
GENERIC SOPs

CHAPTER 9: INTEGRATED SYSTEMS

Date:



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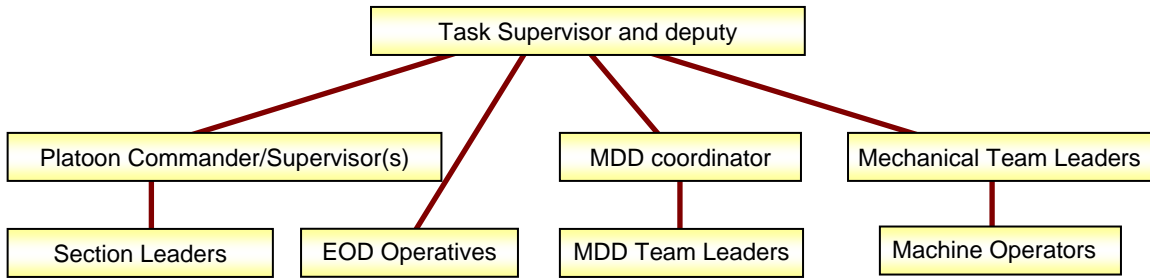
1. Integrated Operations

Integrated operations occur at Tasks where manual demining must be combined with mechanical demining machines and/or the use of Mine Detecting Dogs (MDDs).

The combination of men, machines and dogs can lead to a spectacular increase in speed and efficiency but this can only occur when the combination of assets is managed effectively.

The Task Release Plan must take this into account, and the Task Supervisor must ensure that the appropriate site management for the assets is conducted.

The command chain in an integrated operation is shown below:



The Task Supervisor should have a deputy who is fully aware of the Task Release Plan and the management requirements that it involves. The deputy should serve as an assistant at all times and be prepared to become Acting Task Supervisor when the Task Supervisor must be absent for any reason.

NOTE: *No work can be conducted inside the hazardous area(s) when both the Task Supervisor and the Acting Task Supervisor are not present at the Task site.*

The EOD Operatives report directly to the Task Supervisor because the Task Supervisor must be Level 3 or Level 4 EOD trained and supervise all demolitions.

1.1. Task Supervisor

The Task Supervisor is appointed by the Programme Manager. The Programme Manager must always appoint a single individual to have overall responsibility for each Task (except EOD Spot Tasks, see Part 5.4 in this Chapter).

When a single Platoon is deployed to a Task, the Task Supervisor will normally be the Platoon Supervisor.

When more than one Platoon deploys to a task, the Programme Manager must appoint one of the Platoon Supervisors to be the Task Supervisor. The other Platoon Supervisor should be the Deputy Task Supervisor and support the Task Supervisor in the management of the Task.

The Task Supervisor must ensure that:

1. Appropriate marking for the procedures to be used is in place;
2. Appropriate safe-area features for the assets are prepared;
3. Areas where machines or MDD will work are prepared and marked before the assets are deployed;
4. Appropriate working and safety distances between the procedures being used are imposed;
5. The assets are used in a logical sequence that maximises results; and

6. Duplication of support services, such as the ambulance and Paramedic, is avoided.

1.2. The Task Release Plan

Before demining assets are deployed to a Task, a Task Release Plan must be made by the Task Assessment Team. The Task Release Plan must be included in the Task Folder and is then used as a reference by the Task Supervisor when the demining assets deploy.

The Task Release Plan is the detailed plan of action that will lead to the efficient release of the SHA/CHA. Because in most cases the whole area will not be Cleared, it should not be called a "Clearance plan".

The purpose of the Task Release Plan is to help to ensure efficient use of demining resources. It must be designed and revised to ensure that no more of the SHA/CHA is processed using full Clearance procedures than is necessary.

The Task Release Plan should include:

1. A detailed sketch map showing:
 - a) all of the Task area and its perimeters;
 - b) the Threat levels assigned to the separate parts of the SHA/CHA;
 - c) all obvious features in the SHA/CHA;
 - d) the Task Landmark(s) GPS co-ordinates; and
 - e) the Task Benchmark GPS co-ordinates.
2. An Implementation Plan covering:
 - a) A list of the demining procedures to be used in each Threat Level area;
 - b) The sequence in which the demining procedures must be used in each Threat Level area; and
 - c) Separate sketch maps showing where each of the following will be deployed;
 - MDD;
 - Each Section of manual deminers;
 - Each machine.
3. The Task Risk Assessment (TRA).
4. A sketch of the safe-area site layout, taking account of all features on the ground.

When demining machines will be used, the safe-area site layout must be adjusted to include the wide access-lanes and the machine inspection and parking areas that machines require. When MDD will be used, the safe-area site layout must be adjusted to include an MDD training area and MDD rest areas that meet the MDD Coordinator's requirements.
5. A detailed list of all equipment and consumables that will be needed.

This should cover the predictable needs of the manual demining Platoon(s) and the other demining assets that will be used. When those needs are not known, they must be added to the Task Release Plan as soon as they are known.
6. An estimate of the time that will be needed to complete the Task.

This should presume that the entire High and Low threat areas will need to be processed using manual or MDD Clearance procedures and so will usually be more time that is actually needed. The time estimate must be updated weekly as work as the Task progresses.

After a Task has started, the Task Release plan must be updated at least once a week by the Task Supervisor and all changes submitted to the Programme Manager.

The Task release Plan relies on the completion of the:

1. Task Assessment (See Chapter 3, Part 4); and
2. Task Risk Assessment (See Chapter 3, Part 6).

A Task Release plan comprises:

1. A map of the Task area showing Threat levels for different areas and the GPS co-ordinates for the proposed position for the Task Benchmark;
2. A detailed Task Risk Assessment, which must be updated as work progresses; and
3. A plan of action detailing the assets that will be used, the sequence in which work will be conducted and the parts of the SHA/CHA in which it will be conducted.

The Task Assessment should include a Preliminary Task Release Plan. It is called “preliminary” because it will change according to what is found in the SHA/CHA and the assets that are available to use at the Task.

The Task Release Plan must be drafted by the Task Supervisor with assistance from all Platoon Commanders, Platoon Supervisors, Mechanical team Leaders and the MDD Co-ordinator when these assets will be used. While the Task Supervisors takes responsibility for the final plan, it should be a team effort with all senior supervisors contributing whenever asked to do so.

1.2.1 Step one

The Task Supervisor should ask the Programme Manager to confirm the assets that will be available for use at the Task. The answer should cover:

1. The metal-detectors and battery chargers that are available;
2. The number of Platoons that are available, and their manpower;
3. The converted excavator and its tools;
4. The MV-4 mini-flail;
5. The MineWolf and its tools;
6. The CASSPIR, Steel-Wheels and rollers;
7. any other demining machines that may be available;
8. An MDD Team;
9. Transport vehicles for all assets;
10. Any additional Platoons that could be called upon if needed; and
11. The Paramedic and ambulance support that is available.

The tools that accompany some machines may vary and some are better at some things than others, so details of the mechanical tools, their serviceability and spare parts should be given.

The Task Supervisor must compile a list of the available assets.

1.2.2 Step 2

The Task Supervisor must study the sketch map of the Task and the High Threat, Low Threat and No Known Threat areas identified during the Task Assessment.

The Task Supervisor should plan to approach the High Threat areas as directly as possible. This will affect the position of the start-line at the Task. The start-line should be visible from the benchmark, but may be in any direction from it.

The approaches from the perimeter to the High Threat Areas must be Cleared. When machines are available, they can be used to prepare the ground before manual or MDD assets are used to Clear and mark these safe-access routes.

Depending on the Task, a number of access routes breaching through the SHA/CHA to the High Threat areas should be made. The number will partly depend of the assets that are available to Clear them and the working-distances for the Task.

Whenever possible, machines should continue to be usefully deployed while the Clearance of the prepared access-routes is conducted. If machine safety-distances allow, the machine should be used in another part of the SHA/CHA while the Clearance into the High Threat Areas is conducted. When MDD are being used, the MDD coordinator must confirm that the noise of the machine does not disturb the MDD before the machine(s) are used.

Making maximum use of the assets available, and trying to keep all staff busy at all times, the Task Supervisor must decide on the number of access routes that should be prepared and where they are positioned. He/she may not have an entirely accurate map at this time, but must prepare sketch maps recording all provisional decisions.

1.2.3 Step 3

The Task Supervisor should prepare for the Task by writing Tasking orders for the Platoon(s) covering:

1. Permanent marking of the benchmark;
2. Establishing the safe-area features described in Chapter 4;
3. Marking the start-line or start-lines;
4. Marking the perimeters of the SHA/CHA where necessary; and
5. Surveying the perimeters and producing a detailed map of the SHA/CHA that is to scale. On large Tasks, several maps may be needed in order to include all useful detail.

When the perimeters have been accurately surveyed, marked and are safely accessible, the Task Supervisor should walk the perimeter to check the map details and become familiar with the Task site.

1.2.4 Step 4

With an accurate map of the SHA/CHA and the prepared safe-areas, the Task Supervisor must mark the High threat, Low threat and No Threat Areas onto the map, adjusting them as all new information becomes available. In some cases, the perimeter of the SHA/CHA may need to be adjusted.

The Task Supervisor must prepare Tasking maps of the breaches that will be made to the High Threat areas. Separate Tasking maps must be prepared for each Section Leader, Mechanical Team Leader or MDD Team Leader involved in the work. The shape of breaches may be affected by the assets available. For example when the vegetation Strimmer will be used to cut undergrowth, lateral clearance across an area (as described in Chapter 6, Part 3.1.2) may dictate the shape of a breach.

Along with Tasking maps, the Task Supervisor must prepare detailed Tasking orders and issue the orders and maps through the Teams Leaders and Platoon Supervisors or Platoon Commanders, ensuring that they understand the sequence in which the work will be conducted and the desired end-result.

1.2.5 Step 5

The High Threat areas must be accessed and processed as described in Chapter 3 of these SOPs. They should be Cleared or Reduced using the criteria given in Chapter 3, Part 2 of these SOPs.

While this work is being conducted, other assets must be usefully deployed whenever possible. Machines may be used to cut undergrowth or process the ground in other parts of the Task. When

the machine safety-distance makes this impossible, the machine may be used during meal breaks or rest periods as long as the required safety distances are enforced. Rest periods may be extended when this leads to more efficient overall production.

When deciding how to use a machine, the procedure(s) that will be conducted after the machine will influence the decision over how it is used. For example, when BAC or BACS will be used afterwards, the ground surface should not be disturbed but the undergrowth must be removed. When MDD are used, the ground may be processed as long as time is allowed to pass between the ground processing and the use of the MDD.

Assets should not be kept at the Task any longer than necessary. When there is no further work for them, the Task Supervisor should notify the Programme Manager and ask for them to be assigned to another Task.

1.2.6 Step 6

While the High Threat areas are being processed, it may become obvious that some parts of the hazardous area that had been classed as Low Risk or No Known Risk are too close to the mines that have been discovered for them to continue to be classed in that way. For example, land within a 25 metre radius of a discovered mine will automatically become a High Threat area, so must be fully Cleared using manual or MDD processes. It is likely that only a proportion of the High Threat area will be subjected to full Clearance, but the perimeter of the High Threat area may need to be adjusted. In exceptional circumstances, it may even be necessary to extend the perimeter of the entire SHA/CHA.

The criteria for releasing land by:

1. Percentage clearance (using manual or MDD procedures),
2. BAC,
3. BACS, and
4. Mechanical processing,

are all listed in Chapter 3 and must be applied when revising the Task Release Plan.

As work progresses, unforeseen problems will be encountered. Some work may be slower than anticipated or new features of the Task may be discovered. The Task Release Plan must always be adjusted to make maximum use of the assets available and complete the Task as efficiently as possible.

2. Appropriate Task site marking

The marking for manual, mechanical and MDD assets are described in Chapter 4 of these SOPs. Elements of site layout, marking and control will vary according to the assets deployed at any one time. Task marking and preparation for each asset must be conducted in advance of work starting inside the SHA/CHA.

From the available assets, the Task Supervisor must select the most appropriate for the Task and formally ask the Programme Manager to make them available for the estimated time they will be needed.

The following general points must be taken into consideration:

1. Ground processing machines may be moved from Task to Task as required;
2. Some machines are multi-purpose and can process ground and move obstructions or clear ditches;
3. While some machines may survive an AT mine detonation without severe damage. others cannot;

4. When considering the use of MDD, examples of all the mines and ordnance expected must be available for MDD training;
5. MDD need to be trained close to the working area and considerable time may be spent preparing them before they can work; and
6. MDD that are already working at another Task in the area can sometimes be used for spot tasks without extra training.

2.1. Appropriate safe-area features

Safe-area features will need to meet the needs of machines or MDD that are to be deployed. The necessary safe-area features should be marked and ready before the machine or MDD Team is deployed. These features are described in Chapter 4 of these SOPs.

Examples are:

1. Machines will need safe-area access lanes to be wide enough for them to approach the base-line where they will work without damaging the safe-area marking;
2. Each machine will need appropriate machine Inspection Areas to be prepared close to every place where they will cross the base-line into the hazardous area;
3. Machines may need Observation/control points in suitable places: these may need to be protected;
4. MDDs will need a training area to be identified by the MDD Coordinator and then prepared in an area close to the SHA/CHA; and
5. MDDs will need separate Rest areas away from the Rest areas used by mechanical or MDD assets, and away from the Explosive store, Fuel store and Demolition area.

Other requirements are listed in Chapter 4 of these SOPs.

2.2. Hazardous areas prepared for MDD

When MDD assets are available, parts of the SHA/CHA should be prepared in advance of using MDD.

Examples are:

1. Ground processing or vegetation removal must be conducted in advance of the MDD (consult the MDD coordinator over how long will be necessary);
2. MDD may work in boxed areas required safe access on all sides;
3. MDD may work in areas that require safe access on two sides; and
4. MDD may be used to search obstructions at the Task and safe access should be prepared.

In most cases MDD can prepare their own safe-access, but when waiting for MDD to arrive and complete their on-site training, time can be saved by preparing access routes manually.

2.3. Hazardous areas prepared for machines

It can be efficient and safe for machines to enter the SHA/CHA at any point on the perimeter that gives easy access to the place where they will work. When machines will enter the hazardous area through the perimeter and not from the start-line used by other assets, permanent perimeter-marking should not be placed in that area until the machine access is no longer needed. This is because the machines will process the ground as they enter the hazardous area and permanent marking may be destroyed or damaged. Temporary marking should be placed in areas where the machines will cross the perimeter. The perimeter at that place then becomes another start-line and should be recorded as this on the Task map.

3. Using the available assets

When a range of assets are available, the Task Supervisor should not automatically try to use them all. The Task Supervisor should plan the Task and only request assets that can be kept busy for the entire time that they are at the Task.

When unexpected events mean that assets are standing idle, the staff involved should be found other useful and productive work.

3.1. Using Manual deminers

Manual deminers are the core of the demining resource because any ground that is actually Cleared, is Cleared by them. When MDD indicate, manual deminers investigate the indication. When machines detonate mines, manual deminers search the area where the detonation(s) occurred. If REST or vehicle mounted metal-detection systems are used, the manual deminer must investigate the indications. Manual deminers are essential at every Clearance Task.

Manual deminers can Clear any Task on their own – but their ability to Reduce land is limited to Percentage Clearance and this can be very slow without the assistance of mechanical or MDD assets. Percentage Clearance is unreliable in areas with randomly positions hazards, so must not be relied on for Reducing land.

Manual demining Sections or Platoons are deployed for the following tasks:

1. Technical Survey, making breaches into the SHA/CHA using metal-detector or excavation procedures;
2. Area search, using metal-detector or excavation procedures;
3. Reduction by Percentage Clearance, often following up mechanical processing;
4. Spot tasks, investigating MDD signals or signals from a mechanical detection system; and
5. BAC and BACS conducted in areas with no mines or movement sensitive ERW.

The manual deminer is part of a Section under a Section Leader. That Section should, whenever possible, be deployed together as a Team.

The Task Supervisor must assess the size of the Task, determine the working-distance required, and decide how many manual deminers can be kept busy either working in Clearance lanes or in support of machines and MDD.

3.2. Using MDD

MDD Teams are deployed to assist manual demining by speeding up the detection process and avoiding the need to dig up every harmless piece of metal.

The Task Supervisor should consider the features at the Task and decide whether MDD can be usefully deployed. The MDD Coordinator will advise how long it will take to prepare the MDD for the Task. If the hazardous area has heavy vegetation and no machines are available to clear it, the use of MDD may be limited.

When the conditions are right, MDD can be used to:

1. Make rapid breaches through Low Threat areas into High Threat areas;
2. Conduct rapid area search through areas where there are no, or few, explosive devices;
3. Area search over wide areas where there may be isolated devices;
4. Conduct internal Quality Control over areas first searched with other methods; and
5. For the rapid search of wide areas after machines have prepared the ground.

MDD must be withdrawn as soon as a mine is located and not redeployed in that immediate area until there is confidence that any concentration or cluster of explosive devices has been passed.

MDD can be used to cut breaches and to search wide areas using the deployment patterns described in Chapter 8.

MDD can only be used with the agreement of the MDD coordinator who controls their training and knows what they have been trained to do. The MDD Coordinator should conduct training for all predictable tasks.

3.2.1 Using MDD for Reduction

It is not possible to plan to use MDD for area Reduction until Clearance at the Task has begun. But if MDD are at the Task, using them should be considered when the criteria for Reduction by percentage Clearance (described in Chapter 3, Part 2.2.1) are met. Percentage Clearance must not be relied on in any area where randomly placed hazards are anticipated.

As long as there is no undergrowth, MDD can be used to search 20% of Low Threat Areas in a grid pattern that Clears at least 4 metres in every 20 metre square of the area to be released.

3.2.2 Using MDD to search roads and linear Tasks

The Task Supervisor can plan to use MDD on roads and linear Tasks such as proposed cross-country routes for pipelines, railways, roads or cables in the following ways:

1. Searching a defined width in a mapped line over the land, after vegetation has been cut using a suitable machine;
2. Searching sections that have been identified as mined using REST or mechanised detection systems;
3. Searching a road that has been prepared by a machine, and so allow other assets to safely access overgrown verges; and
4. Searching verges after mechanical preparation or in swathes after the undergrowth has been manually removed with Strimmers

3.2.3 Using MDD to search buildings

The Task Supervisor can plan to use MDD to search buildings when the following conditions are met:

1. A safe-area around the building has been cleared (using manual or MDD procedures);
2. A route into the building has been Cleared using manual deminers. The route into the building should extend along any corridors and give access to all internal doorways;
3. The building has been visually inspected and there is no reason to believe that there may be tripwires or booby-traps;
4. There is no vegetation inside the building. When areas have vegetation, manual deminers should breach to the undergrowth and remove it before the MDD are deployed; and
5. The MDD Coordinator is content that the dogs are suitably trained and prepared for the search.

3.2.4 Using MDD to verify “No Known Threat” areas

This procedure is not Clearance and the Task Supervisor should only use it in areas where the Criteria for Releasing Land by Area Verification listed in Chapter 3, Part 2.3 apply.

At the discretion of the MDD Co-ordinator, areas with No Known Threat may be searched using one MDD Set on a long- or a short-leash working out from a marked base-line. The MDD Team Leader must determine the most appropriate angle of approach to ensure full ground coverage.

3.2.5 Using MDD to search rock-piles and walls

When there is a need to search piles of rock or around fallen walls, mines or ERW may be deeply hidden and MDD can be the most effective way to rapidly confirm that the area is safe and need not be excavated.

The Task Supervisor should ask the MDD Coordinator's opinion on the suitability of the search for MDD. When the MDD have not been trained to work in similar conditions, they should not be used.

A safe-lane must be cleared all the way around the obstruction using MDD or manual demining procedures. This will allow the MDD Coordinator to study the search area in detail and decide the best search approach to use.

3.2.6 Using MDDs in trenches and ditches

Trenches and ditches may be shallow or deep. Some have sides that have collapsed and have buried mines more deeply than they were placed. They may be overgrown and have collected windblown rubbish or been used as a rubbish-pit.

Trenches and ditches can also act as a natural collection point for any devices that may have been washed out of the mined area. They may also have been a convenient place for local people to put mines and ERW that they have discovered and removed.

The Task Supervisor should ask the MDD Coordinator's advice before issuing a Tasking order for the area to be searched by MDD. Generally, MDD may be used in trenches and ditches when there is not too much undergrowth and rubbish but the MDD Coordinator must decide on a case-by-case basis.

Mechanical excavation or ground processing may be preferred, and must be preferred when there is heavy undergrowth or a lot of rubbish in the area.

When a trench or ditch is wide and clear of obstructions, the MDDs may be used to search using first long-leash, then short-leash search-patterns. When the ditch is narrow, it may be more appropriate to run two MDDs using the long-leash search-pattern. If the MDD Coordinator decides that it is necessary, access to the trench or ditch may be made every ten metres and the MDDs used to search in both directions.

If an MDD indicates in a ten metre part of the trench or ditch, that part must be cleared using manual processes, or marked as hazardous and excavated using a machine.

3.2.7 Using MDD after mechanical ground preparation

The Task Supervisor can plan to use MDD to search breaches or wide areas after the ground has been processed by a machine.

The MDD can be used in any approved search-approach, but will usually use an L-shape or a Start-line approach in order to minimise the preparation of breaches that is required.

If any detonations have occurred during mechanical preparation, at least five days must be allowed to pass before deploying MDD. This time can be used for manual deminers to prepare breaches or boxes when necessary. The five day delay may be extended by the MDD Coordinator depending on the weather and ground conditions.

During the MDD search, if there are three or more indications in a ten metre square area, the MDD Team Leader should decide whether it is possible that the MDD indications may be unreliable because of too many signals. If this is the case, the MDDs must be withdrawn and the area searched using another procedure.

3.2.8 Using MDD for Internal Quality Control (QC)

The Task Supervisor can decide to use MDD to make Internal Quality Control (QC) checks in areas that have already been Cleared using manual procedures, Reduced or Cancelled. These areas are considered Clear and safe to walk on.

Internal QC checks may be made by one or two MDD. Long- or short-leash search patterns may be used at the discretion of the MDD Coordinator.

Internal QC may be conducted using the base-line approach, advancing in ten metre increments as the MDD complete each area.

When appropriate, internal QC can be conducted using the L-shape or Box search approaches. The manual deminers attached to the MDD Team can walk over the area and prepare boxes or L-shapes by marking them on the ground. This allows MDD to be deployed when the wind direction is inconvenient or variable.

MDD should not be used to conduct internal QC in areas where there have been detonations or in areas where there are likely to be large numbers of mine fragments following mechanical ground processing.

When an MDD indicates during an internal QC check, the indication must be investigated using the procedure described in Chapter 6, Part 3.2.2 of these SOPs. If a mine is discovered, a critical failure has occurred and the Task Supervisor must adjust the Task Release Plan so that an area extending at least twenty five metre from the mine is Cleared using MDD or manual Clearance processes. The method that was used to Clear the area where the mine was found must also be reviewed and a reason for the error found.

3.3. Where MDD Teams cannot be used

When planning to use MDD, the Task Supervisor must remember that MDD cannot be used in the following situations:

1. When there is high wind which makes the position of indications unreliable. Acceptable wind speeds vary according to training, dust levels and available angles of approach. The MDD Coordinator and MDD Team Leader must judge whether the wind is too high for reliable MDD deployment by using a weather station during both training and deployment.
2. During rain. This may be varied at the discretion of the MDD coordinator, making reference to the MDD Sets' familiarity with the prevailing conditions.
3. When the temperature is too low or too high. The acceptable temperatures must be determined by the MDD coordinator, making reference to the MDD Sets' familiarity with the prevailing conditions.
4. In areas where the MDD paws may be injured or where their muzzles may become irritated. Such areas include places where there is thorny or sharp undergrowth.
5. Where the ground is contaminated with high levels of salt or other chemicals.
6. Where there is undergrowth that prevents the controlled movement of the dog over the area to be searched.
7. In areas with a high density of mines or explosive contamination.
8. In areas with an insect infestation that is known to disturb the concentration of the MDD, or of the Handler.
9. In areas where intact tripwires are anticipated. Effective mechanical preparation of the ground means that any remaining devices will not have intact tripwires.
10. Within five metres of the site of an explosive detonation unless a suitable time has elapsed. The time required must be determined by the MDD Coordinator with reference to experience gained in conditions similar to the specific SHA.

MDD may be used in the areas listed above when the restricting conditions have changed.

3.4. Using Mechanical demining assets

The Task Supervisor must be aware of the different abilities of the various machines, the way that they can be used, and their limitations.

The main uses are:

1. Protection (MPVs).
2. Observation platforms (MPVs).
3. Wide area ground-processing where AT mines are anticipated (MineWolf).
4. Wide area ground-processing where AP mines are anticipated (MV-4, MineWolf, Steel wheels/rollers, and Converted Excavator).
5. Verge processing where AT mines are anticipated (MineWolf).
6. Verge processing where AP mines are anticipated (MV-4, MineWolf, Steel wheels/rollers and Converted Excavator).
7. Ditch or trench processing (Converted Excavator).
8. Cutting trees (Converted Excavator).
9. Vegetation removal (MV-4, MineWolf [with flail], and Converted Excavator).
10. Removing obstructions (Converted Excavator).
11. Sifting soil (Converted Excavator).
12. Raking soil (Converted Excavator).
13. Detection of metal cased mines and ERW (MPV with VMMD).
14. Verification (MV-4, MineWolf, Steel wheels/rollers, Converted Excavator).

The Task Supervisor should consider the varied conditions in the Task area and the possible areas where machines could be used. When he/she has listed the relevant uses and the areas to be processed, the Task Supervisor should work out how to integrate the machine's work with the other procedures to be used at the Task. When that has been done, he/she should estimate the time it will take for the machine to conduct the work.

Depending on the machine, various maintenance parts, fuel, hydraulic fluids, and replacement parts for ground-engaging tools will be required. With assistance from the Mechanical team Leader, the Task Supervisor must estimate the requirements for their work at the Task and ensure that the Programme office is able to supply the need.

When planning the transport of any machine on a trailer, the Task Supervisor must ensure that the route is able to support the weight, height and width of the machine and transport vehicle. Bridge strengths, road width and height limitations must be considered. The machine can be off-loaded and driven past some restrictions, but not all.

3.4.1 Limitations on the use of machines

When preparing Task orders for machines, the Task Supervisor should remember that the safety-distance required between deminers and the machine is greater than the working-distance between manual deminers.

The Task Supervisor should also remember the following:

1. Ground processing machines should not be used in areas with wire, cables or fences;
2. Remotely controlled machines should not be used in areas with hidden ditches, wells, large rocks or hidden obstructions;

3. Some machines can survive an AT mine blast under the ground-processing tool, but the tool will probably be damaged by it; and
4. No machine can withstand an AT mine blast under its wheels or tracks without sustaining significant damage. The way the machine is deployed must ensure that its wheels or tracks only pass over suitably processed ground.

3.4.2 Following mechanical preparation on roads

After the machine has worked, the Task Supervisor can decide to Reduce the area when the criteria for Reduction given in Chapter 3 are met.

If evidence of mines of ERW is found, the Task Release Plan should be reviewed. If single mines or parts of a single mine are found, an area with a radius of at least 25 metres around the mine should be Cleared. If there is evidence that other mines may be in the area, a length of road extending 50 metres in both directions from the evidence of a mine should be Cleared. If single items of UXO are found, the Task Supervisor must review the likelihood of other UXO being on the road. If it is likely that there is other UXO in the area, BACS, manual demining or MDD should be used to search a length of road extending 50 metres in both directions.

3.5. EOD Spot Task Team deployment

The Platoon structure does not include a dedicated EOD Spot Task Team because the number of Spot Tasks does not warrant it. Every Platoon can conduct EOD Spot Tasks using a temporary team comprising:

1. an EOD Operative;
2. the Platoon Supervisor or Platoon Commander (EOD Level 3 qualified);
3. deminers;
4. Paramedic; and
5. driver(s).

During the Task Assessment the liaison with the local community and local authorities should have made it clear whether there is considerable EOD contamination in the area.

If there is a need, but the number of Spot Tasks reported is low, the Task Supervisor must plan the integrated deployment of assets at the Task so that an EOD Spot Task team can be formed at convenient times to conduct necessary EOD tasks.

If a need for a high number of Spot Tasks is reported, the Task Supervisor should plan to form a temporary EOD Spot Task Team for a period during the Task when all Spot Tasks in the surrounding areas can be conducted.

4. Combining assets

Managing a Task in a way that keeps everyone busy and achieves the end result in the shortest possible time is complicated. When the logistical requirements of Mechanical and MDD assets are added to those of manual deminers, management cannot be effectively achieved unless all Platoon Commanders, Platoon Supervisors, Mechanical Team Leaders and MDD Team Leaders work together as a Team under the direction of the Task Supervisor. Good support from the Programme Manager's office is also essential.

4.1. Combining Manual demining with Mechanical demining

Mechanical demining does not Clear any ground, even if it does detonate some devices. When an area has No Known Threat and it is desirable to use a Verification process in the area, a machine that processes the ground in some way may be used over the area without any follow-up by

manual demining or MDD procedures. In every other case, some manual demining follow-up and support is required.

Whenever a machine that processes the ground is used, machine safety-distances must be enforced. These are the distances between machines and staff other than the Operator/driver.

Generally, whenever a machine is to be used in the SHA/CHA, the Task Supervisor should assign a Manual Demining Section (or part of a Section) to work under the direction of the Mechanical Team Leader and in support of the Mechanical Team.

The deminers' duties as part of a Mechanical Team will include:

1. moving and replacing marking to allow the machine access;
2. inspecting the machine after it leaves the SHA/CHA;
3. breaching into the SHA/CHA to gain access to visible devices;
4. breaching into the SHA/CHA to make safe Observation points; and
5. assisting in any vehicle recovery of CASEVAC that may be required.

The number of deminers assigned to a Mechanical Team will vary according to the machine and the Task. The Task Supervisor should ensure that the minimum number is assigned, and be ready to increase that number when required.

4.2. Combining Manual demining with MDD

MDD locate areas with explosive contamination but may not reliably pinpoint individual items. When a MDD indicates, the indication must be investigated by manual deminers using approved manual demining procedures.

When MDD are deployed, they should always have a manual demining Section or part of a Section assigned to work with them under the command of the MDD Team Leader.

The deminers' duties as part of an MDD Team will include:

1. Assisting with area marking as directed;
2. Investigating MDD indications as described in Chapter 6, Part 3.2.2 of these SOPs.
3. Removing vegetation in advance of MDD deployment; and
4. Helping to prepare and maintain the MDD Test area.

Deminers assigned to an MDD Team must understand the need to avoid contact with the MDDs and to avoid all possibility of contamination with explosive residue. Generally, no one who handles explosive, mines or ERW should approach the dogs or handle the marking system, and equipment used. Generally, no deminer who is afraid of dogs should be assigned as MDD support.

The number of deminers assigned to a MDD Team will vary according to the number of MDDs and the number of indications that need to be investigated. The Task Supervisor should liaise with the MDD Coordinator and MDD Team Leader to ensure that the minimum number is assigned, and be ready to increase that number immediately when required.

4.3. Combining Manual demining, Mechanical demining and MDD

When combining mechanical, MDD and manual demining, machine safety-distances must be enforced.

The machines must not work closely enough to the MDD for their noise to disturb the MDD. The noise of their engine is often augmented by the noise of their ground processing tool and the cutting of vegetation. These can be distracting even at a distance.

The manual deminers must not work closely enough to the MDD for their activity to distract the MDD.

Because MDD do not work well in hot conditions, they are often used at the start of the day and have finished work by mid-day. The Task Supervisor should consider varying the start-time for the assets so that the machines start work after the MDD have finished and work longer into the afternoon.

The Task Supervisor has the authority to vary start and finish times and the duration of working shifts as long as the staff do not have to work a greater total of hours than is required in their contracts.

5. Integrated tasks

These SOPS cover a range of procedures that can be used in varied combinations to conduct any demining task.

Typical tasks are:

1. Conventional SHA/CHA (polygon perimeters);
2. Linear Tasks, roads and railways;
3. Wide area survey; and
4. EOD Spot Tasks.

5.1. Conventional SHA/CHA

Conventional SHA/CHA is an area, usually irregularly shaped, where there is believed to be mine or ERW contamination. Task Assessment defines areas within the SHA/CHA that are most likely to be mined and defines them as High Threat Areas. The remaining areas will be defined as Low Threat Areas or No Known Threat areas. Demining procedures approved for use in the different areas vary and are detailed in Chapter 3.

Conventional SHA/CHA are usually of limited size and can often be demined using one or two Platoons assisted by mechanical and/or MDD assets.

5.2. Linear Tasks, roads and railways

Linear Tasks follow a road, railway or a line on a map where a new pipeline, cable, road or railway will be constructed.

Linear Tasks may have areas along the route where mines are known to be or are likely to have been placed. These parts of the Task must be treated as High Threat areas. Other areas may be Low Threat areas (usually adjacent to High Threat areas) and No Known Threat areas.

The procedures appropriate to use in the various threat assessments are listed in Chapter 3.

When there is no information about which areas may be High Threat Areas, the use of MDD or REST systems can be efficient ways of rapidly locating High threat areas and so reduce the resources wasted working in areas where there is No Known Threat. The use of VMMDs can also be effective at identifying High Threat areas as long as the threat is detectable.

When planning a Linear Task, the route should be divided into Parts and the Task split into a number of shorter Tasks each of which can be completed in a set period of time, normally one month. This allows parts of the Task to be rapidly released, and makes it easier to plan the resources required based on experience as the work progresses. It allows separate parts of the Task to be conducted by different Task Supervisors simultaneously.

When a single Task is divided into two or more parts, a single Overall Task Supervisor should be appointed by the Programme Manager to oversee the co-ordination of the entire Task.

The Programme Manager should coordinate with the Client to ensure that the work is conducted in a sequence that is of most advantage to the end-user or Client.

5.3. Wide area survey

Wide area survey is conducted when the limits of a SHA/CHA are undefined and a safe perimeter is not known.

Task Assessment survey techniques should be used to try to determine areas that are known to be safe and areas where there is a High Threat. When this is unsuccessful or if the area must be processed anyway, the use of MDD and/or the REST system can be the most efficient way of rapidly determining safe-areas and establishing approximate perimeters around High Threat areas. Ground processing machines can be used for the same purpose, with manual or MDD follow up.

If more than one large High Threat area is identified, the Task may then be split into smaller Tasks and resources allocated as for Conventional SHA/CHA. The same Platoon or Platoons may move from Task to Task within the area of the original Wide area survey. The advantages of breaking the area into smaller Tasks include:

1. ease of resource planning and management;
2. allowing for varied resources needed in separate High Threat areas;
3. allowing success to be measured step by step; and
4. allowing parts of the area to be Released as work progresses.

5.4. EOD Spot Tasks

EOD Spot Tasks are conducted by manual deminers and EOD Operatives supported by a Paramedic and ambulance. They are generally conducted as sub-Tasks by a Platoon that is engaged on a larger Task in the area. Spot Tasks differ from other Tasks because they do not require a separate Task Supervisor. The Spot Task Supervisor is the Task Supervisor for the Task from which the EOD Spot Task team has been drawn.

When a large number of Spot Tasks must be conducted in a working area, a Spot Task Team may be formed for a period of time at the discretion of the Programme Manager. When this occurs, a Platoon Supervisor must serve as the Spot Task Supervisor for all of the Tasks that are conducted.

MDD or machines may be used for Spot Tasks but normally only when the size of the Task warrants their deployment and when they are already in use at the main Task from which the Spot Task Team is seconded. The machines and MDD can then be temporarily seconded to the Spot Task.

6. Integrated QA/QC

The purpose of Quality Control and Quality Assurance is to confirm that the management practices and operational procedures for demining are appropriate, and will achieve the Release of land in a safe, effective and efficient manner.

Efficient marking of the areas processed in different ways allows QA and QC to be conducted appropriately, so the marking must always be left until QC has been completed.

For example, areas searched by MDD cannot be subjected to QC using a metal-detector, but MDD indications that were then investigated by deminers using a metal-detector procedure should be subjected to QC using a metal-detector. Signal indication marking should be left to facilitate this and may be removed after QC.

Checking the depth of ground processing can be combined with QA of other demining procedures used after the machine. When part of the area has been searched manually or with MDD, the breaches across the mechanically processed area can be used for the depth check as long as the ground in the breach has not been greatly compressed by human traffic.

When a Country Programme appoints an internal QA/QC team, that Team will liaise with the Task Supervisor and Programme Manager with a view to increasing safety and efficiency. The internal QA/QC Team will also be responsible for monitoring the Task Documentation and ensuring that the Task release Plan, Tasking Orders, maps and NMAA documentation are all up to date and that they accurately record the work on the ground.

Internal QA/QC forms for the various demining assets are given in Chapter 12 of these SOPs.