6. SPECIALIST STUDIES

This chapter provides information on specialist studies that will be undertaken during the EIA Phase and the terms of reference for these studies, as well as the predefined rating scales that will be used to assess potential impacts.

6.1 INTRODUCTION

During the EIA phase two specialist studies will be commissioned to address marine fauna (including benthic) and fisheries.

The terms of reference for these studies are presented in Section 6.2 below. As part of these studies, specialists will gather data relevant to identifying and assessing environmental impacts that might occur as a result of the proposed project in their particular field of expertise. They will provide baseline information and identify and assess impacts according to predefined rating scales (see Section 6.3). Specialists will also suggest ways in which negative impacts could be mitigated and benefits could be enhanced.

The results of the specialist studies will be integrated into the EIR.

6.2 TERMS OF REFERENCE FOR THE SPECIALIST STUDIES

6.2.1 GENERAL TERMS OF REFERENCE FOR THE SPECIALIST STUDIES

The following general terms of reference will apply to the specialist studies:

- Describe the baseline conditions that exist in the study area and identify any sensitive areas that would need special consideration;
- Review the Comments and Responses Report (see Appendix 2.6) to ensure that all relevant issues and concerns relevant to fields of expertise are addressed;
- Identify and assess potential impacts of the proposed operations;
- Identify and list all legislation and permit requirements that are relevant to the development proposal;
- Identify areas where issues could combine or interact with issues likely to be covered by other specialists, resulting in aggravated or enhanced impacts;
- Indicate the reliability of information utilised in the assessment of impacts as well as any constraints to which the assessment is subject (e.g. any areas of insufficient information or uncertainty);
- Where necessary consider the precautionary principle in the assessment of impacts;
- Identify feasible ways in which impacts could be mitigated and benefits enhanced giving an indication of the likely effectiveness of such mitigation and how these could be implemented in the management of the proposed operation;
- To ensure that specialists use a common standard, the determination of the significance of the assessed impacts will be undertaken in accordance with a common Convention (see Section 6.3);
- Comply with DEA guidelines as well as any other relevant guidelines on specialist study requirements for EIAs;
- Include specialist expertise and a signed statement of independence; and
- Comply with Regulation 12 and Appendix 6 of the EIA Regulations 2014, which specifies requirements for all specialist reports.

6.2.2 MARINE FAUNA

The specific terms of reference for the marine faunal assessment are as follows:

- Provide a general description of the local marine fauna (including cetaceans, seals, turtles, seabirds, fish, invertebrates and plankton species) within the proposed exploration licence area and greater South-West Coast. The description to be based on, *inter alia*, a review of existing information and data from the international scientific literature, the Generic EMP prepared for seismic surveys in South Africa, information sourced from the internet, as well as MMO close-out reports prepared for previous surveys undertaken off the coast of South Africa;
- Identify, describe and assess the significance of potential impacts of the proposed exploration activities on the local marine fauna, including but not limited to:
  - physiological injury;
  - behavioural avoidance of the survey area;
  - masking of environmental sounds and communication; and
  - indirect impacts due to effects on prey.
- Identify practicable mitigation measures to avoid/reduce any negative impacts and indicate how these could be implemented in the start-up and management of the proposed project.

6.2.3 FISHERIES

The specific terms of reference for the fisheries assessment are as follows:

- Provide a general description of the fishing activities expected in the proposed exploration licence area and along the greater South-West Coast and areas adjacent to the license area in which fisheries overlap or may be affected;
- Undertake a spatial and temporal assessment of expected fishing effort and catch in the proposed exploration licence area for each sector identified;
- Determine whether there is any correlation between seismic and reported catch of the small pelagic and tuna-pole fisheries using information from surveys off the South-West Coast and taking into consideration the seasonality and variability in catches and abundance for the period for which such data are available. Fine scale environmental effects such as physical and chemical oceanographic characteristics will be excluded from this analysis.
- Assess the risk of the proposed exploration activities on the different fishing sectors taking into consideration as far as possible the historical and current performance of the key fisheries in the area and their expected natural variability;
- Assess the impact of the proposed exclusion zones around the survey vessels and potential disturbance of fish on the fishing activities based on the estimated percentage loss of catch and effort;
- Quantify the approximate economic impact of the estimated percentage loss of catch and effort calculated above for the small pelagic and tuna-pole fisheries; and
- Make recommendations for mitigation measures that could be implemented to minimise or eliminate negative impacts on and enhance any benefits to the fishing industry.

6.3 CONVENTION FOR ASSIGNING SIGNIFICANCE RATINGS TO IMPACTS

Specialists will consider seven rating scales when assessing potential impacts. These include:

- Extent of impact;
- Duration of impact;
- Intensity of impact;
- Significance of impact;

- Status of impact;
- Probability of impact occurring;
- Degree to which impact can be mitigated;
- Degree to which a resource is lost;
- Reversibility of impact; and
- Degree of confidence of assessment.

In assigning significance ratings to potential impacts before and after mitigation, specialists are instructed to follow the approach presented below:

1. The core criteria for determining significance ratings are "extent" (Section 6.3.1), "duration" (Section 6.3.2) and "intensity" (Section 6.3.3). The preliminary significance ratings for combinations of these three criteria are given in Section 6.3.4.

2. Additional criteria to be considered, which could "increase" the significance rating if deemed justified by the specialist, with motivation, are the following:
   - Permanent / irreversible impacts (as distinct from long-term, reversible impacts);
   - Potentially substantial cumulative effects (see Item 9 below); and
   - High level of risk or uncertainty, with potentially substantial negative consequences.

3. Additional criteria to be considered, which could "decrease" the significance rating if deemed justified by the specialist, with motivation, is the following:
   - Improbable impact, where confidence level in prediction is high.

4. The status of an impact is used to describe whether the impact will have a negative, positive or neutral effect on the surrounding environment. An impact may therefore be negative, positive (or referred to as a benefit) or neutral (Section 6.3.5).

5. Describe the impact in terms of the probability of the impact occurring (Section 6.3.6) and the degree of confidence in the impact predictions, based on the availability of information and specialist knowledge (Section 6.3.7).

6. Describe the degree to which a resource is impacted (Section 6.3.8);

7. When assigning significance ratings to impacts *after mitigation*, the specialist needs to:
   - First, consider probable changes in intensity, extent and duration of the impact after mitigation, assuming effective implementation of mitigation measures, leading to a revised significance rating; and
   - Then moderate the significance rating after taking into account the likelihood of proposed mitigation measures being effectively implemented. Consider:
     - Any potentially significant risks or uncertainties associated with the effectiveness of mitigation measures;
     - The technical and financial ability of the proponent to implement the measure; and
     - The commitment of the proponent to implementing the measure, or guarantee over time that the measures would be implemented.

8. Describe the degree to which an impact can be mitigated or enhanced (Section 6.3.9) and reversed (Section 6.3.10)

9. The cumulative impacts of a project should also be considered. "Cumulative impacts" refer to the impact of an activity that may become significant when added to the existing activities currently taking place within the surrounding environment.

10. Where applicable, assess the degree to which an impact may cause irreplaceable loss of a resource. A resource assists in the functioning of human or natural systems, i.e. specific minerals, water, etc.

The significance ratings are based on largely objective criteria and inform decision-making at a project level as opposed to a local community level. In some instances, therefore, whilst the significance rating of potential impacts might be "low" or "very low", the importance of these impacts to local communities or individuals might be extremely high. The importance which I&APs attach to impacts must be taken into consideration, and recommendations should be made as to ways of avoiding or minimising these negative impacts through project design, selection of appropriate alternatives and / or management.

The relationship between the significance ratings after mitigation and decision-making can be broadly defined as follows:

Significance rating	Effect on decision-making
INSIGNIFICANT; VERY LOW; LOW	Will not have an influence on the decision to proceed with the proposed project, provided that recommended measures to mitigate negative impacts are implemented.
MEDIUM	Should influence the decision to proceed with the proposed project, provided that recommended measures to mitigate negative impacts are implemented.
HIGH; VERY HIGH	Would strongly influence the decision to proceed with the proposed project.

6.3.1 EXTENT

"Extent" defines the physical extent or spatial scale of the impact.

Rating	Description
LOCAL	Extending only as far as the activity, limited to the site and its immediate surroundings. Specialist studies to specify extent.
REGIONAL	South-West Coast. Specialist studies to specify extent.
NATIONAL	South Africa
INTERNATIONAL	

6.3.2 DURATION

"Duration" gives an indication of how long the impact would occur.

Rating	Description
SHORT-TERM	0 - 5 years
MEDIUM-TERM	6 - 15 years
LONG-TERM	Where the impact will cease after the operational life of the activity, either because of natural processes or by human intervention.
PERMANENT	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.

6.3.3 INTENSITY

"Intensity" establishes whether the impact would be destructive or benign.

Rating	Description
ZERO TO VERY LOW	Where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.
LOW	Where the impact affects the environment in such a way that natural, cultural and social functions and processes continue, albeit in a slightly modified way.

Rating	Description
MEDIUM	Where the affected environment is altered, but natural, cultural and social functions and processes continue, albeit in a modified way.
HIGH	Where natural, cultural and social functions or processes are altered to the extent that it will temporarily or permanently cease.

6.3.4 SIGNIFICANCE

"Significance" attempts to evaluate the importance of a particular impact, and in doing so incorporates the above three scales (i.e. extent, duration and intensity).

Rating	Description
VERY HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***long term***[1]; OR of ***high intensity*** at a ***national level*** in the ***medium term***; OR of ***medium intensity*** at a ***national level*** in the ***long term.***
HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***high intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***medium term;*** OR of ***low intensity*** at a ***national level*** in the ***long term***; OR of ***high intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***regional level*** in the ***long term.***
MEDIUM	Impacts could be EITHER: of ***high intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***medium intensity*** at a ***regional level*** in the ***medium term***; OR of ***high intensity*** at a ***regional level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***local level*** in the ***long term***; OR of ***low intensity*** at a ***national level*** in the ***medium term;*** OR of ***low intensity*** at a ***regional level*** in the ***long term.***
LOW	Impacts could be EITHER of ***low intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***national level*** in the ***short term***; OR of ***high intensity*** at a ***local level*** and endure in the ***short term***; OR of ***medium intensity*** at a ***regional level*** in the ***short term***; OR of ***low intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***local level*** and endure in the ***medium term.***
VERY LOW	Impacts could be EITHER of ***low intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***regional level*** and endure in the ***short term***; OR of ***low to medium intensity*** at a ***local level*** and endure in the ***short term.***
INSIGNIFICANT	Impacts with: ***Zero to very low intensity*** with any combination of extent and duration.
UNKNOWN	In certain cases it may not be possible to determine the significance of an impact.

[1] For any impact that is considered to be "Permanent" apply the "Long-Term" rating.

6.3.5 STATUS OF IMPACT

The status of an impact is used to describe whether the impact would have a negative, positive or zero effect on the affected environment. An impact may therefore be negative, positive (or referred to as a benefit) or neutral.

6.3.6 PROBABILITY

"Probability" describes the likelihood of the impact occurring.

Rating	Description
IMPROBABLE	Where the possibility of the impact to materialise is very low either because of design or historic experience.
PROBABLE	Where there is a distinct possibility that the impact will occur.
HIGHLY PROBABLE	Where it is most likely that the impact will occur.
DEFINITE	Where the impact will occur regardless of any prevention measures.

6.3.7 DEGREE OF CONFIDENCE

This indicates the degree of confidence in the impact predictions, based on the availability of information and specialist knowledge.

Rating	Description
HIGH	Greater than 70% sure of impact prediction.
MEDIUM	Between 35% and 70% sure of impact prediction.
LOW	Less than 35% sure of impact prediction.

6.3.8 LOSS OF RESOURCES

"Loss of resource" refers to the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable.

Rating	Description
LOW	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
HIGH	Where the activity results in an irreplaceable loss of a resource.

6.3.9 DEGREE TO WHICH IMPACT CAN BE MITIGATED

This indicates the degree to which an impact can be reduced / enhanced.

Rating	Description
NONE	No change in impact after mitigation.
VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
LOW	Where the significance rating drops by one level, after mitigation.
MEDIUM	Where the significance rating drops by two to three levels, after mitigation.
HIGH	Where the significance rating drops by more than three levels, after mitigation.

6.3.10 REVERSIBILITY OF AN IMPACT

This refers to the degree to which an impact can be reversed.

Rating	Description
IRREVERSIBLE	Where the impact is permanent.
PARTIALLY REVERSIBLE	Where the impact can be partially reversed.
FULLY REVERSIBLE	Where the impact can be completely reversed.