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Improvised Explosive Device Disposal

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Warning

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Foreword

International standards for humanitarian demining programmes were first proposed by working groups at an international technical conference in Denmark, in July 1996. Criteria were prescribed for all aspects of demining, standards were recommended and a new universal definition of 'clearance' was agreed. In late 1996, the principles proposed in Denmark were developed by a UN-led working group and the International Standards for Humanitarian Mine Clearance Operations were developed. A first edition was issued by the UN Mine Action Service (UNMAS) in March 1997.

The scope of these original standards has since been expanded to include the other components of mine action and to reflect changes to operational procedures, practices and norms. The standards were re-developed and renamed as International Mine Action Standards (IMAS) with the first edition produced in October 2001.

The United Nations has a general responsibility for enabling and encouraging the effective management of mine action programmes, including the development and maintenance of standards. UNMAS, therefore, is the office within the United Nations responsible for the development and maintenance of IMAS. IMAS are produced with the assistance of the Geneva International Centre for Humanitarian Demining.

The work of preparing, reviewing and revising IMAS is conducted by technical committees, with the support of international, governmental and non-governmental organisations. The latest version of each standard, together with information on the work of the technical committees, can be found at http://www.mineactionstandards.org/. Individual IMAS are reviewed at least every three years to reflect developing mine action norms and practices and to incorporate changes to international regulations and requirements.

Introduction

In today's asymmetric environment it is important that the mine action sector is prepared to respond to the wide variety of threats that exist as a consequence of conflict, including those posed by Improvised Explosive Devices (IEDs). Traditionally the guidance provided in International Mine Action Standards (IMAS) has reflected the fact that mine action activities have focussed mainly on mitigating the risks posed by explosive ordnance (EO) that has been produced and assembled to formally specified set of manufacturing standards. This standard has therefore been developed in order to complement the existing guidance for mine action operations. It should not be seen as a standalone document but rather as an integral component of an IMAS framework that, when applied, ensures safety, quality and efficiency in activities being conducted, and thereby providing confidence in mine action operations. References to other standards, included in the text below, should therefore be seen as constituting normative provisions of this part of the standard.

An IED is defined as a device placed or fabricated in an improvised manner incorporating explosive material, destructive, lethal, noxious, incendiary, pyrotechnic materials or chemicals designed to destroy, disfigure, distract or harass. They may incorporate military stores, but are normally devised from non-military components[1]. There are, by definition, no manufacturing standards for IED construction; additionally those who manufacture IEDs continuously alter the characteristics, the functioning or the delivery method of the device. IEDs are employed in a variety of different contexts, these can include; use in open areas, where these devices might be used to counter mobility and/or deny access to specific open areas, such as approaches to an area, resource, or facility that is being protected; as well as in urban spaces or buildings where IED contamination presents a different technical challenge and requires an additional set of skills, equipment and procedures. Although IEDs are among the world's oldest types of weapons, the increased use of IEDs as a weapon of choice by non-state armed groups has been a clear trend in recent years. IEDs impede humanitarian access and impact on civilians, international relief agencies and clearance organisations. As a consequence the mine action sector is increasingly being called upon to help to address the humanitarian impact of the widespread use of IEDs in recent conflicts.

IED Disposal (IEDD) in a mine action context is the location[2], identification, rendering safe and final disposal of IEDs. Mine action organisations may be called upon to conduct IEDD activities within any context that they operate, and as such always need to be mindful of the requirements associated with the specific task or operation being conducted. The layout and complexity of the operating context has a significant bearing on the skillsets required to safely carry out IEDD as part of a larger mine action intervention. The safe conduct of IEDD, relies upon appropriately trained and qualified operators having a thorough understanding of the area that they are working in, and of the increasing complexity of these types of devices.

The overarching aim of this standard is to provide specifications and guidance for the management of IEDD as a part of mine action operations in whichever context mine action operators are being deployed. This standard outlines the competencies required by individuals to meet the minimum requirements relating to IEDD operations in a mine action context. Whilst reference is made to quality of training, this document does not outline quality requirements for clearance operations, as these are addressed in other IMAS within the series. It covers principles and management responsibilities for IEDD as a specific subset of Explosive Ordnance Disposal (EOD). The guidance herein, including the associated annexes, and Technical and Evaluation Protocols (T&EP) have been developed to assist National Mine Action Authorities (NMAA) in countries affected by IED contamination. The content has been designed to inform the development of national standards and Standard Operating Procedures (SOPs), which are tailored to, and appropriate for, the threat posed in specific operating contexts.

[1] See IMAS 04.10.
[2] Denotes location of the device/components, by the IED operator that has been tasked to dispose of a specific IED.

Improvised Explosive Device Disposal

1. Scope

This document details requirements to plan, execute and report IEDD activities, it also details responsibilities and obligations of the organisations involved where IEDD is conducted as part of a MA programme[3]. Within this context, IEDD may be the primary activity conducted by MA organisations or it may be an associated activity with other MA activities. Quality requirements for clearance are addressed in other IMAS.

2. References

A list of normative and informative references is given in Annex A. Normative references are important documents to which reference is made in this standard and which form part of the provisions of this standard.

3. Terms, definitions and abbreviations

A complete glossary of all the terms, definitions and abbreviations used in the IMAS series is given in IMAS 04.10.

In the IMAS series, the words 'shall', 'should' and 'may' are used to indicate the intended degree of compliance.

a) 'shall' is used to indicate requirements, methods or specifications that are to be applied to conform to the standard;

b) 'should' is used to indicate the preferred requirements, methods or specifications; and

c) 'may' is used to indicate a possible method or course of action.

The term 'National Mine Action Authority' (NMAA) refers to the government entity, often an interministerial committee, in an EO-affected country charged with the responsibility for broad strategic, policy and regulatory decisions related to mine action.

Note: In the absence of an NMAA, it may be necessary and appropriate for the UN, or some other body, to assume some or all of the responsibilities of an NMAA.

The term ‘Improvised Explosive Device’ (IED) refers to a device placed or fabricated in an improvised manner incorporating explosive material, destructive, lethal, noxious, incendiary, pyrotechnic materials or chemicals designed to destroy, disfigure, distract or harass. They may incorporate military stores, but are normally devised from non-military components.[4]

The term ‘Improvised Explosive Device Disposal`(IEDD) refers to the location[5], identification, rendering safe and final disposal of IEDs.

The term ‘Positive Action’ refers to any action taken by the operator that will disturb, move, render safe, destroy or introduce any outside influence on EO[6].

[3] See IMAS 1.10 for a description of the definition and scope of MA.
[4] An IED may meet the definition of a mine, booby trap, and/or other type of explosive ordnance depending on its construction. These devices may also be referred to as improvised, artisanal, or locally manufactured mines, booby traps, or other types of explosive ordnance.
[5] Denotes location of the device/components, by the IED operator that has been tasked to dispose of a specific IED.
[6] This includes actions such as X-ray or any other activity that may change the state of the EO.

The term 'Safe Waiting Period(s)' refers to waiting times which an operator[7] must allow to elapse prior to making a manual approach, including approaches after conducting a remote or semi-remote positive actions.[8]

The term 'Remote Action' refers to positive actions that can be carried out without the need for an EOD operator to leave the EOD Control Point (CP) and approach suspected EO.

The term 'Semi-Remote Action' refers to positive actions that require the EOD operator to leave the EOD Control Point (CP) and approach the immediate vicinity of the EO in order to place an EOD tool which is then operated/activated remotely once the EOD operator has returned to the CP.

The term 'Render Safe Procedures (RSP)' refers to the application of EOD methods and tools on EO to interrupt functions or separate components to prevent an unacceptable detonation[9].

4. General considerations

4.1. Safety of personnel

MA organisations need to be sensitive to the context in which they are operating. The level of safety of personnel working in IED affected areas needs to be considered on an on-going basis, given that both; the nature of IED contamination encountered, and the operating contexts can be subject to regular change, leading to high levels of uncertainty. As with any MA intervention humanitarian principles must be upheld and be at the forefront in determining whether operations are appropriate.

4.2. Threat Analysis and Threat Assessment

Threat analysis (at the national level), and Threat Assessment (at the site/task level) together form a set of processes that are a crucial pre-requisite to the conduct of safe, effective and efficient IEDD operations. Guidance on these issues is provided in IMAS 07.14[10].

4.3. IED categories

IEDs generally consist of a switch, power source, initiator, container and a main charge (explosives). All IEDs can be classified as either timed, command, or victim-operated.

4.4. Community engagement

Establishing and maintaining community engagement is critical to ensuring the required level of consent from the local population for IEDD operations. Such engagement also ensures that accurate and timely information regarding the nature and scope of IED contamination is collected, along with other information relating to safety and security.

5. MA procedures and an operational approach to IEDD

The mine action approach to IEDD is characterised by guiding philosophies supported by an interlinked set of general principles, mandatory actions, management oversight, and working practices. The aim of IEDD is to provide a capability for MA organisations to dispose IED contamination, which meet those obligations laid out in the Convention on Certain Conventional

[7] Throughout this IMAS chapter EOD operators conducting IEDD are referred to as IEDD operators.
[8] The term 'soak time' is sometimes used interchangeably here.
[9] The term `permanent neutralisation` is sometimes used interchangeably here. EO is said to be "neutralised" when it has been rendered, by external means, incapable of firing on passage of a target, although it may remain dangerous to handle.
[10] IMAS under development, Threat Analysis and Assesment material available from the Secretary.

Weapons (CCW), Amended Protocol II (AP II) and the Anti-personnel Mine Ban Convention (APMBC).

5.1. Guiding philosophy

The following statements, listed in order of importance, together make up the guiding philosophy used when undertaking IEDD operations in a MA intervention. They provide the overarching direction for the planning and execution of IEDD activities in a mine action context:

- Preservation of life;
- Preservation of infrastructure and property;
- Restoration of the situation to normality as quickly as possible commensurate with safety or the quality requirements for the task;
- Gathering technical information to inform the national threat analysis and task level Threat Assessment.

5.2. General principles

During the development of national standards, SOPs, clearance plans and Render Safe Procedures (RSPs), the following eight IEDD principles should be observed:

- **Manual neutralisation techniques**. Manual neutralisations techniques should not be conducted. Remote (if available) and semi-remote actions should be conducted to neutralise and/or dispose IEDs;
- **Destruction in-situ**. When feasible destruction in-situ, using an explosive donor charge targeting the main charge(s) of the IED is the preferred method of disposal[11];
- **Neutralisation**. Water based energetic disruption of the power source(s) is the preferred means of neutralisation[12];
- **One-person risk.** Manual approaches should be conducted as a one-person risk[13]; Time spent inside the explosive danger area should be minimised and a robust plan should be developed and briefed before leaving the CP;
- **Safe waiting (soak) times**. Appropriate safe waiting times should be applied after a positive action is conducted[14];
- **Personal Protective Equipment (PPE) on all approaches**. Appropriate[15] PPE should be worn on all manual approaches to a suspect IED;
- **Cordon and Evacuation.** Appropriate cordon and evacuation should be in place before conducting any positive action[16]; and
- **Component handling**. All IED components should be moved remotely or semi-remotely prior to any manual handling.

5.3. Mandatory actions

Mandatory actions provide specific direction to support IEDD Philosophies and Principles. NMAA and MA organisations should adopt mandatory actions that are appropriate to context specific operational considerations. The following two mandatory actions are generally applicable to IEDD activities and provide examples from which further manual action can be based:

[11] Damage to critical infrastructure and access to energetics will influence when demolition in-situ can be conducted.
[12] If this is not possible then remote and semi-remote component separation should be conducted.
[13] It may be appropriate for additional logistical support to be provided while RSP is being set up. However, only one person should be within a defined distance from the suspected or confirmed IED.
[14] As a minimum, 10 minutes should be applied after a positive action is conducted prior to making another manual approach.
[15] National authorities and MA operators should conduct a Risk Assessment based on the explosive threat and operational activities to determine appropriate PPE requirements for IEDD.
[16] Determining the exact Net Explosive Quantity (NEQ) and fragmentation hazard from an IED is unlikely to be possible before conducting positive actions.

- In the event that an IED is identified which is suspected to have been emplaced since survey was conducted or clearance commenced, all operations shall be suspended immediately. Work shall only resume once it has been ascertained that the MA organisation is not being deliberately targeted, or that sufficient security is in place;

- Prior to the disposal of specific device types[17] a pre-disposal plan shall be produced in writing and be subject to the appropriate level of approval.

5.4. Working practices

Working practices are a series of general measures that are specific to IEDD inside operational conditions. They provide supporting detail to help guide IEDD operators and facilitate Quality Assurance (QA) and monitoring of IEDD operations. Working practices will vary, sometimes considerably, depending on operational contexts, reflecting both the IED threat and specific limitations, such as access to explosives[18]. An informative list of example practices that can be widely applied is contained in Annex C.

5.5. Management Oversight and Referrals

MA organisations should maintain effective communications throughout IEDD operations. Individual operators or teams must be able to seek advice and/or approval when deviating from the approved clearance plan, principles or mandatory actions. An informative list of widely applicable referrals at both the NMAA and organisational level is included in Annex C.

6. Phases of IEDD[19]

- Phase 1. Arrival and initial questioning
- Phase 2. Detailed Questioning and Threat Assessment
- Phase 3. Evaluation and planning
- Phase 4. Task Execution
- Phase 5. Final disposal and reporting

6.1. Phase 1. Arrival and initial questioning

Where an IEDD capacity is independent of a clearance team that is locating and identifying IED contamination, IEDD operators will need to be briefed on their arrival at the task site. The IEDD operator should ask questions designed to enable an initial assessment on the explosive threat, enabling them to assess the requirement for mitigation measures such as cordon and evacuation. This should ensure that both staff and local people are safe. The key information requirements are establishing the location of the IED and assessing its likely explosive hazard to ensure that the appropriate cordon, evacuation and any supporting services are in place prior to continuing with the IEDD process.

6.1.1. Cordon and Evacuation

Before any IEDD positive actions begin, an appropriate cordon should be put in place. This may necessitate a requirement to evacuate members of the local population. There should be an effective communication system between cordon sentries. Sentries should be positioned at suitable locations to mitigate un-intentional access into the explosive danger area. In some cases, assistance from the local police or security forces may be requested. In such

[17] These device types may include VBIEDs, RCIEDs, Passive Infra-Red (PIR) IED and other sensors. NMAA and MA organisations should determine the approval measures required.
[18] Supporting TNMAs will be developed to provide additional details on individual pieces of equipment, tools, and techniques such as improvised bottle charges, thermite and non-explosive wire cutting techniques.
[19] Certain military doctorines outline 10 generic phases of an EOD operation that may be relevant: to IEDD, may vary in sequence and may not all apply to every IEDD operation. This list has been developed to reflect generic requirements for an IEDD operation conducted as part of a functioning mine action programme that is managed by an NMAA or tasking authority acting on their behalf.

circumstances MA organisations should endeavour to ensure that humanitarian principles are not compromised.

6.1.2. Urban Safety Distances

If operating in a congested urban environment, achieving adequate cordon and evacuation distances may be a challenge. It may be possible to reduce safety distances through risk assessments that consider variables such as: protective works, approximate Net Explosive Quantity (NEQ) and explosive type of anticipated main charges or the presence of pre-existing physical barriers. The NMAA should provide clear guidance on the appropriate applicable risk assessment process including control measures and application of mitigating factors.

6.2. Phase 2. Detailed Questioning and Threat Assessment

6.2.1. Detailed Questioning

As much detailed information as possible should be gathered regarding the specific IED threat. The extent to which detailed questioning will be used will vary depending on a number of task-specific operational and contextual factors, including; previous information and experience in the area of the task and the availability of witnesses.

As a minimum, the deminer / searcher that identified the suspect device, the immediate supervisor and the task supervisor, should be subject to detailed questioning. Additional witnesses may include:

- Local security force personnel;
- Former combatants;
- Civilians living and working in proximity to the site;
- Local government officials;
- Landowners, infrastructure workers and managers.

Questioning should not be leading (e.g. “was the wire green?”) but designed to facilitate an open forum for witnesses to divulge information. Wherever possible there is a requirement to establish:

- ‘Who’ – was being targeted by the IED?
- ‘Who’ – placed the IED?
- ‘What’ – components have been utilised in the device?
- ‘Where’ – are the components located?
- ‘When’ – was the IED emplaced?
- ‘Why’ – was the IED emplaced?

Whilst it is not appropriate to provide a script of template questions it may be useful to consider structuring questioning around the means of initiation. It is essential to consider the conditions in which the device was originally emplaced as these may have changed considerably in the intervening time period.

6.2.2. Threat Assessment

A robust, site specific Threat Assessment is a crucial prerequisite to the conduct of any IEDD operation. Threat Assessment involves the analysis of three interlinked areas of Intent, Capability and Opportunity. Additional guidance on Threat Assessment is provided in IMAS 07.14, Annex C[20].

[20]IMAS under development, Threat Analysis and Assesment material available from the Secretary.

6.3. Phase 3. Evaluation and Planning

The Threat Assessment should be used as the basis for developing a plan prior to approaching a suspected IED. This should contain an evaluation of the potential device specifications, with the '*most likely'* and '*worst case'* scenarios considered.

This evaluation should include:

- Method of initiation (Time / Command / Victim Operated);
- The layout and position of component parts;
- Types of switch(es) (high Metal Content / Low Metal Content);
- Type of main charge(s) including NEQ and fragmentation hazard;
- Number and type of initiators (detonators) and if possible the type and colour of electrical leads[21]; and
- Number, type and configuration of power sources.

The cordon/evacuation area may be re-adjusted based on the assessed hazard radius.

6.3.1. Planning

The RSP for each IED should be planned at the control point (CP). The time spent inside the explosive danger area should be minimised while the threat of a functional device still exists. The plan should cover the full execution of the task and the IEDD operator in charge should provide a brief to the wider team.

As a minimum this brief should include:

- The location of the device, CP, medical point and sentries/cordon;
- The approach route to the device;
- 'Actions on' in the event of an unexpected explosion or accident;
- Casualty evacuation procedures from the device to CP, CP to hospital, etc;
- Outline of the planned technical RSP and approximate time required;
- Communications methods between the IEDD operator, the cordon and team members; and
- Details of any secondary hazards in the area (e.g. petrol stations, power lines etc).

After each approach the IEDD operator should ensure that the team is briefed and advised on any changes to the plan before a subsequent approach is attempted.

6.4. Phase 4. Execution

Task Execution can be classified into four categories:

- Mark, avoid and report;
- Destruction in-situ (High Order);
- Destruction in-situ (Burning / Low Order); and
- RSP resulting in permanent neutralisation.

6.4.1. Mark, avoid and report

There may be situations where a mine action operator elects to mark, avoid and report a suspected IED to the NMAA. This may include cases where a specific procedure or plan needs to be documented and approved prior to disposal. In cases where capabilities for disposal and clearance do not exist, or are not available on a given programme, then the national authority should develop robust processes to support either the long-term marking and avoidance of an IED, or the development of new technical capacities or SOPs to facilitate its disposal.

[21] This information is important if component separation techniques are to be used to remotely (if available) or semi-remotely cut electrical detonator leads.

6.4.2. Destruction in-situ (High Order)

Controlled 'high order' destruction is generally the preferred method of disposal and should be conducted by placing a suitable donor charge of serviceable explosives close to but not touching the main charge.

If the main charge is not easily accessible, then introducing an element of safety should be considered prior to extensive manual excavation. The safest option is disruption of the power source(s); if this is not possible then semi-remote cutting of a single electrical link may be considered. Such considerations are particularly pertinent when the device layout is such that the IEDD operator will need to excavate in close proximity to the firing switch in order to gain access to the main charge.[22]

Shaped charges may be another option. Assuming a shape charge is powerful enough it may be possible to destroy IED main charges in-situ, with no requirement to conduct additional excavation. NMAA and MA operators should develop specific guidance on the type and size of the shaped charges that may be employed in specific operational contexts.

6.4.3. Destruction in-situ (Burning / Low Order)

When a high order event is undesirable, or when the necessary equipment or explosives are not available, then burning or other 'low order' techniques may be considered[23].

When executing this type of disposal, the IEDD operator should:

- Plan for a high order event/detonation;
- Plan for a low order event/detonation; and
- Apply an igniferous safe waiting period of a minimum of 30 minutes after the last sign of smoke.

As per disposal in-situ, if access to the main charge requires excavation in the vicinity of a firing switch, then introducing an additional element of safety into the IED's firing circuit should be considered.

6.4.4. RSP resulting in permanent neutralisation

An RSP is conducted to permanently neutralise an IED. The end result is that the device is in a safe state and the only action required is the final disposal of any explosive components including main charge(s) and detonators.

An RSP will involve a series of remote (if available) and semi-remote actions that will normally be conducted over a series of manual approaches by an IEDD operator from the CP to the IED. An RSP should be executed in accordance with the prescribed IEDD Philosophies and Principles, as well as the Mandatory Actions, Referrals and Working Practices that have been developed, accredited and documented in a MA organisation's SOPs. An IEDD operator should plan for the Worst Case, Best Case and Most Likely case scenarios and should brief the key site personnel accordingly.

MA organisations should consider developing specific guidance for conducting RSPs on device types that are common to the programmes in which they operate.

In countries where an IED threat is anticipated national standards should ensure that the development and detailing of RSP techniques and procedures that are specific to IEDD are a component of SOPs, such as Barrel and Bottle Charge Disruptors; J Knife, detonating cord and other semi-remote cutting techniques and shaped charges.

[22] If the IED main charge is not easily accessible then destruction in-situ may not be an appropriate option. IEDD operators should also be aware of the threat posed by linked or 'daisy-chained' IED main charges which may be spread over considerable distances.

[23] It may also be possible to cause a deliberate high order using a burning technique by targeting the detonator; this removes issues with safe waiting times and hazards created by burning buried main charges.

6.5. Phase 5. Final disposal and reporting

6.5.1. Final Disposal

Where an IED is not disposed of in-situ there will be a requirement to conduct final disposal of components containing explosives. The preferred method of disposal for bulk IED main charges is by explosive demolition in accordance with IMAS procedures for bulk demolition[24].

When high explosives are not available, final disposal by burning may also be considered. The effectiveness of this will depend on the type, quantity, and condition of the HME or military/commercial explosive. Single item or small scale bulk disposal is recommended, as burning large amounts of HME can pose challenges in maintaining an appropriate cordon to the burn time rate.

Other non-explosives mean, such as mechanically breaking down HME main charges, are options in extreme circumstances. However, large quantities of certain types of HME may have significant impact on the environment due to the presence toxic chemicals. Even ammonium nitrate (fertilizer) based HMEs may contain fuels such as aluminium that are substantial pollutants.

6.5.2. Information management and reporting

All relevant information gathering methodologies should be used during the Threat Analysis, Threat Assessment and IEDD decision-making process. IMAS 05.10 provides further details about the principles and processes of information collation and analysis.

Access to the most relevant and up to date IED technical information is an essential component of an effective IEDD operation. It drives the capability requirement, procedures and techniques that are employed during IEDD operations, serves as the basis for RSPs and facilitates continual improvement across the MA sector.

7. Qualifications and Training

IEDD is a subset of EOD, the guidance on IEDD qualifications described in this section and detailed in associated IMAS Test and Evaluation Protocols (T&EP) should be seen as a means of building on and complimenting existing IMAS guidance on EOD qualifications and associated competencies.

7.1. Qualifications

IEDD is a complex undertaking that requires specific skillsets and specific qualifications which should be appropriate to the assessed threat. Aspects of IEDD can be carried out at many levels – this is as a consequence of the nature of IEDs which are limited only by small number of factors, such as the ability and imagination of the person that made the device(s). IEDs can range from simply constructed devices with a single firing switch, to extremely complex devices comprising a number of complicated components, with multiple switches, power sources and explosive charges.

IEDD qualifications should be appropriate to the assessed threat in the given operational context. The qualifications of all IEDD operators shall satisfy the requirements and regulations of the NMAA, or the authority acting on their behalf or in place of, who may request proof of capability in addition to the qualification. IEDD qualifications are only recognised if the holder also has the equivalent EOD qualification as detailed in T&EP 09.30/01/2014. Detailed competencies and operating categories are listed at T&EP 09.31/01/2018[25]. As a guide:

[24] See IMAS 09.30.
[25] These competencies have been developed to complement EOD competencies found in T&EP 09.30/01/2014.

a) Level 1 (IEDD) qualification enables the trained holder of the qualification to understand the broad threat context, processes of Threat Assessment and Threat Analysis, to recognise IEDs expected within the specific context in which they have been trained, to prepare IEDD equipment and under supervision, to search for IEDs as part of a clearance team, under supervision. They may be directed to support the execution of semi-remote actions by an appropriately qualified supervisor; Level One personnel are not qualified to plan or conduct render safe procedures;

b) in addition to the skills of a Level 1 (IEDD) qualification, a Level 2 (IEDD) qualification enables the holder to understand and critically evaluate the assessed threat: Level Two operators are qualified to supervise the preparation of IEDD equipment and, under supervision, to apply remote or semi-remote actions designed to locate IEDs. Level Two personnel are not qualified to plan or conduct render safe procedures;

c) in addition to the skills of a Level 1 and 2 (IEDD) qualification a Level 3 (IEDD) qualification enables the holder to conduct render-safe procedures and final disposal of IEDs in a permissive environment; and

d) in addition to the skills of a Level 1, 2 and 3 (IEDD) qualification, which cover the skills that are routinely required for humanitarian IEDD in a permissive environment, there may be a requirement for additional specialist skills. The Level 3+ (IEDD) advanced qualification is for specialist IEDD operators who have been trained in areas that are needed to address specific threats in specific contexts, in any environment.

The Level 3+ (IEDD) qualification shall clearly indicate the specialist training received by each individual, whether within core or specialist competencies.

Whenever there is a requirement for specialist skills not covered in the Level 3 qualification then it is the duty of the contracting authorities to specify the additional skills required for a particular task, and for the mine action organisations concerned to demonstrate that their Level 3+ operators have the higher-level training and experience appropriate for the task.

Special consideration should be given to the need for additional training, or for specific exclusion from the category of competence.

Where particular items are frequently encountered, specific training in the disposal of these items may be given to enable the operator to deal with them rather than continually refer the problem to the next higher level of expertise.

7.2. Certification

At every level of IEDD competency the training organisation or recognised competent entity that certifies an individual should, within the certification, explicitly list the disciplines on which the individual has been trained.

To complement the certification individuals are encouraged to maintain logs of their application of the training to demonstrate their operational experience.

7.3. Quality and audit of IEDD qualifications

NMAA and mine action organisations should develop performance criteria, appropriate assessment tools and procedures in order to assess the level and quality of competence of IEDD operators. This could include written tests, practical exercises, demonstrating a task, or procedures for assessment of performance during EOD operations.

IEDD Competencies Standards provided in T&EP 09.31/01/2018 are designed to enhance the process of planning and evaluating IEDD operator’s development and capacity building. Its use can also help improve the assessment of training and competency of operators involved in IEDD operations.

7.4. IEDD Team

An IEDD capability can be incorporated into MA organisations in several forms. IEDD operations should be carried out by competent staff, using suitable equipment (accredited where appropriate) in compliance with prevailing safety and operational standards, and in accordance with approved methodologies and team structures satisfying the requirements of NMAS.

8. Quality Management

Specific quality requirements for clearance operations are provided in IMAS 09.10, IMAS 09.11 and 09.13. General guidance on the principles of quality management in mine action, as well as minimum requirements for mine action quality management systems is provided in IMAS 07.12.

9. Responsibilities

9.1. National Mine Action Authority

The NMAA shall:

a) establish and maintain national standards for IEDD;

b) determine the national threat presented by improvised devices;

c) accredit mine action organisations as fit to undertake IEDD operations;

d) specify the standards and guidelines for QA and QC to be applied to IEDD operations;

e) establish and maintain performance criteria and tools for quality and audit of the IEDD; operators deployed by mine action organisations;

f) establish and maintain the capability to accredit IEDD training organisations and monitor the training and certification process;

g) establish and maintain the capability to accredit mine action organisations involved in IEDD operations;

h) establish and maintain the capability to monitor the effectiveness, safety and measures to protect the environment of mine action organisations involved in IEDD operations;

i) establish national systems for IEDD incident reporting; and

j) where necessary, seek assistance from other national governments in accordance with bilateral and international arrangements to obtain the specialist expertise and information necessary to establish safe and effective national standards for IEDD procedures and operations.

9.2. Mine action organisations

The organisation undertaking IEDD shall:

a) obtain from the NMAA or organisation acting in place or on its behalf, accreditation for IEDD operations;

b) establish and maintain SOPs for IEDD operations which comply with national standards;

c) ensure that the IEDD operators are competent and suitably trained, qualified and equipped for all tasks undertaken;

d) apply SOPs for IEDD operations in a consistent, effective and safe manner which include procedures to protect the environment; and

e) ensure that the affected community is fully cognisant of all IEDD activities (including training), clearance regulations and implications.

9.3. IEDD Training Organisation

IEDD training organisations shall:

a) obtain from the NMAA or organisation acting in place of or on its behalf, accreditation for IEDD training;

b) establish and maintain SOPs for IEDD training which comply with national or IMAS standards, and other relevant standards and regulations, that reflect local conditions and circumstances; and

c) establish and maintain certification procedures so that training completion certificates explicitly list the disciplines on which the individual has been trained and has been qualified as competent.

Annex A
(Normative)
References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of the standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of the standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred applies.

a)	IMAS 04.10	Glossary of mine action terms, definitions, and abbreviations;
b)	IMAS 07.12	Quality Management in Mine Action;
c)	IMAS 07.14	Risk Management in Mine Action (under development);
d)	IMAS 07.30	Accreditation of demining organisations and operations;
e)	IMAS 07.40	Monitoring of mine action organisations;
f)	IMAS 08.10	Non-technical Survey;
g)	IMAS 08.20	Technical Survey;
h)	IMAS 09.10	Clearance requirements;
i)	IMAS 09.11	Battle area clearance;
j)	IMAS 09.13	Building Clearance;
k)	IMAS 05.10	Information management for mine action;
l)	IMAS 08.30	Post-clearance documentation;
m)	IMAS 08.40	Marking mine and ERW hazards;
n)	IMAS 09.50	Mechanical demining;
o)	TNMA 10.10/03	Explosive Ordnance Hazard Risk Assessment in Debris; Management (Rubble Removal) Operations;
p)	TNMA 10.20/01	Estimation of Explosion Danger Areas.

The latest version/edition of these references should be used. The Geneva International Centre for Humanitarian Demining (GICHD) holds copies of all references used in this standard. A register of the latest version/edition of the IMAS standards, guides and references is maintained by GICHD, and can be read on the IMAS website (http://www.mineactionstandards.org/).

National mine action authorities, employers and other interested bodies and organisations should obtain copies before commencing a mine action programme.

Annex B
(Informative)
Operational Equipment

Table 1 in this annex provides an example of the basic equipment requirements for an IEDD team operating in a programme with access to energetics including high explosives, disruptors and thermite. TNMA will provide further guidance when the access to energetics is restricted. Depending on the context and Threat Assessment NMAA and MA operators may include more advanced equipment requirements, including those items listed in Table 2, based on specific threats, operational and environmental conditions, and access through suitable importation chains.

MA organisations are encouraged to conduct equipment requirement assessments during programme design and monitoring and to maintain an agile and initiative approach to developing new equipment types and uses. This approach to continual development will increase efficiency, effectiveness and safety during IEDD operations and should be shared across the sector to enable collective best practice.

B. 1. Standard IEDD Equipment Considerations

Item	Remarks
Hook and Line Kits	Low stretch / high tensile strength pulling ropes on reels Karabiners Pulleys Stakes Forceps Prusik loops Pitons Slings and cord
Firing Cable	200m
Exploder	
Continuity tester	
Detonator Safety Tin	
Scalpel	
J Knife	
Operator Marking	
Handheld Detector	
Binoculars	
Hand tools	Hammer, pillars, knife, etc.
Excavation tools	
Barrel disruptor and ammunition	
Appropriate PPE	
Electrical Detonators	
High Explosives	
Detonating Cord	

B. 2. Additional Equipment Considerations

Item	Remarks
X-Ray	This may be held for specific applications at programme level.
ROV	Providing a remote option for IEDD can be extremely beneficial. Consideration must be given to the operational environment and the utility of ROVs especially for buried IEDs.
UAV	
Fibre Scope	For observing inside concealed items.
Heavy Hook and Line	For pulling multiple or large single items.

Improvised VBIED extractor / disruptor	
Shaped Charge	
Bottle Charges	
Pyrotechnic Torches and/or thermite	
Short wire detectors	
Optical Scope	

Annex C
(Informative)
Working Practices and Management Oversight

Working Practices. The following list of working practices is intended as generally informative and not prescriptive. NMAA and MA organisations should assess their inclusion in SOPs and training based on programme and regional specific considerations:

- **Destruction in-situ.** Destruction in-situ using a suitable explosive donor charge, either bulk or shaped charge, should be considered as the preferred means of disposal. The IED's main charge(s) should be the only component(s) that are attacked using this method[26].
- **Single wire attack.** When dealing with electrically initiated devices, especially when buried, an IEDD operator should consider introducing an element of safety into the circuit by remotely or semi-remotely cutting a single electrical wire when one is presented during fingertip search / execution. Care should be taken at this stage to avoid creating an additional open switch (short), which could have safety implications.
- **Avoidance of firing switches.** Interaction with firing switch(es) significantly increases the possibility of an unintentional detonation. When planning an RSP, an assessment should be made of the probable means of initiation and the location of the associated firing switch(es), enabling IEDD operators to avoid switches where possible.
- **Operator search.** Where the presence of a victim operated IED cannot be discounted an appropriate combination of detector assisted search and/or visual inspection (including tripwire feeler and optical aids), should be adopted.
- **Multiple components.** The potential presence of additional power sources/main charges should be considered when planning an RSP.
- **Detonator safety.** Detonator safety should be conducted as early as possible during a RSP.
- **Lack of energetics/explosives**. If energetic material for disruption is not available or permitted, then semi-remote component separation techniques should be used. Instructional guides and TNMA provide further direction.
- **Safe working area.** The area around a confirmed IED should be searched/cleared. This area should be clearly marked and large enough to facilitate the RSP.
- **Device make-up**. In situations where an IED is buried it may be appropriate to expose additional parts of the device as part of an RSP.
- **360º component confirmation.** Extensive component confirmation can increase the risk of initiating a device through unintended interaction with a secondary switch. This should be a consideration when determining whether, and to what level, excavation of buried components is conducted.
- **Appropriate IEDD tools.** During each approach, an IEDD operator should carry suitable tools to deal with a range of scenarios.

Management Oversight and referrals. MA organisations should include a specific list of referrals by an IEDD operator to an appropriate management authority in global and programme SOPs. The following are examples that may be commonly included (the list is not exhaustive):

- If an IED is identified which exceeds the technical capabilities of the IED operator;
- A device incorporating multiple firing switches is identified;
- Prior to positive IEDD action on device deemed significant[27] based on programme SOPs;
- An un-planned explosion occurs during the conduct of positive IEDD action;

[26] This is to mitigate against creating shorts in electrical circuits that could inadvertent cause an un-controlled detonation.
[27] This could include sensor (PIRs etc).)) and radio controlled IEDs.

- Identification of a new or novel device, whether for technical guidance or to ensure immediate passage of critical information to other IEDD operators and clearance teams;
- Prior to conducting operations outside an approved task site, including IED spot tasks;
- If it is believed that deviation from any principle or mandatory action is required to complete a task safely;
- If it is believed that there is a lack of training, equipment or capabilities to successfully complete the task; and
- Any other organisational issues specified for immediate escalation.

In turn, the NMAAs must be informed by MA organisations should one of the following occur:

- A device is identified that falls outside the capabilities of the organisation;
- An unplanned explosion occurs during an IEDD task that results in injury or death;
- A new or novel device is encountered;
- A training gap is identified for the conduct of safe, effective and reliable IEDD operations; and
- A new procedure or IEDD technique is developed to improve safety, effectiveness, and efficiency.