



Guidance Note March 2010

Dealing with munitions in marine sediments

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1 Preface

- 1.1 This Guidance Note is produced by the Mineral Products Association (MPA) and British Marine Aggregate Producers Association (BMAPA) in consultation with the Association of Chief Police Officers, Ministry of Defence, the Health and Safety Executive, Maritime and Coastguard Agency, Federation of Dredging Contractors, EOD Contractors and The Crown Estate to complement and direct the individual company procedures to comply with safety legislation and best practice.
- 1.2 It provides guidance on best working practices for dealing with potentially unexploded munitions, as defined in clause 5, recovered from the seabed while dredging for marine aggregates or undertaking navigational dredging and discharging cargos.
- 1.3 The Guidance Note is not a substitute for officially recognised training and qualifications but is intended to assist all involved in fulfilling their responsibilities for –
 - the safety of employees (wharf and sea staff), contractors and service personnel
 - the safety of people living or working in the vicinity of the wharf
 - the safety of people working with the end use of the aggregate.

2 Introduction

- 2.1 The distribution and density of exploded and unexploded munitions ('explosive ordnance') on the sea bed varies depending on the history of the area – for example whether it has been used for warfare, naval training, disposal or weapons testing. Changes to existing marine aggregate dredging zones, new licensed areas and navigational dredging can result in munitions being raised by a dredger and discharged amongst the marine sand and gravel at a wharf, beach or on a development site within or external to a port/harbour area.

All operations should be subject to an initial Risk Assessment, subsequent Method Statement/Specific Site Procedures and emergency procedures.

- 2.2 This Guidance Note has been prepared in consultation with the supporting authorities and industries involved:
 - to outline the potential risks and safety measures that need to be considered
 - to provide practical advice to the dredging industry, EOD Contractors and marine aggregate operators on the measures to be taken to reduce the risk of dredging munitions, and
 - the procedures to be followed when suspected munitions are encountered – either on the dredger itself or at the wharf/site while receiving or processing marine dredged minerals whether for beach nourishment, contract land fill or for use as construction aggregate.
- 2.3 The Guidance covers two distinct operations:
 - offshore dredging
 - onshore activities (wharf, beach or contract discharge) taking place in a harbour.*

***Note** Harbour defined under Regulation 2, MSER 2005 as '...a harbour which is within the jurisdiction of a harbour authority and includes- a) the areas of water within the jurisdiction of that harbour authority; and b) land within the jurisdiction of, or occupied by, the harbour authority and used in connection with the loading and unloading of ships;'

3 Scope of the Guidance Note

- 3.1 This Guidance Note covers all types of munitions likely to be encountered at sea and whether retained on board the vessel for subsequent disposal or transferred to wharves which remain potentially dangerous even when they have been submerged for many years.

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- 3.2 Munitions can potentially be encountered during various stages of dredging operation and subsequent discharge or marine aggregate production and processing:
- at the mouth of the dredgers drag head through the pumps and pipe work
 - in the dredgers hold and during discharge
 - in the stockpiles at the wharf
 - during the processing of material at the wharf
 - on the wharf conveyor screen or magnet.
- 3.3 Marine dredging and aggregate operators need to consider the potential risks and safety measures of encounters at all of these locations and take action to ensure that the risks to their employees, (crew, wharf staff and others) are reduced to the lowest level that is reasonably practicable. Against this background, the advice in this document provides practical guidance to operators of the options available to minimise the occurrence and effect of munitions in dredging and marine dredged aggregate, and the steps needed to manage any encounters that may take place.

4 Roles and responsibilities

- 4.1 The dredging and aggregate companies have a responsibility, under Sections 2 and 3 of the Health and Safety at Work etc. Act 1974, to reduce the risks to their employees and persons not in their employment who could be affected by their activities to as low a level as is reasonably practicable. In fulfilling those responsibilities the operator will need to consider in particular:
- adopting safe systems of work
 - providing appropriate training.
- 4.2 The Health and Safety Executive has responsibility for enforcing health and safety legislation in respect of harbours, and the construction and extractive industries as well as for the storage of explosives in harbour areas.
- In all other cases the police service have responsibility for licensing the storage of up to 2000kg of explosives, with HSE licensing storage of quantities greater than that.
- 4.3 The Joint Service Explosive Ordnance Disposal Operations Centre (JSEODOC) are responsible for tasking appropriate Ministry of Defence (MOD) assets to provide Explosive Ordnance Disposal (military EOD) support to the civil authorities where there is a perceived threat to life. Where there is a realistic expectation of encountering munitions during a dredging operation and a threat to life does not exist, the MOD would not expect to respond. In such circumstances a competent commercial EOD contractor should be employed as part of business continuity.
- 4.4 The police will be responsible for coordinating the emergency services in the event of an incident above high water mark and HM Coastguard below. This will include: establishing a cordon and evacuating people from the area. The police will normally be the enforcing authority for the storage of explosives.
- 4.5 The Maritime and Coastguard Agency (MCA), under the Merchant Shipping Act 1995, have a duty to enforce merchant shipping legislation in relation to all activities onboard ship irrespective of the size of the ship or quantity of cargo being carried. The MCA is also responsible for response to vessels at danger or difficulty at sea.
- 4.6 Explosive ordnance contractors trained to Level 2 (as defined in Annex A) can provide advice and guidance to operators on the identification of munitions and the subsequent actions that may be necessary.

5 Definitions

- 5.1 Munitions can range from a .22 inch calibre rifle bullet to large calibre shells, bombs and sea mines. There is also the potential to encounter incendiary items – such as military and civil marine pyrotechnics.

Throughout this report, munitions are considered under three distinct categories although **live** and **blind** are both unexploded:

- **inert** – contain no explosives whatsoever.
- **live** – contain explosives and has not been fired.
- **blind** – have fired but failed to function as intended.

6 Dredging operations management actions and best practice

6.1 Prevention

- 6.1.1 It is obviously preferable to avoid recovering unexploded ordnance while dredging. Measures taken to prevent recovery of such items will also help avoid picking up other debris (metal, wood, etc), which may damage the dredge gear or potentially contaminate the cargo.

- 6.1.2 It is recommended that aggregate dredging vessels have a 100mm – 200mm metal grid over the mouth of the drag head, to prevent large items from entering the dredge pipe, and ultimately the pump and vessel itself. Dredgers undertaking navigational or capital projects may have varying arrangements and grids however the drag head and metal grid should be inspected at the completion of each dredging operation for integrity and trapped munitions.

- 6.1.3 Identifying potential concentrations of debris on the seabed is more difficult. While magnetometers can indicate whether iron or steel is present on the seabed, they provide no guide as to the identity or nature of contacts (one large item, or a number of closely spaced smaller items) and whether they are on the surface of the seabed or buried. In the case of munitions, the size of individual items coupled with the scale of the areas being dredged mean that it is impractical to identify the presence of munitions against a background of general metallic seabed debris. Side scan sonar, although commonly used to identify wreckage on the seabed, is not capable of resolving small items of ordnance which may only be a few cm in size on a gravelly seabed.

6.2 Management of dredging operations

- 6.2.1 While it is not possible to entirely avoid recovering munitions; there are a number of steps that can be taken to manage the risks to health and safety – as well as business disruption. Management of dredging operations can also assist in reducing the burden on military EOD units.

- 6.2.2 Munitions will generally be immobile on the surface of the seabed. On aggregate production licence areas where there is known to be a high risk of encountering munitions, restricting trailer dredging operations to narrow lanes ensures that the surface sediments and any accompanying items will be recovered at the start of production. Therefore while there may be a higher than normal recovery rate of items to begin with, experience has shown that there is normally a marked drop in the frequency of incidents once the surface sediments have been removed. When navigational or capital dredging defines the area to be dredged procedures recommended in Annex B apply.

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- 6.2.3 In areas where there is a high potential for recovering munitions, and where the geological deposits, licence conditions and dredging capability of the individual vessels permit, operators may choose to restrict dredging to static operations. This further minimises the spatial extent of the dredged area, which in turn enables the surface sediments to be removed more quickly.

6.3 Monitoring

- 6.3.1 The rate at which surface sediments will be removed, and thus the potential for recovery of munitions, will vary on a case-by-case basis – depending upon the number and distribution of ordnance, size of the zoned area and the rate of production.
- 6.3.2 Records of munitions encounters from individual cargoes can be used to monitor the frequency of incidents over time. Dredging zones can be categorised into low/medium/high risk areas by Marine and Wharf staff to assist in the risk assessment process. The frequency of incidents has a bearing on the response and burden placed upon the local police service and the attending military EOD teams. By managing dredging operations and accurately recording the frequency of incidents, it should be possible for operators to provide advance notice of any change in the expected frequency of encounters, for example when starting to work a new dredge zone, or when the records indicate the surface sediments have been removed.

6.4 Emergency procedures

- 6.4.1 Under the requirements of the International Safety Management code, all dredging vessels must have procedures which define the appropriate responses and actions required by the Master who is the primary contact on board, and crew for any potential operational risk – such as a munition being encountered onboard. On construction/beach projects a designated authority/point of contact should be defined.

The procedures will need to be informed by a risk assessment, which should consider the implications on crew and vessels should a munition explode when moving through the cargo system. The procedures themselves will be defined within the individual vessels Emergency Procedures Manual.

6.5 Emergency actions

- 6.5.1 Munitions encountered while at sea should never be tampered with or cleaned because there is always a possibility of detonation, personal injury and vessel damage.
- 6.5.2 In the interests of safety and the protection of the environment, dumping of munitions overboard is not permitted and all parties should be aware of the OSPAR and licensing requirements for deposits at sea. Advice on licensing requirements is available from the Marine Management Organisation (MMO). In addition if the ordnance concerned has substantial potential to cause damage, consideration must be given to where it is placed (ie. not in a fishing area or shipping lane) and if this needs to be marked for subsequent action to render it safe.*
- 6.5.3 Where there is an expectation that munitions may be dredged, the dredging company should make arrangements for safely dealing with the munitions. If an item is discovered while the vessel is at sea – either while dredging or in transit, the incident must be reported by the Master to the Coastguard who will co-ordinate military EOD support if there is a threat to life. In the event that munitions are reasonably expected to be found during the dredging operations commercial EOD should be in attendance to give advice to the ship's master.
- 6.5.4 If an item is discovered while the vessel is alongside a wharf and discharging, the incident must be reported to the local police service (via a 999 call under police procedures) that will be responsible for arranging military EOD support if a threat to

*Note The UK is a Contracting Party to the OSPAR Convention 1992, the regional marine environmental protection convention for the North-East Atlantic, and also to the London Convention 1972 and London Protocol 1996, the global conventions dealing with the disposal of wastes at sea.

life exists. Otherwise it should be dealt with by the retained commercial EOD company who should have established liaison and protocols with the local police. Contact details and procedures should be issued as per company rules.

- 6.5.5 A flow diagram defining generic actions and subsequent disposal options is presented in Annex B. However, individual vessels should refer to their own Emergency Procedures Manual.

7 Wharf operations management actions and best practice (beach and reclamation refer to Annex C)

7.1 Screening for munitions

- 7.1.1 Effective measures for screening the aggregate for presence of munitions are essential in order to maintain the safety of all site workers and to ensure that that munitions are not passed on to end-users in the saleable aggregate product. Effective screening will ensure that any munitions present can be dealt with in a controlled and safe way with the minimum of business disruption.

- 7.1.2 To allow effective screening for the presence of munitions within marine aggregate, the minimum standard equipment suggested on a site that receives and processes marine dredged aggregate with a history of munitions contamination should be as follows:

- primary magnet (on ship to shore/plant feed conveyor) with safe access
- metal detector with safe access interlocked to stop the feed conveyor
- secure inert munitions container
- if appropriate a secure munitions disposal facility with licensed storage of explosives
- standard operating procedure system for raising the alarm.

This should be augmented by a programme of scheduled visual checks by trained site staff. Refer to Annex A.

- 7.1.3 To further enhance the minimum standard and to operate with best practice the following additional equipment can be used:

- CCTV coverage linked to a monitoring location
- emergency site siren to communicate a muster
- a secondary magnet on other feed conveyors to assess the effectiveness of your systems (usually fitted to the crusher feed)
- photographic evidence of the munitions.

7.2 Management of materials not screened for munitions

- 7.2.1 The management of any product not screened for munitions requires a risk assessment prior to sale. By reviewing records of previous munitions finds, it should be possible to determine whether munitions have been historically encountered in processed material from the originating licence area. A decision can then be made whether screening is required prior to sale.

7.3 Monitoring equipment guidelines

7.3.1 PRIMARY MAGNET (SHIP-TO-SHORE)

If the primary magnet is located on the ship-to-shore conveyor then all of the product in the yard will be screened for munitions. The disadvantage of this location is the operational problems incurred when the munitions are found when the cargo is partially discharged. The vessel usually will have to leave the berth due to draught restrictions and if the cargo has more munitions onboard then, a similar situation would occur for each item.

Note Example of primary magnet installation



Note Example of metal detector



To counter this it is recommended a larger magnet be fitted to accommodate multiple munitions in order to allow the discharge to be completed. The appropriate notice to military EOD via the police should be undertaken on encountering the first item that represents a threat to life, but the ongoing status and timing of the discharge operations should also be stated.

7.3.2 Provision needs to be made to allow safe access to the magnet to permit retrieval of the items in consultation with the EOD contractor or military EOD (see 7.4.1). Munitions being assessed in accordance with clause 7.6.

7.3.3 PRIMARY MAGNET (PLANT FEED)

Wharfs that locate the magnet on the plant feed conveyor will usually not have a ship to shore conveyor, and the dredged aggregate will initially be discharged on to the ground. The ballast as dredged (BAD) will therefore not have received screening, and could potentially be contaminated with munitions.

7.3.4 METAL DETECTOR

A metal detector can be used as a backstop for any metallic object that passes beyond the magnet. Locating the metallic object will normally require the removal of aggregate from the belt cross-section.

Daily tests of the effectiveness of the detection system should be carried out. The correct calibration piece must be used to test the operation of the detection equipment. Failure to do this can restrict the effectiveness of the screening, and could allow munitions to enter the product sales chain. If munitions are being discovered on the secondary magnet this will indicate poor calibration on the metal detector or a design issue.

7.3.5 ACCESS

For all detection equipment (magnet/metal detector), a safe spacious landing with handrails is required to access the munitions. The area should be illuminated at night to at least 100lux.

7.3.6 WHARFS WITH NO RECORD OF MUNITIONS

On wharfs with no record of historical record of receiving munitions, appropriate procedures should still be defined, as the lack of regular exposure will create a higher risk should an item be encountered on site due to unfamiliarity with the situation.

7.3.7 CHANGE OF DREDGE ZONES/AREAS

At all sites, personnel need to be aware that changes in the source of marine aggregate supply (dredge zone or licence area) or to the product being supplied from an existing licence area (particularly from sand to gravel) can immediately alter the potential for encountering munitions.

7.4 Emergency procedures, records and audit trails

7.4.1 Consultation with military or commercial EOD, as appropriate, should be undertaken to determine and define safe systems of work in advance of any EOD incident. This will feed into each site's defined Emergency Procedure which should remain live throughout the operations and be adapted to meet ongoing requirements.

7.4.2 Each site should have a defined procedure to follow in the event that a munition is discovered during its normal operations. This will include defining the roles and responsibilities of all site operatives. Generic instructions are defined in Annex C but the application of the various elements required will differ by site/company. Some sites will require an aerial plan with the location of key personnel posted to assist the Police in cordoning off the area. Within harbour limits the Harbour Master and Health & Safety Executive should be consulted.

7.4.3 A standard form to allow all wharves and sites to record munitions incidents is recommended, as outlined in Annex D. Records of munitions incidents will provide statistics for production downtime, response time by the police/military EOD or commercial EOD contractor, measure the effectiveness of site detection equipment and assist in the risk assessment of licensed areas and dredge zones.

7.5 Training and appointment of competent personnel

7.5.1 When munitions are found, a competent person will need to make a decision on what action to take. This will depend on whether the munitions are assessed as obviously inert or other (live or blind). This initial assessment may be carried out by an appropriately trained employee or contractor who holds a current, approved EOD qualification defined as Level 1 trained (see Annex A).

7.5.2 Where a competent person or contractor has not been appointed then the munitions must be assumed to be live or blind and the appropriate action taken as described below.

7.5.3 In the event that items are assessed to be blind or live munitions they will need to be rendered safe either by military EOD or an appropriate third-party commercial EOD contractor with equivalent competence defined as Level 2 trained (see Annex A).

7.6 Emergency actions

7.6.1 Discarding of munitions from a wharf would be regarded as an offence under Regulation 6(1) of the Manufacture and Storage of Explosives Regulations 2005.

7.6.2 Retaining live/blind munitions at a site beyond 24 hours of discovery would be regarded as an offence under the Manufacture and Storage of Explosives Regulations 2005 unless held in a licensed store (see 9.1).

7.6.3 Munitions encountered at a wharf should never be tampered with or cleaned because there is always a possibility of detonation and personal injury.

7.6.4 The flow diagram presented under Annex E defines the sequence of decisions and actions to be taken should a potential munition be discovered during the operation of a site. General actions will depend on whether the munitions are assessed as inert, live or blind:

- **inert** – when identified by a Level 1 trained person (or higher) as obviously inert the item may be moved to an inert munition container and a record of this activity made
- **live/blind** – Only military EOD or a Level 2 trained contractor with approved on-site storage and disposal facilities may handle and render safe/dispose of these items.

7.6.5 On discovery of a suspected munition, site management should be immediately notified. The suspected munition must be monitored at a safe distance until competent personnel arrive to make a positive identification and assessment. Measures should be taken immediately in compliance with the site procedures to prevent any unauthorised handling access and (see 7.5.1 & 7.5.2).

The plant can only remain running if the munition can be monitored remotely and all personnel who may be affected are made aware of its presence and kept clear, in line with the appropriate Emergency Procedures defined for each site (see 7.4.2).

7.6.6 In the absence of any suitably competent staff, all suspected items must be treated as live/blind, and therefore high risk. Once a potential item has been verified by the site manager/foreman, the site should be evacuated to the site perimeter or an alternative safe perimeter previously agreed with Police, EOD military or EOD contractor.

Where the company retains a Level 2 trained contractor, they will attend the site and take control of the situation.

Where there is no Level 2 trained contractor support, the police should be informed of the EOD incident via a 999 call. The police will attend, satisfy themselves that the site is secure and arrange for military EOD assistance.

Once military EOD have attended and completed the necessary actions to make the munition(s) safe, the police will be able to collapse the site cordon and normal site operations will be able to recommence.

- 7.6.7 The presence of Level 1 trained member of staff on site can allow an initial screening of a suspected item, to determine whether it is obviously inert. Where this is the case, it can be removed to an inert munitions storage container and the normal operations of the wharf can continue.

The identification and retention of inert items will be audited by military or commercial EOD and in the event of live/blind munitions being found in storage, a three near hit system will withdraw the ability for the site to operate with Level 1 personnel. The performance audit will be undertaken when EOD military or contractor attend site and results entered in the HSE site records for subsequent inspection, should it be required, by HSE. The level 1 staff member's immediate manager is responsible for compliance of level 1 performance.

- 7.6.8 If Level 2 trained contractors are able to identify the item as live and consider it safe to move, then subject to an appropriate risk assessment the item may be transferred to an appropriate on-site licensed store or disposal site/facility – where such a facility exists by that contractor.

- 7.6.9 Under certain circumstances, where operators are regularly encountering live and blind munitions, it is necessary to put in place alternative procedures in order to ensure safety and reduce business disruption. These alternative arrangements should involve:

- the appointment of suitable specialist explosives ordnance disposal contractors (Level 2 trained)
- the construction of a blast-proof containment pit or structure
- the provision of suitable remotely-operated equipment for moving articles to the containment area
- appropriate training and awareness of site staff, coupled with Safe Systems of Work and Permit to Work systems
- licensed storage for the explosives.

The specifications for these arrangements must be agreed with the HSE, police, and military EOD on a case-by case basis.

8 Storage and transportation

8.1 Inert Items

- 8.1.1 Inert munitions/items should be stored in a secure wood lined or bagged container which provides ready access for military or commercial EOD personnel employed to collect these items for ultimate disposal as scrap.

- 8.1.2 Once items are collected by military or commercial EOD personnel they can be transported as general stores due to the non hazardous nature. The military or commercial EOD personnel collecting will be responsible for the creation and logging of Free From Explosives (FFE) certification for each inert item.

8.2 Live or blind items

- 8.2.1 Where practicable any munition which has not been positively identified as inert should be destroyed in situ. In practice this is often difficult to achieve resulting in the need for an item to be relocated for disposal. The decision to move an item on a site/wharf can only be made by a military EOD team or qualified Level 2 person in accordance with the company procedures. For ship side finds, it is the Master of the ship who is responsible for making the decision based on advice from EOD military or commercial level 2. In considering the best course of action the individual managing the incident or providing the advice will consider, as appropriate, the safety of the vessel, its crew and/or the wharf staff, service personnel and members of the public in the surrounding area.

Only if it is not safe to destroy the munitions in situ ie. the location is not safe, should consideration be given to moving the item. The preference is for a suitable location on the same site. The aim should be to carry out the disposal without moving the munitions on a public highway.

- 8.2.2 In the event that an item needs to be moved then the process should be achieved by moving the minimum distance needed to achieve safe disposal and involve the least possible contact time for personnel involved in accordance with the specific wharf/site procedure. Where the incident has occurred as part of an ongoing construction/dredging project then a safe and appropriate disposal site should already have been identified as part of the project Method Statement and Risk Assessment process.

- 8.2.3 In certain circumstances (expected or regular exposure of suspected munitions) it may be necessary to conduct regular disposal operations and store the items on land site/wharf prior to disposal in this event a level 2 qualified person will be needed to assess the situation.

For items discovered at sea unless the vessel has a document of compliance to carry dangerous goods a safety case shall be agreed by the MCA prior to commencing storage on board a ship. For shore side storage a licence is not required for storage of up to 7kg for up to 24 hours. For larger quantities or longer a licence is required. Notwithstanding this the following should be considered:

- fused/blind items should be dealt with as soon as possible after discovery
- munitions without fusing (main explosive charge only) should only be stored for short periods and good housekeeping dictates the early disposal of any Unexploded Ordnance (UXO) as a best practice
- any items discovered as part of a maritime dredging operation are recommended to be stored in a similar environment to that which it has been discovered, ie wet. In order to avoid additional hazards each wet store should have a quick drain facility or lift basket
- the maximum NEQ held at any one time should be not more than 7kg unless the process has been subject to a separate Risk Assessment.

- 8.2.4 Shore side movement of munitions must always be under the control and direction of military or commercial (Level 2) EOD personnel. Ship side transportation of munitions on a vessel must always be under the control and direction of the Master after taking advice from military or commercial (level 2)EOD personnel. Notwithstanding the specific responsibilities retained by vessel masters and boat skippers, the military or commercial EOD personnel should ensure munitions are packaged and transported in a safe and controlled manner. This should be compliant with the relevant transportation regulations.

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- 8.2.5 It is recognised that in exceptional circumstances it may be necessary to undertake a short journey by road transportation in order to transfer the munition to a suitable disposal site. In such circumstances the commercial EOD contractor must contact the HSE for approval prior to any transfer.
 - 8.2.6 Before authorising such carriage, HSE will need to be convinced that the carriage is safe, ie. that there is no risk on ignition during the transport operation. For undamaged explosives that are similar to explosives that have already been classified, this can be relatively straightforward but for unexploded ordnance of unknown condition and unknown provenance it could prove very difficult.

9 Licensing requirements

- 9.1 If live munitions are encountered and are to be retained on site beyond 24 hours, there is a legal requirement for a licensed store. The wharf operator or contractor and their Level 2 contractor are responsible for applying for such a facility. The police will normally be the licensing authority unless in a harbour in which case this responsibility rests with the Health and Safety Executive.
- 9.2 If munitions are brought ashore having been dredged and identified at sea the location that they are unloaded must be suitably licensed to handle explosives, be it a permanent or temporary location, under Part IX of the Dangerous Substances in Harbour Areas Regulations 1987. The licensing authority is the Health and Safety Executive, Explosives Inspectorate.

References

The Health and Safety at Work Act 1974
MGN 323 – Explosives Picked Up At Sea
The Control of Explosives Regulations 1991
The Manufacture and Storage of Explosives Regulations 2005

Further information/advice

Institute of Explosive Engineers
Cranfield University
RMCS Shrivenham
Swindon, Wiltshire
SN6 8LA

Telephone 01793 785322
Facsimile 01793 785972

Annex A Competence/training

Level 1 qualification

Level 1 qualification will only allow identification of inert munitions/items.

Training to Level 1 must be accredited by an independent external organisation, either City and Guilds of London Institute or Institute of Explosive Engineers) Staff joining a company may be authorised by their new company as competent to level 1 if they can provide evidence that they have attended and passed a recognised Explosive Ordnance Safety Recognition Course which can be independently verified by an accredited training provider.

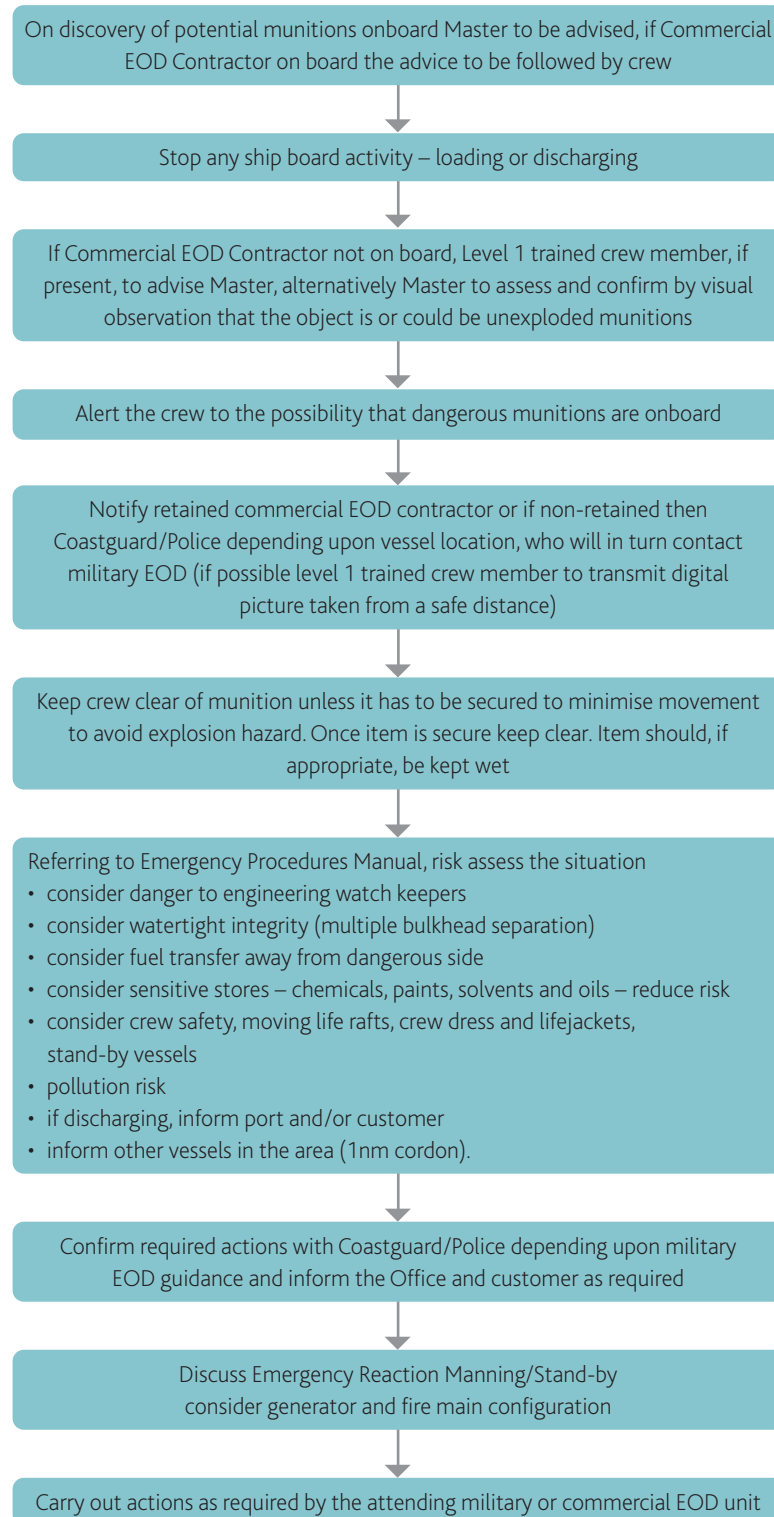
Level 2 qualification

The required standard for the individual responsible for managing the incident should have a combination of training and experience from those listed below:

- must have successfully completed a recognised Advanced EOD Course, such as the current 801 or future equivalent, at the Defence Explosive Ordnance Disposal School, or Ammunition Technical Officer/ Ammunition Technician Course at the Army School of Ammunition or recognised equivalent civilian course provided by an approved EOD Organisation
- could be a full personal member of the Institute of Explosive Engineers
- where the operator will also be required to participate in underwater operations they must have successfully completed the Advanced Underwater EOD Course (808) at the Defence Explosive Ordnance Disposal School.

Annex B
Munitions onboard vessels

Individual vessels should refer to the appropriate sections of their Emergency Procedures Manual.



Annex C
Instructions for dealing with
munitions at wharves and on
beach or reclamation-fill areas

Handling/storage of munitions

In the event that you identify any potential munitions you should immediately contact the nominated Level 1 qualified person or your Line Manager (Wharf/Assistant Manager/Foreman/Charge Hand) or contact the Company Operations Manager in their absence who will implement the previously issued specific plant, site or vessel methodology for dealing with an incident.

On no account should any potential munition be handled or moved mechanically until deemed safe, except where proven and agreed remote systems have been employed as part of the site processes.

The following procedures are to take place in the event of munitions being found on the wharf.

- 1 The munition is not to be moved and site management are to be immediately notified. The munition must be monitored until competent personnel arrive to prevent any unauthorised handling. A competent person will carry out a visual check to determine what has been found. The plant/site can remain running if the munition can be monitored remotely and all personnel who may be affected are made aware of its presence. When appropriate the plant/site or section of the site must be shut down in a manner least likely to cause disturbance to the munition.
- 2 Where a competent person is completely satisfied that there is no danger (ie. the item is inert) it should be placed in a container for subsequent collection and disposal by either commercial or military EOD.
- 3 If there is **any doubt** regarding the stability of the munition(s) found then the sites local emergency plans should be put into place with the area cordoned off and, if appropriate the commercial EOD Contractor contacted. Otherwise Police advised immediately by management staff (*insert local Police number*). The Police will respond appropriately and arrange the attendance of a military EOD unit.
- 4 Traffic movements through the yard/site and joint access routes should be assessed and appropriate restrictions placed as per sites local emergency plans.
- 5 The military or commercial EOD personnel will assess the munition(s) and take appropriate actions. This may take the form of removing the munition or destroying it on site should it prove unstable. Local management and staff must co-operate fully with all requests from the Police and all other Emergency Agencies called to site. Should carriage off site be required H&S Carriage Regs and ADR must be complied with.
- 6 In the event that the munition has to be destroyed on site, by means of a controlled explosion, the area will be isolated and all staff evacuated to a safe distance as designated by commercial or military EOD personnel. Unless told otherwise, all persons will report to your assembly points.
- 7 The site management will arrange for all persons on the contact list to be informed.
- 8 The identification of any munitions and subsequent action taken is to be recorded in the Daily Inspection Book and copied into the Ordnance Action Record Sheet.
- 9 In all cases, personnel should only return to the site once military or commercial EOD personnel determine it to be safe.

Persons to be contacted if a munition has to be detonated on site

Name	Company	Position	Office telephone	Mobile

Roll call to ensure all persons on site are accounted for

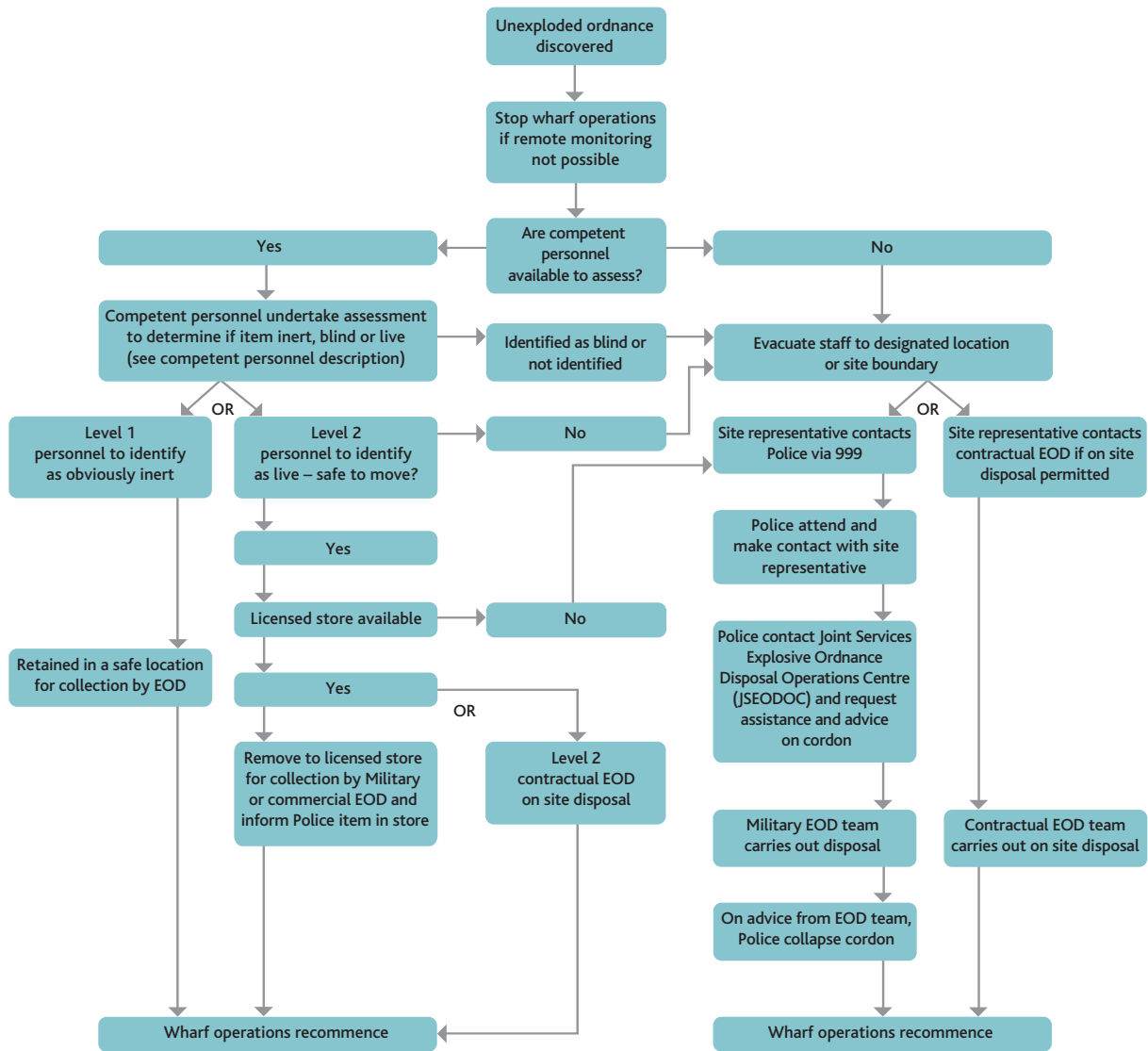
Members of staff					
Name	Company	Present at assembly point A (yes or no)	Present at assembly point B (yes or no)	Holiday, sickness training or temporarily off site	Comments

Contractors and visitors					
Name	Company	Present at assembly point A (yes or no)	Present at assembly point B (yes or no)	Holiday, sickness training or temporarily off site	Comments

Annex D Records and audit trails

Found	Wharf	
	Person discovering	
	Date	
	Time	
	How was it detected (Metal detector/magnet/visual/complaint from a customer)	
	Location (stockpile, conveyor)	
	Competent person to determine	
	Type of munitions (live, blind, inert and size)	
Reported to	Person (Supervisor/Manager)	
	Date	
	Time	
Bomb disposal	Authority called date/time	
	Visit date/time	
	Dangerous (yes/no)	
	Exploded on site (yes/no)	
	Location of controlled explosion	
Source details	Cargo	
	Ship	
	Licensed area	
	Dredge zone	
	Ticket number	

Annex E Munitions at wharf





Mineral Products Association
British Marine Aggregate Producers Association
Gillingham House
38–44 Gillingham Street
London
SW1V 1HU
Tel 0207 963 8000
Fax 0207 963 8001
email bmapa@mineralproducts.org
www.mineralproducts.org
www.bmapa.org



Marine Estates
The Crown Estate
16 New Burlington Place
London
W1S 2HX
Tel 0207 851 5032
www.crownestate.co.uk

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