Ministry of Defence

[redacted]

FOI2019/04888

E-mail: Navysec-foimailbox@mod.gov.uk

[redacted]

21 May 2019

Dear [redacted]

Release of Information

Thank you for your correspondence of 21 April 2019 in which you requested the following information:

> 'My name is [redacted] I am an Environmental Science student at the University of Plymouth and I am currently researching for my dissertation regarding active sonar. I would like to get access to the Marine Environment and Sustainability Assessment Tool (MESAT) documentation used by the RN, which is avalable to request according to JNCC. I would prefer access as an electronic copy if possible. JNCC state that the documentation is available by request.'

Your enquiry is being treated as a request for information under the Freedom of Information (FOI) Act 2000.

A search has now been completed within the Ministry of Defence and I can confirm that information in scope of your request is held. The documentation used by the Royal Navy in relation to the Maritime Environmental and Sustainability Assessment Tool is enclosed with this letter.

The names and/or contact details of third parties contained within the documents have been withheld under section 40(2) (Personal Information) of the FOI Act. Section 40(2) applies to personal data relating to third parties. The release of personal information relating to individuals would contravene the Data Protection Act 2018. In this instance, data has been provided for internal communication purposes and not with the expectation that it would be made public.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at https://ico.org.uk/.

Yours sincerely

Navy Command Secretariat - FOI Section

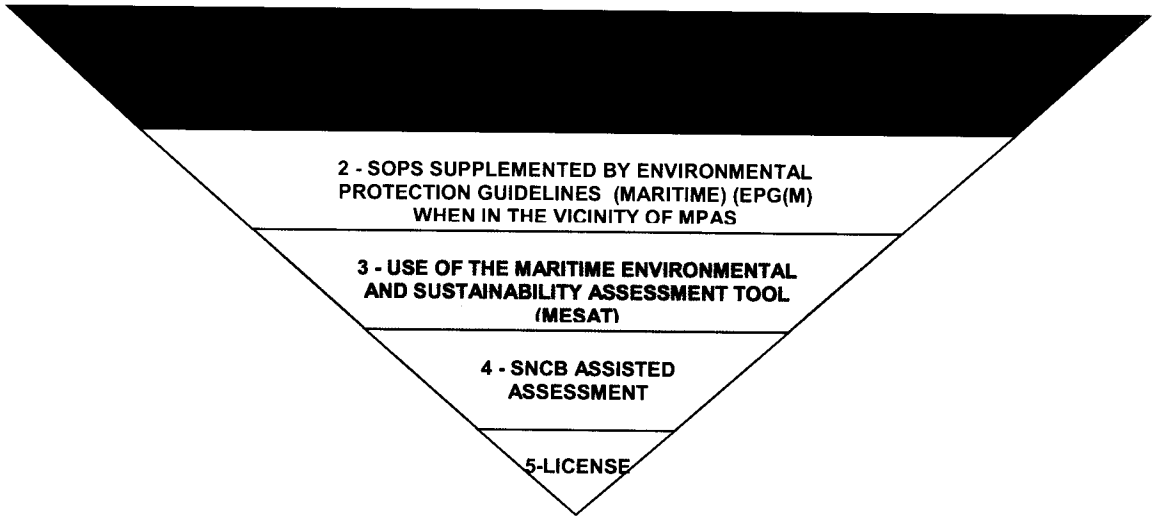
MARITIME ENVIRONMENTAL AND SUSTAINABILITY ASSESSMENT IN THE ROYAL NAVY (MESAT RN)

The MOD has a legal and policy requirement to assess the environmental impact of its activities which are described in **JSP 418**. Key elements of our responsibilities towards protecting the environment mean that:

- Within the UK, Defence is required to comply with all applicable environmental protection legislation, including legislation giving effect to the UK's international obligations.
- Overseas, Defence will apply UK standards where reasonably practicable and, in addition, respond to host nations' relevant environmental protection expectations.
- Where there is specific dis-application from certain legislation in the interests of Defence and or national security we introduce Departmental arrangements that produces outcomes which are, so far as reasonably practicable, at least as good as those required by the associated legislation.

BRd 167 sets out the RN's latest assessment of environmental issues relating to our maritime activities and guidance to meet our obligations.

In order to meet our obligations in the face of expanding environmental legislation Naval operators and planners are to ensure our activities are assessed and measures are taken to minimise their impact on the environment. Robust planning assessments ensure our activities are defensible should they face legal challenge thus safeguarding Operational Capability. Early consideration of environmental issues during planning is the key to effective management and minimising operational or training disruption. The environmental assessment process is part of the NCHQ's **layered approach to environmental protection:**



- **The first layer** contains the application of Standard Operating procedures (SOPs). This relates both to the established RN SOPs and to Range Orders applicable to established MOD ranges across UK land and coastal regions. RN SOPs apply globally and set out clear directives for many forms of environmental protection such as waste disposal at sea, maritime pollution and emissions and the protection of wildlife. They also address specific unique military activities by establishing protocols for such things as transmissions of active sonar or the use of underwater ordnance.

- **The second layer** supplements the SOPs by introducing Environmental Protection Guidelines (Maritime) - (EPG(M)) – which are applied to activities within UK and EU waters when operating in the vicinity of Marine Protected Areas (MPAs) (See EPG(M) webpage). Like following SOPs, these considerations should be made routinely when operating in areas covered by EPG(M). This standard mitigation of the impacts of our routine activities has been centrally assessed and is considered to have no significant environmental impact. When MOD and NC SOPs and guidance are followed no further assessment by the operator is necessary.

- However, when operators or planning authorities are unable to comply with SOPs or EPG(M) or they intend to undertake novel maritime activity the responsibility to consider the impacts of their intentions remains with them. In such cases **Layer 3** calls for the generation of a comprehensive environmental assessment. NCHQ's recommended tool for the production of EAs of RN maritime activities is the '**Maritime Environmental and Sustainability Assessment Tool (MESAT).**

- Should an appropriate assessment indicate that significant environmental impact cannot be avoided through effective mitigation MOD is required to consult with the Statutory Nature Conservation Bodies (**Layer 4**). If, following such consultation, the planned activities must proceed and significant environmental impact cannot be avoided, then it may be necessary to move to **Layer 5** and apply under appropriate legislation to licence the activity. It is inherent in this structure that SOP and EPG(M) should be utilised such that recourse to layers 3 and beyond will only be required in exceptional circumstances. Engaging with external statutory bodies can be time consuming, manpower intensive and have unpredictable outcomes. Planning of novel maritime activities should reflect this.

The **document below** sets out the MESAT process (Layer 3) and presents general advice on environmental protection at sea especially when:

- You cannot comply with MOD Standard Operating Procedures (SOPs)
- Your planned operating area is in the vicinity of a Marine Protected Area and you cannot comply with the Environmental Protection Guidelines EPG(M).

It is the **operators' responsibility** to follow the MESAT process and generate an appropriate assessment for the planned activities.

Any queries about the use of MESAT and advice on conducting the required EA should be made to [redacted]

MARITIME ENVIRONMENTAL AND SUSTAINABILITY ASSESSMENT IN THE ROYAL NAVY (MESAT RN)

Table of Contents

1. Scope and Legislation

UK environmental legislation relates to specific Marine Protected Areas (MPAs) and European Protected Species (EPS). The various types of UK MPA are listed in Annex D - 'Environmental Data Sources'. They relate to a wide variety of benthic, water column and coastal communities and environments; their locations are defined and thus can be directly related to the intended area of activity.

Maritime activities can impact on sea life anywhere. The oceans are home to highly mobile populations of protected species whose location and activity can be unpredictable. Environmental assessments (EAs) must take account of our broader obligation to protect species and to be aware of the potential impact of our activities anywhere in the world.

Although MESAT is specifically designed for the generation of EAs in UK waters or when operating offshore, remote from any protected areas, it can also be used to facilitate assessments when operating in foreign national waters, in association with other environmental briefing documents and local National legislation. Naval Command activities occurring ashore, i.e. above the high water line, should comply with the DIO instructions signposted below.

Legislation

The RN MESAT is scoped to provide an assessment of the environmental impact of our activities at sea, demonstrating areas of likely significant effect and identifying appropriate mitigating measures. MESAT is NCHQ's recommended process to meet the environmental assessment requirements of the following environmental legislation:

Wildlife and Countryside Act 1981
The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007
The Marine and Coastal Access Act 2009
The Conservation of Habitats and Species Regulations 2010
The Marine (Scotland) Act 2010

DIO - MOD Sustainability and Environmental Appraisal Tool Handbook. The MESAT forms part of a suite of Environmental Assessment Tools contained within the DIO Handbook which can be accessed through this link: MOD Sustainability and Environmental Appraisal Tool Handbook

Planners should be familiar with the general guidelines covering compliance with environmental legislation, authorisation and MOD policy contained within the Defence Estates Designated Sites Practitioner Guide.

Internationally protected sites in the UK are represented by European Special Protection Areas (SPAs) under the EC Birds Directive and Special Areas of Conservation (SACs) under the Habitats Directive. Together they form the Natura 2000 network and are protected by the Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations"). Natura 2000 sites are also underpinned by the Site / Area of Special Scientific Interest (SSSI / ASSI) designation.

- SPAs are selected for rare, threatened or vulnerable bird species and for regularly occurring migratory birds listed in the Birds Directive.
- SACs are selected for a number of particular habitats and species which are listed in the Habitats Directive.
- Details of the boundaries and reasons for designation are contained in the Natura 2000 site data form.

MOD is a **'competent authority' and a 'relevant authority'** under the Habitats Regulations. As such, MOD along with other public bodies has a duty to avoid damaging qualifying habitats and harm or significant disturbance of protected species. The Regulations require that any plan or project that may damage a Natura 2000 site is assessed and can only proceed if certain conditions are met. This process is known as Habitats Regulations Assessment (HRA) and is a legal obligation.

2. The MESAT Process Flow Chart and Screening Process

The MESAT Flow Chart below illustrates the process sequence for MESAT Environmental Assessment (EA) production; to determine the requirement for a MESAT based EA the first part of the Flow Chart contains a screening process. This allows planners to determine whether the location and nature of planned activities warrants a full assessment using MESAT or whether the limited nature of those activities enables their conduct to be managed within established Standard Operating Procedures (SOPs) and the Environmental Protection Guidelines (Maritime) - EPG(M) without further detailed assessment.

The Screening Process As shown in the flow chart, the first step in the MESAT is to follow the screening process, based on the Layered Environmental Protection, to determine whether a MESAT based EA is required. To conduct a screening proceeds as follows:

a. Determine the planned operating areas.

b. Access the EPG(M) charts covering those areas.

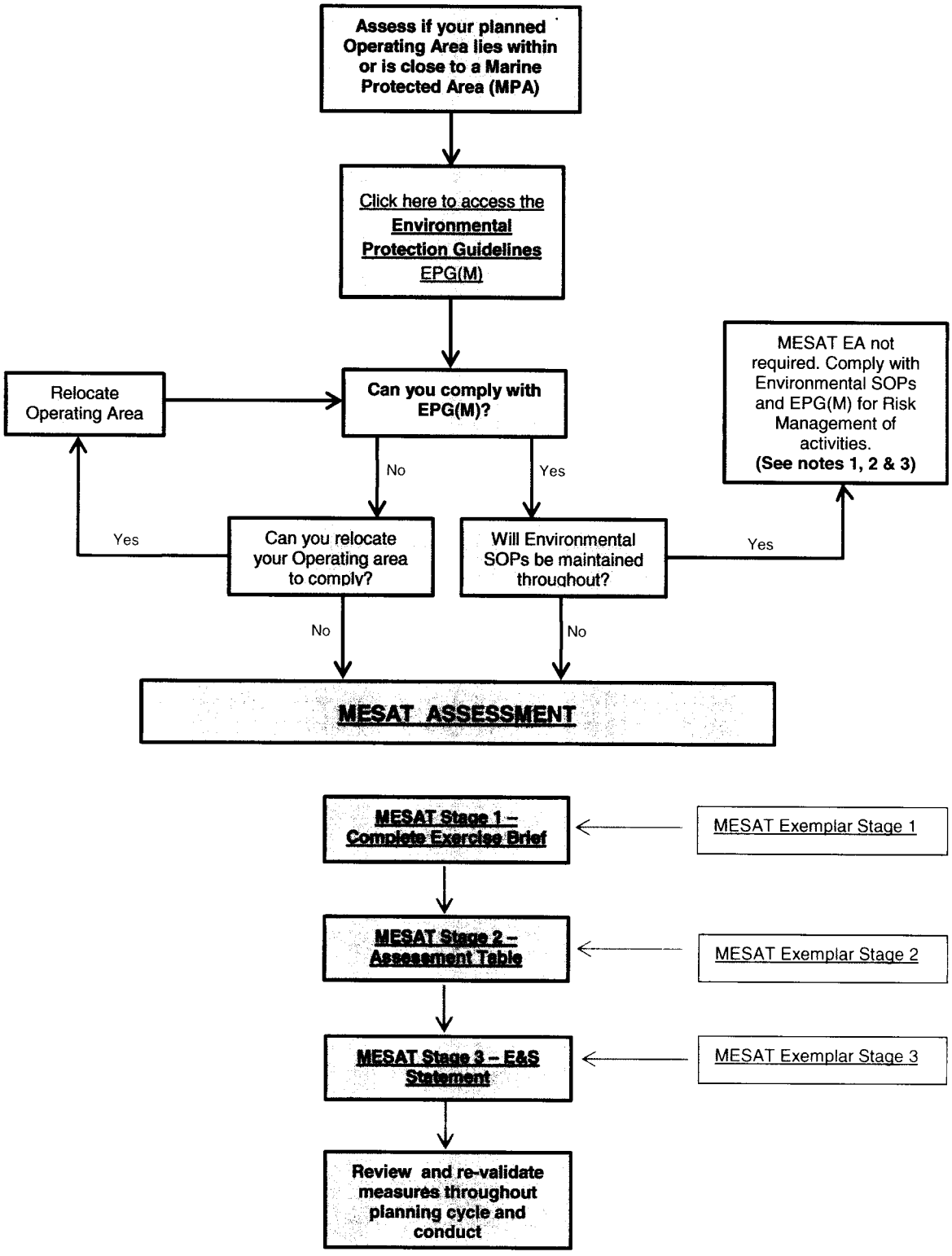
c. Check EPG(M) guidance for those MPAs which lie within or adjacent to the planned operating areas.

d. If your planned activities can be conducted in compliance with EPG(M) guidelines and the environmental SOPs for your intended activity, then a MESAT based EA should not be necessary. However, novel or unusually high levels of activity may warrant assessment for their impacts on the environment. In these cases advice can be sought from NCHQ Navy Safety Centre.

e. If you cannot comply with SOP and EPG(M) by relocating or reprogramming, then a MESAT based EA is needed. In this case, follow the MESAT flow chart below.

f. If operating remote from any MPAs where there is no specific risk of MPA interaction, either in UK waters or on the high seas, then activities are to be risk managed using RN environmental SOPs and Group 6 (Open Seas) of EPG(M).

RN MESAT FLOW CHART



Notes:

1. Early advice from NCHQ should be sought for activities of an unusual nature e.g. a concentration of multiple units, activities in multiple environments (Air/surface/sub-surface) or unusual noise levels (especially sonar or use of explosives). A MESAT EA may be required for such activities, regardless of location.

2. Lists of the principal RN Environmental SOPs relating to activities at sea may be found under Annex B – 'Environmental Themes' – in Tables 1 and 2. The lists are not exhaustive but give planners an overview of the scope of environmental issues to be addressed in all activity planning.

3. If the screening process indicates that a full MESAT EA is required, planners should follow the instructions in this document. If a full MESAT EA is not required, planners are to ensure that RN Environmental SOPs (See Note 2 above) and EPG(M) are observed and built into the planning and conduct of any activity.

3. MESAT Structure

The MESAT should be used to address novel, non compliant or high intensity maritime activities or those where critical characteristics of the environment have not previously been assessed. A MESAT consists of 3 stages:

a. **Stage 1 - The Exercise Brief.** This is a summary of the exercise or operation covering:

(1) Name, location, dates and purpose.
(2) Initial environmental observations.
(3) Other pertinent information such as links to assessments of any related terrestrial activity.

b. **Stage 2 - the Appraisal Matrices**. A detailed assessment of the environmental impacts of the planned maritime activities.

c. **Stage 3 - the E&S Statement.** This is a formal statement of intent which encapsulates the main conclusions from Stage 2, the mitigation needed to remove or minimise any environmental impact and the placing of follow up actions to ensure mitigation is implemented and that the process remains under review.

Production of environmental assessments should be an iterative process. It should start at the earliest exercise or operation planning stage when it is easiest to make changes to the planned activity. After the initial assessment it then grows in substance and detail as plans develop, being included as a standing item at all planning meetings and in exercise/operation orders. Once the activity is completed the assessment should be retained and brought forward for review during exercise de-briefs.

Environmental assessments meet 2 essential needs. First, they support our unhindered maritime activity by ensuring robust environmental planning, enabling us to respond effectively to any external legal challenges and thus avoid detriment to our Operational Capability. Secondly, they provide evidence to show that MOD planners have taken the necessary steps to avoid or minimise the E&S effects of their activities, thus complying with E&S legislation.

Assessments do not give 'right or wrong' answers. The purpose is to explore, justify and record whether negative impacts may exist and how they have been mitigated in the planning and conduct of any activity. They allow for mitigation actions to be put in place and may be subject to public scrutiny. All assessments must be compiled with this in mind and must be written in a language that can be understood by those outside the Military.

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4. MESAT Guidance STAGE 1 – The Exercise Brief

This is an introductory and scoping statement designed to give the reader an overview of the type, nature, scale and location of the planned exercise or activity. Its content should follow the structure and headings set out under MESAT Format Stage 1 on the following page. An example of the finished product is under 7.1 MESAT Exemplar STAGE 1.

There are four main sections to this brief:

a. **Introduction.** A statement of what you plan to do, where and when.

b. **Background.** Setting the scene by giving background information, including reference to previous activities of a similar nature in a similar geographic location. In essence, is this a new or repeat activity and what are the implications of each?

c. **Environmental.** An initial indication of the proximity of any MPAs and the possible impact of the activity on those areas – See Annex A - D for additional Environmental Guidance.

d. **Additional Information.** Give any further relevant background information, such as the planning authorities, any existing Environmental elements of the exercise orders and the intended means of liaising with and informing local authorities and communities where pertinent. Links to assessments of any related terrestrial activity

4.1. MESAT Format STAGE 1

THE RN ENVIRONMENTAL AND SUSTAINABILITY ASSESSMENT TOOL - STAGE 1 FORMAT – THE EXERCISE BRIEF

1. **Introduction.** To include:

   - Exercise Title, dates and geographic locations. NATO or National.
   - Scope of the exercise; a general description of the types and levels of activity:
     - Number of Units – National and Foreign.
     - Air/surface/sub-surface/inshore activities.
     - Exercise or operation areas.

2. **Background.** To include:

   - Is this a new exercise or has it been conducted before?
   - If a repeat exercise, are there any significant differences in type or intensity of activity?
   - Is the exercise/activity being conducted in a location which has not been used for this purpose before?
   - Is the time of year significantly different from when the exercise/activity was conducted before?
   - Are there significant differences in the way the exercise/activity is being conducted?

3. **Environmental.** To include:

   - Has any part of the planned exercise/activity area been designated as a Marine Protected Area for environmental or historical reasons, or does the exercise/activity have the potential to impact on such a site?

   - Are there any species of conservation concern in the area that may be significantly impacted by the exercise/activity?

   - Are there any other aspects of the environment that may be significantly impacted by the exercise/activity?

4. **Additional Information**. To include:

   - Planning authorities and points of contact.
   - Environmental elements of the exercise orders.
   - Intended liaison with local authorities and communities.

Click for MESAT Exemplar Stage 1

Back to RN MESAT FLOW CHART

5. MESAT Guidance STAGE 2

Introduction The detailed analysis work in Stage 2 is based on the details of potential MPA interaction or the deviation from SOP derived from the MESAT Screening Process. These details are fed into the Stage 2 Tables described below. The Stage 2 FORMAT is provided below and a STAGE 2 Exemplar can be found under 7.2.

The Stage 2 Tables Stage 2 is completed in 3 steps labelled **2A, 2B and 2C** as follows:

Stage **2A – Columns a and b.** Give each Activity a serial number in Column a. For each Serial enter information in Column b under 3 sub-headings:

- **A – Activity** - state the specific type of activity or exercise.
- **B – Areas** - give the geographic location of each activity.
- **C - Environmental** - state the aspect of the activity that is a potential source of environmental concern e.g. noise levels, inshore operations, seabed disturbance etc.

Stage 2A – Columns c and d. Using the information gained from the MESAT Screening and EPG(M) as the starting point, list the compromised SOP and MPAs that lie within or adjacent to your operating area and their qualifying interests in Columns c and d.

Stage 2B - Scoring the Matrix.

(1) **Columns e and f. Column e** shows the 4 key environmental themes to be assessed. Use the same activity serial numbers from **Stage 2A Column a** for **Stage 2B Column f.**

(2) **Columns g and h.** Make an initial impact appraisal for each serial against each Environmental Theme, using the colour coding in **Table 3 below,** and insert in **Column g.** Then support your scoring by placing an amplifying statement on the impacting activities in **Column h.** See Annex A - D for additional Environmental Guidance and SOPs.

Suggested contributors to the assessment process are shown in **Table 4 below**. Note that scoring is done without taking mitigation measures into account unless these have already been clearly defined, resourced and included in the exercise plan. The 3 levels of impact are defined as:

- **Negligible** – little likelihood of any measurable disturbance or harm.
- **Minor** – possibility of disturbance but little likelihood of harm.
- **Significant** – risk of disturbance and harm requiring robust mitigating action.

TABLE 3 – SCORING MATRIX

IMPACT LEVELS:	[redacted]	**MINOR**	[redacted]
DEFINITION	[redacted]	Possibility of disturbance but little likelihood of harm.	[redacted]

TABLE 4 – IMPACT ASSESSMENT GUIDELINES

[redacted]	**CONTRIBUTING TO MINOR IMPACT**
Covering an extensive sea area.	Limited to a small area.
Will affect many people	Will effect few people
Effect will be unusual or particularly complex	Effect will be ordinary or simple

Will create significant disturbance and/or harm to protected marine species	Will not harm or cause disturbance to protected marine species.
Will affect valuable or scarce resources or features.	Will have little or no impact on valuable or scarce resources or features
High risk that environmental standards will be breached	Low risk that environmental standards will be breached
High likelihood that protected sites features or areas will be affected	Low likelihood that protected sites features or areas will be affected
High probability of effect occurring	Low probability of effect occurring
Long term/permanent	Short term/temporary
Irreversible	Reversible
Mitigation difficult	Mitigation easier
Cumulative effects of high intensity activity in a relatively short period.	Sporadic, well separated or isolated activity.

(3). **Column i - Mitigation.** Finally in the Matrix, complete **Column i** to set out what mitigating measures you intend to take to counter any potential environmental impacts. Note that there can be no definitive list of measures. Action will depend on the 3 critical factors and their judged interaction; location, activity and timing. Column i may also contain references to SOPs and tools e.g. S2117. In general, the earlier any mitigation can be applied the more effective it should be and the less onerous it may prove. The guidance in **Table 5 below** gives some ideas.

TABLE 5 – GUIDANCE ON MITIGATING MEASURES

KEY ISSUES	MITIGATION
LOCATION	1. MOVE. Even a minor relocation may resolve major issues by moving the activity outside designated areas affecting beaches, seabed or wildlife. 2. STAY BUT MODIFY ACTIVITY OR TIMING - see below.
ACTIVITY	1. MODIFY. The activity might be lower impact if the number of vessels and/or intensity of operation was reduced. Be particularly aware of impact of underwater explosions, high power sonar (using S2117 assessment), multi-ship activities and shallow water operations. Be flexible. 2. AMPHIBIOUS LANDINGS. Perhaps the most difficult to clear as they affect the beach and inshore areas which are subject to some of the tightest controls. Look at location, activity, intensity and timing (below).
TIMINGS	1. The same location may be acceptable on different dates if affected by breeding seasons or migratory patterns. 2. Consider the relative impacts of day and night operations for communities and wildlife. E.g.: Day operations may permit visual avoidance.

Stage 2C – Other Environmental Considerations. Finally in Stage 2, check environmental data sources for any other restrictions under the listed headings. This will, in due course, include any additional restrictions imposed through the introduction of Marine Conservation Zones (MCZs). This is also the point at which to assess any other influences such as offshore EPS populations, participation by foreign naval vessels which may not follow our protocols and the possible cumulative effects of activities by other military units or commercial activities in the same areas.

Note: If, having completed Stage 2, there are areas where you cannot be certain the activity will NOT cause significant negative environmental impact, it may be necessary to consult other Agencies for guidance. In this case, your first point of contact is [redacted]

5.1. MESAT Format STAGE 2

THE RN ENVIRONMENTAL AND SUSTAINABILITY ASSESSMENT TOOL
STAGE 2 FORMAT – APPRAISAL MATRICES

ROYAL NAVY MARITIME EXERCISE ENVIRONMENTAL ASSESSMENT MATRIX STAGE 2A			
Serial No. a	OPERATIONAL ACTIVITY AND AREA b A – ACTIVITY. B – AREAS. C – POSSIBLE SOURCES OF ENVIRONMENTAL IMPACT.	MPAs WHICH MAY BE AFFECTED c	MPA CONSERVATION OBJECTIVES AND QUALIFYING INTERESTS d

ROYAL NAVY MARITIME EXERCISE ENVIRONMENTAL ASSESSMENT MATRIX STAGE 2B						
ENVIRONMENTAL THEME e	Serial No. (SEE COL a) f	INITIAL IMPACT ASSESSMENT g			ASSESSMENT OF ENVIRONMENTAL IMPACT FOR EACH SERIAL IN STAGE 2A h	MITIGATING ACTION REQUIRED i
NOISE						
SEA BED AND SEDIMENTS						
BIODIVERSITY AND NATURE						
HISTORIC ENVIRONMENT AND WRECKS						

IMPACT LEVELS:	[redacted]	MINOR	[redacted]
DEFINITION		Possibility of disturbance but little likelihood of harm.	

OTHER ENVIRONMENTAL CONSIDERATIONS – STAGE 2C	
ISSUES	**REMARKS AND ENVIRONMENTAL IMPACT**
MPAs. IN DEVELOPMENT	
OTHER FACTORS. 1. STANDARD MITIGATION FOR OPERATIONS IN OFFSHORE WATERS (WHEN NOT IN OR ADJACENT TO ANY MPA). 2. PARTICIPATION BY OTHER NAVIES 3. OTHER MILITARY ACTIVITIES IN THE OPERATING AREA – RISK OF CUMULATIVE EFFECTS.	

Click for MESAT Exemplar Stage 2

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6. MESAT Guidance STAGE 3 – The Environmental Statement

MESAT Stage 2 contains the detailed analysis of planned activities and their impacts. When this analysis is complete the results are used to complete Stage 3, the **Environmental Statement.** The Environmental Statement is a formal declaration of intent which can be subject to public disclosure. The full layout is found below under MESAT Format STAGE 3. Exemplar STAGE 3 can be found under paragraph 7.3.

The content should include:

(a) Exercise/Activity title and dates.

(b) Introduction – a general description of the aims and scope of the exercise/activity.

(c) Activities and locations – details of each group of activities and the intended operating areas.

(d) Impact list – a list derived from Stage 2 of the MESAT setting out the activities judged to have environmental impact for each environmental theme and any other relevant issues which could impact on the environment, taking due account of the intensity and frequency of the activities being assessed and the cumulative effects of other activities.

(e) Mitigation List – a list of intended mitigating measures planned for each area of risk identified and listed above, covering each environmental theme and any other issues raised and recorded in the Impact List.

(f) Actions – a list of follow-up actions to be taken by the planners to ensure mitigating measures are put in place and that the completed plan is subjected to continuing review and update as plans change. This list should take into consideration:

(1) Incorporation of the completed assessment as a standing item in all planning meetings.
(2) Monitor and validate the assessment as planning progresses. Update as required.
(3) If your activity may affect any local authorities or communities, ensure they are kept informed throughout and consult FLEET MEDIA if you consider any positive or negative PR may arise.
(4) Once the activity is completed, ensure E&S factors are included in post exercise debriefs and reports.
(5) Archive the assessment and associated reports for BU at planning inception for repeat activities.

6.1. MESAT Format STAGE 3

THE RN ENVIRONMENTAL AND SUSTAINABILITY ASSESSMENT TOOL - STAGE 3 FORMAT – THE ENVIRONMENTAL STATEMENT

THE ENVIRONMENTAL STATEMENT
EXERCISE/ACTIVITY TITLE AND DATE:
INTRODUCTION:
ACTIVITY/LOCATION:
IMPACT LIST: • Noise – including sonar and explosions with transmission parameters and standoff ranges. • Sea bed and sediments – disturbance to benthic communities. • Biodiversity – protection of European Protected Species (EPS) and other species (linked to noise mitigation above). • Historic environment & wrecks. Other issues: • Mitigation for offshore operations not affecting established MPAs. • Participation and compliance by non MOD vessels/participants. • Other military activities in the operating area – risk of cumulative effects.
MITIGATION LIST FOR EACH ENVIRONMENTAL THEME: Working from the Impact List above: • Noise • Sea bed and sediments • Biodiversity • Historic environment & wrecks Other issues: • Mitigation for offshore operations not affecting established MPAs. • Participation by by non MOD vessels/participants. • Other military activities in the operating area – risk of cumulative effects.
ACTIONS TO BE INITIATED BY PLANNING STAFF:

Click for MESAT Exemplar Stage 3

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7. MESAT Exemplars

7.1 Exemplar STAGE 1

STAGE 1 – EXERCISE BRIEF

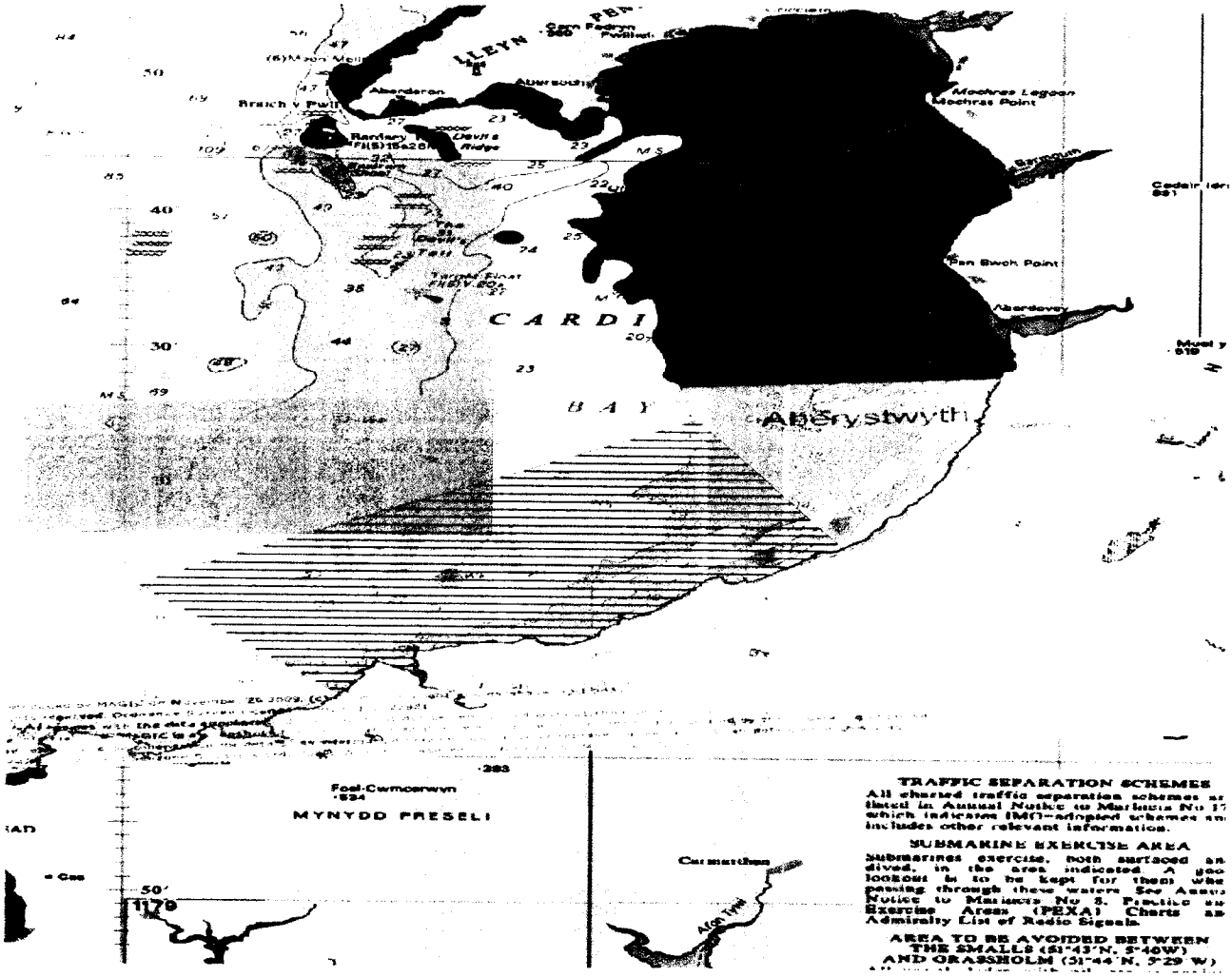
SURVEY OF CARDIGAN BAY, WALES

1. **Introduction.** HMS Nonesuch plans to perform surveying operations in the area of Cardigan Bay West Wales in the spring of 2010. This task will require the use of acoustic sonar equipment of varying capabilities.

2. **Background.** The Bay has been surveyed before using standard sonar mapping equipment. The surveying this time will use modern side-scan and multi-beam sonar. The work will take approximately 40 days to complete. Part of the survey area overlaps with Cardigan Bay SAC. Potential environmental impacts include disturbance to species of conservation concern (bottlenose dolphins and grey seals). To survey the SAC overlap area will take approximately 3 days. Hydrographic Side Scan Sonar Operations have been conducted by RN Platforms since the 1970s. Coastal Multi-Beam Surveys have been carried out by Royal Navy Platforms since 1997.
However this will be the first time this location has been surveyed using these types of equipment. This is a standard hydrographic survey for navigational safety and will not include any aspects of work not carried out by RN Vessels in UK waters before. Parts of the area have previously been surveyed; March to May 1969; September to November 1970; February to July 1981; using single beam sonar. As this is the first multi-beam survey in the area both JNCC and NRW are eager to obtain data as a base-line for future studies. JNCC is keen to get personnel on board NONSUCH during the survey to conduct their own observations.

HMS Nonesuch, Sonar Equipment to be used during survey				
Equipment name	Frequency output	Maximum Power Output	Comments	Usage rates
EM1002 Hull mounted Multi-beam Echo Sounder(MBES)	95kHz	225Db	MBES pulse lengths vary dependant on depth, however, the general depth in the survey area is between 20m and 60m, meaning the MBES will operate with a short pulse length of between 0.2-0.7 ms.	24/7 when conducting area sounding/sonar search.
S2094 Towed Body Side Scan Sonar	114kHz & 410kHz	122Db		24/7 when conducting area sounding/sonar search.
HiPAP High Precision Acoustic Positioning System	21-31.75kHz	206Db		24/7 when Side Scan Sonar streamed.
MST Mini Super Short Baseline Transponder	27-32.5kHz	197Db		24/7 when Side Scan Sonar streamed.
ADCP Acoustic Doppler Current Profiler	150kHz	210-224Db		24/7 SOP to operate the ADCP when surveying.
Small motor boat sonar equipment				
EM3002 Hull mounted Multi-beam Echo Sounder	300kHz	216Db		8 to 10 hours a day when SMB deployed.

3. **Environmental.** The survey area cuts across the northern limits of The Cardigan Bay SAC. See chart below. Hashed area is the SAC – pink area is the survey area. As the survey is likely to take no more than 40 days of actual sounding it is considered that, based on The Protection of Marine European Protected Species from Injury and Disturbance Guidance – DRAFT JAN 2010, the risk of a disturbance offence from one vessel operating an echo sounder will be negligible.



Fauna are mobile and although there may be a designated protected area for them, this does not mean that that is the only place they will be. All ships participating hold a copy of the Environmental Briefing Docket. UK Ships also hold Global Ocean Atlases which include Marine Mammal information and NP141A (Guide to Identification of Whales, Dolphins and Porpoises). UK Ships also hold BR 4985 Vol 5 (Underwater Environment Handbook Volume 5 – Managing the impact of RN acoustic operations on the marine environment) which contains guidance to Commanding Officers in use of sonar. There are 34 known wrecks or obstructions in the area some of known origin others not. As this area has not been surveyed in this detail before more may be discovered.

4. **Additional Information**.

a. JNCC and NRW have both expressed interest in gaining access to the data sets resulting from the work.
b. This survey data will be released for general charting at the UKHO as well as being used in Defence specific products to assist in safety of navigation in the area.
c. Ship will undertake additional active sonar risk assessments using S2117 immediately prior to surveying work to ensure risks from operations in the area have not increased.

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7.2 Exemplar STAGE 2

THE RN MESAT EXEMPLAR STAGE 2 – APPRAISAL MATRICES

ROYAL NAVY MARITIME EXERCISE ENVIRONMENTAL ASSESSMENT MATRIX STAGE 2A			
Serial No. a	**OPERATIONAL ACTIVITY AND AREA b** **A – ACTIVITY.** **B – AREAS.** **C – POSSIBLE SOURCES OF ENVIRONMENTAL IMPACT.**	**MPAs WHICH MAY BE AFFECTED c**	**MPA CONSERVATION OBJECTIVES AND QUALIFYING INTERESTS d**
1.	A. HYDROGRAPHIC SURVEY. B. CARDIGAN BAY, WALES. C. SONAR TRANSMISSIONS – SEE DETAILS IN STAGE 1 BRIEF. MACHINERY AND PROPELLER NOISE AND VIBRATION. SEA BED SAMPLING AND USE OF EXPENDABLE PROBES.	1. A SMALL PART OF THE CARDIGAN BAY SAC 0012712 LIES WITHIN THE PLANNED SURVEY AREA AS SHOWN ON THE CHARTLET ATTACHED TO APPRAISAL STAGE 1. 2. OSPAR SITES LIE WITHIN SAC 0012712.	1. PROTECTION OF CETACEAN CONCENTRATION AND BREEDING GROUND. 2. OSPAR SITES RELATE TO PROTECTED BENTHIC COMMUNITIES.

ROYAL NAVY MARITIME EXERCISE ENVIRONMENTAL ASSESSMENT MATRIX STAGE 2B						
ENVIRONMENTAL THEME e	**Serial No. (SEE COL. a) f**	**INITIAL IMPACT ASSESSMENT g**			**ASSESSMENT OF ENVIRONMENTAL IMPACT FOR EACH SERIAL IN STAGE 2A h**	**MITIGATING ACTION REQUIRED i**
NOISE (ANNEX D)	1				POSSIBLE MACHINERY NOISE AND VIBRATION. SUPPRESSION NOT FITTED. MULTI-BEAM SONAR IN USE.	MINIMISE MACHINERY AND SMALL BOAT ENGINE NOISE. USE SONAR ASSESSMENT S2117 IN PLANNING AND BEFORE ANY TRANSMISSION PERIOD.
SEA BED AND SEDIMENTS (ANNEX E)	1				MINOR SEA BED DISRUPTION DURING SEA BED SAMPLING. USE OF EXPENDABLE PROBES. POSSIBLE SEA BED DISRUPTION IN SHALLOW WATERS FROM SMALL BOATS.	1. ENSURE BOTTOM TYPE IS CHECKED BEFORE SAMPLING. MINIMISE USE OF EXPENDABLE PROBES. 2. SMALL BOAT SURVEY OPERATIONS CLOSE INSHORE IN SHALLOW WATERS ARE TO BE CONDUCTED WITH EXTREME CAUTION TO AVOID SEABED DISTURBANCE.
BIODIVERSITY AND NATURE (ANNEX F)	1				BATHYMETRIC DATA WILL BE MADE AVAILABLE TO JNCC AND NRW TO AID THEIR RESEARCH AND MAPPING. USE OF SONAR COULD DISRUPT OR DISTURB MARINE MAMMALS.	MINIMISE RISKS FROM SONAR TRANSMISSIONS USING S2117 ANALYSIS BEFORE EACH OPERATION. POST MARINE MAMMAL LOOKOUTS BY DAY. CONSULT JNCC AND NRW ON OPTIMUM SONAR PARAMETERS WHEN SURVEYING WITHIN THE SAC.

HISTORIC ENVIRONMENT AND WRECKS (ANNEX G)	1	[redacted]			THERE ARE 34 KNOWN WRECKS FROM EARLIER SURVEYS. MORE MAY BE DISCOVERED WITH NEW SONAR TECHNIQUES.	AVOID ANY WRECK DAMAGE OR DISTURBANCE. REPORT NEW WRECKS FOUND TO JNCC AND NRW.

IMPACT LEVELS:	[redacted]	**MINOR**	[redacted]
DEFINITION		Possibility of disturbance but little likelihood of harm.	[redacted]

OTHER ENVIRONMENTAL CONSIDERATIONS – STAGE 2C	
ISSUES	**REMARKS AND ENVIRONMENTAL IMPACT**
MCZs. IN DEVELOPMENT.	
OTHER FACTORS: 1. STANDARD MITIGATION FOR OPERATIONS IN OFFSHORE WATERS (OUTSIDE ANY MPA). 2. PARTICIPATION BY OTHER NAVIES 3. OTHER MILITARY ACTIVITIES IN THE OPERATING AREA – RISK OF CUMULATIVE EFFECTS.	1. RISK OF CETAECEAN DISTURBANCE IN OPEN SEAS. S2117 ASSESSMENT TO BE USED AT ALL TIMES. MMOs TO BE CLOSED UP IN DAYLIGHT HOURS. 2. NIL 3. NIL

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7.3 Exemplar STAGE 3

THE ENVIRONMENTAL STATEMENT

EXERCISE/ACTIVITY TITLE AND DATE:
Hydrographic Instruction 1234

INTRODUCTION:
HMS Nonesuch plans to perform surveying operations in the area of Cardigan Bay West Wales in the spring of 2010. To carry out this task will require the use of acoustic sonar equipment of varying capabilities. The Bay has been surveyed before using standard sonar mapping equipment. The surveying this time will by means of modern side-scan and multi-beam sonar equipment. The work will take approximately 40 days to complete. Part of the survey area overlaps with Cardigan Bay SAC. To survey this area will take approximately 3 days.

ACTIVITY/LOCATION:
The survey area is Cardigan Bay of the west coast of Wales. The south east corner of the survey area overlaps part of the Cardigan Bay SAC (Special Area of Conservation) This area was awarded its SAC status due to the presence of Bottle Nosed Dolphin (*Tursiops* truncatus) a species of European Conservation concern. Stretching from Ceibwr Bay in Pembrokeshire to Aberarth in Ceredigion and extending almost 20km from the coast, Cardigan Bay SAC protects the wildlife found in around 1000km^2 of sea.

IMPACT LIST

NOISE: - MINOR
1. Active sonar.
2. Ship and small boat noise and cavitation.

SEA BED: - MINOR
1. Use of expendable equipment.
2. Possible sea bed disturbance close inshore.

BIODIVERSITY: - MINOR
1. Risk of physical collision in areas of wildlife concentration.
2. Active sonar.

HISTORIC: - NEGLIGIBLE
1. Disturbance of known wrecks and new uncharted wrecks.
2.

OTHER ISSUES:
NIL.

MITIGATION LIST FOR EACH ENVIRONMENTAL THEME:

NOISE:
1. Minimize noise outputs.
2. Use s2117 RMT.

SEA BED.
1. Minimize use of expendable probes.
2. Small boat survey operations close inshore to be conducted with extreme caution to avoid seabed disturbance in designated OSPARs.

BIODIVERSITY:

1. Posting Marine Mammal Observers (MMO's) during daylight hours whilst on Survey ops.
2. Use of s2117 to identify MAZ (Marine Action Zone) TTS (Temporary Threshold Shift) and PTS (Permanent Threshold Shift) ranges.
3. Survey times will avoid time of year when Marine Mammal densities are at their highest. Use of small motor boats (SMB) to survey the part of the area that overlaps the Cardigan Bay SAC will minimize risk.
4. The ship will have JNCC staff on board as observers and will follow JNCC guidance where possible.

HISTORIC:

1. Known and newly identified wreck sites to be checked, annotated and reported to UKHO, JNCC and NRW.

OTHER ISSUES:

1. Survey operations remote from established MPAs: S2117 assessment to be utilised at all times.

ADDITIONAL SONAR MITIGATION DATA:

1. There appear to have been no dire consequences of using high frequency, low or medium intensity sonar on cetaceans over the period that such navigation and surveying sonar have been in use. (ICES AGISC report 2005, 2nd edition)

2. Survey sonar operates at around 100 kHz and 225dB. We have calculated that survey sonar operating at 100 kHz suffer from sound absorption at a rate of ~100dB per km in seawater.

3. Bottlenose dolphin hearing thresholds have been taken to be between 60 and 90dB for 100 kHz sound and a typical background noise at this frequency is 30dB. This means that an animal would have to be within 1km of an Omni directional 100kHz sonar transmitting at nominal source level of 225dB to even hear the sound

4. Taking into account other propagation losses and the fact that survey sonar are highly directional (i.e. downward looking, 7 deg in front of and 75 deg each side of vertical) it is assessed that an animal would probably have be within 250m of the ship to hear the sound, i.e. well within the visual observation range

5. Only a small part of the survey area (<5%) overlaps the Cardigan Bay SAC, this being the case the surveys will only be within the SAC area for 5 days or less.

6. Survey work which will take place within the SAC area will, weather permitting, be conducted with the Small Motor Boats, using 300 kHz sonar.

7. The lowest frequency acoustic equipment to be used is the HiPAP (see above) which is intended to be operated at its highest frequency of 31.75kHz. At this frequency and highest power setting (206dB) it is calculated that a bottlenose dolphin would need to be within 260m of the vessel to receive more than 100dB. At the lowest frequency (21 kHz) this distance would increase to approximately 450m.

8. All of the distances of any of the above possible acoustic impacts are well within the ship's visual observation range, enabling appropriate mitigation action to be taken should marine mammals approach the surveying vessel.

ACTIONS:

1. CO NONSUCH to implement listed mitigation and confirm compliance in post-op reports.
2. Regular MESAT reviews to be included in weekly planning meetings.
3. Continued OGD and NGO liaison.
4. Review E&S efficacy in post ops wash-ups and reports.

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ANNEX A – General Environmental Guidance

1. UK airspace, seas and coastal regions coincide with many sensitive environments of international importance. These areas contain a wide variety of marine wildlife and fauna and include important marine mammal and sea bird breeding grounds. They are subject to constant maritime traffic and are host to a wide variety of commercial activities such as tourism, fishing, sea bed mining and fish farming. Against this background, any military activity can have a disproportionate impact on the environment and local economy. Utmost care must therefore be taken to minimise this impact.

2. It is UK government policy that any activity which may potentially harm the environment must be risk assessed and measures taken in mitigation to reduce any potentially adverse impact. The risk mitigation actions described in the MESAT apply whenever it is operationally safe to do so and should take priority over achieving any training objectives. Whatever planning takes place, Unit Commanders always remain responsible for their Unit's actions in the environmental context. In short, Units are to take all reasonable and practical measures to protect the environment and reduce the impact of their activities.

3. In planning and implementing any maritime activity, environmental assessments meet two essential needs. First, they support our unhindered maritime activity by ensuring robust environmental planning, enabling us to respond effectively to any environmental challenges and thus avoid detriment to our OC. Secondly, they provide evidence to show that MOD planners have taken the necessary steps to avoid or minimise the E&S effects of their activities, thus fulfilling MOD's legal obligations.

4. Assessments do not give 'right or wrong' answers. The purpose is to explore, justify and record whether negative impacts may exist and how they have been mitigated in the planning and conduct of any activity. They allow for mitigation actions to be put in place and provide a defence measure should the activity be challenged under ESA criteria by any organisation. All elements of any EA are subject to public scrutiny in the event of any legal challenges or FOI requests. All assessments must be compiled with this in mind and must be written in a language that can be understood by those outside the Military.

5. **Marine Protected Areas (MPAs).** Extensive guidance on MPAs is given throughout the MESAT but the following general point should be noted. The qualifying features for each MPA often relate to species which will not be confined to the limits of the designated protected area. Species can cover considerable distances in search of food. Therefore, whilst the initial focus of any EA is legitimately placed on the MPAs themselves, planners must always be aware of the increased risk of frequent random encounters and disturbance outside of MPA boundaries.

6. **Wildlife Congregations.** Whilst the EPG(M) and MESAT in general focus on defined MPAs within UK waters, it is recognised that congregations of wildlife, especially EPS (all species of dolphins, porpoises, whales, basking sharks, otters, seals, marine turtles and Atlantic Sturgeon) and seabirds, may occur anywhere. Current EU guidance allows widespread and on-going activities (such as military activities at sea) to continue without the need to apply for a licence for every activity, through the adoption of codes of conduct and best practice guidelines. For the MoD, MESAT and EPG(M) encapsulate best practice and also emphasise that Units must exercise caution wherever they operate and be prepared at all times to moderate their activities if encountering wildlife aggregations anywhere. Whilst any disturbance caused by Naval activity is most likely to be very minor and transient, even this level of disturbance is to be avoided where possible.

7. **Low Flying.** All military flying operations are to be conducted in accordance with the established UK Low Flying System (UKLFS) and the UK Military Low Flying Handbook. The UKLFS takes account of hazards to aircraft from significant bird aggregations which may be encountered in over flight transit. However there are other MPAs with smaller populations which need protection but present no hazard to aircraft. These must be taken into account by Force or Unit planning authorities who must consider the need for further restrictions. The transient nature of over flights at any level means they are most unlikely to have any significant effect, but particular account should be made of the potential for disturbance by helicopters and hovering over protected sites should not take place unless for reasons of overriding public safety (e.g. SAR) or essential military operations (e.g. counter-terrorism).

8. **Coastal Waters.** Ships' wakes can create unexpected dangers to small craft, marinas and harbours and disturbance to wildlife aggregations in coastal regions, exacerbated by the effects of shallow water and the shape of the coastline and seabed. Units are at all times to obey locally imposed speed limits, are to manoeuvre with care in proximity to local commercial operations such as fish farms or potting and are to be vigilant in their avoidance of any wildlife aggregations.

9. **Amphibious Operations.** These have the potential to disrupt a wide range of protected species and habitats since they involve operations at sea, across inter-tidal habitats and onto land. Where such operations affect MOD owned land an established HRA (Habitat Regulations Assessment) based site management regime will be in place to control activities and protect the area. Such plans will take full account of the presence of any MPAs or SSSIs. If activities are planned across private land, they must be cleared with the land owner and in consultation with NCHQ who will consult the MOD Training Over Private Land (TOPL) Cell to ensure proper compliance with any local environmental interests.

10. **Replenishment at Sea (RAS) Operations.** RAS serials, where ships have a requirement to take fuel, are generally conducted in accordance with ATP 16E, though Nations may apply local variations to these procedures. All such operations should take account of safety and environmental considerations and the proximity of any protected areas.

11. **Maritime Pollution (MARPOL) Restrictions**. Disposal of waste at sea is to be governed by MARPOL restrictions which prohibits the disposal of solid waste at sea. Maritime units that are unable to comply with this and othere MARPOL restrictions should record when and why any non compliance occurred. Operators facing ongoing marine pollution issues should seek further guidance through the chain of operational command.

12. **Hazardous Waste.** Any waste that is classified as hazardous to either humans or the environment is to be retained onboard and disposed of to a shore reception facility. The use of this facility should be specifically requested via the LOGREQ system.

13. **Anchoring.** It is normal navigational practice to check any area where anchoring is planned to ensure avoidance of seabed obstructions, both natural and manmade. However, all Units are also obliged to check for the presence of any MPAs and ensure that there is no risk to protected species or habitats. This is reflected in the EPG(M).

14. **Combined Effect of Military and Commercial Activities.** There is currently no coherent process in place to collate and disseminate information on the location and nature of commercial activities at sea. It is possible that the impact of such activities, if combined with that of any naval activity, could generate a combined or cumulative effect which could cause unacceptable impact levels. To safeguard against this, all Units are to remain alert to any observed commercial activity in their operating areas and are to factor such observations into their assessments. It is anticipated that Units will normally be alerted to commercial activity through Notices to Mariners (NTMs) and Notices to Airmen (NOTAMs).

ANNEX B – Environmental Themes in SOPs

EAs are structured around a number of established **Environmental Themes** which are listed below. Whilst each exercise or activity needs to be judged against these Themes, it is recognised that extant SOPs already dictate our conduct in relation to much of this work. Within the MESAT these **'Environmental SOPs'** are addressed in 2 categories; **Table 1** below lists the Themes where controls and constraints are considered to be adequately addressed in existing SOPs and their implementation is in general not directly affected by the nature of maritime activities. **Table 2** lists the Themes which our activities have the greatest potential to disrupt, creating a dynamic range of interaction with the environment which demands specific assessment or review within the EA process. Full details of all these themes and links to associated web-based environmental data sources can be found in Annex D - 'List of Recommended Environmental Data Sources'.

Table 1 - Environmental and Sustainability (E&S) Static Themes in SOPs. These Themes are covered in detail in extant SOPs. They are an established part of our planning considerations and must remain so. Elements of these themes which are relevant to the scope of any planned activities must be addressed as part of planning documents, operation orders, planning meetings and post exercise/operations wash-ups and reports as an integral part of any EA. See Annex A - 'General Guidance' for further information. Planners must also ensure that the same considerations are recognised and acted upon by all non RN participants in any operation or exercise in UK territorial waters, giving sufficient opportunity for them to embrace the processes and ensure compliance.

TABLE 1 – E&S STATIC THEMES IN SOPs

THEME	REFERENCES	OBJECTIVE
SUSTAINABLE PROCUREMENT	MOD SUSTAINABLE PROCUREMENT STRATEGY – 26/3/10	Ensure that procurement delivers sustainable development and take a whole life approach to procurement decisions and activities.
COMMUNITIES AND SOCIAL VALUES	DEFENCE ESTATES – MOD POLICY ON COMMUNITIES	Promote MOD as a good neighbour which works with local communities to minimise disturbance and maximise positive social impacts.
HEALTH, SAFETY AND WELLBEING	BRd 167 – The Safety, Health and Environment Manual	Maximise opportunities to promote healthy, safe and secure environments in which to live and work.
ENERGY & CLIMATE CHANGE	MOD CLIMATE CHANGE DELIVERY PLAN 2010.	Minimise energy consumption, improve energy efficiency and prepare for risks/opportunities posed by climate change.
AIR QUALITY	BRd 167 CH. 14 BRd 9424 FLOOS	Minimise greenhouse gas emissions & air pollution - gases and particulates
WASTE	BRd 167 CH. 14 BRd 9424 FLOOS	Reduce waste production, improve the management of waste and reduce the environmental impact of waste at sea.
WATER	BRd 167 CH. 14 BRd 9424 FLOOS	Reduce water consumption, maintain and enhance water quality and minimise risk of water pollution.

TABLE 2 – E&S DYNAMIC THEMES INCLUDED IN A MESAT EA

THEME	OBJECTIVE
NOISE.	Minimise disturbance and annoyance to people and wildlife caused by uncontrolled noise and vibration.
SEA BED AND SEDIMENTS	Identify, reduce, manage and mitigate the introduction of threats to the sea bed and sediments.
BIO-DIVERSITY & NATURE CONSERVATION	Protect habitats and species and promote opportunities to enhance and conserve wildlife.
HISTORIC ENVIRONMENT & WRECKS	Protect and maintain the historic environment for the benefit of current and future generations.

ANNEX C – Environmental Themes and Data Links

1. **List of Themes**. See Table 1 below.

Table 1 - Environmental and Sustainability Themes

Theme	Objective
A Energy and Climate Change	Minimise energy consumption, improve energy efficiency and prepare for risks/opportunities posed by climate change.
B Air Quality	Minimise greenhouse gas emissions and air pollution from gases and particulates
C Noise	Minimise disturbance and annoyance to people and wildlife caused by uncontrolled noise and vibration.
D Waste	Reduce waste production, improve the management of waste and reduce the environmental impact of waste at sea.
E Water	Reduce water consumption, maintain and enhance water quality and minimise risk of water pollution.
F Sea Bed and Sediments	Identify, reduce, manage and mitigate the introduction of threats to the sea bed and sediments.
G Biodiversity and Nature Conservation	Protect habitats and species and promote opportunities to enhance and conserve wildlife.
H Historic Environment	Protect and maintain the historic environment for the benefit of current and future generations.
I Sustainable Procurement	Ensure that procurement delivers sustainable development and take a whole life approach to procurement decisions and activities.
J Communities and Social Values	Promote MOD as a good neighbour which works with local communities to minimise disturbance and maximise positive social impacts.
K Health, Safety and Wellbeing	Maximise opportunities to promote healthy, safe and secure environments in which to live and work.

2. THEME A: ENERGY AND CLIMATE CHANGE

It is MOD policy that consumption of energy should be managed as efficiently as possible, consistent with operational effectiveness. Particular importance is attached to the economic benefits of reducing non-operational running costs and emissions by reducing energy consumption. The diversity of activities undertaken by the MOD means that there are many sectors that will be impacted upon by climate change, including biodiversity and water. Activities that interact with these sectors need to assess the risks to the impacts of climate change and develop adaptation measures where possible.

Overall sustainability objective: Minimise total energy consumption and support the use of renewable energy rather than fossil fuel sources, and improve resilience to climate change.

Sub-objectives:

- To improve energy efficiency;
- To reduce the need to travel;
- To prolong the availability of finite fossil fuels;
- To prepare for the likely impacts of a changing climate in order to minimise disruption and take advantage of opportunities.

POTENTIAL ISSUES	MITIGATION & ENHANCEMENT OPPORTUNITIES
Increased use of energy during exercises/activity.	Undertake further assessments to evaluate current/projected energy use. Educate personnel about energy consumption issues, promote behavioural changes & mitigation.

	Avoid the need for energy to be unnecessarily used, e.g. optimise fuel use to maximise efficiency, and only run machinery when required
Change in fuel efficiency and emission levels from vessels/vehicles	Minimise distance between exercise/activity areas and use economic engine configurations/speeds, see guidance note **1a.** Where possible reduce gaseous emissions, see guidance note 2**b.**
Change in amount of vessels/vehicles used in training exercises	Minimise distance between exercise/activity areas and use economic engine configurations/speeds where possible. Limit the number of unnecessary journeys to minimise engine use, fuel consumption and emissions
Change in through-life energy use of equipment	Consider the through-life energy requirements of affected materials/equipment
Response to risks and potential opportunities to the activity posed by the effects of climate change	Ensure your climatic considerations take account of the likely effects of climate change. Impacts on the UK could include increased temperatures, rising sea levels and increased frequency and intensity of storms. See guidance note 3**b.** Infrastructure and equipment may need to be replaced or adapted in response to changes in operations due to climatic conditions.
Other energy and climate change issues.	

Guidance Notes

1. Information on fuel efficiency and emission levels can be found using the following sources:

   Defence Intranet | Library | BRd 9424 - Fleet Operating Orders (FLOOs) (Volumes 1&2) Supersedes FPN 154 & 155 – Articles 05/04 and 05/05

2. Information on gaseous emissions can be found using the following sources:

   Annex VI of MARPOL 73/78, 'Prevention of Air Pollution from Ships'

3 Information on energy policy and climate change mitigation policy can be found using the following source:

   a) Department for Business, Energy and Industrial Strategy (BEIS, former DECC) – Government department responsible for all aspects of UK energy policy, and for tackling global climate change on behalf of the UK.

   b) Information on climate change projections can be found using the following source: MET OFFICE – UK's National weather service. They predict the weather, contribute to the global understanding of climate change and are leading researchers of weather science.

3. THEME B: AIR QUALITY

Air quality is an important theme for the MOD due to legislative requirements and the detrimental effects poor air quality can have on personnel and the environment. MOD activities such as the use of weapons and explosives during military training and testing can release contaminants into the

atmosphere. Contamination can arise from the gases and propellants used when firing, and the smoke, metals and other particulates released when the round explodes.
Emissions from the burning of fossil fuels to power vehicles contain a number of harmful greenhouse gases which can cause long term impacts to the environment. The incineration of waste also contributes to the levels of smoke and gases that are released into the atmosphere.

Objectives:
- To minimise greenhouse gas emissions and pollution of air with gases and particulates.
- To achieve major long term reductions in greenhouse gas emissions; and
- To improve the quality of our air by minimising air pollution by gases and particulate matter.

POTENTIAL ISSUES	MITIGATION & ENHANCEMENT OPPORTUNITIES
Increase in greenhouse gas emissions	Maximise use of clean burn engines to reduce emissions from fossil fuels
Increase in level of CFC/HFC usage	Where impacts may be significant, evaluate the extent of the changes that may occur as a result of the activity. Consider use of alternative gases where possible. Educate project team/end-users about climate change/air quality issues, promote behavioural changes and mitigation. See guidance note **a.**
Change in contaminants released to air from increased use of weapons and/or explosives.	Limit the amount of live ammunition used, favouring blanks where possible.
Change in amount of waste incineration or other combustion activities	Reduce the amounts of waste sent for incineration or to landfill, by overall minimisation and recycling. Ensure compliance with Annex VI of MARPOL, see guidance note **b.**
Other air quality issues.	

Guidance Notes

a. Information on CFC and HFC usage can be found using the following sources:

- JSP 418 - MOD Corporate Environmental Protection Manual - Ozone Depleting Substances and Fluorinated Greenhouse Gases

b. Information on waste disposal and incineration can be found using the following sources:

- Annex VI of MARPOL 73/78, 'Prevention of Air Pollution from Ships' sets requirements on emissions from incineration.
- JSP 418 (2) Leaflet 03 – Waste management
- DSA02 Shipping regulations and JSP 430 Part 2: Specific Regulations. E2 Management of Waste and Discharges from MOD Shipping.
- BRd167 Safety, Health and Environment Manual Chapter 14 outlines the MOD responsibilities for disposal of waste generated at sea

4. THEME C: NOISE

Noise is an important issue for the MOD due to a combination of legislative requirements and unique activities of the Department. The MOD undertakes many activities that may cause disturbance

through noise or vibration including firing, trialling and testing of weapons, low flying and the use of active sonar. These activities can cause disturbance which has been defined as "*a feeling of displeasure associated with any agent or condition, known or believed by an individual or group to adversely affect them*" (WHO, 2000). In the marine environment disturbance is a complex issue covered by JNCC guidance (see guidance note **a.**). Noise and vibration can cause disturbance to people and wildlife and should be minimised during activities and operations.

Overall sustainability objective:
▪ Avoid harm and minimise disturbance or annoyance to people and wildlife caused by noise generated during our activities.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Change in intensity, duration or timing of training activities that may affect people (e.g. local residents or recreational visitors) and/or wildlife.	Publicise or liaise with local communities in advance of exercises involving firing, low flying and night activities. Consult subject matter experts regarding any potential disturbance impacts on wildlife, especially if the exercise/activity could affect designated sites or protected species (see Theme **G**).
Change in type of equipment or weapons used.	Consider mitigation techniques that can alleviate potential impacts. Consider the noise levels produced by the day-to-day operation of vessels. e.g. generators, ventilation systems etc.
Change in noise from the use of underwater explosives.	Consider the environmental impact of underwater explosions on wildlife, especially marine mammals and any special features of the sea bed. See guidance note **b**.
Introduction of other underwater sound.	Consider environmental impacts, using sonar 2117 where applicable, when planning active sonar use. Ensure that all staff are aware of and adhere to BR 4985 procedures, especially immediately prior to and during active sonar transmissions, see guidance note **c.**
Other noise issues	

Guidance Notes

a. Information on species disturbance be found using the following sources:
- JNCC - The deliberate disturbance of marine European Protected Species – Guidance for English and Welsh territorial waters and the UK offshore marine area.

b. Information on the use of explosives in the marine environment can be found using the following sources:
- JNCC - Guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives.

c. Information on active sonar use can be found using the following sources:
- DSA02 Shipping Regulations and JSP 430 Part 2: Specific Regulations. E4 Sonar.
- BR 4985, Underwater Environment Handbook, Volume 5, Managing the Impact of RN Acoustic Operations on the Marine Environment – information on the policy and recommended mitigation for the use of active sonar and information on sonar 2117.
- JSP 364: Joint Service EOD Manual - Explosive ordinance disposal manual.
- Defence Intranet | Library | BRd 5063 - Clearance Diving Operations
- BRd167, Safety, Health and Environment Manual

5. THEME D: WASTE

Waste management is a significant issue in the MOD and the department has an important role to play in reducing the amount of waste generated and ensuring that it is disposed of in the most

appropriate manner. As it is not currently possible to eliminate waste production entirely, effective management is needed to reduce waste production and minimise the requirement for waste disposal, thereby reducing the environmental impact of waste at sea. As different waste streams impact the environment in different ways it is essential that legislation is complied with to ensure minimum impact on human health and the natural environment.

Overall sustainability objective: Reduce waste production and promote reuse, recycling and recovery.

Sub-objectives:

- To reduce the production of hazardous waste and ensure that it is treated responsibly and safely;
- To reduce the spread of persistent or diffuse pollutants and improve the management of waste;
- To reduce the environmental impact of waste at sea; and
- To enable compliance with international, European (EU) and National legislations, International Maritime Organisation (IMO) conventions and EU and UK Waste Strategies.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Change in amount of waste produced (by e.g. more people, different materials).	Educate the project team and end-users about the issues surrounding waste production and disposal, and promote behavioural changes and mitigation techniques that can alleviate impacts.
Change in amount of special, controlled, hazardous or radioactive waste produced	Avoid or reduce waste by estimating quantities accurately and working with suppliers to choose products with minimal hazardous components. Ensure that the appropriate disposal methods are used, see guidance note **a.**
Change in opportunity to send more waste for re-use or recycling.	Dispose of waste as near to its source as possible to minimise unnecessary transport impacts and to keep impacts of the project local rather than widespread if appropriate. Clear all waste from platform prior to leaving port. Manage waste on board in such a way that as much as possible can be returned to shore for recycling/reusing.
Non-compliance with MARPOL 73/78	Ensure staff are aware of and dispose of waste in accordance with MARPOL requirements. See guidance note **b.**
Other waste issues e.g. use of chaff.	

Guidance Notes

a. Information on disposal of hazardous and radioactive waste can be found using the following sources:

- DSA02 Shipping Regulations and JSP 430 Part 2: Specific Regulations. E2 Management of Waste and Discharges from MOD Shipping - Outlines the MOD's duties and responsibilities for the disposal of waste generated at sea.
- JSP 392 Part 1 – guidance on the management of radioactive waste
- JSP 392, Part 2, Leaflet 12 – Information on the accumulation and disposal of radioactive waste.
- BRd167, Safety, Health and Environment Manual
- IMO | International Convention for the Prevention of Pollution from Ships (MARPOL) MARPOL 73/78 - An International Maritime Organisation (IMO) document that is continually reviewed and updated to reflect current thinking in maritime pollution prevention. It contains a series of annexes which relate to different forms of marine pollution.

b. Information on MARPOL 73/78 can be found using the following sources:

- IMO | International Convention for the Prevention of Pollution from Ships (MARPOL) - An International Maritime Organisation (IMO) document that is continually reviewed and updated to reflect current thinking in maritime pollution prevention. It contains a series of annexes which relate to different forms of marine pollution.

6. THEME E: WATER

Water is an essential natural resource which is vital for the survival of flora and fauna and for human health, industry and transport. Governments main objectives related to water include the protection of marine waters by minimising human inputs into the sea, controlling estuarine and marine water quality and pollution and protecting marine biodiversity. MOD activities have the potential to contaminate watercourses as water pollution can arise from the following activities: overboard disposals; dumping of gash, firing of weapons into or from the sea; sewage treatment; leaks and run-off from fuel or chemical stores; aircraft washdowns and maintenance i.e. painting.

Overall sustainability objective: Reduce total water consumption, maximise efficiency of use and encourage reuse whilst minimising the risks of water pollution.

Sub-objectives:
- To safeguard the health and productivity of inland waters and seas;
- To maintain and enhance marine and coastal water quality;
- To reduce the threat of persistent or diffuse pollutants to the environment and human health; and,
- To ensure our waters are clean enough to sustain healthy use by wildlife and communities.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Change in number of people and processes that discharge waste water.	Ensure that all units, especially foreign vessels, are aware of disposal requirements in line with MARPOL and/or local regulations. See guidance note **a.**
Change in number or type of potentially polluting activities or processes during exercise/activity.	Use on board equipment or holding tanks to prevent contaminated runoff from training exercises/activities, de-icing, waste, fuel or chemical storage and handling areas from reaching water bodies. Consider the option of shore disposal of potential contaminants. Check the requirements/limits surrounding the discharge of ammunition rounds into the marine environment. See guidance note **b.**
Introduction of potentially polluting materials into the marine environment. Introduction of black/grey water in to the environment	Check the environmental statements/EIA for equipment that is being used in an intensified manner, in a new area or in different environmental circumstances to ascertain the potential impacts arising from its use. Ensure all waste water is managed in accordance with IMO guidelines. Ensure risk of pollution is appropriate for specific area of activity. Ensure available pollution response organisation and equipment is adequate for the risk posed by the activity. Check the requirements/limits surrounding the discharge of ammunition rounds into the marine environment. See guidance note **b.**
Introduction of invasive species or disease from the discharging of ballast water tanks.	Ensure that ballast water is discharged in line with IMO requirements. See guidance note **c.**
Other water issues.	

Guidance Notes

a. Information on disposal of black and grey water can be found using the following sources:
- IMO | International Convention for the Prevention of Pollution from Ships (MARPOL) – MARPOL 73/78 - the International Maritime Organisation (IMO) sets discharge requirements for black and grey water. The MOD complies with IMO discharge requirements unless more stringent requirements exist.
- Maritime and Coastguard Agency – information on legislation and guidance including IMO documents and amendments to mandatory IMO provisions.
- DSA02 Shipping Regulations and JSP 430 Part 2: Specific Regulations. E2 Management of Waste and Discharges from MOD Shipping – policy document outlining the MOD's duties and responsibilities for disposal of waste generated at sea.
- BRd167, Safety, Health and Environment Manual
- Port Authority Guides – Database of port guides from across the world including the UK.

b. Information on potentially polluting activities or processes is available from the following sources:
- JSP 482 - Part 3 – The operating and management section of MOD Explosives Regulations. Chapter 12 Section 6 provides info on the management and operation of ammunition stores and holdings, Chapter 17 Annex B provides info on Breakdown and Disposal of Explosives and Chapter 27 provides information on Free From Explosives Regulations.
- IMO | International Convention for the Prevention of Pollution from Ships (MARPOL) – MARPOL 73/78 - the International Maritime Organisation (IMO).
- DSA02 Shipping Regulations and JSP 430 Part 2: Specific Regulations. E2 Management of Waste and Discharges from MOD Shipping – policy document outlining the MOD's duties and responsibilities for disposal of waste generated at sea.

c. Information on ballast water is available from the following sources:
- DSA02 Shipping Regulations and JSP 430 Part 2: Specific Regulations. E3 Ballast Water Management – Policy document outlining the MOD's duties and responsibilities for ballast water management.

7. THEME F: SEA BED AND SEDIMENTS

MOD activities such as military training have the potential to affect the sea bed and sediments through direct and indirect contact or use. The coastal locations of a vast number of geological Sites of Special Scientific Interest (SSSI) make it particularly important that consideration is given to the nature of MOD activities and the impact they may have on these sites. Explosives and other materials used and/or disposed of at sea have the potential to contaminate the sea bed and may require licensing.

Sustainability objective:
- To protect sea bed stability and features of geological importance

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Introduction of contaminants to the seabed and/or sediment.	Minimise the use of contaminants. Ensure that all materials that enter the marine environment comply with the relevant legislation
Objects on sea bed	Ensure that any objects placed on the sea bed are in line with the Food and Environment Protection Act (FEPA) licensing / EIA requirements. See guidance note **a.**
Change in status of or effects on features of geological importance e.g. Geological SSSIs, SAC's and Regionally	See Theme **G** for information on protected sites Consider the impact of underwater explosions. See Theme C

Important Geological Sites (RIGS).	
Other geology, soil and sediment issues.	

Guidance Notes

a. Information on placing objects on the sea bed can be found using the following sources:
   - Marine Management Organisation – detailed information on the 1985 Act and how to apply for a licence.
   - Marine and Fisheries Agency – detailed list of activities exempt from FEPA. Now merged with the Marine Management Organisation.
   - Crown Estates – Landlords of the sea bed out to 12 nautical miles

8. THEME G: BIODIVERSITY AND NATURE CONSERVATION

Biodiversity encapsulates the variety of life on earth, including all species of plants and animals along with their genetic variation and the complex ecosystems of which they are a part. Biodiversity contributes to the distinctive character of an area and enriches quality of life. UK wildlife has suffered significant losses over recent years, mirroring similar losses worldwide.
Military training has the potential to impact on biodiversity at sea and if there are significant changes in training (e.g. numbers of people, location, timing and duration) ecological implications should be considered. Disturbance or stress may be caused by noise and movement of people, vessels and ordnance. Vegetation and benthic communities can be damaged by explosives or dredging.

Overall objective: Conserve and, where appropriate, enhance biodiversity to contribute to the UK commitment to halt the loss of biodiversity by 2010 and afterwards, whilst ensuring the provision of defence capabilities.

Sub-objectives:
- Contribute, as appropriate, to the UK Biodiversity Action Plan.
- Contribute towards government objectives to reach good chemical and ecological status in inland and coastal waters by 2015.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Impact (indirect or direct) on a designated site (particularly SSSI, SPA, SAC, RIGS or Ramsar site). Sites may be designated for marine habitats and flora or fauna species, as well as geomorphological and geological features.	Issues may include direct or indirect physical habitat loss or damage; changes in hydrology; noise or visual disturbance; release of toxic contaminants, nutrients, dust or invasive species, and may include distant affects. Investigate the objectives of the designation and identify any potential impacts from the planned exercise or activity. Carefully evaluate and manage the aspects of the activity which have the potential to impact on these features. Consider: ▪ Oil spills ▪ Water pollution ▪ Impact of radar ▪ Impact of sonar ▪ Species being struck by vessel etc. Consider the time of year that your exercise/activity is occurring as this will affect the potential impacts. Consider migration, breeding and temporary location of species.

	Any potential impact on the objectives of a designated site will require an ecological impact assessment and should be discussed with a specialist environmental adviser at the earliest opportunity. See Guidance note **a.**
Impact on a species of conservation concern (including European or UK Protected Species or local biodiversity action plan species).	A desk study may be required to identify possible species issues. A 'Protected Species Licence' application may be required if impact is likely, supported by detailed surveys and mitigation plans. Survey and reporting may be expensive, may take 3 months or more, and are usually only possible at certain times of the year. Therefore early consultation with a specialist is highly recommended. Identify and avoid if possible key habitats used for feeding, resting and breeding. Identify and create buffer zones around sensitive areas, and where practicable, carry out potentially disturbing activities at appropriate times to avoid breeding, migration or other sensitive seasons. See guidance note **b.**
Impact on natural habitats that are not protected by designation.	Issue may include direct or indirect habitat loss or damage, changes in sea water quality, release of toxic contaminants, nutrients or invasive species and may include distant and/or transboundary effects. Identify and mitigate actions that will negatively impact on key habitat features. The location of the activity/exercise will determine which legislation applies. Consider the differences between the devolved administrations and ensure compliance with the correct legislation.
Impact on the critical characteristics of the environment	Consider any changes to the critical characteristics that may have occurred since the exercise/activity was previously conducted. These characteristics may now be vulnerable to impact from the exercise or activity, consider: **Time**: Time of year will impact on the potential impacts and consideration of temporary species, breeding grounds and migratory species will be necessary; **Location**: Designated sites and permanent and temporary habitats including breeding sites and migration routes. **Content**: Permanent and temporary presence of species (both flora and fauna) **Designation**: If an area has been designated as a special/protected area, find out why and ensure that the activity/exercise will not impact on the requirements of the designation.
Introduction of activities or operations that may affect biodiversity and nature conservation.	Investigate the area prior to commencing activities/ operations to ensure that any potential risks are understood and minimised. Consider the time of year that your exercise/activity is occurring as this will affect the potential impacts. Consider migration, breeding and temporary location of species.
Other biodiversity and nature conservation issues.	

Guidance Notes

a. Information on designated sites can be found using the following sources:

- Environmental Briefing Dockets -
- MAGIC – this mapping tool can be used to determine whether the proposed exercise area contains any designated sites including SSSI and SAC. It covers Great Britain Coastline

and marine areas of the UK Continental Shelf and can direct you to the relevant government website which will specify the objectives of the designation.(note, this site can be slow loading and you will need to zoom in on the scale to a minimum of 1-250000 to see enough relevant details).

- Map of Marine protected Sites This will show users where SPA's SAC's and other marine protected sites are located around Great Britain as well as giving information on such sites.
- Map of SAC's with marine components JNCC information page

- Joint Nature Conservation Committee - marine protected sites – JNCC is the statutory adviser to Government on UK and international nature conservation and can provide information on legislation, habitats (including those in the offshore marine area) and designated sites with marine components.

- UK Geoconservation – overview of LNR's (Local Nature Reserves), RIGS (Regionally important Geological / Geomorphological Sites) and SSSI's (Sites of Special Scientific Interest).

- Designated Sites include but are not limited to:
  - Areas of Outstanding Natural Beauty (AONB)
  - Sites of Special Scientific Interest (SSSI) (England, Wales and Scotland)
  - Areas of Special Scientific Interest (ASSI) (Northern Ireland)
  - Marine Nature Reserves (MNRs) will be changed to Marine conservation zones (MCZs) designated under the Marine and Coastal Access act (2009)
  - Nature Conservation MPAs under the Marine (Scotland) Act 2010.
  - National Nature Reserves (NNRs)
  - Natura 2000 Sites, SPA's and SAC's make up the European network of Natura 2000 sites
  - Special Areas of Conservation (SAC) as designated in accordance with the Habitats Directive 92/43/EEC
  - Special Protection Areas (SPA) As designated in accordance with the wild birds directive 2009/147/EC
  - Ramsar Sites, wetlands of international importance for migratory species.
  - UNESCO World Heritage Sites
  - Biosphere Reserves
  - Regionally Important Geological and Geomorphological Sites (RIGS)
  - Sensitive Marine Areas (SMAs)
  - OSPAR Marine Protected Area network – Map of sites

b. Information on species of conservation concern can be found using the following sources:

- Joint Nature Conservation Committee – can provide information on European or UK Protected Species
- UK Biodiversity Action Plan – this site provides information on priority species and habitats and local biodiversity action plans.

9. THEME H: HISTORIC ENVIRONMENT

The seas and shores surrounding the UK contain an immense wealth of archaeological sites and remains. Maritime heritage assets range from prehistoric sites and settlements to the remains of ships and submarines and aircraft lost at sea. Many maritime assets are of value to the ethos and heritage of the Armed Forces especially the Royal Navy.
The MOD undertakes numerous activities that have the potential to impact on, damage or disturb maritime heritage assets or the integrity of underwater landscapes. Such offshore activities include underwater explosions, offshore firing, amphibious landings, dredging and anchor dragging.

As a Government Department the MOD has a duty of care towards the Nation's maritime heritage assets and should seek to minimise the impact of its operations and activities on these assets. This duty of care should extend to heritage assets in international and states' waters as a minimum.

Overall sustainability objective: To protect from damage or disturbance maritime heritage assets in recognition that it is an integral part of cultural heritage of the Nation and the Armed Forces.

Sub-objectives:

- To have a historic environment that is protected and well maintained for the benefit of current and future generations.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
A change in or the introduction of a new activity impacting on, damaging or disturbing known non-designated heritage assets and or its settings	Identify heritage assets and their location within the exercise area prior to the commencing of those activities. Understand the significance/importance of the heritage assets. Understand the potential impacts of the activities on the heritage assets identified remembering that disturbance to the seabed could cause changes in sedimentation behaviour which could impact on heritage assets in the area. If an activity will significantly impact on a heritage asset then explore opportunities for modifying the activity and/or changing its geographical location.
Any activity that may impact on or cause disturbance to a site or wreck designated as a scheduled monument or designated under the Protection of Wrecks Act 1973 or the Protection of Military Remains Act 1986	Identify if a designated asset is located within the exercise area prior to the commencing of those activities Understand the potential impacts of the activities on the designated asset remembering that disturbance to the seabed could cause changes in sedimentation behaviour which could impact on heritage assets in the area If an activity will disturb or damage the scheduled monument heritage asset then explore opportunities for modifying the activity and/or changing its geographical location. If this is not possible then: a. Scheduled Monument Clearance will need to be obtained from the relevant Statutory/Executive heritage body. SMC may stipulate mitigating conditions b. A licence may be required from the Statutory/executive heritage body for access to wrecks designated under the PWA 1973 c. A licence may be required from the MOD for access to wrecks designated under the PMRA 1986 See guidance note **a.**
Other historic environment issues.	

Guidance Notes

a. Information on the location of marine heritage assets can be found using the following sources:

- Pastscape map search – This site allows you to search for wreck sites using Latitude and longitude, grid references or just selecting a location on a map within any given area around the UK
- Historic England, Historic Environment Scotland, Cadw and DoE Northern Ireland - for information on wreck sites designated under the Protection of Wrecks Act 1973 and licensing conditions.
- MOD for information on wrecks and crashed aircraft designated under the Protection of Military Remains Act 1998
    - **a.** Chief of Naval Staff (CNS) Heritage Section for information on wrecks
    - **b.** Joint Compassionate Casualty Centre (JCCC) for information on crashed military aircraft
- RAF Air Historical Branch - for information of crashed aircraft not receiving protection under the PMRA 1986
- Coastal Local Planning Authorities' "Historic Environment Records" - may contain information on local heritage assets
- MAGIC – this mapping tool can be used to determine if there are any protected wreck sites in the proposed exercise area. (Note, this site can be slow loading and you will need to zoom in on the scale to a minimum of 1-250000 to see enough relevant details).
- PASTMAP - this mapping tool can be used to determine if there are any protected wreck sites in the proposed exercise area in Scotland.

10. THEME I: SUSTAINABLE PROCUREMENT

Sustainable procurement means delivering SD through our procurement activities and outcomes. MOD is a major procurer of a diverse range of goods and services. Those procurement activities have a range of social, economic and environmental impacts both negative and positive. MOD aspires to best practice and needs to take the long-term view in its procurement of materials and services. It is important that MOD's aspirations to support SD are communicated right through our supply chain. Consideration of sustainable procurement principles will reduce risks from unintended outcomes of procurement activities. Examples of risks may include direct MOD-attributed activities such as significant pollution events, or indirect risks such as pollution generated from the manufacture (or disposal) of material for a MOD contract, or the use of illegal products, such as protected timber. These events have the potential to impact on MOD performance and reputation.

Overall sustainability objective: Ensure that all Departmental procurement takes full account of Sustainable Development principles and helps meet Sustainable Development targets and objectives.
Sub-objectives:
- To deliver sustainable development through the procurement process;
- To take account of the widespread impacts resulting from procurement decisions and activities;
- To take a whole-life approach to procurement.

POTENTIAL ISSUES	MITIGATION AND ENHANCEMENT OPPORTUNITIES
Ability to achieve a Whole Life, Value for Money approach (where SD is appropriately weighted as part of VFM considerations).	Ensure procured item/contract will be fit for purpose over lifespan (consider what materials go in, how and whom makes it and disposal options) and is future proofed (e.g. climate change) and pragmatically balances the requirements of cost, impact and performance. Consider the inclusion of information in a ships Inventory of Hazardous Materials (IHM) see guidance note **a.**
Sustainability of an activity/exercise jeopardised by funding.	Ensure potential sustainability issues highlighted through MESAT are considered early on and are integrated within cost calculations and decision making process.
Level of Sustainable Development awareness/training of project team.	Ensure personnel and supply chain are well informed with regard to sustainable development and how their constituent roles can achieve this through sustainable procurement.

Guidance Notes

a. Information on Inventory of Hazardous Materials (IHM) can be found using the following source:
- Lloyd's Register – Inventory of Hazardous Materials

11. THEME J: COMMUNITIES AND SOCIAL VALUES

Managing MOD's social impacts is a key part of the Department's contribution towards sustainable development and an integral component of maintaining the ethos and reputation of MOD. There is growing recognition and expectation that communities should be involved in processes and decisions that affect them (and to which they can contribute and influence), and have access to information about the environment. MOD can benefit because an informed public can bring a wide range of views into a discussion, helping MOD to take account of the many potential impacts of a decision. Areas of potential conflict can be identified and addressed at an early stage, minimising future delay. Consultation also provides opportunities to build trust and increase understanding of MOD activities.

Overall sustainability objective: Promote MOD as a good neighbour which works with local communities to minimise disturbance and maximise positive social impacts.
Sub-objectives:
- To minimise disruption and nuisance to communities and local environments;
- To maximise opportunities for partnership-working, public involvement in decision making and access to environmental information; and
- To encourage community involvement and volunteering by the MOD.

POTENTIAL ISSUES	MITIGATION AND ENHANCEM,ENT OPPORTUNITIES
Change in local environmental quality experienced by communities (e.g. noise or electronic interference).	Educate personnel about the importance of strengthening relationships with local communities and promoting social responsibility. Inform local communities of anticipated military activity to promote goodwill. Inform Coastguard and/or local fishermen if higher levels of marine traffic are expected. Avoid unnecessary high powered transmissions at frequencies likely to interfere with public broadcasting networks including radio, telephone etc. See guidance note **a.**
Change in opportunity for consultation, partnership working and information sharing.	Promote consistent communication with communities and interested parties (e.g. pressure groups). Liaise with Fleet Media if PR opportunities arise. MOD has instructions and Standard Operating Procedures for press releases and community liaison. See guidance note **b.**
Impact on fishing activities and/or shipping routes.	Where possible stay clear of shipping routes. Liaise with local fishermen to advise of forthcoming exercise/activity.
Other community or social issues.	

Guidance Notes

a. Information on coastguard and fisheries communication can be found using the following sources:
- Maritime and Coastguard Agency - responsible throughout the UK for implementing the Government's maritime safety policy and can provide contact details for local coastguard stations.
- National Federation of Fishermen's Organisations – representative body for fishermen in England, Wales and Northern Ireland.
- Scottish Fishermen's Federation

b. Information on media and communication can be found using the following sources:
- Media and Communication Standard Operating Procedures– sets out clear procedures and processes for communications across Defence.

12. THEME K: HEALTH, SAFETY AND WELL-BEING

Health, safety and well-being contribute to, or substantially degrade, quality of life. They are important issues for MOD due to a combination of legislative requirements, the moral responsibility of MOD to its employees and the communities in which it operates and the cost implications of accidents. MOD undertakes many activities that could have health, safety and well-being implications, in relation both to its own staff and personnel, and to the wider community. This section is not intended to replace existing extensive MOD guidance on Health and Safety.

Overall sustainability objective: Maximise opportunities to promote healthy, safe and secure environments in which to work.

Sub-objectives:
- To reduce the incidence of work days lost due to work related illness and injury.
- To reduce work-related stress, excessive hours and improve the work/life balance
- To promote a healthy and productive working and, where relevant, residential environment; and
- To promote good health and well-being.

POTENTIAL ISSUES	MITIGATION AND E4NHANCEMENT OPPORTUNITIES
Influx of new staff that may be unsure of health, safety or security procedures and local hazards. Change in organisation roles, responsibilities and work patterns that may significantly affect procedures for health, safety or well-being. Prolonged change in staff numbers, workload and work patterns that may affect health or stress levels.	Explore opportunities to improve working spaces and accommodation. Good risk management practice will improve workplace health and safety. Where training activities differ from day-to-day practice risk assessment will require: Identification of hazards and those who might be harmed; Assessment of the likelihood and consequence of harm; Implementation of appropriate control measures to reduce risk to as low as reasonably practicable; and recording, reviewing and, where necessary, revising the risk assessment to reflect changes. Ensure proper account is taken of health, safety and well-being issues to ensure continuing fitness-for-purpose promote behavioural changes and mitigation procedures to minimise negative aspects. Ensure employees and other relevant parties are fully trained to operate new equipment and understand the relevant safety procedures. Utilise the range of Standard Operating Procedures, Codes of Practice and management systems for maintaining safety. See guidance note **a.**
Change in use or storage of substances that could significantly affect health, safety or well-being.	Storage of all hazardous substances is done in accordance with SOPS.
Change in equipment, processes, activities, external climate that could significantly affect health, safety or well-being.	To reduce risks the following hierarchy of principles should be applied: Elimination of the hazard; Substitution for a less hazardous substance or activity. Adapting to technological progress. Physical safeguarding and collective protective control measures (e.g. security devices or alarms). Procedures for people (e.g. personal protective equipment); and response to limit consequences of accidents that still occur. Also as above.

Change to exterior layout that could significantly affect health, safety or well-being	Provide safe access, including the needs of those whose mobility is impaired
Other health, safety or well-being issues.	

Guidance Notes

a. Information on Standard Operating Procedures for maintaining safety can be found using the following sources:

- JSP 375 MOD Health and Safety Handbook
- BRd167, Safety, Health and Environment Manual

ANNEX D – List of Recommended Environmental Data Sources

D.1 UK Data sources

The vast majority of available data on UK environmental issues is currently focused on the land and coastal environments. From 2013 both UK inshore and offshore waters will be increasingly defined and controlled under the new MCZs (see 1.b.5 below). The process of defining and protecting UK waters will become more sophisticated and it should become easier to find clear data to support our planning needs. An extensive list of links to environmental source data is under Annex C - 'Environmental Themes and Data Links'. The current (2016) primary sources are:

a. **UK www. - MAGIC.** MAGIC is the first web-based interactive map to bring together information on key environmental schemes and designations in one place. It is a partnership project involving six government organisations who have responsibilities for environmental policy-making. The maps can be accessed through this link MAGIC and can be manipulated to show areas of interest generated by each of the MAGIC partners which are:
   - DEFRA (Department for Environment, Food and Rural Affairs)
   - Historic England
   - Natural England
   - Environment Agency
   - Forestry Commission
   - Marine Management Organisation

b. **UK www. - JNCC.** Joint Nature Conservation Committee The JNCC is a Government body tasked with the overall management and control of the UK maritime and land environment. The JNCC web site contains a mass of marine environmental data, including a new (2011) interactive MPA map. **Two key areas to note are:**
   - The deliberate disturbance of marine European Protected Species – Guidance for English and Welsh territorial waters and the UK offshore marine area – JNCC – and
   - Guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives – JNCC.

The JNCC site also contains links to the regional conservation authorities in Scotland, Northern Ireland and Wales, together with details of the following:

(1) **European Marine Sites.** Known collectively as Maritime Protection Areas (MPAs), these primarily consist of Special Protection Areas (SPAs) – link to JNCC list
and Special Areas of Conservation (SACs) – link to JNCC list
They are established under the EC Birds and Habitats Directives respectively to protect marine habitats and species of European importance.

(2) **Sites/Areas of Special Scientific Interest (ASSIs/SSSIs).** ASSIs/SSSIs are established under the Wildlife and Countryside Act 1981 and the Nature Conservation (Scotland) Act 2004 to protect species, habitats and geological features of national importance. Many such areas are coastal and include intertidal habitats. Many are MOD owned and already subject to regulated management plans. Others are on private land and the land owners are also required to have effective management plans in place. When military activity is planned which encroaches on private land, all such plans have to be scrutinized and approved by the MOD Training Over Private Land (TOPL) Cell.

(3) **RAMSAR Sites.** Ramsar sites are established under the 1971 Convention of Wetlands of International Importance to promote the conservation and wise use of wetlands of international importance. JNCC RAMSAR link.

(4) **OSPAR Sites.** OSPAR Sites are established under international law for the protection and conservation of species, habitats, ecosystems or ecological processes of the marine environment. They encompass a very wide variety of benthic communities. JNCC OSPAR link

(5) **Marine Conservation Zones (MCZs).** MCZs are a new type of MPA designation that have been introduced for English and Welsh waters since 2013 through the Marine and Coastal Access Act 2009. A similar process will occur in Scottish waters under the Marine (Scotland) Act 2010 and Irish waters under the Marine Act (Northern Ireland) 2013. MCZs protect nationally important marine wildlife, habitats, geology and geomorphology. JNCC MCZ link

(6) **Scottish Marine Protected Areas.** Scottish Nature Conservation MPAs are established under the Marine (Scotland) Act and the UK Marine and Coastal Access Act for inshore and offshore sites respectively. They are for the protection of nationally important marine biodiversity and geodiversity features. The number and scope of MPAs in Scottish waters have also been increasing considerably since 2014. Scottish Natural Heritage MPA link.

(7) **Northern Ireland.** It is expected that MCZs will soon (2016) be established in Northern Irish waters under the Marine Act (Northern Ireland) 2013. The MCZs will protect nationally important habitats and species inside 12 nautical miles. Department of Environment Northern Ireland MPA link

(7) **European Protected Species (EPS)**. EPS are protected wherever they occur. There are two main potential impact sources; first the effect of high powered sonar transmissions which is mitigated by the use of S2117; secondly the possible impact of underwater or surface explosions which are mitigated through the protocols in BRd 5063. These sources must be factored into any EA. JNCC EPS link

(8) **Seal Haul-Out Sites Scotland**. Seals are European Protected Species which, as described above, are protected wherever they occur. However, under the Marine (Scotland) Act 2010 and the Protection of Seals (Scotland) Order 2014 specific haul-out sites have been designated to provide additional protected to seals from intential or reckless harassment in Scotland. The seal haul-out sites are locations on land where seals come ashore to rest, moult or breed. As the haul-out sites are small and very numerous (194 designated), they have not been added to EPG(M). RN operators are advised to remain vigilant and avoid disturbance to seals irrespective of their location. For large excercises, emphasis can be made to avoid Haul-out Sites through a MESAT. Link to Haul-out Maps.

c. **Overall data maps of the UK** including seabed characteristics, fishing effort, disposal sites, sand extraction sites, Marine Protected Areas, Marine mammal density maps etc.

- **UK**
- **Scotland**

D.2 Royal Navy Data Sources

a. Primary Sources – Policy and Procedures. The primary RN data sources for policy and procedures are:

- BRd 167 – The Safety, Health and Environment Manual – October 2015.
- BRd 4985 – Underwater Environment Handbook – Managing the Impact of RN Acoustic operations – December 2014.
- BRd 5063 – Clearance Diving Operations – Ch.3 Section 9 – Protection of Marine Mammals and the Environment when using explosives – June 2014.
- ATP 16(E) – Replenishment at Sea
- BRd 9424 – Fleet Operating Orders (FLOOS) VOL 1 – 0218 – October 2015

Ref B is particularly significant in assessing the impact of RN acoustic operations and thus the distance from a sound source that a behavioural disturbance or physical injury to wildlife may occur. Within this guidance lie the Sonar 2117 Environmental Risk Management Tool (S2117 ERMT) and the Sonar Global Environmental Impact Assessment (Global EIA) which have been developed specifically to inform the mitigation process. S2117 is the RN's primary means of calculating the potential level of acoustic risk. Ref C gives similar guidelines for managing explosions at sea.

b. **Environmental Briefing Dockets (EBDs).** These are produced by UKHO Taunton and provide a wide range of environmental data for use by units operating worldwide. They are also produced to cover specific activities or exercises such as Joint Warrior. EBDs will gradually be superseded by **Defence Maritime Environmental Briefs (DMEBs).** Until a DMEB supersedes an EBD area, the existing EBD from Version 15 (issued in 2013) should be used.

c. **Environmental Awareness Charts (EACs).** These are a new addition to the Marine & Astronomical Science Team (MAST), Marine Environmental (ME) Products suite at UKHO. EACs are Analogue Graphics which display a selection of key environmental parameters for quick reference. Information provided includes climate station data, sound speed profiles, acoustics and sediments. EACs provide situational Awareness Planning for tactical exploitation of the marine environment.

d. **Additional Military Layers (AMLs) and Environmental Protection Guidelines (Maritime) - EPG(M).** AMLs showing the locations and qualifying interests of all MPAs in UK waters can be accessed through WECDIS and the NavySafe Website. Each MPA can be interrogated to display qualifying interests and linked text boxes can be accessed which list the relevant EPG(M) for each protected area. Link to EPG(M) website

ANNEX E – List Of Acronyms

AML	Additional Military Layers
AONB	Areas of Outstanding Natural Beauty
BR	Book of Reference
CESO	Chief Environmental Safety Officer
CNS	Chief of Naval Staff
DEFRA	Department of Food and Rural Affairs
DIO	Defence Infrastructure Organisation
DMEBs	Defence Maritime Environmental Briefs
DSA	Defence Safety Authority
EA	Environmental Assessments
E&S	Environment and Sustainability
EIA	Environmental Impact Assessment
EMS	Environmental Management system
EPG(M)	Environmental Protection Guidelines (Maritime)
EPS	European Protected Species
ERMT	Sonar S2117 Environmental Risk Management Tool
ESA	Environment and Sustainability Assessments
FCS	Favourable Conservation Status
FEPA	Food and Environmental Protection Act
HRA	Habitats Regulations Appraisal
IMO	International Maritime Organisation
JNCC	Joint Nature Conservation Committee
JSP	Joint Service Publication
MARPOL	Marine Pollution
MCZ	Marine Conservation Zones
MESAT	Maritime Environmental and Sustainability Assessment Tool
MMOs	Marine Mammal Observers
MNRs	Marine Nature Reserves
MOD	Ministry of Defence
MPAs	Marine Protected Areas
NGOs	Non Governmental Organisations
NRW	Natural Resources Wales
OC	Operational Capability
OGDs	Other Government Department
OSPARS	The Oslo/Paris Convention for the Protection of the Marine Environment in the NE Atlantic – 1992
PMRA	Protection of Military Remains Act
PWA	Protection of Wrecks Act
RAMSARS	The Ramsar Iran Convention for the conservation of wetlands – ratified 1976
RIGS	Regionally Important Geological / Geomorphological Sites
SAC	Special Area of Conservation
SD	Sustainable Development
SEAT	Sustainability and Environmental Appraisal Tool
SEPA	Scottish Environmental Protection Agency
SMAs	Sensitive Marine Areas
SNH	Scottish Natural Heritage
SOPs	Standard Operating Procedures
SNCBs	Statutory Nature Conservation Bodies

SPA	Special Protected Area
SSSI	Site of Special Scientific Interest
UKHO	United Kingdom Hydrographic Office