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Evaluation Report of Technical Survey Operations Within the Cambodian Mine Action Centre

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Contents

1 Executive Summary

In 2003, the Cambodian Mine Action Centre (CMAC) introduced a new concept for technical survey. The aim of the new concept was to rationalise the survey process and to deliver a cogent strategy for the effective deployment of resources. Three years on, the approach has been evaluated to determine whether the process is meeting its intended objectives and whether it is the most effective and efficient means of conducting technical survey. The evaluation team determined that there are a number of areas in which CMAC can improve its effectiveness and efficiency, and several areas where improvements can be made at a national level.

The evaluation team found in general that the CMAC technical survey teams were very professional and worthy of praise, but determined that the current technical survey team structure is inefficient and unnecessarily differentiates between the roles, responsibilities, and structure of the teams charged with carrying out technical survey. This has lead to a duplication of effort and inefficiencies in the tasking of clearance assets. The evaluation team determined that one survey team of five men each should be the basic building block for technical survey activities, with multiple teams used on larger tasks. The teams should have common Standard Operating Procedures (SOP) and should be equally capable of surveying in support of Mine Action Planning Unit (MAPU) tasks, casualty reduction tasks, and Explosive Ordnance Disposal (EOD) tasks.

Prioritisation for 'emergency' or casualty-reduction tasks should be strengthened. If the Cambodian Mine Action and Victim Assistance Authority (CMAA) is serious about reducing casualties then a prioritisation process that is at least as transparent as the MAPU process will be required to prioritise these essentially humanitarian tasks. CMAC should develop SOPs that are consistent with any national casualty-reduction prioritisation process.

Within the technical survey process itself, efficiency could be significantly improved through the use of some of CMACs high-impact assets – specifically the brushcutter and MDD teams. The Brush Cutter (BC) and Mine Dog Detection (MDD) teams would operate far more efficiently if they were used as part of the technical survey process, releasing significantly more land into productive use than when used in a clearance role. Similarly, the efficiency of the technical survey process would also be improved if the faster BC and MDD teams were used to delineate the contaminated areas, freeing up deminers to clear areas in which mines have been identified.

The issue of 'land re-classification' is a topical issue in Cambodia at present, and is directly relevant to this evaluation. A recent strategy paper circulated by the CMAA acknowledges and moves to address the issue and has as its objective "to improve the mine clearance planning process by recognizing areas which have been returned to productive use by the community for a long period and have no evidence of risk". The issue is directly pertinent to the issue of technical survey due to the fact that, in many instances, local demining efforts fulfil the technical survey role. In many areas, informal demining by local populations is releasing land to productive use more quickly than formal demining efforts. The concept of land reclassification, if properly implemented and recorded, has the potential to accurately capture the true state of mine and Unexploded Ordnance (UXO) contamination in Cambodia for the first time.

However, effective information management is critical to the success of this concept, and indeed all mine action activities. Until the issue of national level mine action information management is adequately addressed the true state of the landmine and UXO situation in Cambodia will continue to be unclear and misrepresented.

Although national data was consolidated and fed into Version 3 of the Information Management System for Mine Action (IMSMA) provided to CMAA in late 2004, there has been no systematic and accurate reporting and data management, thus the database is not fulfilling any valid function. Information management could also be improved within CMAC itself, with parallel systems duplicating effort, and Demining Unit (DU) managers missing out on the ability to use the information available to maximum effect.

An area that is enjoying success, and at relatively low cost, is that of Community Based Mine Risk Reduction (CBMRR). The CBMRR network of volunteers in mine-affected villages provides the technical survey teams with the intimate knowledge of the mine situation that they require if they are to do their job effectively. CMAC (correctly) only conducts surveys in those locations in which CBMRR is represented, however the lack of CBMRR volunteers in a number of seriously contaminated locations is limiting CMACs ability to deploy survey teams. The evaluation team has determined that the expansion of the CBMRR network and a corresponding strengthening of the coordination component is critical to the future effectiveness of technical survey within CMAC.

2 Introduction and Background

The current technical survey capacity within CMAC has been developing steadily since the formation of the organisation in the early 1990's to the *status quo* of today. In 2003, a review was funded and undertaken by Norwegian People's Aid (NPA) which resulted in the publication of a paper titled "Technical Survey Concept Paper" and which is still acknowledged by CMAC to be the core concept paper for the implementation of technical survey within CMAC.

The review was undertaken due to concern that the process of area reduction was not being undertaken in the most effective manner and it was hoped that a thorough review, followed by a re-draft of the CMAC Standing operating Procedures (SOP's), would result in a more effective deployment of area reduction assets in the CMAC deployment areas of Cambodia.

Around the same time, CMAC clarified that its focus for clearance within Cambodia was "*saving lives and supporting development in Cambodia*". This was simultaneous to the process of reinforcing the Land Use Planning Units (LUPU) [now Mine Action Planning Units (MAPU)] – the mechanism used for task prioritisation according to community needs. The concept paper refers to the use of information to plan effective operations and target areas causing the most accidents and suggests that this information could (and indeed should) be used to "*better focus mine risk reduction teams such as Community Mine Marking Teams (CMT), Mine Risk Reduction Teams (MRT) and Mine Detection Dogs (MDD) on risk reduction tasks*".

The current evaluation has been undertaken by NPA in order to determine whether the technical survey process as defined by the 2003 review is addressing the issues it was intended to address, and whether any recommendations could be made regarding the process's effectiveness and efficiency. The evaluation was conducted by Hemi Morete of Quality Solutions International (QSI), with additional advice being offered by Tim Lardner of the Geneva International Centre for Humanitarian Demining (GICHD).

2.1 Objectives and Scope of the Evaluation

The evaluation considered technical survey activities at both the technical and strategic levels in order to assess the CMAC Technical Survey capacity established in 2003. The evaluation team worked closely with CMAC staff at HQ and provincial levels, and information was collected at both the local (village, commune, district and province) and national level (CMAA, governmental bodies, CMVIS).

The other key mine action operators conducting technical survey in Cambodia (the HALO Trust and Mines Advisory Group) were consulted, as were other key stakeholders (donors, development agencies and NGOs). The objectives of the evaluation were as follows, detailed ToR are attached at Annex A:

a. Assessment of the area reduction approach and capacity of the CMAC Technical Survey Teams (TST), the Technical Survey for Clearance tasks teams (TSC) and their compliance with CMAC SOPs and CMAA/IMAS standards.

b. Assessment of the information flow and the coordination between the target communities, the TST & TSC data collection function, CMAC central database and CMAC related field operations: identify strengths and weaknesses in terms of communication, quality of information and access to information. Also examine the role of CMAA in respect to information flow and planning at the strategic level.

c. Assessment of the Technical Survey teams integration – both TST & TSC – within the CMAC toolbox in working with components such as the CBMRR, MRT and CMMT and the Survey teams' role towards a risk reduction approach.

d. CMAC Technical Survey strategic plan for the next 5/10 years is elaborated with a special focus on CMAC area reduction and risk reduction approaches and includes analysis of the long term financial and technical sustainability.

2.2 Acknowledgements

The evaluation team would like to acknowledge and thank all individuals and organisations that provided assistance during the course of the evaluation, particularly CMAC management staff, the HALO Trust, Mines Advisory Group, Handicap International, and UNDP. The team would especially like to thank the CMAC Survey Coordinator, Mr. Srey Sang Ha, DU Managers, Som Vireak, Keo Sarath, and Min Sarun, deputies Roth Pottana and Oum Socheath and their staff, NPA mine action technical monitor and interpreter Mr. Khun Lay, Driver Mr. Van Pou, and all NPA administrative staff.

3 Approach and Methodology

The assessment was conducted in four phases. The first phase was a document study which enabled the evaluation team to gain an understanding of the procedures and processes used within CMAC for technical survey. The second phase involved interviews with key stakeholders in Phnom Penh, and phase three consisted of a series of field visits to CMAC technical survey assets operating in Demining Units 1, 2, and 3. The fourth and final phase consisted of confirmatory interviews in Phnom Penh and a debrief to CMAC HQ.

3.1 Document Study

The document study involved the review of material relevant to the project and the context in which it is implemented. Documentation reviewed included:

- NPA Technical Survey Evaluation Terms of Reference.
- CMAC Technical Survey Concept Paper.
- CMAC Technical Survey SOPs.
- CMAC 5 year Strategic Plan.
- CMAC Progress Report Jan – Oct 05.
- CMAA National Mine Action Strategy, 2005 Edition 3.

These documents were primarily reviewed at the beginning of the evaluation, although additional information was considered as it came to hand during the course of the assessment.

3.2 Interviews and Field Visits

A series of interviews with key informants were conducted during the course of the assessment. A full list of individuals and organisations consulted is attached at Annex B:

4 Current Technical Survey Capacity

4.1 Roles, Responsibilities, and Structure

Since the re-organisation of its MMTs (Mine Marking Teams) into *Technical Survey for Clearance Teams* (TSC) in 2004/5, CMAC has employed two types of technical survey teams; the *Technical Survey Team* (TST) and the TSC.

The **TST** was created to survey tasks that were prioritized according to the number of casualties occurring in the area. It surveys locations identified by information coming from three main sources: the Cambodia Mine/UXO Victim Information System (CMVIS), the Level One Survey data, and existing information held in the CMAC database. Land identified as contaminated is subsequently cleared by a CMAC clearance unit – usually one of the smaller clearance teams. Its responsibilities are:

- To identify the mine problem for each high casualty village in detail;
- To classify the contamination and the level of risk to local population for each identified minefield;
- To collect operational information and identify the boundaries of each minefield;
- To identify marking and clearance tasks for each minefield;
- To mark all confirmed and suspected minefields.

The **TSC** was created to survey tasks that were prioritised according to the Mine Action Planning Unit[1] (MAPU) process. Its responsibilities are:

- To determine those areas requiring full clearance, those requiring verification and those that do not require clearance.
- To collect operational information on each clearance task.

There are currently 135 staff employed in technical survey roles within the organisation. The staff are organised into two structurally different teams as follows:

- **Technical Survey Team (TST)[2].** There are four teams each consisting of 10 people:
  - 1 x team leader
  - 1 x 2IC
  - 8 x surveyors
  - 2 x vehicles

The TST is deployed to those locations where high casualty rates are found – primarily through the analysis of CMVIS data and drawing on the CMAC CBMRR network in order to reduce the risk to populations in specific locations.

- **Technical Survey Clearance Team (TSC)[3].** There are 19 teams each consisting of 5 people:
  - 1 x team leader
  - 1 x 2IC
  - 3 x surveyors
  - 1 x vehicles

[1] Formerly Land Use Planning Units (LUPU)
[2] Referred to in the concept paper as High Casualty Village technical survey team (HCVTST).
[3] Referred to in the concept paper as the LUPU Clearance Task Technical Survey Team (CTTST).

The primary aim of a technical survey is to *"collect sufficient information to enable the clearance requirement to be more accurately defined, including the area(s) to be cleared, the depth of clearance, local soil conditions, and the vegetation characteristics"*[4]. Given the tasks that both TST and TSC are employed upon, both should have the same ultimate objectives. In practice, however, the team structure, SOPs, and responsibilities of the two types of survey teams differ markedly. While the TSC does have additional tasks to complete, the evaluation team has determined that the core functions of the two teams to not differ enough to warrant a separate structure.

It is assessed that CMAC should employ one type of survey "team" that is capable of surveying any type of task i.e. clearance in support of MAPU, clearance in support of casualty reduction, EOD tasks etc. SOPs should reflect its role in collecting relevant information, and defining the scope and nature of any subsequent effort. These teams should be based on the five-person structure, with DU management deciding how many teams should be employed on a given survey task according to the size and scope of that task.

4.1.1 From Concept to SOP

The concept paper was drafted in 2003 with an aim of rationalising the survey process and delivering a cogent strategy for the effective deployment of resources from CMAC. The stated goal of the CMAC technical survey capacity is to: "reduce the number of mine/UXO casualties and to enhance the efficiency of CMAC operations…"[5]. It is clear that the technical survey capacity has developed well and provides an excellent (and apparently essential) step on the pathway towards effective land clearance.

The concept paper was written by a consultant with long experience in Cambodia and then developed into deliverable SOPs by a former CMAC senior management staff member with extensive knowledge of CMAC and survey processes. Both sets of documents are extensively researched and provide sufficient detail to enable the development of good operational processes.

There are several minor differences in the way that the SOPs elaborate from the concept paper, but none of these appear to create any significant difficulties and appear to have been developed based on practicalities rather than any underlying differences in philosophy.

4.2 Procedures

CMAC Technical Survey procedures as implemented by the TST are generally effective and provide the information necessary for subsequent action; whether that is clearance, marking, or land release to productive use. However, the practice of using manual deminers to locate the confirmed mined areas is inefficient. Currently, manual deminers are used in a "probing" role to confirm the presence of mines in a given area. Their use, however, is limited to confirmation and there is usually insufficient time or capacity to accurately delineate the area that is mined.

However, CMAC does possess the appropriate assets to greatly increase the capacity of the technical survey teams in the form of brush cutters and MDD teams. If these assets were used to compliment the technical survey teams, the output of the teams would increase significantly and the productivity of the assets themselves, in terms of

[4] IMAS 08.20: Technical Survey
[5] SOP 01, Technical survey concept paper.

land released, would also increase markedly. It is the opinion of the evaluation team that utilising the BC and MDD in this way would represent a far more effective and efficient use of resources.

Cambodia does not yet have an authorised national standard for technical survey, but CMAC Technical Survey SOPs are consistent with the International Mine Action Standards (IMAS). CMAA has developed a draft national standard for Technical Survey which is also consistent with International Mine Action Standards (IMAS). The evaluation team has assessed that the formal publication of this, and indeed all draft national standards would be of great benefit to effective technical survey in Cambodia.

5 Tasking Processes

Whilst CMAC's focus is on "saving lives and supporting development", the majority of its clearance and survey assets are deployed on MAPU[6] tasking requirements. The MAPUs have developed significantly over the last 12 months – particularly as a result of the support of AVI – and are now working in a relatively effective manner, but casualty reduction is only one of the criteria applied to the tasking process.

As an example of this, the evaluation team analysed the deployment of clearance teams in DU2. DU2 has 11 mobile clearance platoons, 5 TSCs and 2 TSTs to cover Battambang province. Battambang province is cited in the CMVIS 2004 report as being the most highly affected province in Cambodia, with 129 mine victims reported in 2004. The deployment of the mobile platoons is such that 10 of the 11 platoons are deployed on tasks that were surveyed by the TSCs and thus are deployed based on MAPU priorities. There is a single platoon deployed on a TST surveyed task. Expressed as a percentage of assets deployed, approximately 91% of clearance resources are deployed on MAPU tasks.

In terms of technical survey assets across CMAC, of the 135 CMAC personnel undertaking technical survey (TST and TSC) 70% (95) of them are allocated to surveying MAPU tasks with the remaining 30% (40) surveying high-casualty reduction tasks. However, more than 90% of CMAC clearance assets are deployed to MAPU tasks. Put simply, using the TST in this way is inefficient and the balance is difficult to justify.

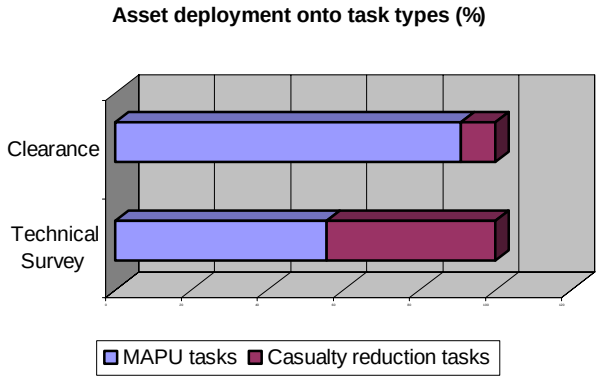

Figure 1 – Asset deployments

[6] The concept paper refers to the Land Use Planning Unit (LUPU), which was subsequently renamed MAPU, as we shall assume that the two are the same.

This is being addressed in part by the MAPU process which is adjusting the prioritisation process to take CMVIS data more into account when considering tasks. However, there are a number of villages which experience a significant number of casualties but that do not find their way into the MAPU process, or do not have sufficient economic benefit to meet the criteria for clearance. It is these villages that require some means by which they can be addressed purely as a casualty reduction priority.

However, to re-deploy CMAC assets solely on the basis of casualty reduction raises the issue of transparency and accountability in task selection. If the issue of casualty reduction is to be taken seriously then a systematic, transparent process should be developed at the national level to assist CMAC in its prioritisation of these tasks.

5.1 MAPU issues

The Mine Action Planning Units (MAPU) have reinforced their base over the last 12 months. This appears to have been influenced significantly by the four advisors from Australian Volunteers International (AVI) who have been working within the MAPUs. The general concept is that the tasking and prioritisation process is driven from the communities upwards which eventually finds its way into the tasking mechanisms – to varying degrees – of the mine action operators. Whilst the principles of the process are sound and well developed and indeed could well serve as a model for other countries, there are two significant flaws within the system. These are:

- The process has only very recently begun to take significant note of the significance of high casualties in communities, although this was identified as a major driver in the very early stages of development.
- The MAPUs specifically do not consider tasks that are in areas where there are land dispute issues. While this principle is sound, the problem is that a significant number of areas with land disputes ongoing are close to the Thai border – precisely that area where the highest number of casualties occur.

Both of these issues have been identified and the first has already begun to be addressed within the MAPUs. However, the CMAC tasking mechanism works on a long lead time and it is likely that it will be several years before the focus shifts back to high-casualty tasks.

5.2 Area reduction

Area reduction is a key issue in relation to mine action in Cambodia. In 2001 the national Level One Survey (L1S) (known more generally as a Landmine Impact Survey – LIS) was completed and identified a total of 6,422 villages affected by landmines and UXO. The L1S ranked these communities according to generally accepted scoring mechanisms and categorised them as high, medium and low impact communities. In addition, some 4,466km^2 of suspected contaminated land was identified.

There are two fundamental problems with the use of this data. First, the impact scoring of affected communities has not been utilised for prioritisation of clearance tasks. Given the rate of developmental progress in Cambodia the information has essentially become out of date and beyond any significant usefulness. Second, the weakest element of the L1S – that of the estimated extent of contamination – has been used as a significant planning figure for mine action in Cambodia.

As a result, much of the data used for national planning is based around the L1S suspect area data, which now represents an inaccurate estimate of contaminated land in the country. Moreover, due to limitations in both procedure and information management systems, operators are often unable to change the status of these "*suspected hazardous areas*" without physical clearance taking place. This is clearly unsatisfactory and is being dealt with by the introduction of a further category of land by the CMAA "*reclassified land*" which should begin the process of dealing with these anachronisms. This is discussed in more detail in the next section.

6 Reclassified Land

Much of the national planning figures are based around the L1S suspect area data. This data suggest that there is currently some 4,466km^2 of contaminated land in Cambodia. This, given what is now known, is undoubtedly not the case – a fact recognised by a number of key actors in the country.

A recent strategy paper circulated by the CMAA acknowledges and moves to address the issue of land that has been returned to productive use. The paper has as its objective *"To improve the mine clearance planning process by recognizing areas which have been returned to productive use by the community for a long period and have no evidence of risk"*. The paper proposes that there be an additional category of land – "reclassified land". Reclassified land is defined as land that has been in productive use for a number of years by the local population without incident. After this reclassification, the land would qualify as a priority for clearance.

The issue of reclassified land is directly pertinent to the issue of technical survey due to the fact that, in many instances, local demining efforts are fulfilling a technical survey role. In the NW provinces where land pressure – and indeed the mine problem – is most acute, informal demining by local populations and free agents is releasing land to productive use more quickly than formal demining efforts.

Large areas of land that were formerly suspected of being contaminated are being cleared by local means and cultivated. In some cases there were no mines to be found – in others, mines that were able to be dealt with due to degradation (e.g. PMD6) were cleared. In many cases, however, informal demining efforts will stop short of tackling pattern minefields that contain more persistent mines (e.g. PMN). Informal demining can therefore clearly define those areas that are probably mined – a *de-facto* technical survey.

Irrespective of the effectiveness of local efforts in contaminated area delineation, one issue is beyond question: informal local demining efforts are releasing land back into productive use. Under the CMAA initiative, this phenomenon is being recorded and the resulting information compiled and used to update existing databases.

MAG and the HALO Trust have accepted not just the principle of this concept, but are already implementing the recording of this on their databases. However CMAC appear to be some way behind and there is a reticence that causes some concern. CMAC management are concerned at this policy shift and express that there is seldom a reason to remove "suspected contaminated" land from their records without a clearance or risk reduction process. Nevertheless, when the evaluation team visited CMAC demining units in four provinces, this reclassification is actually already taking place.

For example CMAC already classifies some areas in a similar way by designating them as "residual minefields". A residual minefield is defined as: "*an area presently used for housing, cultivation or other uses where there is historical and physical*

evidence of mines (accident or visibility) in the past 2 years prior to the arrival of technical survey team. Such an area was cleared using local clearance methods by villagers. In most cases a residual minefield is suitable for MDD clearance due to limited vegetation, high metal contamination and low probability of finding mines". Residual minefields are, understandably, not accorded a high priority for clearance by CMAC and therefore fit the definition outlined by CMAA for reclassified land. Additionally, CMAC TSTs routinely apply common sense when surveying a suspected area and do not include land that has been cultivated for a number of years in their site sketches. CMAC therefore are already applying the concept of land reclassification and their SOPs should be adjusted accordingly, bringing them into accordance with the CMAA concept.

7 Information management.

7.1 National issues

The issue of information management is crucial when discussing technical survey and area reduction in Cambodia. It is particularly important given the current requirement to document reclassified land – without an accurate national overview, the scale of the problem is likely to be grossly overstated and cause confusion amongst donors, mine action operators and other key stakeholders in Cambodia.

Despite a number of efforts over the past fifteen years to address information management within the mine action sector in Cambodia, it remains an area of significant weakness. Although mine action has been operational in the country for more than 15 years, there remains no central national database which links to all mine action activities in the country. Extant data was consolidated in late 2004 and populated a database (IMSMA v3) that was delivered to the CMAA. Unfortunately, there have been no regular formal updates since that time and as such, the value of the current database is very low. Each of the key organisations, CMAA, HALO, MAG and CMAC, manage and maintain their own databases, yet there are no formal links between them. This lack of a central repository means that there is, in reality, no central location where it is possible to gain a clear oversight of the current situation and a realistic view of the scale of the problem.

Under a "capacity development" project put in place by the UNDP, a GIS specialist is providing technical assistance to the CMAA. This has resulted in the publication of an atlas that provides a snapshot view of mine and UXO contamination. However, the information is GIS based, reporting from operators is *ad-hoc* and sporadic, and there is no enduring capacity within CMAA to maintain a database when the existing project reaches a conclusion. The current advisor is due to leave his position in February 2006 there is likely to be a six-month gap before he is replaced.

The evaluation team believe that the quality of data available, combined with the extant knowledge base from the key stakeholders, provides an excellent foundation for the development of a true national mine action database. There are currently plans in place to deploy and implement version 4 of the Information Management System for Mine Action (IMSMA) in the near future. Whilst the team believe that this is a very positive step forward, it also believes that there is a need for a skilled and experienced mine action Information Manager to oversee this project.

The Information Manager would be responsible for:

- The integration of existing information into a National Mine Action Database.

- Establishing reporting systems and procedures to formalise information transfer from, and back to, the field.
- Training CMAA information management personnel on the day to day use of the database,
- Training CMAA staff on the capabilities of the system with regard to their own reporting requirements.

7.2 CMAC issues

Within CMAC, the database in Phnom Penh provides the organisation with its internal information management needs; however it does not take into account the activities of the other operators in the country.

The data that is recorded in the DUs is passed from the field locations to the DU headquarters in paper form – the quality of these reports is very good. Once the data is received at the DU, it is entered into the DU "database" manually and then the paper record is forwarded to the CMAC database in Phnom Penh.

Once in Phnom Penh, the data is firstly manually scanned and entered as GIS data and then is manually entered into the database. Within the headquarters, there are currently three separate databases: one for mine action data, one for UXO data, and a third for data on the deployment of CMAC assets. CMAC are in the process of combining the deployment database and the mine action database, and it is recommended that all UXO related data is also consolidated in this single database.

The evaluation team has determined that information management within CMAC could be made more effective by increasing the utility of the system at the DU level. DU managers are currently reliant on updates from CMAC HQ to provide them with an accurate picture of the situation in their DU. This is inefficient and prone to error. DU managers should have the capacity and capability within their own DU HQ to enter all information, disseminate this information, and interrogate the database to assist in the planning and implementation of their operations.

8 The role of CBMRR

CBMRR was established in 2001 in order to reduce the risk to the population from landmines and UXO. Its objectives are:

- *To establish an effective an effective and sustainable community-based volunteer mine risk reduction network at village, commune, and district level that continues to work to reduce mine/UXO risk after CBMRR is phased out; and*
- *To Link mine/UXO affected communities to appropriate mine action services, community development responses, and victim assistance services.*

CBMRR is currently active in 13 of the 30 most affected districts in the country, these districts were identified by the Cambodian Mine/UXO Victim Information System (CMVIS).

The initial technical survey concept paper developed for CMAC in 2003 recommended that affected communities were subject to a detailed assessment by a small technical survey team. The aim was to glean as much information as possible from the village through close interaction over an extended[7] period of time. This approach was rejected, however, due to the fact that the CBMRR project already

[7] Typically about one week.

existed within CMAC and the CBMRR network would provide the same result – a detailed survey of an affected community.

The evaluation team concluded that the detailed information provided by CBMRR is an essential component of effective technical survey as implemented by CMAC. It provides the in-depth level of information the CMAC technical survey teams require to effectively define the areas that require clearance effort. CMAC has reached the same conclusion and has developed procedures that (correctly) ensure that technical survey only takes place in those communities that have an active CBMRR network in place. However, this leaves many of the worst affected communities without CBMRR and therefore without a means of having their problem surveyed.

The evaluation team therefore believes that in order to ensure the effectiveness of CMACs technical survey capacity the CBMRR network should be expanded to address all of the worst affected communities, and the supporting structure – essentially the coordination component within CMAC HQ – be strengthened to deal with the additional workload. This expansion is considered essential to the effective conduct of TS within CMAC.

Although the technical survey teams have an established methodology for dealing with the tasks identified as being high casualty reduction tasks, the process for selecting these tasks is less well defined. Compared to the MAPU task selection process, which is well established and tested, the task prioritisation and selection process is ad-hoc in nature. This is primarily due to two facts: 1) a significant amount of effort has been invested in the MAPU process and that of LUPU before it; and 2) high casualty tasks are commonly required to take place on land with single beneficiaries or embroiled in a land-dispute. They are therefore often rejected on the grounds that to clear them would open the organisation up to accusations of nepotism and corruption.

This dilemma is a real one for CMAC. On the one hand the organisation is required under the Royal Government's strategic vision, as well as its own, to reduce victims in Cambodia. Yet it is also constrained by procedures put in place, understandably, to ensure transparency and honesty. In order for CMAC to make a real difference in the number of accidents occurring in the highly affected communities of NW Cambodia it must be allowed to conduct demining in the areas that generate the highest casualties. To do this, CMAC must have a prioritisation process for casualty-reduction priorities that is at least as robust as that which exists for development activities under MAPU.

The basis for such a process already exists in the form of CMVIS and CBMRR. Priorities can be developed according to locations identified by CMVIS, and subsequently tested by the CBMRR network. In this way the communities themselves will decide whether land belonging to a single beneficiary is a priority for clearance due to the number of victims they are suffering.

9 Conclusions and Recommendations

9.1 Conclusion 1

TST and TSC have same ultimate aim: i.e. delineation/definition of mined areas, but their current structure and procedures differ unnecessarily.

Recommendations:

1. That TST and TST are all re-designated as "Technical Survey Teams" (TST).
2. That a TST consists of 5 persons.
3. That TST are used on all technical survey tasks, i.e. high-casualty locations, MAPU tasks, and EOD/BAC tasks.
4. That, when necessary, TST are combined for use on large tasks.
5. That Technical Survey SOPs are standardised for use by the TST.

9.2 Conclusion 2

The deployment of clearance assets are unduly weighted towards the clearance of MAPU tasks with no significant clearance assets used on "high casualty reduction" tasks. Technical survey in support of casualty reduction is inefficient.

Recommendation:

1. That CMAC rebalance its deployment of clearance resources to address high-casualty locations.

9.3 Conclusion 3

If clearance in support of casualty reduction is to take place effectively, a systematic, transparent prioritization process should be developed at the national level. CBMRR could assist in this regard.

Recommendation:

1. That CMAA[8] and CMAC develop a transparent prioritisation process to enable clearance in support of casualty reduction to occur effectively.

9.4 Conclusion 4

The process of delineating mined areas could be made more efficient with use of additional existing assets; specifically BC teams and MDD.

Recommendation:

1. That Technical Survey Teams should have the ability to request BC and MDD resources to assist them with survey tasks.

9.5 Conclusion 5

The process referred to as "land reclassification" is an innovative approach to mine action in Cambodia. Formalising the process will ensure that *ad-hoc* efforts that already exist are properly recorded

[8] Although this evaluation was conducted in support of CMAC, we have made this recommendation for CMAA as the issue is a *national authority* responsibility.

Recommendations:

1. That CMAA[8] develop an official policy to advance the concept outlined in the CMAA Strategy Paper.
2. That CMAC develop SOP consistent with this approach.

9.6 Conclusion 6

Information management across the mine action sector in Cambodia is poor. No valid central national database exists and reporting to CMAA is *ad-hoc*; i.e. no formal reporting process exists.

Recommendations:

1. That CMAA establish a national database populated through a formalised and possibly legalised reporting processes from all operators.
2. That a donor be sought to fund a mine action information management consultant (not a database specialist) to develop the systems and procedures required of a national mine action database.

9.7 Conclusion 7

CMAC database is effective in isolation but its effectiveness could be improved.

Recommendations:

1. That the CMAC information management process be streamlined to enable more utility at the DU level.
2. That the CMAC information management process allow for all relevant reports to be entered in main database; i.e. include progress reports in database.

9.8 Conclusion 8

The CBMRR system is the key to successful technical survey in Cambodia. CMAC technical survey teams currently, and correctly, only survey villages with a CBMRR MUC, bit a significant percentage of high-casualty villages do not have a CBMRR presence and will therefore not be surveyed. Extending the CBMRR network can be achieved at relatively low cost

Recommendations:

1. That the CBMRR network be expanded to encompass more highly contaminated villages.
2. That CMAC "Survey Teams" operate as the mechanism to translate community information into a format usable by CMAC.
3. That SOPs be developed to formalise this process, including information management.

Glossary of acronyms

CBMRR	Community Based Mine Risk Reduction
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMAS	Cambodian Mine Action Standards
CMVIS	Cambodian Mine Victim Information System
DU	Demining Unit
GICHD	Geneva International Centre for Humanitarian Demining
HALO Trust	Hazardous Areas Life-Support Organisation
HI	Handicap International
IMAS	International Mine Action Standards
LUPU	Land Use Planning Unit
MAG	Mines Advisory Group
MAPU	Mine Action Planning Unit
MDD	Mine Detection Dog
MUC	Mine and UXO Committee
NGO	Non-Governmental Organisation
NPA	Norwegian People's Aid
SOP	Standing Operating Procedure
TSC	Technical Survey Team for Clearance
TST	Technical Survey Team
UNDP	United Nations Development Programme
UXO	Unexploded Ordnance

Annexes

Annex A

Terms of Reference (TOR)

Evaluation of the CMAC Technical Survey Activities

24 Days Mission

Background:

In spite of more than ten years of humanitarian mine action work in Cambodia, the adverse impact caused by mine and UXO contamination remains one of the highest in the world. With an average of 840 persons being killed or injured for the past three years, the objective to significantly reduce the level of risk for most vulnerable communities remains a daunting challenge.

One of the major reasons for this sustained level of accidents is the increased number of people rendered vulnerable from mine/UXO accidents. Since finally reaching freedom from strife in 1999 many refugees and internal migrants have settled in former conflict areas along the Cambodian-Thai border in search of land and income opportunities. Despite clearance and awareness efforts deployed by CMAC and other agencies, the number of people living in mine-affected areas is continuously increasing due to land and trade opportunities along the Thai border.

In 2002, the results of a National Level One Survey (L1S) revealed that 6,422 villages or 46% of all the villages in Cambodia were subject to mine/ UXO contamination. Furthermore, a land surface of 4,466km2 has been identified as presenting risk factors to more than 44% of the total population.

However, the above figures are misleading in terms of the impact on casualties, in fact analysis of the data shows that only 502 villages out of the 6,422 had any human casualties in the past two years. This number drops further to 120 for villages with more than 5 casualties over the past two years preceding L1S. The great majority of these villages are located along the Cambodian-Thai border, especially in the provinces of Battambang, Pailin, Banteay Meanchey and Oddar Mean Chey. Therefore from the perspective of human casualties, the mine problem in Cambodia is concentrated in these provinces where a large number of demining resources are presently working. Although there can be discrepancies with the L1S casualty data, the Cambodian Mine-UXO Victims Information System (CMVIS) confirms that mine/UXO accidents occur mostly in the Northwest provinces of Cambodia.

At the end of the year 2002, the Cambodian Mine Action Centre (CMAC) with support from Norwegian People's Aid launched a pilot technical survey project in

order to reduce the number of mine/UXO casualties, to strengthen area reduction capacity and to enhance the overall efficiency of CMAC operations.

Rationale

Although the L1S and CMVIS data are useful to locate high casualty villages, they provide only limited information on the precise location of mined areas and on where accidents occur. As CMAC's mandate includes the reduction of mine/UXO casualties with a target of zero mine victims by 2012, this information is critical to plan effective operations and target areas that are causing most accidents. As such, the main purpose of the Technical survey is to further detail the initial information provided by the national Level 1 Survey. As a result, the identification of the minefield boundaries derived from the collection and analysis of accurate information allows for better community ownership, greater effectiveness of the operations, reduced target areas and improved use of resources.

The enhanced quality of the information could in turn be used by CMAC to better inform the deployment and tasks of mine risk reduction teams such as Community Mine Marking Teams (CMMT), Mine Risk Reduction Teams (MRT), Unexploded Ordnance Teams (EOD) and Mine Detection Dog (MDD).

The Community-Based Mine Risk Reduction (CBMRR) Project was started in 2002 with the aim to reduce the mine/UXO risk for communities living in the most contaminated areas by developing their capacity to fully participate in the prioritization and planning of mine action and by using their own community resources for mine risk education. The CBMRR works with communities at risk to collect and analyze information on the mine problem in high-risk villages and inform on development needs. However, there remains a need to better develop the cooperation with demining teams and to share information, which can be better used by the latter to appropriately plan for risk reduction activities in close collaboration with the communities.

At the moment most CMAC demining resources are deployed in accordance to the Mine Action Planning Unit (MAPU), which identifies areas in mine-affected villages where mine clearance will mostly contribute to socio-economic development. However, today CMAC or MAPU often lack precise information on which areas within the villages actually require clearance and which require survey. As a result, some suspected areas for which no evidence of mines have been found were cleared by CMAC, hence wasting substantial demining resources.

MAPU tasks are often related to development projects such as building roads, schools, health centers etc. However, these tasks are not necessarily located in villages with high casualties. Consequently, CMAC should ensure that such clearance is undertaken in areas where there is evidence that there are mines to maximize existing demining resources. In case of deployment in an area where no mines have been found, the DU management should give immediate orders for the re-deployment of the team in a timely and efficient manner so as to maximise all resources available.

Furthermore, a national technical workshop on "The Way Ahead from Level 1 to Level 2 Survey" was organized by the CMAA in view of reducing the 4,466km2 of land initially identified by the Level 1. This concept was brought at national level for discussion in view to clearly define the way to establish accurate boundaries of the minefields, reduce areas to be cleared to the minimum and for better clearance prioritization.

Today CMAC deploys two different types of Technical Survey teams: the Technical Survey Team (TST) and the Technical Survey for Clearance tasks (TSC) team.

- The Technical Survey Team (TST) or large teams (10 people) is exclusively deployed in high casualty areas. Its objective is to reduce mine/UXO accidents by collecting and verifying minefield information, identifying risk reduction tasks with the active participation of the local community and implementing risk reduction activities. Today CMAC deploys 4 TST teams in the northwest provinces.
- Following in-depth survey, data collection and area reduction, the TST should play an important role in articulating the different tools available in the CMAC toolbox. As such, it is an important strategic component in better managing the overall strategic deployment of mine action resources.
- The Technical Survey for Clearance tasks (TSC) or small teams (5 people) operate in direct support to the clearance teams following the MAPU process. The teams are derived from the original mine marking teams and focus on mapping, survey, marking, clearance and placing long term marking poles in operational areas. At present, 19 TSC teams are deployed in preparation for clearance by other teams such as demining platoons, Community-Based Demining teams (CBD), Mine Detection Dog Teams (MDD) and Brush Cutters.

In parallel, lessons learned from the CMAC Community-Based Mine Risk Reduction (CBMRR) project would prove extremely valuable in feeding into the overall technical survey concept and deployment strategy, especially for the TST or large teams.

The number of UXO related accidents has been on the increase in many areas in the country[9] . Consequently, CMAC needs to evaluate the extent to which this has impacted on its Technical Survey teams deployments and how future collaboration with other key players (RCAF, national police...) can be encouraged so as to better respond to these trends in its long term strategy.

Scope of the evaluation

The Evaluation team will be working at both technical and strategic levels to assess and take stock of the CMAC Technical Survey capacity established two and half years ago. The team will work very closely with the CMAC staff at HQ and provincial levels. Information collection will be required at both local level (village, commune, district and province) and national level (CMAA, governmental bodies', CMVIS, international NGOs...), as well as other mine action agencies with a technical survey capacity e.g. Halo Trust and MAG.

Objectives of the evaluation:

- Assessment of the area reduction approach and capacity of the CMAC Technical Survey Teams (TST), the Technical Survey for Clearance tasks teams (TSC) and their compliance with CMAC SOPs and CMAA/IMAS standards.

[9] In 2001, for the first time since the end of the hostilities, The Cambodian Mine-UXO Victim Information System (CMVIS) reported that the **majority of casualties** were due to ERW. Moreover, for the first time in 2004, the CMVIS reports that the **majority of accidents** (52%) are ERW related, whereas ERW related casualties continue to rise (61%).

- Assessment of the information flow and the coordination between the target communities, the TST & TSC data collection function, CMAC central database and CMAC related field operations: identify strengths and weaknesses in terms of communication, quality of information and access to information. Also examine the role of CMAA in respect to information flow and planning at the strategic level.
- Assessment of the Technical Survey teams integration – both TST & TSC – within the CMAC toolbox in working with components such as the CBMRR, MRT and CMMT and the Survey teams' role towards a risk reduction approach.
- CMAC Technical Survey strategic plan for the next 5/10 years is elaborated with a special focus on CMAC area reduction and risk reduction approaches and includes analysis of the long term financial and technical sustainability.

Expected Outputs:

- The evaluation team produces an analysis and make recommendations on the current CMAC Technical Survey strategic approach. This will also include operational capacity and coordination, and team training methodology.
- Recommendations are made to improve and update current SOPs and documentation used within the CMAC technical survey system.
- The analysis of present CMAC Technical Survey deployments at both technical and managerial levels producing pragmatic recommendations on the need for technical assistance and/or for specific training.
- The quality of the information/data collected, its flow and effective use at CMAC central and peripheral level is analysed and recommendations are given to address any lapses or possible improvements
- The role of the Technical survey teams – both TST& TSC - within CMAC toolbox is confirmed or clarified and recommendations are made to ensure cost effective alternatives for a more efficient deployment and positive impact on the targeted communities.
- The Evaluation team will provide an analysis of how to improve the cooperation with the CBMRR component to increase communities' genuine involvement in mine action.
- The Evaluator will support CMAC to conduct a strategic planning exercise and help CMAC produce a Technical Survey strategy document.

Methodology:

- Desk review and analysis of available documentation on CMAC Technical Survey, Risk Reduction teams and MAPU in Cambodia.
- Meetings and interviews with CMAC senior management staff, CMAA and managers of International Organizations involved in Humanitarian Mine Action.
- Field visits and interviews with Technical Survey team staff (both large and small teams), supervisors, Survey Officer, TC staff, DU management staff other local and national stakeholders, villagers and the local authority.

- Interviews and coordination with CBURR, CBMRR, MDD and other relevant risk reduction teams.
- Interview of Halo Trust and MAG Technical Survey teams.
- Analysis and use of the findings derived from the mine action studies on Tampering and Spontaneous demining.

Guiding steps for the evaluation team:

General level:

- Re-assess the technical survey concept in view of CMAC' s risk and area reduction approach
- Review how the TS can inform and update the Level 1 Survey
- Assess the Technical Survey tool technically and strategically and provide recommendations for improvement and further expansion.
- Evaluate the pertinence of the concept in supporting the recommendations given by the recent studies undertaken on "Tampering" and "Spontaneous demining".

Technical level:

- Examine the command and control function of the technical survey teams
- Review small and large teams' strengths & weaknesses, deployments, use of resources...
- Check the safety of the TST according to CMAC SOPs
- Advise on training needs
- Assess the effectiveness of the team's capacity to collect and analyse local information
- Assess the effectiveness of the TST reporting system at DU and HQ level
- Evaluate and advise on how to improve the current Technical Survey monitoring system
- Evaluate the team's skills in GPS use, mapping, demolition of UXO, mine neutralization first aid, marking, area reduction, limited clearance, risk classification, information collection, and collaboration with the CBMRR...

CMAC Toolbox level:

- Examine the effectiveness of the deployment of the different Technical Survey teams in relation to other CMAC teams (coordination, complementarities...)
- Assess the team's ability in liaising and tasking other teams (CMT, MRT, MDD, MAT) to respond in a timely and cost effective manner
- Advise on information integration into the CMAC database management, use of data for the different CMAC field deployed teams and by the DU HQ.

Community level:

- Evaluate the teams' ability to liaise and work effectively together with the CBMRR (Mine/ UXO committee, District Focal Points...)
- Assess the teams' ability to promote genuine community participation (mapping, identification of risk reduction tasks etc.)
- Verify how the teams properly use community based information (maps, community action plan etc.)

- Verify how the teams regularly update the information provided to and from the CBMRR following clearance.
- Examine how CMAC is updating CBMRR groups with the collected data

MAPU level:

- Evaluate the team compliance with the MAPU tasks and the degree of information sharing and collaboration.
- Assess the degree of cooperation during planning and prioritization of the minefields
- Provide recommendations on how the TST can help integrate high casualty areas minefields into the MAPU planning/ prioritizing process.

Timeframe

The evaluation will take place for 24 working days (excludes Sundays)

Reporting

The Evaluator will debrief CMAC top management and NPA representatives in Phnom Penh before departure.

The Evaluator will develop his/her report during the course of the evaluation. An extensive draft will be provided in English during a final debriefing to CMAC top management and to the NPA Regional Representative at the end of the mission.

The final report will be sent no later than two weeks after the evaluation in both hard and electronic versions. The distribution list will consist of CMAC and NPA.

The Evaluation Team profile

The evaluation team will be composed of two international evaluators, one recruited as team leader by NPA in agreement with CMAC and the other one seconded by the Geneva Centre for Humanitarian Demining (GICHD)

Both the Evaluators shall have:

- A strong professional knowledge of Mine Action technical aspects
- At least five years experience in humanitarian demining
- Excellent analytical and planning skills
- Experience in using participatory approach an advantage
- Good strategic thinking
- A good knowledge of IMAS standards
- An excellent ability to communicate and report in English.

One Cambodian Consultant will be employed as translator possibly with a technical background.

Literature samples:

- CMAC Technical Survey concept
- CMAC CBMRR concept
- AVI and Geospatial documentation on MAPU capacity building
- R. Bottomley "Crossing the Divide: Landmines, Villagers and Organizations"

- R. Moyes, "Tampering, deliberate handling and use of live ordnance in Cambodia."
- M. Fleisher "Informal Village Demining in Cambodia, An Operational Study "
- Cambodian Mine Action Standards (CMAS)08.20 – Guidelines for the conduct of Technical Survey

Annex B

Evaluation Itinerary

Date	Activities and meetings
16th Jan.	Marc Bonnet (NPA)
18th Jan	Heng Ratana, Phum Ro (CMAC)
18th Jan	Mao Vanna (GSI)
18th Jan	Julien Chevillard (UNDP)
18th Jan	Kao Vannarhin (CRC/CIMVIS)
18th Jan	Tong Try (Independent)
19th Jan	Christian Provoost (HIB)
19th Jan	Heng Ratana (CMAC)
19th Jan	Rupert Leighton (MAG)
19th Jan	Ian Thomas (CMAA)
20th Jan	Steven Close (Australian Embassy)
21st Jan	Michel le Pechoux
22nd Jan	Travel to Siem Reap
22nd Jan	Richard Boulter, Dan Bridges, (HALO Trust)
23rd Jan	Jean-Gabriel Masson, Meun Sarun, DU6 Siem Reap
23rd Jan	Travel to Sispohon
24th Jan	Oum Socheath (Deputy Manager), Prum Kum (Ops Assistant), DU1
24th Jan	Site visit to TST, Malay District, Banteay Meanchey
24th Jan	Ruth Bottomley (NPA)
25th Jan	Site visit to 2x TSC Malay & Or Cheroit Distrist , Banteay Meanchey
25th Jan	Travel to Battambang.
26th Jan	Roth Pottana, DU2 Deputy Manager
26th Jan	Site visit 1x TST, 1x TSC, Phnom Proek District
27th Jan	Site visit 1x TST, Phnom Proek District
27th Jan	Chea Sarim, MAG Regional manager, Battambang
29th Jan	Travel to Pailin
30th Jan	Som Vireak, DU3, 1x TST, 1x TSC
30th Jan	Travel to Battambang
30th Jan	Meeting with Keo Sarath, DU2
31st Jan	Meeting with Rebecca Day, (AVI), MAPU Battambang
31st Jan	Travel to Phnom Penh
1st Feb	Meeting with Sam Sotha, CMAA
1st Feb	Meeting with Dave McCracken, Bruce Powell: EOD Evaluation Team
2nd Feb	Meeting with Mr Kim Lee, CMAC Information Management Officer
6th Feb	Debrief CMAC

Annex C

CMAA Strategy on Reclaiming Land

The scale of local clearance by local initiatives is such that the changing status of areas previously thought to be suspect needs to be formally recorded and mapped. This data is needed to provide best information to Provincial Mine Action Planning Units (MAPU) to allow them to make appropriate decisions in the planning process.

Objective**: **To improve the mine clearance planning process by recognizing areas which have been returned to productive use by the community for a long period and have no evidence of risk.

Definition: Reclaimed land is land that was formerly regarded as suspect, but which has been returned to productive use by local efforts, and which has been used for three years without incident.

Reclaimed land does not correspond to cleared land. Rather it is to be viewed as land where the threat has been reduced to the level at which, unless particular circumstances exist (such as for infrastructure), that further mine clearance should not be considered. After three years of active use the risk on reclaimed land is considered very low or non-existent. Continued use of the land shows that it is not a problem for the community.

Based on this theory, reclaimed land does not qualify as a mine clearance priority and cannot be put in the list of provincial priorities for mine clearance.

Data collection on reclaimed land:

Data collection of reclaimed land is to be carried out by the HALO Trust, MAG and CMAC (through CBMRR) and registered in a standard protocol agreed With CMAA/NMAD. MAPU will also register reclaimed land in their data when they find it during their field investigations.
All information is to be shared with MAPU in order to help them develop their capacity to make informed decisions.
It is recognized that the scope of the present reclamation effort is such that constant resurvey could absorb significant resources and thus rather than continuous revisiting of reclaimed areas, that in the absence of accidents continuous use will be assumed.

The CMAA role:

The National Mine Action Database (NMAD) will use the following tools to classify the areas as “reclaimed land”:

- Operators reports;
- MAPU reports
- CMVIS of the Cambodian Red Cross data on accidents reports; and
- Aerial/satellite imagery (for evidence of land use).

Mapping

Reclaimed land will over the course of its three year probationary period be mapped differently from cleared land, with each passing year leading to a reduction in its clearance status. Thus the categorization will be:
Locally reclaimed 1 year productive use
Locally reclaime 2 years no incidents
Locally reclaimed no incidents over 3 years, to be considered to be of minimal residual threat.