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Technical survey

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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, in particular those of mine risk education and victim assistance, and to reflect changes to operational procedures, practices and norms. The standards were re-developed and have now been named *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/. 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

Experience in many mine action programmes indicates that large areas of land that have been cleared were, in fact, hazard free. In many instances the targeting of clearance assets could have been improved if appropriate non technical and technical surveys had been conducted. The challenge is to attempt to better define the land that contains explosive hazards so that clearance activities can be limited to those areas.

A physical intrusive process into a hazardous area may provide enough information to allow an informed assessment of the clearance needs. This process is known as a technical survey and although it may be a separate activity, it is often integrated with clearance and can be undertaken before, during and even after clearance. In many cases however, it is only after technical survey and clearance are completed that the true nature and extent of contamination by mine/ERW, including unexploded sub-munitions, can be fully understood.

When sufficient information is available and non-technical survey is carried out well, technical survey may not be necessary before clearance. Where it is required, technical survey may confirm the presence of mines or ERW leading to the location of one or more Defined Hazardous Areas (DHA). Alternatively, technical survey may add to the confidence that there are no hazards leading to some, or all, of the land being released without the necessity for clearance.

Technical survey will not always be able to release land. In areas where randomly positioned hazards are expected, surveying a small percentage of these areas may not be appropriate. In such cases, while the survey may be able to demonstrate the presence of hazards and may give an indication of densities, it fails to provide sufficient confidence to justify the release of the land outside the sampled area.

Where the non-technical survey has indicated the presence of hazards in an unpredictable pattern, it may be appropriate to apply technical survey methods that provide full coverage over selected areas. If the outcome from these technical surveys is such that no hazards are found, land release may be justified in some or all of the area when the combined data from non technical and technical surveys provide sufficient confidence that no hazards are present. Where survey finds evidence of hazards, however, subsequent clearance of the entire area may be required.

Technical survey can be an important component of the land release process and can provide important information to improve planning of clearance tasks where hazards are identified. An output of a technical survey may also include perimeter marking. For details of marking of hazards see IMAS 08.40.

This IMAS provides guidance on the role of technical survey in the land release process, explains the main principles of technical survey, and provides a framework for the conduct of technical survey. The broad land release process is outlined in IMAS 08.20 and non survey approaches in 08.21.

Technical Survey

1 Scope

This standard establishes principles and provides guidance on the conduct of technical survey in the land release process and details responsibilities and obligations of the mine action organisations involved.

2 Normative 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 and definitions

A complete glossary of all the terms and definitions 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 that 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 **“Land Release”** describes the process of applying all reasonable effort to identify or better define CHA and remove all suspicion of mines/ERW through non technical survey, technical survey and/or clearance. The criteria for “all reasonable effort” shall be defined by the NMAA.

The term **“National Mine Action Authority” (NMAA)** refers to the government entity, often an inter-ministerial committee, in a mine-affected country charged with the responsibility for the regulation, management and coordination of mine action.

Note: In the absence of a NMAA, 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 the functions, of a MAC or, less frequently, an NMAA..

The term **“Suspect Hazardous Area” (SHA)** refers to an area suspected of having a mine/ERW hazard. A SHA can be identified by an impact survey, other form of national survey, or a claim of presence of explosive hazard.

The term **“Confirmed Hazardous Area” (CHA)** refers to an area identified by a non-technical survey in which the necessity for further intervention through either technical survey or clearance has been confirmed.

The term **“Defined Hazardous Area” (DHA)** refers to an area, generally within a CHA, that requires full clearance. A DHA is normally identified through thorough survey.

The term **“Non-technical Survey”** describes an important survey activity which involves collecting and analysing new and/or existing information about a hazardous area. Its purpose is to confirm whether there is evidence of a hazard or not, to identify the type and extent of hazards within any hazardous area and to define, as far as is possible, the perimeter of the actual hazardous areas *without* physical intervention. A non-technical survey does not normally involve the use of clearance or verification assets. Exceptions occur when assets are

used for the sole purpose of providing access for non-technical survey teams. The results from a non-technical survey can replace any previous data relating to the survey of an area.

The term **"Technical Survey"** describes a detailed intervention with clearance or verification assets into a CHA, or part of a CHA. It should confirm the presence of mines/ERW leading to the definition of one or more DHA and may indicate the absence of mines/ERW which could allow land to be released when combined with other evidence.

The term **"Targeted Investigation"** refers to the investigation during technical survey of certain areas within a CHA that are more likely to be mined or contain ERW.

The term **"Systematic Investigation"** refers to a systematic process of applying technical survey in a CHA. It is typically used where there are no areas within the CHA that are more likely to be mined, or contain ERW, than others.

The term **"High Risk Area"** is defined as an identifiable area that is typically mined in a CHA, or an area that is described by a non-technical survey as being more likely to be mined, or contain ERW than others.

The term "**All Reasonable Effort**" describes what is considered a minimum acceptable level of effort to identify and document mined areas or to remove the presence or suspicion of mines/ERW. "All reasonable effort" has been applied when the commitment of additional resources is considered to be unreasonable in relation to the results expected.

Note: Unexploded sub-munitions are included in ERW and are therefore, not mentioned separately.

4 General Requirements

4.1 Principles of technical survey

A CHA is produced by a non technical survey that has identified a suspicion (or a claim) of mines or ERW. The degree of suspicion can vary and can be derived from various sources, including the local population, past or current military forces, the police, accidents, incidents, or other signs of mines and ERW. A CHA may require further investigation through the use of technical survey.

Technical survey serves the following main purposes: (1) to confirm the presence of mines and ERW, (identify the type of hazards and the boundaries of hazardous areas) which will then require clearance and/or (2) to increase confidence to help justify decisions on the release of land and/or (3) to give the local people sufficient confidence to use land without resorting to full clearance techniques.

A technical survey differs from clearance, despite often using the same assets. The main purpose is to collect information about the presence and location of explosive hazards in a CHA. This information is then assessed and used to make decisions about the actual limits of the DHA where full clearance is required.

A technical survey typically complements a non-technical survey and can lead to the release of land or to more accurate DHA. Both non-technical and technical surveys aim to contribute to the decision making process to determine whether or not an area (or parts of it) contains explosive hazards. The main difference between them is that technical survey involves physical intervention into the suspect area.

A technical survey should result in confirmation of the existence of hazards and provide the planning requirements for the future clearance of land found to contain hazards. However, an absence of evidence does not automatically constitute evidence of absence. At times, even when no items are found, additional work may be required to satisfy the national authority and local land users that the ground is safe to use. The technical survey therefore needs to provide sufficient confidence in the absence of mines to release land.

Sampling methods, in particular, are unsuitable for technical survey into areas where a low density of hazards has been indicated by non-technical survey. There will often be situations however when the quality of local information and evidence of land use are sufficient for the non-technical survey alone to cancel parts of a suspect area or remove the suspicion of the existence of hazards without any requirement for technical survey.

Information gathering through the non-technical survey process does not stop when the technical survey starts. Additional non-technical survey information is often collected during technical survey. For example, new informants may provide additional information during technical survey, or, the assets used during technical survey may provide access to parts of the CHA that were previously inaccessible and so allow additional information to be gathered.

Whenever mines/ERW are found after a survey has suggested that an area is safe, an appropriate area around the hazards should be reclassified as a CHA and additional resources deployed to address the problem.

4.2 Information to be collected during a technical survey

When conducted, a technical survey becomes a primary source of planning information for mine/ERW clearance operations. It involves gathering specific information through access into the CHA and recording, reporting, and mapping of any DHA as well as any parts of the suspect area that can be released.

When conducted independently of the clearance process, the information obtained from a technical survey should be summarised in a survey report which can then be used as the technical specification for the planning and management of any subsequent clearance requirements and the release of land.

During a technical survey the following information should be collected:

a) confirmation of the presence or likely density of mines/ERW;

b) confirmation of existing recorded information;

c) assessment of the ground in terms of the soil and metal contamination;

d) definition of the type, condition and extent of hazard;

e) the suggested depth of clearance for specific areas within the DHA. This should be clearly indicated in reports and maps; and

f) the resources recommended to carryout further activities, such as clearance, including assets to be used in specific areas of the DHA, and a work plan for these assets.

In addition to the information above, a detailed site plan (sketch, digital map of the area, aerial photograph, etc.) shall also be prepared. This will be provided, with the rest of the task dossier, to the organisation that will carry out any follow-on activity. The following information should be included in the site plan:

g) exploratory lanes (if used), area covered by technical survey assets, and safe access routes;

h) reference Point, Bench Marks, Turning Points and Intermediate Points as applicable;

i) distances and bearings from the bench mark and turning points;

j) location of visible mines/ERW and the pattern or mines (if known);

k) locations(s) of any mine, ERW or other devices found/destroyed earlier, or during, the technical survey;

l) prominent natural features such as high ground, water courses, trees, etc.; and

m) prominent man-made features within the CHA.

When the information has been collected and documented it should be returned to the mine action authority to be included in the data management system.

5 Output from technical survey

5.1 General

The outputs from a technical survey are:

a) definition of any DHA within the initial CHA;

b) additional information for planning the initial clearance of any identified DHA;

c) the gathering of information (through all reasonable effort) which may be sufficient to determine and demonstrate, to the satisfaction of the land users, that an area is free of mines and ERW; and

d) additional information for the establishment of priorities for future action.

5.2 Releasing land by technical survey

A robust technical survey process will in many cases provide the ability to reduce the original suspect area. In order to do this the operator shall ensure that “all reasonable effort”, as defined by the NMAA, to determine that an area is free of mines/ERW contamination has been made. This involves gathering sufficient information through the use of demining assets such as manual resources, mine detection dogs and machines.

If a technical survey provides information about a part, or all, of a CHA to assess with confidence that the initial suspicion no longer exists (the claim of a hazard existing in that CHA, or part of the CHA, has been rejected) then the land can be released and the methods used shall be recorded.

5.3 All reasonable effort

A condition for releasing land by technical survey is that “all reasonable effort” of investigation has demonstrated with confidence that there is no evidence of hazards in the area. IMAS 08.20 explains the concept of “all reasonable effort”.

6 Technical survey methods

6.1 General

Technical survey can be undertaken using the same assets as clearance but with a different methodology. Virtually any mine action asset can be used as long as it has been established that the asset can provide reliable and useful information, with a defined degree of confidence, in relation to the hazards that are expected to be found. Assets should be used to complement each other in the conduct of a technical survey. Whichever method is used, when a technical survey confirms the presence of a mines/ERW, clearance is required. No technical survey method should put survey staff at greater risk than during clearance.

6.2 Technical survey assets

All assets used in technical survey shall be specifically accredited by the NMAA for this purpose. Assets used in technical survey shall be matched to the expected hazards to be found in the suspected areas and shall have demonstrated a capability to identify, remove, destroy or detonate the likely hazards with a degree of confidence defined by the NMAA.

The most common assets and methods used are:

a) *Manual clearance.* This is a reliable technical survey method providing a high degree of confidence in the ground that has been searched. Due consideration, however, should be given to the sample size when using manual clearance to determine the likely presence of mines.

b) *Animal detection.* Animal detection may be a reliable survey method. Dogs are the most common animal but other animals are also being trialled and used. The use of remote sensing technology may also be applicable for technical survey.

c) *Flail machines.* It is known through trials that flail machines can miss or move a percentage of targets/hazards. This is not necessarily a limitation in their use in technical survey as long as it can be reliably determined that the flail will detonate a reasonable percentage of hazards. A percentage of hazards that are not destroyed or detonated may also be thrown out leaving them visible on the ground to allow hazard identification. Recording detonations and conducting a visual search after flailing can enhance the value of flail machines as a technical survey tool. Flailing may be considered adequate to restore confidence in land that is not being used on account of a suspicion of explosive hazards.

d) *Tiller machines.* Tiller machines normally crush or destroy hazards rather than detonate them. Because tillers detonate a much lower percentage of hazards than other machines they may have less value as a mechanical survey asset than flails.

e) *Rollers.* Rollers are known to detonate or crush a low percentage of hazards. The type of hazard, the ground conditions, and the weight and design of the roller will affect the percentage of mines and ERW that are detonated or crushed. Even if only 20 to 40% of mines are detonated rollers may still be a useful technical survey tool, for example, in areas where the non-technical survey has established the likelihood of many pressure sensitive mines. Rollers can also be used to gain access to areas of a CHA where visual inspection of the ground can occur or other assets such as low sensitivity metal detectors can then be used.

f) *Low sensitivity metal detectors* (sometimes referred to as wide area detectors and may include magnetometers). These are detectors that are designed or configured to detect bulk amounts of metal (e.g. metal cased anti-vehicle mines and ERW) without signalling on small amounts. These detectors may prove to be useful in technical survey under some circumstances.

6.3 Classification of survey assets

If several assets are used in technical survey, a confidence classification system should be developed for each of them and each combination of assets in complementary roles. This may assist in determining the minimum requirement for technical survey. A classification system should be developed from an assessment of how much, and what type of information each asset will provide when used. Paragraph 6.1 provides broad generic information about asset information gathering properties that should be considered when defining confidence levels. A technical survey asset with a low or moderate confidence rating may prove sufficient to use for land release provided that no mines were found during the technical survey and the previous non-technical survey generated a high level of confidence that the area is hazard free. Land released in this way shall not be recorded as “cleared”.

Confidence rating of assets should be developed from a detailed assessment of the properties of each potential asset coupled with an assessment of empirical experience, tests, trials and other documentation. The NMAA should approve the final confidence classification of survey assets.

6.4 Targeted versus Systematic investigation

The objectives of a technical survey are to determine whether there are hazards present and to define the location of these hazards in the most economical manner. Targeted and systematic investigations are two processes that may be applied to achieve this. Targeted investigation will focus technical survey efforts on areas of the CHA that are thought to be more likely to contain hazards (these are sometimes called “high risk areas”). Systematic investigation is used where there are no obvious “high risk areas” to target. When there are no “high risk areas” the search for information should be spread uniformly over the area. Systematic investigation is less applicable or will require an increased survey requirement (ground coverage) in areas where the mines are not in a predictable pattern.

“High risk areas” are identifiable areas inside a CHA described by a non-technical survey as more likely to be mined than others, or areas that are more likely to be mined considering their geographical importance or tactical relevance etc. They are identified through an analysis of the military action that took place in the area or knowledge of the tactics used by the organisations who laid the mines/ERW. These areas should be targeted for search as a priority during technical survey because they will be more likely to provide vital information about whether the CHA, or parts of the CHA, contain a hazard and may, in fact, contain all of the hazard. If the identified “high risk areas” are found not to contain explosive hazards this may increase the confidence that other areas of the CHA will also not contain an explosive hazard.

Because “high risk areas” may not be well defined by features on the ground, an area around them should also be searched. The area around the “high risk areas” may be called the “buffer zone”. It is an area of ground that provides a safety margin around the suspected “high risk area”.

While it is not possible to define all possible “high risk areas”, the table at Annex B provides a sample list of “high risk areas” and the buffer zones around them that may typically be applied. The extent of buffer zones should be defined by the national authority.

When targeted investigation is used as opposed to systematic investigation the area of land that will need to be searched by technical survey assets is generally reduced.

6.5 Requirement for the degree of technical survey

The degree of technical survey required on a CHA will depend on the original level of suspicion and the quantity and quality of information collected by non-technical survey efforts. Strong and reliable evidence from a non-technical survey may negate the requirement for technical survey. A non-technical survey should, with a high degree of confidence, assist in determining the technical survey requirements if any.

The actions of technical survey may be sufficient to convince the local land users that previously suspect areas are in fact safe to use. The term “all reasonable effort” should be balanced with the remaining requirement for information after non-technical survey has been completed. An agreed definition of “all reasonable effort” will assist in determining the minimum requirements for technical survey on a CHA.

7 Survey team requirements

When a technical survey is undertaken in the field, the following should be considered.

a. Training. Technical survey should *only* be undertaken by mine action personnel who are suitably trained, experienced and accredited to carry out the activity. Investment in the training of survey staff should have a positive impact on the accuracy of the survey. Survey teams should be sufficiently tested in conducting technical surveys before becoming operational. A good indicator is whether the survey concept is unambiguous and the teams are able to provide objective assessments.

b. Equipment. Demining assets used in technical survey shall be accredited for this task by the NMAA and matched to the expected hazards at each task site.

c. Staffing. The size of a survey team can vary depending on the local situation, which technical survey assets are being used and the complexity of the survey.

d. Communication. Communications for control and safety should be tested before any survey work is conducted in any CHA.

e. Monitoring. Technical survey operations should be subject to internal and external monitoring. See IMAS 07.40 for further guidance.

f. Liaison with local authorities. Technical survey teams shall coordinate with appropriate local or competent authorities to ensure that it is safe to conduct survey work in an area and to avoid disruptions in the work of the national authority.

g. Medical backup and evacuation. All safety and CASEVAC procedures shall be as required during clearance and regularly assessed and tested.

8 Documentation

Information should be collected and recorded in a systematic manner. Whenever possible, use should be made of standard and proven information management systems and GIS, such as IMSMA. Guidance on information management can be found at IMAS 05.10 Management of Information (to be published).

General location maps should be used to indicate the approximate size of any DHA, and in particular to mark reference points (or landmarks). Such information should be recorded electronically, or marked on a topographical map, a satellite image or on a trace. If topographical maps are not available, this information should be recorded on locally produced maps.

A sketch map of each DHA shall include sufficient detail about the location and identification of the survey markers and the hazard marking system. Other relevant information which will assist future clearance activities should be included.

The information recorded during non-technical survey shall also form an important part of the documentation required for the handover to the organisation conducting technical survey or clearance and for the final release of the land.

9 Responsibilities and obligations

9.1 National Mine Action Authority

The NMAA shall:

a. develop a land release policy for technical survey;

b. develop national standards for technical survey;

c. accredit organisations as fit to undertake technical survey;

d. prepare and publish standards and guidelines for technical survey including:

   i. quality assurance and quality control to be applied to technical survey contracts and agreements; and

   ii. documentation for technical survey;

e. use the information collected through the technical survey process to prepare tasking orders and annual work programmes;

f. define liability issues relating to the clearance operator, the individuals undertaking the technical survey, and the local community, in accordance with national legislation; and

g. monitor the effectiveness of land release outputs from technical survey.

9.2 Survey organisations

The organisation undertaking technical survey shall:

a. gain (from the NMAA, Mine Action Centre or equivalent) accreditation needed to conduct technical survey;

b. apply the national standards for technical survey. In the absence of national standards, the organisation shall apply the IMAS standards, or such standards as are specified in their contract or agreement;

c. develop SOPs for the implementation of technical survey;

d. collect the necessary information as required by the technical survey documentation;

e. where applicable, conduct a formal handover of surveyed sites to the organisation conducting follow-on activities;

f. maintain and make available documentation as specified by the NMAA or Mine Action Centre or equivalent; and

g. consult closely with both men and women of the affected communities about all decisions made during technical survey.

In the absence of an NMAA or similar authorities, the organisation should assume additional responsibilities. This includes assisting the host nation during the establishment of a NMAA and Mine Action Centre or equivalent and in framing standards for technical survey, including quality assurance and quality control.

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 04.10 Terms and definitions

b) IMAS 07.30 Accreditation of demining organizations

c) IMAS 07.40 Monitoring of demining organizations

d) IMAS 08.20 Land release

e) IMAS 08.21. Non-technical survey

f) IMAS 09.10 Clearance requirements

g) IMAS 09.11 Battle area clearance

h) IMAS 05.10 Management of Information (to be published)

i) IMAS 08.30 Post-clearance documentation

j) IMAS 08.40. Marking mine and ERW hazards

k) IMAS 09.50. Mechanical application.

l) IMAS 09.40 Use of mine detection dogs

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

Annex B
(Informative)
High Risk Areas and Buffer Zones

When investigating an area that contains, or is suspected to contain a hazard, "high risk areas" are often identified and a buffer zone around them is typically applied. The buffer zone is an area cleared around the "high risk area" in order to increase the level of confidence that the "high risk area" does, or does not, contain any hazards.

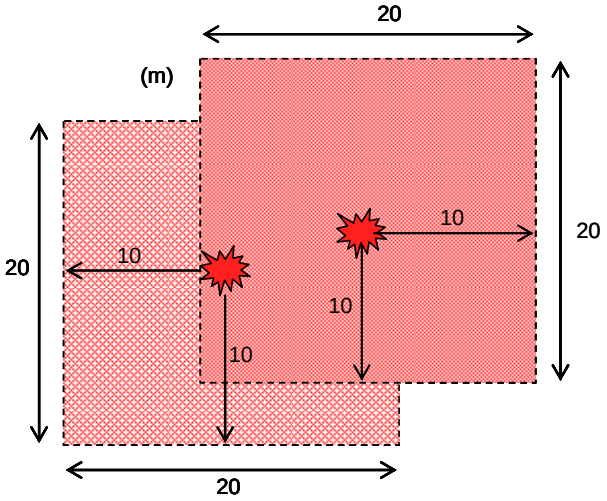
Buffer zones may also be used around identified hazards (e.g. a single mine) to determine whether the hazard is likely to be an isolated hazard.

It may not be appropriate to rely on buffer zones when a low density of hazards is anticipated in the area.

The table below provides a list of typical areas of high risk and the buffer zones that may be applied.

Buffer zones are country specific and should be developed and defined by the NMAA or equivalent.

Type of "High Risk Area" / Identified Hazard	Land	Road	Buffer Zone Applied
Single mine	X		10 -15m
Stockpile of mines/ERW	X		10 - 20m
Pathway	X		5 m each side of path
Large tree or copse of trees	X		2 - 8 m
Dikes/canals	X		2 - 8 m
Potential cache areas	X		2 - 10 m
Electrical Pylons	X	X	5 - 25 m
Human/Animal remains	X	X	5 -10 m
Crater		X	5 - 25 m
Fox hole/Fighting pit		X	10 - 15 m
Extended Military position		X	50 - 100 m
Road		X	10m each side of road
Vehicle wreckage		X	15 m
Road bridge		X	50 m, each side of bridge
River crossing point		X	10 - 25 m
Road junction		X	25 - 50 m, each direction



Example of a 10m buffer applied to 2 separately identified hazards.

Annex C
(Informative)
Possible Process of a Technical Survey

The conduct of a technical survey will vary according to local conditions and requirements. The broad outline given below provides general guidance.

Sequence of Work

a) Tasking. Receive tasking for the technical survey from the relevant authority.

b) Pre-planning. The non-technical survey report should be studied and assessed. Any sub-divisions of the CHA made during the non-technical survey should also be reviewed (refer to IMAS 08.21 for further information). All information about the CHA that was collected during the non-technical survey should be analysed in liaison with the non-technical survey staff when possible.

c) Plan asset requirements. Decide which of the available assets will be most suited to conduct the survey

d) Site visit. Conduct a site visit with the following:

- Non-technical survey team leader (when available);
- Plans/operations representative from the MAC or relevant authority;
- Representative from the local area (e.g. landowner);
- Representative from any other organizations that will be involved in the technical survey (e.g. MDD, mechanical assets)

e) Site preparations. Establishing administrative and other site features.

f) Conduct of the technical survey.

g) Planning assessment for any clearance requirements determined by the technical survey.

h) Marking and/or fencing of relevant parts of the task.

i) QA and completion report.

Mine risk education and community liaison should be conducted before, during, and after the technical survey.

Task Documentation

The management of detailed task documentation is of major importance because this will be used for the planning of any further clearance activity and/or provides an audit trail showing that land released through the technical survey complied with the national requirements and standards.

Annex D
(Informative)
Illustrated example of the Non-technical & Technical Survey Process

Figure 1 – The picture illustrates a possible SHA generated during an impact survey or other claim of presence of hazard.

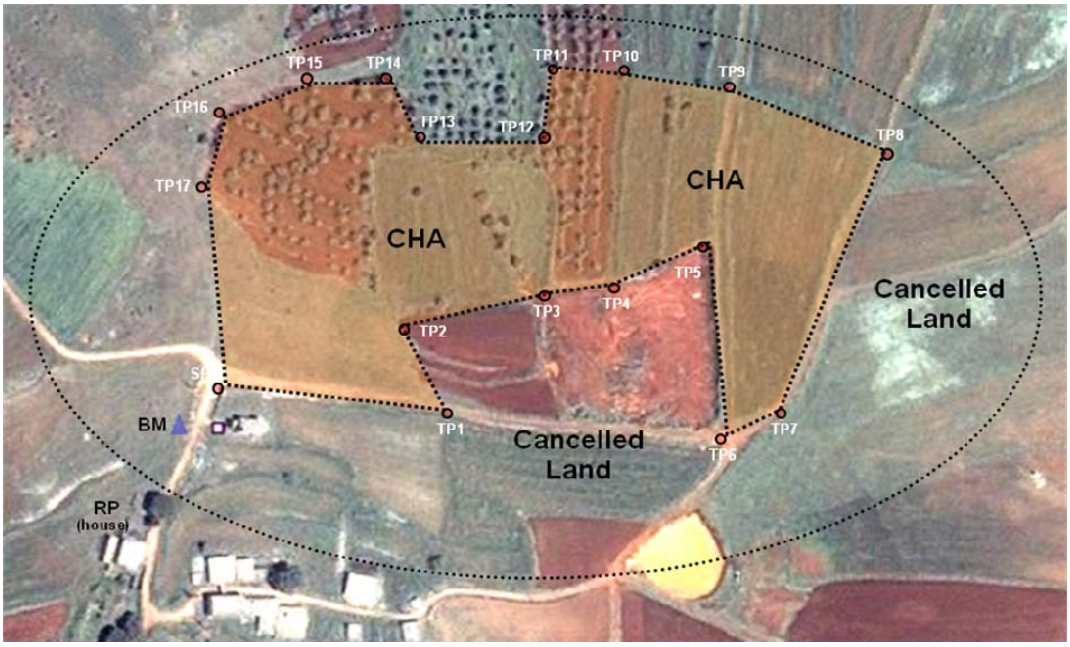


Figure 2 – This picture illustrates a possible conclusion of an initial non-technical survey. Based on further evidence the area outside the CHA has been cancelled and the CHA has been marked, for mapping purposes only and not physically on the ground, with a Reference Point (RP), Bench Mark (BM) and Turning Points (TP).

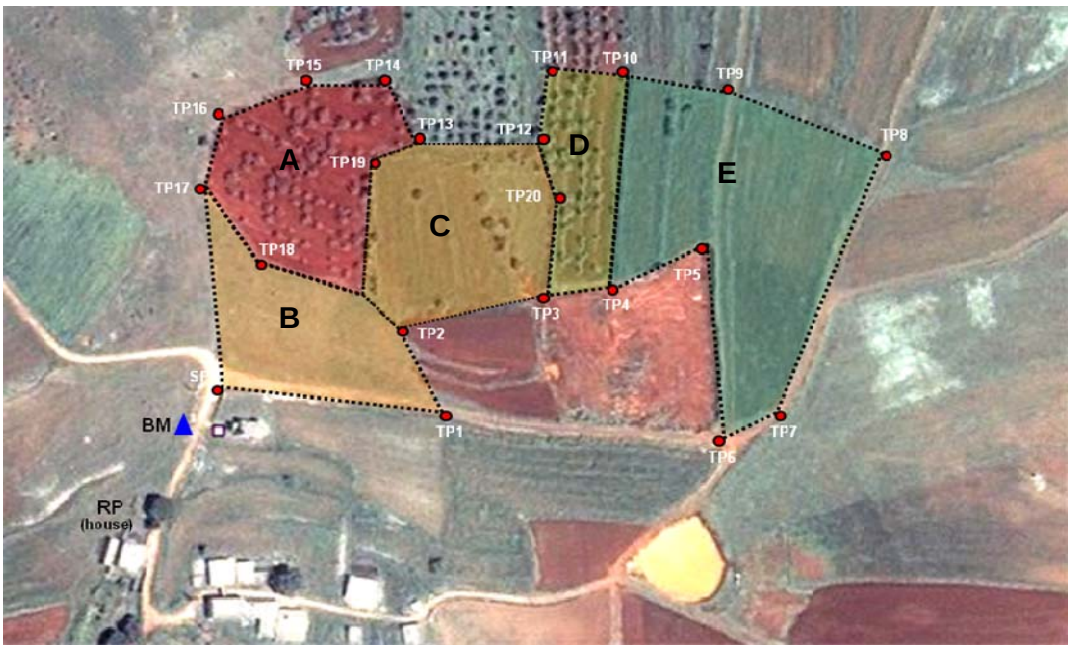


Figure 3 – This picture illustrates a possible situation after further information gathering and analysis. The CHA has now been sub-divided into sections based on differing evidence of hazards e.g. one section (A) may have shown hard evidence of mines on the surface and so obviously requires clearance. A first hand informant may have provided verbal information regarding a second (B) and a third (C) section stating that these areas are mined. The fourth and fifth (D and E) sections only have weak information regarding the presence of mines. The level and type of technical survey needed, therefore, may vary between sections. Refer to paragraph 8.5 in IMAS 08.21 for further information on sub-dividing CHA.

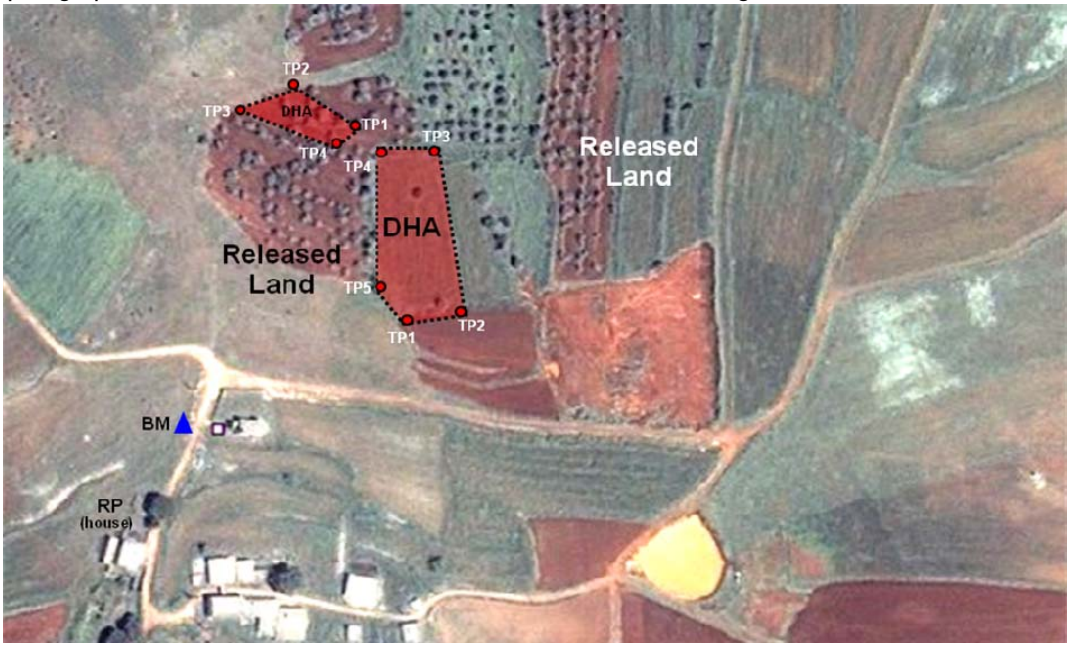


Figure 4 – This picture illustrates a possible situation following technical survey. The CHA has now been reduced to two discrete DHA. RP, BM and TP have now been put into the ground to mark the DHA for further clearance. TPs should also be placed to identify where technical survey has been conducted.

Note: Even at this stage, the whole, or part of the DHA may not require clearance because the clearance requirement will depend on the evidence that is found on the ground.

Amendment record

Management of IMAS amendments

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

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

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

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

Number	Date	Amendment Details
1	1 Mar 2010	UNMAS address updated. NMAA definition updated. Inclusion of a note in Clause 3 that ERW includes unexploded submunition. Minor changes to ensure gender issues. Removal of Annex B from the IMAS series and re-naming Annex C to B and D to C.