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# Land Release and the Evaluation of Mineclearance

*'When I use a word,' Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean - neither more nor less.' 'The question is,' said Alice, 'whether you can make words mean so many different things.' 'The question is,' said Humpty Dumpty, 'which is to be master - that's all.'*

***- Lewis Carroll***

## Summary

**Land Release has been widely hailed by some donors and mine action personnel alike, as a cost-effective solution to the problem of landmine contamination. Some operators now claim to be able to "release" large areas of suspect land without the need to deploy costly mineclearance assets, apparently saving scarce donor funds. The reality however is more complex. Some of the land "released" in this way was either never contaminated at all or has been reclaimed by local people without the intervention of the mine action community. Poor quality Landmine Impact Surveys have clogged national databases with phantom minefields that can be removed at the click of a mouse. Rectifying these errors does not deliver any benefits to poor subsistence farmers still suffering from the effects of genuinely mined land, or to those who were originally unaffected by the phantom minefields. This short paper clarifies the process of responsible land release and proposes a rational approach to evaluating mineclearance, in line with standard OECD criteria of relevance, effectiveness, efficiency, sustainability and impact.**

## Contents

## 1. What is meant by Land Release?

### (i) Definition

Land Release is a term that has been used to describe some or all of the stages of the process by which land which has been suspected to contain mines can be reclassified as no longer hazardous, and formally made available for public use. It is also used to describe the final outcome of this process. The official International Mine Action Standard (IMAS) definition states:

***"Land Release is the process of applying all reasonable effort to identify or better define [a] Confirmed Hazardous Area and remove all suspicion of mines/ERW through non technical survey, technical survey and clearance using an evidence based and documented approach" [1].***

### (ii) Process

The first step in the process of land release is called **non-technical survey** (NTS) of an area where there has been a report of mines. This might be a completely new report, or a follow-up of previous survey on a recorded **suspected hazardous area** (SHA). In either case, the result of NTS should be a well-defined **confirmed hazardous area** (CHA) or the removal of suspicion that the area (or part of it) is hazardous. This process is shown in the decision tree provided by IMAS 08.20 (Figure 1A). This is discussed further in section 2, below.

The second step in the IMAS Land Release process (Figure 1A) is **technical survey**. The IMAS concept of land release introduces an artificial separation in time between technical survey and clearance. It also implies that technical survey will lead to the discovery of a "Defined Hazardous Area" (containing all the mines), and a separate area with "No evidence of explosive hazard" within the previously identified CHA, before any clearance takes place. HALO argues that this is quite impractical in most CHA. This is because, in order to find and neutralize the whole hazard, the area that it is in has to be located and cleared. Clearance of a whole hazard requires a combination of technical survey and clearance and the two should not be separated.

The reality of the Land Release process is shown, alongside the IMAS version, in Figure 1B. In practice, technical survey usually proceeds in parallel with clearance and the hazardous area is only defined as it is actually being cleared. The final extent of the "**defined hazardous area**" involved can only be accurately measured after technical survey/clearance have been completed, and when final documentation is being prepared for the updating of the database[2]. While a rigidly sequential process, separating technical survey from clearance, as envisaged by IMAS, might be technically feasible in some cases, HALO believes it is impractical and costly.

### (iii) Cancellation or release?

The IMAS diagram also indicates that non-technical survey of previously recorded suspect land (often land identified as suspect by an LIS survey) can, if "no evidence of explosive hazard" has been found, lead directly to release of that land. While it is true to say that a suspect area can be reclassified as not suspect without clearance, the use of the same term "release" for this land, as well as for land which has been declared mine-free after being subjected to an exhaustive process of technical survey and clearance, at considerably greater cost, gives a misleading impression of achievement.

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[1] IMAS 08.20 "*Land release*". UN Mine Action Service (UNMAS), New York, USA. 20 pp.

[2] IMAS 08.22, Technical Survey, (2009) page v, states: "In many cases… it is only after technical survey and clearance are completed that the true nature and extent of mine/ERW contamination can be fully understood."

The crudely estimated polygons resulting from LIS surveys, can often be rapidly and substantially reduced by professional non-technical survey and liaison with local community informants, without deploying costly clearance assets.

The disparity in usefulness between these two types of "released" land, is also recognised by IMAS 08.20, which states (immediately after the definition of land release) that: *"The polygons, from an impact survey or other non-evidence based survey typically labeled SHA, are often incorrectly perceived as boundaries of mined areas and correcting these mistakes is not the same as releasing land."* This suggests that reducing an SHA to a CHA by non-technical survey does not after all constitute valid land release.

It is these ambiguities in the IMAS standard for Land Release that have encouraged some operators to report large areas of SHAs (up to 500 $km^2$ in one case) as having been "released", while other operators would not consider this land as "released". An alternative, and in HALO's view a more appropriate designation for such discounted areas of land, is "cancelled".

## 2. The problem of inadequate initial survey

There are two possible reasons for large areas of land being reported as released. Firstly, the "released" land may never have been suspect in the first place, but was misreported as suspect due to poor survey technique, and wrongly entered into a national database. Such land may or may not already be in use by local people. Once its true status has been clarified by non-technical survey (NTS), it can be cancelled by removal from the National Mine Action Authority (NMAA) database.

Secondly, the "released" land may once have been genuinely suspect, but the mine contamination was very diffuse and local people have already taken the land into cultivation, using their own resources to remove any mines or UXO that they found. Any such land that has been cultivated for three years without accident can be regarded as "reclaimed". Reclaimed land is a sub-category of land cancelled by non-technical survey (discussed further in section 3, below).

The frequent disparity in size between areas of land initially reported by impact surveys and the much smaller areas ultimately cleared arises from the imprecise nature of survey data held in national mineclearance databases in many countries. Initial impact surveys, often known as Level One Surveys (L1S) or Landmine Impact Surveys (LIS) were often carried out by inexperienced surveyors, untrained in mineclearance, who did not know how to get good information from local people, and were understandably cautious in approaching the edge of a minefield of which they had inadequate knowledge.

The resulting circles drawn around SHAs in LIS surveys were often ten or more times larger in area than the true extent of the minefield. Faced with such exaggerated SHAs, an efficient clearance operator would conduct a non-technical resurvey of the area, using trained minefield surveyors, to delimit the hazard more closely. The difference between the original SHA polygon and the new smaller CHA can then be cancelled and removed from the database.

Ideally however, the first step should be a thorough non-technical survey, either instead of or as part of an LIS, resulting in the delimitation of CHAs rather than the creation of SHAs, with the consequent saving of a great deal of donor funds. The difference

between conventional impact survey and correct non-technical survey is exemplified by the Angola Landmine Impact Survey (Box 1).

**Box 1. The Angola Landmine Impact Survey: setting best practice for estimating minefield areas**

The Angola Landmine Impact Survey (LIS), published in 2007, covered 18 provinces of Angola, all of which were contaminated by mines and unexploded ordnance (UXO). HALO Trust was allocated four provinces to survey for the LIS (Benguela, Bié, Huambo, and Kuando-Kubango). Only HALO applied a rigorous methodology for identifying the perimeter of each suspected hazardous area (polygon mapping), to define closely the area actually contaminated.

**HALO's approach resulted in an average suspect hazardous area (SHA) size only one-ninth of those measured by the other LIS operators**. **In just its four allocated provinces, HALO located more than a third of all the SHAs identified in the whole survey. However, once accurately defined, these measured only 6.4% of the total estimated suspect area**. **As a result of HALO's survey work, the National Mine Action Authority (CNIDAH) concluded that the overall contaminated area in Angola might well be as little as one sixth of that previously suspected.**

This has reduced the perceived mine problem to a more manageable size, encouraging donors to invest in clearance and enabling operators to focus on clearing only genuinely mined land for development, thereby freeing communities from the risk of injury and death.

Source: Landmine Monitor 2009, pp 158-159.

## 3. What is meant by cancellation of suspect land?

The IMAS defines a Cancelled Area as "an area of land, previously recorded as a hazardous area" (due to suspected mine or UXO contamination) "which subsequently is considered, as a result of non-technical and technical surveys, not to represent a risk from mines and ERW"[3].

In IMAS, land cancellation is a crucial concept for understanding Land Release, since all land which is suspected of being hazardous by reason of contamination with explosive remnants of war (ERW) must either have that suspicion removed through a process of cancellation, or be released by physical clearance which removes and destroys all mines and unexploded ordnance (UXO). However, in the process of Land Release as defined by IMAS, there are actually two different categories of land cancellation:

### (i) Cancellation by non-technical survey

The first type of IMAS cancellation process is the removal of part or all of an SHA, no longer suspected to be hazardous, from the NMAA's database as a result of non-technical survey (NTS). Any part of the original SHA which is not cancelled is then referred to as a confirmed hazardous area (CHA). In general, cancellation by non-technical survey removes errors from a database without changing the situation on the ground. HALO agrees with this process and definition. Local people are usually well aware of the true status of the land, and in some cases (e.g. in Cambodia) may have reclaimed lightly contaminated land themselves by removing mines or UXO while farming. As a result there are usually no direct beneficiaries from this type of cancellation.

[3] See IMAS 04.10 (2009) "Glossary of mine action terms, definitions and abbreviations", Item 3.29.

**(ii) Release by technical survey**

The second type of IMAS cancellation process is the removal of part or all of a CHA, no longer suspected to be hazardous, from the NMAA database as a result of technical survey (TS) associated with clearance. This usually leads to the land, previously unused by local people because of suspicion of hazard, being returned to productive use. For clarity it is better to refer to such areas of land as released by technical survey, rather than merely cancelled, since the land was previously subject to justifiable suspicion and often contiguous to genuinely mined ground cleared by formal survey.

It is important to note however that technical survey is in effect a sampling process (often involving the use of detectors to clear a grid). However if an area is sampled and nothing is found, it cannot be concluded that the whole area is safe. Where mines have been laid in a clear pattern (e.g. a *cordon sanitaire*) gridding may find the edges of the minefield, allowing some suspect land outside the belt of mines to be cancelled. In all cases it is only after the situation across the whole mined area is understood, that parts of a CHA can be referred to as being cancelled (released) through technical survey.

Mines and other explosive hazards (e.g. cluster bombs) are sometimes distributed unpredictably and in such cases technical survey (TS) alone will not give certainty of absence[4]. IMAS allows for land to be released by technical survey, without full clearance, if all other sources of evidence have been taken into account and support a strong presumption of the absence of mines[5]. However the HALO Trust argues that if there was still sufficient justifiable suspicion, after conducting competent NTS, to proceed to technical survey, then finding no mines by TS does not change the situation. A fuller discussion of the right and wrong use of technical survey can be found in "Land Release: Best Practice and Bad Practice" on the HALO website.

In a nutshell, land released by technical survey is that part of a CHA which has not been cleared because the combination of technical survey and clearance in the rest of the CHA has led to certainty that the whole hazard has been removed.

## 4. What is best practice in releasing demined land?

Best practice in demining involves a sequential process of:

**(i) An initial non-technical survey** (NTS) which generates **the smallest feasible defined polygons of contaminated land (confirmed hazardous areas or CHA)**, even in the absence of any previous LIS survey. This process is based on the sites of accidents and any mines located, on former combatants' and local population's knowledge of how mines were laid in the area, and on practical observation of land that has evidently been used without accidents. NTS should be conducted by appropriately trained and experienced personnel.

[4] IMAS 08.22, Technical Survey (2009), page 3, states that "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."

[5] The wording of the IMAS definition of technical survey (3.284, 2009) reflects this need for caution: "It … may indicate the absence of mines/ERW which could allow land to be released when combined with other evidence."

**(ii) Narrowing down a suspected hazardous area (SHA) derived from any previous LIS to the smallest feasible defined polygon of contaminated land (a confirmed hazardous area or CHA) by non-technical survey (NTS)**. The difference between the LIS SHA and the CHA resulting from NTS can be regarded as land cancelled by NTS (see **Figure 1**).

**(iii) Clearance by physical investigation of the site to find and remove all mines**. The initial part of clearance, involving locating the edge of a minefield by one of several direct investigative techniques (breaching lanes, dogs, flails etc), may be referred to as Technical Survey (TS). However this process continues throughout clearance and therefore, in HALO's Standard Operating Procedures, does not usually constitute a distinct phase. The area which is actually found to contain mines is the defined hazardous area, or DHA. However the actual extent of the DHA is usually not precisely known until clearance is completed. Retrospectively, the difference in area between the CHA and the DHA can be regarded as having been released through TS (see **Figure 1B**)[6].

**(iv) Handover to local authorities and local people**, based on objective assessment (from detailed minefield maps and survey data) that the hazardous area, or a defined section of it, has been fully cleared to standards stipulated by the National Mine Action Authority and is now as safe as reasonable effort can make it. A process of external quality control may be carried out by the NMAA before hand-over. Only at this point can the original area of suspect land be said to be fully released and the NMAA database be updated accordingly.

## 5. Why is the overall area of land released not a good indicator of value for money in mineclearance?

The area of land that is "released" by the process of non-technical survey, technical survey and clearance is often claimed as the whole of the original SHA, whereas the area that has been cleared (the land which actually contained the mines) may be a much smaller part of that area. The largest component of released land claimed by some operators is often the cancelled suspect land which, as we have seen, either was never suspect or has ceased to be suspect without any official demining activity. Including both categories within a single reported figure of land area "released" is misleading. Such figures may sound impressive, but they are not a legitimate measure of the true benefits accruing to local people, whether in terms of accidents avoided or new land made available for their use.

**In reality, a claim to have "released" (i.e. cancelled) a large area of suspect land, while only a small area of land is actually cleared, is more likely to be an indicator of inaccurate original SHA survey than an indicator of efficient or effective mineclearance.**

Since there is no IMAS standard for a Landmine Impact Survey, a loose concept of land release has actually encouraged bad practice in impact survey, allowing operators subsequently to claim much greater areas of land as "released", because the initial SHAs were so poorly defined. The way forward is to evaluate mineclearance outputs

[6] IMAS uses of the term "cancellation" to cover both SHA land found to be uncontaminated by mines and ERW through non-technical survey and CHA land found to be uncontaminated by direct investigation during technical survey/clearance. This ambiguity in IMAS contributes to a lack of clarity in land release. The HALO Trust would prefer to use the term "release" for the latter situation where there is a genuine suspicion of hazard which requires deployment of technical survey/clearance assets to resolve, and which leads to a genuine increase in the land available for local people's use.

in terms of the separate components resulting from non-technical survey and from technical survey/full clearance.

## 6. So how should donors evaluate mineclearance outputs?

The outputs of mineclearance need to be judged primarily against the five standard criteria for evaluation of development assistance approved by the OECD and adopted by most donors[7]. Some appropriate indicators include:

### (i) Relevance

- The geographical pattern of mine accidents in relation to the location of the demining effort can be used to assess the relevance of an operator's demining activity, if the mapping scale is fine enough.
- Density of contamination cleared, expressed as the number of anti-vehicle (AV) or anti-personnel (AP) mines found and removed per hectare of confirmed hazardous land[8]. The greater the density, the greater the hazard removed.
- Proximity of mined areas cleared to communities and community assets.

### (ii) Effectiveness

- The number of demined confirmed hazardous areas (CHAs) actually handed back to local people after external quality control.
- Within a given SHA, separate accounting (post-completion) for:
    - The area of confirmed hazardous land (not already used by local people) that has been cleared by the use of manual or mechanical demining assets.
    - The area of confirmed hazardous land (not already used by local people) that has been released by technical survey, and has therefore not needed to be physically cleared. This figure is relative to an initial non-technical survey polygon (CHA) that might have been overstated by poor survey. The minefield map will give some indication of the true situation (see section 6 (iii) Efficiency, below).
    - The area of suspect hazardous land (SHA) cancelled by non-technical survey (a secondary indicator to be viewed with caution in the light of the provisos mentioned above).
- The length of road opened up to NGO traffic that would otherwise not have been permitted to use suspected hazardous roads. This measure can be augmented by qualitative or semi-quantitative assessments of the area of hinterland opened up by clearance of such roads (e.g. number of villages affected).

### (iii) Efficiency

- Minefield maps showing several closely defined survey (SHA or CHA) polygons tightly enclosing areas of mined ground, rather than large areas with a few dispersed mine concentrations within them[9]. This can only be judged through *post hoc* quality control in a specific situation and cannot be predicted at the outset. Judging the quality of demining may be assisted by study of the sequence of actions taken during the process of clearance. This may involve

[7] Development Assistance Committee (DAC) Criteria for Evaluating Development Assistance. http://www.oecd.org/document/22/0,2340,en_2649_34435_2086550_1_1_1_1,00.html

[8] This is a relative, not an absolute measure. Depending on the type of mines, past accidents or other factors, local people may be effectively deterred from using an area of land even though it has few mines, or occasionally, none left.

[9] The ratio of the number of SHAs recognised to their total area provides a relative (but not absolute) indicator of good practice in impact surveys. See **Box 1**, p. 3.

examining the minefield task dossier, including the visitors' log and maps of tasks which are still in progress.

- Area of CHA cleared or mines removed per deminer or per unit of funding investment. This needs to be assessed across all minefields in a funding period, since the quality of initial survey information is highly variable. It is entirely possible for no mines to be found in an area that local people are entirely convinced is mined.

**(iv) Impact**

In addition to the output indicators, there are also indicators of the outcomes of demining which represent the impact of the action. These include:

- The numbers and the areas of cleared CHAs actually used for infrastructure, agriculture or other forms of resource use within a specified period after hand-over to local people. An evaluator can examine data collected by the operator or by the NMAA, or can conduct their own rapid sample survey.
- The declining trend of human (and livestock) mine accidents over a five year period for the relevant district (if available).

Beyond these fairly direct measures of impact, the increased pace of development following demining, as judged by new roads, schools and clinics, increase in school attendance and inoculations could be assessed. However with these measures, collection of useful data is time-consuming and expensive, and there are substantial difficulties in attributing the effects directly to demining, as compared to improved governance or funding or other causes. In most cases it may only be possible to infer that demining has made a contribution to the delivery of these benefits. In cases where demining agencies are able to partner directly with development actors to deliver additional benefits, these may serve to further obscure the correct attribution of beneficial outcomes deriving directly from the demining activity itself.

**(v) Sustainability**

- Formal handover of cleared land to the local community correctly carried out and documented, avoiding any future confusion that might cause a return to suspicion.
- Clear assignment of demined land to specific households agreed and recorded between NMAA, local authorities and the operator.

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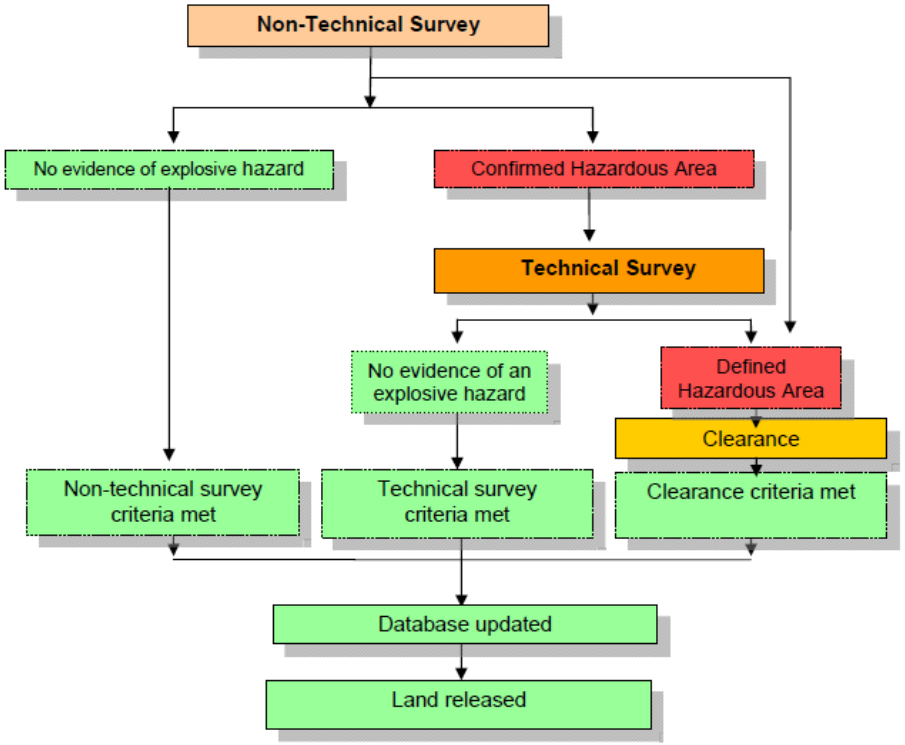
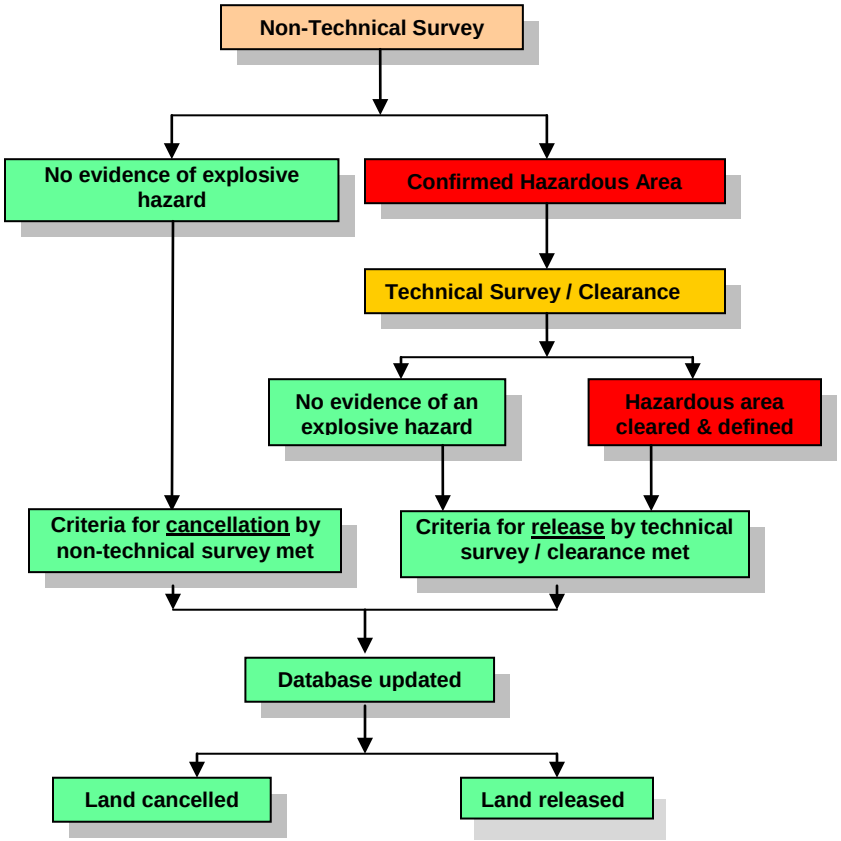
**Figure 1. Modified IMAS Decision tree diagram for Land Release**

**(A)**




**Theoretical Sequencing of Land Release Process**
(according to IMAS 08.20, (2009), p. 4)

**(B)**




**Realistic Sequencing of Land Release Process**
(as undertaken by HALO)