



**TOTAL E&P SOUTH AFRICA B.V.**

**PROPOSED SONAR SURVEYS AND  
SEABED SEDIMENT SAMPLING IN  
BLOCK 11B/12B, SOUTH COAST,  
SOUTH AFRICA**

**ENVIRONMENTAL MANAGEMENT  
PROGRAMME ADDENDUM**

**AMENDED IN TERMS OF THE MINERAL AND PETROLEUM  
RESOURCES DEVELOPMENT ACT, 2002 (No. 28 of 2002)**

Prepared for:  
**TOTAL Exploration & Production South Africa B.V**

Prepared by:  
**CCA Environmental (Pty) Ltd**







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Prepared for:  
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## PROJECT INFORMATION

TITLE	Environmental Management Programme Addendum for proposed sonar surveys and seabed sediment sampling in Block 11B/12B, South Coast, South Africa.
HOLDER	TOTAL Exploration & Production South Africa B.V
ENVIRONMENTAL CONSULTANTS	CCA Environmental (Pty) Ltd
REPORT REFERENCE	[TOT04SS / EMPR ADDENDUM]
REPORT DATE	December 2014

**REPORT COMPILED BY:** Nicholas Arnott

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**REPORT COMPILED BY:** Jonathan Crowther

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Jonathan Crowther (Pr.Sci.Nat.; CEAPSA)  
**Managing Director**

## EXPERTISE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

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<b>RESPONSIBILITY ON PROJECT</b>	Project leader and quality control.
<b>DEGREE</b>	B.Sc. Hons (Geol.), M.Sc. (Env. Sci.)
<b>PROFESSIONAL REGISTRATION</b>	Pr.Sci.Nat., CEAPSA
<b>EXPERIENCE IN YEARS</b>	24
<b>EXPERIENCE</b>	Jonathan Crowther has been involved in environmental consulting since 1988 and is currently the Managing Director of CCA Environmental (Pty) Ltd. He has expertise in a wide range of environmental disciplines, including Environmental Impact Assessments (EIA), Environmental Management Plans / Programmes, Environmental Planning & Review, Environmental Auditing & Monitoring, Environmental Control Officer, Public Consultation & Facilitation. He has project managed a number of offshore oil and gas EIAs for various exploration and production activities in South Africa and Namibia. He also has extensive experience in projects related to roads, property developments and waste landfill sites.

<b>NAME</b>	Nicholas Arnott
<b>RESPONSIBILITY ON PROJECT</b>	Project consultant and report compilation
<b>DEGREE</b>	B.Sc. Hons (Earth and Geographical Science)
<b>PROFESSIONAL REGISTRATION</b>	-
<b>EXPERIENCE IN YEARS</b>	8
<b>EXPERIENCE</b>	Nicholas Arnott has worked as an environmental assessment practitioner since 2006 and has been involved in a number of projects covering a range of environmental disciplines, including Basic Assessments, Environmental Impact Assessments and Environmental Management Programmes. He has gained experience in a wide range of projects relating to mining, infrastructure projects (e.g. roads), housing and industrial developments.

## **EXECUTIVE SUMMARY**

### **1. INTRODUCTION**

TOTAL Exploration & Production South Africa B.V. (hereafter referred to as “TEPSA”) is the operator and holder of an existing Exploration Right for undertaking seismic surveys and exploration well drilling in Block 11B/12B. This block is located off the South Coast of South Africa roughly between Mossel Bay and St Francis Bay, approximately 130 km to 70 km offshore, respectively. Following a farm-in to the Exploration Right, TEPSA has assumed operatorship of Block 11B/12B from CNR International (South Africa) Limited (CNRI), who has retained a 50% working interest in the block.

CNRI obtained the Exploration Right for Block 11B/12B in terms of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002) (MPRDA). As part of the process of applying for the Exploration Right, an Environmental Management Programme (EMPr) was compiled and approved for the undertaking of seismic surveys and exploration drilling within the licence area. Exploration drilling also received Environmental Authorisation under the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA), as amended. Both seismic surveying and exploration well drilling have been undertaken within the licence area to date.

TEPSA is now proposing to undertake additional exploration activities, including sonar surveys and seabed sediment sampling over selected areas of the licence block at various times over the Exploration Right validity period. TEPSA is thus required to apply for an amendment of the approved EMPr in order to undertake these proposed activities.

TEPSA has appointed CCA Environmental (Pty) Ltd (CCA) to compile this EMPr Addendum to meet the relevant requirements of the MPRDA and the Regulations thereto.

### **2. EMPr ADDENDUM APPROACH AND METHODOLOGY**

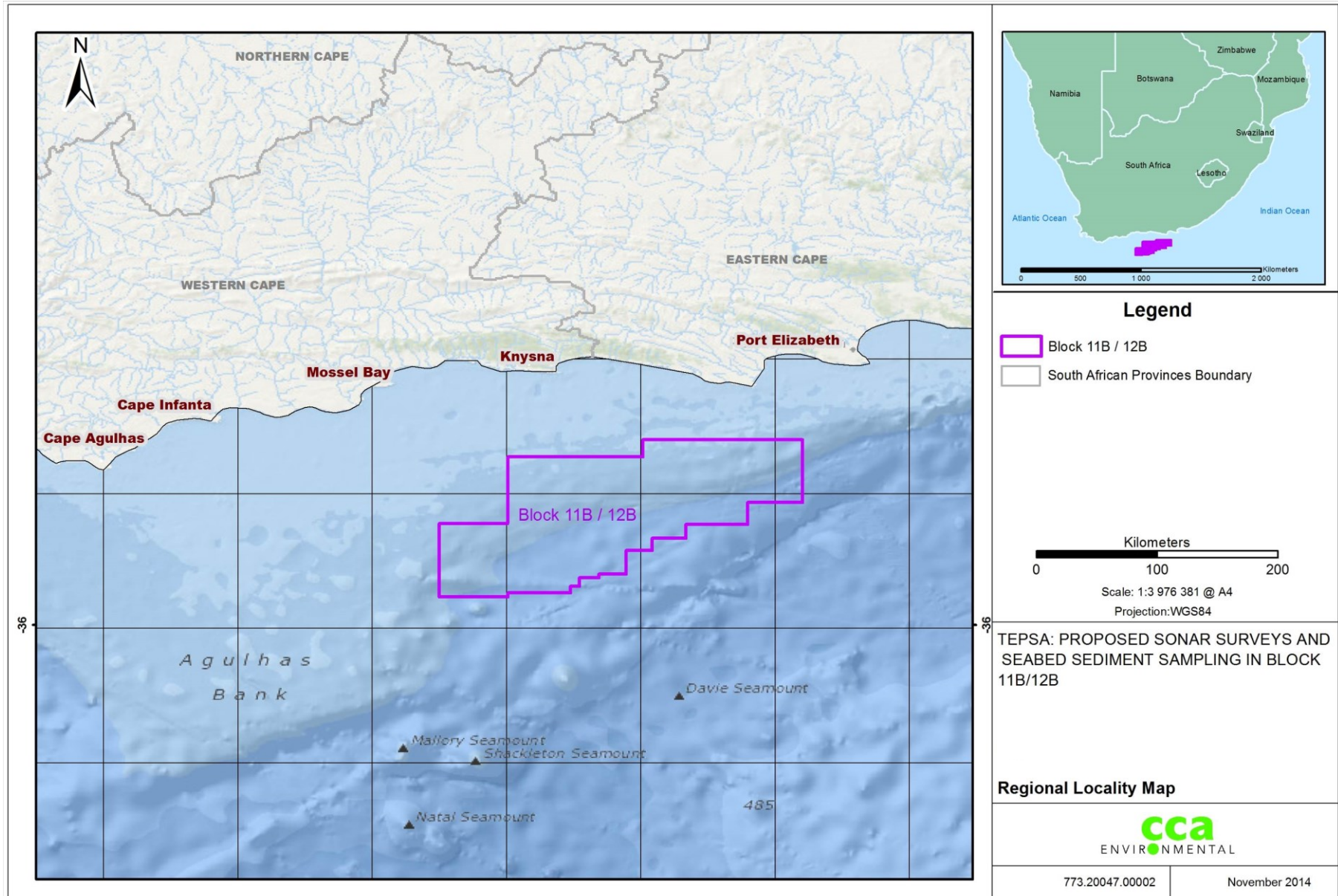
#### **2.1 OBJECTIVES**

The objectives of the EMPr Addendum process are:

- To provide a reasonable opportunity for I&APs to be consulted on the proposed project;
- To ensure that all potential key environmental issues and impacts that could result from the proposed project are identified;
- To identify feasible alternatives to the implementation of the proposed project;
- To assess potential impacts related to the proposed project;
- To present appropriate mitigation or optimisation measures to minimise potential impacts or enhance potential benefits; and
- Through the above, to ensure informed, transparent and accountable decision-making by the relevant authorities.

#### **2.2 PUBLIC PARTICIPATION PROCESS**

The public participation process has involved an open, participatory approach and involvement of I&APs to ensure that all potential impacts are identified and that planning and decision-making takes place in an informed, transparent and accountable manner.



**Figure 0-1: Locality of Licence Block 11B/12B off the South Coast of South Africa.**



As part of compiling the EMPr Addendum, a Background Information Document (BID) and Response Form were distributed for a 21-day comment period (5 November 2014 to 26 November 2014). An advertisement announcing the proposed project and the availability of the BID was placed in The Cape Times (Western Cape), Die Burger (Western Cape), Die Burger (Eastern Cape) and The Herald (Eastern Cape) on 5 November 2014. Five written submissions were received during the comment period.

### **2.3 SPECIALIST STUDIES AND REPORT COMPILATION**

Two specialist studies were undertaken to address the key issues that required further investigation, namely the impact on fishing and marine fauna.

The specialist and other relevant information were then integrated into the EMPr Addendum.

## **3. PROJECT DESCRIPTION**

### **3.1 GENERAL INFORMATION**

#### **3.1.1 EXPLORATION RIGHT**

TEPSA is the operator and holder of an existing Exploration Right for undertaking seismic surveys and exploration well drilling in Block 11B/12B.

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#### **3.1.2 FINANCIAL PROVISION**

TEPSA will comply with the requirements for financial provision as specified in terms of Section 41 of the MPRDA and Sections 52 and 53 of the MPRDA Regulations. TEPSA would provide for rehabilitation, management and remediation of negative environmental impacts associated with the additional exploration work programme that is being proposed. This would be provided for by means of an insurance policy.

#### **3.1.3 ENVIRONMENTAL POLICY**

The TEPSA Health, Safety and Environmental Policy sets out their commitment to ensure successful implementation of the proposed project and EMPr Addendum.

### **3.1.4 MONITORING AND EMP PERFORMANCE ASSESSMENT**

TEPSA would undertake appropriate monitoring during the proposed sonar surveys and seabed sediment sampling. TEPSA would track performance against objectives and targets specified in this EMPr Addendum.

At the conclusion of each exploration activity a “close-out” report would be prepared, which would include monitoring and performance assessments. This report would outline the implementation of the EMPr and highlight any problems and issues that arose during the proposed activities.

### **3.1.5 PLANS AND PROCEDURES FOR ENVIRONMENTAL RELATED EMERGENCIES AND REMEDIATION**

All offshore emergencies would be managed in terms of a bridging document between the Emergency Response Plan prepared for Block 11B/12B by TEPSA and the emergency response procedures and plans of the selected Contractor.

### **3.1.6 Undertaking by the Applicant**

TEPSA undertakes to comply with the specifications of the EMPr Addendum and provisions of the MPRDA and Regulations thereto.

## **3.2 PROJECT OVERVIEW**

The proposed exploration activities would include various sonar surveys and seabed sediment sampling. The following sonar surveying tools are currently considered for use:

- Depth sounders;
- Side scan sonar;
- Bottom profilers; and
- Multi-beam bathymetry.

The seabed sediment sampling programme would involve the collection of sediment samples in order to characterise the seafloor and for laboratory geochemical analyses in order to determine if there is any naturally occurring hydrocarbon seepage at the seabed. Piston and box coring (or grab samples) techniques would be used to collect seabed sediment samples.

The seabed sediment sampling would be undertaken in small specific areas across the block. Each individual piston and box core would have a maximum volume of 0.02 m<sup>3</sup> and 0.03 m<sup>3</sup>, respectively. It should be noted that the total cumulative volume of material that would be removed from the seabed would be less than 5 m<sup>3</sup>.

## **4. THE AFFECTED ENVIRONMENT**

Block 11B/12B falls within the offshore area of the South Coast region of South Africa. The South Coast stretches between Cape Agulhas (34° 30'S, 20° 00'E) and Cape Padrone (33° 38'S, 27° 00'E). The region is dominated by the Agulhas Bank, a roughly 116 000 km<sup>2</sup> triangular extension of the continental shelf, extending over 10° of longitude to some 250 km offshore at its widest point at approximately 21° 00' E.

The Agulhas Bank represents a transition zone between the warm Agulhas Current waters to the east, and the cool waters of the Benguela system to the west. The eastern margin of the Bank is strongly influenced by the south flowing Agulhas Current.

The eastern coastline is characterised by a number of Capes separated by sheltered sandy embayments. The oceanography of the coastal strip is largely dependent on the orientation of the local coastline and bathymetry in relation to prevailing easterly and westerly wind regimes.

## 5. ENVIRONMENTAL IMPACT ASSESSMENT

A summary of the significance ratings assigned to each potential impact of the proposed exploration activities is provided in Table 1.

**Table 1: Summary of the significance of the potential impacts of undertaking sonar surveys and seabed sediment sampling in Block 11B/12B.**

Potential impact		Significance	
		Without mitigation	With mitigation
<b>Normal vessel operation:</b>			
Emissions to the atmosphere		VL	<b>VL</b>
Deck drainage into the sea		VL	<b>VL</b>
Machinery space drainage into the sea		VL	<b>VL</b>
Sewage effluent into the sea		VL	<b>VL</b>
Galley waste disposal into the sea		VL	<b>VL</b>
Solid waste disposal into the sea		Insignificant	<b>INSIGNIFICANT</b>
Noise from vessel operations		VL	<b>VL</b>
<b>Impacts on marine fauna:</b>			
Impacts of sonar survey on marine fauna		VL	<b>VL</b>
<b>Impacts of seabed sediment sampling</b>			
Impacts on marine fauna	Sediment removal	Insignificant	<b>INSIGNIFICANT</b>
	Crushing	Insignificant	<b>INSIGNIFICANT</b>
	Smothering	Insignificant	<b>INSIGNIFICANT</b>
Impacts on cultural heritage material		H	<b>L</b>
Impacts on seafloor infrastructure		M	<b>NO IMPACT</b>
<b>Impact on other users of the sea:</b>			
Fishing industry	Demersal trawl fishery	VL	<b>VL</b>
	Midwater trawl	L	<b>L</b>
	Demersal long-line fishery	L	<b>L</b>
	Large pelagic long-line fishery	VL	<b>VL</b>
	Traditional line-fish	Insignificant	<b>INSIGNIFICANT</b>
	Small pelagic purse-sine	Insignificant	<b>INSIGNIFICANT</b>
	South Coast rock lobster	L	<b>L</b>
	Squid jig	VL	<b>VL</b>
Impacts on fisheries research		VL	<b>VL</b>

Potential impact	Significance	
	Without mitigation	With mitigation
Impacts on marine prospecting and mining activities	VL	<b>VL</b>
Impacts on marine exploration and production activities	VL	<b>VL</b>
Marine transport routes	L	<b>VL</b>
H=High      M=Medium      L=Low      VL=Very low      N/A=Not applicable	All impacts are negative	

## 6 CONCLUSIONS

The majority of the impacts associated with the sonar surveys and seabed sediment sampling would be of short-term duration and limited to the immediate survey and/or sampling areas. As a result, the majority of the impacts associated with the exploration activities are considered to be of **INSIGNIFICANT** to **LOW** significance after mitigation.

Although the impacts on the various fishing sectors active in License Block 11B/12B are assessed to be of **LOW**, **VERY LOW** significance or **INSIGNIFICANT** after mitigation, it is important that the operator engages timeously with the fishing industry prior to and during the proposed exploration activities. Regular communication with fishing vessels in the vicinity during surveying or sampling would minimise the potential disruption to fishing operations and risk of gear entanglements.

## 7 RECOMMENDATIONS

The following recommendations and mitigation measures are proposed.

### 7.1 GENERAL

#### 7.1.1 Compliance with environmental protection activities and procedures

- All phases of the proposed sonar surveys and seabed sediment sampling programme (including pre-establishment phase, establishment phase, operational phase, and decommissioning and closure phase) must comply with the specific environmental protection activities and procedures presented in Chapter 7.

#### 7.1.2 Compliance with MARPOL standards

- All vessels must comply with the MARPOL 73/78 standards.

#### 7.1.3 Exemption application

- In terms of the Marine Living Resources Act, 1998 (No. 18 of 1998) it is illegal for any vessel to approach to or remain within 300 m of whales within South African waters without a permit or exemption. Therefore, if necessary, it is recommended that the operator apply to DEA for an exemption from the reelvatn section of this Act.

#### 7.1.4 Vessel safety

- The survey vessels must be certified for seaworthiness through an appropriate internationally recognised marine certification programme (e.g. Lloyds Register, Det Norske Veritas). The certification, as well as existing safety standards, requires that safety precautions would be taken to minimise the possibility of an offshore accident;
- Collision prevention equipment should include radar, multi-frequency radio, foghorns, etc. Additional precautions include:
  - > The existence of an internationally agreed 500 m safety zone around the survey vessels;
  - > Cautionary notices to mariners; and
  - > Access to current weather service information.
- The vessels are required to fly standard flags, lights (three all-round lights in a vertical line, with the highest and lowest lights being red and the middle light being white) or shapes (three shapes in a vertical line, with the highest and lowest lights being balls and the middle light being a diamond) to indicate that the survey vessel is restricted in manoeuvrability, and must be fully illuminated during twilight and night; and
- Report any emergency situation to SAMSA.

#### 7.1.5 Emissions, discharges into the sea and solid waste

- Diesel motors and generators are to be adequately maintained to minimise the volume of soot and unburned diesel released to the atmosphere;
- All hydraulic systems are to be adequately maintained and hydraulic hoses frequently inspected;
- Undertake training and awareness of crew members of the need for thorough cleaning up of any spillages immediately after they occur, as this would minimise the volume of contaminants washing off decks;
- Use of low-toxicity, biodegradable detergents during deck cleaning to further minimise the potential impact of deck drainage on the marine environment;
- Collect deck drainage in oily water separator systems. Discharged water must meet MARPOL 73/78 standards;
- Discharge effluent (e.g. sewage and galley waste) as per MARPOL requirements;
- Initiate an on board waste minimisation system;
- On board solid waste storage is to be secure; and
- Contractors must co-operate with the relevant local authority and dispose of waste (solid and hazardous) in accordance with the appropriate laws and ordinances.

#### 7.1.6 Communication with key stakeholders

- Prior to the commencement of each exploration activity the following key stakeholders should be consulted and informed of the proposed activities (including navigational co-ordinates of the survey / sampling areas, timing and duration of proposed activities) and the likely implications thereof:
  - > Fishing industry / associations (these include South African Tuna Association, South African Tuna Long-Line Association, Fresh Tuna Exporters Association, South African Deep-Sea Trawling Industry Association, South African Hake Long-Line Association, South African Fishing Industry Associations, South African Midwater Trawling Association, South Coast Rock Lobster Association, South African Commercial Linefish Association, and South African Squid Management Industrial Association); and
  - > Other: DEA, Department of Agriculture, Forestry and Fisheries (DAFF), Port Captains, South African Maritime Safety Authority (SAMSA), South African Navy (SAN) Hydrographic office,

overlapping and neighbouring exploration right holders and applicants, and Transnet National Ports Authority.

- The operator must request, in writing, the SAN Hydrographic office to release Radio Navigation Warnings and Notices to Mariners throughout the various sampling / survey periods. The Notice to Mariners should give notice of (1) the co-ordinates of the proposed survey / sampling areas, (2) an indication of the proposed survey / sampling timeframes and day-to-day location of the survey vessel, and (3) an indication of the 500 m safety zones. These Notices to Mariners should be distributed timeously to fishing companies and directly onto vessels where possible;
- Any fishing vessel targets at a radar range of 12 nautical miles from the survey vessel should be called via radio and informed of the navigational safety requirements; and
- Affected parties should be notified through fishing industry bodies when the programme is complete.

## **7.2 RECOMMENDATIONS SPECIFIC TO THE SEABED SEDIMENT SAMPLING PROGRAMME**

- The final positioning of the sample sites should avoid any cultural heritage material identified during the sonar survey and existing seafloor telecommunications cables;
- If any cultural heritage material is found during sampling activities SAHRA should be notified immediately. If any material older than sixty years is to be disturbed a permit would be required from SAHRA; and
- No anchoring is permitted within 1 nm of seafloor telecommunication cables.

## **7.3 RECOMMENDATIONS SPECIFIC TO THE SONAR SURVEYS**

- Appoint an MMO for the duration of the survey;
- Surveying must only commence once it has been confirmed for a 15-minute period (visually during the day) that there is no large cetacean activity within 500 m of the vessel;
- Terminate the survey if cetaceans show obvious negative behavioural changes within 500 m of the survey vessel or equipment. The survey should be terminated until such time it is confirmed that cetaceans have moved to a point that is more than 500 m from the source or despite continuous observation, 15 minutes has elapsed since the last sighting of the cetaceans within 500 m of the source.
- The MMO should conduct visual scans for the presence of cetaceans around the survey vessel prior to the initiation of any acoustic impulses. The duties of the MMO would be to:
  - > Monitor the survey pre-watch period to confirm that there is no large cetacean activity within 500 m of the vessel for a 15-minute period;
  - > Record sound levels, pre-watch sightings and “soft-start” procedures (if required);
  - > Observe and record responses of marine fauna to the multi-beam bathymetry survey. Data captured should include species identification, position (latitude/longitude), distance from the vessel, swimming speed and direction (if applicable) and any obvious changes in behaviour (e.g. startle responses or changes in surfacing/diving frequencies, breathing patterns) as a result of the survey activities; and
  - > Request the temporary termination of survey, as appropriate. A log of all termination decisions must be kept for inclusion in both daily and “close-out” reports.
- If the source level is greater than 210 dB re 1  $\mu$ Pa at 1 m the following is recommended:
  - > Where equipment allows, a “soft-start” procedure shall be implemented for a period of 20 minutes. This requires that the sound source be ramped from low to full power rather than initiated at full power, thus allowing a flight response by marine fauna to outside the zone of injury or avoidance. Where this is not possible, the equipment should be turned on and off over

- a 20 minute period to act as a warning signal and allow cetaceans to move away from the sound source;
- > “Soft-starts” should, as far as possible, be planned to commence within daylight hours;
  - > “Soft-start” procedures must only commence once it has been confirmed by the MMO (visually during the day) that there is no large cetacean activity within 500 m of the vessel for a 15-minute period. However, if after a period of 15 minutes small cetaceans (particularly dolphins) are still within 500 m of the vessel, the normal “soft-start” procedure should be allowed to commence; and
  - > “Soft-start” procedures must also be implemented after breaks in surveying (for whatever reason) of longer than 20 minutes. Breaks of shorter than 20 minutes should be followed by a “soft-start” of similar duration.
- For the months of June and November (period of Southern Right Whale migration to and from the South Coast) ensure that Passive Acoustic Monitoring (PAM) is incorporated into any survey programme.

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