in length and the diameter of the pipeline is more than 800 mm;
- Any CO<sub>2</sub> storage projects;
- An installation for the capture of CO<sub>2</sub> for the purpose of storage;
- Any change to or extension of the above activities, where the change or extension itself meets the thresholds;
- Activities which could have significant effect on a formally designated area (e.g. Specially Protected Area).

### **2.3. Project requirements for an Environmental Appraisal (i.e. full EIA is not required)**

7. The following criteria identify which projects would generally require an Environmental Appraisal, i.e. when a full EIA is not required, based on similar criteria set out in the European Union (EU) EIA Directive:

- The extraction of less than 500 tonnes of oil per day or less than 500,000 m<sup>3</sup> of gas per day, or for an increase in a currently consented level of production that is below those thresholds;
- Deep drilling of a well or borehole for the purposes of, or in connection with the getting or storage of petroleum, or the storage of CO<sub>2</sub>;
- The use of a mobile installation for the testing of a well;
- The use of a mobile installation for the purpose of carrying out test injections of CO<sub>2</sub> or combustible gas;
- The construction, amendment or augmentation of a pipe-line for the transportation of petroleum, gas, chemicals or CO<sub>2</sub> for the purpose of storage, where the pipeline is less than 40 km in length and the diameter of the pipeline is less than 800 mm.

8. However, each individual project should be reviewed on their individual merits, whereby the Competent Authority will determine the requirements for an EIA as part of the scoping decision. For example, in Italy a full EIA is required for geophysical surveys, when using airguns or explosives.

### **2.4. Exemptions for Undertaking an EIA**

9. Where the sole purpose of the project is that of national defence or a civil emergency and, in the opinion of the Competent Authority, complying with the EIA requirements would have an adverse impact on that purpose, a project may be exempt from undertaking an EIA.

## **3. EIA Guidance for Offshore Activities**

### **3.1. EIA Terminology**

10. This section defines terms that are relevant to the EIA methodology framework. Technical studies may use topic-specific terminology that differs from these definitions and these should be clearly defined.

11. **Baseline:** the pre-existing state of the environmental, socio-economic or cultural domain prior to project construction or operation. The baseline incorporates the specific area of the project and the surrounding and interconnected areas and components of the environment.

12. **Receptor:** a specific component of the baseline environment or socio-economic domain that will be, or is 'likely' to be, affected by the impacts or effects of the project. This could be a single entity such as a species or community, or a conceptual grouping such as a population or subset of an ecosystem. A receptor may be affected only by the specific project proposed, or by the proposed project and other relevant projects in combination.

13. **Source:** the source of an impact. This will be an aspect of the project, and will typically be a project-related activity, or a direct result of the development.

14. **Pathway:** a mechanism or series of interactions that results in an impact upon a final receptor. Pathways may be physical, chemical, biological or ecological processes or interactions, and may include intermediate stages.

15. Source-Pathway-Receptor Analysis: a formal approach to assessing the flow of changes and consequences from a source of impacts to all final receptors. Analysis incorporates the best current scientific understanding of the processes involved, logical cause-and-effect, and considers the relevant characteristics of all receptors and interactions.

16. Likelihood: a possibility or potential risk, which does not imply that something is necessarily probable or certain. However, all likely impacts and effects must be considered in the EIA process.

17. Impact: the predicted change in environmental conditions as a direct result of a project-related activity. Impacts are frequently constrained to the physical and chemical domains but may also include biological aspects. Changes should be measurable, quantified or estimated in relevant units where possible, and defined as positive or negative. Predictions should be relative to the baseline, and incorporate any natural variability:

- Positive: a positive impact will cause an increase to the baseline condition of a receptor, such as an increase in the number of jobs in a given area;
- Negative: a negative impact will cause a decrease to the baseline condition of a receptor, such as a decrease in the area of a given habitat;
- Direct: an impact that is the direct result of a project-related activity. Direct impacts are likely to be spatially or temporally concurrent;
- Indirect: an impact that is an indirect or secondary result of a project-related activity. Indirect impacts are likely to be spatially or temporally removed from the direct impacts.

18. Effect: the environmental, ecological, socio-economic or cultural consequence of project-related impacts upon receptors of concern. Consequences are defined as beneficial or adverse. Predictions should be relative to the baseline, and incorporate any natural variability:

- Beneficial: a beneficial effect is one that improves the baseline conditions of receptors of concern e.g. increases in populations of rare or protected species, increases in the area or quality of habitats, or increases in local and regional economic activity;
- Adverse: an adverse effect is one that worsens the baseline conditions of receptors of concern e.g. decreases in populations of rare or protected species, reductions in the area or quality of important or protected habitats or sites, or decreases in local and regional economic activity;
- Direct: an effect that is the direct consequence of a project-related impact;
- Indirect: an effect that is an indirect or secondary consequence of a project-related impact. Indirect effects are likely to be spatially or temporally removed from the direct impacts.

19. Interacting Effects: multiple effects upon a single receptor may interact in a number of ways, including:

- Additive Effects: the sum of all effects e.g. multiple impacts which would individually cause a population reduction, add together to produce a larger population reduction;
- Synergistic Effects: an interaction of effects upon a single receptor that causes an overall effect that is greater than the sum of the individual effects;
- Antagonistic Effects: an interaction of effects upon a single receptor that causes an overall effect that is less than the sum of the individual effects;
- In Combination Effects: effects arising from an individual development in combination with effects from other plans or projects;
- Cumulative Effects: the incremental effects caused by the combined effects of past, present or reasonably foreseeable activities and the development itself. This includes the combined effects of this project in combination with other projects and activities generating similar effects both temporally and spatially. Predictions should be relative to the baseline and incorporate any natural variability.

20. Value: the intrinsic worth or importance of a receptor. This may be characterised by different factors according to the receptor considered e.g. species rareness or legal protection, financial worth, aesthetic beauty, or historic importance.

21. Sensitivity: the sensitivity of a receptor is the degree to which it may be affected by project-related impacts or effects. Sensitivity is a component characteristic that will determine the magnitude of effects and is independent of value or legal status.

22. Magnitude: the degree and importance of the change to the baseline conditions, and subsequent effects. Assessment of magnitude must consider all the relevant ecological, socio-economic or other aspects of the receptors concerned, including the legal aspects.

23. Mitigation: measures to avoid, cancel, reduce, ameliorate or abate adverse project impacts or effects. Restoration or reinstatement activities may also be classified as mitigation. Subcategories include:

- Avoidance: avoidance is the process of eliminating possible project impacts at source, either through designing them out or through implementation of alternative methods. Also known as built-in mitigation;
- Minimisation: minimisation is conceptually similar to avoidance but aims to reduce project impacts at source where eliminating them may not be possible. Again, this may be through design considerations or through alternative methods;
- Offset: where project-specific mitigation is not possible or is unlikely to be effective, compensation through measures to improve other sites may be undertaken.

24. Residual Effect: the remaining effect after mitigation measures have been applied to reduce predicted project-related effects.

### **3.2. The EIA Process**

25. This section describes the key stages in the EIA process, including the principles of EIA and the approach taken to identify baseline conditions and to evaluate the potential environmental impacts and effects associated with a proposed project.

26. The EIA guidance in this document follows common legislative requirements and has drawn on a number of established guidance documents and best practice publications. This includes clear and transparent determination of the magnitude of impacts of the proposed activities, the sensitivities and resilience of the receptors, and the impact receptor pathways. This is key to a successful and clearly auditable EIA process supporting statutory decision making.

#### **3.2.1. Overview of the EIA Process**

27. The EIA process is a series of assessments undertaken to ensure environmental issues are captured and considered throughout all stages of the project development, from initial plans through to construction and operation (Figure 1). Wherever possible, assessments should use an evidence-based approach that is systematic and auditable to evaluate and interpret the potential marine, terrestrial and socio-economic impacts of proposed project/activities on physical, biological and anthropogenic receptors.

28. An EIA is an effective tool to determine mitigation measures for project-specific impacts and effects. The views and concerns of consulted stakeholders form an important part of any recommendations. The EIA should follow all relevant best practice throughout the process, ensuring



appropriate mitigation recommendations are developed to minimise the project's adverse effects and to maximise positive environmental effects wherever possible.

29. The aim of the EIA process is to reduce or eliminate potential adverse impacts or effects wherever possible. It is a process that is informed by the best understanding of the baseline environment and the corresponding body of scientific knowledge and is focused on identifying the most effective mitigation solutions, and subsequently reassessing the potential residual environmental effects.

30. Competent Authority and stakeholder consultation are a key factor in determining important data sources, the survey scope and design of the supporting technical studies, and the recommendation of mitigation measures. Consultation is crucial to understanding the limitations of the existing body of science and knowledge within relevant topics. This should be captured throughout the Environmental Impact Statement (EIS).

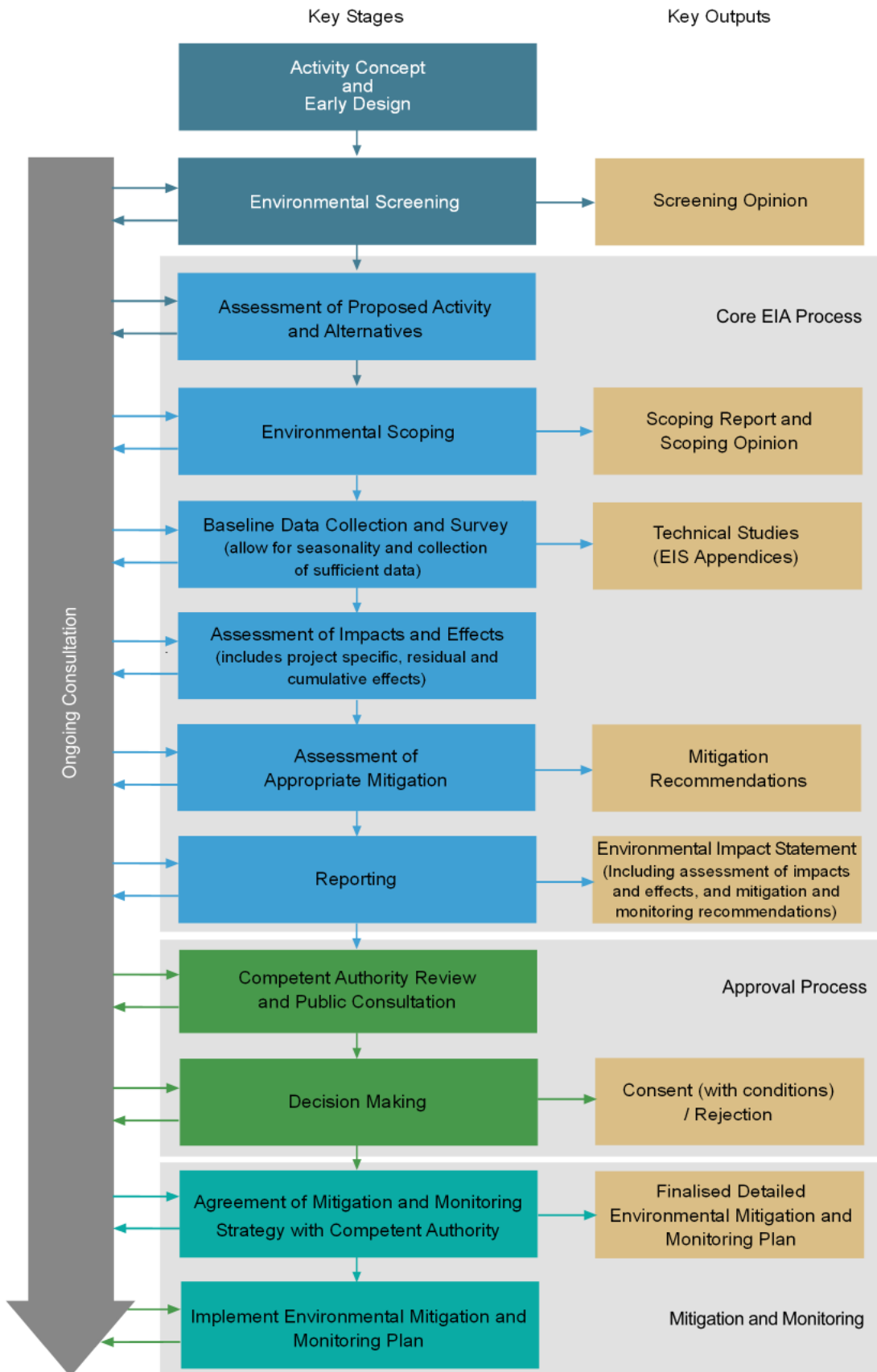


Figure 1: Key stages and outputs of the EIA process

### **3.3. Scoping**

31. Scoping is the process of determining the content and extent of the issues to be covered in the EIA.
32. Depending on the activity and local sensitivities, the scoping process should consult with all stakeholders which may include a range of statutory and non-statutory consultees to ensure the widest (reasonable) scope of the EIA.
33. Generally, the Competent Authority will provide feedback on key environmental matters which should be addressed in the EIS. All scoping activities should be recorded and included as appendices to the EIS.

#### **3.3.1. Informal Consultation**

34. Following receipt of the Scoping Opinion, the relevant Competent Authorities should be approached to discuss and agree the scope of assessments to be undertaken as part of the EIA. Key regulators and stakeholders should be contacted to agree the scope of desk-based assessments, survey design and sample analyses, modelling studies and impact assessments to be undertaken, where necessary. Further consultation should be ongoing throughout the development of the EIS to ensure all relevant available data sources are identified and incorporated. Details of the consultations with the relevant Competent Authorities should be summarised in the relevant chapters of the EIS.

#### **3.3.2. Identifying and Addressing Data Gaps**

35. During the scoping process, it is important to identify potential data gaps or uncertain datasets and acknowledge limitations of datasets, and to attempt to fill those gaps or find alternative datasets to support scoping assessment. Where alternatives cannot be found, it is important for the assessment to characterise any uncertainty within the supporting data or the underlying body of scientific knowledge, and to recognise and communicate any corresponding uncertainty in predictions of impacts and effects.

### **3.4. Impact Assessment Methodology Framework**

#### **3.4.1. Describing and Valuing the Baseline**

36. A thorough understanding of the environment and the receptors that are likely to be affected by the proposed project is essential for making predictions of potential impacts and effects, and for making appropriate mitigation recommendations. It is important to describe the presence or absence of relevant receptors, their current condition, natural variability, and any other characteristics relevant to impact assessments. Valuations of receptors and the methodology employed should also be included. Details of the valuation methodology are described in Section 3.4.7, Valuation of Receptors.
37. The description of the baseline should incorporate both desk-based research and field survey data. Before commencing surveys or technical studies, guidance and agreement should be sought from the Competent Authority regarding appropriate data sources, desk-based assessments, survey design and sample analyses, modelling studies and appropriate stakeholder consultation. The scope of surveys and technical studies should consider the nature of project activities and the corresponding zones of influence, the sensitivities of likely receptors, and potential pathways for project activities to affect receptors. Formal analysis of potential pathways is known as source-pathway-receptor analysis, and a full description is provided in Section 3.4.4, Source-Pathway-Receptor Analysis.

### **3.4.2. Data Gaps and Uncertainty**

38. During the EIA process, it is important to identify potential data gaps or uncertain datasets and acknowledge limitations of datasets, and to attempt to fill those gaps or find alternative datasets to support impact assessment. Where alternatives cannot be found, it is important for the assessment to characterise any uncertainty within the supporting data or the underlying body of scientific knowledge, and to recognise and communicate any corresponding uncertainty in predictions of impacts and effects.

### **3.4.3. Defining Impacts and Effects**

39. The terms 'Impact' and 'Effect' are frequently used interchangeably in many published EISs and in certain guidance documents. The Offshore Protocol requires that "an application must include a survey concerning the effects of the proposed activities on the environment"

40. The Offshore Protocol stipulates the requirement for EIAs to describe and assess the "foreseeable direct or indirect short and long-term effects" of the activity. In particular, Annex IV requires:

- A description of the likely effects of the project on the environment;
- A description of the features of the project and/or measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, including possible alternatives.

41. 'Impacts' are defined as measurable changes to the environment as a direct result of project activities (e.g. km<sup>2</sup> losses of habitat, or mg/l increases in a substance concentration).

42. 'Effects' are defined as the consequences of those impacts upon receptors of concern that are subject to assessments of significance.

43. The nature and characteristics of impacts and effects differ according to the topic and should be described in detail in the relevant EIS chapters.

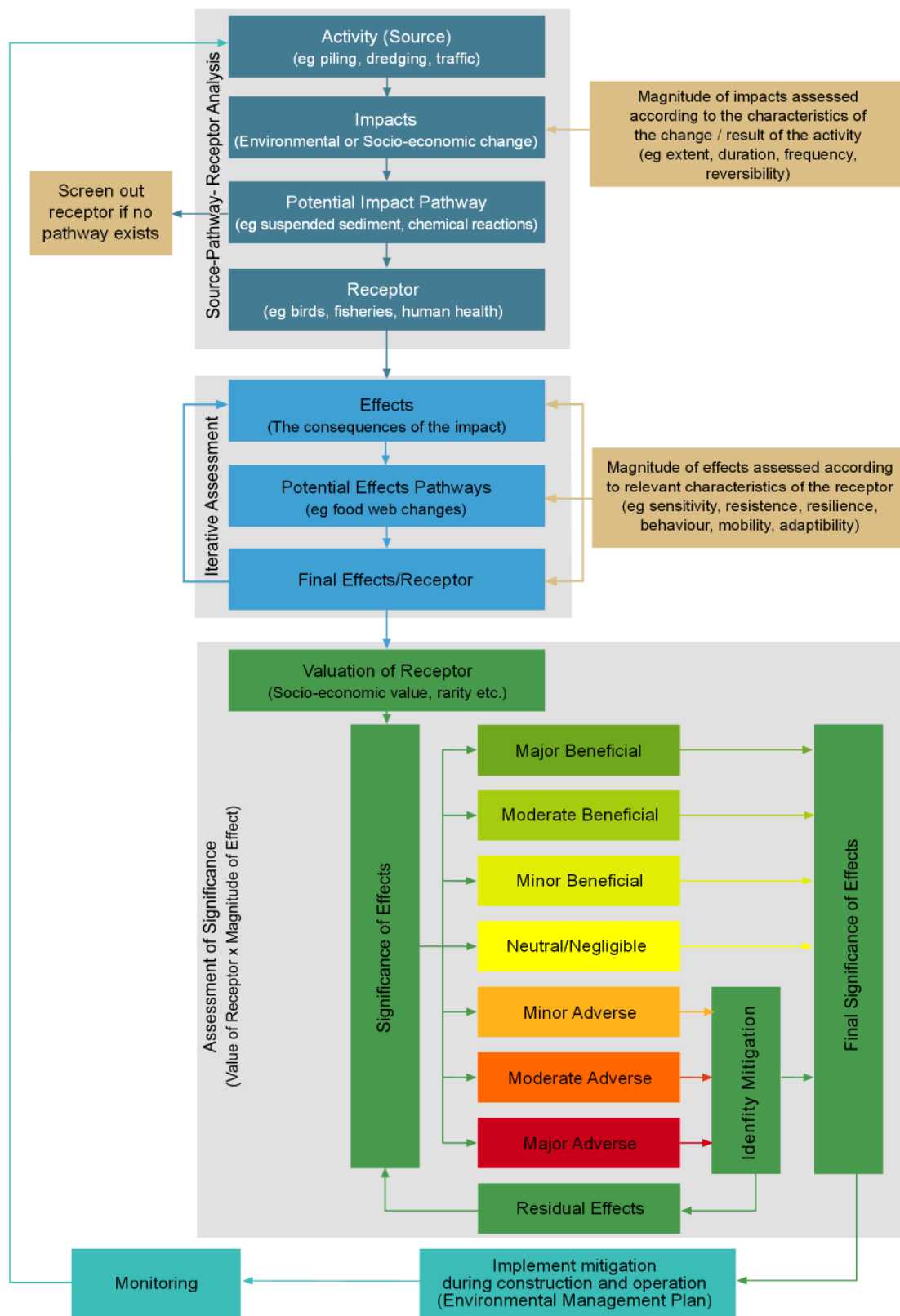
### **3.4.4. Source-Pathway-Receptor Analysis**

44. Determining which receptors may be affected by project-related activities relies on Source-Pathway-Receptor (SPR) analysis for the identification of impacts and consequential effects (Figure 2). SPR considers all potential routes and mechanisms for impacts to affect all potential receptors along predicted pathways. Pathways are processes or series of interactions that result in an impact upon a final receptor.

45. The term 'source' describes the origin of the potential impacts (e.g. the impacts of ground preparation and construction activities) and the term 'pathway' as the means (e.g. deposition of sediment, chemical reactions, or airborne noise) by which the impact reaches the affected 'receptor' (e.g. benthic organisms, terrestrial habitats or nearby residential properties). Pathways may be physical, chemical, biological, ecological or socio-economic processes or interactions, and may include intermediate stages.

46. In some cases, receptors affected by project related sources may themselves have effects upon other receptors, for example where there are effects on food webs or predator-prey relationships. SPR analysis should also identify all pathways and receptors when considering complex interactions where several inter-related receptors may be affected. In these cases, receptors may be affected in different

ways and to different extents. For this reason, assessment of effects may need to be an iterative process, identifying several ultimate receptors, each with differing magnitudes of effects (Figure 2).



**Figure 1: Source-Pathway-Receptor analysis, assessment of significance of effects, and implementation of mitigation and monitoring measures**

### **3.4.5. Characterising and Assessing the Magnitude of Impacts**

47. Impacts are defined as predicted changes in baseline conditions as a result of a project-related action. Predictions are made relative to the baseline. These should be measurable, and quantified or estimated where possible. The characterisation and assessment of the magnitude of impacts are made according to the receptors affected and require receptor-specific context. Therefore, threshold values for specific factors such as area, frequency or duration should be provided within the relevant EIS chapters.

### **3.4.6. Characterising and Assessing the Magnitude of Effects**

48. The magnitude of potential environmental effects for each receptor should be assessed independently of its value or designated status. The distinction between magnitude of impacts and magnitude of effects is crucial to the overall assessment of significance of effects described in Section 3.4.8 Assessment of Significance of Effects. Even where high value receptors utilise the site, the magnitude of the effect upon those receptors may be relatively low if the habitat affected is relatively unimportant to them. Examples where the magnitude of effects upon high value receptors of concern may be low:

- Loss/reduction of habitats of receptors that are a very small proportion of their foraging range;
- Loss/reduction of habitats of receptors whose ranges are increasing;
- Loss/reduction of habitats of receptors that are of very poor quality;
- Loss/reduction of habitats not used for the purposes of breeding, sheltering or overwintering;
- Loss/reduction of habitats of receptors that have many alternative sites.

49. The sensitivity of each receptor must be considered when assessing the likely magnitude of the effect. Ecological sensitivity is defined as the relative change of a system or population in relation to the level of disturbance or perturbation (Miller et al., 2010). The sensitivity of socio-economic and socio-ecological systems may be defined in a similar manner (Holling, 2001).

50. The magnitude of ecological effects will be a product of the project-specific impacts and the receptor specific characteristics that make those receptors sensitive or responsive to the relevant impacts. Definitions for topic-specific characteristics should be provided in individual EIS chapters and should incorporate any receptor specific guidelines and best practice.

### **3.4.7. Valuation of Receptors**

51. The next stage is to determine the nature conservation, socio-economic or heritage value of the affected receptor. The methods and criteria for assigning value need to be specific to individual receptors and should be detailed in relevant EIS chapters.

52. Special attention should be given to the receptors typically affected by offshore activities, including:

- Benthos;
- Coral reefs;
- Fish and shellfish;
- Marine mammals;
- Marine reptiles;
- Plankton;
- Seabirds;

- Seagrass beds;
- Nature Conservation Areas;
- Other users of the sea e.g. fishing, shipping, tourism, oil and gas activities, renewable energy, submarine cables, military activity, aquaculture, archaeology etc.

#### **3.4.8. Assessment of Significance of Effects**

53. The significance of each effect is determined by scoring the value of the ecological, socio-economic or heritage feature against the magnitude of the predicted effect. This methodology is applied individually with respect to the specific ecology, socio-economic or heritage characteristics of each receptor.

54. The level of effect significance is used to determine the use and level of mitigation measures. Where a potential effect is assessed as 'moderate' or 'major', then this should be considered "significant" in EIA terms. So far as practicable, mitigation (including offsetting) should be identified that reduces the potential magnitude or significance of effects, or the likelihood of significant effects. Minor adverse effects would not usually require any action beyond standard good management practices.

55. Mitigation recommendations should be explored as part of the EIA process for all 'moderate' and 'major' effects. Effects are reassessed as described above until either the effect significance is reduced to acceptable levels ('Minor Adverse' or 'Negligible') or no more mitigation can be applied. Residual effect significance is estimated, from which consenting decisions can be made.

#### **3.4.9. Environmental Risk Assessment**

56. It is also important to consider the likelihood that a potential effect could occur as predicted. Therefore, once the magnitude of an effect has been determined, the probability of the effect occurring should be categorised into a number of classifications ranging from 'Certain' to 'Extremely Unlikely'.

57. The reason for including an 'Extremely Unlikely' category is that while some potential effects may be very improbable, they may also be extremely serious should they occur, resulting in major adverse effects on some receptors. These cases will require contingency plans to be put into place. Where doubt exists between two categories within the scale of probability, a precautionary approach should be adopted, and the more conservative category selected.

58. For accidental events, where it may not be possible to reduce the magnitude of potential impacts or effects, the overall environmental risk may be decreased by reducing the likelihood of an adverse event occurring through adequately designed-in mitigation measures (Gormley et al., 2011). Further risk management strategies include managing or breaking receptor pathways, and/or protecting receptors. Mitigation measures or strategies to reduce environmental risk should be addressed for relevant activities, and their subsequent influence on residual effects should be assessed for relevant receptors.

59. The assessment methodology used should be clearly described in the relevant EIS chapter.

#### **3.5. Mitigation Measures and Residual Effects**

60. The term mitigation is used in general to cover all efforts used to reduce potential impacts (and consequently, effects). These may include design changes, alteration of proposed methods, or other activities in addition to the core project-related activities to reduce or ameliorate impacts.

Mitigation is often used as a catch-all term that also includes avoidance, minimisation, mitigation and offsets or compensatory measures.

61. Mitigation measures are predominantly applied at source, to reduce impacts, with the intention of a corresponding reduction in residual effects upon the receptors in question. However, mitigation may also be applied directly at the receptor-level, with the intention of reducing effects, without any influence on the source or the impact.

62. All the mitigation recommendations described within the EIS should be based upon the realistic worst-case scenarios, ensuring that all measures described are adequate to ameliorate the range of predicted effects. Mitigation recommendations may be revised during the determination of application.

### **3.6. Cumulative and Transboundary Effects**

63. Cumulative effects are those caused by the combined effects of past, present or reasonably foreseeable activities in the wider area and the project itself. Assessment of in combination effects considers other marine and terrestrial projects and activities generating effects over similar temporal and spatial extents. Assessment of cumulative effects should consider all potential interacting effects. The assessment of cumulative effects should draw upon established guidelines and methodologies.

64. Factors considered in scoping other projects in or out for assessment of cumulative effects should include connectivity, effects pathways, species distribution and foraging ranges. Consultation with the Competent Authority should be undertaken to confirm that the selection of projects included is complete, and that the approach to the assessment of cumulative effects is correct. Details regarding the rationale for considering cumulative effects should be provided within relevant EIS chapters.

### **3.7. Baseline Data Collection**

65. The methodology guidance for monitoring set out in the list of parameters document (UNEP(DEPI)/MED WG.434/4) submitted to the last OFOG Meeting held in Loutraki Greece, in April 2017, outlines the requirement for operators to undertake an evaluation of the baseline marine environmental conditions of the area of potential impact from the planned activities, conducted via a desktop review and supplemented by field based studies if required, based on lifecycle stage of the planned activity and the availability of existing information.

66. For activities which require an EIA, recently-obtained site-specific environmental data, and a summary of the results of physical environmental baseline surveys should be presented in the EIS. For activities which do not require a mandatory EIS, including Environmental Appraisals, there is also an expectation that the submissions will include recent and relevant environmental data.

67. More information on a recommended standard for seabed sampling programmes is provided in UNEP/MED WG.476/Inf.5 Rationale for the Common Standards and Guidance on the Disposal of Oil and Oily Mixtures and on the Use and Disposal of Drilling Fluids and Cuttings.

#### **3.7.1. Desktop Data Gathering**

68. As outlined in the list of parameters document (UNEP(DEPI)/MED WG.434/4) submitted to the last OFOG Meeting held in Loutraki Greece, in April 2017, a desktop evaluation of the baseline conditions of the marine environment should be conducted prior to commencing project activities, documenting the condition of the marine environment for the area of potential impact from project activities. Environmental baseline data should be sufficient to characterise the area of potential impact, including regional and local biodiversity, locations of sensitive habitat and resources, and impact from other users of the resource (e.g. fishermen), so that potential impacts from project



activities on all components of the marine environment can be adequately assessed within the EIA and monitored by the Operator over the duration of the project's activities.

69. The desktop evaluation should comprise a data search of published and grey literature, where available, and searches to identify publications and organisations that could provide relevant information.

70. Gap analysis of the desktop data identified will provide advice on which additional data is to be collected to augment the data gaps during subsequent field studies to the appropriate level of detail required for the EIA.

### **3.7.2. Environmental Baseline Surveys**

71. In order to be able to assess and monitor any future change, a scientifically robust data set should be collected to determine the present environmental conditions (i.e. the baseline) of the project location.

72. A well-designed environmental baseline survey will allow any changes in environmental conditions in the local area to be observed in the future, as well as determine whether these changes are the result of the proposed activities, or due to natural variation or other external factors.

73. The environmental baseline survey should collect geophysical data (bathymetry, seabed features, etc.), as well as an adequate number of seabed samples for faunal identification, sediment characterisation and chemical analysis (e.g. particle size analysis, organic contaminants, heavy metals, etc.). The use of stills photography and drop-down video is a non-destructive method, which can be used for habitat assessment.

74. Additional baseline data that may be useful to collect include local hydrodynamic, metocean and water quality conditions in the area (e.g. local wind, currents, seawater and air temperatures, salinity, and sediment transport).

75. Further guidance on Environment Baseline Survey (EBS) is provided in the list of parameters document (UNEP(DEPI)/MED WG.434/4) submitted to the last OFOG Meeting held in Loutraki Greece, in April 2017, in which a number of Operator field environmental monitoring (including baseline environmental evaluation) criteria are proposed as follows:

- A field marine environment and seafloor surveys be undertaken to supplement the desktop-sourced baseline data where there are gaps found within desktop-sourced information and/or where the project activity warrants such further evaluation;
- A pre-activity Marine Environment Baseline Survey (MEBS), gathering data regarding the baseline marine environment within the area of potential impact from project activities e.g. water and sediment, from sufficient sampling locations over the full area of potential zone of impact in order to provide a statistical representation of the baseline conditions in the area, as well as from sampling locations further afield for use as points of regional reference.
- Pre-activity Seafloor Survey (such as high resolution sidescan sonar survey, 3D shallow hazards assessment, Remotely Operated Vehicle (ROV) video survey, etc.) should be undertaken documenting near-field and far-field seafloor conditions. The survey results will provide a reference for potential spatial and temporal changes in environmental conditions on the seafloor which may result from project activities.

76. All surveys should be designed in consideration of the Integrated Monitoring and Assessment Programme (IMAP) Common indicators described in UNEP/MED WG.476/Inf.4 Rationale for the Guidelines for the Conduct of Environmental Impact Assessment (EIA) and more information on

environmental survey strategies and the methodologies can also be found in UNEP/MED WG.476/Inf.5 Rationale for the Common Standards and Guidance on the Disposal of Oil and Oily Mixtures and on the Use and Disposal of Drilling Fluids and Cuttings.

77. The Operator Compliance Factsheets (OCF) should be used when collecting environmental data for the relevant common and candidate indicators. The completed OCFs (UNEP(DEPI)/MED WG. 434/inf.6) should be submitted to the Competent Authority of each country for authorisation and/appropriated corrective action, if necessary.

### **3.8. Assessment of Impacts and Effects**

78. All impacts identified as being potentially significant during the scoping phase should be taken forward for detailed assessment in the EIS. Each impact should be described, quantified and assessed.

79. Although not an exhaustive list, a number of impacts associated with typical offshore oil and gas activities have been listed below.

Seismic survey:

- Underwater noise generation on marine mammals and fish;
- Physical presence (e.g. survey vessel, streamers etc.) on other users of the sea and marine animals.

Exploration drilling:

- Physical presence on other users of the sea and the seabed and associated communities (e.g. benthos);
- Drilling discharges (e.g. drilling muds, cement etc.) affecting the seabed and associated communities (e.g. benthos), water column and associated communities (e.g. fish);
- Atmospheric emissions (e.g. power generation, flaring etc.) on the atmosphere (local, transboundary and cumulative);
- Underwater noise generation on marine mammals and fish;
- Unplanned/accidental events (e.g. hydrocarbon spills) may affect plankton, benthos, coral reefs, fish, shellfish, marine mammals, marine turtles, seabirds, seagrass beds, designated sites, coasts and inshore habitats and other users of the sea.

Production:

- Physical presence on other users of the sea and the seabed and associated communities (e.g. benthos);
- Oily discharges (e.g. produced water) on water column and associated communities (e.g. fish);
- Atmospheric emissions (e.g. power generation, flaring etc.) on the atmosphere (local, transboundary and cumulative);
- Unplanned/accidental events (e.g. hydrocarbon spills) on plankton, benthos, coral reefs, fish, shellfish, marine mammals, marine turtles, seabirds, seagrass beds, designated sites, coasts and inshore habitats and other users of the sea.

80. Recognition of potential cumulative and transboundary impacts from the proposed activities should also be considered when assessing impacts and effects and included within the EIS.

### **3.9. Mitigation and Monitoring**

81. Mitigation measures are predominantly applied at source, to reduce impacts, with the intention of a corresponding reduction in residual effects upon the receptors in question to acceptable

levels. However, mitigation may also be applied directly at the receptor-level, with the intention of reducing effects, without any influence on the source or the impact.

82. Countries with mature oil and gas industry and well-developed regulatory frameworks, such as the UK, Norway, The Netherlands and the US have incorporated comprehensive mitigation measures within their permitting and consenting regime. These mitigation measures are often informed and/or augmented with good industry practice guidance from organisations and institutions such as OSPAR, IFC/World Bank and IOGP.

83. As many oil and gas operators are multinational companies, which operate in different countries under multiple regulatory regimes, which are typically managed through their global corporate management systems to ensure all regulatory standards are met wherever they operate, many offshore oil and gas operations do have many inherent mitigation measures in place, as part of their “normal” operational procedures and practices.

84. All environmental mitigation and monitoring requirements should be stated within the EIS and should be taken forward in an Environmental Management Plan (EMP). In line with the requirements set out in the IMAP, regular Operator Environmental Performance assessments should be carried out by an independent/third-party to assess and evaluate the operator’s environmental performance throughout the operations against that stated within the EIS.

### **3.10. The Environmental (Impact) Statement**

85. An EIS submitted to the Competent Authority must describe the effects of the proposed activities on the environment, information on geographical location, safety measures, contingency plan, operator details, monitoring and decommissioning procedures, precautions for specially protected areas and details of financial liability.

86. Annex IV of the Offshore Protocol provide the minimum criteria that every Environmental Impact statement must contain.

#### **3.10.1. Content and Structure**

87. The Environmental Impact Statement must contain at least:

- A description of the methods, installations and other means to be used, possible alternatives to such methods and means;
- An indication of the nature, aims, scope and duration of the proposed activities;
- A description of the initial state/baseline of the environment of the area;
- A description of the geographical boundaries of the area within which the activities are to be carried out, including safety zones where applicable;
- A reference to the methodology used for the environmental impact assessment;
- A description of the foreseeable direct or indirect short and long-term effects of the proposed activities on the environment, including fauna, flora and the ecological balance;
- A statement setting out the measures proposed for reducing the minimum the risk of damage to the environment as a result of carrying out the proposed activities, including possible alternatives to such measures;
- An indication of the measures to be taken for the protection of the environment from pollution and other adverse effects during and after the proposed activities;
- An indication of whether the environment of any other State is likely to be affected by the proposed activities;
- Details of the environmental monitoring programme.

### **3.11. Regulator Review and Public Consultation**

88. After submission of the EIS to the Competent Authority it will be subject to a formal public consultation period. The general public should be notified that an EIS has been submitted to allow for any persons or third parties likely to be interested in, or affected by, the relevant project to comment. Notifying the public is typically undertaken through the publication of a notice in a newspaper or other publication inviting comments on the EIS. It is recommended that a deadline for the submission of comments be applied to the consultation period e.g. 30 days after the date of public notice. Any comments raised during public consultation must be sent to the Competent Authority.

89. If the Competent Authority considers that an activity could have a significant effect on the environment of an adjacent State, or where that State considers that its environment is likely to be significantly affected by the activity, the adjacent State should be invited to participate in the consultation process.

90. Once the consultation has concluded, the Competent Authority will undertake its review. The review is the process of establishing whether the environmental information submitted by the developer, as part of an EIA procedure, is adequate to grant consent. The review can be undertaken by the Competent Authority or by an independent organisation on behalf of the Competent Authority.

91. Where the EIS is considered to be inadequate, the developer will be asked to provide additional information and the consent decision process will not start until this information has been provided. There will usually be a procedure for appeal against requests for further information.

92. Following receipt of the developer's response, the Competent Authority will take the additional information into consideration when reviewing the submission. If the additional information is considered to be integral to the decision, it will also require the additional information to be subject to a further round of public consultation.

93. Where there are significant additional information requirements, the Competent Authority may request a formal addendum to the original EIS, or even suggest that the developer should prepare a new EIS, and the entire review process would have to be repeated.

### **3.12. Decision Making (Consenting)**

94. Once all the issues raised during the consultation process and the Competent Authority's review have been resolved, authorisation will only be granted if the authority is satisfied that the activity is unlikely to have a significant impact on the receiving environment, that the installation has been constructed in accordance with accepted international standards and practice and that the operator has the technical competence and the financial capacity to carry out the activities.

95. Authorisation may be refused if it is thought that the proposed activities are likely to cause significant adverse effects on the environment that could not be avoided by compliance with the conditions prescribed by the Competent Authority.

96. When considering approval of the siting of an installation, the developer should ensure that no detrimental effects will be caused to existing facilities, in particular, to pipelines and cables.

97. The Competent Authority will examine the EIS against the requirements listed in the Offshore Protocol. Authorisation will be granted when the Competent Authority is satisfied with the information provided and that there are no environmental objections to the issue of consent for the activities. Authorisation will specify the activities and the period of validity, geographical limits, technical requirements, installations and necessary safety zones. The authorisation may impose conditions to reduce risks and damage due to pollution resulting from the activities. Any changes to

the proposals must be reported to the Competent Authority, who will advise the developer if further action is necessary. The authority may advise that changes can be addressed in an Environmental Appraisal which would be required prior to commencement of the project. In exceptional cases, the Competent Authority can advise that a new EIS would be required and the formal review process will have to be repeated.

#### **4. Environmental Appraisal Guidance for Offshore Activities**

##### **4.1. Permitting for Environmental Appraisal**

98. Applications for an Environmental Appraisal to confirm that an EIA is not required can be sought for all activities listed in Section Error! Reference source not found. Project Requirements for an Environmental Appraisal. The Environmental Appraisal should state that the activities are not subject to EIS requirements because they are unlikely to have significant effects on the environment, or the activities have already been assessed in an EIS and that a further EIS is not required for specific elements of the activity after consultation with the Competent Authority.

99. An Environmental Appraisal should broadly mirror the content of a full EIS, however generally with less detail, and is not subject to a public consultation process. An Environmental Appraisal should contain the following aspects:

- A brief description of the methods, installations and other means to be used;
- A brief description of the nature, aims, scope and duration of the proposed activities;
- A brief description of the initial state/baseline of the environment of the area;
- A brief description of the geographical boundaries of the area within which the activities are to be carried out, including safety zones where applicable;
- A brief description of the potential direct or indirect, short and long-term effects of the proposed activities on the environment, including fauna, flora and the ecological balance;
- A description of the mitigation measures in place to avoid/minimise the risk of damage to the environment through pollution and other adverse effects during and after the proposed activities;
- A notification on whether it is likely that the environment of another State is to be affected by the proposed activities.

##### **4.1.1. Description of Activity**

100. A description of the activity including the activity methodologies, location of activity and work programme should be provided.

##### **4.1.2. Activity Schedule**

101. The Environmental Appraisal should confirm the proposed start date and duration of the activities. The schedule should also take into account potential delays, as there may be seasonal differences in environmental sensitivities.

##### **4.1.3. Description of Environmental Baseline**

102. A description of all aspects of the environment likely to be affected by the activity should be included. Particular attention should be made to environmentally sensitive geographical areas, which are likely to be affected by the activity, including any protected species or habitats. Maps should be included, where relevant, to supplement the environmental baseline description. Consideration should also be given to other activities and users which use the location of the proposed activities.

#### **4.1.4. Assessment of Environmental Impacts**

103. The Environmental Appraisal should include any likely significant effects of the activity on the environment resulting from:

- Physical presence;
- Production of wastes and relevant emissions, discharges and expected residues;
- Production of underwater noise;
- The use of natural resources;
- The characteristics of the activity;
- The cumulation with other activities;
- The risk of accidental events;
- Location of the projects, close to or within an environmentally sensitive geographic area;
- Characteristics of the potential impacts.

#### **4.1.5. Environmental Management and Mitigation Measures**

104. Where relevant, any features or measures envisaged to avoid, prevent or reduce what might otherwise cause significant adverse effects on the environment should be included.

### **4.2. Permitting for the Use and Discharge of Chemical Additives**

105. The List of Parameters Document (UNEP(DEPI)/MED WG.434/4) submitted to the last OFOG Meeting held in Loutraki Greece, in April 2017, outlines the requirement for the submission of documentation to the relevant regulatory authority (Competent Authority) for the provision of environmental permits for the use of chemicals, drilling mud and allowable discharges, as part of the Operator Monitoring Plan and to address the requirements per relevant sections of the Offshore Protocol.

106. This section provides further clarification on the minimum criteria which must be included within an application for a chemical use and discharge permit according to relevant legislation and international best practice.

107. The use and discharge of all planned chemical additives, including any contingencies, must be approved by the Competent Authority. Any chemical permit application should include:

- A brief description of the offshore installation on or from which the chemicals are to be used and/or discharged and its location;
- A brief description of any technology and/or techniques which would be used to prevent or minimise the use and/or discharges;
- A brief description of the measures intended to monitor the use and/or discharge of any chemicals;
- A list of the use and discharge volumes of chemical additives;
- A risk assessment, incorporating details of any chemicals that could pose a risk to the environment and an impact assessment.

#### **4.2.1. Permitted Substances List**

108. Currently Annex I of the Offshore Protocol lists substances where disposal is prohibited and Annex II, which lists substances that require a special permit to discharge. The Barcelona Convention Offshore Oil and Gas Group (OFOG) Sub-Group on Environmental Impact of Offshore Monitoring Programmes has recommended changes to Annex I and II of the Offshore Protocol after reviewing

best practices. A proposed amendment to The List of Pollutants Document (UNEP(DEPI)/MED WG.434/3) submitted to the last OFOG Meeting held in Loutraki Greece, in April 2017, is provided as Appendix 1 to the Rationale for the Guidelines for the Conduct of Environmental Impact Assessment (EIA) submitted as information document (UNEP/MED WG.476/Inf.4).

109. The OFOG has proposed using the lists of substances addressed under the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) and the Offshore Chemical Notification Scheme (OCNS), which manages chemical use and discharge by the UK and Netherlands offshore petroleum industries, as an alternative to Annex II. These lists include, the List of Substances of Possible Concern (LSPC), the List of Substances Used and Discharged Offshore which are Considered to Pose Little or No Risk to the Environment (PLONOR), and the OCNS Chemical Hazard and Risk Management (CHARM).

110. The OCNS is based upon the OSPAR Harmonised Mandatory Control Scheme (HMCS) developed through the OSPAR Decision 2000/2 (as amended) on a harmonised mandatory control system for the use and discharge of offshore chemicals.

111. The Harmonised Offshore Chemical Notification Format (HOCNF) applies to all chemicals used in connection with offshore exploration and production activities in the OSPAR maritime area. Chemical manufacturers must complete a HOCNF registration for each chemical product. Once registered and approved, each chemical product will receive a certificate of use/template and will be placed on the list of registered products. This list contains all chemical products certified for use offshore.

#### **4.2.2. Quantification of Chemical Use and Discharge**

112. Information on the quantities of chemicals to be used and discharged should be recorded, based on either standardised reference installations or, where appropriate; on site specific use and discharge. The quantification of chemicals will allow chemical use and discharge in the Mediterranean to be monitored, with the potential for reporting on the levels of chemical use and discharge in the region.

113. The measurement or calculation, documentation, and reporting of chemical use and discharge (volumes, rates and characteristics) are also required as part of IMAP's Operator Environmental Monitoring Programme.

#### **4.2.3. Chemical Risk Assessment/Modelling**

114. The following section uses the procedure described by the OCNS and HMCS, as an example of best practice, which can be readily adopted for use in the Mediterranean. An assessment of the potential risks to the environment as a result of the use and/or discharge of primary and/or contingency chemical, should be undertaken. Chemicals which have been assigned as PLONOR will need to be included on the permit application but do not need any further modelling or risk assessment. Chemicals which have to potential to cause risk will require a risk assessment using modelling software such as CHARM.

115. The risk assessment modelling is based on the ratio between the Predicted Environmental Concentration (PEC) derived from data relating to individual substances or preparation characteristics and the conditions of use, and the Predicted No-effect Concentration (PNEC) derived from toxicity tests conducted to agreed protocols. The PEC:PNEC ratio facilitates informed assessments of the risk for each usage and/or discharge scenario, which can then be considered in the light of local sensitivities.

116. A site-specific risk assessment should be undertaken using ecotoxicological information to calculate a Risk Quotient (RQ) using installation specific data, using the CHARM model. The CHARM model is not applicable for all substances, depending on their biodegradation value, bioconcentration and molecular weight. Specific chemical and toxicity data required to calculate RQ will be available from the chemical suppliers on the product templates. The calculations of the RQ Chemicals with functions for which the CHARM model has no algorithms are ranked by applying the OCNS hazard groups instead.

117. The risk assessment should consider the toxicity of the chemicals present in a discharge, calculate the dispersion/dilution rate and, where there is the potential for effects upon local sensitivities such as spawning grounds, should estimate the area of potential biological effect. The risk assessment should include coherent rationale for the use of the selected chemical products balanced with the potential for adverse effects on the local environment. The assessment should also consider operational and commercial requirements for product use, and/or refer to monitoring data or specific knowledge that enables a more accurate prediction of the chemical fate and effects.

#### **4.2.4. Justification for Use and Discharge of OCNS Chemicals with Substitution Warnings**

118. An important part of the HMCS is the identification and phasing out of harmful chemicals. OSPAR has developed lists of harmful chemicals (OSPAR List of chemicals for Priority Action) which should be phased out and have provided these chemicals with a substitution warning. Developers should try and avoid using products with a substitution warning if an appropriate alternative is available. A chemical with a substitution warning will be identified on the manufacturers chemical template.

119. If a chemical is, or contains, a substance that has been assessed as an OSPAR Candidate for Substitution, the use of the chemical must be justified including, where appropriate, a description of relevant risk mitigation measures. Consideration of alternative products to demonstrate whether they would represent a lower environmental risk should also form part of the overall risk management process.

#### **4.3. Regulator Review and Consultation**

120. Environmental Appraisals and Chemical permit applications will be reviewed by the Competent Authority and may also be subject to review by additional statutory consultees. Once satisfied all statutory requirements are met, the Competent Authority will issue a permit to undertake the proposed work. The permit may contain specific operational, temporal and reporting conditions/restrictions related to the proposed operations. Environmental Appraisals and Chemical permit applications are not subjected to public consultation, so typically the permitting process will be much quicker than for projects that require a full EIA.

#### **4.4. Decision Making (Consenting)**

121. When considering approval for Environmental Appraisals and chemical permit applications, consultee comments will be taken into consideration along with the outcome of the Competent Authority's review. If the information provided in the Environmental Appraisal is acceptable, there are no objections from consultees and the Competent Authority is satisfied that the activity will not result in any significant adverse effects, the approval will be granted. If the Competent Authority is not satisfied, and considers the activity has the potential to cause significant adverse environmental effects, the application will be rejected. The Competent Authority will provide advice on how to proceed in this instance.



#### **4.5. Bibliography**

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