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Animal Detection Systems – Principles, Requirements and Guidelines

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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

A system is made up of interacting processes. An Animal Detection System (ADS) includes processes ranging from the breeding, selection and training of animals, through accreditation and operational testing, veterinary and welfare support, to operational survey and clearance activities, and the use of performance data to maintain confidence in the validity of the system as a whole and of the outputs it delivers.

An ADS comprises the animals, handlers, supervisors, managers, policies and procedures, health and logistic support, and training and monitoring, that are combined to offer a reliable means of detecting Explosive Ordnance (EO). As with any tool used for explosives detection, ADS must meet this standard, providing stakeholders confidence that EO will be detected if present.

The term ADS includes systems using Mine Detection Dogs (MDD) and Mine Detection Rats (MDR) as well as other animals, should circumstances arise where their utility in detecting EO justifies their deployment on mine action tasks. Their use for odour detection is widespread, encompassing applications relevant to the military, the police, border control, health, emergency response, humanitarian aid, environmental management, and more.

The collection, analysis and transparent dissemination of comprehensive, quality-managed data detailing the performance of ADS, as part of a consistent and overarching quality management, accreditation and monitoring system, is the means by which confidence is maintained in the performance of ADS used in mine action.

Principles, requirements and guidelines for Animal Detection Systems

1 Scope

This standard replaces the International Mine Action Standard (IMAS) 09.40 on the guide for the use of Mine Detection Dogs (MDD).. This standard is applicable to the use of Animal Detection Systems (ADS) in mine action programmes. It focuses primarily on ADS using MDDs and Mine Detection Rats (MDRs), although its principles may be applied to the use of other animals should operating organisations wish to offer them for mine action operations.

This standard sets out fundamental principles and specified requirements relating to the use of ADS in mine action programmes. It is primarily intended for application by National Mine Action Authorities (NMAAs) and National Mine Action Centres (MACs), but its principles remain valid for, and should be used to form the basis of, internal ADS procedures employed by mine action organisations and governmental agencies.

This ADS IMAS provide a framework for the accreditation, planning, operational testing and implementation of ADS in land release operations within mine action programmes, and details the responsibilities of national authorities, ADS organisations. Individual ADS organisations should develop Standard Operating Procedures (SOPs) consistent with this and other national and international standards and reflect the parameters determined by local circumstances and conditions in specific mine action programmes.

2 References

A list of normative 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 which are to be applied in order 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 'Quality' in mine action refers to the degree to which a mine action service, product or output fulfils requirements.

The term 'Animal Detection System' (ADS) refers to the combination of animals, handlers, supervisors, managers, equipment, facilities, policies, procedures and other associated

functions, that interact to provide a tool intended to detect vapour from Explosive Ordnance. 'Vapour' may include vapour from the case material and other substances as well as from explosives.

The term 'ADS Organisation' refers to any organisation (government, NGO or commercial entity) responsible for implementing mine action projects or tasks with the use of ADS.

The term 'ADS Unit' refers to an animal and its handler (under the direction and monitoring of team/site management).

The term 'Mine Detection Dog' (MDD) refers to a dog specifically trained to detect and indicate vapour from EO, normally in a minefield environment/setting.

The term 'Mine Detection Rat' (MDR) refers to a rat, specifically trained to detect and indicate EO, normally in a minefield environment/setting.

The term 'Explosive Detection Dog' (EDD) refers to a dog specifically trained to locate and correctly indicate the presence of defined explosive substances or other relevant target objects.

The term 'Demining' refers to activities that lead to the removal of Explosive Ordnance.

The term 'Explosive Ordnance' (EO) is interpreted as encompassing mine action's response to the following munitions:

- Mines
- Cluster Munitions
- Unexploded Ordnance
- Abandoned Ordnance
- Booby traps
- Other devices (as defined by CCW APII)
- Improvised Explosive Devices

The term 'Target Object' is used to describe a specified object that ADS units are required to detect during search and clearance operations.

The term 'Test Item' is used for EO that are laid in the test site for detection by the ADS unit.

The term 'Target Odour' is used to describe the scent from the target object or the test item.

The term 'Operational Testing' refers to testing that takes place outside the confines of accreditation testing (initial or re-assessment).

4 Use of ADS for EO detection

ADS are used for the detection of EO. The use of ADS offers potential benefits including:

- detection of EO with low-metal and no-metal content;
- detection of EO in areas with high metal contamination such as cluster munition strike sites and former battlefields; and
- increased speed compared to manual demining using metal detector and excavation methods.

ADS units can be used in many different roles, however they are best at working in areas where there are low concentrations of EO. As such, they are well suited for activities such as: technical survey (TS):

- searching roads and road verges;
- searching pockets of land unreachable by mechanical demining equipment;
- searching areas contaminated with metal restricting the use of metal detectors;
- creating safe lanes and control points; and
- rapid sampling of cleared land (Quality Control (QC)), following manual and mechanical demining.

4.1 ADS for clearance

If ADS units are used as the primary detection tool, then all areas shall be searched by at least two different ADS units before being considered as cleared.

4.2 ADS during emergency response

As an exception, one appropriately trained ADS unit may be used on its own in cases of urgent medical evacuation.

4.3 ADS for technical survey

When used in TS, a search with one ADS unit may be sufficient, to confirm that EO is present or not, but if EO is found, two ADS shall then be used. Evidence from results of verified test and evaluation, operational testing and on-going monitoring shall be used to provide the required confidence in order to define parameters under which search with one ADS unit may be allowed.

The purpose of TS is to provide evidence for analysis to support the land release decision-making process. It is an intrusive process, using survey and clearance assets, typically into a suspected or confirmed hazardous area, although it may also be used as a method for the initial investigation of areas under some circumstances.

ADS units can be used to conduct TS in accordance with IMAS 08.20, to help to determine the presence or absence of EO. ADS units can rapidly search areas with low EO concentrations and are well suited to the delineation of contamination boundaries. Other assets and methods may be more suitable for the conduct of TS in areas known, or assessed as more likely, to contain EO.

4.4 ADS used in other applications

When ADS operations are carried out to provide verification following manual or mechanical operations, or confidence building, one ADS unit may be used provided that clearance requirements as specified by the NMAA are achieved. Again, if EO is found, search with two ADS units shall be used.

ADS units are also well suited to use on roads and other linear features where there is little vegetation, tripwires are not expected, and where the reduced environmental impact associated with ADS operations, compared to that associated with the use of mechanical assets, is an advantage.

4.5 Limitations on the use of ADS

ADS units cannot be used successfully under all circumstances and conditions. Limitations associated with environmental, contamination and practical aspects include:

- Vegetation: Dense or thorny vegetation may give rise to unsearched areas, or prevent the handler from maintaining continuous visual contact with the animal and controlling the search;
- Weather: Hot, windy, snowy, wet and cold conditions may compromise the animal's comfort and ability to focus on the detection task, and may either restrict the dispersal of scents, or disperse them too widely;
- Atmospheric conditions: High levels of pollution from smoke, exhaust gases, odours from petroleum products or industrial activity may prevent ADS from satisfying detection standards;
- High concentrations of EO: A high density of EO may make it hard for animals to differentiate between targets;
- Background contamination: Widespread background contamination, following mechanical or other processing of land containing many targets, may overshadow the scent from target objects; and
- Changes in working environment: Significant changes in working conditions, following a sudden shift in weather patterns or terrain features for instance, may require retraining to ensure that the animal remains capable of detecting and correctly indicating the specific targets that ADS units are likely to encounter.

5 Minimum requirements for the operational use of ADS units in mine action programmes

5.1 Records

The following information, as a minimum, shall be established, maintained, retained, updated and documented to provide a continuous record accompanying each animal through accreditation and during its working life:

- breed sex, genealogy, age, reproductive history, and any identifying marks, features or tag references;
- medical details including dimensions and weight;
- details of all routine health checks and inoculations;
- details of all illnesses, injuries and treatments, as well as dietary requirements;
- details of initial accreditation, its extension through periodic reassessment and any periods when accreditation is withdrawn;
- training records including dates, duration and type of training, instructors/handlers, environmental conditions, operating procedures, target objects and the results of training;

- records of operational performance including any operational test passes and/or failures, nonconformities specific to the animal identified during operations, and any other significant events relating to the performance of the animal; and
- other information as may be required by the NMAA.

5.2 Accreditation

Accreditation shall address all aspects of the ADS, not just the animal and handler combination, but include field supervision, veterinary and welfare support, facilities, procedures for the selection, training and operation of the ADS units and internal quality, safety and information management aspects.

All ADS organisations shall be accredited in line with the requirements of IMAS 07.30 and 07.31. All ADS units shall be operationally accredited in accordance with the requirements of IMAS 07.31 prior to their employment on operational activity. Accreditation shall be approved, maintained or withdrawn in light of the results of:

- accreditation testing and periodic reassessment testing;
- operational testing (in accordance with IMAS 09.41);
- the results of in progress monitoring (in accordance with IMAS 07.40); and
- other conditions specified in IMAS 07.31 and accreditation agreements.

Facilities and personnel carrying out accreditation testing of ADS units shall themselves have been accredited to conduct ADS testing (in accordance with the requirements of IMAS 07.30 and 07.31) by the national authority or other competent agency.

Facilities and personnel carrying out accreditation testing of ADS units shall be subject to external monitoring and inspection by the national authority or other competent agency.

Significant changes relating to an ADS unit, including changes of handler/animal combinations, changes in operating methodology or changes to the known threat, shall be notified to the accrediting authority, and may result in a suspension of accreditation and re-testing in accordance with the IMAS ADS series before receiving further operational accreditation.

5.3 ADS inputs

Inputs to ADS systems and processes shall be identified and subject to appropriate and effective quality management (QM) monitoring, inspections and checks. Inputs include:

5.3.1 Animals

Animals used as part of an ADS unit shall:

- have demonstrated suitability and competence in the EO detection role, in combination with their accredited/specified handler, during accreditation testing at an authorised test location and any subsequent operational testing;
- have documented evidence of their accreditation, testing and working history;
- be provided with adequate and appropriate medical, welfare and training support¹;

¹ IMAS 09.44 provides guidance on occupational health and general dog care.

- be subject to appropriate and effective monitoring; and
- be withdrawn from detection work at any time when there is any reason to doubt their continued ability to satisfy detection or other requirements.

5.3.2 Handlers

ADS handlers shall:

- have demonstrated suitability and competence in the EO detection role, in combination with their specified animals, during accreditation testing at an authorised test location and any subsequent operational testing;
- have documented evidence of their accreditation, testing and working history;
- be provided with appropriate and adequate insurance/social welfare cover;
- be trained on the most up to date version of applicable SOPs, work instructions and other documentation detailing the conduct of operations;
- be subject to effective supervision;
- be subject to appropriate and effective monitoring; and
- be withdrawn from detection work at any time when there is any reason to doubt their continued ability to satisfy detection or other requirements.

5.3.3 Supervisors

Supervisors shall:

- have been assessed to be competent to act as supervisors in accordance with the competence principles set out in IMAS 07.12;
- be authorised to act as supervisors of ADS units by the ADS organisation;
- have documented evidence of their training and authority to act as supervisors;
- be provided with appropriate and adequate insurance/social welfare cover;
- be trained on the most up to date version of applicable SOPs, work instructions and other documentation detailing how operations should be conducted;
- provide effective supervision of ADS operations; and
- be subject to appropriate and effective monitoring.

5.3.4 Management system

The overall management system applied by the ADS organisation shall be adapted to, and be appropriate for, prevailing circumstances and conditions. The ADS management system shall, as a minimum, address:

- QM aspects, including personnel and animal selection, equipment procurement and management, training, monitoring and improvement of ADS operations (see IMAS 07.12 for more guidance);
- risk management aspects, including risk/threat assessments, identification and application of appropriate and effective risk mitigation measures and periodic review of risk/threat aspects (see IMAS 07.14 for more guidance);
- occupational health and safety aspects, relating to the welfare and performance of animals, handlers, ADS team members and other relevant stakeholders; and
- information management aspects, relating to the identification, collection, reporting and analysis of performance data, inputs to non-technical survey (NTS), TS and other aspects of land release, and support to operational improvement processes.

5.3.5 Occupational health and veterinary support

Successful ADS operations rely on well-fed, well-trained, and well-treated animals. Poor attention to the health of animals, and their treatment when sick, may result in prolonged training periods and a limited operational output. Animals may die as a result of poor health care, inadequate vaccinations and neglected symptoms of disease.

Adequate and appropriate veterinary support shall be provided, including knowledge of health issues associated with working locations, prevailing climatic conditions, diseases and other environmental aspects.

Providers of veterinary and/or medical support to animals shall be competent to fulfil their responsibilities and shall have completed appropriate and relevant training courses, and hold qualifications, as determined by the NMAA.

The ADS healthcare system shall include:

- maintaining adequate veterinary support;
- carrying out initial screening of animals;
- satisfying any applicable quarantine requirements;
- conducting periodic health checks, treatment and vaccinations;
- providing suitable food and water in appropriate quantities, as and when required to maintain the health and performance of the animals;
- physical and mental exercise to sustain the animals' wellbeing and operational performance;
- providing kennel/shelter facilities of an adequate size that maintain appropriate environmental conditions and with access to daylight, exercise areas and human company;
- maintaining transportation facilities, equipment and procedures that keep animals safe and healthy and that do not adversely affect their operational performance;
- maintaining a high standard of hygiene at all times; and
- providing on site medical knowledge, skills, equipment and procedures necessary to treat animals and evacuate them to a suitable veterinary facility in the event of an accident.

Animals shall be subject to a health check each day before starting work, as required during work, and at the end of the day on completion of work. No animal, found to be suffering from illness, incapacity or other condition that may affect its performance, shall perform ADS operations until a subsequent health check shows that it is fit to work (for further guidance see IMAS 09.44).

5.3.6 Food and water

ADS organisations shall make adequate provision for clean and appropriate food and water for animals, handlers and other team members, necessary to sustain them and maintain their ability to conduct ADS operations safely and reliably.

5.3.7 Equipment

Equipment used within ADS operations shall be subject to procurement, storage, inspection, test, maintenance and repair procedures that ensure its continued suitability and capability to satisfy operational quality, safety and environmental requirements.

Equipment used to measure and record location data shall be calibrated and tested to ensure that location data satisfies accuracy requirements as specified in relevant IMAS, National Mine Actions Standards (NMAS), task orders and other applicable documentation.

5.3.8 Documentation

ADS work sites shall have access to all relevant documentation, including, as a minimum:

- task orders and other documents specifying on-site requirements;
- up to date SOPs; and
- reporting forms.

5.4 ADS activities

5.4.1 Integration with other operational procedures

ADS SOPs shall be integrated with procedures applying to other associated mine action activities, processes and methods.

5.4.2 Accommodation and transport

Animals shall be accommodated and transported so as to ensure their continued health and ability to perform EO detection functions.

5.4.3 Management of training

ADS unit training shall be planned, delivered, monitored, reviewed, in line with the principles set out in IMAS 06.10 and updated as necessary to ensure the continued competence and capability of all aspects of ADS support and operation including:

- establishing clear, relevant training objectives;
- when planning training, taking into account information relating to relevant EO threats;
- delivering training using authorised, competent trainers;

- ensuring that training sites, targets and conditions correspond to those associated with operational sites;
- monitoring training performance through observation and the collection and analysis of data; and
- updating training whenever necessary in response to changing circumstances, conditions and standards.

5.4.4 Standard Operating Procedures

ADS operating organisations shall develop SOPs as necessary to:

- satisfy accreditation requirements;
- ensure the safety of animals, handlers, supervisors and other stakeholders;
- ensure that all specified land is searched by the ADS unit and methods capable of detecting defined target objects;
- conduct operations that satisfy the requirements of this, and other applicable, standards;
- define working time durations and rest intervals for animals and handlers appropriate to operational methodologies and working conditions; and
- take into account changes in circumstances and improvements to operating methods and practices.

5.4.5 Operational planning

ADS operational plans shall:

- be documented;
- satisfy requirements specified in standards, task orders, contracts and other applicable documentation;
- take into account threat assessments and the capabilities of the allocated ADS units;
- reflect input from relevant stakeholders;
- be appropriate to the prevailing environmental circumstances and conditions including the need to cut/burn vegetation before ADS unit search can take place;
- be consistent with accredited SOPs; and
- enhance the efficiency of ADS operations.

5.4.6 Operational testing

Operational testing of ADS shall take place in accordance with IMAS 09.41 and the requirements of national authorities. As a minimum, operational testing shall take place:

- as required to maintain operational accreditation;
- each day prior to the conduct of search;
- whenever there is any significant change in operating conditions, the local environment or the target type;
- on other occasions, and at intervals, determined by authorities and ADS organisations, as required to maintain confidence in the reliability of the ADS units; and
- whenever a handler, supervisor, quality assurance officer or other authorised person, has reason to doubt the reliability of the performance of an animal and/or the handler.

In the event that an animal fails an operational test, all land searched by that animal since it last passed an operational test shall be deemed potentially nonconforming, shall be subject to review, and where necessary re-search by an animal that has passed an operational test.

5.4.7 Conduct of operations

Sites where ADS operations take place shall be managed as mine action sites in accordance with relevant IMAS (listed in Annex A) and NMAS.

ADS operations shall be conducted in accordance with the ADS organisation's accredited SOPs.

5.5 Outputs of ADS operations

5.5.1 Land

Land released (reduced or cleared) as a result of the use of ADS units shall be defined and managed in accordance with the definitions and requirements specified in IMAS 07.11.

5.5.2 Data, Information and reporting

Data relating to the release (reduction or clearance) of land shall satisfy the minimum requirements set out in IMAS 05.10, 07.11, 08.10 and 08.20.

ADS performance data shall be recorded, reported and analysed in order to:

- support ongoing land release decisions;
- maintain confidence in the quality of ADS operations;
- enhance understanding of EO contamination relevant to future land release planning, prioritisation and operations;
- enhance understanding of ADS units operational performance; and
- support improvement in the performance of ADS units.

The following specific information relevant to ADS units shall be recorded and shall be traceable to the task site, locations/areas within the task site, false/positive indications, and the date of operations:

- unique identification of individual animals;
- unique identification of handlers, traceable to the animals that they handle; and

- environmental/weather data.

5.5.3 ADS outputs as inputs to other land release processes

Where land processed using ADS units is subject to further processing by other land release assets (such as manual or mechanical assets) ADS organisations and authorities shall ensure that the status of all land and details about any information/items discovered using ADS units are handed over in full to follow-on mine action managers. Such cases may include ADS units used in a TS role before full clearance or ADS units used for clearance but where specified spots or parts of the area have been deemed unsuitable for ADS unit deployment (slopes, anthills, puddles, trenches etc)

5.6 Measurement, monitoring, analysis and improvement of ADS

Monitoring of ADS operations and activities (at administrative, accommodation, medical, training and work sites) shall be carried out in accordance with the requirements of IMAS 07.40.

5.6.1 Identification and traceability

ADS organisations shall collect, record and document data as necessary to achieve, as a minimum, the identification of individual ADS units including:

- animals;
- handlers;
- supervisors; and
- methods used.

And their traceability to:

- specific operational sites/tasks;
- operating dates/times; and
- specific locations within operating sites as agreed with authorities, customers and other interested parties and/or required for QM purposes.

5.6.2 Quality assurance monitoring

Monitoring of ADS operations shall be carried out in accordance with IMAS 07.12 and 07.40.

While particular focus may be applied to ADS TS and clearance activities, monitoring should include appropriate efforts to confirm the suitability and effectiveness of all aspects of the ADS including, as a minimum:

- the general management capability of the operating organisation to address all aspects of the ADS;
- logistic, support and health/veterinary aspects of the ADS operation;
- conduct, quality and validity of training;
- internal quality monitoring (QA and QC) including operational testing;

- conduct of field operations;
- use of information to support ongoing risk, quality and environmental management decisions;
- quality of information delivered to other stakeholders; and
- the identification and management of nonconformities and opportunities for improvement.

5.6.3 Quality control monitoring

Outputs of ADS operations (including land and information) should be subject to inspection and monitoring in accordance with the requirements of IMAS 07.40.

The quality of land subject to search by ADS units, whether released directly through clearance or reduced following TS, or in conjunction with follow-up clearance using another mine action asset, may be monitored by:

- internal/external QC sampling/inspection by other search/clearance assets;
- the analysis of the findings of follow-on LR assets; and/or
- the results of long-term monitoring of the land following its handover.

Other outputs of ADS processes, including data, reports and records, shall be subject to QC inspection in accordance with the requirements of IMAS 05.10 and 07.40.

5.6.4 Managing nonconformity

Nonconformities associated with ADS units shall be managed in accordance with IMAS 07.12 and 07.40.

ADS organisations shall implement effective measures to ensure that nonconformities are identified, assessed, corrected and, where appropriate, used to inform improvement processes.

ADS organisations shall make information relating to nonconformities, and their management, available to authorities and specified agencies acting on their behalf.

5.6.5 Managing improvement

Authorities and ADS organisations shall implement effective measures to ensure that opportunities for improvement are identified, assessed and, where appropriate, acted upon.

Opportunities to improve ADS operations shall be actively pursued. Opportunities for improvement may be identified through:

- root cause analysis of a nonconformity;
- analysis of performance data;
- suggestions received from staff members, external quality assurance/control, customers or other stakeholders;
- management review; and/or
- internal or external quality audit.

6 Responsibilities

6.1 National Mine Action Authority and/ or Mine Action Centre

The NMAA and/ or MAC, or an organisation acting on its behalf, should:

- a) develop and implement national standards and other guidelines governing the testing and use of ADS units within the mine action programme;
- b) accredit organisations to conduct ADS operations;
- c) develop and implement a system for the QM of ADS operations (including operational testing and accreditation of ADS organisations) within the mine action programme;
- d) ensure that personnel charged with ADS QM are competent for the task;
- e) promote transparent sharing of ADS performance information;
- f) provide ADS organisations with appropriate testing and training areas and other facilities to support ADS; and
- g) provide ADS organisations with test items to support training, testing and operational procedures.

6.2 ADS organisations

ADS organisations shall:

- a) establish SOPs for the use of ADS units for demining operations, consistent with applicable NMAA, or in the absence of national standards, IMAS;
- b) gain accreditation for the use of ADS units by the NMAA or an organisation acting on its behalf;
- c) ensure that operational testing of ADS units is carried out as required in NMAA, accreditation agreements, and as otherwise necessary to maintain confidence;
- d) ensure that the competence of animals, handlers and other elements of the ADS are maintained through effective monitoring and training;
- e) make performance data available to the NMAA; and
- f) establish systems, procedures and facilities to ensure the occupational and general health care of ADS units.

In the absence of a NMAA or similar authority, the ADS organisation should assume additional responsibilities. These include:

- g) agree with the donor (or client, or customer) a system for managing the quality of ADS operations;
- h) assist the host nation, during the establishment of a NMAA, in framing national standards for ADS; and
- i) coordinate with other ADS organisations to ensure consistency in standards for ADS operations and to cooperate in the testing of ADS units.

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 to applies. IMAS 04.10 Terms and definitions:

- a) IMAS 05.10 Information management for mine action;
- b) IMAS 06.10 Management of training;
- c) IMAS 07.11 Land release;
- d) IMAS 07.12 Quality management in mine action;
- e) IMAS 07.13 Environmental Management in Mine Action;
- f) IMAS 07.14 Risk Management in Mine Action;
- g) IMAS 07.30 Accreditation of mine action organizations;
- h) IMAS 07.31 Accreditation and operational testing of animal detection systems and handlers;
- i) IMAS 07.40 Monitoring of mine action organizations;
- j) IMAS 08.10 Non-technical Survey;
- k) IMAS 08.20 Technical Survey;
- l) IMAS 08.30 Post-clearance documentation;
- m) IMAS 09.10 Clearance requirements;
- n) IMAS 09.41 Operational procedures for ADS;
- o) IMAS 09.44 Guide to occupational health and general dog care;
- p) IMAS 10.10 Safety and Occupational Health – General requirements; and
- q) IMAS 14.10 Guide for the evaluation of mine action interventions.

The latest version/edition of these references should be used. GICHD hold 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 mine action programmes.

Amendment record

Management of IMAS amendments

The IMAS series of standards are subject to formal review on a three-yearly basis, however this does not preclude amendments being made within these three-year periods for reasons of operational safety and efficiency or for editorial purposes.

As amendments are made to this IMAS they will be given a number, and the date and general details of the amendment shown in the table below. The amendment will also be shown on the cover page of the IMAS by the inclusion under the edition date of the phrase 'incorporating amendment number(s) 1 etc'.

As the formal reviews of each IMAS are completed new editions may be issued. Amendments up to the date of the new edition will be incorporated into the new edition and the amendment record table cleared. Recording of amendments will then start again until a further review is carried out.

The most recently amended IMAS will be the versions that are posted on the IMAS website at www.mineactionstandards.org.

Number	Date	Amendment Details
1.	24 Mar 2020	<ol style="list-style-type: none"> 1. Formatting and numbering corrections throughout . 2. Removal of outdated references from scope (para 1) 3. Inclusion of terms and definitions 'ADS Unit', Explosive Detection Dog' and 'Explosive Ordnance'(para 3). 4. Updated definition of 'Test Item' and 'Target Odour' (para3). 5. Incorporated additional references to IMAS 06.10, 07.14 and 07.31.