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General mine action assessment

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Foreword

International standards for humanitarian mine clearance programmes were first proposed by working groups at an international technical conference in Denmark, in July 1996. Criteria were prescribed for all aspects of mine clearance, 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).

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

Planning for mine action requires accurate and timely information on the form, scale and impact of the threat posed by mines, UXO and other explosive hazards. Such information will come from local information, surveys and assessment missions and ongoing local mine action projects and tasks.

For new programmes, the planning process should ideally start with a formal country-wide assessment of the country situation. This assessment will draw heavily on existing information provided by agencies and organisations familiar with the mine-affected country or region. If requested a UN multi-disciplinary assessment team will deploy to the country to validate and update existing information, and to determine at first hand the scale and impact of the landmine situation. The country assessment should determine whether a UN-supported national mine action programme is required, whether such a programme is possible, or what other action is required. It may also define the scope of additional information gathering requirements.

Should a decision be taken to develop a national mine action programme, it will be necessary to conduct a comprehensive assessment of the mine-affected country. Existing programmes should also begin the General Mine Action Assessment (GMAA) process as early as possible. The aim of the GMAA is:

- a) to assess the scale and impact of the landmine problem on the country and individual communities;
- b) to investigate all reported and/or suspected areas of mine or UXO contamination, quantities and types of explosive hazards; and
- c) to collect general information such as the security situation, terrain, soil characteristics, climate, routes, infrastructure and local support facilities, to assist the planning of future mine action projects.

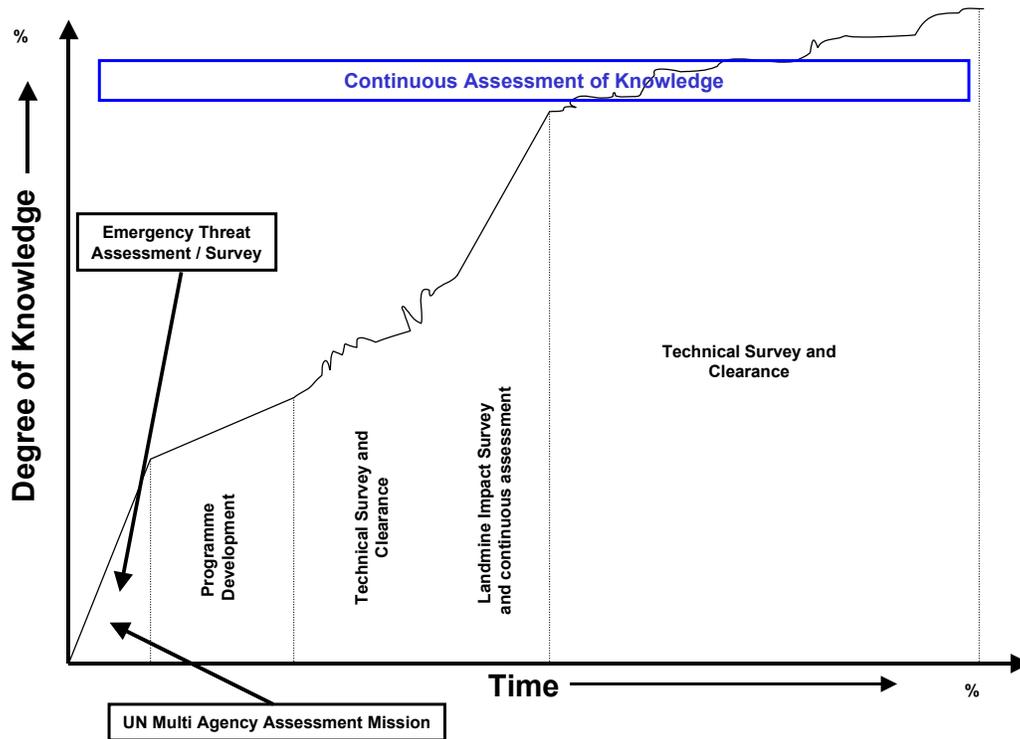
The GMAA process gathers information on national capabilities and potential to address the problem, and the need for external assistance including financial, human skills, material and information. The information collected should be sufficient to enable priorities to be established or updated and plans to be developed. It is a continuous process.

The previous 'mine clearance standards' implied a sequential Level 1, Level 2 and Level 3 process; this was not always achieved or practiced; a GMAA is more complex than that. More often the processes of a GMAA require the use of complementary skills and procedures.

Impact Survey, Technical Survey, and post clearance completion activities are still functional areas of the overall GMAA; they are covered as separate IMAS or TNMA for ease of use and simplicity during technical operations.

For the purposes of this IMAS an 'assessment' defines a 'continually refined process of information gathering and evaluation', whereas a 'survey' is a distinct operational task capable of being contracted.

The following diagrammatic is a possible illustration of the functional flow during a GMAA in a mine affected country:



General mine action assessment

1. Scope

This standard establishes principles and provides guidance on the requirements of the GMAA process, and details responsibilities and obligations.

2. References

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

3. Terms, definitions and abbreviations

A list of terms, definitions and abbreviations used in this standard is given in Annex B. A complete glossary of all 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 ISO standards and guidelines:

- a) 'shall' is used to indicate requirements, methods or specifications which are to be applied in order to conform to the standard.
- b) 'should' is used to indicate the preferred requirements, methods or specifications.
- c) 'may' is used to indicate a possible method or course of action.

The term 'National Mine Action Authority (NMAA)' refers to the government department(s), organisation(s) or institution(s) in each mine-affected country charged with the regulation, management and co-ordination of mine action. In most cases the national Mine Action Centre (MAC) or its equivalent will act as, or on behalf of, the 'NMAA'. In certain situations and at certain times it may be necessary and appropriate for the UN, or some other recognised international body, to assume some or all of the responsibilities, and fulfil some or all of the functions, of a NMAA.

4. General Mine Action Assessment (GMAA) – purpose and scope

The purpose of a GMAA is to continually gather, evaluate, analyse and make available sufficient information to assist and update the strategic planning of a national mine action programme. It should provide a source of continually updated data on the nature and extent of the hazards and hazardous areas, the impact of such hazards at community and country level, and other important planning information such as local soil characteristics, vegetation and climate, and safe access routes and local facilities such as water and medical support. The GMAA should also provide an inventory of national capabilities and potential to implement national mine action projects, and to support the work of external organisations and agencies.

The scope and extent of the GMAA depends on many factors, including the availability of (and access to) existing information, the local security situation, and the human and financial resources available. Its scope and thoroughness will also depend on the urgency and need for planning information. The process of gathering information carried out in the early stages of an emergency programme will be quite different in form and detail to those conducted as part of a more stable developmental mine action programme.

5. General principles

Although GMAAs will vary significantly in terms of scope, complexity and duration, five general principles apply:

- a) the GMAA forms part of a national mine action programme, or in some cases, (on a limited scale) elements of it may, precede a national mine action programme. It should therefore be controlled by the NMAA, or by an agency or organisation acting on behalf of the NMAA. The NMAA should normally be custodian of the data, reports and related products such as maps;
- b) the GMAA is not merely a 'snap-shot' of the situation on a particular date. It is a continuous process which aims to collect and to refine relevant information. As such, a GMAA should use systems and methods which are robust and sustainable;
- c) the NMAA, government departments, UN agencies, NGOs, commercial demining contractors and other organisations operating within a mine-affected country should cooperate by providing access to information, and where necessary, by giving practical support to the GMAA process;
- d) whenever possible, information collected during the GMAA process should not be restricted or sensitive. The use of unclassified material will assist and encourage the wide distribution of survey reports, maps, data and assessments. But there will be occasions when information is provided with national security implications, and with restrictions on its further distribution. Such information may be provided by national authorities who perceive the information to have some military security value, or by members of former warring factions or others who wish to remain anonymous. The use of such information, and its exploitation, should be considered by NMAAs on a case-by-case basis. Where information collected is not sensitive or restricted it shall be made widely available to all stakeholders; and
- e) throughout the GMAA process, major principles of mine action, such as capacity building and information sharing should always remain a major priority.

6. GMAA – the process

6.1. Planning and preparation

Careful planning and preparation is essential in order to ensure that the GMAA objectives can be achieved with the resources available and in a timely manner. All possible sources of information should be considered. Survey or assessment teams will provide the principal sources of information.

Local information gathering teams may not exist and will need to be established, trained, equipped and briefed. Valuable information may also be obtained from 'technical' sources such as satellite images, aerial photographs, military dossiers and hospital records. Special arrangements should be established and procedures should be developed, including the use of liaison officers to improve access to such information and data collection techniques and methodologies for collection.

The relationship between the three categories of information (the mine/UXO threat, its impact and general planning data) should be addressed fully during the planning stage. It will normally be appropriate to collect all three categories of information at the same time, but in such circumstances the specialist skills needed to analyse and interpret the different sets of data must be included in the joint project team.

6.2. Collection

The second stage involves the collection of information. Wherever possible the original documentation (such as maps, minefield records, questionnaires, interview notes and satellite imagery) should be retained, although additional information may be added for clarity or amplification. However, no formal attempt should be made at this stage to analyse or interpret the information as this may lead to early and false deductions being drawn from an incomplete set of data; and these deductions may, in turn, influence the way in which the remaining information is collected and interpreted. (The teams will obviously be sensitive to the information they obtain, and may need to act on such information in order to save life or improve operational efficiency).

The type and detail of the data collected will vary, and should be appropriate to its intended use. There will be the obvious constraints of time and resources, but the GMAA should aim to implement as comprehensive a system of data collection as early as possible.

The GMAA shall, inter alia, collect information on:

- a) the numbers, locations and livelihoods of communities at risk and otherwise affected by the presence, or perceived presence, of mine and UXO hazards. This should include details such as access to drinking water, housing and shelter, productive land, roads and infrastructure. It should identify the numbers and demography of mine victims and survivors, and the availability of victim assistance. It should include an assessment of the ability of the affected communities to cope and adapt to the threat. Guidelines on the collection, collation and subsequent evaluation of such information (the 'impact' survey) will be given in Technical Notes for Mine Action (TNMA) 08.10 series;

Note: The United Nations subscribes to the methodology of the impact component of the GMAA in TNMA 08.10 series. In order to enable a consistent, global picture to be developed of the impact of landmines on communities, the UN will certify those surveys conducted in accordance with this methodology. Certification guidelines will be applied using quality assurance monitors.

- b) the extent of the national mine and UXO threat, in order to assess the amount and type of resources needed to remove (or at least to reduce) the risk through hazard marking, risk education or clearance;
- c) the approximate location and extent of each suspected or confirmed hazard area, including any details of fencing or marking, in order to locate it safely and quickly at some later stage, in order to conduct a technical survey and/or clearance;
- d) the local terrain including ground profile, soil type, soil contamination (mineral and scrap metal), drainage, vegetation (type and density) and access, in order to describe in general terms the technical factors which will influence the resources required for clearance;
- e) the mine and UXO types and density. The detail collected as part of the GMAA need only be sufficient to assess in general terms the resources required for clearance. More detailed information on the density and depth of the mines and UXO in each hazardous area shall be collected during the technical survey, (should one be conducted). Furthermore, personnel conducting such general assessments are unlikely to be trained or equipped to enter suspected mined areas, so the nature and accuracy of the information sought should be commensurate with the resources available; and
- f) the Anti-Personnel Mine (APM) stockpile situation. This should include quantities, locations, stability in storage, storage conditions, technical data and any proposed destruction methodologies.

The GMAA should also collect information on:

- a) the condition and potential of the local infrastructure, including logistic facilities, transportation, communications and medical facilities) which could be used to support technical survey and/or clearance projects;
- b) the availability of suitable local staff for employment as deminers, support staff and management; and
- c) the local climate (rainfall, temperature and humidity) and its potential impact on technical survey and/or clearance projects.

The information should be collected in a systematic manner. Wherever possible use should be made of standard and proven information management systems and GIS, such as the Information Management System for Mine Action (IMSMA). Guidance on the use of IMSMA as part of the general survey process is given in Annex C.

6.3. Collation and evaluation

Collation is the procedure for receiving, sorting and recording all information collected from all sources, both planned and unplanned. A collation system should be simple to operate and maintain, and require minimum staff effort. Wherever possible use should be made of standard and proven information management systems and GIS, such as IMSMA.

Evaluation occurs concurrently with collation. It involves the assessment of each piece of information as it is received for its relevance, accuracy and duplication. Obvious errors such as transposed grid references should be corrected.

Each source of information should be assessed in terms of its proven reliability and credibility. It is most important to reduce uncertainty and to correct inaccuracies at this stage. Inaccurate and misleading data will impact on later stages of the process, and may reduce confidence in other (and more accurate) information collected during the survey. Greater effort at this stage enables resources to be focused more effectively on follow-on activities such as mine risk education, technical survey and clearance projects.

Organisations should remain vigilant to the risk of database 'contamination' with unsubstantiated information. A system of credible verification of information must be adopted in order to avoid unnecessary clearance operations for land that should never have been classified as mine affected in the first place.

6.4. Analysis, integration and interpretation

Analysis involves the detailed examination of each piece of information, once it has been evaluated, to identify significant facts and to draw appropriate conclusions. At this stage it may be considered necessary to revisit the source of information to confirm its accuracy or completeness.

Integration involves the detailed examination of two or more pieces of information to establish patterns and to draw conclusions. Examples are the integration of aerial photographs showing evidence of significant military activity, with unconfirmed reports from local communities; or the integration of information from bomb-damage assessment folders with UXO-casualty data.

Interpretation is a systematic process which leads to deduction. It relies on experience, professional judgement and an understanding of the local context in which the data was collected. New information is compared with what is already known or suspected. This may increase confidence in the reliability of a source of data, or it may raise new questions or uncertainty.

Effective analysis, integration and interpretation requires specialist skills such as photographic/imagery interpreters, linguists and experienced deminers. Such skills may be in short supply and it will take time to obtain suitably qualified specialists.

This stage of the process should be well documented with assumptions clearly stated and reasons given for all deductions and conclusions. This provides an 'audit trail' which can be revisited should new information become available or should assumptions subsequently be challenged, revised or refined.

6.5. Dissemination

Dissemination involves the publication of the information collected during the GMAA process so that it can be readily and easily used and exploited. The form and means of dissemination should have been agreed at the start of the survey, but may need to be revised to reflect changing requirements such as the handling of restricted information.

Information should be made available in a form which is appropriate for its local use and exploitation, and subsequent review. This may include reports, summaries, maps, verbal briefings and electronic media. Whenever possible, use should be made of standard and proven information management systems and GIS, such as IMSMA.

6.6. Review

The information and conclusions obtained as part of the GMAA process should normally be subject to continuous review with new information being added, and the implication(s) of that information being adequately addressed. In particular, changes to assumptions and to the reliability of sources of information should be revisited on a regular basis, and the implication(s) of these changes examined fully.

7. Anti-Personnel Mine Ban Convention (APMBC) surveys

Article 7.1 of the *Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on their Destruction* (commonly known as the Ottawa Convention or Anti-Personnel Mine Ban Convention (APMBC)) requires each State Party to report annually to the United Nations '...to the extent possible, the location of all mined areas that contain, or are suspected to contain, anti-personnel mines under its jurisdiction or control, to include as much detail as possible regarding the type and quantity of each type of APM in each mined area and when they were emplaced.' The UN Department of Disarmament Affairs (DDA) provides guidance on the level of detail required, the form in which it should be provided, and the reporting schedule.

States Party who are required to provide information to DDA in accordance with Article 7.1 of the Anti-Personnel Mine Ban Convention (APMBC) should consider using the GMAA process to collect, collate and present the necessary information on mined areas which contain, or are suspected to contain, APM.

8. Responsibilities and obligations

8.1. United Nations

The United Nations assesses and monitors the global landmine threat and its impact with a view to identifying needs and developing appropriate responses. This is accomplished through inter-agency and multi-disciplinary assessment missions, and by providing support to the GMAA process.

The United Nations has a general responsibility for ensuring the establishment of a regime conducive to the effective management of mine action programmes. This includes mine action standards, including this standard. It also includes IMSMA, which is the information management system preferred by the United Nations for use in all new mine action programmes.

8.2. National Mine Action Authority (NMAA)

The NMAA is responsible for the regulation, management and coordination of mine action in a mine-affected country, and for ensuring the national and local conditions which will enable the effective management of demining projects.

The NMAA is ultimately responsible for all phases of a demining project within its national boundaries, including the GMAA. In particular, the NMAA shall establish and maintain a system and procedures for the collection, collation, analysis and dissemination of information on the mine and UXO threat and its ongoing impact.

8.3. Demining organisations

Where the NMAA is in the process of formation, demining organizations should assist the formation process, by giving advice and assistance including the framing of national standards.

Until the formation of the NMAA there may be no centralised direction or coordination, and most management decisions including the prioritisation of work will be made by mine action managers operating at the local level. In such circumstances, local managers should apply judgement and common sense in the application of IMAS. Whenever possible, standards covering safety and occupational health (S&OH) should be applied judiciously, and information on the location of mine and UXO hazardous areas, casualties and technical details on the mines and UXO found should be shared and recorded in a systematic manner - by applying the principles and procedures recommended in IMAS. Even in the absence of a national plan or database, the proper recording of clearance work done is vital, if subsequent re-clearance is to be avoided.

Where mine/UXO information is available to demining organisations, this information should be freely made available to the NMAA or others involved in the GMAA process.

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:

- a) IMAS 05.10. Information systems and communications.

The latest version/edition of this reference should be used. GICHD hold copies of all references used in this standard. A register of the latest version/edition of the IMAS standards, guides and references is maintained by GICHD, and can be read on the IMAS website (www.mineactionstandards.org). NMAA, employers and other interested bodies and organisations should obtain copies before commencing mine action programmes.

Annex B **(Informative)** **Terms, definitions and abbreviations**

B.1. **GIS**

Geographical or Geospatial Information System.

an organised collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information.

Note: GIS allows a user to graphically view multiple layers of data based on their geographic distribution and association. GIS incorporates powerful tools to analyse the relationships between various layers of information.

B.2. **IMSMA**

the Information Management System for Mine Action (IMSMA).

Note: This is the United Nation's preferred information system for the management of critical data in UN-supported field programmes. The Field Module (FM) provides for data collection, information analysis and project management. It is used by the staffs of MAC's at national and regional level, and by the implementers of mine action projects - such as demining organisations.

B.3. **National Mine Action Authority (NMAA)**

the government department(s), organisation(s) or institution(s) in each mine-affected country charged with the regulation, management and co-ordination of mine action.

Note: In most cases the national MAC or its equivalent acts as, or on behalf of, the 'NMAA'.

Note: In certain situations and at certain times it may be necessary and appropriate for the UN, or some other recognised international body, to assume some or all of the responsibilities, and fulfil some or all of the functions, of a NMAA.

B.4. **technical survey**

previously referred to as a Level 2 survey

the detailed topographical and technical investigation of known or suspected mined areas identified during the planning phase. Such areas would have been identified during any information gathering activities or surveys which form part of the GMAA process or have been otherwise reported.

Annex C (Informative) Guidance on the use of IMSMA for the GMAA

IMSMA. The Information Management System for Mine Action (IMSMA) is the United Nation's preferred information system for the management of critical data in UN-supported field programmes. IMSMA provides for data collection, information analysis and project management. It is used by the staffs of MACs at national and regional level, and by the implementers of mine action projects - such as demining organisations.

GMAA. The GMAA is the collection, collation, analysis, interpretation and dissemination of information on the mine and UXO threat and its impact in order to assist the planning of mine action projects. The GMAA provides a source of accurate and reliable information on the nature and extent of the hazards and hazardous areas, on mine-affected communities and other important planning information such as local soil characteristics, vegetation and climate. IMSMA enables the User to enter, store and retrieve the information from such investigations using a Graphical User Interface (GUI) in a flexible manner. The relationship between data entry, storage and retrieval of information is shown in Figure 1, (using information gathered from an impact survey as an example).

Annex C

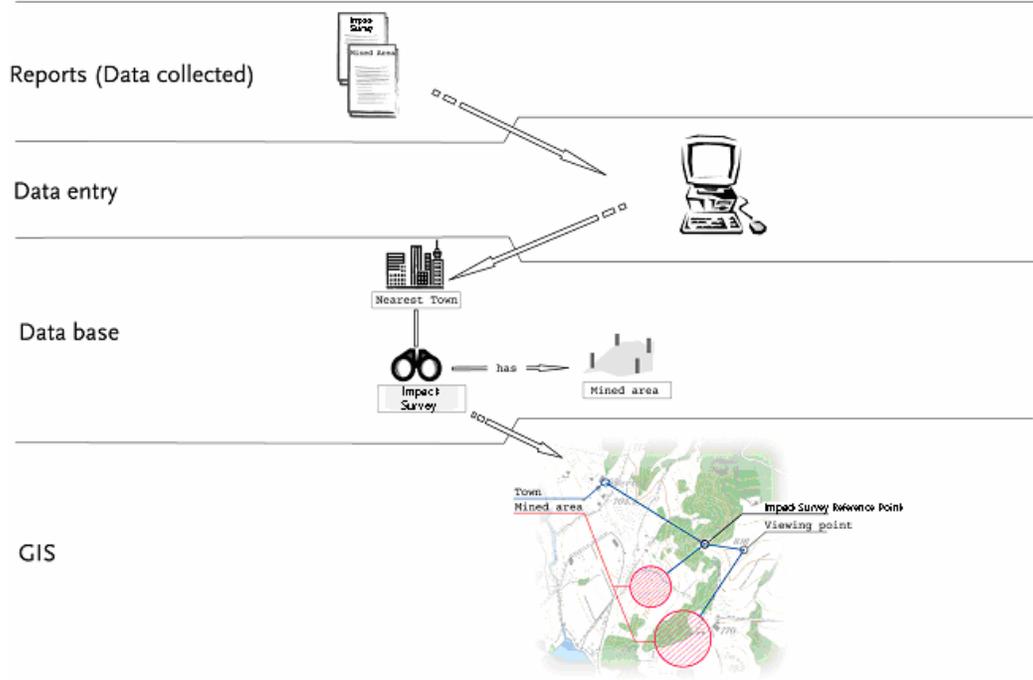


Figure 1: IMSMA FM - GMAA data entry, storage and retrieval

Data entry. The normal means of entering information is via two forms: the Dangerous Area Report and the Mined Area Report (the Mined Area Report can also be used when UXOs exist with mines, or when UXOs exist alone such as areas affected by cluster bomb strikes). The report formats defined in IMSMA may be used as provided, or they may be customised to meet local requirements.

- a) A Dangerous Area Report allows the User to enter data on suspected but unconfirmed hazards and hazardous areas. Such details include: the general location and extent of the hazardous area (longitude, latitude, easting, northing, MGRS coordinates); description of a reference point; distance from and direction to the nearest town; the category and type of mines and UXO reported (if known), the estimated quantity of mines and UXO (if known), and details of minefield records (if they exist). The Report also allows other related information to be entered such as access and land use.

- b) A Mined Area Report allows the User to enter additional information once the hazardous area has been confirmed following a site visit conducted as part of the GMAA process. The Mined Area Report contains sufficient information to enable detailed planning for clearance to begin, although it may still be necessary to carry out a much more detailed Technical Survey of the site prior to clearance to confirm the perimeter of the contaminated area containing mines and/or UXO.

Additional information on the mine and UXO threat will come from Accident, Incident and Contact Reports.

As part of the process it is also necessary to collect and record other general information such as the condition and potential of the local infrastructure, including logistic facilities, transportation, communications and medical facilities which could be used to support technical survey and/or clearance projects. This information can be entered using Country, Province, District or Sub district or Town Data Sheets.

Data storage. Information is stored in tables within the IMSMA database. These tables are structured and named to reflect the category and function of information held, for example the Hazardous Areas Table or the Country Features Table.

Reporting and analysis tools. IMSMA contains predefined reports useful for summarising data collected during the GMAA. IMSMA GIS functionality includes analysis tools which assist in developing mine clearance plans from the database.

