

LAO PDR NATIONAL UXO/MINE ACTION STANDARDS (NS)



Chapter Six Survey

National Regulatory Authority for
the UXO/Mine Action Sector in Lao PDR

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Survey

1. Introduction

Survey in Lao PDR takes two forms; surveys of spot UXOs that may be affecting the use of land or posing a risk to communities, and surveys of areas known or suspected of having UXO contamination. The two forms of survey require a different approach.

Surveys of spot UXOs involve either the gathering of information to permit the UXOs to be dealt with, or the recovery of the UXOs by the survey team itself.

Surveys of known or suspected UXO contaminated areas involve a process that leads to land either being released for use or designated as requiring clearance. This form of survey involves a progressive response through stages of general and technical survey and risk management is integral to the process. For land identified as requiring clearance, the type and extent of clearance is determined and information to assist with planning obtained. Land identified as not requiring clearance is released for use.

In Lao PDR emphasis is to be placed on rigorous survey of known or suspected UXO contaminated areas in order to avoid unnecessary clearance and if possible, permitting land to be released for use. This will ensure that UXO clearance resources are used efficiently and effectively on tasks where evidence of UXO contamination that will affect land use is confirmed and most benefit can be obtained.

Note: Where the term 'UXO that will affect land use' or words to that effect are used in this NS, the term also covers the safety aspects to people who are affected by the UXO.

2. Scope

This chapter covers the processes and requirements for survey operations carried out in Lao PDR.

The details included in this chapter apply to UXO clearance operations only; they do not apply to mine clearance operations. The specific requirements for survey for mine clearance operations are included in **Chapter 12 of NS, Mine Clearance Operations**.

3. General Responsibilities for Information Gathering

All UXO/mine action organisations operating in Lao PDR have a general responsibility for gathering information on the risks of UXO and their effect on communities. UXO/mine action organisations that receive information about any of the situations indicated below should report the details to the Lao PDR National Regulatory Authority (NRA) head office and the NRA provincial office:

- a. UXO/mine accidents. The **UXO/Mine Accident Report** and **UXO/Mine Victim Report** are to be used.
- b. Mined areas. The **Mined Area Report** is to be used.

Note: The details included in the **Mined Area Report** require some investigation of the areas, which are beyond the capability of UXO/Mine Risk Education (UXO/MRE) or UXO mine Victim Assistance (VA) organisations. UXO/MRE and UXO mine VA organisations are to fill out the general details parts of the report based on the information they receive and forward the incomplete report to the NRA offices.

- c. UXOs. Where UXO/mine action organisations have the capability and the authority to deal with the items they are permitted to do this and report the action taken as part of routine reporting. If the items are not dealt with the details should be reported as follows:
- (1) Location of the item(s) by map reference or GPS reading. A sketch of the location should also be provided.
 - (2) Type and quantity of item(s). If known, the common name should be provided, if not a detailed description should be provided. If possible, photographs should also be provided.
 - (3) Details of the affect that the UXO is having i.e. restricting land use or posing a risk to communities.
 - (4) Any marking systems used and if known, who emplaced the marking systems.
 - (5) Contact details of local personnel who may assist in locating the item(s).

There is no designated format for the reporting of UXOs. This information is to be passed to the NRA provincial office (not to the NRA head office) by whatever means is available.

Clearance organisations should mark UXOs that they are not required, or unable to deal with, however this is dependant on the particular situation. In some cases marking may advertise the presence of UXO. Non clearance organisations should not mark UXOs. Details of the requirements for marking UXOs are included in **Chapter 4 of NS, Marking Systems**.

In addition, all UXO/mine action organisations have a general responsibility for advising communities of the systems and procedures for the reporting of UXO.

4. NRA Provincial Office Responsibilities for Information Gathering

The NRA provincial office is responsible for the establishment of systems and procedures for the collection and reporting of UXO/mine action related information. These systems should use NRA provincial and district office and other local Government resources; the resources of UXO/mine action organisations operating within the province; and the village/community leaders to collect and pass on information.

Note: This responsibility also includes notifying all information gathering stakeholders, including local communities, of the systems for the collection of information.

The system should involve passing information by whatever means are available, from villages/communities up through the various levels of provincial government to the NRA provincial office. Information should be actively sought during routine visits by NRA provincial and district staff and other local government officials to localities, villages and organisations working within the province (not necessarily UXO/mine action organisations); and through visits to district and provincial facilities such as hospitals.

Information obtained should be dealt with by the NRA provincial office in accordance with section 4.1 below. When information received is incomplete the NRA provincial office should take action to follow up the matter to obtain a complete set of information. The NRA provincial office should ensure that when passing on information, data is not inadvertently duplicated.

4.1. Acting on Information

NRA provincial offices will obtain information from their own province's information gathering (see section 4 above), or information will be relayed to them from the NRA head office. NRA provincial offices should act on information received as follows:

- a. UXO accidents and victims:
 - (1) Ensure that surviving victims or their families are advised about UXO/mine VA available, either within the province or nationally.
 - (2) Where applicable, notify any UXO/mine VA organisations operating in the province about surviving victims.
 - (3) Forward copies of **UXO/Mine Accident Reports** and **UXO/Mine Victim Reports** to the NRA head office after making comments on any action taken by the NRA provincial office on the report.
- b. Mined areas:
 - (1) Ensure that the mined area is marked and fenced in accordance with the requirements of **Chapter 4 of NS, Marking Systems**. Technical assistance will be needed from a UXO clearance organisation for this task.
 - (2) Forward the original copy of the **Mined Area Report** to the NRA head office after making comments on any action taken by the NRA provincial office on the report.
- c. Spot UXOs or areas of UXO contamination. Pass the information received to the UXO clearance organisation responsible for humanitarian clearance within the province and task the organisation to investigate and either advise on the task, or if the task is straightforward, to deal with it. Further action may be necessary depending on the outcome of the investigation. This will include:
 - (1) Identifying the priority of the task in relation to other tasks already on the provincial work plan. This must take into account the impacts of the UXOs in terms of safety or restrictions on communities.
 - (2) Tasking a clearance organisation to carry out the task or ensuring it is included on future work plans.
 - (3) Notifying the reporting agency or community of the action to be taken and keeping them informed of progress.
 - (4) Monitoring the conduct of the task by the organisation concerned.
- d. Ensure that all reports are actioned and that information on the status of the report is provided to the reporting agency or community.
- e. Keep NRA district offices informed about UXO related activities occurring in their districts.

When contaminated areas have been marked and not prioritised for clearance then the NRA provincial offices have responsibilities in regard to the maintenance of marking systems. Details of these responsibilities are included in **Chapter 4 of NS, Marking Systems**.

5. Survey Standards

The standards for survey operations in Lao PDR are:

- a. Measurements. Distance measurements are to be taken horizontally and accuracy must be to +/- 0.3 m.
- b. Bearings (Azimuths). Bearings are to be taken forward and back as a check against gross error and bearings are to be recorded to an accuracy of +/- 2 degrees.
- c. Global Positioning System (GPS). The map datum to be used is WGS 84. The coordinate system (Magellan GPSs) or position format (Garmin GPS) is to be degrees and decimals of a degree, with decimals to at least five decimal places (ddd.ddddd°)

Organisations may use different settings for their internal survey work but the settings indicated above are to be used when exchanging information between organisations and when reporting to NRA offices.

6. Task Numbering

There is no national UXO/mine action task numbering system. UXO/mine action organisations are to develop their own task numbering as required for the management of their UXO/mine action tasks.

Each UXO/mine action organisation will be allocated a three letter code by the NRA. This three letter code is to be prefixed to the organisations task numbering system and used in all work plans and reports that originate from that organisation.

7. Survey Markers

Survey markers are used to provide points of reference to locate other survey markers, or to mark the boundaries of areas of land for UXO clearance operations. Survey markers may be established during survey to support future clearance, or they may be established as part of the completion survey. Survey markers include:

- a. Reference Point (RP). A RP is a fixed point of reference located a suitable distance outside the marked area. The RP is to be a permanent and easily recognisable landmark or feature in the general area. The position of the RP must be such that Bench Marks (BMs) are able to be located from it.
- b. Benchmarks (BMs). BMs are fixed points of reference used to locate the points on the boundary of a marked area. On large sites more than one BM may be established covering different areas on a site. BMs may be established within the boundaries of a marked area provided they are not going to be disturbed by the planned land use. If the RP is close to the boundary of a marked area, there is no need to have BMs.
- c. Start Point (SP). A SP is the turning point on the boundary of the marked area from which the survey of the boundary starts.
- d. Turning Points (TPs). TPs are all the points on the boundary of a marked area where the boundary changes direction.
- e. Intermediate Points (IPs). If the distance between two TPs is more than 50 m, IPs are to be used to ensure that the direction between TPs can be easily and accurately followed.

8. Survey and Land Release

Traditionally, surveys of areas known or suspected as being UXO contaminated have been carried out to support area clearance. This has now changed. The aim of survey is now on confirming the presence of UXO contamination and releasing land from suspicion of contamination through a documented survey process. Land will only be designated for full clearance when evidence of UXO contamination that would affect the intended land use is obtained. Where no evidence of such UXO contamination is apparent, land may be released from suspicion through survey.

Survey in relation to UXO contaminated areas means all types of survey; general, technical and any other information gathering activities. It also means all efforts to verify and analyse the information obtained. Survey may include some limited clearance work, either EOD roving or area, but not to the extent of full clearance.

Note: In the NS the term 'survey' when used alone means the whole survey process. If either general or technical survey are referred to specifically the words general or technical will be included with the word survey. UXO clearance organisations may use their own terminology for the activities that make up survey.

The change of focus does not mean that the traditional outputs of survey are not required should full clearance be necessary. However, most of the information needed, i.e. the type and extent of contamination and a definition of the area to be cleared would have been identified during the survey process.

8.1. The Application of Survey and Land Release

Survey and land release focuses on specific areas. In Lao PDR these areas are those identified for clearance due to known or suspected UXO contamination. Such areas are to be selected based on the current priorities of the Government of Lao PDR (GOL).

Note: All land identified for clearance should either be high priority/high value in accordance with Lao PDR's Millennium Development Goal 9; priority in accordance with the current UXO Sector Strategic Plan or some other priority as specified by the NRA.

Note: The actual selection of specific areas within provinces will be coordinated by NRA provincial offices after consultation with all stakeholders including UXO-affected communities and UXO clearance organisations.

All areas identified for clearance are to be put through a survey process that is applied progressively through stages of general and technical survey and if necessary some limited clearance with the effort increased until sufficient information is obtained to make a decision with confidence. If at any time during the process sufficient information is obtained to release the land, or parts of it, this should occur. Alternatively, if it is identified during the process that full clearance will be necessary then the focus should transfer seamlessly from survey to full clearance.

During the survey a risk management approach¹ is to be used. Details of the requirements for this are included in sections 10 and 10.1 below. Critical to the application of the risk management approach is knowing the intended land use.

All reasonable effort is to be applied during the survey process to achieve the desired level of confidence in the result, i.e. a decision to release the land or carry out full clearance.

1. The UXO Sector Strategic Plan section 18.1 states as a major action "Release priority land through a 'risk management' approach....."

Note: The term all reasonable effort describes what is considered a minimum acceptable level of effort to survey a UXO contaminated area. All reasonable effort has been applied when the commitment of additional resources is considered to be unreasonable in relation to the results expected.²

Note: Full clearance is where UXO clearance must fully achieve the clearance requirements. This means that the whole area identified to be cleared must be cleared to the required depth of clearance and to the required quality of clearance.

Land owners/users are to be involved in the survey, risk assessment and land release process to ensure that they have confidence in the process and when land is released it is actually used.

The overarching principle to be applied is: *“Land should only be released when it is deemed safe to use after a credible and well documented process has been implemented”*³

Note: When the requirements for UXO clearance are specified in a commercial contract or other formal agreement, survey to determine the need for clearance as described in this section of NS is not necessary. Survey may still be carried out for marking and information gathering purposes.

8.1.1. Dealing With Large Tracts of Land

When large tracts of land are identified for clearance the land should be divided into manageable sized lots for the survey. Each lot should then be treated as a stand alone area for the survey process without limiting the clearance organisations ability to deal with multiple lots during the same survey activity.

If during the survey process the boundaries of lots of land are found not to represent the boundaries of UXO contamination, the boundaries are to be changed to permit the release of uncontaminated land.

When boundaries are changed an appropriate sized buffer zone is to be made into the area designated as uncontaminated as a safety margin against incorrect boundary identification.

9. Specific Survey Operations

This section describes the requirements of the specific survey activities, general and technical, that are carried out as part of the overall survey process. Both of these activities incorporate the risk management approach in the decision making concerning releasing land. The risk management approach is covered in more detail in section 10 below.

While general and technical surveys are described separately, consideration should be made to carrying them out concurrently or sequentially by the same team to achieve greater efficiency.

Note: UXO clearance organisations may use their own terminology for what is described in this NS as general and technical survey.

Prior to any activities taking place certain information should be available to the UXO clearance organisation concerned. This includes:

- a. The location (boundaries) of the known or suspected contaminated area identified for clearance.
- b. The land owner(s)/user(s) so they can be involved in the survey process.

2. Adapted from IMAS 08.20.

3. From IMAS 08.20.

- c. The intended land use as this affects any risk assessment.

While sections 9.1 and 9.2 below discuss specific areas of land identified for clearance, these areas may be divided up if separate areas within the original area have different levels or types of UXO contamination (including none). Notwithstanding this, the whole area originally identified for clearance must be released as safe for use at the end of the entire process (survey and clearance).

All of the activities and decisions associated with survey that lead to land being released for use are to be well documented so an auditable trail is available. There are currently no standard formats for this documentation; UXO clearance organisations may use their own standard forms.

9.1. General Survey

General surveys do not involve the searching for UXO using metal detection equipment, or any excavation for or movement of UXO. General survey may involve some or all of the following:

- a. Examining data such as bombing data, clearance records, UXO socio economic impact data and accident reports. Clearance records of adjacent or nearby land may assist in determining the likely scope and scale of UXO contamination on the area being surveyed.
- b. Visiting the location and talking to the landowners, land users, local authorities and communities about land use and the type and extent of contamination on the site.
- c. Visiting the site and conducting a visual inspection for evidence of UXO contamination. Evidence of UXO contamination does not have to include actual UXO, UXO fragments are sufficient to indicate UXO contamination.

General survey may also include checks by metal detection equipment to determine the extent of metal fragmentation contamination (no excavation involved).

The main aim of general survey as part of the survey process is to check if the area of land identified for clearance has evidence of UXO that would affect the intended land use or not, and what further survey effort is needed to make a decision with confidence. For example:

- a. If land has no evidence of UXO contamination that would affect the intended land use then it can be released for use. No further survey effort is needed.
- b. If there is clear evidence that the land will require full clearance then the land is programmed for clearance. No further survey effort is needed as the evidence will indicate the type and extent of UXO contamination. Land identified for full clearance should have the boundaries marked.
- c. If there is some evidence of UXO but the type and extent of contamination is not clear then further survey effort is needed. Depending on the UXO evidence this may be technical survey, EOD roving or a combination of them both.

Note: As indicated in section 8 above the survey process may include some limited clearance work but not to the extent of full clearance.

9.2. Technical Survey

Technical survey involves carrying out UXO area clearance operations on areas of land identified for clearance that have evidence of UXO contamination but the true extent and nature of the contamination is uncertain. The aims of technical survey are:

- a. To identify if land can be released for use. In this case the technical survey is carried out on a representative sample of the area, with the sample to be of sufficient size to indicate with confidence that the land can be released. In this case there would be no evidence of UXO of a type that would affect the intended land use.

Note: Common sense has to be applied in the application of the provisions of sub paragraph a above. If there is evidence of a sub munition then there would be a strong likelihood of other submunitions being in the area. If the evidence is of a land serviced ammunition item then there is a strong likelihood of this being a one-off item. In both cases further survey should be conducted to confirm the evidence.

- b. To complete limited clearance on an area of land to permit the release of the land and avoid the land being designated as requiring full clearance. This would occur if there was evidence that parts of the land needed clearance but not the whole area. This would involve the clearance of a larger proportion of the land than what would occur in the scenario in sub paragraph a above.
- c. To identify if land requires full clearance. In this case technical survey need only cover enough of the area to confirm with certainty the need for full clearance, keeping in mind that the intent of the survey process is to release land where possible and avoid full clearance.

Depending on the evidence of UXO contamination technical survey may be combined with other clearance (EOD roving).

During technical survey all of the requirements for UXO area clearance operations as detailed in Chapter 7 of NS, **UXO Clearance Operations** are to be complied with except as provided in section 9.2.1 below.

9.2.1. Technical Survey for Specific UXO Evidence

In some cases UXO evidence obtained from general survey will indicate the presence of a certain type of UXO and technical survey is only required to determine the extent of the contamination. In these situations it would not be efficient to apply technical survey using full area clearance procedures; shortened procedures would be more suitable.

In situations where UXO clearance organisations are carrying out technical survey for specific UXO evidence procedural requirements may be adjusted subject to the following conditions:

- a. Safety is not to be compromised.
- b. Clearance drills and procedures as detailed in Chapter 7 of NS, **UXO Clearance Operations** are to be adapted to suit the technical survey methodology with details included in survey Standard Operating Procedures (SOPs); see section 10.4 below.
- c. Depth and quality of clearance requirements do not apply.
- d. Work site preparation requirements may be reduced in accordance with section 2 of Chapter 5 of NS, **Worksite Preparation**; however effective control of the worksite must still be able to be maintained.

- e. The requirements for clearance marking systems may be reduced provided clear delineation between processed and un-processed areas is possible and safety distances are maintained.
- f. Detector testing is carried out against the target size of specific UXO evidence being searched for.

10. Land Release and the Risk Management Approach

In normal circumstances, areas of land should only be released for use if there were no UXOs, (or evidence of UXOs) equal to or greater in size than a half BLU 26 with a fuze found during the survey process. Small arms munitions, spent shell cases and fragmentation from high explosive aircraft bombs or large land serviced ammunition that **obviously** originated from outside the surveyed area are acceptable. (See note below).

Note: Survey teams should use their experience and judgement when fragmentation from large aircraft bombs or large land serviced ammunition is found. With these munitions, fragmentation may travel a considerable distance and contaminate areas that are otherwise free from UXO.

However, the risk management approach permits UXO clearance organisations to release clearly defined areas of land if, after a comprehensive survey process, they assess that the risk from UXOs, given the intended land use, is acceptable.

This permission has serious implications and cannot be taken lightly; therefore it is bound by a strict set of conditions that must be complied with. These are detailed below.

10.1. Conditions for Release of Land Using the Risk Management Approach

All known UXOs on the area of land are to have been destroyed, removed or marked in accordance with Chapter 4 of these NS, **Marking Systems**. A sketch map of marked UXOs and a plan for their disposal should be included with the land release documentation.

The land owner/user is to have been involved as much as practically possible in the survey process, understand the risk and accepts the land for use as presented by the clearance organisation. A statement signed by the land owner/user to this effect is to be included in the land release documentation.

Note: The organisation still has to go through the formal hand over process as covered in Chapter 11 of these NS, **Released Land Handover Procedures**.

The survey process carried out and the rationale for the decision to release the land are to be clearly recorded on the land release documentation. The requirement for recording the survey process may be achieved by reference to an accredited procedure.

The land release documentation is to include details of the checks carried out either visually or with detection equipment, and details of any evidence of UXO found. A statement of the assessed residual risk is to be included to cover:

- a. Probability of UXOs still being in the area. This should be qualified based on survey results.
- b. Types of UXOs.
- c. Risk to the land owner/user based on the types of UXOs and intended land use.
- d. Risk to the land owner/user if other more intensive use of the land occurs.

The land release documentation is to be included with the Completion Survey Report and submitted to the NRA head office within one month of the land being handed over.

UXO clearance organisations that for whatever reasons do not follow the risk management approach during survey are to comply with the land release criteria in paragraph 1 of section 10 of this NS. Technical Survey reports are required with Completion Survey Reports.

10.2. Review by the NRA

As part of its normal report review process the NRA will check the land release documentation included with Completion Survey Reports for land released using the risk management approach. If the NRA is not satisfied with any aspect of the release of land it may reject the Completion Survey Report completely and direct that the releasing organisation carries out more work on the area of land concerned.

10.3. Liability for Released Land

Chapter 11 of NS, **Released Land Handover Procedures** covers the matter of liability if a UXO incident occurs on an area of land released by an organisation. The provisions of Chapter 11 also apply in the case of land released through the risk management approach.

Clearance organisations applying the risk management approach during survey are to ensure that a high level of diligence is applied to the overall survey process and the decision making is very clearly documented.

10.4. Standard Operating Procedures (SOPs)

Clearance organisations are to include procedures for the conduct of survey and land release in their SOPs. These procedures are to ensure that the tasks are able to be carried out safely and efficiently and in accordance with the requirements of these NS.

11. Surveys of Spot UXOs

Surveys carried out for spot UXO that are affecting the use of land or posing a risk to communities normally lead to EOD roving tasks; however this is not always the case. If the UXOs concerned are BLUs for example, then the contamination may be widespread and area clearance may be required. Alternately, if the contamination is solely land serviced ammunition then EOD roving may be carried out on the area concerned. The survey teams must assess the situation and determine the type and extent of contamination before any decision is made on the work required.

If the UXO contamination involves single or small numbers of UXO in one location then an EOD roving task would be appropriate. However, clearance organisations should not exclude the use of marking and UXO/MRE to reduce the risk.

Clearance organisations should also consider the option of survey teams disposing of or recovering safe to move UXO provided these tasks are carried out in accordance with the requirements of these NS in terms of procedures and qualifications.

Surveys for EOD roving/spot tasks involve the gathering of information to permit the UXOs to be dealt with so will not be discussed in detail in this NS.

12. Survey Reporting

Survey reports are only required to be submitted to the NRA head office if they support the land release documentation as indicated in section 10.1 above. If the land release documentation has survey details already included then survey reports are not required by the NRA.

Survey reports that support clearance by an organisation are not required by the NRA.

12.1. Surveyed Land Not Included on Work Plans

There may be situations when clearance organisations complete surveys, determine that the land requires clearance but for certain reasons the task is not included on work plans. If this situation occurs:

- a. The results of the survey are to be reported to the NRA provincial office so a record of the work is kept to avoid duplication of work on the same area. The information is to be reported on the organisations surveyreport on an as required basis.
- b. The land owner/user is informed of the reasons why the land is not being cleared, and not left under any misapprehension that the land is safe to use.

13. Disposal of UXO

All UXOs located on areas of land being surveyed are to be disposed of by the clearance organisation conducting the survey in accordance with the requirements of **Chapter 8 of NS, Explosive Ordnance Disposal (EOD)**.

Such disposal does not have to occur on a daily basis, disposal may occur at a future time depending on work commitments/disposition of the clearance organisation concerned. When UXO is not going to be disposed of immediately they may be marked in accordance with the requirements of **Chapter 4 of NS, Marking Systems**.

Note: Prior to any marking of UXO being carried out an assessment is to be made as to the likelihood of the UXO being touched or moved as a direct result of the marking. Guidance on this assessment is included in **Chapter 4 of NS, Marking Systems**.

The responsibility for the disposal of UXO located on areas of land being surveyed may be passed to another clearance organisation subject to the agreement of that organisation. Details should be recorded in writing.

On no account are UXOs located on areas of land being surveyed to be left without being disposed of.

Other UXOs located during surveys that are **not on** areas of land being surveyed, should, where possible, be dealt with by the clearance organisation conducting the survey. Provisions for marking and then dealing with UXO at a later date also apply. However, if clearance organisations are unable to deal with these UXOs then they may be marked in accordance with **Chapter 4 of NS, Marking Systems** and must be reported to the NRA provincial offices in accordance with section 3 to this NS.

14. Completion Survey

All clearance organisations releasing land for use, either through survey or clearance, are responsible for marking, surveying, recording and reporting details of the area to be released, prior to the land being handed over. The surveying, recording and reporting are all part of the completion survey.

Marking released land is covered in **Chapter 4 of NS, Marking Systems** and the handover of released land is covered in **Chapter 11 of NS, Released Land Handover Procedures**.

Completion surveys are to include the following:

- a. The establishment of a Reference Point (RP) and Bench Marks (BMs).

Note: Due to the likelihood of boundary markings being moved or lost after handover, it is extremely important that the RP and BMs are permanent features. It is also important that the accuracy of survey work is of the highest standard so that actual positions of boundary points can be located in the future.

- b. A survey of the RP, BMs, SP and TPs. The survey should include the following:
- (1) GPS readings of all survey markers i.e. RP, BMs, SP and TPs.
 - (2) Bearings and distances surveyed between the BM(s) and at least two TPs on the boundary of the released land. If two BMs are used, bearings and distances should be surveyed from both BMs to the selected TPs (at least two) on the boundary.
 - (3) Bearings and distances surveyed between the SP and TPs on the boundary of the released land.
 - (4) GPS readings of the TPs on the boundary of any uncleared areas within the area being released, or if the area concerned does not form a polygon, a combination of GPS reading(s) and bearings and distances so the boundary can be accurately recorded.
- c. Filling in of the **Completion Survey Report**. This includes all the data recorded during the survey and a detailed sketch map of the site. The sketch map is to show the position of each survey marker, any recorded uncleared areas and each UXO located during the work. The sketch map should also state the type(s) of UXO. Details of the marking systems used for the marking of the survey markers are to be included on the **Completion Survey Report**.

Completion surveys are to be carried out as soon as a clearance task, or a survey that determines land not requiring full clearance, is completed. The Completion Survey Report is to be combined with other task documentation and submitted to the NRA head office within one month of the land handover being completed. Details of the required task completion documentation are included in **Chapter 11 of NS, Released Land Handover Procedures**.

14.1. Long Term Tasks

When clearance organisations carry out long term area clearance tasks i.e. tasks are expected to exceed 3 months duration, marking, completion survey and reporting is to be carried out on the areas cleared as a minimum, every 2 months. This is so that NRA head office's records remain up to date in terms of areas cleared.

If the cleared land is required for use, then formal hand over of the part area of land should also occur at the same time as the completion survey.

14.2. Mining Tasks

When land is to be used for open cast mining purposes and area clearance is carried out repeatedly on the same land but in layers as the mining proceeds, completion survey is not required until all clearance work has been completed.