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Monitoring of mine action organisations

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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

Changes in this standard

Previous versions of this standard focused almost exclusively on monitoring through the conduct of visits to demining sites. Site visits remain an important quality management function, but this version reflects an up-to-date understanding of the wider scope and practice of monitoring in mine action and includes:

- monitoring through the collection and analysis of information about the performance of mine action processes and products; and
- application of monitoring principles and processes to all activities that come under the heading of mine action.

IMAS 09.20 relating to post-clearance inspection is withdrawn. This new version of IMAS 07.40 addresses the issue of monitoring of product performance for mine action in general and provides specific guidance on actions to check the quality of cleared land.

Monitoring and quality management

Monitoring is an essential element of any effective quality management system (QMS) as well as within strategic, operational, project, programme, safety, environmental and results-based management systems.

At the heart of quality management (QM) is the concept of continual improvement, captured in the Plan – Do – Check - Act cycle. Monitoring is integral to the 'check' stage of the cycle. Monitoring represents the primary means of 'closing the loop' to ensure that needs and opportunities for improvement are identified and addressed, and that authorities and managers have the information they need to take timely and effective, evidence-based decisions to support the achievement of strategic and operational objectives.

Definitions of monitoring emphasise that it is a continuing function, that it relies on systematic collection of data in relation to specified indicators, and that its purpose is to provide management with information about progress, achievement of objectives and compliance with policies and standards. Monitoring is also described as *determining the status of a system, a process or an activity* - what is to be monitored, the methods for monitoring, measurement and analysis, when monitoring should be performed and how results will be analysed and evaluated all need to be defined.

This standard addresses all aspects of establishing, implementing and using a mine action monitoring system.

Monitoring, Quality and Results-based Management (RBM)

QM focuses on the products and services delivered by mine action organisations. The results, outcomes and impacts associated with delivery of those products are equally important.

While this standard addresses the monitoring of processes and products, authorities are strongly encouraged to make use of similar principles to understand the extent to which mine action projects and programmes lead to desired results, outcomes and impacts. Donors increasingly want to understand the difference that their funds have made to the lives of beneficiaries, RBM provides a way to do this.

Using this standard

The main body of this standard sets out minimum requirements for a widely applicable mine action monitoring system. Additional detail about the conduct of visits to work sites and guidance on the implementation of post-clearance sampling is provided in the Annexes. Further advice and guidance, aimed at providing field implementers with information that helps them plan and implement standards-compliant projects, may be found in relevant Technical Notes for Mine Action (TNMAs).

Monitoring of mine action organisations

1 Scope

This standard describes the implementation of a system for monitoring mine action organisations by the National Mine Action Authority, or by a monitoring body acting on behalf of the NMAA. The principles should also be used as the basis of internal monitoring systems used by mine action organisations.

2 References

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

3 Terms, definitions and abbreviations

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

In the IMAS series of standards, the words 'shall', 'should' and 'may' are used to indicate the intended degree of compliance. This use is consistent with the language used in the International Organization for Standardization (ISO) standards and guidelines:

- a) 'shall' is used to indicate requirements, methods or specifications that 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 definition of 'monitoring' includes both of the following:

- the activity of systematic collection of data in relation to specified indicators, in order to provide management with information about the progress of work, achievement of objectives and compliance with policies and standards.
- determining the status of a system, a process or an activity - including the definition of what is to be monitored, the methods for monitoring, measurement and analysis, when monitoring should be performed and how results will be analysed and evaluated.

The term 'National Mine Action Authority' (NMAA) refers to the government entity, in a mine-affected country, with the responsibility for the regulation, management and coordination of mine action.

Note: In the absence of a NMAA, the United Nations, or some other recognised international body, may assume some or all of the responsibilities, and fulfil some or all the functions, of an NMAA.

A mine action organisation is "any organisation (government, military, commercial or NGO/civil society) responsible for implementing mine action projects or tasks. The mine action organisation may be a prime contractor, subcontractor, consultant or agent." IMAS 04.10 May 2013.

A 'sub-unit' is part of a mine action organisation which is operationally accredited to conduct one or more defined mine action activities, such as technical surveys, manual clearance, explosive ordnance disposal (EOD), mine risk education or task prioritisation.

A 'monitoring body' is an organisation, usually part of the NMAA, responsible for the management and implementation of a national monitoring system.

Quality management is “coordinated activities to direct and control an organization with regard to quality. These activities generally include the establishment of a quality policy and quality objectives, quality planning, quality control, quality assurance, and quality improvement.” (ISO9001:2015)

Quality Assurance is “part of quality management focused on providing confidence that quality requirements will be fulfilled” (ISO9001:2015). QA is a confidence-building process, based on evidence, that the quality requirements are likely be met. QA encompasses all pro-active activity undertaken by an organization to increase confidence in the likelihood that requirements will be met.

Quality Control is “part of quality management focused on fulfilling quality requirements” (ISO9001:2015). QC should address the question “Did we get what we wanted?”

An interested party is a “person or group having an interest in the performance or success of an organization.” “A group can comprise an organization, a part thereof, or more than one organization.” Both: ISO9001:2015. In mine action an interested party is often called a *stakeholder*. Examples include: beneficiaries, donors, mine action organisations, NMAA, other national government departments and ministries, equipment manufacturers, IMAS review board.

Two definitions of monitoring are of particular relevance to mine action:

Monitoring is “systematic collection of data on specified indicators to provide management and the main stakeholders of an on-going project, programme or policy with indications of the extent of progress and achievement of objectives, and progress in the use of allocated funds.” IMAS 4.10 based on OECD/DAC definition.

Monitoring means “determining the status of a system, a process or an activity - to determine the status there may be a need to check, supervise or critically observe.” ISO 9001:2015.

4 Monitoring within the context of mine action

4.1 General context

The overall responsibility for external monitoring rests with the NMAA. The NMAA may delegate the responsibility to the mine action coordination centre or appoint an external monitoring body to conduct monitoring on its behalf. The responsibility for internal monitoring rests with the mine action organisation itself.

The context of mine action includes all aspects of the surrounding circumstances, conditions and environment relating to authorities, organisations, programmes, policies, locations, standards, laws, expectations and requirements. The monitoring system should appropriately reflect:

- a) an up-to-date and accurate analysis of the context; and
- b) the information needs of relevant authorities, decision-makers and managers

4.2 Monitoring within the quality management system (QMS)

The overall aim of mine action quality management (QM) is to provide confidence (to the beneficiary, the mine action organisation, the NMAA, the donor and to other interested parties) that quality requirements have been met or exceeded, and that mine action activities and products are fit for purpose.

Monitoring is a mandatory function within any quality management system. Monitoring is the primary means by which authorities, managers and other interested parties receive information about the performance of mine action organisations, the processes that they use, the products they deliver, and the results of their activities. The information provided by

monitoring systems supports corrective action, continual improvement and management review processes.

Monitoring of processes is an important part of the quality assurance (QA) function, which includes all pro-active action taken to increase confidence that requirements will be met. Monitoring of products is a quality control (QC) function – checking that product requirements have been met.

Monitoring should address the effectiveness of mine action activities (the extent to which they achieve planned purposes/objectives) and their efficiency (the relationship between achievement of objectives and use of resources). Monitoring should also be used to inform decisions about relevance – are the planned activities likely to deliver the desired results for beneficiaries.

Where appropriate, the results of monitoring should be used to inform the process of accreditation, in particular the renewal of accreditation of an organisation that has been monitored during the current or previous phase of a contract. The accreditation process is set out in IMAS 07.30 accreditation of mine action organisations.

4.3 Monitoring and strategic planning

Monitoring systems should reflect the requirements of overall strategic goals and objectives. The structure and implementation of mine action monitoring systems should be informed by the national mine action strategic plan (NMAASP) or equivalent, and have the capacity to deliver information relevant to strategic decision-makers. Monitoring systems should include assessment of performance and progress against strategic policies, objectives and targets.

4.4 Quality, safety and the environment

There are close parallels between quality, safety and environmental management systems. Mine action monitoring systems should address relevant safety and environmental aspects as directed by the NMAA or other authorities.

4.5 International and national legislation

Monitoring systems should take into account the extent to which the requirements of applicable international and national legislation and policies are satisfied and, where appropriate, establish indicators relevant to those requirements.

4.6 IMAS, NMA and SOPs

Monitoring systems should include mechanisms for the identification of applicable standards and procedures, the definition of specified requirements, and for review of requirements whenever standards or procedures change.

4.7 Management, stakeholders and interested parties

Monitoring systems should ensure that the requirements of the various users of monitoring information are understood, and that the system appropriately and effectively satisfies those requirements.

Monitoring systems should provide feedback to operating organisations, including comparative performance indicators, benchmarks and other information necessary for managers to understand the performance of their organisations.

4.8 Gender and diversity

No mine action programme can succeed in satisfying stakeholder requirements unless it reflects the different circumstances, requirements and needs of gender and diversity groups.

Mine action monitoring systems should include the collection, analysis and reporting of data relating to gender and diversity aspects of the mine action programme. Sex and age disaggregated data (SADD) should be used whenever possible in mine action monitoring systems.

The NMAA should ensure that gender and diversity related key performance indicators (KPIs) are identified, defined and included within monitoring processes and procedures.

4.9 Information management systems

Monitoring systems should be integrated into an effective and efficient information management system (IMS).

4.10 Monitoring and risk management

Risk is defined as 'the effect of uncertainty on objectives' (ISO Guide 73:2009). It may be expressed through reference to the 'combination of the probability of occurrence of harm and the severity of that harm' (IMAS 04.10 and ISO Guide 51:1999).

Monitoring is integral to risk management processes at both the strategic and operational levels in any mine action programme. Risk identification, analysis, evaluation, treatment and review functions should be used to identify and specify information requirements, including KPIs, relevant to, and requiring the attention of, the monitoring system.

5 General requirements

5.1 General

In any mine action programme the relevant authorities shall determine:

- a) what needs to be measured and monitored;
- b) methods for monitoring, measurement and analysis as necessary to ensure valid results;
- c) when and how monitoring shall be performed;
- d) when and how the results of monitoring shall be analysed; and
- e) how monitoring results will be displayed and disseminated.

Monitoring functions shall be implemented in accordance with the requirements of this standard. Appropriate documented information shall be retained as evidence of the results of monitoring.

Authorities shall monitor and review the performance of the monitoring system itself.

5.2 Purpose of monitoring

Monitoring is conducted to provide authorities, managers and decision-makers with reliable evidence-based information about the performance of organisations and the mine action programme as a whole, in relation to strategic and operational objectives and policies. Monitoring is used to inform decisions about future planning and the continual improvement of mine action, including:

- a) the extent to which mine action organisations comply with the requirements of standards, regulations, procedures, agreements and other defined criteria;
- b) the practical performance of mine action organisations in terms of the efficiency and effectiveness of processes, the products of those processes and the results, outcomes and impacts that accrue from delivery of products;
- c) progress towards achievement of practical objectives, against financial budgets and targets, and in relation to desired results, outcomes and impacts;
- d) the degree to which strategic planning decisions, and prioritisation are likely to achieve the desired results for beneficiaries;

- e) the performance of the mine action programme, and organisations within it, in relation to gender and diversity;
- f) other key characteristics of the mine action programme and organisations within it;
- g) to establish benchmarks against which future performance can be assessed; and
- h) to support understanding of performance in relation to any other measure, target or objective of importance to the NMAA.

5.3 Conduct of monitoring

Mine action monitoring should be comprehensive, rigorous, and deliver sufficient information to satisfy the needs of relevant stakeholders. Monitoring should not discourage initiative and innovation, nor should it impose such a burden on operating organisations that it significantly and adversely affects their efficiency. Efficient monitoring, as part of an effective QMS, should enhance the overall success and efficiency of the mine action plan, programme or project.

The mine action monitoring system should:

- a) be independent, objective, ethical and fair;
- b) be systematic and evidence-based;
- c) be implemented with due professional care and effort;
- d) produce valid information on which management (internal and external to organisations) can act to improve operations;
- e) be properly planned and managed;
- f) record and store data in a systematic way for future reference;
- g) provide conclusions that are relevant, reliable and sufficient to satisfy decision-making needs;

Those involved in monitoring should be competent, free from bias and conflict of interest and maintain confidentiality and discretion with organisations and individuals subject to monitoring.

Mine action monitoring should consist of a combination of information management functions, review of records and site visits (announced and unannounced).

5.4 Systematic collection, analysis, reporting and archiving of data

Effective monitoring relies upon access to consistent, reliable and comprehensive data about the performance of organisations and the processes and products for which they are responsible. Authorities should:

- a) identify indicators relevant to the effectiveness of mine action activities (the extent to which planned activities are realized and planned results are achieved) and the efficiency of those activities (the relationship between the results achieved and the resources used);
- b) specify information requirements in relation to indicators for both product and process performance;
- c) ensure consistency of data/information between organisations and over time; and
- d) ensure data are stored in a manner that makes future access feasible, and that data are made available to interested parties for time-sequence comparisons.

5.4.1 Collection of monitoring data

Data relevant to monitoring may be collected and reported by monitors, mine action organisations or other individuals. In all cases requirements should be clearly defined in terms of:

- a) responsibility for collection of data;
- b) responsibility for record keeping and archiving of data;
- c) sources of data;

- d) units of measurement;
- e) frequency of collection;
- f) data collection formats;
- g) frequency of reporting;
- h) reporting formats; and
- i) reporting channels.

Requirements should be defined in NMAS, monitoring procedures, policies and mine action organisations' own SOPs as appropriate.

Additional information about the collection of data through site monitoring visits is provided in Annex A.

5.4.2 Analysis of monitoring data

The results of monitoring should be analysed to satisfy the requirements of relevant managers and decision-makers. As a minimum, monitoring should deliver results that indicate:

- a) conformity of products and services to requirements (including compliance with standards, policies and procedures);
- b) customer satisfaction;
- c) implementation of gender and diversity policies;
- d) conformity and effectiveness of the QMS and other relevant management systems;
- e) successful implementation of planning and progress towards objectives;
- f) the performance of mine action processes;
- g) the performance of mine action products;
- h) the performance of mine action organisations;
- i) the performance of mine action assets; and
- j) needs or opportunities for improvement.

Monitoring systems should include adequate detail, and sufficient record-keeping, to identify and trace relevant performance measures to individual organisations and elements, and to observe trends over time.

Monitoring data should be sex and age disaggregated (SADD) whenever possible and appropriate.

5.5 Key performance indicators (KPIs)

Key performance indicators (KPIs) are measurable values used to demonstrate how effectively an organisation or programme is achieving objectives.

Relevant indicators include:

- a) nonconformity rates (by product/process, by organisation/element and in relation to defined requirements);
- b) compliance rates (in relation to standards, rules, regulations, policies and procedures);
- c) progress rates (against defined deadlines, targets, budgets and benchmarks);
- d) asset performance (productivity rates, detection/miss rates); and
- e) efficiency rates (effort applied in relation to results achieved).

Authorities, managers and decision-makers at different levels in a mine action programme (MAP) should identify KPIs relevant to their own functions and responsibilities. Higher levels in the MAP may make use of KPIs based upon aggregated data.

Requirements should be communicated to, and be understood by, those with responsibility for the collection of data, analysis of data and reporting of results, to ensure the consistency, comparability and validity of KPIs.

5.6 Display and Dissemination of monitoring results

The results of monitoring, including up-to-date KPIs, should be displayed through tables, graphs, plots and other methods, to allow authorities, managers and decision-makers to identify and understand trends, draw comparisons in performance over time and between organisations, and identify needs or opportunities for improvement.

The use of digital dashboards is recommended.

The results of monitoring should be made available as widely as possible consistent with confidentiality principles and policies.

5.7 Competence, training and awareness

5.7.1 General

Monitoring is not a policing function. The primary purpose of monitoring is to provide information to managers and authorities to maintain confidence, identify areas requiring attention and support continual improvement processes.

Where shortcomings or nonconformities are identified, root cause analysis should be carried out and appropriate corrective action agreed and implemented. In the rare instances where there is negligence, dishonesty or criminality, appropriate disciplinary or legal action may need to be taken, but this should be something very much out of the ordinary.

5.7.2 Competence of monitoring staff

In order to carry out their functions effectively and efficiently, mine action monitors should:

- a) have adequate experience and knowledge of the procedures, methods and techniques that they will be monitoring;
- b) be able to plan and organise monitoring functions;
- c) collect information through interviewing, listening, observing, reviewing and verifying the accuracy of records and documents;
- d) have skills to systematically record evidence based results;
- e) confirm that they have sufficient evidence to support conclusions;
- f) maintain confidentiality of information;
- g) communicate effectively; and
- h) demonstrate an understanding of management systems.

Depending on the specific activities and areas that they will monitor, mine action monitors should have knowledge of relevant:

- i) International treaties and regulations;
- j) National laws and regulations;
- k) Standards (IMAS, NMAS, IATGs, ISO etc.)
- l) Contracts and agreements;
- m) Labour, workplace safety and working conditions requirements;
- n) Products, activities and services;
- o) Quality terminology;
- p) QM principles and their application; and
- q) Quality tools and their application.

5.7.3 Training

Monitors should receive training and demonstrate adequate aptitude, skills and knowledge, in monitoring processes, procedures, techniques and recording, prior to conducting monitoring activities.

Additional training should be provided to monitors when there are changes in the monitoring system, when there are significant changes in applicable regulations and standards, and at appropriate intervals, to ensure that their competence to perform monitoring tasks is maintained.

Training in relevant aspects of the monitoring system should be provided to other personnel (such as data collectors/reporters and other information management staff) who perform functions associated with the monitoring system.

Records of training, qualification and experience of monitors and other staff working in the monitoring system shall be maintained.

5.7.4 Awareness of monitoring roles and responsibilities

The NMAA should ensure that there is adequate awareness of the monitoring system, its purpose, functions and principles, among the organisations and individuals who will be subject to monitoring, as well as other stakeholders with an interest in the performance of the MAP.

Organisations and individuals subject to monitoring should not perceive monitoring to be a hostile process, or one that brings excessive or unjustified consequences in the event of nonconformity or other failure. Those subject to monitoring should be open, honest and consistent in their provision of information and access to working locations.

Evidence to suggest that information provided to monitors is incomplete, inaccurate or has been tampered with, constitutes a nonconformity and should be subject to investigation and follow up.

5.8 Monitoring of process performance

5.8.1 General

Mine action comprises many different processes at operational and strategic levels. Appropriate data should be collected and analysed to allow authorities, managers and decision-makers to:

- a) understand the relevance, effectiveness and efficiency of key processes;
- b) identify and respond to those parts of processes that can be improved;
- c) compare process performance over time between organisations, elements and locations; and
- d) reflect the results of process monitoring in future planning.

5.8.2 Identifying and describing key processes

Key processes should be identified within the mine action programme and appropriate performance indicators should be defined and maintained. Key processes are those that:

- a) deliver product to customers/end users; or
- b) directly support processes that deliver final product; or
- c) are otherwise significant for the effective and efficient operation of mine action organisations.

Products that are released to customers/end users, or that are otherwise significant within the mine action organisation, should be subject to product monitoring as described in section 5.9 of this standard.

5.8.3 Processes and performance indicators

KPIs should be established for key processes to indicate:

- a) process effectiveness – the extent to which the process fulfils its function successfully; and
- b) process efficiency – the resources used within the process in relation to the results achieved.

5.8.4 Compliance with standards, regulations and procedures

Monitoring should be established such that compliance or non-compliance rates can be associated with individual standards, regulations and procedures.

5.8.5 Progress monitoring

Progress of mine action activities against agreed deadlines and targets should be monitored. Where no external deadline or target has been set for an activity, mine action organisations should establish appropriate internal targets against which progress can be measured.

5.8.6 Working environment

Monitoring systems should include appropriate action to confirm that the working environment remains suitable for efficient and effective mine action activities, and complies with applicable standards, legislation and regulations.

5.8.7 Process monitoring methods

The performance of processes implemented by mine action organisations, and their compliance with standards, regulations and other requirements, may be monitored through:

- a) analysis of nonconformity records, where such records should indicate which standards, rules, regulations, processes or procedures are associated with the nonconformity;
- b) review of a mine action organisation's documentation including manuals, plans, procedures, reports and records;
- c) analysis of data provided by mine action organisations; and
- d) site visits to observe activity (Annex B describes the planning and conduct of site visits in more detail).

Data collected through site visits should be subject to analysis to identify trends and allow comparison between the performance of different organisations and elements.

5.8.8 Frequency and level of process monitoring

Monitoring activities, including the submission of reports, analysis of data and conduct of site visits should take place at intervals sufficient to maintain confidence amongst authorities and interested parties in the performance of mine action organisations and of the mine action programme as a whole. Monitoring activity should not be so intrusive, nor place such demands on a mine action organisation, as to reduce operational efficiency significantly.

As a minimum, monitoring activity should take place at intervals and in such ways as are specified in accreditation agreements, standards, contracts and other applicable documentation.

Monitoring activity, especially site visits, should not be used as a substitute for appropriate corrective action by a mine action organisation. Poor performance may justify more frequent observation and inspection of activity, processes and products, but any nonconformity or shortcoming in the performance of an organisation should always be addressed primarily through appropriate management action from within that organisation.

The frequency of site visits may be adjusted in light of results of previous visits, experience of the mine action organisation in relation to its activities, and the nature of those activities.

Monitoring bodies should consider adoption of a 'tightened' monitoring schedule when:

- a) a mine action organisation is newly accredited for a defined activity;
- b) there have been significant changes in the management or structure of an organisation/element;
- c) results of monitoring (through analysis of data and/or site visits) have identified shortcomings in the performance of an organisation/element; or
- d) as part of the follow up to an identified nonconformity.

Monitoring bodies may consider reducing the frequency of monitoring visits when:

- a mine action organisation has demonstrated a consistent level of acceptable performance over a period of monitoring; and
- there is no change in the scope of activities of the mine action organisation.

5.9 Monitoring of product performance

5.9.1 General

Monitoring bodies should ensure that appropriate action is taken to maintain confidence in the performance of mine action products. Quality control is the process of checking that 'what was received is what was wanted'.

5.9.2 Products and performance indicators

The mine action sector has traditionally focused on one product to the exclusion of almost all others. That product (cleared land) is important, but it is only one of a range of products of mine action processes, others of which are also important and should receive a similar level of attention. The main categories of product relevant to mine action include, but are not limited to:

- a) Information: without accompanying information many products of mine action (especially those relating to the release of land) are of limited or no value. Information is a product in its own right. Records, reports and public information campaigns all deliver information products to people.
- b) Land: mine action processes deliver cancelled, reduced and cleared land. All are required to meet the same basic quality requirement – that they are safe, containing no specified hazard items down to a specified depth.
- c) Hardware: ranging from prosthetic limbs, to training aids made using free from explosive (FFE) UXO items, to scrap material resulting from demilitarisation and stockpile destruction programmes, to the fencing and warning signs used to delineate hazardous areas. All should have clearly specified quality, safety and environmental requirements against which performance can be measured and monitored.
- d) People: mine action engages in a wide variety of training processes. Each delivers trained and competent personnel as their product. Requirements against which performance can be monitored should be defined in Job Descriptions, Terms of Reference, Training Plans and other appropriate documentation.

Every product should be designed and delivered to satisfy specified requirements. Performance indicators should be identified, defined and used within the monitoring system to indicate:

- the extent to which products meet requirements;
- the incidence of real and potential product nonconformities;
- responses to real or potential product nonconformity; and
- progress towards achievement of product related objectives.

5.9.3 Product monitoring methods

Options for monitoring the performance of products include:

- a) physical inspections and sampling;
- b) testing;
- c) customer feedback; and
- d) long term monitoring.

Mine action programmes should include an appropriate, effective and efficient combination of product monitoring methods.

5.9.4 Physical inspection and sampling

Physical inspection and sampling are useful where identical products are produced from the same materials using the same process, and where inspection can reveal defects that can be traced back to the cause of nonconformity. Examples of mine action products that may be suitable for physical inspection and sampling include:

- a) prosthetics for mine victims;
- b) data/records; and
- c) FFE training aids.

Areas of released land do not all start in the same condition (some square metres contain contamination, some do not), and are not all subject to the same processes (some may be cancelled, some reduced and some cleared. Even different cleared areas may be subject to different processes). If a post clearance inspection finds no contamination in a sample it is not possible to determine if the land was correctly processed or if it was badly processed (or not processed at all), but had no contamination before the release process. Sampling and inspection of released land cannot be compared with sampling and inspection of items from a production line.

Limited, appropriately implemented, sampling of land can have value in support of confidence-building and contractual enforcement as it may lead to increased quality of work. Annex C provides additional guidance on the physical inspection and sampling of released land.

5.9.5 Product testing

Hardware products, such as detectors, locators and mechanical systems, when received into mine action programmes, should be subject to test. Any such test should be based upon clear criteria reflecting the intended use of the equipment and the specific circumstances and conditions associated with that intended use. Equipment operators should be included in testing as far as possible as their skills may affect the results of the testing. (IMAS 03.40 Test and Evaluation of Mine Action Equipment provides further guidance).

Testing should also be considered in relation to people (as products of training processes), through written and practical tests, examinations and other demonstrations of competence, and in accordance with IMAS 06.10 Management of training.

Animal detection systems should be subject to testing in accordance with applicable standards (IMAS 09.42 Operational testing of mine detection dogs and handlers).

The results of product testing, including performance and failure rates, should be analysed and included within monitoring systems.

The records of test results should be stored and made available as required for comparisons of performance over time and/or between different operators.

5.9.6 Customer feedback

NMAAs should ensure that monitoring systems include mechanisms for the identification of customers, including land users, recipients of information, managers of trained personnel,

users of prosthetic limbs and others as appropriate and relevant. Sensitive personal information should be held in a secure way, but as far as possible anonymised feedback data should be made available to interested parties.

NMAAs should ensure that mine action monitoring systems include reliable, publicised, easy to use mechanisms for encouraging and receiving customer feedback (such as telephone hotlines, surveys, feedback forms, etc.) in relation to all mine action products.

The results of customer feedback should be analysed and made available to authorities, managers and decision-makers.

NMAAs should establish KPIs in relation to customer feedback.

5.9.7 Long term monitoring

Long term monitoring is used to build up confidence in large volume products that are used over extended periods. This is particularly important in the case of released land. The main indicator of quality in released land is that it is used safely for long periods following handover.

Long term monitoring may be accomplished through:

- a) Analysis of data held in mine action information management systems;
- b) Analysis of data from information management systems external to the mine action programme (such as national health systems); and
- c) through pro-active surveys of locations and regions where product has previously been handed over to customers.

Long term monitoring systems should be developed to deliver confidence that any product nonconformity, however long after handover, will come to the attention of the monitoring body/authority.

NMAAs should ensure that absence of evidence of product nonconformity indicates an actual absence of nonconformity, rather than a failure of the long term monitoring system to identify nonconformity.

5.9.8 Frequency and level of product monitoring

The frequency of product monitoring, and the proportion of product that is monitored, depend on the type of product, the significance of the product and the likelihood of nonconformity. Factors that influence decisions about how often and how comprehensively to conduct product monitoring include:

- a) the level of confidence in the mine action organisation's own quality assurance (QA) systems and internal product monitoring (QC);
- b) the results of previous monitoring (including long term monitoring) of the product and of the mine action organisation;
- c) the need to maintain confidence amongst stakeholders/interested parties; and
- d) requirements set out in contracts and other agreements.

Annex C provides additional guidance on post-clearance sampling of land.

5.10 Nonconformity identification and response

5.10.1 Identification of nonconformity

Real or potential nonconformity in process or product performance, may be identified by operators, managers, visitors, customers and other people, as well as monitors. A key part of any QMS is that it responds to the identification of any real or potential nonconformity,

documents it, investigates it and, where necessary identifies, agrees and effectively implements corrective and preventive actions.

Nonconformities that are identified during monitoring, or by monitors, should where possible be addressed by the operating organisation concerned, using their own QMS. Monitors should agree corrective actions proposed by the operating organisation and take appropriate action to confirm the effective implementation of those actions.

Only when there are shortcomings in the operator's QMS, or where the seriousness of the nonconformity justifies it, should monitors be directly involved in identifying and implementing corrective actions.

As part of normal monitoring functions, monitors should seek evidence to confirm that mine action organisations have reliable internal systems in place to identify and respond to real and potential nonconformities, and that those systems are implemented and functional.

5.10.2 Types of nonconformity

Nonconformities should be categorised as:

- a) Real – a nonconformity that has already occurred; or
- b) Potential – one that has not yet occurred, but where there is a significant risk that it will.

Nonconformities should be further categorised in respect of the part of the management system to which they relate, including:

- Quality;
- Safety;
- Environmental; or
- Other categories as appropriate to the circumstances, structure, functions and objectives of the mine action organisation and needs of the NMAA and monitoring body.

5.10.3 Severity of nonconformity

The monitoring system should identify the severity of any nonconformity as:

- a) Major: a serious situation usually associated with serious problems including, but not limited to:
 - A major element of the QMS (or other system subject to monitoring) is not being implemented;
 - Something that affects everything or everyone in the operating organisation/element;
 - Significant problems may result if the nonconforming product is released to the customer/end user;
 - Problems occurring before release of product but with the knowledge of the customer/end user; or
 - Problems carrying a significant risk to an organisation, its people, or other interested parties.
- b) Minor: less serious situations including, but not limited to:
 - Isolated instances of not meeting requirements;
 - Incorrect or missing pieces of non-critical information; and
 - Problems where the consequences are limited to internal inefficiencies, but products and customers/end users are not affected.

Nonconformities should be categorised once the full extent of the problem is known. Additional information may come to light during analysis of the root cause of the nonconformity or through discussion with other personnel. Minor nonconformities may be upgraded to major ones in light of factors such as:

- a number of related incidents;
- related processes or products being affected; and
- root cause analysis identifying a greater problem.

5.10.4 Critical nonconformities

A critical non-conformity is a major nonconformity that additionally implies an immediate and significant safety, environmental and/or quality risk to any worker, visitor, customer, authority, member of the public, other stakeholders/interested parties or the environment/infrastructure.

Notes:

The discovery of a mine or ERW in land presented for inspection, or that has already been released, shall always constitute a critical non-conformity.

NMAAs, contracting authorities and agencies may choose to adopt additional definitions of critical nonconformity as appropriate and as stated in NMAS, contracts, accreditation agreements or other relevant documentation.

Authorities should empower monitors to stop operations at a worksite on any occasion when they have reason to believe that a critical non-conformity has occurred or is likely to occur.

5.10.5 Observations

Monitoring staff may also identify weaknesses in processes or products that do not constitute nonconformity, but which can be improved upon. Such circumstances may be categorised as observations and recorded within monitoring documentation.

Although an observation is not a nonconformity at the time of recording it may become one if appropriate preventive action is not subsequently taken. Monitoring at a later date should review the status of previous observations.

5.10.6 Responses to nonconformity

All identified nonconformities (including those identified during monitoring) should be documented within the QMS of the organisation subject to monitoring. Monitors should also include nonconformities identified during monitoring in monitoring records. Actions in response to nonconformity should include corrective action (to eliminate the cause of a detected nonconformity) and, when relevant, preventive action (to eliminate the cause of a potential nonconformity).

The mine action organisation's records should include:

- a) A description of the nonconformity;
- b) The aspect of the QMS (standard, requirement, SOP or other element of the management system) to which it relates;
- c) The date of the nonconformity;
- d) The category and severity of the nonconformity;
- e) Root cause analysis of the nonconformity;
- f) Agreed corrective actions (including action to prevent reoccurrence);
- g) Agreed preventive action (if appropriate);
- h) Who will have responsibility for taking the agreed actions;
- i) The date by which actions will be taken;
- j) How the implementation and effectiveness of actions will be checked; and

- k) Additional information as required to allow monitors, managers and authorities to identify trends over time and between organisations and elements in terms of their performance.

Where a critical or major nonconformity has occurred and someone has suffered harm a formal investigation may be required (in accordance with IMAS 10.60 Reporting and investigation of demining incidents).

There should always be follow-up after the identification of any nonconformity to confirm that appropriate action has been taken to correct the situation and prevent reoccurrence. Follow up may be through provision of documentary evidence to the monitoring body or site visits as appropriate.

5.10.7 Implications of nonconformity for accreditation

Depending on the results of monitoring, and the occurrence and severity of nonconformity within an organisation, monitors may recommend suspension or termination of an organisation's accreditation agreement. Any such action should be managed in accordance with the requirements of IMAS 07.30 Accreditation of Mine Action Organisations.

5.11 Review of the monitoring system

The performance of the monitoring system shall be subject to review at appropriate intervals and in light of the results of the monitoring body's own QMS.

5.12 Integrating monitoring and Results Based Management (RBM)

Quality management is particularly focused on the quality of products/outputs as part of making sure that work is done correctly. Mine action organisations must also be sure that the right work is chosen to have the required impact that will make a difference to affected people, societies and countries. QM must also focus on this second requirement of making sure that resources are directed to achieving stated strategic goals, not just to keeping people busy.

Long term monitoring is of direct relevance to RBM aspects addressing questions such as whether land has been used for the expected purpose and whether that land use leads to expected medium-term outcomes, and impacts such as increased health of a population. Monitoring systems should consider the use of RBM indicators related to the results of product use and longer-term impacts.

6 Monitoring body – general obligations

6.1 General

The NMAA shall establish a monitoring body. The monitoring body, however named, shall have a written description of its responsibilities, the methods to be used in the monitoring process, and the technical scope of its activities.

Any monitoring body appointed by the NMAA shall be adequately staffed, equipped and trained.

Where the monitoring body also acts as a national accreditation body and/or an inspection body, the relationship between its functions shall be clearly defined.

6.2 Independence, impartiality and integrity

The staff of the monitoring body shall, as far as possible, be free from operational, political, commercial, financial and other pressures that might affect their judgement. Policies and procedures shall be implemented to ensure that persons or organisations external to the monitoring body cannot influence the results of inspections, evaluations or monitoring.

The monitoring body and its staff shall not engage in any activities that may conflict with the independence of their activities. In particular they shall not become directly involved in organisations that carry out any mine action activities, or that design, manufacture, supply, install, use or maintain services or equipment for organisations operating in the mine action sector, or closely related fields. These restrictions also apply to close family members and business partners of the monitoring body staff.

All interested parties shall have access to the services of the monitoring body. The procedures under which the body operates shall be administered in a non-discriminatory and gender sensitive manner.

6.3 Confidentiality

The monitoring body shall ensure appropriate confidentiality of information obtained in the course of its activities. Proprietary rights shall be protected. The proceedings of the monitoring body shall not normally be released to anyone but the NMAA, except for informing individual mine action organisations or other interested parties needing access to the information, of the results of monitoring of their activities.

The monitoring body should make use of anonymised data when appropriate to encourage and allow wider dissemination of the results of monitoring.

6.4 Organisation

The monitoring body shall have an effective and efficient organisation.

The body shall have a technical manager, however named, who is qualified and experienced in monitoring of relevant mine action activities and who has overall responsibility for ensuring that the monitoring activities are carried out in accordance with NMAS, IMAS and other relevant standards. The technical manager should, if possible, be a permanent employee.

6.5 Management system

The monitoring body shall develop and maintain documented procedures. The monitoring body shall implement an internal QMS, preferably based on a recognised system such as ISO 9001. The management of the monitoring body shall designate a person who, irrespective of other duties, shall have defined authority and responsibility for all quality management within the monitoring body. For quality related issues, this person shall have direct access to the most senior executive of the NMAA.

The monitoring body shall ensure that its quality and other applicable policies are understood and its procedures are implemented and maintained at all levels in the organisation. Where its systems and procedures affect the conduct of the mine action programme, the working relationship between the body and the mine action organisation should be agreed, and form part of the contractual arrangements.

6.6 Personnel

The monitoring body shall have a sufficient number of competent personnel with the range and level of expertise required to carry out its normal functions. The monitoring body shall have access to technical expertise on all the activities that will be monitored.

6.7 Monitoring methods and procedures

The monitoring body shall establish and maintain written procedures for all monitoring activities.

6.8 Records and analysis

The monitoring body shall prepare and maintain records of all monitoring and inspections. All

records shall be safely stored for a period of at least five years, held secure and in confidence to the applicant, unless otherwise required by law. Where possible, long term monitoring of land use after land release shall continue beyond five years and arrangements should be made to hand this on to a suitable permanent body if the monitoring body ceases activities.

The monitoring body shall analyse the results of monitoring as required to provide valid, relevant, up to date reports, KPIs and information to users of monitoring information.

6.9 Appeals

The NMAA shall establish a fair and impartial system to enable mine action organisations to appeal against decisions of the monitoring body that it feels are unfair, or when new evidence comes to light. The appeals system shall include the use of independent arbitration.

7 Responsibilities

7.1 National Mine Action Authority (NMAA)

The NMAA, or organisation acting on its behalf, shall:

- a) establish a system for the monitoring of mine action organisations' compliance with accreditation agreements, standards, norms and other applicable legislation;
- b) specify the national standards and provide guidelines for the monitoring of mine action organisations;
- c) monitor the work of the monitoring body, ensure that the monitoring system is being applied in a fair, equitable and gender aware manner,
- d) ensure that monitoring does not unnecessarily interrupt or delay mine action projects; and
- e) ensure appropriate follow-up action is taken on the monitoring body's recommendations.

The NMAA, or organisation acting on its behalf, should:

- f) accredit and appoint a monitoring body; and
- g) conduct periodic external quality and financial audits on the monitoring body.

7.2 Monitoring body

The monitoring body shall:

- a) have accreditation from the NMAA to operate as a monitoring body;
- b) monitor mine action organisations, including sub-units;
- c) provide documentation on monitoring activities and inspections as required by the NMAA;
- d) establish and maintain an effective and documented quality management system for monitoring;
- e) analyse the results of monitoring to check that the requirements of users of monitoring information are satisfied.
- f) work with mine action organisations to educate and inform the mine action

organisation's staff, particularly task site managers (however named) about their responsibilities to cooperate with monitors, including, in the case of clearance operations, facilitating close-in monitoring.

- g) recruit appropriately qualified and experienced monitoring staff and ensure they are trained to conduct monitoring visits in a way that minimises disruption to the mine action activities being monitored, including where appropriate the requirement to comply with the mine action organisation's safety instructions;
- h) compile a list of monitors certified to conduct 'close-in' monitoring of specified hazardous activities, disseminate the list to relevant mine action organisations, and train the monitors in their duties in this regard;
- i) instruct monitors in their responsibilities and authority in the event of observing a critical non-conformity;

7.3 Mine action organisations

The organisation subject to monitoring shall:

- a) apply management practices, and quality management and operational procedures which lead to mine action activities that meet or exceed agreed, specified standards (usually NMAA or IMAS), and that also meet or exceed requirements specified in the contract, accreditation agreement, other relevant formal agreements and applicable rules and regulations;
- b) maintain, ensure the accuracy and validity, and make available documentation (including SOPs and other written procedures), reports, records, (including internal monitoring and quality reports), and other data on their activities to the monitoring body;
- c) provide the monitoring body with access to all sites, buildings and other facilities that need to be visited as part of the monitoring requirement;
- d) work with the monitoring body to educate and inform the mine action organisation's staff, particularly task site managers (however named), in their responsibilities to cooperate with monitors, including, in the case of hazardous activities, facilitating close-in monitoring.
- e) fully and promptly comply with instructions of monitors in the event of a critical non-conformity requiring an immediate cessation of work.

In the absence of a NMAA or similar authority, the mine action organisation should assume additional responsibilities, if requested by national or UN authorities acting on behalf of the host nation, and donor funding permits, to assume additional responsibilities. These include but are not restricted to:

- a) agree with the donor (or client, or customer) a system for monitoring the mine action activities; and
- b) assist the host nation, during the establishment of a NMAA, in framing national standards for monitoring.

7.4 Donors and other stakeholders

When a contract or other formal agreement has been written by a donor organisation or other customer, the donor/customer organisation shall be responsible for including a requirement in the said document that the implementing partner(s) will comply with the national monitoring requirements established by the NMAA or other appropriate international body acting on its behalf.

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. Members of ISO and IEC maintain registers of currently valid ISO or EN:

- i. IMAS 03.40 Test and Evaluation of Mine Action Equipment
- ii. IMAS 04.10 Glossary of mine action terms, definitions and abbreviations
- iii. IMAS 06.10 Management of training
- iv. IMAS 07.30 Accreditation of mine action organisations and operations;
- v. IMAS 09.10 Clearance requirements
- vi. IMAS 09.11 Battle Area Clearance (BAC)
- vii. IMAS 09.42 Operational testing of mine detection dogs and handlers
- viii. IMAS 10.20 S&OH - Demining worksite safety;
- ix. IMAS 10.30 S&OH - Personal protective equipment;
- x. IMAS 10.40 S&OH - Medical support to demining operations;
- xi. IMAS 10.50 S&OH - Storage, transportation and handling of explosives; and
- xii. IMAS 10.60 S&OH - Reporting and investigation of demining incidents.
- xiii. IMAS 10.70 S&OH – Protection of the environment

The latest version/edition of these references should be used. A copy of all references used in this standard can be found on the IMAS website (www.mineactionstandards.org). 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 (www.mineactionstandards.org). NMAA, employers and other interested bodies and organisations should obtain copies before starting mine action programmes.

Annex B

Planning and conducting site monitoring visits

B.1 General

Site visits are conducted to gather data/evidence about the performance of mine action organisations, to identify aspects requiring improvement and to establish and maintain confidence in the quality of mine action activities and products.

Monitoring through site visits, as it is understood in the context of mine action, exhibits close parallels with the principles of auditing of quality and environmental management systems, as detailed in ISO19011:2002.

Monitors should be competent to perform the monitoring function in accordance with the requirements of monitoring body (obligations) discussed in section 6. The monitoring process and monitor's activities are mapped in page B-2.

The key approach of a site visit is to focus not only on identifying if processes and products are in themselves correct, but on making sure that the mine action organisation has in place a functioning system to ensure quality. If a nonconformity is identified during a site visit, the key questions to be answered are how and why it is possible that the mine action organisation itself has not already identified and corrected the nonconformity before the inspection visit. Getting the system right is the focus. At the end of a site visit, it should be clear to all parties if changes are needed to the internal quality procedures to identify and correct the root causes of nonconformities.

B.2 Identifying sites

Site visits may be undertaken at any working location including:

- a) offices and administrative centres;
- b) land release work sites (NTS, TS and clearance);
- c) ammunition storage areas (ASAs), ammunition processing buildings (APBs), stockpile processing sites and facilities;
- d) medical facilities;
- e) risk education locations;
- f) locations where victim assistance activities take place;
- g) manufacturing and maintenance facilities;
- h) test and evaluation centres;
- i) training facilities; and
- j) anywhere else where activities relevant to the mine action programme are undertaken.

Monitors may be tasked with one-off visits to sites or to implement a programme of visits to a number of sites over an extended period.

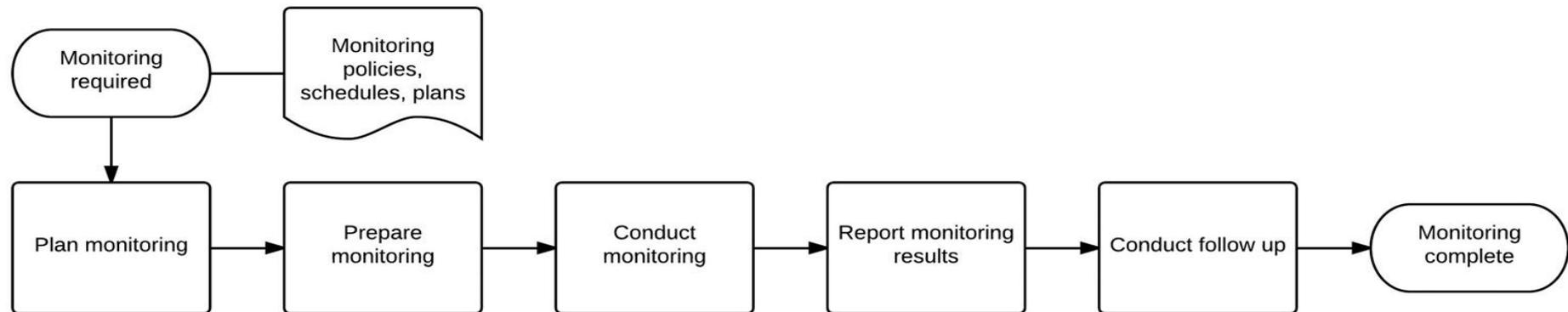
In every case monitors should ensure that each site is clearly identified and the activities that will be monitored at the site are specified.

B.3 Defining the purpose and scope of the visit

The scope and purpose of each site visit should be clearly defined in writing. Define the scope in terms of the standards, procedures, processes, regulations or other requirements against which compliance and performance will be checked.

The purpose may be to support the accreditation process, to observe day-to-day operational activity, in response to a previous nonconformity, to observe (and gain confidence in) the test and evaluation of equipment, check management practices or other aspects relevant to the performance of a mine action organisation.

Monitoring Process



Monitoring body:

- Schedules monitoring based upon:
- Importance of aspects to be monitored
- Results of previous monitoring
- Previous nonconformities
- Requirements of standards, SOPs, accreditation etc.

Monitor:

- Reviews requirements
- Reviews results of previous monitoring
- Reviews previous nonconformity reports
- Prepares checklists
- Establishes monitoring timings
- Liaises with mine action organisation (for announced visits)

Monitor:

- Manages opening meeting with site management
- Carries out monitoring iaw SOPs, check lists etc
- Collates monitoring findings
- Records and categorises nonconformities

Monitor:

- Presents findings to site management at closing meeting
- Agrees required corrective actions, timescales and responsibilities with site management
- Obtains signature of site management accepting nonconformities and agreed corrective action
- Copies monitoring report to monitoring body and mine action organisation

Monitor:

- On agreed completion date liaises with site management to ensure all agreed corrective actions effectively implemented
- If not, updates records with copy to monitoring body and mine action organisation and liaises with site management over further action

Monitoring Process

It is not necessary during a single site visit to attempt to monitor every aspect of an organisation and its activities, although there may be occasions when a monitoring body chooses to do so. Often it will be more appropriate to focus on a limited scope, but to investigate in more detail. On other occasions a wider scope may be appropriate, while accepting less opportunity to consider details and interactions of parts of the management system.

Monitoring should include an appropriate combination of visits, with a range of purposes, in order to maintain confidence, without imposing such a burden on the mine action organisation that its ability to deliver product is compromised.

B.4 Defining the type of visit

Site visits may be announced, and conducted at a time agreed with the organisations subject to monitoring, or they may be unannounced. Each type of visit has advantages and disadvantages.

Announced visits ensure that key personnel and supporting documentation are available to support responses to the monitor's questions. Monitors should not necessarily expect to observe day-to-day activities that are typical in every respect; the mine action organisation may choose to make an extra effort to impress.

Unannounced visits offer the monitor an opportunity to observe work as it is usually done, but it is possible that the absence of key people or records will limit the monitor's ability to seek evidence in support of questions and analysis.

The possibility of unannounced visits is likely to have a positive influence on the way in which an organisation goes about its daily business, but an excessive programme of unannounced visits can be counter-productive; both monitor and operating organisation can become complacent, falling into habitual routines.

Unannounced visits may not always be possible (especially to work sites with complex security protocols or access permissions, such as may be found at some medical facilities and large scale stockpile destruction sites).

Mine action monitoring should include a mix of announced and unannounced visits that is appropriate for the situation.

B.5 Planning the visit

Monitors should have a clear idea about what they will be looking for during the visit. The scope of the visit should identify those procedures, processes, standards or regulations against which compliance will be checked.

Monitors should be ready to assess not just how individual requirements are reflected, but also how the management system functions as a whole.

B.5.1 Reviewing requirements

Monitors should ensure that they are familiar with the most up to date versions of the standards, procedures, contracts or other requirements against which they will be checking compliance.

B.5.2 Identifying activities and associated risks

Monitors should confirm the scope of the visit and the range of activities, processes and products that they will be required to observe and check.

Monitoring Process

Monitors should identify any aspects of the visit scope where they are not competent, or authorised, to monitor and agree appropriate actions with the monitoring body. This may include:

- remove such activities from the scope of the visit; or
- making available additional personnel competent to monitor such activities.

Monitors should check that the risks associated with the activities and sites that will be monitored have been identified, assessed and appropriate and effective control measures agreed. Where there is need for authorisation for close in monitoring of hazardous activities, and/or derogation from normal safety distances, monitors should confirm that appropriate authorisations and derogations are in place.

B.5.3 Reviewing previous monitoring results

Monitors should review the results of previous site visits and other monitoring (such as up-to-date KPIs, Balanced Score Card results or other relevant information).

Planning for the site visit should reflect previous findings, and the performance of the mine action organisation. Monitors may need to focus particular efforts on aspects of the organisation's work that have previously been shown to exhibit weaknesses or nonconformities.

B.5.4 Using checklists

Checklists are a good discipline in monitoring and can provide objective evidence that the scope of the monitoring has been properly covered. Monitors should understand the content of the checklist and not use them simply as tick-box records.

A well-prepared checklist offers a number of advantages:

- a) It acts as a way for the monitor to remember that no important issues are left unattended. This can be an important matter at large and complex sites where there is a risk of distraction from a long list of tasks.
- b) A standard basic list can be (and should be) customised for different site visits. On some occasions, especially repeated and similar site visits, a standardised list can be used (although it is important to review it at intervals to avoid it becoming stale, out of date, or otherwise inadequate).
- c) It can be used to provide a format in which identification of more detailed evidence and information can be included.
- d) It provides evidence that the full scope of monitoring has been addressed.
- e) It encourages consistency of approach – this is important when a number of different monitors work in the programme, or when a number of different organisations may have their performance compared against each other.

There are also disadvantages/risks associated with checklists including:

- a) They can become tick lists with little or no research or investigation performed during the site visit;
- b) They are prepared (or are already standardised) before the site visit. The situation on the ground may require an amended response, when the checklist should be used as a framework rather than a fixed procedure. Monitoring must be tailored to local circumstances and conditions at the time of the visit; this may require adjustment or the setting aside of checklists on some occasions.
- c) Findings during site visits often lead to a need to follow a trail of evidence to understand root causes. Such trails are unpredictable, requiring an open-minded and flexible approach.

Monitoring Process

Irrespective of circumstances, monitors should never blindly follow checklists nor ignore important evidence relating to aspects of operations that may fall outside the immediate scope of the site visit.

B.5.5 Liaising with mine action organisations

For announced visits the monitor should liaise with the mine action organisation over timing, logistics and, where necessary, accommodation and feeding.

For unannounced visits the monitor should make sure that independent transport, accommodation and other logistic requirements are addressed and will not constrain the ability to conduct effective monitoring.

B.5.6 Preparing documentation

Prior to travelling to the site monitors should ensure that all required documentation (copies of procedures, standards, contracts and other requirements, as well as check lists, lists of items to remember, forms etc.) is available in sufficient quantity for the requirements of the site visit.

B.6 Conducting the visit

B.6.1 Roles and responsibilities of monitors

Monitors are required to:

- a) Comply with monitoring standards and procedures;
- b) Communicate and clarify monitoring requirements to organisations subject to monitoring;
- c) Plan and carry out assigned monitoring functions;
- d) Prepare monitoring documentation;
- e) Exercise objectivity;
- f) Act in an ethical manner;
- g) Cooperate with other monitors;
- h) Comply with the mine action organisation's site safety procedures;
- i) Collect and analyse evidence;
- j) Require the mine action organisation to stop work in the event that a real or potential critical non-conformity is identified by the monitor;
- k) Report critical nonconformities immediately;
- l) Document evidence in support of findings and conclusions;
- m) Remain within the defined scope of monitoring;
- n) Remain alert to any situation that may require further investigation;
- o) Report results clearly, conclusively and without delay;
- p) Verify the effectiveness of corrective actions previously agreed with mine action organisations;
- q) Ensure that documents relating to monitoring are retained and safely and securely stored; and
- r) Report any major obstacles to conduct of monitoring visits;

B.6.2 Opening meeting

All monitoring visits should start with a brief meeting between monitors and site management. The meeting should cover:

- a) Introduction of participants and their roles;
- b) Confirmation of the scope and purpose of the visit;
- c) Confirmation of the timetable and any planned interim meetings during the visit;
- d) Methods and procedures to be used during the visit;
- e) Information that the visit will represent a sample of information – if no problems are found during the visit that does not mean that there are no problems. Quality management remains the primary responsibility of the operating organisation;

Monitoring Process

- f) Checking that the documentation (such as SOPs) available to the monitors is the current version;
- g) Confirmation of channels of communication between the monitor(s) and the site management;
- h) Confirmation that site management will be kept informed of progress of the visit;
- i) Confirmation that any resources and facilities needed by the monitor(s) are available (such as guides, PPE, etc.);
- j) Confirmation of confidentiality aspects;
- k) Site safety briefing provided to the monitor(s);
- l) Confirmation of method of reporting and categorisation of nonconformities;
- m) Information about the appeal system.

The monitor should keep a record of attendance at the opening meeting.

On occasions when routine repeat visits are conducted by the same monitors at the same sites over a period of time, monitors may shorten the opening meeting to a minimum consisting of:

- Confirmation of the scope of the visit;
- Reminder that if no problems are found during the visit it does not mean that no problems exist;
- Checking that documentation is the current version; and
- Site safety briefing.

Note that a safety briefing, including fire and evacuation drills, is appropriate at all work sites, not just ones where land release operations are under way.

Guides provided to monitors should assist the monitor(s). They should ensure that monitor(s) understand and respect site safety procedures. Guides should not interfere with the monitoring process, nor should they answer questions on behalf of individuals being interviewed by the monitor(s).

B.6.3 Gathering information

Monitors should look, listen and ask questions during the site visit. Questions should be 'open' questions whenever possible. Closed (yes/no) questions should be kept to a minimum.

- Look: observe activities, assess competence and conformity to procedures, make notes and avoid jumping to conclusions on the basis of subjective impressions.
- Listen: pay attention, assess responses and ask further questions in light of those responses.
- Question: ask open questions – how, what, why, when, who etc., include 'what if' scenarios, compare answers from different respondents to the same question.

Every aspect of the scope of monitoring should be addressed. Monitoring should reach a clear conclusion in respect of each aspect - is it OK, is there a nonconformity (major, minor or critical), or an observation?

Conclusions should be supported by objective evidence. Evidence should be identified and clearly recorded.

A monitor should be certain of nonconformity before reporting it as such. If in doubt the situation may be identified as an observation to encourage follow up.

During the site visit monitors should focus on those aspects specific to the scope of the visit, but should also remain aware of wider aspects of management systems and the performance of the organisation.

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Aspects upon which information may be gathered (during one or a series of site visits) include:

- Management practices and systems;
- Supporting processes (logistics, human resources, finance and administration);
- Health, safety and the environment;
- Marking and warning systems;
- Equipment (procurement, testing & evaluation, use, maintenance and repair);
- Operational activity:
 - Land release (non-technical survey, technical survey and clearance);
 - Risk education and community liaison;
 - Victim assistance;
 - Stockpile destruction;
 - EOD;
- Competence and training and awareness of personnel;
- The mine action organisation's own quality, safety and environmental management systems;
- Documentation (SOPs, policies, standards, regulations, contracts etc.);
- Records.

Inspection of product (QC) through sampling or other forms of inspection may be included in a site visit. Annex C to this standard provides additional guidance on the use of sampling techniques.

B.6.4 Monitoring hazardous activities

Mine action monitors may need to observe a range of hazardous activities at close range including:

- Mine/ERW survey, search and clearance drills;
- Transfer and handling of explosive items, such as bombs during stockpile destruction;
- Operation of mechanical demining systems;
- Use of power-operated machinery in workshops;

In every case authorities should identify and authorise monitors to engage in such monitoring, ensure that they have received suitable training for the function and provide mine action organisations with an up-to-date list of authorised monitors.

Many NMAA and mine action organisations state that visitors are not allowed within a specified distance of a deminer who is working, and that if the visitor moves closer then the deminer must stop work. In the case of on-site monitoring of demining/technical survey this restriction may be lifted if:

- (a) a suitably qualified and authorised monitor wearing appropriate PPE (as per IMAS 10.30 S&OH – Personal Protective Equipment) and having received the site safety brief requests derogation; and
- (b) the mine action organisation's task site manager (however named) agrees that the close approach can be undertaken in a non-disruptive manner.

This derogation permits close-up monitoring of individual deminers where compliance with SOPs cannot be confirmed remotely. Any such close-in monitoring shall be done only when necessary and shall expose the minimum number of people to the hazard for as short a time as possible,

Similar derogations may be required in relation to other potentially hazardous activities. They should be subject to a similar system of request and agreement.

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B.6.5 Monitoring hazardous and controlled materials

Mine action operations include a requirement to handle, store and transport hazardous and controlled materials including various categories of explosive, controlled drugs, fuels, lubricants, hydraulic oil, gas under pressure and other substances that could be harmful to human health.

Monitors should check that mine action organisations have identified any such materials and substances and have appropriate procedures and controls in place.

IMAS 10.50 provides guidance on the safe storage, transportation and handling of explosives. Note that other national and international regulations may be applicable.

B.6.6 Monitoring occupational health and safety aspects

IMAS 10.20 sets out minimum standards for demining worksite safety. If the activities being monitored include a requirement for medical support, the monitoring programme shall include the medical support available on site. Medical support and procedures shall be specified in the standard operating procedures, or a separate worksite safety document, included in the accreditation agreement.

Appropriate levels of medical support, training and equipment should be provided for all mine action activities. This includes staff working in the field and also office staff. Training and emergency medical kits should be appropriate to the risks and the availability of medical support.

Where appropriate procedures for treatment and casualty evacuation should be monitored. IMAS 10.40 provides guidance on the minimum requirements for medical support to demining operations.

For other mine action activities monitors should check the mine action organisation's own risk management and safety documentation for evidence that risks have been identified, analysed, evaluated and that suitable procedures/controls are in place.

B.6.7 Monitoring environmental aspects

Many mine action processes have the potential for adverse environmental impact (manual and mechanical demining, demolition, waste disposal etc.). Monitors should check that appropriate environmental management plans are in place in accordance with IMAS 10.70 Protection of the environment.

B.6.8 Investigation of incidents

For serious incidents that have harmed, or have the potential to harm people formal investigation may be required. Any such investigation should be conducted in accordance with the requirements of IMAS 10.60 Reporting and investigation of demining incidents.

Less serious incidents, or near misses, may be investigated, and appropriate corrective and preventive action be undertaken, using normal nonconformity procedures and principles.

B.6.9 Collating findings

Monitors are responsible for collating their findings and ensuring that any evidence supporting their conclusions is referenced or attached to relevant forms and records.

B.6.10 Recording, categorising and managing nonconformities

All nonconformities should be recorded, categorised and managed in accordance with section 6.9 of IMAS 07.40. Nonconformities should be recorded by:

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- a) Severity (critical, major or minor)
- b) Description (which SOP, standard or other requirement the nonconformity relates to)
- c) Aspect (quality, safety, environmental etc.);

Lesser issues may be categorised as 'observations'.

For each nonconformity the monitor should agree with the appropriate site management representative:

- The date of the nonconformity;
- The category and severity of the nonconformity;
- Root cause analysis of the nonconformity;
- Agreed corrective actions (including action to prevent reoccurrence);
- Agreed preventive action (if appropriate);
- Who will have responsibility for taking agreed actions;
- The date by which actions will be taken; and
- How the implementation and effectiveness of actions will be checked;

Nonconformities should be categorised once the full extent of the problem is known. Additional information may come to light during analysis of the root cause of the nonconformity or through discussion with other personnel. Minor nonconformities may be upgraded to major ones (and major may become minor) in light of factors such as:

- a number of related incidents;
- related processes or products being affected; and
- root cause analysis identifying a greater problem.

B.6.11 Root cause analysis

Gaining an understanding of why a real or potential nonconformity has arisen is fundamental to the successful management of quality in a mine action organisation. Monitors should ensure that the root causes of nonconformity are identified and understood in order to agree on appropriate corrective action.

'Failure to follow procedures' for instance is unlikely to represent a root cause of nonconformity. Instead questions of training, supervision, organisational culture, leadership and direction, may all be relevant. Further questions about the suitability of the procedure in question, the equipment in use, prevailing circumstances and conditions should all be considered when identifying the root cause (or causes).

The four types of error identified for industrial health and safety purposes may be useful in root cause analysis:

- **Slips** are unintended or unplanned actions, e.g., pressing the wrong button on a piece of equipment by mistake. It is usually a one off error that occurs unintentionally.
- **Lapses** are missed actions or omissions when somebody has failed to do something due to short term lapse of memory or lack of attention.
- **Mistakes** are when somebody does something believing it to be correct when it is in fact wrong. Typical causes are an error in training or an error in assessing the situation.
- **Violations** sometimes appear to be human errors but are different from slips, lapses and mistakes because they are deliberate, illegal actions. A violation is when somebody does something intentionally despite knowing it is against the rules, e.g., deliberately failing to follow proper procedures to save time or effort.

B.6.12 Authority to stop work

Monitors should be authorised by the monitoring body, and where appropriate by higher authorities, to require a mine action organisation to stop work in the event that a critical

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nonconformity has occurred, or where there is reason to believe that there is potential for one to occur.

Monitors should immediately bring the situation to the attention of the site management.

B.7 Reporting

Reporting of the results of site visits is an essential input into a monitoring system. Visit reports and records should be:

- in the correct format;
- complete;
- legible;
- accurate;
- consistent with agreed terminology, units of measurement and symbols;
- accompanied by supporting evidence/references where appropriate; and
- submitted without delay.

B.7.1 Closing meeting

Prior to leaving the site the monitor should conduct a closing meeting to ensure that the findings and conclusions of the visit are understood by the site management and any follow up action is agreed. The closing meeting is an opportunity to identify any disagreements between monitor and mine action organisation and to seek to resolve them.

The closing meeting should cover:

- Thanks to the site management for their cooperation;
- A reminder that not finding a problem does not mean that no problem exists – it remains the responsibility of the mine action organisation to manage the quality of its own work;
- Identification of any nonconformities found and agreed corrective actions;
- Confirmation that findings will remain confidential between the monitoring body and the mine action organisation;
- Agreement of any follow up actions; and
- Answers to any other questions arising from the site visit.

B.7.2 Distribution of reports

Site visit reports should be signed and dated by the monitor. Review or agreement by managers within the monitoring body should also be recorded by date and signature.

Site visit reports and records should be submitted to the monitoring body and other recipients as required by monitoring procedures and as agreed with the mine action organisations.

The results of monitoring should be analysed in relation to KPIs, Balanced Score Card systems (if used) and other tools to allow understanding of performance levels, trends and comparisons between organisations, elements and over time.

Records, reports and other supporting documentation should be retained (or disposed of) in accordance with monitoring SOPs.

B.8 Follow up

The mine action organisation is responsible for implementing any corrective action. Actions should be implemented within an agreed time period.

B.8.1 Liaison with mine action organisation management

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The mine action organisation should inform the monitor when agreed action has been implemented. In the event that the mine action organisation has not contacted the monitor within the agreed time, the monitor should contact the mine action organisation for an explanation and revised action plan.

Implementation may be confirmed through:

- review of documentation/records submitted by the mine action organisation;
- a follow up visit specifically to confirm effective implementation; or
- checking during the next planned site visit.

B.8.2 Further action

In the event that the mine action organisation fails to implement agreed action, or the action is not shown to be effective, the monitor should agree further appropriate action. In serious instances of failure to correct nonconformities, the monitor may need to take the situation within the monitoring body and further action may be appropriate. Persistent failure to take further action may eventually lead to a review of the mine action organisation's accreditation.

B.9 Managing regular site visits

Programmes of frequent repeated site visits offer opportunities to streamline the site visit process. Opening and closing meetings should still be conducted, but they may be reduced to cover only those aspects specific to the visit.

At the same time, monitors should not lose sight of the need to remain alert, objective and perceptive. Just because something is the same as on previous visits does not necessarily mean that it is correct.

Where check lists and standard approaches to observing, investigating and checking activity are involved, monitors should be particularly wary of falling into repeated habits. It is advisable to change the scope from one visit to another, focusing in detail on different aspects of activity, as well as looking at the overall system on occasions.

Where the same individual monitors are responsible for repeated visits to the same sites, the monitoring body should look for opportunities to rotate staff.

B.10 Monitoring of certified organisations

Mine action organisations that are certified against the requirements of recognised quality, safety or environmental management systems (such as ISO 9001, ISO 14001 and OHSAS 18001) will be subject to independent external audit annually as well as required to implement a programme of internal audits.

Under such circumstances, monitoring bodies may want to include the formal management system audits, conducted by ISO qualified auditors, as part of their programme of monitoring through site visits.

Options for doing so can be investigated through national quality authorities (detailed in the ISO website www.iso.org) and accredited bodies in each country.

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Annex C
Guidance on post-clearance sampling

C.1 Background

Post clearance inspection and sampling has been a topic of discussion and uncertainty within the mine action sector for a number of years. The inspection regime set out in IMAS 09.20 has been used inconsistently and intermittently in mine action programmes and its validity has been called into question.

C.2 Previous standards for sampling

The original standard for inspection of cleared land (IMAS 09.20) was developed to satisfy a specific set of requirements relating to questions of importance to the mine action industry when the IMAS series was originally developed. IMAS 09.20 drew on principles used in a range of manufacturing industries (and ISO 2859) in an attempt to establish a methodology that would deliver a specified level of confidence in the results of clearance. It has become increasingly clear that it does not do so for a number of reasons.

- Most importantly, clearance of land exhibits fundamentally different characteristics in terms of its production process compared with a typical manufacturing process. When making a product on a production line the various inputs (components, raw materials, etc.) all start in the same condition, they undergo the same sequence of events, and should deliver the same product at the end.

Clearance is different. The main input to the process is land that may be contaminated, but not every element of that land starts off the same; some individual square metres contain mines or UXO: many do not. Contaminated square metres typically constitute a very small percentage of the site area. Although, all square metres that are technically investigated undergo a similar process (detector check, excavation, etc.), the picture is further complicated by the application of land release processes such as reduction through technical survey.

Although all square metres of released land should exhibit the same product characteristics (they should contain no specified hazard items down to a specified depth), they did not all start in the same condition, and they may not have undergone the same technical process. For these reasons an industrial manufacturing style inspection regime cannot deliver a clear statistical confidence level when applied to the clearance process (or other processes within land release).

- The rectification of nonconforming items in a production environment is entirely different from a demining environment. In a factory, a few items that fail to reach the quality standard will often be acceptable in return for cheaper or faster production. If an item from the factory is below standard then it will be removed from the production and individually either thrown away or put right. The nonconforming item can be easily removed from overall production and dealt with separately without affecting any other item. There is no equivalent in demining; a square metre of land that has not been cleared properly cannot be removed by simply throwing it away, nor can that single square metre be re-cleared in isolation from the rest of the site.
- Post clearance sampling is unable to distinguish between:
 - a. Land that has been properly cleared;
 - b. Land that has been inadequately cleared but where there was no initial contamination (potentially a critical nonconformity);
 - c. Land that has been declared cleared without any demining actually taking place (potentially a critical nonconformity) but where there was no initial contamination.

Quality management depends on being able to distinguish a conforming process from a nonconforming process.

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- Post clearance sampling is unable to identify the cause of missed contamination. Was an item missed due to inadequate training, inadequate supervision, inadequate equipment, or some other cause? A full investigation may be able to recover some of this information, but post clearance inspection long after the site is finished may lead to this information being lost. Without this information no action can be taken to prevent a repetition of the incident.

C.3 Studies into post clearance sampling

The GICHD conducted a study into post clearance sampling of cleared land in 2012. Its main conclusions included:

- that the approach to post-clearance sampling in mine action should be reviewed;
- that mine action organisations should focus on quality assurance (pro-active management action to increase confidence that quality requirements **will** be met) rather than quality control (checking that product quality requirements **have** been met);
- that the application of post-clearance sampling along the lines of IMAS 09.20 imposed high costs for a negligible increase in (statistical) confidence – the typical extra cost of inspection to find one missed mine was over a million US dollars;
- that there should be more focus on quality management of the survey process (and land release as a whole) than just on clearance; and
- that external QC should remain an option in mine action programmes.

C.4 Actions within the IMAS system

Post-clearance inspection is defined as the process of measuring, examining, testing or otherwise comparing a sample of cleared land with the clearance requirements. IMAS makes it clear that it may not be necessary to carry out post clearance inspections (QC) if thorough and comprehensive accreditation and Quality Assurance (QA) monitoring is carried out.

In light of the study and discussions within the mine action industry the following actions have been taken or are in process:

- IMAS 09.20 is withdrawn. Guidance on sampling and post clearance inspection is now addressed within IMAS 07.40, which covers all monitoring of mine action processes, products and results.
- The relationship between QA and QC and their roles within an overall QMS are clarified.
- The definition of product is widened to encompass all products arising from mine action activities and processes.

C.5 Implications for mine action programmes

The IMAS system does not require that post clearance inspection should be mandatory. Instead it is recommended that post clearance inspection be retained as an option in mine action programmes and that, when it is applied, it is used proportionately, appropriately and for clear purposes.

Although sampling in accordance with IMAS 09.20 does not yield a high enough, and statistically valid, level of confidence in the quality of cleared land to satisfy its original purpose, post clearance QC inspection continues to be useful as an option in mine action programmes. The inspection regime proposed in IMAS 09.20 was based on permitting a background error rate of 0.35% and one error in every sample. Permitting any missed mines makes the inspection nonconforming with IMAS 09.10.

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C.5.1 Perceptions of confidence

While valid statistical confidence levels are desirable they are not economically feasible in demining. The investment required would be better spent on clearing more land and avoiding accidents caused by long delays to clearing land that is needed. Mine action succeeds in releasing land when land users, and other interested parties, perceive the processed land to be safe. The level of their confidence is often driven by subjective influences, rather than the objectivity of mathematical functions.

The inclusion of post clearance inspection and sampling, even at a very low level, can have a significant effect on the extent to which interested parties perceive the product to meet requirements.

A lack of confidence amongst land users may result in released land being left unused: a fundamental failure of the land release process, representing wasted cost and time, as well as the exposure of clearance staff to danger. Application of even limited post clearance inspection (at low cost) can be enough to avoid such a situation.

Mine action authorities and monitoring bodies should remain alert to any risk of rejection of land by intended beneficiaries and consider using post clearance inspection as one tool (alongside public communication, transparency and other techniques) to maintain public confidence in the quality and safety of released land.

C.5.2 Contractual compliance

Monitoring systems are not designed to be coercive mechanisms to force mine action organisations to comply with standards. Circumstances where such situations arise are ones that exhibit a fundamental failure of accreditation and QA aspects of the overall quality management system (QMS). Nevertheless, it is human nature to respond to the knowledge that product will be checked by adapting their approach to work.

Sampling of outputs, even at a very low percentage level, has been shown to consistently improve the quality of work in repetitive tasks and reduce the number of non-conformities. If the standard of work is already more than good enough post clearance inspection may yield little improvement and not be cost effective.

A clear distinction should be drawn between in-progress and post-clearance external inspections. In-progress inspections are carried out while the mine action organisation has responsibility for the work site, and while land release processes are still under way. Post clearance inspection is carried out after the mine action organisation has declared an area (which may be part of a larger site) as 'complete'.

Discovery of product nonconformity is a serious matter in both instances, but post clearance nonconformity indicates a more comprehensive and serious failure of the mine action organisation's own QC and QA processes.

Both in-progress and post clearance external QC inspections should influence management attitudes. Any failure (such as a critical nonconformity) discovered during external QC could have significant financial and reputational consequences for an organisation that may be required to re-clear areas of land, or that may find its accreditation status compromised.

Sampling for the purpose of encouraging effective management within mine action organisations relies upon awareness that:

- any part of a cleared area may be sampled;
- the only acceptable standard for clearance is that defined in IMAS, NMAS, accreditation agreements, task orders or other authorised documentation;
- failure to meet requirements in cleared land constitutes a major and/or critical nonconformity;

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- any such nonconformity will be subject to root cause analysis and the implementation of agreed corrective action which may include a requirement to re-clear land at the mine action organisation's own cost; and
- repeated major/critical nonconformities in respect of cleared land may lead to the suspension or termination of a mine action organisation's accreditation.

External QC should not be carried out as a hostile or aggressive act. Inspection is a means of collecting data to maintain confidence in the performance of the mine action organisation and to encourage consistent and competent management of operations. At the same time, the consequences of finding clear evidence of negligence or dishonesty during the root cause analysis should be severe. The purpose of sampling is not to seek out such behaviour specifically, but rather to contribute to the overall effectiveness of the mine action organisation's performance and the confidence of authorities and other interested parties in that performance.

C.6 Implementation of post clearance inspection

Before implementing post-clearance inspection, authorities, contracting agencies and other relevant decision-makers should:

- conduct a review of all information gained during any and all NTS, TS and clearance at the site;
- consider whether post-clearance inspection is appropriate/required at the site;
- if post clearance inspection is intended, determine the extent of the area subject to inspection based on the results of the review; and
- limit inspection to a proportion of the area within which direct evidence of contamination was found as well as any associated and defined buffer/fade out zones.

Areas where NTS, TS and clearance have provided no evidence of contamination should not generally be subject to post-clearance inspection.

Post clearance inspection should not be used on its own to help form an opinion on the overall validity of the land release decision making process. Any doubts about the extent to which NTS, TS or clearance processes, and the decisions associated with the application of those processes, satisfied requirements should be addressed through appropriate quality assurance and continual improvement actions.

C.6.1 Inspection lots

The mine action organisation should declare the extent of the area that will be inspected. This is often known as a 'lot'.

The QC monitor should plan sampling in accordance with agreed requirements. Sampling should generally be 'targeted' on those areas that have been subject to technical investigation or clearance. Within the target area sampling must be unpredictable. Depending on the circumstances sampling may focus on a part of the lot where problems might be expected, or it may choose an area apparently at random to reinforce the message that any person in the mine action organisation could find their work being checked.

Inspection should take place within a time acceptable to the monitoring body and mine action organisation. The key purpose of post clearance inspection is to reinforce good work habits so it may be useful to undertake inspection of the first part of a site that is ready in full view of the mine action organisation staff to reinforce the message that poor quality work may be discovered by inspection. Excessive delays between completion of clearance and conduct of sampling leave the mine action organisation uncertain about the status of the land, delay release to end users and may give rise to challenges from the mine action organisation in the event that evidence of nonconformity is discovered.

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C.6.2 Definition of critical nonconformity

IMAS 09.10 provides guidance on clearance requirements and IMAS 09.11 on Battle Area Clearance (BAC).

Minimum targets and critical nonconformities should be defined in standards, contracts, accreditation agreements, task orders, SOPs or other agreed and authorised documentation as appropriate.

Monitors should ensure that the mine action organisation's site management understands and accepts any critical nonconformity definition before sampling begins (see Annex B to this standard, section B.6.2 Opening meeting).

C.6.3 Equipment and methods

All sampling should be conducted using equipment and methods capable of indicating the presence of any object (or combination of objects) defined as the minimum clearance target, down to the specified clearance depth. Detection capability tests should be performed on all detection equipment before and after sampling to confirm its suitability for the task.

The proportion of land subject to sampling should be kept to the minimum appropriate to the purpose of the sampling and local circumstances and conditions. A default level of 1% of land that has been subject to technical investigation may be appropriate in many circumstances, only increasing where there is a need to do so to address public/end user confidence or where it is being used as a tool to encourage better general compliance from a mine action organisation.

Sampling/inspection should be conducted on an unpredictable basis across all areas that have been subject to technical investigation. Inspectors may choose to focus their efforts on one part of a site but should not leave all other areas entirely unsampled.

C.6.4 Sampling assets

Sampling may be carried out by the monitoring body's own assets, or by assets of the mine action organisation, working under the supervision and direction of the monitor. Where assets of the mine action organisation are used, they should not be the same assets that conducted the original clearance. Monitors should comply with the mine action organisation's relevant safety and operational SOPs.

C.6.5 Responding to nonconformity

The discovery of evidence of critical product nonconformity is a serious matter. The location and nature of the evidence should be clearly documented, its precise position in the cleared area be recorded, as well as maps and photographs, should be used to support the monitor's conclusions about the nonconformity.

The site file, monitoring records and mine action organisation's own records should include details about the nonconformity and the response to it.

The monitor should consider whether the nature and implications of the nonconformity call into question the immediate safety of continuing with sampling of other parts of the cleared area. If there is any doubt about the status of other land declared as clear, sampling operations should stop, the monitor and sampling assets should exit the area safely and root cause analysis of the nonconformity should be conducted.

Monitors may encounter other evidence of minor nonconformity or observations relating to mine action processes while undertaking sampling. Any such evidence should be managed using normal response procedures as set out in IMAS 07.40.

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C.6.6 Corrective action

In all cases when there is evidence to indicate product nonconformity a thorough root cause analysis should be conducted. Depending upon the level of traceability in the mine action organisation's records it may be possible to narrow down the cause to an individual asset or tool, limiting the extent of any corrective re-clearance. In the absence of detailed information the extent of corrective action may be widened and may include the entire 'lot'.

The QC monitor should agree corrective action, including action to prevent reoccurrence, with the mine action organisation. Corrective action will include re-clearance of some, and possibly all, of the declared lot, depending on the results of the root cause analysis. Any disagreement between monitor and mine action organisations should be managed in accordance with IMAS 07.40, including taking the case to a higher authority if necessary.

Who will pay the costs of corrective action should be clearly defined in accreditation agreements, contracts, standards or other appropriate documents.

C.6.7 Re-inspection

The mine action organisation should re-present the lot for inspection once the agreed corrective actions, including action to prevent reoccurrence, have been implemented. In addition to re-inspecting the lot, any changes in processes or procedures to prevent re-occurrence should be verified.

C.6.8 Records of inspections and results

All sampling actions, including results, should be recorded in the site file, monitoring records and elsewhere as directed by the NMAA. Maps and photographs as well as written records should be used to provide a full and clear statement of what sampling action was undertaken, what was found (if anything) and what follow up actions were implemented.

C.7 Other means of maintaining confidence in released land

Post clearance inspection of cleared land has significant limitations as a quality control tool. There are other options for monitoring the performance of released land (cancelled and reduced, as well as cleared). The most appropriate of these is long term monitoring of what happened to the land after release.

Evidence of missed items or accidents in released areas should be investigated as potential critical nonconformities by the monitoring body, or other body authorised by the NMAA. Evidence to suggest nonconformity within a released area should be subject to root cause analysis and the identification of corrective and preventive action as appropriate.

Where reliable systems are in place, and there is confidence that any adverse event in a released area would come to the attention of the monitoring body or other authorities, then the continued absence of such evidence contributes to an on-going and growing body of data supporting confidence in the performance of mine action organisations, processes and products.

