Vietnam Veterans of America Foundation /
Information Management and Mine Action Programs
(VVAF / iMMAP)

Emergency surveys in Humanitarian Mine Action
Elements of a Protocol

A stockpile ready for clearance by Mines Advisory Group (MAG) personnel in Luhonde village, in the southeast of the Democratic Republic of Congo. The village had been the object of an emergency survey with emphasis on abandoned munitions.

Summary

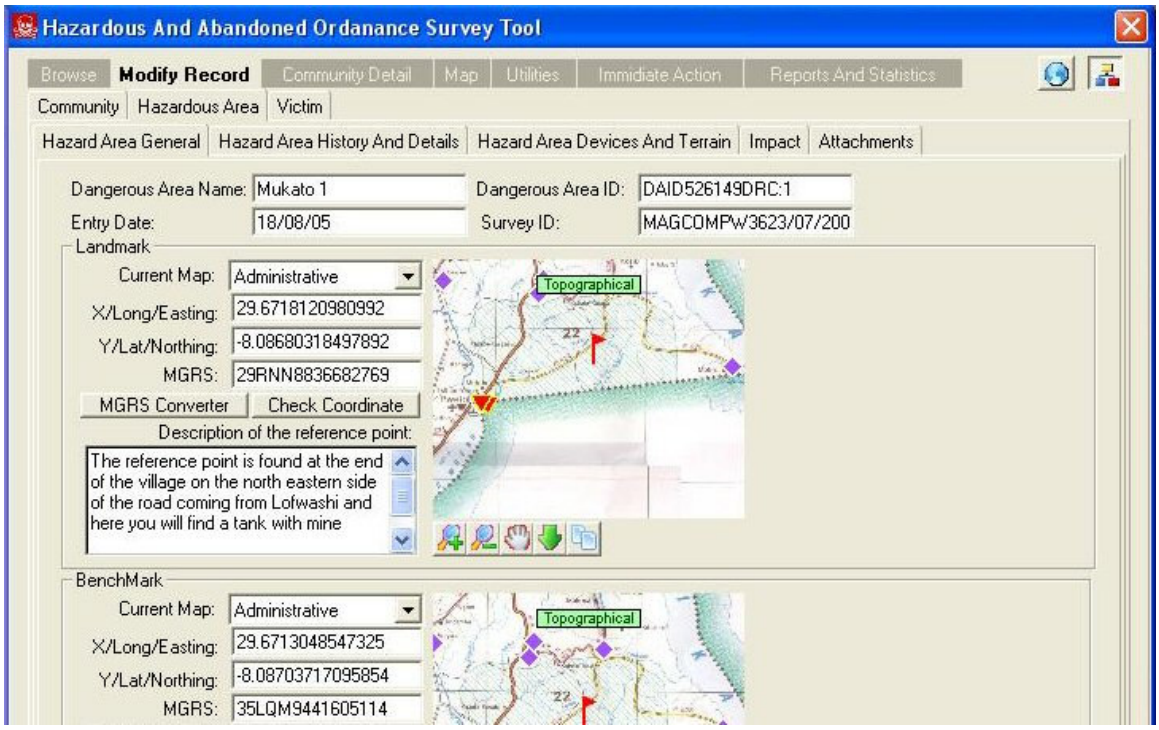
Emergency surveys need a methodology that integrates them tightly with the technical requirements of Humanitarian Mine Action (HMA), notably clearance and disposal. One of the objectives is to accelerate the response to the needs of surveyed communities. While the protocols of the well-known Landmine Impact Surveys (LIS) provide many of

the methodological building blocks, in other aspects they fall short of guiding rapid data collection in a volatile and impoverished post-war environment.

This note is a work in progress that starts addressing some of the current inadequacies and delineates possible solutions. Rather than being a practical handbook, it discusses a number of conceptual and organizational issues. These are interwoven with elements of practical action, including a catalogue of minimum information fields and a sample questionnaire. It must be understood that these are possibilities, not definitive recipes, although some are obviously more likely to succeed than others in typical emergency survey environments.

The basic assumption is that the coverage error – the disagreement between target population and sampling frame – is much larger than we are used from the LIS. The community gazetteer is absent or very defective, and expert opinion on affected communities is poor. In this situation, neither the full-census approach to suspected communities nor sample surveys of unsuspected ones for the control of false negatives work satisfactorily.

Instead, the sampling strategy has to aim at the positives. In addition to visiting communities and stand-alone sites known to be contaminated, survey teams may sample the river and road network. They travel selected circuits in search of affected communities. Two strategies are appropriate: adaptive and purposive sampling. Under adaptive sampling, teams terminate or expand the search depending on the affected/non-affected status. Teams may just visit more suspected communities as they travel, or may stop within a narrow band en route to the next suspect, as appropriate. Under purposive sampling, elements – communities, circuits, even elements of suspected areas such as road segments – are selected by virtue of an *external* property, usually their importance for relief and development programs (typically planned and implemented by other organizations) in conjunction with HMA capacity considerations.



A screen segment of the application developed under the "Abandoned Ordnance (AO) and Hazardous Ordnance (HO) Site Survey Methodology Project". Known by its current acronym "HAOST", this tool is available for data entry and limited data management in emergency surveys of similar orientation and is compatible with the LIS standard IMSMA application.

Survey returns must be processed rapidly – typically in weekly batches – for use by the regional (e.g., provincial) HMA community. Case listings, district and site maps, simple descriptive statistics are produced for actionable inventory, not for representative prevalence estimates.

In other regards, the emergency survey will do well to follow practices that have proven effective in the LIS. In particular, adequate pre-tests of instruments and field staff competence are necessary even if practical arrangements have to differ from the LIS. Data should be reviewed close to where it originates, which calls for proper field-editing. For data entry, the new Hazardous and Abandoned Ordnance Survey Tool (HAOST), developed by MAG / VVAF, is available, offering greater technical detail than the LIS part of Information Management System for Mine Action (IMSMA), yet programmed for migrating data to IMSMA. The scoring of impacts may require local adaptation beyond the setting of weights for blockages.

The protocol is segmented into sections regarding: Aims and concepts, survey infrastructure, survey phases, instruments, the questionnaire (enumerating minimum information requirements), and fieldwork. Illustrations are drawn mainly from the recent emergency survey in Haut-Katanga, Congo (conducted as part of the USG Department of State-funded Abandoned Ordnance and Hazardous Ordnance Site Survey Methodology Project), and in small measure, from Kosovo, Afghanistan and northern Iraq. A sample questionnaire and scoring sheet are appended.

Acronyms

AO/HO	Abandoned and hazardous ordnance
DRC	Democratic Republic of the Congo
EMAS	Emergency Mine Action Survey in Iraq
EOD	Explosive Ordnance Disposal
ERW	Explosive Remnants of War
ESTI	Emergency survey Tool for Iraq
GPS	Global Positioning System
HAOST	Hazardous and Abandoned Ordnance Survey Tool
HMA	Humanitarian Mine Action
IMSMA	Information Management System for Mine Action
LIS	Landmine Impact Survey
LQAS	Lot Quality Assurance Sampling
MAG	Mines Advisory Group
MRE	Mine Risk Education
NGO	Non-governmental organization
UXO	Unexploded ordnance
VVAF	Vietnam Veterans of America Foundation

Table of Contents

Background, Aims and Concepts

Emergency surveys in humanitarian mine action (HMA) have **goals** similar to those pursued by traditional Landmine Impact Surveys (LIS). They aim at improving the informational basis of relevant, effective and efficient HMA. They do so in a perspective of demonstrating the socio-economic impacts. They describe the impacts in terms of population at-risk, nature and location of the contamination and victim characteristics meant to inform practical decisions. The goals of emergency surveys may differ in one aspect on which LIS traditionally elaborate little: They may be used to evaluate the risks that the contamination poses to peace and stability, particularly the risks to returnees and the danger of abandoned munitions to be recycled into new violence.

The **objectives** of emergency surveys, however, are clearly different from those set for surveys in more settled circumstances. First and foremost, emergency surveys place a higher premium on speed and on concurrent use of their information for tactical HMA decisions while data collection is continuing.

The emphasis is on the rapid creation of actionable **inventory** (of contaminated sites, populations at-risk, or survivors in need), possibly at the expense of the unbiased estimates of prevalence that the LIS has achieved. The survey environment may be volatile and insecure, with the result that basic information on local communities is largely absent. Survey workers may have limited control over the selection of local experts, guides and respondents (see box on guide selection in the DRC on the next page). Entity relationships assumed in the LIS such as the attribution of each hazardous area to some local community may be selective or unverifiable. Information that the LIS uniformly collects for the importance scoring of surveyed entities (notably of affected communities for clearance priorities) may be sketchy, irrelevant and in need of supplementing by local, case-based deliberation. More than the usual concerns of the survey profession, **security and logistics** will be powerful drivers.

The loss of representativeness may be further complicated by modifications of **scope** that the post-war situation forces upon the emergency survey. For example, in regions afflicted with massacres and mass rape, mine and UXO strike survivors may form such a small minority among trauma victims that the collection of detailed information on this limited group of victims may not be productive. In another type of scenario, the notion of open-field type hazardous areas contaminated with landmines and scattered munitions may pale in the face of large caches and stockpiles of small arms and light weapons.

Such special situations, if judged important for subsequent HMA, should be allowed to affect the design of an emergency survey. For example, small arms caches may have tenuous rapport with nearby farming communities, but may be clearly linked to regional militias and their local commanders. These are not our normal survey entities. Including them may create data management challenges that will need to be handled in some way – yet, a universal recipe applying to most conceivable situations does not seem feasible.

Guide selection in the DRC

Guide selection during the Emergency survey in Haut-Katanga, DRC, proved to be delicate, because of high levels of mistrust and also of the more intrusive approach to suspected areas. As usual in the LIS, it was during the interviews held with community members that survey teams would discuss the selection of a local guide to take them to the hazardous area. The guide had to meet certain criteria: they had to have a good knowledge of the area concerned and they had to be one of the people involved in the interviews.

The survey teams were careful to ensure that no mines were suspected to exist in the hazardous area since this would entail a more cautious and less intrusive approach to the suspected area. Normally, in the DRC one or two community members would act as guides. All children who attempted to accompany the team to the hazardous area were made to return to the village. The teams then used tracks or paths which were well traveled and which had obvious signs of use (footprints, tire tracks). Survey teams were trained to always be conscious of the nature of their guide – whether the guide showed indications of risky behavior towards ordnance and whether the team felt confidence in their knowledge of the area.

This level of confidence was especially important in the DRC since the methodology called for a more intrusive approach than that used by the LIS. MAG teams were asked to identify and photograph munitions as much as possible which entailed getting closer to the abandoned ordnance. This approach was feasible given the surface nature of the UXO contamination. This additional information was seen as being an important technical aspect of the survey, which would enrich the data and speed up follow-on clearance activities.

Typically, however, a number of entity relationships can be anticipated for most, if not all, survey situations. For example, all hazardous sites have a geographic location and are filled with devices that ultimately can be identified. This protocol is mostly concerned with these basics. In addition, it addresses a recurrent, although not classic (in the LIS sense) type of situation: **abandoned and hazardous ordnance** (AO/HO). Formats are needed that expedite solutions for the disposal of such ordnance while continuing to feed HMA community with data on the customary minefield, battle field and spot contamination. In terms of the importance that the traditional LIS scoring methodology affords, AO/HO sites may go unnoticed for lack of perceived socio-economic impact. De facto they pose grave risks for the well-being of civilians and for the stability of peace and reconstruction. The emergency survey needs to highlight them including through an adapted scoring system.

The **basic entities** of the emergency survey are community, survey, hazardous area, recent victim, and explosive device. In this, it is the same as the LIS. And, as in the LIS, outside the database design, “community” and “survey” are almost identical. A difference arises in the sense that hazardous areas can be the object of an emergency survey without any local community to which it is attributed. We will call these “stand-alone hazardous areas”. Similarly, recent victims can be related to a community or a stand-alone hazardous area. Suspected **routes** (roads, railroad lines and other line features) form an important special case, calling for a type of emergency survey with its own equipment and expertise. This protocol does not cover route assessments; see the insert at the end of this section.

A concept that has not been used systematically in the LIS is **"nearest town"**. As will be repeated many times in this text, the emergency survey usually has to work with very defective administrative information. "Nearest town" is a makeshift construct, the nearest (from the affected community or stand-alone hazardous area) populated place that figures in some official or semi-official community listing. This could be: a statistical gazetteer, a UN Humanitarian Information Center place code system, or a map widely used by the relief community.

A special category: Route assessments

Route assessments form a special category within landmine/UXO emergency surveys. They are different both from the needs and the methods perspectives and should not be approached with the means that this protocol details for the survey of communities and localized stand-alone SHAs.

Routes – roads, railroad tracks, navigable waterways, even dirt-track mountain passes traveled by refugees – that are untrafficable due to mines or other obstacles such as destroyed bridges threaten major bottlenecks in humanitarian action. They demand assessments and remedial action early on in the sequence of relief activities. Until routes are opened, humanitarian access may remain blocked or greatly hampered in general, and specifically for emergency surveys of the communities served by these routes.

Route assessments demand a heavier technical equipment and closer integration with clearance than surveys of distinct polygon SHAs that allow teams to work from safe outside points. The armored excavator that MAG workers in Angola prepare to unload in this picture, however, is more a treatment than an assessment tool.

Routes are essentially line features. Contrary to distinct polygon-type SHAs, which theoretically can be surveyed and prioritized as independent entities, mined routes create sequential dependencies. In order to assess the hazard at point B, the assessment teams will first need to navigate the hazard at point A. Depending on the type of contamination, the knowledge of it, and the humanitarian urgency, teams may need to move in armored vehicles and to combine assessments with clearance, bypass construction, and emergency repairs.

This calls for a mix of expertise that is more informed by the mine warfare engineering and logistics professions and by policy makers who set ex-ante priorities (as opposed to those based on completed surveys). Such an approach is reinforced by the poor knowledge that village communities may have of route conditions, particularly of the segments far from homes and markets and not traveled by heavy vehicles.

An example may help. During the emergency survey in the Pweto and Moba Districts, Katanga, DRC, data collectors were able to use motorbikes to access isolated communities. Some communities reported mined roads and destroyed bridges, which made whole sections of the local transportation network inaccessible to large vehicles, isolating communities from services such as Doctors Without Borders' mobile primary health care clinics. Yet villagers did not know much of the mined roads because they were bypassing the suspected sections, adding many hours and even days to their travel. They used bicycles or went by foot on small tracks to take goods to markets and access services such as health care in sub-district and district headquarters.

The information that villagers possess of route conditions may be elicited as one of several components of an extensive expert opinion collection and survey process. For example, in its Angola program, MAG carefully pieces together its "Route Assessment Reports" from six types of sub-reports:

- Village Summaries
- Interview records
- Bridge Summaries
- Pavement Summaries
- Threat Summaries
- Observation & Deduction Summaries

In addition, MAG's database holds the way points collected while constantly mapping the road, thus allowing for an accurate plotting of the route and for pinpointing of reference points. A senior management team finalizes each assessment report, with specific recommendations as to the use of the route and its possible treatment together with mine action partners and other agencies.

In sum, route assessments are sufficiently different, in priority and expertise, from the objects of this emergency survey protocol to justify their own set of guidelines. In many situations, however, Emergency Surveys may depend, at least in part, on preceding effective route improvements.

Survey Infrastructure

In countries with physical and social infrastructure greatly weakened by war and insecurity, the emergency survey will be circumscribed less by methodological limitations than by **external factors.** The survey organization may need to run supply lines, or make partnering arrangements, for the provision of such basics as fuel, drinking water, food, camping gear, stationary and batteries that in more stable countries can be obtained in local markets. Similarly, communications with, and transport of, survey workers may become subordinate to the rhythm of other organizations, or of other departments in the organization doing the survey, notable the EOD teams. In fact, logistical constraints and budget implications may come to determine methodology, such as by ruling out as excessively expensive the scouting for affected communities outside clusters of areas that are confirmed contaminated.

As a rule of thumb, an emergency survey organization may need to create and equip an intermediate layer of survey infrastructure between the naturally fixed-point central headquarters on one end of the organizational hierarchy, and the mobile interviewer teams on the other. This layer may consist of, among other things, temporary **field camps**, fuel storage and supply points, places to withdraw cash from, and vehicle repair arrangements.

Survey Phases

Set-up

During the initial set-up phase, the survey managers pursue several objectives in parallel. In addition to creating a physical **infrastructure** that supports the coordination function, they reconfirm the need for, and feasibility, of the survey. They create or reinforce its legitimacy with various stake-holders and observers, put in place a **coordination mechanism** with stake-holders and obtain what **foundational information** others are willing to share regarding the object of the survey. And not least, they need to come to terms with the country's **security** challenges.

Central headquarters

Survey headquarters will normally be set up in the national capital because of better security, communication facilities, and closeness to stake holders and job markets for the kinds of qualifications needed. Special situations motivated by logistical convenience, political divisions or a strictly regionally confined explosive remnants of war (ERW) problem may militate for a headquarter location outside the capital. It is often possible to set up office at an **appropriate institution** such as the Ministry of Planning or the UN Mine Action Center.

National authorities

In some countries, social surveys of any kind need government clearance. Apart from security and legal requirements – the labor law can be particularly tricky -, the central government bureaucracy and the armed forces capital offices will contain units that become key partners in the emergency survey, as suppliers of initial information and as consumers of the survey. A national **Mine Action Center** would be a clear case in point.

However, obtaining formal approval of the emergency survey as an activity in its own may be tedious and prohibitively lengthy and, in the extreme, subject to illicit demands. One has to investigate whether the emergency survey can be mounted as part of some other HMA or reconstruction activity already accepted. Regardless of the acceptance that the survey wins with central authorities, approvals may have to be negotiated, separately and repeatedly, with local powers.

Stake-holder coordination

There are an almost endless number of reasons why emergency survey managers should seek to identify stake-holders early on and contact them with a view to bringing cooperative ones into a coordination framework. Stakeholders may comprise of a **bewildering variety** of government offices, international and local relief, advocacy, social welfare, development and peace-keeping organizations, religious associations, professional and academic institutions, and others. Managers should have an unorthodox look also at the fringe elements among "the coalition of the willing" – groups with questionable connotations, but a self-interest that pushes them to collaborate for the greater good for landmine safety, such as extractive industry firms – and then make an ethical judgment.

These diverse quarters contribute political support, logistics, information (on the landmine / UXO, security and previous HMA situation, and more), translators, qualified recruits and the ability to vet candidates and to improve on survey formats and tactics. Ultimately, they receive, critique, disseminate and put to practical use the emergency survey information and findings.

There is little of general validity that can be formulated for stake-holder cultivation in all possible situations, except to point out that there is a difference between **stake-holders and experts**, and the way the former share their assets and advice is not neutral. Also, the capacity to network is always limited, and choices have to be made. As in all survey planning, one wants to secure **relevance, reliability and validity**. Trivially, reputation for honesty and helpfulness is one of the prized elements while navigating the stakeholder and expert networks. A consequence often overlooked is that valid survey results depend on **language** command, and during the rapid build-up to working in multi-lingual survey regions, identifying competent and affordable translators and trainers, and then, field staff, demands early attention.

For greater relevance, stakeholders should be queried on the appropriate scope of the survey, too. They may point to survey **work already done** in related areas – say, small arms, or persons with mobility problems – that can be piggy-backed or amplified by

inserting a small number of connector questions or using an established community identifier system. This can ultimately enhance the value of the emergency survey for both traditional HMA users and others beyond them.

Various degrees of formal coordination may come to be used during the lifetime of the emergency survey; a general rule does not seem feasible.

Foundational and HMA information

The informational basis of post-conflict societies is usually weak and volatile. One recurrent feature is of particular concern to the emergency survey: numerous **local communities** may be in flux, together with a great deal of population movement, abandoned settlements and selective resettlement. A consequence - one that forces a design modification over the LIS format, as we shall see – is the existence of mines and UXO in some areas that are not claimed by any currently populated communities. An abandoned munitions depot in a region depopulated by the war is such a scenario.

Nevertheless, there remain usually some information bodies that still have value concerning the distribution of settlements and populations. Securing copies of what is accessible information in the shape of documents as well as of persons with living memory of relevant facts is essential towards building the **emergency survey sampling frame** – in other words, the list of communities and stand-alone contaminated sites to be surveyed.

On the document side, hardcopy **maps**, GIS databases, administrative **gazetteers**, **census** and survey data may be available from a variety of sources. To some of them, the emergency survey will be pointed naturally. To others, a creative link may be needed; for example, former Soviet bloc pilots using Russian maps, oil exploration firms, or guinea worm eradication campaigns. Some of this information may be "in exile", and the principals of the survey through their international headquarter staff have a role in finding and channeling it. Straddling the international and local levels, embassies and donor coordination offices can occasionally provide access to valuable maps and data sets.

Personal knowledge can be harnessed systematically when collections of **local experts** – such as village deacons in a church network, vaccinators re-supplying at regional hospitals – are introduced to the survey and requested to draw maps of what they know, each of his/her own area of work and travel. Plausibly, in many situations, up-to-date security information still travels more in personal networks than committed to ink and bits.

Information that was collected as part of prior HMA activities is particularly pertinent for the emergency survey. However, one cannot be sure that it can be directly assimilated, and some disappointment about formatting discrepancies and lack of background documentation is to be expected. An example often cited concerns surveys of landmine amputees that give the current residence, but not the incident location. If those shortcomings cannot be repaired "on paper", a more promising strategy may be to hire some of the former data collectors and processors for part of the emergency survey.

The essential point to press here is that the assembly of foundational information, particularly the community gazetteer, will be messier than in the more settled circumstances of traditional LIS and will depend on **numerous updates** while fieldwork goes on. In fact, the creation and enforcement of a viable gazetteer updating mechanism is one of the managerial challenges for this kind of survey, and this should be addressed and written into survey training, operating procedures and stationary once the basic playing field is understood. Experience in Iraq has taught that the capacity of the other gazetteer contributors to assimilate update reports and to respond to specific requests is modest. The emergency survey will need to determine the **level of effort** at which it can verify presumed settlements and prospect for new ones during its own field operations.

Survey organization

Organigram

In the LIS scheme of things, **interviewer teams** and **survey groups** led by a field **supervisor** and a **field editor** were the classic building blocks in the field machinery. The number of teams per supervisor would be determined by workload considerations, notably the supervisor's ability to secure enough survey appointments in the villages for the teams to keep busy during most of the week and to do, together with the editor, a minimum of field checks. The default expectation was that with safe roads, good expert opinion on suspected communities and complete gazetteers from which to draw samples for the control for false negatives, the workload in a district was predictable.

These assumptions may not hold for the emergency survey. Moreover, logistics and security may be highly restrictive. That and the desire to respond promptly to some of the urgent clearance needs may call for different organigrams. For example, it may be productive to include **EOD personnel** within survey groups. It is not possible to suggest templates for every type of environment and task mixture. However, any survey organization should preserve one of the LIS achievements – quality assurance both in the managerial and in the substantive information sense. The latter refers to the **field editing** function, controlling survey returns for completeness, legibility and consistency.

Recruitment and training

The pool of suitable survey worker candidates has varied greatly in the number of applicants and in their quality among LIS, and there is no reason to expect that emergency survey managers would face problems worse that those overcome in the least endowed LIS countries. However, if the "emergency pressures" are real, they may frustrate some of the strategies that were helpful during the recruitment and training phase of several LIS.

The **time** that the management can spend soliciting applications from a wide spectrum of potential workers and subsequently vetting out claims to education, prior experience, tribal representation and other relevant characteristics, not to mention political pressure to get kin and clients employed, is likely shorter. This increases the preference for

candidates that other credible organizations have used in survey work. In countries with longstanding emergency relief traditions, there is usually no shortage of persons with enough education and useful job experience to work as data collectors and even as field supervisors, but positions that require editorial and translation skills are harder to fill. Field editors may have to be seconded from other organizations.

Second, in most LIS training phases, a first round of recruitment and training brought the requisite number of field supervisors, field editors and data entry personnel up to speed. This was an achievement on several fronts. Class was relatively small, fostering strong individual acquaintance between managers and supervisory staff as well as *"unité de doctrine"* in survey concepts. This first round of training would be used also for the **first pre-test**, with the result that the training of interviewers relied on instruments already tested. This produced a crop of supervisors and editors that would take care of part of the subsequent data collector training with the authority of personal, if very limited, field experience with the instruments being taught, and in the trainees' own language. And not least, running two trainings also bought the survey time for **expert opinion collection**, procurement and field arrangements. Typically, about half of the freshly trained supervisors and editors would help in the interviewer training (and survey stationary production); the other half would be dispatched to provincial or district headquarters for liaison, camp preparation and listings of suspected communities.

The emergency survey may not have that luxury, because of time pressures or because ferrying staff to pre-test communities and then back to the training site may not be feasible. An alternative is to recruit for general-purpose field responsibilities and train all selected candidates in a **common 1 – 2 week course** focused on **interviewer** competency. At the end, from among the better performing trainees, **supervisors and editors** are selected and are trained in a short course while those assigned as interviewers may be off duty or doing useful preparation work for a few days. All then do the first pre-test together, with an evaluation that may take place in the field, far from the original training site. This arrangement also lets managers assign recruits more flexibly to the levels of responsibility for which abilities revealed during training recommend them.

Interviewer training: Adding interviewers with new language skills mid-survey

The DRC emergency survey used the three existing MAG community liaison teams in order to facilitate the work and reduce the amount of time spent in training new staff. Two new staff members were recruited from the Pweto-Moba area, adding local knowledge and local language skills to the team. The MAG Community Liaison Manager acted as the field supervisor for the duration of the survey. The new staff members benefited from the experience and capacity of the more experienced staff members and were assigned to work alongside them at all times. Training took place over a period of two weeks with two field trips occurring to provide the survey teams with direct experience of using the new instruments in the field. Subsequently, retraining occurred on a regular basis as errors were noted in the data and difficulties with certain survey tasks became apparent.

However, this strictly is an emergency arrangement, and should be avoided if possible. It is largely in the interviewer training that the struggle for quality data is lost or won, and

teaching instruments (questionnaire, community mapping, hazardous area perimeter point recording, etc.) without the benefit of knowing what will work in the field is liable to implant and cement error-producing behaviors. It is much preferable to train interviewers in the confidence that the instruments basically work and to be able to have the **second pre-test** focus on interviewer competency rather than instrument quality.

In large surveys, with distinct regional staffs, a compromise may be justified. For the first region to be surveyed, two trainings and two pre-tests are done. With the lessons learned, this is abbreviated for subsequent regions.

Links to HMA activities

The particular links that the emergency survey develops with the various wings of HMA will also define the type of machinery needed. This is rarely discussed because landmine surveys, whether traditional hazardous area, socio-economic impact, or technical surveys, have been developed in a predominantly clearance perspective. And one expects that the addition of abandoned and hazardous ordnance concerns will further reinforce this perspective.

But there may be circumstances that give a stronger place, in the instrument design and/or in its administration, to other HMA components. The inadequacy of clearance resources or the cost and difficulty of sending specialist teams later may recommend the use of emergency survey staff for mine risk education (MRE) sessions before they leave the surveyed communities. A high number of survivors of trauma from causes other than landmine and UXO strikes may justify the collection of **additional data** on groups of persons with special needs or conditions carefully defined for the survey.

Two examples may illustrate the point. In one country, an NGO while conducting an emergency survey continued the group interview with sessions on MRE and on AIDS awareness. In another, the emergency survey had a narrow initial focus on road safety in coordination with international organizations that predicted routes of refugee returns and relief shipments. The modifications of the survey scope are reflected in changes in the requisite **skills and equipment** such as armor-plated vehicles in the second case.

Selecting units to survey

Survey target

The **target population** of the LIS is not straightforward, and that of an emergency survey looking also at hazardous areas unclaimed by any local community, even less so. In survey parlance, the LIS operates at two levels. To determine which communities are affected, and which not, the universe of all villages and city neighborhoods in the country is targeted. For the details of the landmine problem, only the affected communities are targeted ("selection on the dependent variable").

In a further step, the sampling frame is constructed out of all gazetted communities in districts suspected of having some affected communities. This excludes communities in

districts presumed mine-free as well as populated places not figuring in the gazetteer. As some readers may know, the community sample is then **stratified on expert opinion**. All suspected communities are visited (**full census** approach); the others are the object of a Lot Quality Assurance Sampling (LQAS)-inspired **sample survey** for the detection of false negatives. Within communities confirmed affected, information is taken on all hazardous areas and on all recent victims. A purposive-sampling element may come to play when the visual verification is not practical for all listed hazardous areas in the community.

Thinking through the representational entities – what units does the emergency survey target? Which have any chance of getting selected? Once selected, what internal components are to be surveyed? – is helpful, if only to press the point that in the end there will be a **need for simple rules** to proceed in the field. For starters, three differences stand out:

- The **community gazetteer** is incomplete, unreliable, updated during data collection and, in some places (e.g. census tracts in Kosovo) rejected by some of the stake-holders.

- **Stand-alone hazardous areas,** not claimed by any local communities, are part of the emergency survey target set.

- Finding affected communities for HMA inventory is one of the objectives; a nationwide prevalence estimate, however, is not intended. Therefore, false-negative detection is less important, and the extent of surveying is determined also by the capacity to respond to needs and priorities that stake-holders agree upon as they evaluate subsequent **batches** of completed community surveys.

This calls for an approach different from the LIS. The **target set** (the statistical term "target population" may confuse some readers) consists of contaminated communities (and, lower down, their hazardous areas) as well as of stand-alone hazardous areas. There will be some listings of both (from various sources including incident reports and prior HMA activities), but no exhaustive list of communities. As for areas, the obverse of a list of suspected areas, a list of unsuspected ones does not exist, almost by definition. However, all affected communities, listed or not, and all hazardous areas in a district can in principle be touched by a finite length of line features such as roads, trails and navigable rivers.

This makes, in addition to lists of known affected communities and hazardous areas, the **road and river networks** an alternative sampling frame. A discrete unit is needed for this. The **interviewer circuit** – the closed loop from and to base of road and river that survey staff can safely cover during daylight – is a candidate unit. It should be looked at critically: while analytically plausible (any network with branches marked for travel times can be subdivided into itineraries not exceeding a certain length of time), it may not be practical everywhere. In conditions where workers travel long distances, spending nights in different villages before returning to the starting point, a different discrete unit

will be needed for sampling. What unit this should be will depend on local factors, notably safety, the quality of local informants, the ability to communicate between field and base.

Sampling frame

Community gazetteer

A tentative list of local communities, in lieu of a reliable official gazetteer, can be drawn up from various sources:

- The latest gazetteer and similar **official documents**, to the extent that some informants confirm the existence of towns and villages
- Lists that the humanitarian and development communities have created, some with their own administrative identifier system (such as the P-codes used by **UN Humanitarian Information Centers**)
- **Local experts**, such as traditional chiefs, requested to enumerate populated places in a given area or who help verify maps with place names on them

In regions in which survey assignments in the way of interviewer circuits make sense, these sources will be used also to complete maps of safe-travel roads and rivers. This should be done anyway as part of the security dossier.

Expert Opinion Collection

In LIS lingo, "expert opinion" is a collection of statements, from **persons with knowledge** of the landmine and UXO situation, concerning contaminated territorial units – provinces, districts and local communities. For example, a hospital administrator may have records of patients with landmine injuries that state their communities of residence. The list of communities that he compiles for LIS staff is a list of suspected communities although some of the incidents may have taken place elsewhere. For each affected district, LIS workers elicit lists of possibly affected communities from several local experts, in separate interviews. As a general rule, provided at least one expert nominated a community by name (i.e., not only with a vague geographical reference), it would subsequently be visited.

In principle, the strategy of canvassing a small number of knowledgeable persons, though from diverse backgrounds, makes sense for the emergency survey as well. However, there may be fewer of them conveniently available in district headquarter towns, and their information may be sketchy, leaving important **"blanks" on the map**. In addition, more often than the LIS, emergency survey workers may be faced with no-go areas for which reliable information is available only at the small scale – at an army checkpoint or from a village headman.

Taken together, the sampling frame – the list of units that can be considered for selection – for the emergency survey consists of:

- Known local **communities** that are suspected
- Defined suspected **hazardous areas not claimed** by a local community
- Base-to-base **road and river circuits** in suspected districts

From these, a selection has to be made for interviewer trips, together with **stopping rules** for reasonable effort.

Selection approach: Full census vs. sample surveys

Adaptive sampling and purposive sampling

As mentioned before, LIS have used a full-census approach to the verification and study of positives, i.e., communities that the experts suspected to have landmine or UXO problems. By contrast, a sampling approach is taken for the detection of false negatives. LIS staff visit samples of communities not suspected by any experts and, if they find an affected community, also all its neighboring communities.

That assumes that survey staff have fairly complete lists of communities in the districts to which they apply the false negative sampling procedure. The lists are usually a result of combining outside data (the official gazetteer) with local intelligence, and contain all or most of the communities that putatively fill the district even if they may be represented only by a point feature (central reference point) or incomplete polygon features (major built-up areas, but not the full extent of their territories).

In emergency survey conditions, the community information will likely be far less complete. We have already hinted at that when describing the structure of the sampling frame. The dearth of information has several consequences. It **rules out systematic sampling** for false negatives. It also requires a stopping rule for the search for affected communities and hazardous areas (see below). The danger of multiplying efforts in areas that contribute very little useful information is real in emergency surveys. It needs to be forestalled by clear definitions, or if these are not evident initially, by frequent review.

The sampling provides some stopping rules. There are essentially two approaches suitable for emergency surveys – adaptive sampling and purposive sampling. The adaptive variety relies on the essential property to survey – the difference between affected and non-affected. Purposive sampling follows external considerations, notably the relevance of some units for relief, reconstruction or development purposes.

- **"Adaptive sampling"** means that selection is **reinforced around positives**, and decreased in regions that have not produced any positives. Some may say that this is done also in the LIS sampling for false negatives. The difference is that the emergency survey does not have a list of unsuspected communities to sample from, and will not necessarily go to all the corners of an affected district. **Snowball** or respondent-driven sampling is a sub-form of adaptive sampling, taking advantage of sampled units to provide information not only about themselves but also about other units. Normally, these will be other affected communities or stand-alone SHAs nearby. Snowball sampling was practiced, for

example, in the Afghanistan Post-Conflict Contamination Assessment in 2002, with survey teams branching out from district towns and collecting names, during interviews in first-wave communities, of more remote communities exposed to hostilities after 9/11. It goes without saying that this procedure may leave isolated affected units, or small clusters thereof, undetected. The snowball-only variety, therefore, may not be entirely satisfactory, and some will want to have also communities visited that lie within a reasonably narrow band covering the routes between suspected communities.

- **Purposive** sampling is dictated by **external** considerations, notably at the behest of the relief and development communities. Units are selected on assumptions concerning the impact that contamination of certain units will have on these and other units. Some of the assumptions are prior to any data collection, others result from first survey results. A good example is provided by the rapid route assessment that the Halo Trust performed, in 1999, on the major axes leading from Macedonia into Kosovo, and thence on lesser roads that could be reached. This in particular assured the agencies supporting the returnees of safe travel routes.

Both sampling approaches need more specific translation to local circumstances. Mixtures between the two are conceivable.

Selecting suspected communities and hazardous sites

Like in the LIS, emergency survey staff will visit all suspected **communities** that are **known by name** and are known to be currently populated, security permitting.

Similarly, all suspected stand-alone **hazardous areas** with **known location** are visited.

Visiting parts of suspected districts **beyond** known communities and known stand-alone hazardous areas is done on a **selective basis**. An appropriate simple-to-apply **rule** is needed. For example, each mobile team camped in the district does one one-day circuit on safe roads, trails and rivers. If the local persons to whom they talk during these trips do not point to any settlements or areas of concern, the search is terminated, and the teams move to other districts. If any units of interest are found, they are surveyed, and a defined number of additional circuits are traveled beyond the affected units.

Again, whether that is practical depends on circumstances beyond sampling. If taken to mean that one visit per affected community will be enough in order to extract the desired information, this approach is contrary to the LIS experience. In the LIS, the survey teams do not enter into communities 'cold' since there was always at least one visit from the field supervisor to 'smooth' the way for them. And, as hinted earlier, in the emergency survey in Haut-Katanga, DRC, some communities would only have the confidence to share information about UXO contamination after several visits.

Selecting unsuspected communities

The emergency survey does **not** do searches for **false negatives**.

Communities that were visited and were found **unaffected** are recorded in a list. The rule of having three separate encounters all confirming the absence of landmine / UXO problems will be reviewed.

Instrument adaptation

Translation

Situations in which the source language of the questionnaire (in most cases: English), the language of survey documents in-country and perhaps again the languages and dialects used in community interviews are not the same can vary considerably. The objective of translating questionnaire, forms and instruction material is twofold. Primarily, translated documents are needed for the practical work. Just as importantly, good translations help to form adequate cognitive consensus between the **survey management** and the newly minted **field staff**. Eventually, the terms used in the interview conversation must be understood by the **respondents**. For example, a collective term like "unexploded ordnance" may not equivalently exist in the local lingo; people may approximate it by a *pars-pro-toto* term such as "bombs".

In an ideal world – with enough time and professional translators at hand -, it will be desirable to have the main national language version of the translated instruments **retranslated** to the source language by an independent person who has not seen the original. However, one may have to settle for a less perfect method of **group review** involving some of the bilingual recruits in the review. If several **regional languages** will be used, it may not be efficient to create printed versions in several of them. However, survey workers who command these idioms should be encouraged to practice oral translations during the training course and to produce tables of **agreed-upon translated key terms**. This worked well in the Chad LIS, where interviewer teams traveled with small notebooks into which they had copied these tables, thus making it more likely that concepts were used identically in interviews across a language area. In the emergency survey in Haut-Katanga, survey terms were codified in French and Swahili (see box).

Source language and interview languages

During a training period in Haut-Katanga, MAG community liaison teams were asked to translate key terms into Swahili from the French. This improved the teams' understanding of the principal terms used during the survey and allowed them to develop common Swahili phrases for key survey terminology. Presented below is part of the glossary used during training of MAG survey teams to clarify and identify common terms in French and Swahili (English has been added for the benefit of English speakers). Two of the team members also spoke Bemba; since not all interviewers knew this language, survey terms in it were not codified.

Impact Survey // Etude d'Impact // Mashifunzo Kuusu Kinyume
Dictionary English-Français-Swahili

Impact on local community resources	Impact sur les ressources de la communauté locale	Kinyume Zidi Ya Utajiri Ya Wa Kaaji
Agricultural land	**Surface agricole**	**Eneo La Shamba**
Farmland	Culture	Mulimo
Pastureland	Pâturage	Ufugo
Non-agricultural land	**Surface non agricole**	**Eneo Liso Kuwa La Shamba**
Fuel	Carburant	Kuni, Makala
Food	Nourriture	Chakula
Hunting	Chasse	Uwindaji
Construction materials	Matériaux de construction	Vyombo Via Majengo
Water points	**Points d'eau**	**Kisima Cha Maji**
Drinking water	Consommation	Kutumiya
Irrigation	Irrigation	Ku Tiririka
Watering plants	Arrosage	Ku Mimiya Ku Mauwa
Fishing	Pêche	Ulobaji
Watering animals	Abreuvage	Kinwaji Cha Nyama
Bathing	Baignades	Ku Oka / Usafi Wa Mwili
Washing clothes	Lessives	Kufula
Inhabited Areas	**Zone d'habitation**	**Makao**
Houses	Maisons	Nyumba
Huts	Cabanes	Nyumba Ndogo
Granaries	Greniers	Chumba Cha Mbegu
Courtyard	Cour	Kiwanya
Animal pens	Enclos	Lupango
Unknown	Inconnu	Lisilo Julikana

Pre-testing

Survey pre-tests fulfill several functions. The most commonly thought-of are to find out whether respondents **understand questions** as intended, **interviewers are competent**, and invitations for interviews produce **knowledgeable respondents**. Less familiar functions have to do with the adequacy of pre-defined response sets and important facets of the study object that the questionnaire designers overlooked.

All traditional LIS conducted at least one pre-test, and some conducted two. Even in an emergency situation, the pre-test must not be traded off for greater speed. There may be practical difficulties, however, in calling back field staff to the original training venue and in having the revised questionnaire re-printed. The pre-test may also have to take on some of the functions that, in traditional concepts, would be reserved to the pilot test. For example, the pre-test location may have to take place "far out in the bush", so much so that the logistics of operating a camp, fanning out in one-day circuits, and of reviewing and entering returns, has to be tested simultaneously with the more basic pre-test challenges.

The reverse case – that is, the pilot test taking care of some basic pre-test function – is not unheard of either. This typically happens when the delivery of equipment is delayed. For example, GPS receivers may become available for all teams only after they have deployed to the field, and their make and operation may differ from those borrowed for the training.

The bottom-line is that conceptual, equipment and human mismatches are often detected only in the field reality, and the survey must have the chance to correct those.

Training local translators

In multi-lingual countries, interviewing in some regions may create a dilemma between relying on the trained interviewers, who may not sufficiently command the **local language**, and translating through local persons, who have not previously been exposed to the **survey concepts**. Once promising local translators have been identified, interviewers should conduct a brief training session for them, perhaps using a mock interview in which one of the team members plays the respondents. Local circumstances will determine whether candidate translators can be brought together in a common location (say, village deacons to a sub-district church), or the briefings need to be done one-on-one just before the start of the interview in each village.

Pilot test and main data collection

In traditional survey methodology, as followed by several LIS, the pilot test is the full "road test". It evaluates the smooth functioning of the survey machinery, before the "all-out" opening of the main data collection phase.

Pilot tests make three **basic assumptions**. First, the instruments, particularly the questionnaire, are satisfactory already before this test. Only their interplay, plus logistics and workflow, have to be tested. Thus, in the instruments, only minor improvements, if any, will have to be accommodated. Second, the data collection can be suspended for the short period while the pilot test findings are being evaluated; corrective actions can then be applied uniformly and will remain in force throughout the main data collection phase. Third, the needed data collection effort is more or less known (from previous enumerations and sample definitions) or, if not well known (say, the effort needed to replace sample loss is unknown), at least the procedures to make tactical decisions are known. In other words, instrument and effort will not have to be reviewed during the main data collection phase.

None of those assumptions may hold in the emergency survey. As its users review the first batches of survey returns, they may suggest important modifications to address information needs that the pre-tested instruments did not meet. The idea of stopping the survey machinery while modifications are debated, or the attempt to introduce agreed-upon modification with all teams and at once, may not be feasible. Changes may have to be eased in gradually, in batches, as emissaries from survey headquarters (e.g., a trainer, or someone taking re-printed stationary to the field) meet with survey groups in the field.

The most vehement assault on the data collection plan may come from unexpected quarters, the **number and size of local communities**. This has to do with the noted shortcomings of the community gazetteer and with weak expert opinion, also at times with the absence of local political authority. Changes in the dominant settlement pattern, from nucleated villages to more dispersed forms, as teams move across the country, can be similarly disconcerting. For example, in the Iraq Emergency Mine Action Survey, interviewer teams, guided by health department staff and local police, increasingly visited small, remote settlements, far from any contamination zones. This loss of survey efficiency was prompted by the lack of clear community definitions and by a new concern, among survey users, for villages that had recently seen ethnic reversal or incipient repopulation.

We would therefore not expect the pilot test to be a major landmark event in the life of the emergency survey. It may have to be **replaced with more gradual, multiple changes** of practice. These will happen as users communicate new expectations, equipment is completed, or the need to adjust instruments to changing (or differently perceived) survey environments emerges.

This openness to change during the main data collection phase is no excuse for sloppiness or an *"anything goes"* attitude. The objective of the emergency survey is to create actionable inventory – find cases on which something practical can be done – rather than prevalence estimation; therefore **uniformity** over its lifetime is a **lesser concern**. The important point is that not only work quality but also the level of effort need to be monitored repeatedly during the main data collection. This is done, as in the LIS, through field editing and rechecking, but also while preparing batches of surveys for case conferences with users. For example, it is important that the interviewer teams record the dates of the surveys correctly. The managers can then follow how the population of the surveyed communities varies serially, and how many unaffected communities were recorded between consecutive surveys of affected ones. A consistent decline in the **affected population per team-days ratio** would call for explanations and perhaps for re-focusing the effort, geographically or substantively.

Data entry, analysis, and dissemination

In the LIS, field-edited surveys are forwarded in weekly or bi-weekly batches, to regional centers (if they exist), and thence to the national survey headquarters. The information is usually computerized at headquarters. Analysis takes place on the complete national data set (that is the general rule although at least one LIS produced some provincial reports

while data collection was ongoing). The classification of affected communities by the severity of socio-economic impacts is done at the end, using the pre-defined indicators and a set of weights some of which are the outcome of stakeholder debate. The weights are applied uniformly to the communities from all regions and ideally are sample-independent (tweaking by blockage-type frequency so as to maximize the proportion of high-impact communities has been observed, though). This is applied to several hundreds, in some countries even thousands, of affected communities.

In the emergency survey, surveys are forwarded at short intervals, too – such as in **weekly batches**. The data may be entered in the field, by field editors with laptop computers. In Iraq, the database application (known by its acronym ESTI) came in field and head office modules with the ability to make gazetteer corrections in the field, as interviewer teams identified abandoned and undocumented new communities. Survey groups would send floppy disks together with their hardcopy survey batches to regional UN mine action offices, which incorporated the data and analyzed it in preparation of **case conferences with the user community**. The priority discussions in these meetings had a more qualitative flavor. Participating NGOs were familiar with many of the surveyed communities to the extent that they had been active in EOD or MRE work nearby. A nationwide classification using the indicator data in a standard format was not attempted during the emergency survey.

In a general way, a similar arrangement of repeated short-term batch processing, analysis in preparation of tactical priorities and decentralized user conferences may be optimal for emergency surveys. The pattern will have to be worked out for each country, and perhaps for each major region in large countries. In the process, there is a **danger** that criteria may become **too localized**, with a weakening of the extent and quality of information suitable for more strategic mine action planning at the country level. The emergency survey managers need to be conscious of this risk and weigh the benefits of localized formats against larger concerns.

Experimenting with scoring systems and priorities

During the survey in Haut-Katanga, a scoring system was developed by VVAF consultants in consultation with MAG technical staff. The scoring system incorporated four categories:

- Presence of mines or UXO;
- Socio-economic impact;
- Peace and stability, and
- Incident victims.

The scoring operated at the community level, as in the LIS.

Based on the survey data, a sketch map of the district was drawn up by survey team members with communities placed along the main transportation axes accessed during the survey. Once the communities were located, each community on the map was designated as affected or non-affected. Those communities scored and classified as highly impacted were highlighted for priority clearance (see photo below). This allowed the team to have an overview of the survey area and see where the main clusters of impacted communities lay. Once road access and

logistical considerations were discussed with the survey teams, MAG technical staff planned their clearance activities according the priority assigned to them by the survey teams and operational and logistical constraints. At the end of the survey fieldwork, clearance activities were commenced focused around two clusters of affected communities: a triangle of communities with the apexes being the high impact communities of Lofwashi, Kapondo and Kapala and another cluster lying further north near the town of Pepa. Pepa itself had been cleared earlier.

In total, the MAG survey teams visited 149 communities between May and early July 2005. Out of these communities, 39 with a combined population of 95,000 were found to be affected by different types of ERW. Using the locally developed scoring system, MAG and VVAF classified seven as high-impact, 12 as medium-impact, and 20 as low-impact.

The optimal arrangements will be determined less by analytic considerations and more by organizational ones. The foremost is how to **integrate** the survey workflow and use **with the EOD response**. In the traditional LIS, the handling of so-called "spot clearance" opportunities has been a challenge because it invited special procedures for the expert opinion collection and later during analysis. In the emergency survey, the challenge is bigger; the data collection is expected to help optimize the use of regional EOD resources continuously.

Practically speaking, survey users – say, for example, representatives of demining NGOs who meet repeatedly at regional HMA coordination centers - deliberate relatively small numbers of cases (affected communities, hazardous areas, incidents). Typically, they want **case lists**, simple **descriptive statistics,** project-area or district **maps** and printed-out reports of individual cases. More documentation – e.g., site maps – may be requested once specific actions are decided.

An important part of the analyst's responsibility is to flag important missing or patently incorrect information early. A course of action should be set for bad surveys that were not corrected in the field. It may not be practical to send interviewers back to those places, but EOD or MRE teams working in the area may be asked to "have a look" if it seems worth their effort. Of even greater importance is the **quality of the summaries** and recommendations on the survey cover pages; these few lines embody the core findings that the field staff were able to abstract from each unique survey situation. They may be the only part of a report that attracts close attention from all participants.

As the emergency survey lengthens, its data may be transferred to, and **further analyzed by, national entities**, such as a Mine Action Center mandated to coordinate HMA surveys. The emergency survey information may eventually come to form part of the **expert opinion** that a subsequent full-blown **LIS** uses. To what extent it is suitable for analyses that inform the strategic planning short of an LIS cannot be determined in the abstract. Generally one would assume that emergency surveys produce data that is less uniform in definitions and quality, and while it supports local action well, it may not be complete or consistent enough to draw the larger picture.

This may be particularly true of attempts to **categorize affected communities** with the help of some impact scoring system similar to the one used in the LIS. The meaning and measurement of "blocked access to resources" may be highly variable, within the emergency survey, and between it and other HMA and reconstruction endeavors in the country. Moreover, it needs to capture other impacts, notably the danger of munitions being recycled for violent purposes.

This imperfection should be more than compensated for by the practical response that the emergency survey produces. EOD, MRE and survivor assistance personnel who work in those communities will undoubtedly come up with a wealth of insights much richer than what the immediate survey analysis can possibly bring to light. The emergency survey will contribute to strategic planning not so much by whatever sophisticated analyses of its own data, but to a greater degree through **organizational learning** in the HMA community.

Recycling of munitions in Pweto-Moba region of DRC

MAG technical staff discussed on a number of occasions the issues around the recycling of munitions. To sum, there were two points of view from the technical side of the project:
1. Munitions could not easily be recycled for *conventional use* because there were very few delivery systems available for militias to use in the Pweto-Moba region.
2. All munitions have the potential to be modified for *non-conventional use* by militias or insurgents. The ongoing insurgent attacks in Iraq have very much proven this to be the case. With a basic knowledge of explosives and chemistry anybody can learn the simple means and methods of removing explosives from discarded munitions and how they can be adapted via cottage type industries into IEDs. These kinds of activities could rapidly take off in this area if this ever became common knowledge resulting in a rapid increase in explosive type accidents and a trade in the recycling of both explosives and metal.

The situation in Pweto-Moba in mid-2005 meant that it was unlikely that recycling would occur in the immediate future. In fact, the survey found that only three communities reported this kind of activity. This is possibly due to a number of factors:

1. First, this region of the DRC is located along borders with two politically stable countries, Tanzania and Zambia which do not have recent conflict histories and where the cross-border trade in munitions does not currently appear to exist. This is unlike the cross-border trade reportedly occurring between the Republic of the Congo (Brazzaville) and the DRC in the 2002 *Small Arms Survey*.
2. Secondly, the main local insurgent group in the Pweto-Moba region are the different Mai Mai rebel factions. However:
    a. Although local Mai Mai groups have reportedly already sorted through many of the stockpiles and arms caches for any munitions or ordnance they can re-use in any future conflict and are currently stockpiling them locally, except for the village of Kisanze they do not have the delivery systems needed to recycle them back using standard deployment methods.
    b. Local Mai Mai groups do not currently have the technical know-how to recycle munitions as IEDs and indeed, they are commonly still using bows and arrows as weapons.

Survey Instruments

Questionnaire

The question development for emergency surveys has tended toward less detailed inquisition than the LIS model. As a result, questionnaires are likely to become hybrids between a guide to conduct key informant group interviews and a recording device for information produced during the visual inspection of hazardous areas. In style, they will be more like check-lists than questionnaires.

A detailed listing of items that should go into the questionnaire (most of which will need to correspond exactly to database fields) is given further below.

As a sample questionnaire, the one used in Haut-Katanga, DRC, is appended.

Community mapping

The participatory community mapping procedure is the same as used in the LIS, as laid down in the "LIS Operational Protocol **P05** v 3 – Guidelines for Interviewers in the Community Visit", page 4.

Site mapping

Hazardous areas will be mapped following a set of instructions to be developed on the basis of the "LIS Operational Protocol **P06** v 3 – Visual inspection". This protocol has not been adhered to in all emergency surveys. The one in Haut-Katanga, for example, used a more intrusive approach (see page 33, "perimeter"). Such procedures will need additional written rules and training.

District mapping

Field supervisors and editors will draw maps of their working districts, ideally overlaid on printed administrative maps. These maps should be large (A0 or A1) to fit on a wall in the place where the survey group discusses work and tracks progress.

District maps will show named communities, color-coded by survey result, as well as roads and rivers usable by survey teams. Circuits actually traveled will be marked. These maps will help inform **decisions to extend or terminate movements** in search of affected communities and hazardous areas.

Technical instruments

Survey teams will be equipped with **digital cameras** to take pictures of hazardous areas, their landmarks and benchmarks.

Each team will also have a **GPS receiver** and a **compass**. Topographic maps and compasses are an alternative where GPS receivers are not available.

Depending on country conditions, cost and local site mapping instructions, some teams may have laser range finders.

On an experimental basis, some interviewer teams may work with Personal Digital Assistants (PDA) in lieu of paper-and-pencil recording.

In some countries, it may be feasible for field editors to have **laptop computers** and enter the survey data from their teams in the field.

Questionnaire

Modules

Like the questionnaire used in the LIS, the one for the emergency survey is composed of several modules. The modularity is required because the units of interest – communities, hazardous areas, recent victims, key informants – come in different numbers within one basic survey.

In the emergency survey, a hazardous area may be stand-alone, not related to any surveyed local community. All recent victims in a given community are recorded in one list even if it is known that some came to harm in one hazardous area, and others in different areas. This list can also be used for the (unlikely) case that recent victims are enumerated for a stand-alone hazardous area.

For simplification, a common **cover sheet** is used, prominently displaying a 2 – 4 line summary of findings and an at-a-glance overview of recommended actions. Besides the cover sheet,

- Community module
- Hazardous area modules
- Recent victim list
- Key informant and important contact list

are to be used in the appropriate numbers. Additional paperwork comes in the shape of the community sketch map and hazardous area sketch maps and, occasionally, minefield records and other types of documents.

The recording of all **recent victims in one list** needs brief comment. This is a simplification over the traditional LIS format, which requires filling out a separate multi-page module for each victim. The amount of information collected is limited by the column headings that can be accommodated on a page. We caution against misplaced simplifications in the shape of cross-tabulations inside the community module (of the kind used in the Iraq Emergency Mine Action Survey). Cross-tabulations are neither conversationally nor analytically convenient. Besides, the emergency survey will want to record the names of known recent victims, for possible assistance purposes.

A sample questionnaire is attached. It is based, in large part, on the recommendation made by the participants of a workshop, in Amman in 2003, who reviewed the questionnaire used in the Iraq Emergency Mine Action Survey, and subsequently was further developed in the DRC.

Minimum information

A listing of the minimum information (variables, fields) follows. These are **ordered by entity** (community, hazardous area, victims, and a grouping called "survey-administrative"). This order may differ from the one used in a final questionnaire format.

For example, a mix of information about different entities may be displayed on the cover sheet.

Required fields are marked with bullet-points. Response sets have been suggested for only some of them (in square brackets []); others will be country-specific. In the final questionnaire design, check boxes will needed to be included for "N/A" or "don't know" where recording **missing information** seems important. An example is "Was there recent fighting in this area?" If the key informants do not know, this should raise a red flag.

Community

Identification

Administrative

- Community name
- Community ID [gazetteer code]
- District
- Province
- Alternative community name
- Nearest town name
- Nearest town ID [gazetteer code, p-code]

Note that also a sub-district may be needed for proper identification; in some countries even more than one administrative level may be relevant between community and district (Example: DRC – "localité" and "territoire". One "territoire" contains several "localités".).

Geographic

- Reference point name
- Reference point description
- Spatial reference system used [Lat/Long WGS 1984, UTM WGS 1984, MGRS WGS 1984]

Coordinates:

- X/Longitude/Easting
- Y/Latitude/Northing

perhaps additionally with MGRS recorded as a redundant measurement for a validation rule for point coordinate accuracy.

Access

- Point from which community can be accessed
- Type of vehicle that can access
- Route description

Population

- Current (Persons / households)
- Whereof displaced persons / refugees

- Pre-war [or at a certain past date] (Persons / households)
- Principal languages

Institutions and services

Number and content of items to be asked about institutions and services with a functioning local presence will vary.

This information serves a **double purpose**. The presence of institutions indexes a problem-solving potential that often goes beyond the immediate designation. Teachers, for example, improve the community's chances to tie into relief and rehabilitation programs. Second, some institutions can help with the emergency survey itself or with subsequent follow-up actions. In our example, teachers may translate survey terms into local languages or help make arrangements to accommodate EOD teams.

The emergency survey will need to keep this part limited to a small number of questions (mostly of the simple yes/no-type) on institutions and programs of interest.

In the sample questionnaire attached, this (arbitrary) selection of service variables come as a small table at the end of the community module:

- Primary school
- Teachers present, nos.
- School, other type
- Teachers present, nos.
- Health care facility
- Personnel present, nos.
- Phone or radio link

Based on their ability to discern between stronger and weaker institutional endowments, different item sets have been used from survey to survey. It is important to collect this information on services that **currently** work, e.g. schools that have teachers holding classes, not on those that functioned before the war or figure in some reconstruction plans only. However, it is not the mandate of a HMA emergency survey to proceed to an evaluation of local service delivery.

Hazardous area

Identification and delimitation

Administrative

There may not be a defined local community claiming this area as part of its territory. The identification system, therefore, has built-in redundancy. The default case is that the area is claimed, and the claiming community is identified through its ID and name (normally during the very community interview). In this as well as the opposite case (no local community), the interviewers elicit the **nearest town** (village, city, river port, etc.) and note also its **gazetteer code**, if known.

- Hazardous area ID [no pre-existing codes will exist; a numbering convention for field work will be followed]
- Related community ID
- Related community name
- Nearest town ID
- Nearest town name
- District
- Province

Geographic

The geographic identification too has built in redundancy, motivated also by safety concerns. Three types of points are highlighted in approaching the hazardous area: a landmark, a benchmark, and points on, or even inside, the perimeter bounding the hazardous area.

A **landmark** is a prominent feature (e.g. a water tower) between the community reference point and the edge of the hazardous area. It is easy to find and often visible from community center. From the landmark observers will be able to see the hazardous area although the distance may be too far in order to distinguish its features such as vegetation density.

By contrast, the **benchmark** is a point close to the edge of the hazardous area, but still at a safe distance from it. It is also called a "safe viewing point". From the benchmark the survey team can clearly distinguish local features of the hazardous area. It is from here that the team will estimate the size and take pictures. The benchmark may not be visible from the community reference point, but <u>should</u> be easy to find from the landmark.

The **perimeter** defines a polygon so circumscribing the hazardous area that no explosive devices are expected to be found outside. Several scenarios occur:

1. It is safe to walk around the hazardous area (as per safety protocol of the survey organization). Starting and turning points are recorded, with coordinates, and direction and bearing to the following point, as well as brief descriptions if needed.

2. It is not safe to walk around the hazardous area. Interviewers then estimate bearing and distance from the benchmark to the nearest boundary point. They estimate also the length and width if this can be done visually from the benchmark. They estimate the area as a rectangle or ellipse.

3. Under certain safety and contamination conditions (no mines; UXO dispersed to a small number of localized stocks that the local guide knows well; paths visible), interviewers may enter a hazardous area. It would be more appropriate to describe such an area as the combination, for mapping and data management convenience, of several distinct small hazardous areas. Points where the survey party changed direction and where it found munitions will be recorded as way points.

The limits of this and similar more intrusive approaches need to be defined in a local protocol, with appropriate testing and training.

If the survey teams use published maps, then the following map identification variables are collected:

Map used:

- Map name
- Map sheet
- Map edition
- Map scale

Then, as appropriate, the following are collected:

Landmark

- Spatial reference system used [Lat/Long WGS 1984, UTM WGS 1984, MGRS WGS 1984]
- Coordinates: X/Longitude/Easting; Y/Latitude/Northing:
- Method of fixing coordinates (GPS / resection)
- Description of landmark
- Bearing and direction to the benchmark

Benchmark

- Spatial reference system used [Lat/Long WGS 1984, UTM WGS 1984, MGRS WGS 1984]
- Coordinates: X/Longitude/Easting; Y/Latitude/Northing
- Method of fixing coordinates (GPS / resection)
- Description of benchmark
- Bearing and direction to the starting point, nearest boundary point, next way point, as the case may be
- Nearest community from which this hazardous area can be accessed
- Walking distance from community to benchmark (in meters)
- Type of vehicle that can access
- Route description

Substantive information

Perimeter

If the perimeter is known, then, for each vertex point, this information is noted:

- From-point
- To-point
- Bearing (degrees)
- Distance (m)
- X/Longitude/Easting
- Y/Latitude/Northing
- Description

If the perimeter is not known, a simplified description is attempted:

Alternate description

- Hazardous area length
- Width and length
- Nearest boundary point:
- Spatial reference system used [Lat/Long WGS 1984, UTM WGS 1984, MGRS WGS 1984]
- Coordinates: X/Longitude/Easting; Y/Latitude/Northing

Note that attempts made during the Iraq EMAS to have interviewer teams also estimate hazard area center point coordinates and orientation angle of the main axis were not successful.

Marking

- Official signs present
- Local signs present
- Fence
- None
- Unknown
- Local sign description

Munitions

Type of devices found:

- AP Mines
- AT Mines
- CBU/Sub-munitions
- UXO
- Improvised (IED)
- Infantry munitions
- Artillery munitions
- Anti Aircraft munitions
- Missiles
- Improvised Explosive Devices

- Abandoned armored vehicle
- Abandoned munition stores
- Unknown
- Other

prompting interviewers to note model, quantity and condition for each type checked, if known.

Munition identification: A challenge for emergency survey data collectors

There are training, supervision and quality assurance challenges associated with the skills that non-technical interviewers need in order to develop an adequate munitions typology in terms of the needs of subsequent EOD teams, who wish to cut down on extra reconnaissance trips. This is due to the need to use it in conversation with local informants, whose substantive and linguistic distinctions may be even less sophisticated, as well as during visual inspections. The urge to have the survey collect detailed technical information at this stage may also inadvertently create safety hazards for interviewers and guides.

This, together with the visual inspection rules, is one of the problematic areas that needs more work in the further development and testing of the emergency survey methodology.

Hazardous area and local mine action history

- Date mines first laid
- Party to conflict laying the mines
- Date mines last laid

- Minefield record available
- Person / organization from whom record is available

- Recent fighting (none, [period classification], unknown)

- Area contains explosive ordnance (EO)
- EO degree of spread (single spot, spread)
- EO gathered/stockpiled

- Marking and survey
- Organization marking or surveying
- Clearance organization
- Local clearance efforts

- Additional information

Munition stockpile in hazardous area

- Date stockpile was established

- Party to conflict establishing stockpile
- Type of stockpile (warehouse, defensive position, , vehicle/gun, other, unknown)
- Specific informant name and contact details
- Stockpile degree of spread (single location within hazardous area, spread, unknown)
- Stockpile was exploded
- Stockpile is secure

Clearance considerations

Information relevant for clearance is elicited through a number of questions most of which are multiple-choice. To each choice a distinct field must correspond in the database. Note that in the traditional LIS reporting some of the multiple-choice response sets were transformed into scales of difficulty, for example: "Vegetation: None – only grass – bushes at most (but no trees) – also trees – unknown". This concerns the analysis only, not the way the response is to be recorded. For several of these questions, appropriate **country-specific typologies** have to be worked out; those shown in the appended questionnaire have only a sample value.

- Vegetation (appropriate typology, e.g. grass, bushes, trees, none, unknown)
- Vegetation density [none, low, medium, high, unknown]
- Vegetation removable (manually, mechanically, n/a, unknown)

- Drainage features (appropriate typology, e.g. ditches, canals, rivers, lakes, other, none, unknown)
- Ground profiles (appropriate typology, e.g. flat, hillside, ridge, gully, unknown)
- Soil type (appropriate typology)

The typologies used by the survey organizations and those **understood by local** respondents may not completely match. This is particularly likely the case with soil types, where respondents may use a variety of terms that are strictly regional or even local. This will not be a problem where interviewers know enough to fill in the information from direct observation.

Resource and use blockages

Evaluating the type of resources that the mines and UXO are preventing from being used safely involves an amount of **interpretation**. Some in-country definitions may be needed. Notably, one has to determine what pre-war usage recalls are meaningful (e.g., the farms used to be in high-value irrigated land before the war, the head works were destroyed several years ago – so, should the mined fields still be counted as "irrigated land"?). Also, people may continue to use some resources although the access area is known to be contaminated, perhaps for lack of alternatives (e.g. water sources). Mined roads may not be blocking access to significant resources if all the mined segments are known and detours are short and easy, but may still pose a danger to travelers not familiar with them.

Through interviewer training and pre-tests, one needs to find rules to settle some of the more important ambiguities. "Non-agricultural land" has to be rendered in a positive local formulation, in many situations as "forest". Similarly for "fuel", which may consist chiefly of wood, charcoal, dried manure, dry leaves or reeds.

- Agricultural land (Type: Irrigated cropland, rain-fed cropland, pasture, other, unknown)
- Water body (Use: Irrigation, fishing, watering animals, drinking, other, unknown)
- Non-agricultural land (Use: Fuel, food, lumber, other, unknown)
- Residential area
- Route ([If appropriate: Type: Road, trail, waterway]
- Service facilities from which community is effectively cut off [appropriate typology])

Victims

Information on **recent** landmine and UXO victims is to be gathered into a listing of individuals. The fields of concern should not exceed the space that can be accommodated on an A4-size page (in the sample questionnaire, the column headings run through two tables on the same page). **Each victim** should figure as a **separate row entry**. As warned above, two- or even three-way cross-tabulation forms as interviewing templates are to be avoided – they strictly belong to a later analysis phase.

Minimal information on recent victims includes:

- Name
- Sex
- Age [often it will be sufficient to distinguish between children and adults]
- Device [landmine / CBU / other UXO / unknown]
- Outcome [injured / killed / unknown]
- Activity at time of incident
- Status [civilian / military / unknown]
- Hazardous area reference [ID of local area / outside local community / unknown]
- Current place of residence [for survivors]

An appropriate **activity typology** will have to be developed. Traditionally, the HMA community has respondents specify whether the victim came to harm while working in a farm, tending animals, collecting food, water or fuel, playing, traveling, removing or tampering with devices.

It cannot be taken for granted that the respondents carefully distinguish between those victims who came to harm in some area claimed by the local community and others who were originally from the community but were harmed elsewhere. A third category concerns survivors now residing elsewhere but listed as involved in a local incident, e.g. as travelers or seasonal farmhands. The stakeholder community has a double concern to

know the locations of incidents as well as the whereabouts of survivors. Until it is established that the special cases are rare and/or irrelevant, a question concerning the current residence of survivors should be asked.

Recent victims usually comprise all persons harmed by mines or UXO within the 24 months prior to the interview. Other **cutoff points**, such as a prominent historic event (e.g., the outbreak of the most recent war) are conceivable.

Whether the emergency survey should collect information on **victims of older date** needs discussion. If so, it will be less specific. It should suffice to ask two questions only: *"Before that time, how many persons were killed by landmines or UXO? How many were injured but survived?"* Normally, the questions are understood at the community level, but other notions may obtain in unsettled situations and will need to be clarified in pre-tests. The attached sample questionnaire does not carry such questions.

It goes without saying that the collection of minimal information on landmine and UXO victims does not amount to a survey of survivor needs, of the needs of their families and communities. If these concerns were to be addressed, the emergency survey would need extensive redesign, possibly with a view to other groups of people with special needs as well.

Survey-administrative information

Survey organization

- Organization name

in case of a multi-organization survey, such as by subcontracting to local NGOs.

Survey staff involved

- Date of survey
- Attachments provided
- Interviewers

- Date of field verification
- Verifying staff member name and position

- Date of data entry
- Entry person name and position

These fields may be designated differently depending on the survey organization. In some countries, the date is recorded when the organization received an initial contamination report from outside sources. In general, however, the usual trinity obtains of interviewers collecting the primary information, some of their supervisors reviewing and sample-checking it, and some designated staff transferring it from paper to computer. Hand-held data capture devices may alter this scheme.

Informants

In traditional LIS community interviews, a **meeting attendance** sheet is circulated with the purpose of documenting the number and diversity of the key informants present. The ideal of sufficient **informant diversity** may not be achieved in emergency survey circumstances that rule out prior appointments.

It is acceptable to keep a record of only **2 - 3 key individuals**, perhaps distinguished by political roles (village headman), personal knowledge of the hazardous areas, and other qualities to which returning HMA teams later may appeal (e.g., polyglot teachers). Note may also be made, under "Additional Information", of important persons on which the interviewer missed out, together with their function, temporary whereabouts and contact numbers. An example would be a security person controlling access to local munition stores.

Informants can be recorded with this minimum information:

- Name
- Sex
- Age
- Occupation
- Address at which he/she can be re-contacted

Immediate decision support

Traditional LIS classify affected communities through a consistently applied scoring system, with results that normally are not available until at the end of data analysis. By contrast, emergency surveys supply information that enables users to evaluate and compare situations – of communities or stand-alone hazardous areas – as surveys are returned in batches. To do so intelligently, users need mine **action recommendations** and **reasoned priority** ratings from individual interviewer teams or from field supervisors familiar with the surveyed situations.

Although field staff should recommend and justify actions only after they have reviewed all the survey information, it may be appropriate to present these elements on the first page of the questionnaire, below a space that the interviewers are required to fill with a brief summary of their main findings.

- Operation recommended (Type: Technical survey / clearance / mine risk education / other / none / unable to say)
- Area recommended for clearance (Size, sketch map)
- Priority (high / medium / low)
- Justification for priority given
- Families / persons, number, expected to benefit

Some surveys have elicited priority ratings only for clearance proposals; since all types of HMA operations come with a cost, they all should be justified and assigned a degree of importance and urgencies relative to other possible resource uses.

Fieldwork

Breaking the task down into units of effort

This section is in part repetitive of what was discussed earlier. In an emergency survey, the manner in which the total survey effort is broken down into practical units will be dictated by logistics and short-term prioritization factors more so than in traditional LIS. But certain principles and practices of the latter make good sense for emergency survey field work as well.

Districts and field camps

One of the assumptions carried over from the LIS is that **survey groups** – 2 – 6 interviewer teams led by a field supervisor – can be assigned geographically compact areas. Within such an area, the same group will complete all the survey activities (not talking here of subsequent other HMA activities). This minimizes set-up and transportation costs. In the LIS, such an area is generally identical to an official administrative unit, often a district or its equivalent. In emergency surveys, supply lines and accessibility may cause managers to carve out more opportunistic areas, perhaps centered on one of the rare places where field camps can be set up. Such areas may cross-cut administrative boundaries. If so, care has to be taken nevertheless to be in good books with the powers that be in each of the units concerned. The common principle is one of efficiency: the survey group should not have to return once it has left the district.

Interviewer team circuits

In the LIS, the workload is projected on the basis of the expert opinion collected for the district, plus the number of communities to be visited under the false negative sampling approach. In principle, the first part holds for the emergency survey as well. However, where the **community gazetteer** is largely **defective**, or the **experts** are **poorly informed**, the basic unit of effort becomes more ambiguous. After all, what constitutes a community, and how many distinct ones can be reasonably found in the district?

Work plans for a survey group may then have to be spelt out in two different terms. A number of <u>named</u> affected **communities**, suspected or confirmed, and of <u>known</u> stand-alone **hazardous areas** will be visited and possibly surveyed. In addition, and within limits defined by security, access and distance from confirmed sites, interviewer teams travel **circuits** in search of other affected communities and hazardous sites. The circuits need to be budgeted in terms of time, vehicles and fuel, and stopping rules need to be defined and applied. Each team needs to map its actual circuits noting coordinates and local (community, place) names, and field supervisors and editors need to combine these reports into district maps showing the extent of exploration and surveying.

Key informant meetings

For the conduct of group interviews, the same guidance applies as for LIS. The meetings are to produce a **community map**, the information in response to the **structured questionnaire** and the **guides** that will take the interviewers to the safe viewing points for the visual verification of hazardous areas. As in the LIS, one would like to interview a small group of key informants who represent a knowledgeable cross-section of the local community.

This ideal may be more easily compromised in the emergency survey, though. For example, it may not be possible to set up **appointments** for group meetings ahead of time; as a result, the composition of key informants may be largely accidental. In communities composed of a central village and a myriad of outlying hamlets and isolated homesteads, the center residents may know little about the hazardous sites farther away (the Mozambique LIS struggled with this limitation). They may not have the clout to call informed persons from the fringes, even if the survey team agrees to conduct a meeting with proper notice. This may call for difficult decisions concerning visits to outlying areas, justified on special grounds such as a credible report of a recent incident.

The typology of situations that deviate from the key informant and group interview orthodoxy is not predictable in the abstract. **Interviewer teams** will need to have a fair measure of **discretion**, within rules that the survey managers will elaborate gradually. What is important is that the interviewers (or at least the field editors who debrief them) document as completely as possible what they did and why they did it. For this, the interviewer training needs to create a level of understanding of survey objectives that goes beyond the mechanical administration of the instruments.

Visual verification

The default assumption for the emergency survey should be that the visual verification will follow the LIS protocol. Some additional rules may be needed for the verification of stand-alone sites not claimed by any local community.

Data editing and recording

The LIS standard that data must be field-edited for legibility, completeness and consistency should be upheld. To find suitably educated persons for this function may not always be easy in war-ravaged regions. If **competent field editors** cannot be found, some other arrangement needs to fill the function. For example, case conferences that review weekly batches of surveys may need to be held in or close to the surveyed districts, with their participants singling out those surveys that they feel warrant immediate re-survey.

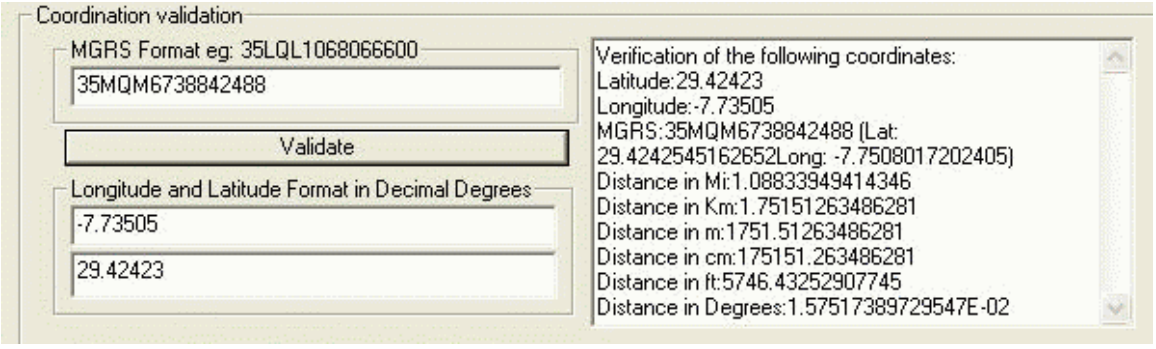
In the Iraq EMAS, field editors entered survey data into laptop computers. They would send diskettes weekly to a regional database that incorporated the data from the contributing survey groups. Such an arrangement may be desirable for speed and for avoiding errors in centralized data entry, but may not be logistically feasible. Regardless of how the data reaches the ultimate HMA database, it must be available at the **location** and point of **time** where it will inform an **emergency response**. This may be, for

example, in the provincial NGO or UN office that brings together various responder organizations at regular intervals.

The HAOST application

A new tool for emergency survey data entry (and limited data management) has been developed by MAG / VVAF under the "Abandoned Ordnance and Hazardous Ordnance Site Survey Methodology Project" and has been tested with emergency survey data collected in DRC Haut-Katanga.

HAOST and coordinate validation



In circumstances that make field editing difficult, additional safeguards on data reliability are desirable. Having data collectors record point coordinates in both latlong and Military Grid Reference System (MGRS) format reduces the risk that GPS reading errors or fake survey returns go undetected – a precaution that MAG and VVAF in Katanga learned from DanChurch Aid survey colleagues. HAOST has a built-in routine for the otherwise tedious calculation of the distance between the two measurements. In this example, they disagree by almost two kilometers – a call for more verification of this particular survey!

This Hazardous and Abandoned Ordnance Survey Tool (HAOST) can export the segment of data for which the LIS standard tool IMSMA provides fields. It comes with an integrated GIS functionality and is available for emergency surveys with an emphasis on area SHAs and on abandoned munitions. SHAs can be recorded as polygons or simply with estimated center point, length and width. For surveys emphasizing other orientations, such as line features (route assessments) or incident survivors with medical details, the tool would require adaptation.

Communities found unaffected

Named communities that experts suspected of contamination and which survey staff subsequently found unaffected should be recorded in a **special form**. They should be recorded in the database. Similarly, relatively large and distinct settlements (e.g. nucleated villages with a church or mosque), even if not suspected, should be listed as unaffected when interviewer teams pass through them on circuits and converse with

residents who confirm that they do not have a mine or UXO problem. In both cases, the coordinates of a point should be recorded and, if it exists, the gazetteer code.

What this **rules out** is the idea of creating a record each of a large number of **small settlements** that, from all sources used, including local experts, residents and travelers, seem unaffected. Similarly, the LIS guideline to have three physically distinct conversations all confirming the mine/UXO-free status should be part of the interviewer training, but may not work in practice, culturally or at the speed at which the emergency survey moves.

Quality assurance

The basis for emergency survey data quality is the same as in the LIS. Adequate training, pre-testing and support of field staff take care of most potential problems. Reviewing survey returns close to the place and time where the information was collected is another important precaution. A certain fraction of surveys should be field-checked by supervisors or even by an independent line of field "auditors".

This frequency will depend on a number of practical factors, but generally **problems tend to cluster** in certain interviewers, survey groups, or survey regions, and often the paperwork gives them away. For example, a series of wildly misplaced coordinates may lead one to think that the interviewers did not properly operate their GPS sets, or alternatively that they faked visits and reports.

In surveys with defective sampling frames (in our case, chiefly the community gazetteer), **replacing unavailable sample members** is a potential source of error and abuse. If sampling of any kind is done, interviewer teams will need a measure of discretion to make replacement decisions in the field, if only for the better use of their time and transport. It is important that decisions, and the reasons for them, be written down, together with an indication if the original member (e.g. a suspected community with no suitable informants on the day of the visit) should be re-contacted, or remains an ineligible unit.

Concurrent non-survey activities by survey staff

Mine Risk Education

An MRE session can conceivably be conducted prior to, or following, the survey group interview. The order of these two activities is a matter of preference. MRE before the interview could lead to an unstructured conversation about elements of the survey and a subsequent lack of motivation to follow the interview afterwards *"because we have already told you everything."* But it could also help set the **stage for the interview** and absorb the "latecomer problem" that plagues group interviews without prior appointments.

Similarly opposed views could be advanced about the reverse sequence – the MRE may go on for too long and delay the visual verification part, or it would help retain the people among whom the interviewers could find guides for the verification.

Other dissemination activities

Landmines and UXO may not be the most pressing problem for the majority of communities that the emergency survey workers visit. Although the survey, for reasons of competence and technical integrity, focuses on explosive remnants, there may be an **ethical or practical reason** to bundle the community visit with an informational activity beyond landmines and UXO. For example, in a recent survey in the eastern part of the Democratic Republic of the Congo, the concerned NGO closely integrated survey work with the HIV/AIDS awareness sessions.

On the other hand, once the key informants have understood the focus of a visit, it would be naive to expect that some kind of a ranking exercise would reliably reveal the place of landmines and UXO in the **local community's problem hierarchy**. This question, while important from a reconstruction viewpoint, the emergency survey may not able to answer.

While there ought to be an openness on the part of the emergency survey organization to widen or narrow its scope as need and opportunity suggest, the conventional wisdom is that "*keeping it simple"* makes for speed, good workers, and also good cooperation with those who want to support and use the survey.

Draft by:

Aldo Benini, Kim Spurway
Initial version 8 September 2005

Reviewed by Llewelyn Jones, Adam Komorowski
24 October 2005 and partially 15 November 2005

Revised by Aldo Benini
26 October 2005 and 17 November 2005

Appendices

Sample Questionnaire

Emergency Mine Action Survey Report – Cover sheet

If this is a defined *local community* claiming hazardous areas:	**If this is a *hazardous area not claimed* by any local community:**

Community name		Hazardous area ID	
Community ID		Coordinate X	
District		Coordinate Y	
Province		This point is the	
Alternative name			
Nearest town		Nearest town	
Nearest town ID		Nearest town ID	

Summary of important survey findings:

Recommended action and priority:

Mine risk education	Not needed ☐	Low ☐	Medium ☐	High ☐
Survivor assistance	Not needed ☐	Low ☐	Medium ☐	High ☐
Technical survey	Not needed ☐	Low ☐	Medium ☐	High ☐
Clearance	Not needed ☐	Low ☐	Medium ☐	High ☐
Other: _____	Not needed ☐	Low ☐	Medium ☐	High ☐

Area recommended for clearance: _____ sq. m. (identify on sketch map)

Justify priorities and describe expected impacts; number of families / persons benefited

This information was collected and processed by:

Surveyed:	Verified:	Entered:
Names:	Name:	Name:
Date:	Date:	Date:
Signatures:	Signature:	Signature:

Attachments

Community module ☐	Community sketch map ☐	Digital photo disks ☐ No.:
Hazardous area modules ☐ No.:	Site sketch maps ☐ No.:	Other: ☐ :
Recent victim list ☐	Minefield records ☐ No.:	

Part I: Community Module

Repeat from cover sheet:

Community name	
Community ID	

Community reference point:

Spatial reference system:	☐	Lat/Long WGS 1984
	☐	UTM WGS 1984 Zone Nr: _____
	☐	MGRS WGS 1984 Zone Nr: _____
X/Longitude/Easting:		
Y/Latitude/Northing:		
MGRS:		
Description of the community reference point:		

Access to the community is possible from _____ for:

☐ All ☐ 4x4 Vehicle ☐ Big truck ☐ ATV ☐ Motorcycle

Route taken to community (provide enough detail for others to retrace the route safely):

Population:

	Before War	Most Recent	Remarks (incl. "unknown", "deserted", "IDP")
Estim. no. households			
Estimated population			
Principal language(s)			

Institutions and services:

Primary school functioning	☐	Health care facility functioning	☐
Teachers present		Personnel present	
School, other type: ____ functioning	☐		
Teachers present		Phone or radio link functioning	☐

Part II: Hazardous area module

Administrative

Hazardous area ID		Nearest town ID	
		Nearest town name	
[If claimed by			
local community:]		District	
Community ID		Province	
Community name			

Geographical Reference

Map name:		Map sheet:	
Map edition:		Map scale:	

Coordinates of the Landmark

Reference System:	☐ Lat/Long WGS 1984 ☐ UTM WGS 1984 Zone:_____ ☐ MGRS WGS 1984 Zone:_____
X/Longitude/Easting	
Y/Latitude/Northing	
MGRS	
Coordinate fixed by:	☐GPS ☐Resection
Description of landmark:	

Coordinates of the Benchmark

Reference System:	☐ Lat/Long WGS 1984 ☐ UTM WGS 1984 Zone: _____ ☐ MGRS WGS 1984 Zone:_____
X/Longitude/Eastin g	
Y/Latitude/Northing	
MGRS	
Coordinate fixed by:	☐ GPS ☐ Resection
Description of benchmark and position in relation to the hazardous area (bearing and distance):	

Access from nearest community

Walking distance from nearest community: _____ meters

Access to the dangerous area from community is possible for:

☐ All ☐ 4x4 Vehicle ☐ Big truck ☐ ATV ☐ Motorcycle

Route from nearest community: (include check points, i.e. small bridges)

Hazardous Area History – Mines and UXO:

Date mines first laid in area:	Mines were laid by: /
Date mines last laid in area:	Minefield record available: ☐ Yes ☐ No From:
Fighting occurred in: 2003 ____ Before 2003 ____ Unknown ____	
EO situated in area: ☐ Yes ☐ No ☐ Unknown	
If YES, EO situated in ☐ Single spots ☐ Spread across certain areas	
IF YES, EO gathered/stockpiled in area: ☐ Yes ☐ No ☐ Unknown	
Marking and survey during the past 12 months ☐ Yes ☐ No ☐ Unknown	
If yes, what organization:	
Mine clearance during the past 12 months ☐ Yes ☐ No ☐ Unknown	
If yes, what organization:	
Local clearance efforts: ☐ Yes ☐ No ☐ Unknown	
Additional Comments	

Munition Stockpiles

Date stockpile established in area:	Stockpile created by : /
Type of Stockpile: ☐ Warehouse ☐ Defensive Position ☐Abandoned ☐ Vehicle/Gun ☐ Other_____	If available, Contact:
Stockpiles situated in ☐ Single spots ☐ Spread across certain areas	
Stockpiles bombed ☐ Yes ☐ No ☐ Unknown	
Is stockpile secure ☐ Yes ☐ No ☐ Unknown	

Perimeter points (attach sketch map):

Describe perimeter points if known. Else use alternate description below

From point	To point	Bearing (deg.)	Distance (meters)	X/Longitude / Easting	Y/Latitude/ Northing	Description
Benchmark	Datum p.					

Alternate description(width/length estimation) if perimeter points are not known:

Area width: _____m Area length: _____m

Area orientation angle: _____°

Coordinates of the area center point:

Reference system:	☐ Latitude/Longitude WGS 1984	Coordinates:	X/Longitude/Easting	
	☐ UTM WGS 1984 Zone: _____		Y/Latitude/Northing	
	☐ MGRS WGS 1984 Zone: _____		MGRS	

Marking: ☐ Unknown ☐ Official Signs ☐ Fenced ☐ None

☐ Local Signs Describe local signs: _____

Explosive Devices

Type of Device	Found	Model/Type/Quantity/Condition (if known)
AP Mines	☐	
AT Mines	☐	
CBU/Sub-munitions	☐	
UXO	☐	
Improvised (IED)	☐	
Infantry munitions stockpile	☐	
Artillery munitions stockpile	☐	
Anti Aircraft munitions stockpile	☐	
Missiles stockpile	☐	
Improvised Explosive Devices stockpile	☐	
Abandoned armored vehicle	☐	
Abandoned munition stores	☐	
Unknown	☐	
Other	☐	

Terrain and vegetation

Vegetation: ☐ Grass ☐ Bushes ☐ Trees ☐ None ☐ Unknown

Vegetation density: ☐ Low ☐ Medium ☐ High ☐ N/A ☐ Unknown

Vegetation removable by: ☐ Manual ☐ Mechanical ☐ N/A

Drainage features: ☐ Ditches ☐ Canals ☐ Rivers ☐ Lakes ☐ None ☐ Unknown

Ground profiles: ☐ Flat ☐ Hillside ☐ Ridge ☐ Gully ☐ Embankment ☐ Unknown

Soil type: ☐ Sand ☐ Chalk ☐ Ploughed ☐ Clay ☐ Swamp ☐ Laterite ☐ Rocky ☐ Unknown

12. Blockages

Agricultural land: ☐ Crop ☐ Pasture ☐ Other:_____ ☐ Unknown

Water body: ☐ Irrigation ☐ Fishing ☐ Watering animals ☐ Bathing ☐ Laundry ☐ Other: _____ ☐ Drinking ☐ Unknown

Non-agricultural land: ☐ Fuel ☐ Food ☐ Hunting ☐ Building materials

☐ Other: _____ ☐ Unknown

Route to: ☐ Housing area ☐ Unknown ☐ Nearest village ☐ Commune center ☐ District center ☐ Provincial capital ☐ National capital ☐ Other:_____

Infrastructure and services:

☐ Bridge ☐ Airstrip ☐ Factory ☐ Markets
☐ Dam ☐ Power line ☐ Railroad ☐ Power Station
☐ Medical facilities ☐ Cultural/Religious sites ☐ Educational facilities ☐ Other:_____
☐ Buildings ☐ Unknown

Additional Information/Comments

Part III: Recent victims

If a *local community* has been identified:		**If only a *hazardous area not claimed* by any local community:**	
Community name		Hazardous area ID	
Community ID		Coordinate X	Coordinate Y

No.	Hazardous area ID.	Name	Sex	Age	Device
1.					
2.					
3.					
4.					
5.					

No.	Activity at incident [typology]	Outcome	Status (mil. / civilian)	Current residence	Comment
1.					
2.					
3.					
4.					
5.					

Part IV: Key informants and other local contacts

If a *local community* has been identified:	**If only a *hazardous area not claimed* by any local community:**

Community name		Hazardous area ID	
Community ID		Coordinate X	Coordinate Y

Group interview participants and guides

No.	Name	Sex	Age	Occupation / Function / Organizational affiliation	Contact details
1.					
2.					
3.					
4.					
5.					

Other persons of importance

No.	Name	Sex	Age	Occupation / Function / Organizational affiliation	Contact details
1.					
2.					
3.					
4.					
5.					

Impact scoring used in Haut-Katanga, DRC, 2005

Impact Scoring at Community Level

According to the work done in this community, it is reported that:

1. Mines and Explosive Ordnance

There are explosive ordnance	If this is the case, add	1 point	_____
There are mines	If this is the case, add	2 points	_____
There are sub-munitions	If this is the case, add	3 points	_____
	Sum mines or explosive ordnance:		_____

2. Socio Economic Impact

Agricultural land impacted	If this is the case, add	2 points	_____
Pastureland impacted	If this is the case, add	1 point	_____
Non-agricultural land impacted	If this is the case, add	2 points	_____
Housing area impacted	If this is the case, add	2 points	_____
Water points impacted	If this is the case, add	1 point	_____
Routes leading to admin centre	If this is the case, add	1 point	_____
Other infrastructure	If this is the case, add	1 point	_____
	Score according to number of persons:		
	1-50 persons = 1		
	51-100 persons = 2		
	101-200 persons = 3		
	200+ persons = 4		
	Score:		_____
	Sum Socio Economic Impact:		_____

3. Peace and Stability

Recycling of munitions possible	If this is the case, add 0,1, 2 or 3 points	_____
Instability Score according to region	If this is the case, add 0, 1, 2 or 3 points	_____
Prevent return of refugees/IDPs		
Score according to the number of persons:		
	1-50 persons = 1	
	51-100 persons = 2	
	101-200 persons = 3	
	200+ persons = 4	
	Score:	_____
Preventing reconstruction/development project		
Score according to the number of people affected		
	1-50 persons = 1	
	51-100 persons = 2	
	101-200 persons = 3	
	200+ persons = 4	
	Score:	_____
	Sum of the sub-totals for Peace and Stability:	_____

4. Accident Victims

Victims since the war (killed or injured)	Number killed and injured	____ x 4	_____
	Sum Victims		_____

TOTAL SCORE [Sum Subtotals 1+2+3+4] _____

If the score equals 0 then the community has "no suspected pollution"
If the score equals between 1 and 7 inclusive, then the community has "low impact"
If the score is equal to between 8 and 14 inclusive, then the community has "medium impact"
If the score is equal to or more than 15, then the community has "high impact"

IMPACT CATEGORY: _____

We, the data collectors believe that:

1. The impact score is in accord with the actual situation.
2. The impact score must be adjusted as follows:
   For this we propose to reduce the score by 10% or 20% OR to increase the score by 10% or 20% (circle your choice)

The reasons for this choice are as follows:

ADJUSTED IMPACT SCORE:

Supervisor

I agree/do not agree with the adjustment proposed by the data collectors

My reasons are as follows: