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C.M.A.A

Cambodian Mine Action Standards

(CMAS 24)

Baseline Survey
(Cluster Munitions)

May 2024

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Contents

Foreword

International standards for humanitarian demining were first proposed by working groups at an international technical conference in Denmark in July 1996. Criteria were prescribed for all aspects of demining, standards were recommended, and a new universal definition of “clearance” was agreed upon. In late 1996, the principles proposed in Denmark were developed by a United Nations-led working group and the International Standards for Humanitarian Mine Clearance Operations were developed. A first edition was issued by the United Nations Mine Action Service (UNMAS) in March 1997.

The scope of these original standards has since been expanded to include the other components of mine action and to reflect changes to operational procedures, practices and norms. The standards were re-developed and renamed International Mine Action Standards a (IMAS), with the first edition produced in October 2001.

The Cambodian Mine Action and Victim Assistance Authority (CMAA) is responsible for developing, revising, and maintaining effective Cambodian Mine Action Standards (CMAS) based on the IMAS and best practices. The CMAS sets minimum requirements and provides a regulatory framework for mine action operators to develop Standard Operating Procedures (SOP) to ensure safe, effective, efficient and practical mine action activities. The first CMAS was developed in 2005.

CMAA initiates the development of CMAS in consultation with relevant mine action operators to ensure practicality. When a CMAS is drafted, the CMAA shares it with the CMAS Committee (led by the CMAA with relevant mine action operators as members) for their review and comments. The CMAA has the authority to make the final decision on the CMAS, and the CMAA’s Secretary General approves all CMAS. The development and revision of the CMAS follows this process.

Introduction

Humanitarian mine clearance operations in Cambodia started in 1992 with the support of the United Nations Transitional Authority in Cambodia (UNTAC) to clear transportation routes to enable the repatriation of hundreds of thousands of Cambodian refugees living in camps in Thailand back to Cambodia. When clearance of the routes was completed, clearance operations shifted to clear land to support the resettlement of the returnees. Due to the magnitude of the mine contamination, the clearance was then extended to clear land for agriculture and other productive use to support local reconstruction and development projects with limited information on the locations and the level of the contamination in the country.

In 2000, the Royal Government of Cambodia (RGC), through the Cambodian Mine Action Center (CMAC), requested the Government of Canada to fund a National Level 1 Survey to identify hazardous areas contaminated by Explosive Ordnance (EO) in Cambodia to understand the magnitude of mine/ERW contamination and to support the mine/ERW clearance planning and prioritization. The Government of Canada, through the Canadian International Development Agency (CIDA), agreed to support and contracted a Canadian Company GeoSpatial International company to conduct the National Level 1 Survey with CMAC providing staff to work for this project. The project commenced in October 2000 and concluded in April 2002. The Survey results showed that 46% of Cambodia's villages were on mine contaminated lands covering 4,544 km² (about 2.5% of Cambodia's territory). Results from the Survey were released to the RGC through CMAC for the benefit (utilization) of the mine action sector.

In 2008, when mine clearance operators in Cambodia were invited by the Cambodian Mine Action and Victim Assistance Authority (CMAA) to quantify the remaining challenges in preparation for the RGC's first extension request to the deadline for Cambodia to complete clearance of all known minefields from 2010-2019 under Article 5 of the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (also known as the Anti-Personnel Mine Ban Convention - APMBC)[1]; the clearance operators collectively acknowledged that data from the National Level 1 Survey was no longer accurate and reliable. This was based on the collective understanding that some suspected minefields had been reclaimed for productive use, additional hazardous areas had not been identified, inaccuracies existed in the records of suspected areas, and some hazardous areas were deemed too large to be accepted. As a result, it was agreed that a new comprehensive 'Baseline Survey' was needed, with the findings (results) superseding the previous data from the original National Level 1 Survey.

The objective of the Baseline Survey was to better define the magnitude of the remaining mine contamination by defining the boundaries of contaminated areas and to classify the areas according to the nature of the contamination in a standardized manner. It was also agreed that the Baseline Survey shall be conducted by experienced operators, CMAC, HALO Trust and MAG and managed by the CMAA under a Standard (CMAS on Baseline Survey) to be developed jointly by the CMAA and the three operators.

Following the development of the CMAS on Baseline Survey and associated Standard Operating Procedures (SOPs), training, field testing, and dissemination of lessons learned from the field testing by the three operators, the first Baseline Survey commenced through the three operators in August 2009 focusing on the 23 most densely contaminated districts on Cambodia's north-west border shared with Thailand. In May 2011, the Baseline Survey of the 23 most mine affected districts was completed, and the Survey was expanded to other districts. By the end of 2012, 124 districts had undergone a Baseline Survey. The Baseline Survey initiated in 2009 across the entirety of Cambodia was finally completed in late 2020, finishing with districts in the eastern provinces that are contaminated mainly by cluster munitions (CM).

[1] For the purpose of the Convention the definition of anti-personnel mine includes all mines that are activated by the presence, proximity, or contact of a person (as opposed to a vehicle), but includes anti-vehicle mines with anti-handling devices that impede their clearance.

The Baseline Survey was initiated in 2009 and completed in 2020, due to issues of prioritization and inaccessibility, some hazardous areas were not captured during that period. Since 2020 additional suspected hazardous areas have been reported and therefore, baseline survey activities related to both survey of mine-contaminated areas, and survey of other EO-contaminated areas, including cluster munitions remains ongoing and shall continue.

CMAS 24 shall govern all operators in undertaking all ongoing baseline survey of areas contaminated by cluster munitions specifically. For ongoing survey of mine-contaminated areas please refer to CMAS 14.

The cluster munitions found in Cambodia do not represent the same level of threat as landmines that typically will detonate if subjected to pressure by persons, animals or vehicles. However, cluster munitions do pose a threat if subjected to heat (for example, burning), or being hit by objects like a hoe or similar. Cluster munitions may be a more significant threat than landmines. Cluster munitions are small, often visible on the ground easily picked up by anyone, and especially attractive for children to pick up and play with.

The reduced threat level represented by cluster munitions in Cambodia enables operators to deploy assets directly into cluster contaminated areas with reduced precautions compared to deployment in landmine contaminated areas. There are usually no restrictions on the movement of personnel during a Technical Survey operation, except when an indication is excavated or during demolitions. This allows a much faster deployment and the survey itself will be considerably faster compared to Technical Survey in a landmine context.

CM Baseline Survey

1. Scope and Purpose of this Standard

This standard provides the guiding principle for conducting the Cluster Munitions Baseline Survey in the Cambodia context and enables operators implementing the CM Baseline Survey to develop Standard Operating Procedure (SOP).

2. Normative References

Normative references are important documents to which reference is made in this CMAS or, which form part of the provisions of this CMAS. Normative references are:

- CMAS 14 on Baseline Survey (Landmine)
- CMAS 15 on Land Release
- CMAS 15.1 on Non-Technical Survey, and
- CMAS 15.2 on Technical Survey.
- CMAS 16 on Cluster Munition Remnant Survey
- CMAS 22 Gender and Diversity Mainstreaming in Mine Action
- Technical Note 07.11/03 on All Reasonable Effort
- Technical Note 08.20/02 Cluster Munitions Remnant Survey

This CMAS should be read in conjunction with the above documents to fully understand the entirety of the identification and the release of cluster munitions contaminated areas in Cambodia.

3. Terms and definitions

- **"CM Baseline Survey"** refers to a survey activity undertaken by accredited operators to collect and analyze local information to determine the size and classification of the land suspected to be contaminated by CM. A suspected hazardous area recorded by the CM Baseline Survey shall be defined and classified according to the CMAS land classification standard (see annex 2).
- **"All Reasonable Effort"** (ARE- TN 07.11/03) in the context of this CMAS refers to a minimum acceptable level of effort to identify and document CM contaminated areas. "All reasonable effort" has been applied when the commitment of additional resources is considered to be unreasonable in relation to the results expected. All reasonable effort is achieved when all the requirements of this CMAS are fulfilled.
- **"Key** Informants" refers to men, women and children who have clear information about suspected areas where cluster munitions are present in and around their communities. Note: Key informants may be land users, village chiefs, community leaders, victims, teachers, religious leaders, etc.
- **"Hazard (hazardous) Area"** - same as a contaminated area - in the context of Cambodia mine action, the term refers to an area perceived to contain cluster munitions.
- **"Suspected Hazardous Area"** (SHA) in the context of this CMAS, the term "Suspected Hazardous Area" is an area where there is reasonable suspicion of CM contamination on the basis of indirect and limited direct evidence of the presence of CM captured by baseline survey. Note: A suspected hazardous area, which has undergone a technical survey may result in a confirmed hazardous area (CHA).
- **"Shall"** is used to indicate requirements, methods or specifications to be applied in order to conform to the standard.
- **"Should"** is used to indicate the preferred/recommended requirements, methods or specifications.
- **"May"** is used to indicate a possible method or course of action.

4. Purpose of the CM Baseline Survey

The purpose of the CM Baseline Survey is to collect and analyze information in order to identify, define and report suspected hazardous areas (SHA) based on direct and indirect evidence of cluster munitions.

5. Output of the CM Baseline Survey

The output of the CM Baseline Survey is suspected hazardous areas identified, defined and reported by the CM Baseline Survey, suggests that high confidence levels exist that there is a high suspicion or direct evidence of CM presence and recorded in Form II CM Suspected Hazardous Area (see annex 4). The data shall be stored in the national mine action database until they (SHA polygons) have been subsequently released.

6. Evidence for Identifying CM Suspected Hazardous Areas

The quality of a survey depends on two points: firstly, the quality of all available information and secondly, the ability of the survey team in determining its quality and analyzing all information and evidence correctly.

6.1 Direct Evidence to Identify a Suspected Hazardous Area:

During a CM Baseline Survey with key informants, at least one direct evidence shall be required for the survey team to record the area as a Suspected Hazardous Area. The direct evidences are:

- Visible cluster-munitions
- Visible cluster-munition fragments and/or parts
- CM accidents or incident location, where the CM is originally located.
- EOD CM spot task location, where the CM is originally located.

6.2 Indirect Evidence to Identify a Suspected Hazardous Area:

Unlike in the case of direct evidence, it is necessary to obtain at least two indirect evidences to capture a SHA. More indirect evidences will convince the team leader that there is a high probability that the area is actually contaminated. It is important for survey teams to recognize that some types of indirect evidence have more weight and validity than others. The following are the indirect evidence:

- At least two reliable witnesses that have seen one or more of the following: cluster munitions, fragments of CM, parts of CM, CM dispensers and craters caused by CM.
- Detonations during fires or by animals
- Potentially productive land not in use due to perceived CM threats
- Verbal reports from local populations, former combatants, and all other relevant actors.
- EOD CM spot task records where original location of CM cannot be confirmed.
- CM accidents or incident location, where the original location of CM cannot be confirmed.

Note:

In instances where the survey team encounters challenges in identifying direct evidence, despite the concerns and beliefs of villagers regarding the original contamination of an area by cluster munitions, the survey team is mandated to invite the CMAA QMT to conduct a site visit. The

purpose of this visit is to determine whether the area should be officially recorded as a hazardous area, specifically as a Suspected Hazardous Area (SHA) in this particular scenario.

7. Cluster Munitions Strike Footprint

Submunition is any munition that is released from a parent munition that form part of a Cluster Bomb Unit (CBU), artillery shell or missile payload. Submunition is designed to function by detonating an explosive charge prior to, on or after impact. The trajectory and area of dispersal is a product of many factors, including height and speed.

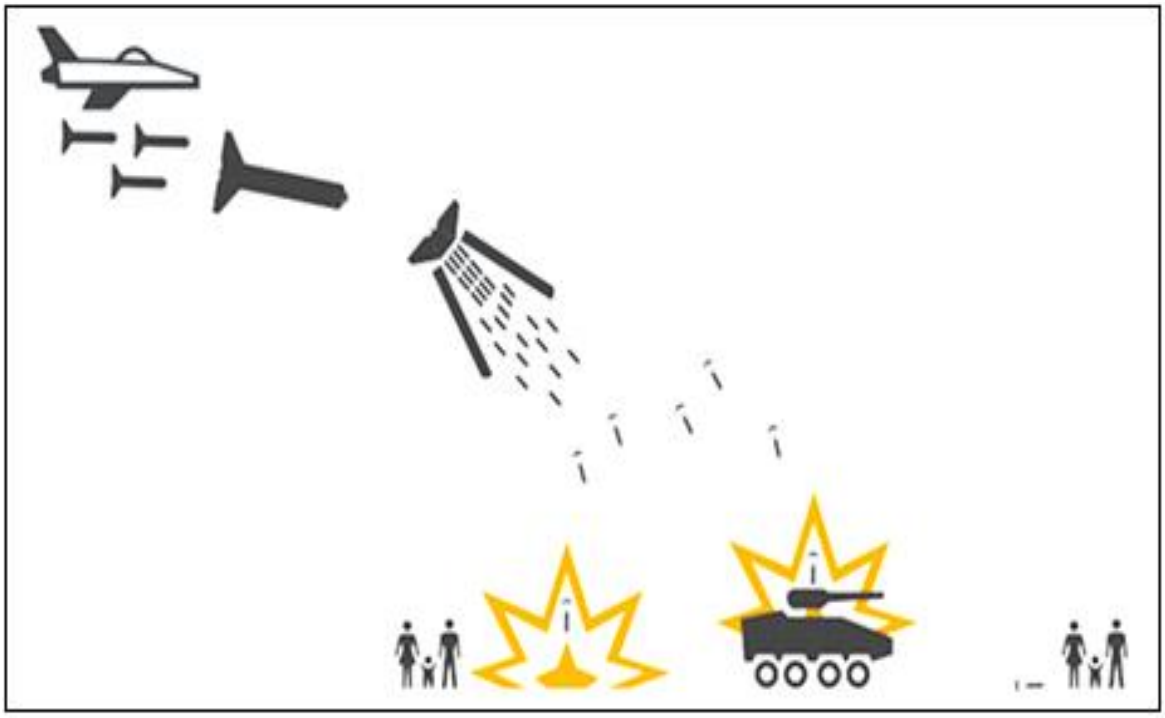


Figure 1 – Example air dropped cluster bomb trajectory and submunition dispersal

Cluster munition strikes or drops normally create a semi-elliptic pattern of submunition strikes. Whether the submunitions have functioned or not, the pattern may be first noticed through discovery of unexploded submunitions or evidence of explosions of submunitions.

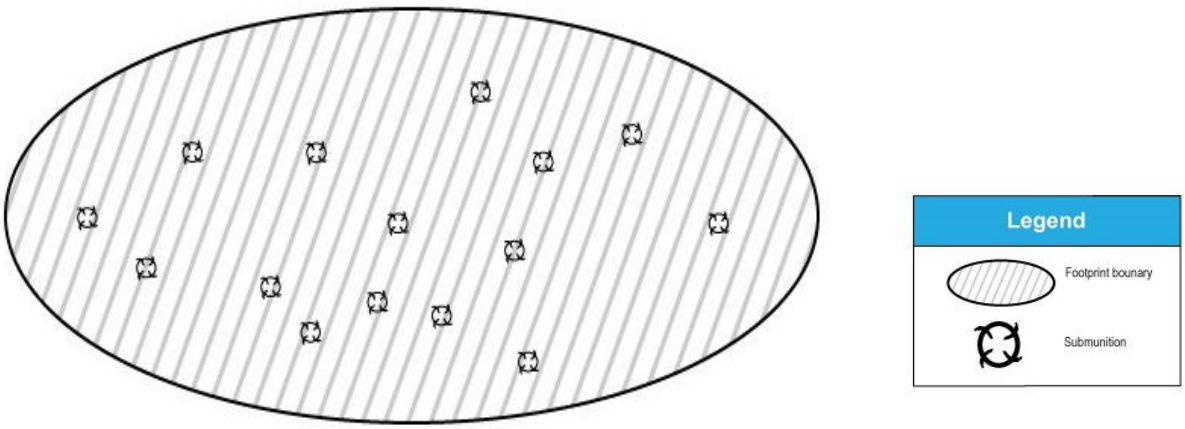


Figure 2 – Example of a single CM strike footprint

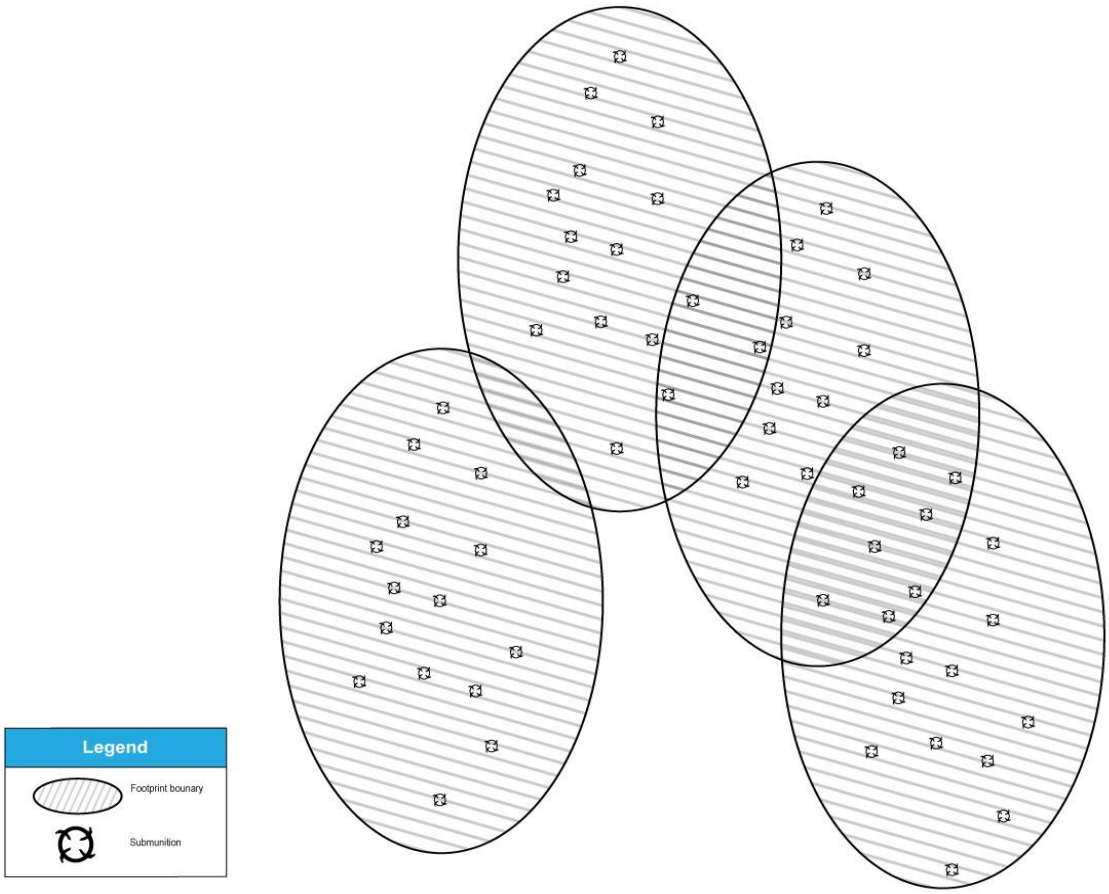


Figure 3 – Example of a multiple Cluster Munition strike footprint

8. Mapping of a Suspected Hazardous Area

Baseline Survey Team shall establish the tentative boundary of a suspected hazardous area based on direct or/ and indirect evidences obtained.

A hazardous area reported by the CM Baseline Survey is recorded/measured by:

- GPS Datum reference: GIS: WGS 1984 Universal Transverse Mercator (UTM) Zone 48N,
- Distance in meters,
- Area in square meters,
- Bearings in degrees,
- Gazetteer (administrative hierarchy-villages, commune, districts, provinces).

When mapping a suspected hazardous area, the first step is to select a **Landmark** and a **Benchmark**:

Landmark (LM) is a fixed point of reference some distance outside the suspected hazardous area. It should be an easily recognizable permanent feature (such as cross-roads, bridge, building etc.) which can be used to assist in navigation to one or more benchmarks. The LM shall be permanently marked and included the following information as a minimum:

- Description,
- GPS reference/coordinates,
- Bearing and distance to Benchmark.

Benchmark (BM) a fixed point of reference used to locate a marked and recorded suspected hazardous area. It should normally be located a short distance outside the hazardous area. The BM should be clearly visible from some distance. A benchmark may not be necessary if the

landmark is sufficiently close to the contaminated area. The BM shall be recorded with the following information as a minimum:

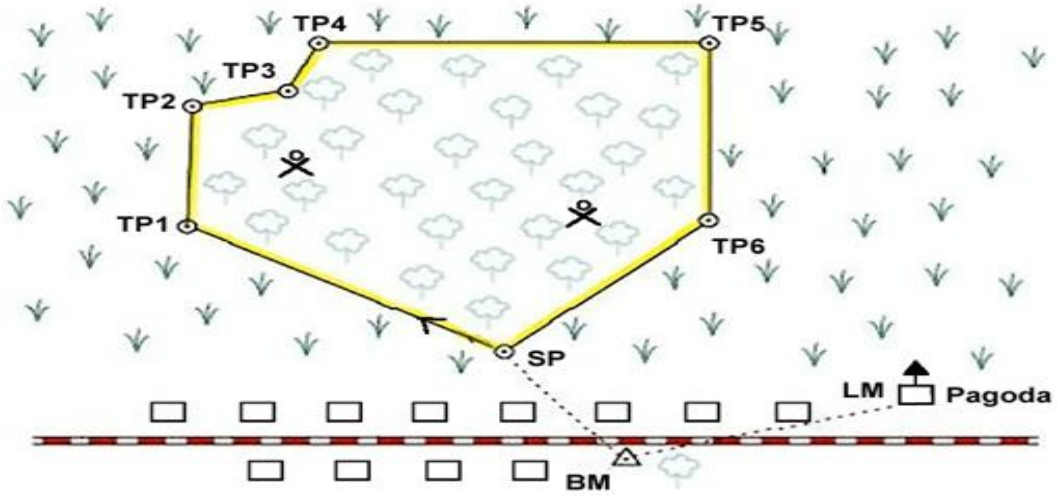
- Description,
- GPS reference/coordinates,
- Bearing and distance to the Start point of the contaminated area.

Start Point (SP) is a fixed point of reference used to locate the start of a suspected hazardous area. One contaminated area shall have only one SP.

Turning Point (TP) a fixed point on the ground which indicates a change in direction of the perimeter of the suspected hazardous area. It shall be clearly marked and recorded.

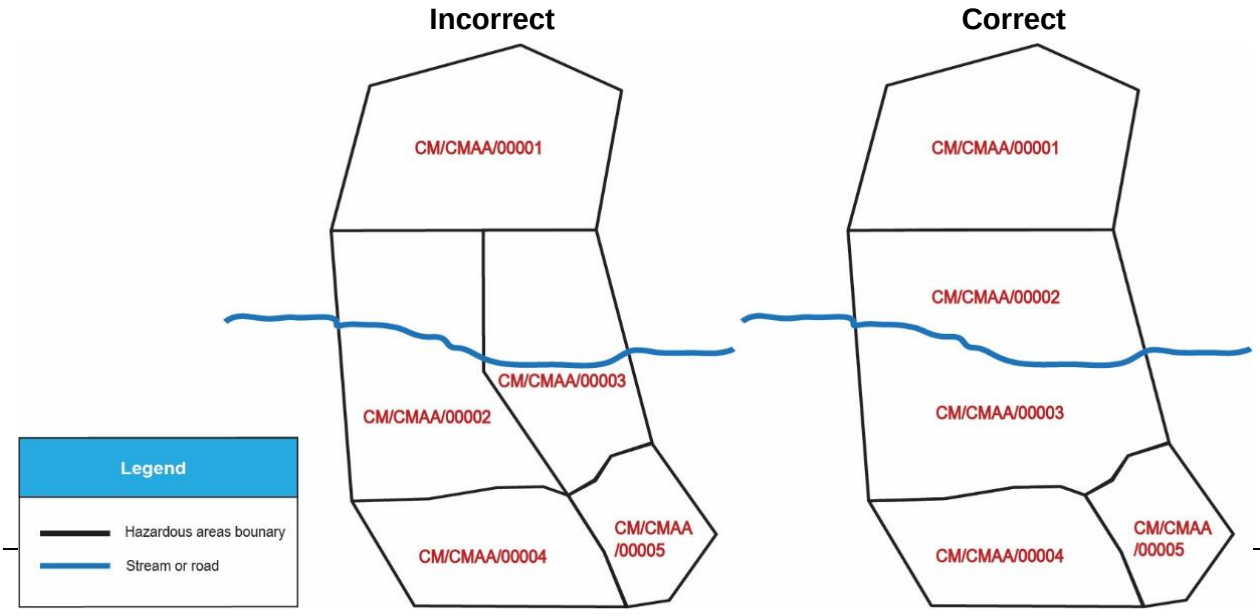
After the LM and BM have been fixed, the next step is to map the boundary of the suspected hazardous area using a SP and a series of TP. TP is to be numbered sequentially (i.e., TP1, TP2, TP3, etc.) and shall be recorded in a **clockwise direction** using bearing and distance from one TP to another.

- SP/TP which can safely be approached on foot are to be mapped using GPS. In this example the suspected hazardous area is surrounded by cultivated ground so all TP can be mapped using GPS.



9. Defining a Suspected Hazardous Area

A suspected hazardous area shall not be greater than 300,000 sqm. If a suspected hazardous area is greater than the specified size, it shall be broken down into smaller areas. In the example below, a hazardous forest area has a stream or road running through it. Rather than cutting the area into straight lines across the road or stream, it would be better to divide it into the specified size using the information and natural features available.



Numbering of Suspected Hazardous Area

Each suspected hazardous area defined by the CM Baseline Survey shall be numbered for recognition as CM/CMAA/… When a suspected hazardous area is numbered, the number shall not change, and it is used as the task identification number.

10. CM Baseline Survey Process

The operators should conduct the CM Baseline Survey systematically, commencing with the village-by-village and commune-by-commune approach. When the CM Baseline Survey is completed in a village, the CM Baseline Survey team moves to the next one in the same commune. When the CM Baseline Survey is completed in the whole commune, the CM Baseline Survey team moves to the next village in the new commune, and this process then repeats itself.

To ensure the Baseline Survey's comprehensiveness, the survey team shall consult with each village chief and key informants upon arrival and upon completion of the survey. The village chief should then sign off that they are satisfied that all reported suspected hazardous areas within their villages have been visited by the survey team. If any part of the village remains un-surveyed due to reasons such as informant unavailability or accessibility issues, the survey team shall document these details in the baseline survey village report (refer to annex 3, Form I). Subsequently, the same survey team should revisit the village at the earliest opportunity to complete the Baseline Survey.

Here are key steps in the CM Baseline Survey process:

Step 1 (desktop study): Before a CM Baseline Survey team conducts any field activities, the survey team shall collect, review and analyze existing information (previous survey reports, clearance completion reports, EOD spot tasks, CMVIS reports, US Bombing data, etc.) to better understand the known contamination situation in the village.

Step 2 (meeting to identify suspected hazardous areas): When in the field, after reviewing and analyzing existing information, the CM Baseline Survey team shall organize a meeting with village chiefs and key informants to map hazardous areas in the village and identify key informants for each reported suspected hazardous area.

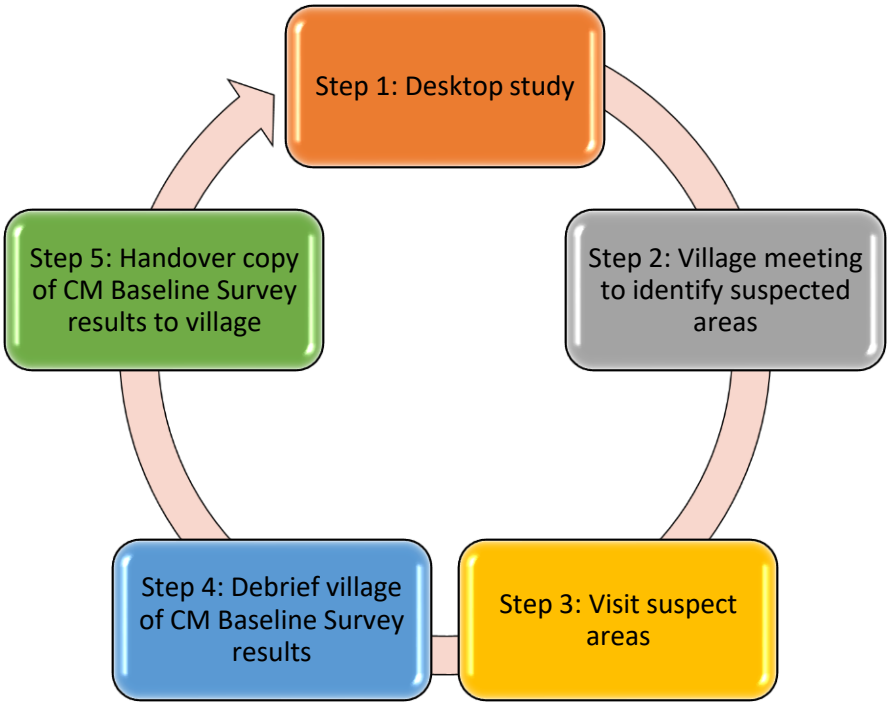
Step 3 (visit suspected hazardous areas): After the meeting, the survey team together with the key informants physically visit each reported hazardous area and interview key informants, collect and analyze information in order to decide whether or not to record the area as a suspected hazardous area (based on direct or/and indirect evidence). If information collected does not present evidence to record the reported area as a suspected hazardous area, the survey team should inform the informants as such, and move on to the next reported area. If the information collected presents evidence, the survey team shall establish the boundaries of the suspected hazardous area and then move to the next reported area.

Note: if a known landmine threat exists, the process shall stop and the survey team shall follow section 13 on Safety in this standard.

Step 4 (survey completion report): When visits to all the reported suspected hazardous areas in the village are completed, the CM Baseline Survey team shall organize a meeting to debrief the village chief and key informants on the results of the CM Baseline Survey such as number of hazardous areas identified, shape and size of each suspected hazardous area etc. Before ending this meeting, the survey team shall request the village chief to sign off the survey report Form I (annex 3) to confirm and accept the results of the CM Baseline Survey in the village.

Step 5 (handover of CM Baseline Survey results): After the debrief meeting, the CM Baseline Survey team shall hand over a copy of the Form I report and the village contamination map to the village chief for information/reference before moving to the next village in the same commune or the new commune.

The following chart describes the process of how the CM Baseline Survey in the Cambodia context shall be conducted.



11. Sources of Information

The effectiveness of the CM Baseline Survey in Cambodia depends on quality of all relevant and objective information and the analysis of the data to determine whether or not to accept a reported hazardous area as hazardous. The survey team should review and analyze the existing reports such as previous survey reports, clearance completion reports, EOD spot tasks, CMVIS reports, US bombing data etc. in order to understand the situation of CM contamination in a village. When in the field, the CM Baseline Survey team shall take every effort to collect information from the sources of high confidence whether they are men, women, boys, girls or Persons with Disabilities (PwD).

Table 1 presents the key informants with the level of confidence.

Key Informants	Confidence
1. Person who has been injured by cluster munition in the reported area	High
2. Person who has had friend or family member or livestock killed in reported area	High
3. Person who has seen the cluster munitions in the reported area	High
4. Person who has been ploughing in the reported area	High
5. Person who has been cultivating the reported area	High
6. Person who has been living on the reported area	High
7. Person who has been entering the reported area	High
8. Elderly person who has lived in the reported area during the war	High
9. Person who has been living next to or near the reported area	Medium
10. Landowner who has not been involved in above mentioned activities	Medium
11. Person who has been living near (not next to) the reported area	Low
12. Person who has been living in the village, but away from the reported area	Low
13. New person arriving in the village or returning to the village	Low

12. CM Baseline Survey Team Requirements

All CM Baseline Survey activity shall be carried out by competent staff, using suitable equipment, in compliance with approved Standard Operating Procedures (SOP). The CM Baseline Survey team, shall have sufficient resources, knowledge and skills to carry out the activity safely, effectively and efficiently, and in particular, to be able to engage in communication with local members, other interested parties and all key informants, including women, men, girls, boys and Persons with Disabilities (PwD).

A CM Baseline Survey team should consist of at least four persons (mixed gender) with one as a team leader. All team members (inclusive of team leader) shall be qualified persons, having received training in CM Baseline Survey, Non-Technical Survey, interviewing methods and skills, communication and basic first aid.

13. Safety

The first priority for any survey team leaders at all times is to ensure the safety of their team. Survey teams shall never touch or move any EO items at all. If evidence of landmines is encountered during the CM baseline survey process, all activities stop and the team leader shall evaluate the situation and respond in accordance with their organization SOP.

When CM Baseline Survey teams are working in the border areas, they shall coordinate with appropriate local authorities and security forces to ensure full compliance with any restrictions of access. The survey team should consider asking for a representative from the relevant local authority to accompany them.

14. CASEVAC

All safety and CASEVAC procedures shall be established, and communications tested prior to conducting any CM Baseline Survey, whether that be by road or by helicopter, in accordance with approved SOPs. Any CM Baseline Survey team shall be able to evacuate any casualty. It may be appropriate to use informants or guides to assist in casualty evacuation (such as carrying a stretcher), however they shall be briefed on their role, in event of CASEVAC, prior to the survey taking place.

15. Documentation

The information collected, recorded and reported by the CM Baseline Survey team is important. If the quality of the information is poor, or if high quality information is poorly recorded and reported, then it affects the quality of the CM Baseline Survey outputs (suspected hazardous area). Therefore, the team leader shall ensure that quality information is properly recorded in the CM Baseline Survey report forms (Form I and II).

There are two separate forms to be used for the CM Baseline Survey:

- **Form I: Village Information**. This form is used to record basic geographical information on the village, and to record if there are any areas not able to be accessed during the survey for whatever reason.
- **Form II: CM Supected Hazardous Area**. This form is used by the CM Baseline Survey team to record information on a suspected hazardous area within the village boundaries. One suspected hazardous area with one classification shall be recorded using this form.

Form II is to be attached by a scale map of the suspected hazardous area drawn on A4 graph paper, showing local features (roads, streams, houses, etc.), the accurate position of CM if possible, and the location of all accidents. Standard map symbols to be used for the scale map are attached at annex 5.

Operators conducting CM Baseline Survey shall ensure that the CM Baseline Survey report forms (Form I and Form II) are correctly and timely completed and sent to the CMAA.

16. Quality Assurance (QA) and Quality Control (QC)

Appropriate quality management systems (including QA of CM Baseline Survey process and QC

of CM Baseline Survey reports) shall be established and implemented by the operators implementing CM Baseline Survey. Any non-conformities in CM Baseline Survey activity and CM Baseline Survey reports shall be investigated by the operators and appropriate corrective and preventive action taken immediately.

Operators implementing CM Baseline Survey should compare their CM Baseline Survey reports with subsequent land release reports to identify areas for improvement.

CMAA shall conduct QA of the CM Baseline Survey process and QC of CM Baseline Survey reports and inform management of the operator implementing the CM Baseline Survey of any real or potential non-conformities immediately and monitor corrective and preventive actions to be implemented by the operator – further details on monitoring in CMAS 03.

17. Liability Issues

The EO problem is primarily and ultimately a national responsibility and, as such, the Royal Government of Cambodia (RGC) has a responsibility to accept accountability and liability for victims caused by EO in the Kingdom of Cambodia.

The CMAA accepts that no liability shall rest with an accredited operator that has fully complied with the CMAS using accredited Standard Operating Procedures and has been subjected to quality management by CMAA. Should an accident or incident occur, and the operator implementing CM Baseline Survey is found not to have complied with CMAS, or the intent of CMAS, then CMAA reserves the right to review the accreditation status which may result in the operator losing its accreditation.

18. Responsibilities

Responsibilities of key stakeholders for the implementation of this Standard are described below:

18.1. CMAA

- Shall develop, review and maintain the CMAS on CM Baseline Survey,
- Shall maintain and update a Central Information Management System for the management and storage of all national mine action data;
- Shall accredit operators to undertake CM Baseline Survey in accordance with CMAS02
- Shall review and approve Standard Operating Procedures developed by operators implementing CM Baseline Survey to ensure compliance with CMAS,
- Shall conduct QA of the CM Baseline Survey process and QC of CM Baseline Survey reports,
- Shall conduct investigations into any incident and accident related to CM Baseline Survey and take corrective or preventive actions as needed.
- Should disseminate quality information products per request.

18.2. Operators Implementing CM Baseline Survey

- Shall develop, review and maintain Standard Operating Procedure on CM Baseline Survey to ensure compliance with CMAS,
- Shall acquire accreditation from CMAA to conduct CM Baseline Survey
- Shall conduct QA of its CM Baseline Survey process and QC of CM Baseline Survey reports,
- Shall ensure that accurate, timely and correct data collection and reporting in line with CMAS17 on Information Management.
- Shall report accidents or incident related to CM Baseline Survey to the CMAA immediately
- Should provide feedback to the CMAA to improve the CMAS on CM Baseline Survey.

18.3. Members of the EO Affected Community

- Should participate as requested to provide information and answer, to the best of the knowledge, the questions from the team conducting CM Baseline Survey and the CMAA,
- Should cooperate with the CM Baseline Survey team and the CMAA to the fullest extent possible.

Attachment:

Annex 1: Amendment Record

Annex 2: Hazardous Land Classification Standard

Annex 3: Report Form I: Village Information

Annex 4: Report Form II: CM Suspected Hazardous Area

Annex 5: Map Symbol

PHNOM PENH, 24 May 2024

Senior Minister First Vice President

Dr. Ly THUCH

Annex 1: Amendment record

Amendment Record

Management of CMAS amendments

Each CMAS is subject to formal review on a five-yearly basis. However, this does not preclude amendments being made within these five-year periods for reasons of operational safety, effectiveness and efficiency or for editorial purposes.

As amendments are made to this CMAS they will be given a number, and the date and general details of the amendment in the table below. The amendment number will also be shown on the cover page of the CMAS.

No	Date	Amendment Details
1	Dec 2023	CMAS 14 base line survey (mine only)– augmented with the creation of specific CM BLS is called CMAS 24

Annex 2: Land Classification Standard

Land Classification Standard

CLASSIFICATION	SUB-CLASSIFICATION		SUB-CLASSIFICATION DETAILS
A Land that presents evidence of mines	**A1**	Land containing dense concentration of AP mines	Strategically located, logical patterns of protective, defensive or denial mine laying such as mine belts, mines along road alignment, borders, military bases, and other infrastructures.
	A2.1	Land containing mixed dense AP and AT mines	
	A2.2	Land containing mixed scattered AP and AT mines	Land that is not in productive use with limited presence of AP and AT mines laid in a non-defined manner.
	A3	Land containing AT mines	In-use or abandoned route alignment presenting threat of AT mines.
	A4	Land containing scattered or nuisance presence of AP mines	Land that is not in productive use with limited presence of AP mines laid in a non-defined manner
B Land that presents evidence of ERW or an indeterminate presence of mines	**B1**	Land containing ERW (not including mines)	Battle areas containing ERW. These areas are suitable for BAC
	B1.1	Land containing aircraft bomb	Bomb data or evidence that single aircraft bombs may be present.
	B1.2	Land containing cluster munitions/bombies	Bombing data or evidence that an area contains cluster munitions or bombies.
	B1.3	Location of Ground Battles	Areas containing evidence of ground fighting only.
	B1.4	Land containing stockpiles/caches	Locations where caches or stockpiles are existing.
	B1.5	Abandoned military compounds	Locations which may be more highly suspected to contain munitions.
	B1.6	Land containing Chemical weapon	Location where chemical weapon exist
	B2	Land with no verifiable mine threat	Previously suspected land that local population are putting back into productive use. No accidents or evidence of mines for a period of 3 years will result in reclassification as C1
C **(End State Land)** Land that presents no obvious threat	**C1**	Cancelled / Reclaimed Land	Previously suspected land that non-technical survey confirms has been put back into productive use and ploughed without accident or evidence of mines a minimum of 3 times. Land previously recorded in error as A or B categories where non-technical survey confirms that the area meets the criteria detailed in Annex F
	C2	Land Reduced through Technical Survey	Land previously recorded as mined or suspected where as a result of approved technical survey methodology no obvious threat remains.

	C3 Cleared Land	Land formally cleared by accredited mine clearance operators adhering to the national standards (CMAS).

* Note:

- Only cluster munitions (B1.2) are subjected to capture as SHA polygons whilst the others are recorded as evidence point for EOD spot tasks.

Annex 3: Report Form I

របាយការណ៍ស្រាវជ្រាវមូលដ្ឋានគ្រាប់បែកចង្កោម
ទម្រង់របាយការណ៍ទី១: ព័ត៌មានភូមិ
CM Baseline Survey Report
FORM I: Village Information

អង្គការ C.M.A.A

អង្គការ/Organization:	ស្ត្រី/Women: នាក់ ប្រុស/Men: នាក់
ការិយាល័យ/Regional Office:	ជនមានពិការ/PWD: នាក់
ម្ចាស់ជំនួយ/Donor Support:	ឈ្មោះប្រធានក្រុម:/Team leader's name:
ក្រុមស្រាវជ្រាវលេខ/ Survey team number:	ភេទ/sex:

1.1 ព័ត៌មានអំពីការប្រមូលទិន្នន័យ - Data Collection Information	
1.1.1 រាយការណ៍ដោយ/Reported by:	1.1.2 មុខងារ/Position:
1.1.3 ថ្ងៃចាប់ផ្តើមស្រាវជ្រាវ/Survey start date:	1.1.4 ថ្ងៃបញ្ចប់ស្រាវជ្រាវ/ Survey end date:

1.2 ព័ត៌មានអំពីភូមិ - Village Information	
1.2.1 លេខកូដភូមិ/ Village Code:	
1.2.2 ភូមិ / Village: ☐ ថ្មី	1.2.3 ឃុំ / Commune: ☐ ថ្មី
1.2.4 ស្រុក / District: ☐ ថ្មី	1.2.5 ខេត្ត / Province: ☐ ថ្មី
1.2.6 ចំនួនគ្រួសារក្នុងភូមិ/Number of households in village:	1.2.7 ចំនួនប្រជាជនក្នុងភូមិ/ Number of populations in village: ស្ត្រី/Women…… បុរស/Men… …កុមារី/Girl……..កុមារ/Boy…….. ជនមានពិការភាព/PWD……..
1.2.8 ចំណុចយោងដែលមានក្នុងភូមិ / Reference point in the village:	អាប់ស៊ីស(X) UTM East: អរដោណេ(Y) UTM North:

1.3 ស្ថានភាពផ្លូវចូលភូមិ - Accessibility to village		
1.3.1 លទ្ធភាពផ្លូវចូលភូមិ/ Road access to the village	☐ ផ្លូវប្រាំង / Dry season	☐ ផ្លូវវស្សា / Wet season
1.3.2 អធិប្បាយផ្លូវពីទីប្រជុំជនដែលជិតបំផុតទៅកាន់ភូមិនេះ - Describe the route from nearest town to the village: …… …… …… ……		
1.3.3 តើគ្រប់កន្លែងទាំងអស់ក្នុងភូមិនេះអាចឆ្លងកាត់បានដែរឬទេ នៅពេលស្រាវជ្រាវ? Are all areas in the village accessible during the survey?	☐ បាន / Yes	☐ មិនបាន/ No
បើមិនបាន ត្រូវរាយការណ៍ទៅប្រធានត្រួតពិនិត្យ ហើយកត់ត្រាតំបន់នោះ(ដោយបំពេញតារាងមានភ្ជាប់) សំរាប់ចុះស្រាវជ្រាវលើកក្រោយ និងសូមពន្យល់ពីមូលហេតុដែលមិនអាចឆ្លងកាត់បានខាងក្រោម។ If No, report to supervisor and record the areas (by completing the attached form) for "REVISIT". Explain reason for inaccessibility below.		
☐គ្មានផ្លូវ ☐ទឹកលិច ☐តំបន់ហាមឃាត់ ☐បញ្ហាព្រំដែន/Border Issue ☐សន្តិសុខ/Security ☐ផ្សេងៗ(សូមរៀបរាប់/Please describe): …… …… …… ……		

1.4 ការគំរាមកំហែងដោយសារគ្រាប់បែកចង្កោម និងយុទ្ធភណ្ឌគ្រឿងផ្ទុះផ្សេងៗទៀតនៅក្នុងភូមិ – CM and other EO Threat in the village
1.4.1 តើនៅក្នុងភូមិនេះ នៅមានគ្រាប់បែកចង្កោម ឬយុទ្ធភណ្ឌគ្រឿងផ្ទុះផ្សេងៗដែរឬទេ ? Is there an existing CM and/or other EO threat within the village boundaries ? ☐ មាន/Yes (បើមានសូមបំពេញទម្រង់ទី២/ If YES, fill out Form II) ☐ គ្មាន/ No (បើគ្មាន សូមសួរសំណួរ/ If NO, go to section 1.4.2)
1.4.2 តើកន្លងមក នៅក្នុងភូមិនេះ ធ្លាប់មានគ្រាប់បែកចង្កោម និងយុទ្ធភណ្ឌគ្រឿងផ្ទុះផ្សេងៗដែរ ឬទេ ? Were there previously a CM and other EO threat within the village boundaries ? ☐ មាន/ Yes បើមាន ហេតុអ្វីបច្ចុប្បន្នពុំមាន ? …….. ☐ គ្មាន / No

1.5 យោបល់របស់ក្រុមស្រាវជ្រាវ/ Survey team's comments:

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1.6 អ្នកផ្តល់ព័ត៌មានសំខាន់ៗ (យ៉ាងតិចឱ្យបាន៤នាក់) - Key Informants (at least 4 people)

ល.រ No.	ឈ្មោះ Name	ភេទ Sex	អាយុ Age	មុខរបរ Occupation	លេខទូរស័ព្ទ Phone#	ហត្ថលេខា Signature
1						
2						
3						
4						

ឯកសារភ្ជាប់/ Attachment

- តំបន់មិនអាចចូលស្រាវជ្រាវបាន (បើមាន) / Sketch of area(s) inaccessible during BLS (if any)

តំបន់មិនអាចចូលស្រាវជ្រាវបាន/ Area inaccessible during BLS						
ពីចំណុច From	អាប់ស៊ីស X (UTM East)	អរដោណេ Y (UTM North)	មុំ (អង្សា) Bearing (°)	ចម្ងាយ(ម៉ែត្រ) Distance (m)	គោលដៅពីចំណុចមុន Destination	សេចក្តីផ្សេងៗ Remarks
LM					BM	
BM					SP	
SP					TP1	

ប្រភេទ ជីភីអែស ដែលប្រើ / Type of GPS used: ....

ប្រព័ន្ធកូអរដោណេ/ Coordinate system:...

ខណ្ឌសីមារបស់ផែនទី/ Map datum: ....

Annex 4: Report Form II

CM/CMAA/

របាយការណ៍ស្រាវជ្រាវមូលដ្ឋានគ្រាប់បែកចង្កោម

ទម្រង់របាយការណ៍ទី២: ព័ត៌មានចម្ការគ្រាប់បែកចង្កោមសង្ស័យ

CM Baseline Survey Report

FORM II: Cluster Munition Suspected Hazardous Area

អាជ្ញាធរមីន
C.M.A.A

អង្គការ/Organization:	ស្ត្រី/Women: នាក់ ប្រុស/Men: នាក់
ការិយាល័យ/Regional Office:	ជនមានពិការ/PWD: នាក់
ម្ចាស់ជំនួយ/Donor Support:	ឈ្មោះប្រធានក្រុម:/Team leader's name:
ក្រុមស្រាវជ្រាវលេខ/ Survey team number:	ភេទ/sex:

2.1 ព័ត៌មានអំពីការប្រមូលទិន្នន័យ - Data Collection Information

2.1.1 រាយការណ៍ដោយ/Reported by:	2.1.2 មុខងារ/Position:
2.1.3 ថ្ងៃចាប់ផ្តើមស្រាវជ្រាវ/Survey start date:	2.1.4 ថ្ងៃបញ្ចប់ស្រាវជ្រាវ/ Survey end date:

2.2 ព័ត៌មានអំពីភូមិ - Village Information

2.2.1 លេខកូដភូមិ/ Village Code:	
2.2.2 ភូមិ / Village: ☐ ថ្មី	2.2.4 ឃុំ / Commune: ☐ ថ្មី
2.2.5 ស្រុក / District: ☐ ថ្មី	2.2.6 ខេត្ត / Province: ☐ ថ្មី
2.2.7 ចំនួនគ្រួសារក្នុងភូមិ/ Number of household in village:.....	2.2.8 ចំនួនប្រជាជនក្នុងភូមិ/ Number of population in village:..... ស្ត្រី/Women.....បុរស/Men.....កុមារី/Girl.....កុមារ/Boy..... ជនមានពិការភាព/PWD.....
2.2.9 ចំណុចយោង ដែលមានក្នុងភូមិ / Reference point in the village:	អាប់ស៊ីស(X) UTM East: ..... អរដោណេ(Y) UTM North:.....

2.3 ស្ថានភាពផ្លូវ- Road Accessibility

2.3.1 លទ្ធភាពផ្លូវចូលចម្ការគ្រាប់បែកចង្កោម/ Accessibility to CM field ☐ រដូវប្រាំង / Dry season ☐ រដូវវស្សា / Wet season

2.3.2 អធិប្បាយផ្លូវទៅចម្ការគ្រាប់បែកចង្កោម - Describe the route to the CM field

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.....

.....

2.4 អធិប្បាយអំពីចម្ការគ្រាប់បែកចង្កោម – Description of CM field

2.4.1 ប្រវត្តិចម្ការគ្រាប់បែកចង្កោម - History of CM field: .....

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.....

.....

.....

.....

2.4.2 ដង់ស៊ីតេគ្រាប់ Density of CM	☐ច្រើន / Dense	☐រាយប៉ាយ/ Scattered	☐សង្ស័យ / Suspected	☐គ្មាន / None

2.4.8 សេចក្តីផ្សេងៗ/ Remarks: .....
.....
.....
.....
.....

2.5 ចំណាត់ថ្នាក់ដី - Land Classification

ដីមានការគំរាមកំហែងទាប/ Land that presents evidence of ERW

○ B1.1 ដីមានគ្រាប់ទំលាក់ពីយន្តហោះ Land containing aircraft bomb	○ B1.2 ដីមានតែគ្រាប់បែកចង្កោមLand containing cluster munitions	○ B1.3 ដីធ្លាប់មានការវាយប្រយុទ្ធគ្នា Location of Ground Battles	○B1.4 ដីមានស្តុកគ្រាប់សេសសល់ពីសង្គ្រាម Land containing stockpiles/caches	○ B1.5 ដីជាបន្ទាយទាហានបោះបង់ចោល Abandoned Military Compounds	○ B1.6 ដីមានអាវុធគីមី Land containing Chemical weapon

2.6 ព័ត៌មានគ្រោះថ្នាក់ដោយសារគ្រាប់បែកចង្កោមនៅលើដីកំពុងស្រាវជ្រាវ - Information on CM Accident at survey area

	គ្រោះថ្នាក់ ឬឧបទ្ទវហេតុ Accident/Incident	មនុស្សស្លាប់ People Killed	មនុស្សរបួស People Injured	សត្វពាហនៈ Cattle	ផ្សេងៗ Others
ចំនួនសរុប/ Total number					
ឆ្នាំគ្រោះថ្នាក់កើតឡើងចុងក្រោយបំផុត year of most recent accident					

2.7 កម្រិតភ័យខ្លាចរបស់អ្នកភូមិអំពីគ្រោះថ្នាក់គ្រាប់ (ត្រូវពិគ្រោះជាមួយអ្នកភូមិ) Level of fear of the villagers (shall consult villagers)

2.7.1 កំរិតនៃការភ័យខ្លាច - Level of fear ☐ ខ្ពស់ / high ☐ មធ្យម / Medium ☐ ទាប/ Low ☐ គ្មាន / None

2.7.2 មតិរបស់អ្នកភូមិ/ villagers´ comments:
.....
.....
.....
.....
.....
.....

2.8 អត្តសញ្ញាណដី និងការប្រើប្រាស់ដីពេលបោសសម្អាតរួច(អាចជ្រើសរើសបានច្រើនជាង១ប្រភេទ)

Land Identification and potential land use after clearance (can select more than one category)

អត្តសញ្ញាណដី/land identification	ការប្រើប្រាស់ដីពេលបោសសម្អាតរួច/future land use		
☐ ដីធ្លីសាធារណៈរបស់រដ្ឋ State public property	☐ តំបន់អភិរក្ស (ហាមឃាត់) Conservation Forest Lands (CVN)	☐ ដីកសិកម្ម Agriculture (AGR)	☐ ផ្លូវ Road (ROAD)

☐ ដីធ្លីឯកជនរបស់រដ្ឋ State private property	☐ ប្រាសាទ ឬតំបន់ប្រវត្តិសាស្ត្រ Temple/ historical sites (TEM)	☐ ប្រព័ន្ធស្រោចស្រព Irrigation (IRR)	☐ មណ្ឌលសុខភាព Health Center (HC)
☐ ដីធ្លីរបស់ឯកជន Private property	☐ តំបន់ទេសចរណ៍ Tourist Site	☐ សាលារៀន School (SCH)	☐ ទីស្នាក់ការរដ្ឋបាល Administration Office (ADM)
☐ ដីធ្លីសហគមន៍ជនជាតិដើមភាគតិច Indigenous community property	☐ កាត់បន្ថយគ្រោះថ្នាក់ Casualty Reduction (CAS)	☐ វត្តអារាម Pagoda (PAG)	☐ ដីលំនៅដ្ឋាន Resettlement (RES)
☐ ដីធ្លីសម្រាប់សាសនា Monastery property	☐ ផ្លូវទៅកាន់ប្រភពទឹក Water Access (WAT)		

2.9 ចម្ងាយទៅចម្ការគ្រាប់បែកចង្កោម (វាស់តាមផ្លូវត្រង់)- Distance to CM field (direct distance)

☐ ជិតបំផុត Very Near	☐ ជិត(តិចជាង ១ គ.ម) Near (less than 1km)	☐ ឆ្ងាយ(១ គ.មទៅ១០គ.ម) Far (1km – 10km)	☐ ឆ្ងាយបំផុត(១០គ.មឡើង) Very Far (more than 10 km)
នៅក្នុងភូមិ ឬជាប់កន្លែងដែលមានលំនៅដ្ឋានឬមានគម្រោងសាងសង់លំនៅដ្ឋាន/ In village or immediately adjacent to area of settlement/proposed settlement	ដីដនបទ ជីព្រៃចន្លោះ១ គ.ម ពីលំនៅដ្ឋាន ឬហ៊ុំព័ទ្ធដោយដីកសិកម្ម Rural land/woodland within 1 km of any housing and/or surrounded by cultivation	ដីដនបទ ជីព្រៃចន្លោះ ១០ គ.ម ពីលំនៅដ្ឋានតែឆ្ងាយពីដីកសិកម្មRural land/woodland within 10km of a village but away from cultivation	តំបន់ផ្សេងៗទៀត Any other area

2.9.1 ចំនួនប្រជាពលរដ្ឋកំពុងប្រឈមនឹងគ្រោះថ្នាក់ - Number of people at risk

ចំនួនគ្រួសារ/ Number of households: .....

ចំនួនប្រជាពលរដ្ឋ/ Total population: .....

(ស្ត្រី/Women.....បុរស/Men..... .....កុមារី/Girl.....កុមារ/Boy.....ជនមានពិការភាព/PWD.....)

2.9.2 សេចក្តីផ្សេងៗ/ Remarks:

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2.10 ព័ត៌មានសម្រាប់ប្រតិបត្តិការ - Operational Information

2.10.1 ប្រភេទព្រៃ Vegetation	☐ ស្មៅ.....% Grass.....%	☐ ព្រៃគុម្ពោត.....% Bushes.....%	☐ ព្រៃឈើ/ឫស្សី.....% Tree/Bamboo.....%	☐ គ្មាន None
2.10.2 ភាពស្មុគស្មាញ Contamination	☐ កម្ទេចដែក Metal	☐ ដីក្រួសក្រហម Laterite	☐ គ្មាន None	
2.10.3 កម្រិតនៃភាពស្មុគស្មាញ Level of contamination	☐ ទាប Low	☐ មធ្យម Medium	☐ ខ្ពស់ High	
2.10.4 សណ្ឋានដី Ground profile	☐ រាបស្មើ Flat	☐ ចំណោតភ្នំ Hillside.....	☐ ខ្ពង់រាប Ridge	☐ ជ្រលង ឬច្រកភ្នំ Gully
	☐ មាត់ទឹក Embankment	☐ ដីជីកកកាយយករ៉ែ Mining	☐ ដីពូក Spoil Piles	☐ ផ្សេងទៀត Other.....
2.10.5 ប្រភេទដី Soil type	☐ ដីខ្សាច់/Sand	☐ ដីកំបោរ/Chalk	☐ ដីឥដ្ឋ/Clay	☐ ដីថ្មច្រើន Rocky
	☐ ដីក្រួសក្រហម/ Laterite	☐ ដីល្បប់ ឬភក់ Swamp	☐ ផ្សេងទៀត: Other	
2.10.6 រដូវកាលអនុគ្រោះសម្រាប់ការបោសសម្អាតគ្រាប់បែកចង្កោម/គ្រាប់ Season suitable for demining		☐ រដូវប្រាំង/ Dry season	☐ រដូវវស្សា/ Wet season	
2.10.7 ឧបសគ្គទៅកាន់ចម្ការគ្រាប់ Obstacle to accessing the CM field	☐ ផ្លូវ/ Road ☐ ស្ពាន/ Bridge	ចូររៀបរាប់/ Please explain:		
2.10.8 តើមានការត្រួតពិនិត្យផ្ទៃដីឬទេ? Is physical verification conducted?	☐ មាន/ Yes	☐ គ្មាន / No	បើមាន តើភស្តុតាងអ្វីខ្លះបានរកឃើញ? If Yes, what kind of evidence found?	

☐ គ្រាប់/ EO ☐ អំបែងគ្រាប់/ EO fragment ☐ ផ្សេងៗ / Others:

2.11 យោបល់រួមរបស់ក្រុមស្រាវជ្រាវ - Survey team's general comments

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2.11 ចម្ការគ្រាប់បែកចង្កោម ចំណុចយោងចម្ការគ្រាប់បែកចង្កោម (ចំណុចយោងទី១ ចំណុចយោងទី២ ចំណុចចាប់ផ្តើម ចំណុចរបត់) CM field reference points (landmark, benchmark, starting point, and turning points)

ពីចំណុច From	អាប់ស៊ីស X (UTM East)	អរដោណេ Y (UTM North)	មុំ (អង្សា) Bearing (°)	ចម្ងាយ(ម៉ែត្រ) Distance (m)	គោលដៅពីចំណុចមុន Destination	សេចក្តីផ្សេងៗ Remarks
LM					BM	
BM					SP	
SP					TP1	

ប្រភេទ ជីភីអេស ដែលប្រើ / Type of GPS used:.....

ប្រព័ន្ធកូអរដោណេ/ Coordinate system:.....

ខណ្ឌសីមារបស់ផែនទី/ Map datum: .....

2.12 អ្នកផ្តល់ព័ត៌មាន (យ៉ាងតិចឱ្យបាន៤នាក់) - Key Informants (at least 4 people)						
ល.រ No.	ឈ្មោះ Name	ភេទ Sex	អាយុ Age	មុខរបរ Occupation	លេខទូរស័ព្ទ Phone#	ហត្ថលេខា Signature
1						
2						
3						
4						

2.13 ការប្រមូលទិន្នន័យផ្ទៃក្នុង - Internal Data Collection		
អ្នករាយការណ៍ Reporter	អ្នកត្រួតពិនិត្យ Supervisor	អ្នកបញ្ចូលទិន្នន័យ Data entry
រាយការណ៍ដោយ Reported by:	ត្រួតពិនិត្យដោយ: Verified by:	បញ្ចូលទិន្នន័យដោយ: Entered by:
ភេទ: Sex:	ភេទ: Sex:	ភេទ: Sex:
មុខងារ: Title:	មុខងារ: Title:	មុខងារ: Title:
កាលបរិច្ឆេទ: Date:	កាលបរិច្ឆេទ: Date:	កាលបរិច្ឆេទ: Date:
ហត្ថលេខា: Signature:	ហត្ថលេខា: Signature:	ហត្ថលេខា: Signature:

ឯកសារភ្ជាប់/ Attachments:

- ប្លង់ចំការគ្រាប់បែកចង្កោម CM Sketch map
- រូបថតចំការគ្រាប់បែកចង្កោម (បើមាន)/ Photos of area (if possible)

Annex 5: Map symbols

Annex E/ CMAS 15

និមិត្តសញ្ញាផែនទី
MAP SYMBOLS