

Guidebook on Environmental Considerations during Military Operations

A Joint United States – Republic of South Africa
Environmental Security Working Group Project



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PREFACE

The relationship between the United States of America (US) and the Republic of South Africa (RSA), which has taken shape under the US – RSA Defence Committee (DEFCOM), is a critical one to both countries. The co-operative relationship that we have forged in recent years has strengthened our mutual understanding and serves as a model for other nations to jointly address common interests and identify solutions to problems.

Over several decades, we have repeatedly witnessed confirmation of the basic premise that bilateral and multilateral co-operation on topics of mutual concern and interest reap great rewards, including saving time, money and resources as well as learning from the past experiences of others. This has proven to be especially true in the area of international defence-related environmental co-operation. The environmental security initiatives between the US Department of Defense and the RSA Department of Defence have already created a number of specific products including other guidebooks and an international conference on military integrated environmental management. A list of other completed guidebooks is provided at the end of this document.

There is global recognition that world dynamics are creating new environmental challenges and requirements for military organisations worldwide. At the same time, military mission readiness must not be impaired; defence organisations must be able to train their troops and sustain their installations in an environmentally sound manner.

This guidebook is intended to assist the international military community in identifying procedures to adequately assess the impacts of its activities to meet its environmental responsibility and accountability to ensure a sustainable environment. Environmental Considerations during Military Operations (ECOps) are to be implemented in all activities taking place during operations, integrated with project planning as well as day-to-day operations. This guidebook is written in a manner that can be utilised by any defence department/organisation and will assist them in achieving their overall environmental goals and objectives.

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EXECUTIVE SUMMARY

The focus on environmental issues is global in nature and the integration of Environmental Considerations during Military Operations (ECOps) is a growing challenge world-wide. The United States of America (US) and Republic of South Africa (RSA) have forged a co-operative relationship on defence-related issues of mutual concern. Within the US-RSA Defence Committee (DEFCOM), an Environmental Security Working Group (ESWG) has been in place since 1997. Under the ESWG, bilateral initiatives are identified, with joint US-RSA teams established to develop and complete specific projects. This particular guidebook was identified as a topic beneficial to contemporary integrated environmental management processes within the military.

The purpose of this guidebook is to assist the international military community in identifying procedures to adequately assess the impacts of its activities so that it can meet its environmental responsibility and accountability in ensuring a sustainable environment. Commanders, service members and civilians within the various military and defence organisations are ultimately responsible for the lands and associated environment entrusted to their care. **Unless military organisations establish and implement procedures to adequately minimise the impacts of their activities, they will not be able to protect the force or achieve their environmental protection and stewardship objectives.** The implementation of ECOps is critical to ensuring that any adverse effects of their activities on the environment are avoided or mitigated as necessary. **This guidebook is designed to be general in nature, so that military organisations will have a basic understanding of the importance of and need to establish a process for integration of ECOps from the earliest stage of planning any military operation and ensure ECOps become an integral part of the decision-making process.**

This document provides information that can be used by military organisations in identifying various levels of planning and determining the entry level for ECOps in its specific situation. It contains guidance on general planning processes for military operations, typical functional areas and activities associated with military operations and identifies mitigation measures that may be necessary to offset potential negative impacts.

All military organisations face environmental challenges as part of their day-to-day operations. The concepts of interoperability among different nations and principles associated with proper environmental stewardship are relevant to increased environmental stewardship on a global scale.

This guidebook was developed via a joint US-RSA project team, comprised of subject matter experts in both environmental management and training development from both countries. A list of team members and a glossary of terms and acronyms used are provided at the end of the guidebook.

BACKGROUND

The United States of America (US) and Republic of South Africa (RSA) have forged a co-operative relationship on defence-related issues of mutual concern under the bilateral Defence Committee (DEFCOM). The Environmental Security Working Group (ESWG), which was established in December 1997 to address strategic environmental considerations, has been incorporated into the DEFCOM structure. The ESWG is co-chaired by the RSA and US DOD senior environmental leadership executives and convenes annually. Bilateral project initiatives are identified, and joint project teams are established based upon the required subject matter expertise, with project teams convening in either of the two countries to develop and complete their efforts. Both countries identified this particular “Guidebook” effort on Environmental Considerations during Military Operations (ECOps) as a topic beneficial to contemporary integrated environmental management in the military.

Purpose of This Guidebook

The purpose of this guidebook is to identify and describe processes for integrating environmental considerations into the planning and implementation process for Peace Support Operations (PSO). Appendices to this guidebook provide formats and guidance for input into Orders Appreciation and Production Process, as well as standard reporting formats for use during the life cycle of the mission.



Military operations, by their very nature, can have major impacts on the environment.

Intended Users of This Guidebook

This guidebook has been developed and written with an extensive target audience in mind. It is intended for use by the broader international military community and civilian personnel at any level that may have responsibility for operational planning and those persons responsible for planning and conducting military operations and activities (i.e., proponents). It is designed to assist them in identifying appropriate levels of entry in the planning process and provides examples of typical critical areas where implementation of ECOps will be required. It is important to remember the military mission perspective, as well as the need to address and improve environmental stewardship. ECOps can thus be used as a tool to support informed decision-making during the planning process.

While this document is designed for use by the broader international military community, it is not meant to supersede or replace policies and processes developed by individual countries. Additionally, the global tendency toward joint military operations and interoperability becomes a “driver,” that is, a motivating factor toward ensuring that environmental considerations are an integral part of planning and decision-making. **This guidebook will assist commanders in complying with environmental and force protection requirements during all phases of an exercise or operation, both legally and financially.** An added bonus of this guidebook is that implementation of these guidelines will serve as background information in communication efforts.

This document is intended to provide general information and ideas for the planning and implementation of ECOps. It can also be used as a guide or “tool” to assist organisations, according to their own situations, in establishing specific policy and procedures to integrate ECOps in the planning processes of military operations and activities.

OVERVIEW OF ENVIRONMENTAL CONSIDERATIONS

What Are Environmental Considerations?

Environmental Considerations can be regarded as any measure or process put in place to ensure avoiding or minimising adverse impacts that can potentially occur during military operations. The aim of environmental considerations is to enable pre-active planning instead of continuous intervention to mitigate impacts during the operation, thereby ensuring the future environmental viability of the host nation. It also allows for the mitigation and/or avoidance of pre-existing environmental conditions.

A broad spectrum of disciplines (e.g., operations, logistics, intelligence, environmental managers, health workers) should co-operate in identifying potential impacts during the planning process. These identified impacts include:

- Environmental Risks

- Human Health and Safety
- Natural Resources
- Cultural Resources
- Legal Liability

The impact on the geopolitical situation should also be determined in order to integrate environmental considerations in terms of:

- Environmental resources as a cause of conflict, e.g., water resources, agriculture.
- Environmental threats, e.g., industrial accidents.
- National strategic assets and security interests where implementation of considerations should be in line with the host nation's ethos in terms of local environmental protection.

Effective Implementation of ECOps

A pre-requisite to assume all environmental considerations are in place to enable proper execution will include but is not limited to the following:

- **Entrenchment of Military Integrated Environmental Management (MIEM) principles in training programs.** Because participants need to train as they fight, it is important to ensure availability of skills and trained personnel in terms of environmental technical equipment to ensure combat readiness, mission readiness, specific mission readiness and handling of contingencies.
- **Environmental Management Capability.** Successful integration of ECOps is directly related to the organisational structure available for the management thereof. The ideal situation would be to have an approved structure in terms of Higher HQ Specialist Environmental Support Capability, Deployable Capability (dedicated Environmental Manager) and an Organic/Attached Capability (e.g., dually-assigned environmental representatives and engineering equipment).

LIFE CYCLE OF A MILITARY OPERATION

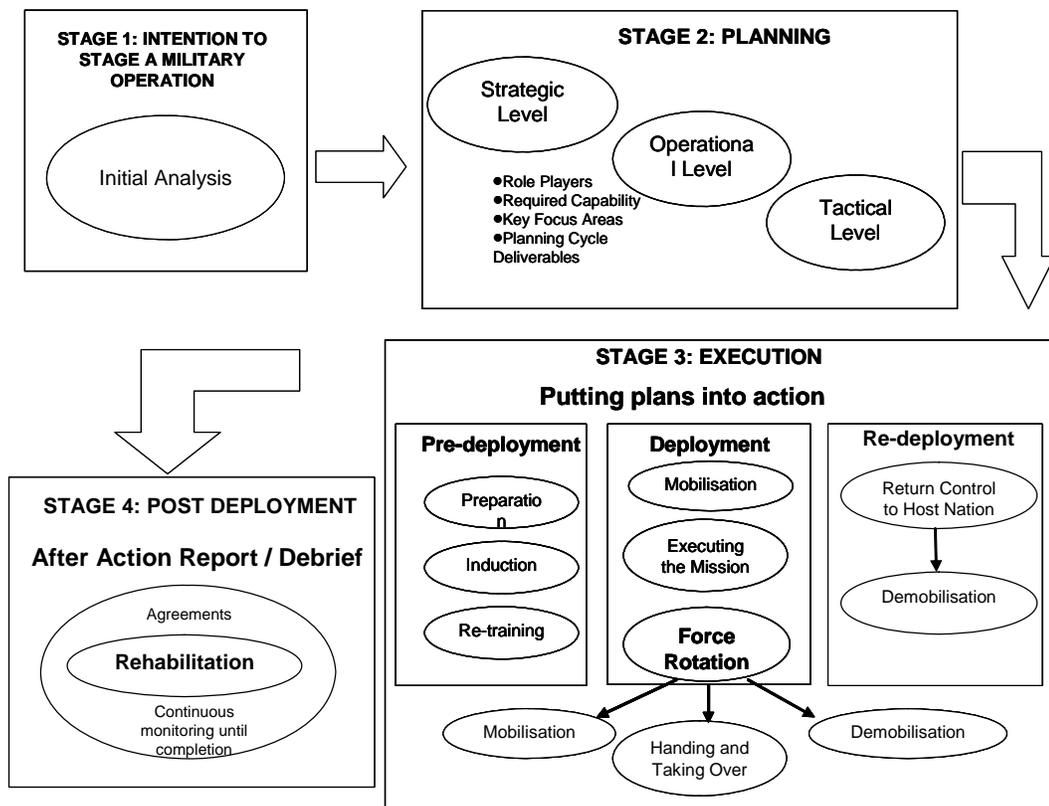
In any instance where an objective is set and needs to be achieved, some type of process will precede it. The complete life cycle of any event/project/military operation will typically include various processes e.g., planning, execution, finalisation and aftermath to ensure a manageable life cycle that can be monitored towards achievement of the initial objective.

Any generic life cycle can be made applicable in the planning of military operations. This guidebook will focus on a life cycle categorised by four different stages: intention to stage a military operation, planning, execution and post deployment.

The life cycle is driven by logically sequential processes and events but not necessarily sequential in terms of timeframe. All groupings follow the same cycle in sequence but some groupings commence before the rest—advance parties, base construction, etc. (as illustrated in Figure 1).

The mission may change due to a variety of reasons (changes in mandating authority, posture of the operation, etc.), all of which require reassessment of the existing plan.

Figure 1. Life Cycle of a Military Operation



Stage 1: Intention to Stage a Military Operation

Once a decision is made on the political level that a military operation (e.g., Peace Support Operation (PSO)) may be staged, an initial analysis is performed and submissions to the government are prepared indicating military capabilities.

Initial Analysis

The aim of the initial analysis is to determine what is required for a successful mission and give input to higher levels of authority to ensure that an informed decision will be made on the deployment ability within the required timeframe.

The broad national environmental policy statement should be taken into consideration throughout the initial analysis, which should also include all environmental aspects that can have an influence on the decision-making process. Aspects to be analysed include, but are not limited to:

- **Legal framework.** International Treaties/protocols, etc. must be considered for compliance as well as the different legal compliance requirements in terms of the host nation, mandating authority (e.g., UN, AU, SADC), and home country.
- **Critical environmental aspects that can constrain the effective achievement of the mission.** Different climate and terrain than deploying forces are familiar with can have a direct impact on the efficiency of equipment and health of personnel. The utilisation of terrain in planned movements and base selection can furthermore be affected by the existence of sensitive natural and cultural resources.
- **Critical environmental aspects that could increase the financial/force risks.** In order to deal with unfamiliar climatic and terrain conditions as well as inadequate infrastructure, certain measures might have to be implemented increasing the capability requirement e.g., dealing with exotic diseases, establishment of contracts for waste management, water run-off/drainage, base closure and rehabilitation, day-to-day compliance with legislation.

All aspects analysed contribute to the final submissions according to which the highest political level makes a decision about the extent of participation. The decision to participate in the operation is formally made known by the government, after which Memorandums of Understanding (MOUs) and Status of Forces Agreements (SOFAs) may be compiled.

Environmental inputs should be included in MOUs and SOFAs ensuring a proper foundation from which the planning process (Stage 2 of the Life Cycle of a Military Operation) can commence.

Stage 2: Planning

It is of the utmost importance that environmental considerations be integrated in planning at all levels to ensure legal conformance and that force protection is planned for and assessed from the onset. To establish and continue with such an integrated process, suitably experienced environmental personnel should form part of planning groups and meetings so as to ensure inputs and guidelines are obtained and included at the required level of planning. Environmental intelligence should be updated continuously with new information from internal capabilities/capacity as well as by utilising other sources e.g., other government agencies and the host nation's local community and NGOs.

All planning requirements, at whichever level, result in an appreciation process with guidelines to the next level with different outputs. Different levels of planning discussed by this guidebook will include Strategic, Operational and Tactical Planning.

Strategic Planning

Strategic Planning is achieved by the lead agency establishing an integrated process, which includes strategic planners of other relevant services/military and government departments (land, sea, air).

The main purpose of planning on this level is to give broad guidelines for Operational-level Planning in terms of personnel/organisation, responsibilities and functional guidelines with regards to the mission and situation.

Key Environmental Focus Areas

Environmental situation analysis should be used in order to derive inputs for broad ECOps guidelines in terms of the following, but not limited to:

- **Legal Review.** The complete environmental legal framework must be reviewed in terms of the specific situation, e.g., applicable conventions and treaties.
- **Policy Review.** Guidelines should be compiled for those issues not specifically provided for by existing policies on decisions made for the mission and its situation.
- **Environmental Intelligence.** Liaison with the embassy of the host nation and its relevant departments/NGOs may take place on a strategic level to determine a broad picture of the country in terms of critical unique resources, environmental issues in-country, infrastructure that might affect one's own forces and available supporting infrastructure and services (e.g., accommodation, disposal sites and sewerage plants). Intelligence may come from a variety of standard and non-standard sources.

Operational Planning

Operational Planning should be regarded as the crucial level for integrating ECOps because guidelines at the tactical level are extremely detailed in terms of required capabilities and equipment working within an approved budget. Executional control lies with this operational level where monitoring of ECOps integration can be achieved successfully.

Planning guidelines integrated with environmental considerations include but are not limited to:

- **Availability and serviceability of equipment.** Equipment should be serviceable so as to avoid unnecessary environmental maintenance. For example, fuel spillage during replenishment could occur due to damages to pipelines; absorbents must then be available to handle the spill. In addition, adequate specialist/environmental technical equipment should be available to handle such circumstances if and when they arise.
- **Availability of training for operators of equipment.** Competencies must be confirmed and re-training scheduled prior to deployment ensuring not only that military equipment is readied so as to avoid extra maintenance but also that application of environmental technical equipment is used. The operator of environmental technical equipment should also be declared “mission ready.”
- **Environmental Reporting Procedures.** Channels for reporting environmental contingencies must be established and confirmed.
- **Liaison and co-ordination.** Commanders must receive the appropriate authorizations to have clear responsibilities and authority for networking with internal sources, external bodies and contractors.
- **Environmental Management Plan (EMP).** The EMP should include processes, roles, functions, responsibilities as well as monitoring, assessment and rehabilitation over the time frame of the operation in terms of pollution, waste, HAZMAT, use of resources, protection of environmental (natural and cultural) resources, as well as handing and taking over procedures during rotation of forces. This must also be integrated with the Force Rotation Plan. Plans are to be reviewed and additional measures taken to address specific situations not already effectively provided for in the existing plans.

Key Environmental Focus Areas

In order to derive valuable inputs on ECOps for inclusion in functional guidelines and compile detailed EMPs, it is important that a knowledgeable environmental officer analyse the environmental situation received from the strategic level as applicable for the specific situation in terms of the following:

- **Environmental Baseline Survey (EBS).** A preliminary survey, scope or initial environmental review is required of all potential sites by utilising available Environmental Intelligence. A complete, detailed EBS is done when site selection has been finalised and before base construction commences. Refer to Appendix 1 for general EBS format guidance.
- **Legal Review.** The legal framework received in guidelines is analysed and those liabilities not applicable directly to the specific situation, site, or terrain are eliminated. Through this process it is possible to focus only on relevant liabilities and compliance thereby narrowing down the environmental implications that need to be addressed.
- **Environmental Risk Analysis.** Possible environmental impacts should be measured in terms of the legal, financial and force protection requirements. Environmental risks must be considered with and balanced against accidental and tactical risks.
- **Interaction with host nation and mandatory authority.** As much information as possible should be obtained and researched internally as well as with the host nations and mandatory authority during reconnaissance. Suitably experienced environmental personnel should preferably form part of the reconnaissance grouping to ensure all possible environmental considerations and liabilities are analysed. It is imperative to have broad knowledge of military functions and activities to enable effective identification of environmental impacts during site selection.
- **Equipment Tables.** It is important to ensure that environmental technical equipment is included in standard operational equipment tables (WET/PET) as well as to confirm that standard equipment is serviceable in order to avoid adverse environmental impacts e.g., pollution due to unserviceable equipment. Environmental technical equipment is essential for the correct handling of waste, HAZMAT and environmental resources protection.
- **Environmentally relevant training requirements.** Ensure environmental considerations are included in induction awareness material and refresher training modules for the application of environmental technical equipment.
- **Contingency plans.** All participants must know the response drills, such as for the handling of HAZMAT spills.

Environmental Protection Levels

The following table can be used by commanders and planners to develop the appropriate level of environmental protection. The level of environmental protection is dependent upon the length of time for the deployment and also on the nature of the mission. However, the long-term measures (found within the last column) should always be considered the goal, regardless of the duration or type of mission.

Table 1. Environmental Protection Levels

ENVIRONMENTAL PROTECTION LEVELS				
Area	Duration of Operation			
	Immediate	Short Term	Medium Term	Long Term
1 Field Sanitation				
a. Human Waste	Unit Field SOP	Slit trench	Chemical toilets or septic tanks	Sanitary system or link to existing infrastructure
2. Waste Management				
a1. Solid Waste - Combustible	Unit Field SOP	Incineration	Incineration and landfill	Recycling, landfill and Incineration
a2. Solid Waste - Non-combustible	Unit Field SOP	Back load	Back load and landfill	Recycling and landfill
a3. Solid Food Waste	Unit Field SOP	Incineration or landfill	Compost, incineration or landfill	Compost
b. Gray Water	Unit Field SOP	Effluent downstream from water sources	Primary treatment (collection basin, oxidation pond, wetland treatment)	Sanitary system
c. Medical waste	Incineration, Autoclave, Back load	Incineration, Autoclave, Back load	Incineration, Autoclave, Back load	Same as medium-term; also sanitary system disposal when approved
d. Hazardous waste	Unit collection; avoid water contamination	Field collection and consolidation	Collection points established; classify, label and back load or contractor disposal	Host nation procedures (contractor disposal)
3. Hazardous Materials	Unit Field SOP	Spill response, report water contamination	HAZMAT tracking, spill response, report spills	Spill prevention plans, response teams
4. Natural Resources Protection				
a. Water	Unit Field SOP	Due care	Erosion control measures, monitor surface water quality	No degradation of water quality due to erosion or effluent
b. Vegetation	Unit Field SOP	Due care in clearing for fields of fire/camouflage	Due care in clearing for fields of fire, camouflage, wildfire control procedures	Clearing requires environmental impact assessment process and wildfire prevention plans

Area	Duration of Operation			
	Immediate	Short Term	Medium Term	Long Term
c. Wetlands	Unit Field SOP	Due care in operations and logistics	Avoid operations which degrade wetlands	Damage to wetlands requires environmental impact assessment process
d. Air	Unit Field SOP	Control open fires, dust suppression (non-hazardous only)	Control open fires, fugitive dust	Regulations on incineration and traffic
e. Wildlife	Unit Field SOP (+ no pets or mascots)	Avoid accidental kills and habitat destruction	Note and avoid specific habitats; minimise impact on TES	TES fully protected
f. Marine	Unit SOP and applicable international agreements	Unit SOP and applicable international agreements	Unit SOP and applicable international agreements	Unit SOP and applicable international agreements
5. Cultural and historical preservation	Due care in planning	Minimise damage if unavoidable due to mission requirements	Higher HQ approval required for operations in area	JTF approval or Cultural Resources Management Plan
6. Environmental Assessments	N/A	Exercise due care in planning and operations	Assessments required for activities with a potential to inflict major damage	SOFA or host nation governing standards
7. Installations Operations	Note environmental conditions before and after occupation	Note environmental conditions before and after occupation	Operate IAW governing environmental standards	Operate IAW governing environmental standards

Guidelines for conducting an Environmental Impact Assessment are contained in Publication ESWG/005 – Guidebook on Environmental Impact Assessment in the Military.

Tactical Planning

Tactical Planning relates to the formulation of an Operations Order in line with guidelines received from the operational level, tasking different roleplayers in terms of execution of the operation and their responsibilities. It must be understood that such an Order is very detailed and attends to specific activities rather than the broad

concept of the operation; environmental considerations will become more relevant at lower levels of execution.

Key Environmental Focus Areas

- **Specific site selection.** A complete, detailed EBS is done when the specific site for deployment has been determined and before the base is established.
- **Detail planning.** A suitably experienced environmental officer must participate in detail planning to ensure environmental considerations are included in the day-to-day operation and requirements of the base and operations. Examples of these are: resources required, base layout and mapping, record keeping, inventory, transport and logistic systems, responsibilities and delegation and inclusion of requirements towards ECOps in the budgetary requirement.
- **Situation-driven plans.** Existing management plans and SOPs are not always purposeful for the specific situation; plans and procedures should be adapted according to available capacity/capabilities. It is important to ensure that plans are established and in place as SOPs, including detail on tasking and responsibilities in terms of pollution, waste, HAZMAT, use of resources and protection of environmental resources (including natural and cultural resources).

Stage 3: Execution

The Execution Stage directly translates into "Putting Plans Into Action." An Operations Order will be the formal document explaining the sequence of events of the operation, considering guidelines generated during the Planning Stage.

The Operations Order will discuss exact activities, roleplayers and responsibilities to take place in various phases of execution. This guidebook addresses the Execution Stage in the following phases:

- **Pre-deployment.** This phase includes aspects such as tactical reconnaissance, preparation, acquisition of and training on mission-specific equipment, mission-specific induction and re-training of forces earmarked for deployment.
- **Deployment.** During deployment, specific actions are addressed e.g., mobilisation and execution of the mission.
- **Rotation of Forces.** This is when one unit assumes the mission from another unit. This will have to be implemented in terms of mobilisation, handing and taking over as well as demobilisation.
- **Re-deployment.** This phase entails all actions regarding withdrawal of forces from the site or area where deployment took place after the conclusion of the mission. It refers to demobilisation of forces in any instance e.g., where forces

return home after deployment as well as where forces embark on another mission. This process should include the return of control to the host nation.

Pre-deployment

The pre-deployment phase is instituted before actual troop movement and has the purpose of ensuring preparedness of the force in terms of equipment, military skills and knowledge towards mission readiness. These activities would not necessarily only take place where forces are mobilized and integrated, but also take place at home units in terms of unit/core specific combat readiness.

Preparation

It is necessary to plan in advance for the actions that will be implemented to ensure the force is prepared and mission-ready in terms of specific required equipment, skills and knowledge. It is therefore important that ECOps are integrated in the preparation phase in order to:

- Confirm environmental plans are in place.
- Check environmental-specific mission readiness in terms of environmental technical equipment and vehicle-specific equipment (e.g., drip trays, spill kits), availability of record keeping documentation, environmental-related permits and licenses (beach landing, border crossing, port entry, etc.) as well as requirements in terms of decontamination of vehicles and equipment.
- Confirm Environmental Intelligence and establish a complete EBS demarcating environmentally sensitive areas and planning specifics on maps.
- Establish liaison and co-ordinating platforms ensuring constant update of Environmental Intelligence and status of existing and new environmental-related contracts as well as means towards efficient contract management.

Mission-Specific Induction

An informed force is a strong force and environmental awareness material should be included in the induction package. Cross-referencing the environmental functions in relation to other functions during planning can strengthen integration of ECOps. Induction training is the mission-specific training given to all participating service members and should include relevant environmental aspects identified in the planning process. This information is derived from the environmental annex of the Operations Order and SOPs.

Mission-Specific Environmental Skills Training

This is training for leaders and service members requiring specific environmental skills to execute specific duties, including reporting procedures. This may include

training on newly acquired equipment. Mission readiness and levels of training should be evaluated and forces re-trained to meet required standards. Re-training can take place as a formal process or simply to address only weak areas, depending on time frame and limitations.

Deployment

The deployment phase entails all activities from the moment forces have been declared mission ready and includes the movement of forces to the area of deployment, the physical execution of the mission, rotation of forces as well as more detailed activities that might take place during these actions.



Detailed planning will ensure mission success the moment forces arrive in the area of operations.

Mobilisation

During the movement of forces—whether by land, sea or air—it is important to ensure correct implementation of the following:

- **Trans-boundary transportation of HAZMAT.** Ensure proper monitoring of movement according to international legislation in terms of permits/authority, etc.
- **Risk and impact management.** Mass movements of troops unavoidably have larger impacts on the environment and carry greater risks environmentally and financially. It is important to avoid and minimise adverse impacts on the environment during convoy movements in terms of resting-, waiting- and replenishment areas, movement management centres, generated waste (e.g., sealing and packaging) and Contingency Plans.
- **Compatibility of materials for bulk/shared transport purposes.**

- **Reporting procedures in terms of contingencies.** Procedures have to be made known to all members and included in the Contingency Plan as well as the Movement Plan.

Executing the mission

This phase entails all activities from arrival at the deployment site to achievement of the mission, including day-to-day management and maintenance of forces and resources.

In order to maintain natural and cultural resources on a daily basis, proper management is of the essence, especially in terms of:

- Updating of Environmental Intelligence.
- Establishment and maintenance of infrastructure.
- Contract Management.
- Implementation of plans and procedures where plans and risk assessment are adapted through constant review and continued training.
- Monitoring of environmental status through continuous updating of the EBS by means of checklists, sampling and creation of a rectification (corrective action) plan for non-conformance regarding contract compliance, HAZMAT status, waste streams and record keeping.
- Continuous back loading of stores and equipment, including waste when necessary.
- Testing of Contingency Plans.

Environmental Management and successful implementation of ECOps can be measured against records kept from regular reporting procedures:

- **Scheduled reports.** In order to keep information updated on all levels of operation, certain reports should be submitted at regular intervals e.g., Environmental Condition Reports (ECR) and progress reports (in terms of monitoring aspects). The ECR is completed on a periodic basis to document conditions at the site/area as well as any time a potentially significant environmental event occurs. Refer to Appendix 4 for ECR format guidance.
- **Incident reports.** Incidents occur where non-compliance exists and should be reported to higher authority. All incidents that could occur should be addressed in formal documentation e.g., Base SOPs. ECRs serve as the incident report. Refer to Appendix 5 for an example of an Environmental Incident Report.

- **Feedback reports.** As a control measure, higher HQ might distribute feedback reports after receiving scheduled- or incident reports. The same type of report will also be compiled after a monitoring inspection, indicating corrective actions to be implemented.
- **Closure reports.** As locations are vacated or activities cease, reports that detail environmental conditions and status should be finalised.

Relevant information from the above reports should be used to update maps and management information.

Rotation of Forces

It must be understood that, depending on the time frame of the mission, forces may be rotated where activities similar to those explained otherwise in this guidebook, will have to be implemented in terms of mobilisation, handing and taking over as well as demobilisation. A detailed Force Rotation Plan covering environmental functions and responsibilities, procedures for matériel, personnel, and contract management as well as authorization for liaison with the host nation must be in place before the rotation of forces can be implemented.



All environmental documents for high impact activities need to be handed over to the rotating forces.

Mobilisation

Forces relieving deployed forces are required to go through the same type of pre-deployment phase as did the initially deployed forces. Table 2 refers to the difference in expectations between initial force deployment (pre-deployment) and rotating

forces' mobilisation process to relieve forces deployed. Mobilisation during rotation of forces entails the process of preparation, induction and re-training.

Table 2. Pre-deployment and Rotation of Forces Activities

Pre-deployment/Mobilisation	Initial activity to deploy with main force	Activity preceding rotation of forces
Preparation		
Environmental technical equipment and vehicle-specific equipment	Check	Update
Environmental Plans in place	Check	Update
Environmental mission specific readiness	Check	Update
Record keeping documentation in place	Check	Update
Environmental related permits/licences in place	Check	Review/renew/confirm
Decontamination of vehicles and equipment	Check	Check
Compliance with customs regulations in terms of plant material and animal transport	Control	Control
Environmental Intelligence	Confirm	Update
Liaison/co-ordination platforms	Establish with host nation	Between in going and outgoing forces
EBS	Do complete EBS	Update
Demarcating environmentally sensitive areas on maps	Execute	Confirm
Existing and new contracts	Environmental inputs	Review and manage
Contract Management	Environmental inputs	Confirm procedures
Mission-Specific Induction		
Environmental information from Operations Order available for distribution in terms of awareness	Convey Content	Convey Content
Mission-Specific Environmental Skills Training		
Evaluation towards mission readiness	Check	Check
Re-train	Train	Train
Documentation	Check	Update

Handing and Taking Over

Proper Handing and Taking Over procedures are the most important aspect on which to focus during the rotation of forces. This is the critical area to ensure continuity in record keeping for legal compliance in terms of ECOPs.

Handing and Taking Over must take place according to checklists ensuring all equipment, skills and procedures had been put in place by relieved forces and are completely understood for continuous implementation and monitoring by relieving forces. Checklists are furthermore effectively utilised to update the EBS and control the availability of various documents and records required by the dedicated environmental manager. Types of documents to be confirmed, although not all inclusive, are listed below:

- Operations and Fragment Orders
- Management Plans
- SOPs
- Contingency Plans
- Reports and Management Information (e.g., statistics and data bases)
- Risk Assessments
- Management Directives/Duty Sheets/Command Delegations
- Logistics, Assets and Stores tracking (e.g., HAZMAT in/out flow)
- Contracts

Demobilisation

Relieved forces are required to go through the same type of demobilisation phase as forces finally returning home after achieving the mission. Table 3 refers to the difference in expectations between final withdrawal back to the home country (re-deployment) and rotating forces' demobilisation process.

Table 3. Demobilisation, Force Rotation and Re-deployment

Demobilisation	Rotation of forces	Re-deployment
Mapping of infrastructure and sites of impact	Confirm status during handing and taking over	Confirm
Water purification, sewerage facilities, dumping sites, borrow pits, etc.	Confirm status during handing and taking over	Closure
Environmental technical equipment	Confirm application and serviceability	Improve equipment according to new technological requirements
Environmental implications of disposal decisions of obsolete equipment	Confirm procedures	Environmental Inputs
Environmental Clean up/ Clearing of:	Confirm status during handing and taking over	Implement Rehabilitation Plan

Demobilisation	Rotation of forces	Re-deployment
- Facilities	Confirm status during handing and taking over	Implement Rehabilitation Plan
- Unserviceable or redundant equipment/stores	Confirm status during handing and taking over	Repair or Dispose
- Unexploded Ordnance (UXOs)	Confirm status during handing and taking over	Implement Rehabilitation Plan
- Emptying of fuel storage	Confirm status during handing and taking over	Implement Rehabilitation Plan
- Remediate fuel spills, etc.	Confirm status during handing and taking over	Implement Rehabilitation Plan
Decontamination of equipment/vehicles	Establish in both host and home country	Establish in both host and home country
Compliance with customs regulations for plant material and animal transport	Control	Control
Policy and procedures	Confirm and implement	Amend and update
EBS	Update	Finalise and exit
Transfer of property/land/facilities (dump site)	Between incoming and outgoing forces	Back to host nation
Back loading of waste	Handle according to Environmental Management Plan	Handle according to home country legislation
Transfer/Agreement with regards to cultural resources created in the host nation during ops	Confirm status during handing and taking over	Environmental Inputs and liaison with host nation
Implement/terminate agreements	Confirm status during handing and taking over	Terminate
- Finalising and Closing of contracts	Confirm status during handing and taking over	Closure
- Follow up responsibilities	Confirm status during handing and taking over	Liaison with host nation on possible long term rehabilitation
Documentation for transportation	Transport permits e.g., Shipment manifest	Transport permits e.g., Shipment manifest
Documentation (general)	N/A	Closure document including confirmation of rehabilitation
Debrief	Utilise information for future corrective action	Learn from mistakes/successes and update SOPs

Re-deployment

Re-deployment takes place after the initial mission of the operation has been achieved and the total force withdraws from the area of operation back to the home country or next deployment area.



Re-deployment planning is as important as all other planning phases.

Demobilisation and return of forces and equipment, as well as the transfer of infrastructure to the host nation, takes place during this phase. In order to ensure control over management liabilities the following aspects need to be considered:

- **Environmental implications of disposal decisions of obsolete equipment.**
- **Decontamination of equipment and vehicles.**
- **Environmental clean up and clearing of facilities.** All environmental impacts must be surveyed and rehabilitated either immediately or a rehabilitation plan must be compiled where rehabilitation will be taking place over a longer term. Examples of rehabilitation will include, but are not limited to, removal of abandoned equipment and stores, clearing of UXOs, emptying of fuel storage, rehabilitation of fuel spills, etc.
- **Rehabilitation requirements.** It is of the utmost importance that all infrastructure within the utilised area as well as sites from where services had

been delivered (e.g., water purification plant) are adequately mapped. Such facilities and infrastructure must be properly closed down and surveyed for any rehabilitation requirements.

- **Closure EBS.** Determine the status of the environment in comparison to the initial baseline study to determine the level of compliance, successes achieved and possible future rehabilitation requirements.
- **Handing back of property/land/facilities.** The site and all infrastructure utilised during deployment must be cleared, rehabilitated and handed back to the host nation in an acceptable condition. Documentation with respect to confirmation of acceptance must be kept as a record.
- **Handing over of or agreement with regards to cultural resources created in the host nation during the operation.** Whenever an official symbol of a force is left on the site of deployment, enriching the history of the host nation, it becomes a significant site in terms of cultural resources management. Specific liaison must take place with the host nation in terms of future maintenance of a significant site.
- **Termination or implementation of agreements.** Various agreements are implemented during the course of the operation which have to be finalised and terminated once the force withdraws from the host nation. This will include contracts (e.g., waste management systems, HAZMAT). New agreements may have to also be established and implemented in terms of long-term rehabilitation or maintenance of resources. Such agreements have to be established before final withdrawal from the host nation.
- **Environmental overview of the mission.** This comprehensive overview will include all the different EBSs and environmental incidents/issues that arose during the mission as well as outstanding rehabilitation/monitoring requirements. This assessment should be included in the debrief.
- **Debrief.** The final debrief taking place in the home country will relate to all aspects during deployment in terms of successes achieved and areas requiring improvement. This information is of cardinal value in updating policy, developing procedures and successful implementation of ECOps.

Closure documents should be coordinated with the appropriate legal advisors.

Stage 4: Post Deployment

This stage refers to all actions to be taken after forces withdraw completely from the site of deployment. Such actions are mainly related to agreements established during re-deployment (stage 3) in terms of rehabilitation programmes and other aspects that require a longer timeframe to complete.

During the demobilisation phase of forces returning to the home country, the environmental impact is rehabilitated. However, it often occurs that some activities have a more severe impact on the environment that cannot be rehabilitated instantly but require rehabilitation and monitoring programmes over a longer term. Agreements with the host nation may be established and sites revisited for monitoring progress according to timeframes agreed upon.

Where new systems are put in place during deployment and handed over to the host nation for continued utilisation, agreements should make provisions for longer term involvement to train the host nation in terms of management and utilisation of such a system or facility.

The establishment, implementation and finalisation of post deployment agreements require intensive legal liaison and confirmation in terms of correct actions to be taken as well as in terms of time frames linked to rehabilitation, training or upliftment (improvement) programmes.

The number of programmes to be implemented in the post deployment stage reflects directly on weaknesses either with regards to planning or the execution of plans integrated with Environmental Considerations. One should strive towards correct planning to avoid long-term impacts requiring long-term rehabilitation.

Appendix 1
ENVIRONMENTAL BASELINE SURVEY (EBS) FORMAT

References:

- a. Applicable environmental laws and regulations.
 - b. Command guidance references.
 - c. For a closure EBS, the initial EBS (and any applicable update) and any ECRs are also reference documents.
1. Site/Property Location. List the legal address and 6-figure grid reference or latitude and longitude.
 2. General Site Setting. Note whether the site was visually observed or identified from interviews or record reviews. For an updated initial EBS or a closure EBS, the site should always be visually observed.
 - a. The methodology used and limitations encountered during the initial (or updated) site reconnaissance or the closure inspection. Describe the method used to reconnoiter the property; for example, the use of grid patterns or other systematic approach. List and describe any limitations encountered during the reconnaissance such as physical obstructions, bodies of water, pavement, weather, or uncooperative occupants.
 - b. The current uses of the property. Be as specific as possible.
 - c. The past uses of the property. List all known past property uses. If a past use is likely to have involved the use, treatment, storage, disposal, or generation of HAZMATs or petroleum products, include a detailed description or indicators of this use. A closure EBS includes information obtained from ECRs as well.
 - d. Current uses of adjoining properties. Be as specific as possible.
 - e. Past uses of adjoining properties. If a past use is likely to have indicated recognized adverse environmental conditions, include a detailed description.
 - f. Current or past uses of the surrounding areas: list general types of past uses; for example, residential, agricultural, or industrial. Limit surroundings to that which can be seen or would clearly affect the area, such as upstream on a waterway.
 - g. Geologic, hydrogeologic, hydrologic, or topographic conditions. List the conditions and give a general description of the topography in the area. If indicated, analyze the likelihood of contaminant migration on or to the property through the soil or groundwater from the adjacent properties or the surrounding areas.

- h. General description of structures. List the buildings, and their locations, size, basic construction type, stories, and approximate age.
 - i. Roads. List all public thoroughfares adjoining the property and describe all roads, streets, parking areas, and walkways.
 - j. Water supply. List and differentiate all sources of potable and non-potable water.
 - k. Sewage disposal system. Describe sewage disposal systems on the property and their general condition, and approximate age.
 - l. Cultural Resources. List and describe any significant cultural sites adjacent to or on the site. These would include cemeteries, religious sites, archaeological sites, historical structures, etc.
 - m. Natural Resources. List and describe general vegetative communities (to include endangered or protected plant species), all surface waters (to include flood plains, streams, rivers, wetlands), wildlife observed (to include any known threatened and endangered species, as well as poisonous, venomous and dangerous species) and potential disease carriers.
3. Interior and Exterior Observations. To the extent visually/physically observed or identified from interviews or record reviews (list actual source).
- a. HAZMAT and POL products. Describe uses and types of products used on the property, and the approximate amount and storage conditions.
 - b. Storage tanks. Describe size, location, condition and approximate age of all above and below-ground storage tanks.
 - c. Odors. Describe any noticeable odors and their source.
 - d. Pools of liquid. Note all surface water and describe all pools or sumps that contain water or other liquids that may contain HAZMAT.
 - e. Drums. Describe all drums and their conditions. If they are known to contain no HAZMAT, list only the contents of the drum.
 - f. Unidentified substance containers. Describe any open or damaged containers suspected of containing HAZMAT or petroleum products.
 - g. Polychlorinated biphenyls (PCBs). Include a description of electrical or hydraulic equipment likely to contain PCBs.
 - h. Interior observations (found inside of buildings) of the following:

- i. Heating and cooling systems. Describe, to include the fuel source and amount on hand.
 - ii. Stains and corrosion. Describe stains on floors, walls, and ceilings.
 - iii. Drains and sumps. Describe floor drains and sumps.
 - i. Exterior observations (found outside of buildings) of the following:
 - i. Pits, ponds, and lagoons. Describe the pit, pond, or lagoon, especially if it may have been used for Hazardous Waste disposal or waste treatment. Include a discussion and description of any on adjacent or adjoining properties as well.
 - ii. Stained soil or pavement. Describe any stained soil or pavement.
 - iii. Stressed vegetation. Describe any stressed vegetation and probable cause.
 - iv. Solid waste. Describe any filled, graded, or mounded areas that would suggest the disposal of trash or solid waste.
 - v. Wastewater. Describe every discharge of a liquid into a stream or ditch that is adjacent to the property.
 - vi. Wells. Locate and describe all wells (monitoring, potable, dry, irrigation, injection, abandoned, etc.) on the property.
 - vii. Septic systems. List indications or the existence of on-site septic systems or cesspools.
 - viii. Ambient air quality. Smog, smoke, and odors from industrial facilities and many Hazardous Waste products can be detected easily. Terrain can also affect air quality. Mountains and canyons can cause temperature inversions, which impact air quality. Setting up base areas with heating units and vehicles in an area prone to temperature inversions can cause poor air quality. Prevailing winds should also be considered.
 - ix. Unexploded ordnance. Identify and ensure clearance before occupation.
4. Omissions and Deviations. Describe all omissions or deviations from the home country's normal procedures or the environmental standards currently in use by the command. Discuss each one individually and in detail.

5. Findings and Conclusions Statement. This section summarises the key environmental impacts, considerations and risks for the purpose of recommending courses of action and completing the initial environmental risk assessment. List the protocol used for the survey, exceptions to the protocol and any evidence of recognized adverse environmental conditions.
6. Qualification Statement. List the qualifications and duty position(s) of the individual(s) preparing the EBS.

Appendix 2
ENVIRONMENTAL SELECTION CRITERIA FOR RECOMMENDING
COURSE OF ACTION

The purpose of this appendix is to provide suggested selection criteria to be used by the staff recommending a particular course of action from an environmental perspective. The staff should consider both the effects of environmental factors on the force and impacts of the force on the environment. Some examples (*in italics*) are listed to illustrate the application of these criteria.

References:

- a. Applicable environmental laws and regulations.
 - b. Applicable EBS.
 - c. Command guidance references.
 - d. Initial environmental intelligence.
1. Site Contamination. *Evidence of extensive hazardous waste contamination is found within a storage facility at a proposed deployment site.*
 - a. Effects on the force. *The storage facility will not be able to be used for human habitation due to health risks. There is potentially a clean-up cost involved.*
 - b. Impact on the environment. *None caused by the force. However, potentially the force could be blamed by HN or local inhabitants (we believe that this is leaching into the adjacent stream.)*
 2. Sewage. *There is a fully operational sewage treatment facility present at a proposed deployment site.*
 - a. Effects on the force. *There is a positive effect in that there are reduced health risks, shorter site set-up time and more sustainable operation.*
 - b. Impact on the environment. *There is no negative impact as long as projected capacity and duration of the mission remains unchanged.*
 3. Erosion. *Proposed deployment site is located on a small plateau on exceedingly steep terrain with soils highly subject to erosion.*
 - a. Effects on the force. *Force protection is favorable due to this location being highly defensible.*
 - b. Impact on the environment. *The construction of access roads and vehicle traffic will likely lead to severe erosion and consequent silting of waterways.*

4. Vegetation. *The surrounding vegetation at the potential deployment site is predominantly sugar cane plantation.*
 - a. *Effects on the force. There is a positive effect in that this vegetation conceals the site from ground observation. Negative effects are an increased fire hazard to deployed forces and close proximity to civilian population.*
 - b. *Impact on the environment. This land is already cultivated (i.e., disturbed), therefore base construction will not have a negative impact on native vegetation. However, the potential exists for agriculture activities to be displaced to other areas.*

This list is by no means exhaustive. Other selection criteria (and their effects on military forces as well as the military's impact on the environment) that might similarly be considered include (but are not limited to): drinking water, hydrogeology (i.e., surface and ground water), air quality, flood potential, cultural resources, and wildlife.

Appendix 3
ENVIRONMENTAL ANNEX TO THE OPERATIONS ORDER FORMAT

This appendix format lists typical environmental considerations for Operational Planning, Contingency Planning, Operational Orders and execution. For small units (e.g., battalions and companies), the format will provide a guide for finding necessary information for developing their own orders. For larger units (e.g., brigade), the format should provide an example for developing a similar appendix. *Examples are provided in italics.*

References:

- a. Host Nation (HN) agreements, command special instructions, policies, guidance for environmental considerations, or references pertaining to significant environmental factors in the Area of Operations.
- b. SOPs.
- c. Applicable national legislation, international treaties and agreements.

Time Zone Used Throughout the Order: Specify the time zone used.

1. SITUATION.

- a. Enemy forces. Refer to the Operations Order. State any environmental factors or conditions that could adversely affect the successful completion of the mission, and/or the health or welfare of friendly forces and the indigenous population. Environmental threats can be natural, collateral, accidental, or caused by actions of the population or belligerent forces. *(e.g., this operation depends upon our ability to provide water for both our forces and the indigenous population through desalinization plants drawing water from the sea....The belligerent forces has large amounts of chemical munitions. Special care must be taken when destroying belligerent forces' munition dumps to ensure chemical munitions are not being detonated....Due to the extremely high water table in the area, special care and considerations must be taken in the siting of landfills and the collection of all waste products...)*
 - i. Terrain. List all critical terrain aspects that impact functional areas of operation.
 - ii. Weather. List all critical weather aspects that impact functional areas of operation.
 - iii. Belligerent forces functional area capability and/or activity:
 - (a) List known significant environmental hazards. If the information is large and specific enough, this list may become an overlay.

- (b) List significant belligerent forces capabilities to use environmental manipulation as a means to impede friendly forces or jeopardize long-term objectives. (*Belligerent forces may release oil directly into the water resources....Belligerent forces may set oil wells afire to cover their retreat...*)
 - (c) State the expected employment of belligerent forces' functional area assets based on the most probable course of action. (*Belligerent forces will not be affected by international opinion....They will use all means at their disposal including sabotaging catchment dams and setting oil wells afire, contaminating water resources to prevent further utilization...*)
 - iv. Limiting factors. Outline limitations that are due to lack of foreign access, time, operations security (OPSEC), Host Nation rules or sensitivities, public affairs (foreign and domestic), legal considerations, and resources.
 - b. Friendly forces. Refer to an Operations Order. State the concept of environmental operations for the higher headquarters. This concept covers relationships between environmental considerations and the supported Operations Order, Operations Plan (OPLAN), Contingency Plan (CONPLAN), or Support Plan.
 - c. Attachments and detachments. Identify special environmental teams or personnel.
2. **MISSION.** State the commander's concept/intention for environmental actions. This concept answers the who, what, when, where, how, and why of the relationship between environmental considerations and the supported Operations Order, Operation Plan, Contingency Plan, or functional plan. Normally, the mission will be to protect, as much as practicable, the health and welfare of home country personnel and the indigenous population from environmental threats during the conduct of the operation; to reduce long-term, adverse impacts on the economy and public health; and to reduce home country costs and liabilities upon completion of the operation.
3. **EXECUTION.**
 - a. Scheme of Environmental Operations. Summarize the commander's concept of environmental actions required to support the OPLAN, Operations Order, or CONPLAN. Identify issues and actions that should be addressed during all phases of the operation. Identify the desired environmental endstate.
 - i. Operational effect on the environment. List critical resources that should be protected during the operation such as forests,

- croplands, or water- and sewage-treatment facilities. Describe factors to be considered by subordinate unit commanders when making collateral damage decisions.
- ii. Environmental resource effect on the operation. List any environmental conditions or factors that could impede successful completion of the operational mission or jeopardize the desired endstate. Identify possible targets of environmental sabotage or terrorism.
 - iii. Compliance requirements. State regulatory, legal, and Host Nation compliance requirements that will apply and under what conditions they may be applicable (combat versus non-hostile, stability operation or support operation; geographical differences; or event-triggered changes).
 - iv. Phased compliance. Describe in general terms the major environmental concerns and requirements during different phases of the operation. Specify transition tasks and measures and the appropriate initiating control measures.
- b. Tasks to subordinate units. It will be unusual to have an entry here. If only placed here it is likely to be overlooked by the tasked unit. If including tasks to subordinate units:
- i. List functional area tasks that specific maneuver elements must accomplish and that the Operations Order does not contain.
 - ii. List functional area tasks the functional area units supporting maneuver elements must accomplish only as necessary to ensure unity of effort.
- c. Coordinating Instructions. Outline key coordination that must be accomplished by two or more units and not routinely covered in unit SOPs. Pay particular attention to coordination requirements with higher HQs. Unit responsibilities and requirements may vary according to location, activity or phase of the operation; attach a matrix that specifies various levels of environmental protection. Environmental responsibilities may be included here if not incorporated in respective annexes.
- i. Environmental reconnaissance. Identify general responsibilities here.
 - ii. Environmental vulnerabilities. Specify general responsibilities for intelligence collection, identification, and response planning for environmental threats to mission success.

- iii. Environmental impact assessments. List conditions under which environmental impact assessments may be required, conditions when assessments may be sensible even when not required by law or order, and responsibilities for conducting and approving assessments.
- iv. Occupation of base camps and rear assembly areas. *(Occupation of base camps or rear assembly areas, and subsequent operations, will be accomplished incorporating environmental considerations whenever feasible and in relation to the operational situation.)*
 - (1) An initial Environmental Baseline Survey (EBS) will be conducted to determine the preexisting condition of the site and its ecological resources. Direct the conduct of Environmental Condition Reports (ECRs) based on the duration of stay at a given site (to give interim snapshot condition reports) and in response to environmental incidents.
 - (2) Before departure or withdrawal, units will perform a closure EBS to document the condition of the site to include water sources, soil, flora, archaeological/historical facilities, air quality, and other environmental conditions. Document the location of latrines, hazardous waste sites, landfills, hospitals, maintenance activities, POL storage, and any other environmentally-sensitive activities.
- v. Facilities.
 - (1) Environmental baseline surveys. Specify conditions, formats, responsibilities, and reporting of initial EBS, closure EBS, and any interim ECRs.
 - (2) Operating procedures. Provide guidance for environmental considerations and services in established facilities.
 - (3) Closure. Specify closure activities such as documentation of the location of latrines, Hazardous Waste sites, landfills, hospitals, maintenance activities, POL storage, and other environmentally sensitive activities. Publication of these procedures may be delayed until a more appropriate phase of the operation.
- vi. Construction. When planning and conducting general engineering operations, military designers should consider the project's effect on the environment as well as the applicable

home country and host nation agreements, and applicable environmental laws and regulations. (*Soil erosion/runoff control procedures and other common sense procedures will be applied to the maximum extent possible in any case.*)

- vii. Claims. (*Under the provisions of home country/host nation SOFA/MOU, claims by local national individuals or organizations for damages arising from spills will be handled through established claims procedures.*)

4. SERVICE SUPPORT.

- a. Identify those environmental planning factors which, although not mandated by law or regulation, will support successful execution of the OPLAN, Operation Order, CONPLAN, or functional plan in all phases and protect the health and safety of home country forces, allied forces, and noncombatants. As a minimum, address certification of local water sources by medical Environmental Health, solid and liquid waste management, Hazardous Material (HAZMAT) management, flora and fauna protection, archaeological and historical preservation, and spill response. Disposal of solid and liquid waste will depend upon the location and surrounding environment of the disposal area. The intent is to minimize the environmental impact and to limit potential contamination to the holding site.
 - i. Development, use, and protection of potable water sources. Certification of water sources includes: special considerations for the protection of surface water, groundwater, and water in distribution systems; location and special protection requirements for water and wastewater (gray water, see below) treatment facilities; disposal of effluents from showers and laundry facilities; disposal of brine water (or wastewater) from water purification operations. In training exercises, require a permit to discharge brine into a water source. Returning brine (or wastewater) directly to the source, untreated, also violates national legislation. (*Water will be obtained or processed from approved sources. Water quality certifications will be accomplished according to procedures outlined in the Environmental Health standing operating procedures. Operational and support elements will not contaminate potable water resources.*)
 - ii. Solid and liquid waste management. (*Disposal of solid and liquid wastes will be dependent on location and surrounding environment of the disposal area. The intent is to minimize the environmental impact and to limit potential contamination to the holding site.*)

- (1) Solid waste. Requirements include: Disposal of solid waste (includes sludge); approval process for the use of landfills or incinerators; and protection of solid waste transportation, transfer, and disposal facilities. (*Solid waste will be removed and disposed of at approved facilities via host nation support agreements. In the absence of host nation support, solid waste should be incinerated as the preferred method of disposal.*)
 - (2) Sewage. Handle, store and dispose of human waste in a way that best supports the mission and is most protective of human health. This factor is particularly significant in densely populated areas where basic public health services may be disrupted, and standard field sanitation procedures are inadequate. (*Existing sanitary latrines, sewers, and treatment plants should be used to the maximum extent possible. If such facilities have exceeded their capacity or do not exist, human waste will be disposed of according to the operation and the situation encountered. The preferred methods of disposal in order of precedence are sanitary wastewater disposal systems, portable latrines, and slit trenches. The placement and operation of the chosen sewage disposal method should have the least environmental impact and be in accordance with field sanitation procedures. If possible, do not conduct open burning upwind of populated areas. As a minimum, all slit trenches will be covered with not less than 48 cm of earth fill [24 cm of compacted fill level to the site. A sign showing the date of closure and the words "Closed Latrine" will be posted at each closed site.*)
 - (3) Gray water. (*At locations that lack sewage treatment facilities, the preferred method of handling gray water will be by collection and proper disposal via HN support. In the event these preferred options are not achievable during contingency operations, effluents from showers/ bathing facilities will be located downstream and away from water sources, both civilian and military. For example, most rivers in southern Africa supply water to local populations, and gray water discharges into rivers are prohibited. Construction of temporary drainage facilities must ensure proper drainage of gray water runoff that prevents pooling. Measures will be taken to prevent creation of pest breeding sites.*)
- iii. Medical waste. This section includes procedures and locations for storage and disposal of medical waste under normal and emergency conditions, as well as the responsibilities and

procedures for approval of disposal methods. (*Disposal of medical waste will be according to guidelines established by the medical service. Should facilities be unavailable for permanent disposal, suitable temporary disposal should be accomplished through the use of a suitably labeled, segregated containment area. Wastes will be held in sealed containers or another appropriate manner that minimizes the release of biological contamination into the environment. A record will be made of the type, quantity, and location of the containment area. A copy of the report will be forwarded to the medical contingent. Burying of medical waste is strictly prohibited under normal conditions.*)

iv. HAZMAT/Hazardous waste management.

- (1) Hazardous Waste management. This section includes procedures and locations for the storage and disposal of Hazardous Waste under normal and emergency conditions, operations of the Supply Support Service (SSS) or approved contractor facilities, and the recording of abandoned Hazardous Waste sites. (*Hazardous Waste will be collected, packaged, and transferred to the closest registered site when feasible according to legislation. If the operational situation dictates abandonment of HAZMAT/ Hazardous Waste, consolidate, contain, and record the location of the items, type of items, and any other information that will facilitate future recovery operations. Forward a copy of the report to higher HQs.*)
- (2) Hazardous Material management. (*HAZMATs will be stored, transported, and used according to established procedures and in a manner that prevents improper human or ecological exposure. To the extent practical, consolidation and reutilization will be applied to reduce the amount of HAZMAT expended and waste generated.*)
- (3) Abandonment. (*If the operational situation dictates abandonment of hazardous material/waste, troops should consolidate, contain, and record the location of the items, type of items, and any other information that will assist future recovery operations. Forward a copy of the report to higher HQs.*)
- (4) Spill prevention/control procedures. (*Commanders will maintain spill-prevention/control plans with battalion level spill response teams. Units will take immediate action to contain the spill, clean up the site to the best of*

their ability, mark the site, and report the spill through their chain of command. The spill report should be in basic ECR format and at a minimum contain the location, type and quantity of contaminant[s], status of the clean up, and an estimate of additional resources required to complete the clean up.)

- v. Ecosystem protection. Protect special flora and fauna, surface water/wetlands, forests, and croplands, and seek approval for the clearing of large areas and approved methods and chemicals, if any, for clearing. *(The requirement to clear fields of fire [as well as limited clearance for health, safety, and troop welfare] may cause the destruction of ecosystems. Destruction and clearing of areas should only be done in consultation with the environmental officer and depending on the present tactical situation.)*
 - vi. Air and noise emissions. Give special consideration to preventing air and noise emissions normally confined to theater rear areas or to security, support, or humanitarian missions. *(Generators and movement will be operated according to command directives.)*
 - vii. Archaeological and historical preservation. State the requirements to minimize damage to historical sites and buildings, monuments, and works of art. A separate overlay may be required. *(Operational activities that adversely impact archaeological and historic sites and buildings are to be minimized. If damage occurs, a report of circumstances will be made through operational channels to higher HQs.)*
- b. Logistics. Address any necessary guidance for administering the environmental effort by the commander. Provide guidance for logistic support to environmental support and compliance.
- i. HAZMAT management. Specify unique control measures used in supply, storage and transportation to reduce and regulate the use of HAZMAT.
 - ii. Environmental considerations and services locations. Provide, when appropriate, the location of landfills, incinerators, Hazardous Waste collection facilities, water and wastewater treatment plants, watershed protection areas, ecologically sensitive areas, contaminated areas, potentially dangerous industrial facilities, and other points of environmental sensitivity or interest to the command. Include cultural resources if not noted elsewhere.

5. COMMAND AND SIGNAL.

- a. Command. Identify the executive officer for environmental functions in the command and Command Post location. Specify responsibilities and levels for issuing guidance and waivers.
- b. Signal. List environmental reporting instructions not specified in unit SOPs; identify the required reports, formats, times and distribution lists.

NAME (An appendix can be signed by either the commander or primary staff officer.)
RANK

List of Recommended Standard Appendices:

- a. Initial EBS
- b. Environmental Risk Assessment
- c. Environmental Condition Report (This is only applicable during the rotation of forces, not during the initial mission.)
- d. Environmental Incident Report Format (SITREP)

Appendix 4 ENVIRONMENTAL CONDITIONS REPORT (ECR) FORMAT

References:

- a. Applicable environmental laws and regulations, Operations Order and unit SOP.
 - b. Site specific EBS (if applicable).
 - c. Environmental Incident Report Format in Appendix 5.
1. Site/Incident Location. List the legal address and 6-figure grid reference or latitude and longitude of the incident location or reference the applicable EBS to link the ECR to a given site. Refer to the environmental incident report format at Appendix 5. (The ECR can function as a situation report (SITREP), or interim report, for a given site. The frequency of ECR reports is a higher headquarters' decision but supports the need to document the condition of a given site over time [interim snapshots], as well as helping to ensure that an appropriate environmental focus is being maintained at a given site. The basic format of the ECR may also be used when reporting an incident, such as a POL spill, not related to a given EBS or site location.)
 2. Site/Incident Description and Background. Give a brief description of the site (installation), including its related EBS/historical use(s) or the circumstances surrounding the incident. For an incident at a location not covered by an EBS, it is critical to provide the same sort of information contained in a standard accident report.
 3. Map/Description of the Incident Location. If the ECR is related to a site covered by an EBS, this entry is able to relate to the information already provided in the EBS (a baseline document). If the ECR defines a location where an incident has occurred that is not covered by an EBS, the description needs to be adequate to direct a follow-on element to the site. In this respect, it is similar to the graves-registration report if the incident occurs during a tactical operation where time precludes remaining at the site.
 4. Summary of Environmental Conditions. List the environmental event(s) at the site/location. All spills should be inventoried. If the ECR is a periodic report for a given site, significant events, such as major spills, should have been reported using the basic ECR format. In this case, simply reference any significant incident report ECRs that may have occurred at the given site over the time frame that the periodic ECR covers. Also provide a "snapshot" report of the types of Hazardous Waste/HAZMAT that are stored at the site. Describe minor spills and other events that have occurred over the time frame in question in basic terms, including quantities and the method(s) used.

Example: Twenty liter of waste oil spilled at the Hazardous Waste accumulation site (Hazardous Waste) located northwest of the maintenance building (shown on map) at 1600 hours on 16 December 2004. The Fire and

Rescue Service contained the spill with assistance by 24 Hour Spill Response, by 1725 hours. About 3 cubic meters of contaminated soil was taken to the 24 Hour Spill Response Hazardous Waste disposal area at Vissershok Landfill site.

Example: Raw sewage ran from a pump house behind the main warehouse (shown on map) for an estimated 3 days during the initial stages of occupying the base in early June 2004. The problem was identified on 13 Jun 04 and corrected when the pump was repaired on 14 Jun 04.

Example: A fuel tanker overturned at the road intersection R46 – N1 vicinity Touws River (see map) at 2000 on 09 November 2004 during the road movement to Cape Town. Immediate mitigation included spill containment by the employment of all available spill kits with the unit. Higher HQ was immediately notified. An estimated 10 000 liters of diesel spilled at that site. The vehicle has been righted, and excavation of the site will begin at first light, 10 November 2004.

5. Interior and Exterior Observations. These entries should be viewed as an abbreviated version of the information that would be found in an EBS. Items should only be addressed if they differ from the last ECR or vary from the initial EBS.

6. Findings and Determinations with Qualification Statement. A statement similar to the following should appear in this paragraph of the ECR: According to national legislation and DOD policy I have considered whether or not significant environmental impacts will occur as a result of turnover/return of this site (base camp, logistics area) and have determined that (include one of the following statements):
 - a. Turnover of this base camp area will not result in environmental impacts significant enough to warrant additional environmental analysis.

OR

- b. Turnover of this base camp area will result in environmental impacts significant enough to warrant additional environmental analysis. Environmental actions or projects must continue after transfer of the base camp area because of substantial (imminent) threat to human health or safety. The impacts of concern are (list impacts): (If the report is due to an incident not connected to a specific site/installation, this paragraph is an assessment by the commander/individual on the scene.)

Signature block (Name)

(Title/Rank)

Appendix 5
ENVIRONMENTAL INCIDENT REPORT FORMAT

REPORT NUMBER: _____

GENERAL INSTRUCTIONS: Used to send periodic information (interim snapshots) of the environmental status of specific sites (assembly areas, base camps, logistical support areas, and medical facilities) where hazards are likely to occur and can result in significant, immediate and/or long-term effects on the natural environment and/or health of friendly forces and noncombatants. Sent in accordance with unit SOP and commander's direction.

LINE 1— DATE AND TIME _____	(Date-time Group [DTG])
LINE 2— UNIT _____	(Unit making report)
LINE 3— LOCATION _____	(Universal traverse mercator [UTM] or six-digit grid coordinate with MGRS grid zone designator of site/incident)
LINE 4— DESCRIPTION _____	(Description of site/incident)
LINE 5— CHANGES _____	(Changes from last ECR or EBS)
LINE 6— HAZARDS _____	(Hazards to natural environment, friendly forces, and/or civilian personnel)
LINE 7— ACTIONS _____	(Summary of actions to minimize hazards/remedial effects)
LINE 8— UNIT POC _____	(Reporting unit Contact Person details)
LINE 9— ASSISTANCE _____	(Assistance required/requested)

LINE 10— REFERENCE_____	(Site specific EBS, if required)
LINE 11— NARRATIVE_____	(Free text for additional information required for clarification of report)
LINE 12— AUTHENTICATION_____	(Report authentication)

GLOSSARY

Appreciation	The process during which available management information and data are analysed to reach a conclusion or plan e.g., Operational- and/or Tactical Appreciation which can also be otherwise known as a Staff Estimate.
Bunding	Method of containment, whether temporary or permanent, and is especially referred to in terms of containing HAZMAT and potential spills.
Co-ordinate	Networking on various levels of similar delegation or stature and can take place in either a formal or informal manner.
Cultural Resources	Any place of aesthetic, architectural, historical or spiritual value or significance.
Demobilisation	The final activity taking place at the end of the operation after the mission had been achieved and includes preparation as well as the actual movement of the complete force with its support systems in terms of re-deployment.
Deployment	The period a base is occupied from the moment of arrival until the base is deemed obsolete for the purpose of the operation and includes mobilisation (i.e., movement to area), execution of the mission, and rotation of forces.
Driver	A concept that has the ability to act as motivational force towards implementation and success.
Environmental Baseline Survey (EBS)	A preliminary survey, scope or initial environmental review that is required of all potential sites by utilising available Environmental Intelligence. A complete, detailed EBS is done when site selection had been finalised and before base construction commences.
ECOps	Environmental Considerations during Military Operations
Environmental Condition Report (ECR)	Environmental Condition Reports (ECRs) are completed on a periodic basis to document conditions at the site/area as well as any time a potentially significant environmental event occurs. ECRs will also be used as SITREPs.

Environmental technical equipment	That equipment specifically acquired to mitigate adverse impacts on the environment.
Execution	The stage where plans are put in place from the moment deployment commences until the mission is achieved, including pre-deployment, deployment and re-deployment.
Executing the mission	The implementation of activities to achieve the mission including intervention and stabilisation and is included in Stage 2 together with mobilisation and rotation of forces.
Force Rotation Plan	The plan compiled to establish procedures to be followed during the rotation of forces.
Handing and Taking Over	Relief in-place.
Home country	The country of origin of contributing forces.
Host nation	The country within whose borders the operation is staged.
Infrastructure	Man-made features not natural to the environment, part and parcel of human activities and ways of life (e.g., transportation networks, buildings, utilities and fences).
Landfill	An approved and existing refuse or rubbish site.
Liase	A formal process of interaction between role players on a higher political level.
Lead agency	Refers to the highest level of operational planning within the organisation.
Mobilisation	An activity forming part of the deployment stage, referring to the physical movement of forces.
Mitigate	The implementation of practical measures to reduce or negate adverse impacts as well as to enhance beneficial results of the action.
Monitoring	A method to ensure that the requirements for compliance with relevant legislation and management systems are met.
MOU	Memorandum of Understanding refers to the official document compiled on highest political levels between the host nation and participating forces in terms of expectations, responsibilities, accountability and liability of a force staging or participating in an operation e.g., Peace Support Operations (PSO).

Operation	The complete action of a military force from planning to re-deployment of a force with the desire to achieve a predetermined, specific mission.
Proponent	An organisation or person principally responsible for the proposed action.
Re-deployment	The movement of the complete force after the mission has been achieved either to its home country or to another area of deployment.
Rehabilitation	Rectifying adverse impacts by repairing or enhancing the affected resource.
Rotation of forces	An activity taking place whereby a previously deployed force or part thereof is relieved by another force taking over existing support systems.

ACRONYMNS

AU	African Union
DEFCOM	Defence Committee
EBS	Environmental Baseline Survey
ECOps	Environmental Considerations during Military Operations
ECR	Environmental Condition Report
ESWG	Environmental Security Working Group
EMP	Environmental Management Plan
HAZMAT	Hazardous Materials
IMO	International Maritime Organization
JTF	Joint Task Force
MARPOL	Marine Pollution as described by the International Convention for Prevention of Pollution from Ships (MARPOL 73/78)
MIEM	Military Integrated Environmental Management
MOU	Memorandum of Understanding
NGO	Non-Governmental Organisation
PET	Peacetime Establishment Tables
POL	Petroleum, Oil and Lubricants
PSO	Peace Support Operations
SADC	Southern African Development Countries
SOFA	Status of Forces Agreement
SOP	Standard Operating Procedure
SITREP	Situation Report
TES	Threatened and Endangered Species
UN	United Nations
UXO	Unexploded Ordnance
WET	Wartime Establishment Tables

REFERENCES

Numerous environmental policy and doctrine documents, from international organizations as well as the US and RSA Defence Departments, were utilised during the development of this guidebook. Some of these documents are available as public domain on the World Wide Web. While they are too numerous to cite herein, it is important to note that key documents used as reference during this effort include (but are not limited to):

MC 469: NATO Military Principles and Policies for Environmental Protection (draft 04 Jun 03)

NATO STANAG 2510: Ratification draft 1/115.11.2005: Waste Management Requirements

NATO STANAG 7141EP: Joint NATO Doctrine for Environmental Protection during NATO led Operations and Exercises.

USAF Environmental Guide for Contingency Operations (1 Aug 97). Air Force Handbook 222, Volume 4.

US Army Environmental Impact Analysis Manual for Off-post Training and Deployments (Aug 98)

US Army Environmental Considerations in Military Operations (11 May 01)

US Army in Europe: Contingency Operations Environmental Guide (24 Jun 05)

Multiservice Environmental Considerations in Military Operations (initial draft 2 Aug 04)

USEUCOM Overseas Deployment for Training Project Environmental Planning and Documentation Checklist

Annex L to CDR USEUCOM Op Plan with Appendix 1-4

"Environmental Baseline Surveys" (20 Jul 05)

SA Air Force Instruction: Prescriptions for Deployments regarding Safety, Health, Environment, Risk and Quality (draft Jul 05)

Trilateral Guidebook (USACHPPM): Commanders Guide to Environment, Safety and Occupational Health Considerations in Contingency Operations and Exercises (draft 24 Jun 02)

OTHER GUIDEBOOKS DEVELOPED UNDER THE AUSPICES OF THE US-RSA DEFCOM ESWG

The following are guidebooks previously developed for use by the international defence environmental community by joint US-RSA teams.

Publication ESWG/001 – Conversion of Military Bases in South Africa

Publication ESWG/002 – Military Integrated Training Range Management Guidebook

Publication ESWG/003 – Partnering to Build a South African Ministry of Defence Facilities Management Web Site

Publication ESWG/004 – Guidebook on the Development and Implementation of Environmental Education and Training in the Military

Publication ESWG/005 – Guidebook on Environmental Impact Assessment in the Military

Additional copies may be downloaded from the International Section (“US/South African Guidebooks”) of the DENIX website, which is publicly accessible. Specific location is <https://www.denix.osd.mil/denix/Public/Intl/international.html>.

ACKNOWLEDGEMENTS AND AUTHORS

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