

# AMAS 05.02

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## Mine ERW Survey

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MINE AND ERW SURVEY .....	3
1. INTRODUCTION.....	3
2. AIM:.....	3
3. IMPACT SURVEY DATA:.....	3
4. NON TECHNICAL SURVEY:.....	3
4.1 PURPOSE .....	4
4.2 GENERAL .....	4
4.3 SOURCE OF INFORMATION:.....	4
4.4 QUALITY OF INFORMATION:.....	5
4.5 NON-TECHNICAL SURVEY OUTPUT .....	5
4.5.1 CHA CRITERIA.....	5
4.6 HTA AND LTA WITHIN THE CHA .....	6
4.7 EVIDENCE-BASED DECISION MAKING PROCESS .....	6
4.8 NON-TECHNICAL SURVEY TEAM REQUIREMENTS:.....	6
5. TECHNICAL SURVEY .....	7
5.1 PRINCIPLES OF TECHNICAL SURVEY.....	7
5.2 TECHNICAL SURVEY INFORMATION.....	7
5.3 OUTPUTS OF TECHNICAL SURVEY .....	8
5.4 ROLE OF TECHNICAL SURVEY IN LAND RELEASE .....	8
5.5 ESTABLISHING CUT LANES TO DIFFERENT PARTS OF CHA:.....	9
5.6 TECHNICAL SURVEY IN LTA USING SYSTEMATIC INVESTIGATION APPROACH .....	9
5.7.1 TARGETED INVESTIGATION: .....	9
5.7.2 SYSTEMATIC INVESTIGATION: .....	9
5.7.3 INSIDE OUT APPROACH: .....	10
5.7 TECHNICAL SURVEY TEAM REQUIREMENTS .....	10

## Mine and ERW Survey

### 1. Introduction

Survey is one of the key aspects of successful planning and implementation of demining operations and played critical role in properly identifying the mine/ERW contaminated areas.

The nature of the land, worksite condition and the type and extent of anticipated hazard should always be taken into account during the survey operations in order to select most suitable approach for the land release process. The approach that is taken may be different for each worksite and shall be based upon those specific requirements determined during a comprehensive survey process.

Conducting land release operations may require the use of different assets, such as manual demining teams, MDDs and mechanical machines. Therefore, comprehensive plan should be made during the survey operations to ensure safe, effective and efficient use of these assets.

### 2. Aim:

The aim of survey is to gather sufficient information about the type and extent of mine/ERW hazards in recorded SHAs, CHAs and other newly reported hazard areas and to facilitate safe, efficient and effective use of demining resources for the removal hazards or suspicion from these areas.

### 3. Impact Survey Data:

Impact survey data shall not to be used to define the geographical extent of mine/ERW problem but rather appropriate and comprehensive survey should be applied. Impact survey data may be useful indicators of where further investigation is required but does not make a non-technical survey unnecessary.

### 4. Non Technical Survey:

Non-technical survey is a thorough investigation of new or previously recorded hazardous areas. Non-technical survey shall be the starting point for recording hazardous areas either as Confirmed Hazardous Areas (CHA) and may be Defined Hazard Area (DHA) as in mine belts. It is crucial to eliminate the "suspicion" from the SHAs using methods other than the commitment of limited clearance resources. One way suspicion can be removed from SHAs is gathering and analysis of update and existing IMSMA information.

This operation is undertaken to collect the essential information about a new CHA or an existing SHA, which has in some way been identified and reported through, perhaps, an emergency survey, an impact survey, military records or word of mouth etc, in order to allow a decision to be made for subsequent land release operations.

Non-technical survey actions may include the following:

- a) Clarification regarding the local perception of the hazard status of land, or parts of it;
- b) Identification of areas where further investigation is required;
- c) Priority setting of tasks that may require further mine action support;
- d) Placement of marking to identify the requirement for mine/ERW including sub-munitions removal, or clearance.
- e) Removal of suspicion associated with parts of that area.

- f) If there is an existing SHA, non-technical survey can lead to that suspicion being cancelled.

#### **4.1 Purpose**

Non-technical survey involves the collection and analysis of new and old information about a SHA. A non-technical survey does not normally involve physically entering a hazardous area or the use of demining assets inside the CHA, unless when demining assets are required to establish safe access to areas that would otherwise be inaccessible.

Non-technical survey may serve the following purposes:

- a) Assess whether previously reported hazardous areas remain contaminated by mines/ERW.
- b) Refine the original size or limits of a reported hazardous area.
- c) Cancel reported hazardous areas that no longer pose a mines/ERW threat to a community.
- d) Identify socio-economic and threat factors that may influence future priority setting.

#### **4.2 General**

Original baseline data for planning often comes from broad national surveys the LIS, which had been implemented rapidly, as such may not fully address the needs of site-specific operational planning for further demining operations. The boundaries of SHA and CHA estimated during non technical survey shall not be considered as real boundaries of the hazard.

Changes are more likely to occur in LIS data as a result of people's intervention and also emerging of update and new information about the recorded SHAs and or CHA. Therefore, a refresher non technical survey of the area shall be conducted by demining teams in order to reach a realistic decision for conducting the technical survey and or subsequent clearance operations.

#### **4.3 Source of information:**

Demining organisations shall ensure that all relevant information sources are identified, interviewed and the information obtained is properly recorded.

Information gathering process shall be structured in such a way that the most reliable sources with specific knowledge about the area have been interviewed as part of the process. If possible separate meetings should be arranged with female informants and children using appropriate and applicable approaches.

The fact that local communities are using the land may not guarantee that the land is free from mines and ERW hazards. Nevertheless, the use of land by the community can serve as one of the factors in the confirmation of whether or not a SHA contains landmines or ERW. Depending on the degree of use by the local population, the survey and clearance teams shall assess the situation, collecting reliable information and objectively make the decision for the release or further demining operations. Common sources of information about mine and ERW contamination in Afghanistan should include but not limited to the following:

- a) Former Mujahedeen fighters;
- b) Military personnel;
- c) Kochi (nomads);
- d) Shepherds;

- e) Mine and ERW survivors/victims and or their relatives;
- f) Minefield/battlefield maps if available; and
- g) Community members who have knowledge of mine/ERW hazards.

#### **4.4 Quality of information:**

Information can be classified based on reliability of sources. The following broad classification shall be considered:

##### 1) High quality information:

Information gathered from the people and institutions with sound knowledge of when and where the mines were laid. These may include military persons involved in past fighting, survival mine/ERW accidents and their relatives. Information gathered from the nomads who having been witness of the accidents in the area may also be considered as high quality information.

Physical evidences that indicate various degrees of presence of mines shall be considered as high quality information. The evidences may include visible mine accident craters, military positions, trench lanes, animal bones died due to accidents and local mine/ERW marks.

##### 2) Low quality information:

Information gained from persons and institutions without being involved in mine contamination or did not observe the mine laying or accidents themselves, but have been told about the mine/ERW hazards.

#### **4.5 Non-Technical Survey Output**

Non-technical survey is normally carried out on an area that has somehow been identified as possibly containing mines/ERW or upon a new claim of presence of mine/ERW hazard. Upon completion of the non-technical survey it may result to cancellation of the reported area or creating one or more CHA. Non-technical survey has the following outputs:

- a) Identify Confirmed Hazardous Area (CHA);
- b) Provide more likely estimations of HTA and LTA; and
- c) Removal of suspicion about parts or all of an original SHA.

A CHA should only be created if the evidences of hazards have been found.

##### **4.5.1 CHA Criteria**

Criteria for declaring ground as CHA or refining a previously recorded CHA through non-technical survey should be clear and understood by all involved. Considering the situation, terrain, climate and history of conflict the following criteria shall be used:

- a) Reliable information that mines/ERW were laid in the area;
- b) Records of past military activity/fighting in the area;
- c) Minefield records and previous survey reports and database records;

- d) Land indicated by the local community as not in use because of accidents to humans or animals;
- e) Visible evidence of the presence of mines/ERW;
- f) Visible evidence of accidents to animals (carcasses etc);
- g) Visible craters from mine/ERW detonation;
- h) Written or verbal reports from local sources of accidents; and
- i) Information about detonations during burning or other land use.

#### **4.6 HTA and LTA within the CHA**

Update information gathered during the non technical survey process may be resulted in HTA and LTA within a CHA. In this case the demining team shall record the locations of the HTA and LTA in a sketch map.

If the HTA and LTA have not been identified by the communities within any CHA, then the team should conduct technical survey using systematic approach. This will help the team to have access to different parts of the CHA and new information will come to exist, based on which they can decide whether to release the CHA or justify further clearance operations.

Note: Mine action organizations shall conduct non-technical survey of all allocated hazards when developing demining projects, in order to develop an appropriate and justifiable land release plan to be included in the project proposal.

#### **4.7 Evidence-Based Decision Making**

Non technical survey is mainly based on gathering and analysis of reliable evidences and information about mines/ERW hazards. Appropriate decision for land release can only be made if it is based on facts and information, which come to exist at the result of non technical survey operation. This information will help the team to decide whether to release the SHA without further technical survey and subsequent clearance or to apply technical survey and clearance operations.

#### **4.8 Non-Technical Survey Team Requirements:**

When non-technical survey is undertaken, the following points shall be followed by demining organizations involved:

- a) Safety: Non technical survey teams should not take unnecessary risks by walking or driving on land/roads where there is risk of mines/ERW. Credible local advice should be sought prior to walking or driving on land, paths or roads. Non-technical survey teams should not enter the suspected area.
- b) Equipment: Non technical survey teams should be equipped with all the required equipment including but not limited to: compass, measuring tap, camera, range finder, mobile phone, stationary and vehicle for transportation.
- c) Training: Non-technical survey should only be undertaken by accredited mine action organizations having suitably trained and experienced personnel. Comprehensive training has a major impact on the accuracy of the result of non technical survey operation. Refer to AMAS 04.01.

- d) Liaison. Non technical survey teams shall maintain proper liaison with the communities, local authority and other stakeholders. This will ensure the safety of survey teams and will help in gathering high quality information.
- e) Medical backup and evacuation: The non technical survey team shall be equipped with a first aid medical kit and if the situation does not allow the provision of a dedicated medic for the team, then at least one member of the team shall be trained in first aid. The team shall also gather information about the closest available medical facilities and prepare a medical evacuation plan (CASEVAC).

## 5. Technical Survey

Technical survey is detailed and topographical investigation of presence of hazards and requires physical intervention into a hazardous area; however, it may be conducted separately, but can be integrated with clearance.

Although sufficient information may be available at the result of comprehensive non-technical survey, but technical survey may be to some extent necessary before clearance in HTA. Technical survey can confirm the presence of mines/ERW leading to the location of one or more Defined Hazardous Areas within HTA. Alternatively, technical survey may add to the confidence that there are no hazards in some, or all parts of the land being released without being fully cleared.

Technical survey serves the following main purposes:

- a) Defines the actual hazard area in terms of presence of mines and ERW, (identify the type of hazards and the boundaries of hazardous areas) which will then require clearance;
- b) Increases confidence to help facts based decisions on the release of land; and
- c) Gives the local people sufficient confidence to use the land without full clearance.

### 5.1 Principles of Technical Survey

- a) As technical survey is a dynamic process of investigation and information gathering, therefore, any new information shall be considered in decision making for further intervention.
- b) Any CHA shall be further investigated through technical survey using appropriate and suitable approaches.
- c) Technical survey typically complements non-technical survey and may lead to the release of land or identifying actual boundaries of the hazard (DHA).
- d) There may be occasions where the technical survey teams require adding more pieces of contaminated area adjacent to the CHA that had not been previously identified as containing hazard.
- e) A technical survey should result either in confirmation of the existence of hazards and provide sufficient information for planning subsequent clearance or in releasing the land without any need for its full clearance.

### 5.2 Technical Survey Information

All the information gathered during technical survey shall be summarised in a technical survey report and then be used as the technical specification for the planning and management of subsequent clearance and or the release of the land.

During a technical survey the following information should be collected:

- a) Confirmation of the presence or likely density of mines/ERW hazards in the area;
- b) Definition of the type, condition and extent of hazard;
- c) Assessment of the ground in terms of the soil and metal contamination;
- d) The suggested depth of clearance for specific areas within the DHA. This should be clearly indicated in reports and maps; and
- e) The resources recommended for carrying out further clearance.

In addition to the information above, a detailed report and map shall also be prepared and recorded in IMSMA in order to be used during post land release inspections. The technical survey report and map should reflect the followings:

- a) Control Markers including Turning Points and boundaries around the released land and their bearings and distances;
- b) Location of visible mines/ERW and the pattern of mines (if known);
- c) Locations(s) of any mine, ERW or other devices found/destroyed earlier, or during, the technical survey;
- d) Boundaries of DHA, HTA and LTA;
- e) Prominent natural features such as high ground, water courses, trees, etc.; and
- f) Prominent man-made features within and around the DHA.

### **5.3 Outputs of Technical Survey**

The outputs from technical survey are:

- a) Identification of DHA within the HTA with detailed information for planning the clearance.
- b) Reliable information (through all reasonable effort) which should be sufficient to determine and demonstrate to provide confidence of the land users, that the area is free of mines and ERW hazards; and
- c) Additional information for the establishment of priorities for future actions.

### **5.4 Role of Technical Survey in Land Release**

A robust technical survey process may in many cases provide the ability to reduce the original size of CHA. As such the operators shall through "all reasonable effort", be able to classify the area based on the presence and or "no evidence of" mine/ERW hazards in the area. This can be achieved through gathering sufficient information using clearance and or verification assets such as manual, MDD and machinery.

If technical survey resulted in "no evidence of" mine/ERW hazards in a part or complete CHA and the initial suspicion is no longer exists, then the land should be released and the methods used shall be recorded.

The land release process in SHAs where randomly planted anti-tank mines are reported requires careful consideration by the organisation and the final decision for selecting the suitable approach should be based on facts.

### 5.5 Establishing Cut Lanes to Different Parts of CHA:

The main purpose of establishing cut lanes in different parts of the CHA is to have better access within the CHA. This allows technical survey team to collect more reliable information to make factual based decision. This should make the team able to reach to a decision to release some parts or the whole area without further clearance operations or identify one or more DHAs for subsequent clearance operations. In some occasions and based on evidences the HTA may include some portions of the land that had not been covered in the CHA polygon.

The information obtained from the community should not be considered enough for identifying the boundaries of actual hazard, but further targeted technical survey should be conducted to identify the DHA within HTA.

Note: Normally, the team should reach to a decision to clear a buffer of 5-10 meters around the boundaries of the DHA, but the fade out distance should be site specific and dictated in light of the findings during DHA clearance. The HTA shall be addressed first and then to direct focus towards the LTA using the appropriate technical survey approaches.

### 5.6 Technical Survey in LTA Using Systematic Investigation Approach

Systematic technical survey should be conducted in those areas where there is no certain and high source of information about presence and or absence of hazard. Such areas may be considered as low probability mined areas.

Systematic investigation shall be spread uniformly over the whole area, as this will allow the team to find more reliable information through having access to different parts of it. This will help the team to decide for subsequent clearance operation or cease the operation and release the land back to the community or land owner. **Annex A** to this AMAS shows the pictorial description of land release process.

#### 5.7.1 Targeted investigation:

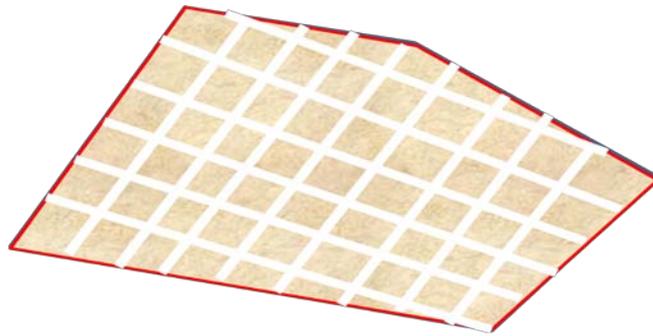
Targeted investigation is the suitable method of technical survey if there is reliable information and or evidence about the location of mine belts, accident points and other signs. This can allow the team to direct their investigation lanes towards target area within the HTA.



#### 5.7.2 Systematic investigation:

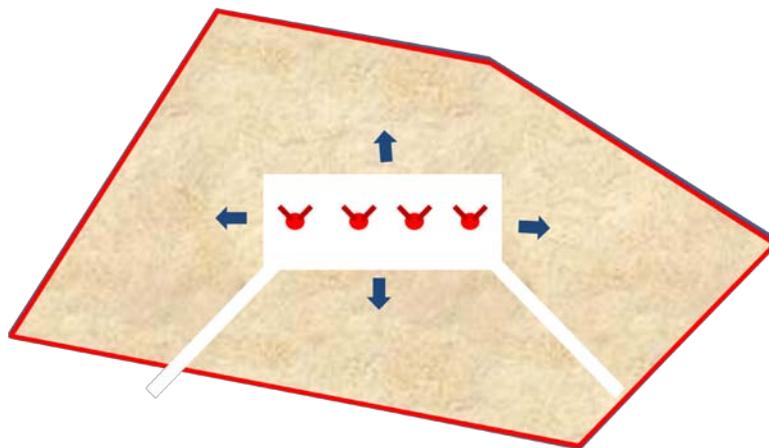
Systematic investigation is a suitable method when there is low probability of mine presence in the reported area. Systematic investigation approach allows the team to have access in different parts of

the area and objectively make further decision on continuation of operation or closing the areas without further efforts.



### 5.7.3 Inside out Approach:

This method is a follow up of targeted investigation where the team will extend the clearance based on findings of targeted investigation to the surrounding of the targets identified in HTA.



## 5.7 Technical survey team requirements

The following requirements shall be undertaken by organisations performing technical survey operations in the field:

- a) Training: Mine action personnel involved in technical survey shall be suitably trained, experienced and qualified. Refer to AMAS 04.01.
- b) Equipment: Prior to deployment to the field, the organization shall ensure the teams are properly equipped with the technical survey required equipment.
- c) Communication. The technical survey teams shall be equipped with suitable type of communications that allows them to maintain communications with their office.
- d) Liaison. Technical survey teams shall maintain proper liaison with community, local authorities and other stakeholders and ensure that all are aware of current demining intervention.
- e) Medical support and evacuation. The technical survey team shall be supported with a dedicated medic. The team shall also be aware of the closest available medical facilities and prepare a medical evacuation plan (CASEVAC) for each worksite.