



MINISTRY OF DEFENCE

An Introduction to Environmental Management in the MOD Acquisition Process



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Background

The environmental performance of the Ministry of Defence (MOD) is determined to a significant extent by the nature of the equipment and materiel that it procures. Exercising effective control of equipment specification, design, through-life management and disposal throughout the acquisition process in order to minimise and mitigate any environmental impacts arising from the MOD's activities is therefore fundamental to MOD acquisition activities.

The Secretary of State (SofS) for Defence's Policy Statement for Safety, Health, Environmental Protection and Sustainable Development in Defence states that the MOD is expected to:

"Ensure that in the acquisition of materiel, services and equipment of all kinds, safety and environmental management and sustainable development principles are considered at the requirement definition stage and carried forward through life to disposal. This includes all aspects of maintenance and operation" (September 2010).

As this makes clear, the management of environmental issues applies throughout the life of a project, from the initial concept and design, through usage and operation to maintenance, refurbishment and final disposal. As part of this, it is critical to apply formalised environmental management practices to the acquisition process in order to ensure adequate measures and appropriate controls. This focus on the environmental aspects of MOD acquisition is also critical to achieving MOD Sustainable Development and Sustainable Procurement policy, which are detailed in the Acquisition Operating Framework.

Purpose

This booklet introduces the concepts, terms and activities of effective environmental management that are mandated within the MOD equipment acquisition process. It is intended to enable Project Teams and other MOD staff, especially those in Front Line Command and Operating Centres, to understand the main environmental issues and essential methodologies to control, minimise and mitigate environmental impacts arising from the MOD's procurement decisions and equipment through-life management.

This booklet also introduces and supports the Project Oriented Environmental Management System (POEMS) mandated for use by all Defence Equipment and Support (DE&S) Project Teams to establish their EMS and undertake equipment environmental impact assessments.

Acknowledgement



This booklet was written by SKM Enviros under contract to the MOD DE&S. Suggestions for improvement should be sent to: Acquisition Safety and Environmental Team (ASE)
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Key Messages

The Environment has become an increasingly important issue

The concept of Sustainable Development is considered a way forward to manage human interaction with the environment

The MOD has a moral and legal responsibility for identifying and managing environmental risk

The development of environmental management systems and processes has allowed the MOD to improve its environmental performance

The activities and responsibility of DE&S and Front Line Command is becoming ever more important in terms of delivery of environmental improvements within the MOD

1.1 The Environmental Imperative

The relative state of the environment has become an increasingly important issue over recent decades. Politicians throughout the world now attend regular summits specifically arranged to discuss global environmental concerns, including the impact of Greenhouse Gas emissions and resource use.

A recent MORI report on public perception of climate change found that most people in Britain (71%) are either fairly or very concerned about climate change (March 2010). Another recent poll carried out by MORI following the UN Climate Change Conference in Copenhagen in December 2009 found that around nine out of ten people questioned accept some degree of global warming.

The industrial revolution, combined with population growth since 1900, has imposed unprecedented and unsustainable pressures on the natural world and the unsustainable consumption of resources. These are manifest in widespread degradation of the natural environment in ways that now affect every living creature. To counter this trend, environmental legislation has been made increasingly stringent and far-reaching, a pattern set to continue as we become more knowledgeable about what causes environmental damage.

The environment can be an emotive subject. Some people regard any change to the natural world as unacceptable. To the more pragmatic, this view is impractical and an approach that is considered sustainable would be considered more realistic as it balances economic growth, social pressures and environment into the decision making process. All organisations impact on the environment to some extent, and the Ministry of Defence (MOD) is no exception. Environmental management is about taking a consistent approach to identify significant areas of concern and to target effort where it will deliver the greatest benefit.

For the MOD, decisions made on environmental and Sustainable Development grounds must be balanced with other requirements such as operational capabilities and cost-effectiveness over the whole lifetime of a project. This approach is utilised by most organisations and is supported in UK and European law by concepts such as BAT (Best Available Techniques), BPEO (Best Practicable Environmental Option) and BPM (Best Practicable Means), all explained in Chapter 9. Government and MOD Sustainable Procurement policies also aim to minimise environmental impact of government department procurement activities, setting minimum procurement standards for certain commodities.

1. Introduction

1.2 Why manage environmental performance?

We now know that many activities once considered relatively benign have a significant impact upon the natural world. Once the oceans were thought so vast that comparatively minor amounts of sewage would have no detrimental effect. As with numerous other issues, we have learned that the environment is far more susceptible to suffer from such activities than was previously imagined.

As environmental legislation has tightened and public perception has shifted, it has become unacceptable for individuals or organisations to needlessly pollute the natural environment. Organisations have also learned that operating in an environmentally responsible manner saves money, will improve recruitment and staff retention, and often enhances the reputation and business output of an enterprise.

The MOD is a large organisation whose activities inevitably impact significantly on the environment. The MOD is responsible for 1% of the UK Governments Carbon Budget, with emissions from the estate and operations, and marine and aviation fuel included within the budget. An adequate response to these issues requires a robust and methodical approach to identify potentially significant environmental impacts at the earliest possible stage in the acquisition cycle. Such a process will help procurement teams to design out environmentally damaging and unsustainable features and to procure equipment services and materiel with fewer impacts through-life.

Recent experience has shown that a failure to identify and assess environmental issues surrounding particular services or the design, manufacture, use, refurbishment and disposal of goods and equipment will cause project and equipment delays. These can give rise to cost overruns, complicate and delay disposal and may significantly undermine operational effectiveness.

1.3 Judgement and Evidence

Sound judgement concerning the relative environmental impacts of equipment and materiel will develop only over time. Documenting past decisions and the evidence used to reach them provides the 'Environmental Case' for a particular equipment system or acquisition.

An Environmental Case is the "structured and documented body of evidence" about the environmental impacts associated with the equipment or capability. This will be built up gradually over time and is never static, but rather a collection of documents that will be supplemented and reviewed over the equipment's lifetime. Environmental Cases should be proportionate to the environmental risks that the project poses.

Environmental Cases also provide a means to show that environmental issues have been given adequate consideration within a logical decision making process. This ensures that any future challenge to past decisions can be defended on the basis that they were made with sound judgement using all the facts available at that time.

The MOD acquisition community is developing its competence in this area. As a result it has become easier to analyse the relative merits of different equipment options. This has helped to drive improvement in the MOD's environmental performance, and will continue to do so in the future.



1.4 MOD Environmental Responsibilities

The Secretary of State (SoS) for Defence's policy statement provides strategic direction to all the Top Level Budget (TLB) holders and Trading Fund Agency Chief Executives responsible for the implementation of the MOD's environment policy. They have systems for explicitly delegating down the management chain the authority for implementing environment policy. TLB holders and Trading Fund Agencies will also have safety and environmental management systems (EMS) for their own organisations.

Defence Equipment and Support (DE&S) is responsible for the procurement and support of military systems. DE&S therefore has a key role in ensuring that the systems provided to MOD personnel are, and continue to be, environmentally adequate for their purpose. This is achieved by following a systematic process through the project lifecycle of all military systems to ensure that the management of environmental issues is "built in".

The MOD has a Project Oriented Environmental Management System (POEMS) which is mandated across its acquisition activities. This management system is described in the strategic policy Joint Services Publication (JSP) 815 (Defence Environment and Safety Management) and detailed policy JSP 418 (Sustainable Development and Environment Manual).

The Front Line Commands will usually have responsibility to operate and maintain the military systems, therefore; their decisions can also expose the environment to risk. They have a crucial responsibility in managing the environmental aspects and impacts of their activities and should ensure that any environmental management system is functioning and that any shortfalls are recognised and corrected. The Environmental Case should give commanders sufficient information to make robust judgements.

The MOD's POEMS system for defence equipment is underpinned by clear policy and organisation, but the key to achieving environmental improvements is competent people working co-operatively and from the earliest stage of the system lifecycle.



2. The Environment

Key Messages

The term 'environment' encompasses the whole world; land, water, air, plants, animals and people

There are considered to be 12 (the Dirty Dozen) major environmental issues faced globally

Emissions and use of carbon is one of the most prominent environmental issues facing the MOD, which is responsible for 1% of the UK Carbon Budget

Waste and its disposal is also an issue arising throughout the life of a project, and during final disposal

The goal of Sustainable Development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life for future generations

2.1 What do we mean by the Environment and Environmental Impacts?

The term 'environment' encompasses the whole world; land, water, air, plants, animals and people. Environmental impacts can arise naturally, although the majority of those we are concerned with tend to be caused by human activity.

2.2 Environmental Change

The environment exists in an ever-changing natural state of dynamic equilibrium. Some change occurs gradually over long periods of time and the natural world generally adapts to this through evolutionary processes to establish a new equilibrium. Occasionally, a period of rapid change or a catastrophic event will cause an extreme shift in the equilibrium, sometimes on a global scale. For example, an entire life-supporting ecosystem can fail with the loss of just one species or it may unravel following the rapid loss of many species.

Humans have a unique ability to shape their environment to meet their own needs. Our actions commonly disrupt the natural equilibrium, but the rate at which we are now causing substantial disruption is creating pressures on the natural environment sufficient to provoke catastrophic change. For example, combined changes in land use, exploitation of forests and marine resources, rising atmospheric carbon dioxide (CO₂) concentrations, climate change and eutrophication

are projected by models to result in significant changes in the distribution and abundance of species, species groups and biomes (Secretariat of the Convention on Biological Diversity, 2010).

2.3 The State of the Environment

The current crisis on the extinction of species stems from humanity's unsustainable management of the planet. Humans are a part of a large ecosystem within which they depend upon many other species for their own survival. The condition of the natural world, the environment in which we live, is vital to our continued existence. For example, plants supply virtually all our food directly or indirectly and are the primary source of medicine for at least three-quarters of the world's population. Plants also regenerate the air that we breathe, regulate climate and produce the soil we depend on.



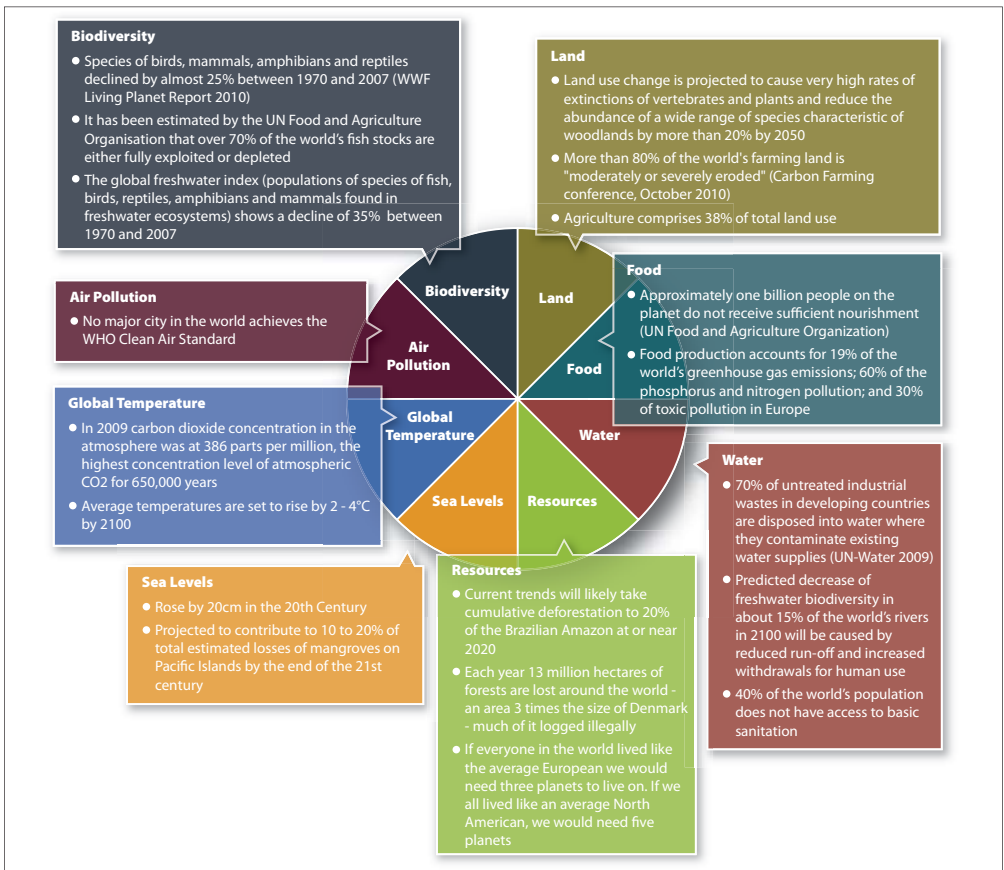
2. The Environment

2.4 Global Environmental Issues

The natural world is under enormous pressure from human existence. The most significant of these pressures can be summarised by the so-called 'Dirty Dozen'. They are:

- Climate Change
- Ozone Depletion
- Acid Rain
- Air Pollution

- Resource Depletion
- Waste Disposal
- Water Pollution
- Water Shortages
- Biodiversity Loss
- Desertification and Soil Erosion
- Deforestation
- Overpopulation



The information above is taken from a variety of reliable sources, including the World Health Organisation (WHO), United Nations Environment Programme (UNEP) and World Wide Fund for Nature (WWF).

2. The Environment

One of the most significant global environmental issues faced is that of Climate Change through Greenhouse Gas emissions. Of the 6 major Greenhouse Gases, which includes both carbon dioxide (CO₂) and methane (CH₄), currently it is carbon dioxide which faces closest scrutiny.

The basket of GHG comprises the six main gases with a direct greenhouse effect: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). The base year is defined as 1990 emissions of carbon dioxide, methane and nitrous oxide – about 98% of the basket – and 1995 emissions of hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

The UK Government has set a Carbon Budget, which covers the following sectors: Residential; Transport; Waste; Energy Supply; Industrial Processes; Business; Agriculture; and, the Public Sector Estate and Operations. Most of these relate to MOD activities, for example, the MOD's share of the Transport Sector is 3% of UK emissions, whilst the MOD's share in the Public Sector Estate and Operations is 18% of emissions.

The MOD is responsible for emissions of approximately 5.6 Mega tonnes of Carbon Dioxide equivalent (Mt CO₂e) each year, roughly 1% of UK emissions (08/09 figures). As part of implementing the Carbon Budget, the MOD was required to implement a Climate Change Strategy, within which the Transport and Estate Sectors are covered in relation to both emissions reduction and Climate Change adaptation.

2.5 Addressing Environmental Problems

The WWF estimates that global resource consumption is 50% greater than the Earth's biological capacity and could increase to 200% of the Earth's capacity by 2030. Such a scenario is unsustainable and is likely to provoke local and potentially global catastrophes on a scale and with a frequency previously unknown.

Future scenarios need to be sustainable, balancing the three accepted pillars of Sustainable Development (society, the environment and the economy) to ensure that we live within our means, as defined by the UK Government's Sustainable Development Strategy, 'Securing the Future':

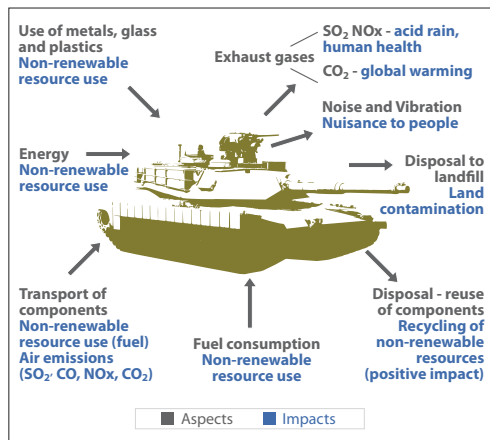
"The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life of future generations."

The need to mitigate environmental impacts is paramount to our continued quality of life.

2.6 Curbing Environmental Impacts

The primary goal of environmental management is to manage, minimise and mitigate environmental impacts arising from the organisation's activities.

The drive to pursue such practice has produced a number of concepts, some of which have been introduced into legislation and others that are applied as voluntary codes of practice, such as Sustainable Procurement. Some of these concepts are discussed in greater detail in Chapter 9.



3. The MOD and the Environment

Key Messages

Positive environmental outcomes are important to the MOD for its public reputation, operational flexibility, cost savings and to ensure compliance with regulations and MOD policy

The MOD can use its purchasing power with suppliers to implement Sustainable Procurement, such as through the MOD's Sustainable Procurement Charter

Project Teams are responsible for implementing an EMS throughout the acquisition process

Front Line Command are also responsible for delivery of environmental improvements

Involvement of Heads of Capability is crucial to managing environmental impacts at the beginning of CAD-MID, where the greatest opportunity to mitigate environmental impacts lies

Operating Centres are responsible for providing assurance that all Project Teams within that Centre have appropriate environmental management arrangements such as implementing POEMS and complying with all Sustainable Development and Sustainable Procurement mandates

All MOD organisations should have, or be part of, an Environmental Management System based on ISO 14001

3.1 Why is environmental management important to the MOD?

The MOD recognises the value of protecting the environment and the need to demonstrate that it has put in place appropriate management processes to deliver improvements.

- Legislation demands it

The MOD must operate within the confines of the law as it no longer enjoys Crown Exemption. Exemption to legislation may still be granted (by the Defence Minister of the day) but only in circumstances where it is absolutely essential to maintain operational capability, or in the interest of National Security.

The scope and demands of environmental legislation continue to increase, imposing stricter limits on negative impacts such as air emissions, effluent discharges, noise and waste. Some recent legislation directly affects supply chains. For example the Registration, Evaluation, Authorisation & restriction of Chemicals (REACH) Regulations 2010 (see section 4.5) and Waste Electrical and Electronic Equipment Directive (Jan 2007).

In the UK, under measures such as the Environmental Protection Act 1990 and the Environment Act 1995 ministers can issue Statutory Instruments. Organisations (and in some cases individuals) that infringe the provisions of such measures can face criminal proceedings started by a relevant enforcement agency, individual or organisation. Conviction can lead to a fine or to imprisonment for up to five years for some environmental transgressions.

- Public opinion expects it

According to the European Commission, 85% of European Union (EU) Citizens feel that policymakers should consider the environment to be as important as economic and social policies. Today the environmental impact of all government procurement, including that of the MOD, is attracting an ever-increasing amount of public scrutiny.

- Increased efficiency requires it

Until relatively recently, business activity and environmental protection were not seen as compatible. This perception began to change when business started to recognise that more efficient use of resources would not only curb environmental impacts but could also enhance business output and save a great deal of money.

3. The MOD and the Environment

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Resource efficiency is rapidly becoming the crux of contemporary purchase management because the adoption of greener business practices, such as using renewable energy, applying eco-design principles, recycling waste materials or investing in a transport fleet that uses cleaner fuels, can deliver substantial cost savings.

The report 'More Fight – Less Fuel', prepared for the US Department of Defence (February 2008), found that improving the environmental performance of the US military would result in major financial savings and environmental benefits.

- Local ecosystems and global cycles are preserved by it

The MOD acknowledges that it uses natural resources and that its activities have the potential to contaminate water, cause air pollution, disrupt and destroy natural habitats and give rise to land contamination.

In addition to meeting its legal obligations, minimising impacts benefit the MOD's business and efficiency as well as protecting local and global ecosystems.

- The reputation of the MOD and Services depends on it

A strong focus on environmental performance, particularly in purchasing practice, demonstrates to the public that the UK military is paying attention to the consequences of its operations and activities. When public authorities fail to lead by example on this agenda their reputation will tend to suffer.

- MOD Policy insists upon it

The Secretary of State for Defence requires that the MOD *"implement and maintain coherent ... environmental management systems"*.

POEMS forms part of the Acquisition Safety and Environmental Management System (ASEMS) and has been implemented by the MOD to comply with Government policy and stakeholder expectations with regard to environmental risk in acquisition projects. POEMS has been mandated for all DE&S

acquisition projects. Therefore all Project Teams must adhere to the process and procedures, and comply with the principles of POEMS or put in place a system that meets its requirements to ensure that they are compliant with both MOD and Government policy.

The SofS for Defence has overall responsibility for health, safety, environment and Sustainable Development policy throughout the MOD, which is detailed in JSP 815. In summary, the policy is that:

- Within the UK we comply with all legislation which extends to the UK (including legislation giving effect to the UK's international obligations)
- Overseas we apply UK standards where reasonably practicable, and in addition, comply with relevant host nations' standards

The policy states that *"where there are exemptions or derogations from either domestic or international law applicable to defence, we introduce standards and management arrangements that produce outcomes that are, so far as reasonably practicable, at least as good as those required by legislation"*.

Additionally, the statement notes that *"we seek to disapply legislation on the grounds of national security as far as possible only when such action is absolutely essential to maintain operational capability"* and *"Where there is no relevant legislation, our internal standards aim to optimise the balance between risks and benefits"*.

The statement notes that this does not mean avoiding risks but managing them responsibly, on the basis of impact and likelihood. The policy statement contains a list of strategic principles, in which the SofS requires MOD to:

- Maintain effective emergency arrangements
- Protect the environment
- Deliver against the Government's sustainable development commitments.

3. The MOD and the Environment

3.2 The environmental impact of MOD procurement

On average, the generation of 1 tonne of any product requires 10 tonnes of source materials in its manufacture. Over and above any operational concerns, the MOD therefore impacts significantly upon the environment through its procurement of equipment and materiel. The cost of the eventual product also reflects the 9 tonnes of waste not used.

The MOD has a vital role to play in achieving internal and UK Government Sustainable Development targets, through Sustainable Procurement. Sustainable Procurement is also critical to delivering Defence capability. Climate change, resource depletion and competition for energy have been identified as significant challenges to global stability and therefore national security. Understanding and adapting to these challenges will be critical to delivering defence capability and ensuring operational sustainability in the long-term.

The MOD has introduced the Sustainable Procurement Charter, which is a voluntary charter developed in conjunction with industry and is based on a set of Sustainable Procurement principles. The aim is to work with key defence industry contractors, and the supply chains, who sign up to the Charter in order to embed the principles of Sustainable Procurement into acquisition and through life management practices within the supply chain.

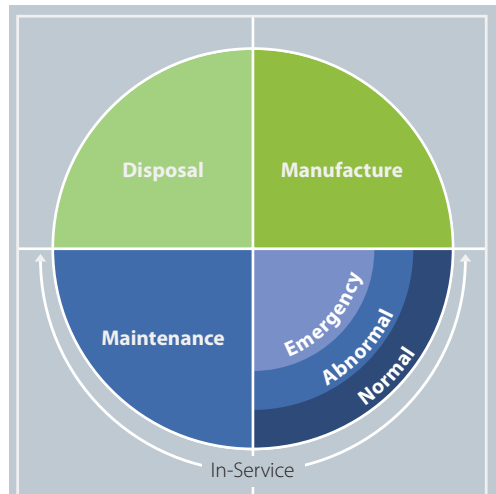
European public authorities spend each year over €1,800 billion on goods and services (14% -16% of the GDP). Directing this spending power towards the purchase of greener products and services can:

- Achieve huge direct environmental benefits
- Help drive the market for greener products and services
- Set an example for corporate and private consumers

For example, the EU Public authorities buy 2.8 million computers annually, which is 12% of the European computer market. If the European market could be moved to producing slightly more efficient computers then over 8 million tonnes CO₂ could be saved - equivalent to the emissions of almost 1 million people

The MOD spends around £18bn a year on procuring equipment, costings for estates and other goods and services - a significant figure from any perspective.

Environmental impacts may occur at all stages during the acquisition process, from manufacture, through use (in normal, abnormal and emergency conditions), maintenance and up-grade, to disposal. For example, if the equipment system procured is a land vehicle, the environmental impacts at different stages of the life cycle may include:



Manufacture

Use - Normal conditions

- Abnormal conditions

- Emergency conditions

Maintenance and Up-grade

Disposal

3. The MOD and the Environment

Life Cycle Stage	Activity Env. Aspect	Possible Env. Impact
Demonstration	Testing and trials	Fossil fuel consumption, carbon emissions noise
Manufacturing	Manufacture of components, assembly, transport to location where system will be In-Service	Energy use in manufacturing, fossil fuel consumption, production of waste, air/carbon emissions Resource depletion
In-Service/ Operation/ Normal	Transport of personnel and equipment, refuelling	Energy use, air/carbon emissions, possible spillages of oil/fuel when refuelling, noise, odour, dust and vibration
In-Service/ Operation/ Abnormal	Temporary deployment for civilian duties	Energy use, air/carbon emissions, possible spillages of oil/fuel when refuelling, noise, odour, dust and vibration
In-Service/ Operation/ Emergency	Road traffic accident, fire or explosion	Land or water contamination through spillages of oil/fuel, air/carbon emissions from fire/explosion
In-Service/ Maintenance/ Routine	Routine servicing	Energy use, fossil fuel consumption, carbon emissions, waste disposal
In-Service/ Maintenance/ Deep repair/upgrade	Replacement of worn or obsolete parts	Energy use, waste disposal, fossil fuel consumption, carbon emissions, special waste disposal
In-Service/ Maintenance/ Rebuild	Fitting of larger engine	Energy use, waste disposal, fossil fuel consumption, carbon emissions special waste disposal
Disposal	Sale of vehicle, recycling of components, disposal of vehicle components	Waste disposal, special waste disposal

Disposal of waste arising from equipment use during the through life stages, and at the end of life, as well as disposal arising from activities on the built estate is a crucial environmental impact faced by the MOD. Through life waste management requires storage, handling and disposal that is compliant with legislation, whilst end of life disposal also requires close liaison with the Disposal Service Authority (DSA) to ensure that appropriate disposal options, i.e. resale (reuse), recycling or landfill disposal, have been considered.

3.3 What can the Project Teams do to manage the environmental impacts of acquisitions?

In general terms, the earlier in a purchasing process, even at the capability setting stage, you consider and incorporate environmental considerations, the greater the opportunity for intervention to manage, mitigate or eliminate negative impacts arising from that acquisition. It is also simpler and cheaper to make modifications during the design phase of an equipment system than it would be to recall, modify and reissue that capability once it has been deployed (even if the extra budget could be found to rectify problems at that stage).

Programme boards set the overall budget for each acquisition and must include in this allocation any provision required to mitigate environmental issues. It is essential that Project Teams identify environmental issues at an early stage so that these costs can be factored in accurately. Likewise, the main environmental requirements need to be set out clearly within the User Requirement Documents (URD) and System Requirement Documents (SRD) if the acquisition process is to fully integrate environmental concerns. The POEMS assessment of a capability being replaced is a good benchmark from which to develop environmental improvement targets and metrics for its successor.

To improve through-life management, the environmental aspects and impacts for each acquisition can be analysed and evaluated in several ways.

The application of an EMS and associated environmental impact methodologies help identify and clarify key environmental impacts. This in turn can help ensure that appropriate procedures are put in place at the key points of the Concept, Assessment, Demonstration, Manufacture, In-Service and Disposal (CADMID) cycle to limit or manage potential problems.

3.4 What can the Front Line Command do to manage the MOD's environmental impacts?

Whilst DE&S Project Teams are responsible for implementing POEMS and managing the environmental impacts through acquisition, they have less control over the environmental impacts of the use of the equipment during training and in-theatre operations. They will rely on active stakeholders, such as Front Line Command to implement and deliver the EMS actions on the ground.

As such, at some point in the implementation of POEMS within the projects life cycle, the immediate

responsibility for managing the use of the equipment and services and delivering environmental improvements may transfer to the Front Line Command. The implementation of POEMS can be influenced by Front Line Command through input into identification of environmental risk, and implementing mitigation actions through managing the use of the equipment and the behaviour of personnel.

3.5 Other Environmental Responsibilities

Delegation of Environmental Tasks within MOD

MOD has a system of "Letters of Delegation" which serve to delegate down the management chain the authority for carrying out safety, and usually environment management, tasks and to define their scope. At the highest level, the delegation starts from the SofS and it will normally be passed down to individual Project Team Leaders, Project Managers (PMs) or commanders. Below that level, the process can be continued, where necessary, through an individual's job description, terms of reference or further letters of delegation.

A letter of delegation is not a legal document and cannot transfer legal responsibility for environmental risk. The person delegating the authority must:

- Ensure that the person tasked is competent to undertake the task
- Provide the necessary resources
- Continue to monitor the progress of the task

The person thus tasked must:

- Report back on progress
- Identify shortfalls in achievement or necessary resource

3. The MOD and the Environment

Project Team Leaders

The Project Team Leaders are responsible for ensuring that the appropriate personnel within their Project Team have been tasked with implementing POEMS. They are also responsible for first line authorisation of environmental risk within their Project Team, after which responsibility of risk acceptance will be elevated up the chain of command. Although unlikely to occur, the highest level for responsibility of risk acceptance lies with the SofS.

Operating Centres

Two of an Operating Centres' key environmental responsibilities include liaison with the Project Teams to ensure that an EMS is in place and liaison with the Customer Support Teams (CST), which includes Front Line Command, to ensure these are being communicated and implemented appropriately.

The Operating Centre also provides assurance to the Acquisition Safety and Environmental Group (ASE) that an EMS is in place, and that there are appropriate arrangements for environmental management within the Project Teams that they cover.

Heads of Capability

The decisions of the Heads of Capability (HoC) are crucial to managing environmental impacts. Their decisions on projects are made before the beginning of the CADMID cycle, during the Capability Setting phase, where the greatest opportunity to mitigate environmental impacts lies. The HoCs should be responsible for ensuring that environmental concerns are taken into consideration during the decision making process from the outset, and as such will be fundamentally incorporated within a project.

3.6 The Management of Environmental Impacts arising from the Estate

As well as with the acquisition of materials and equipment, MOD's decisions also impact on the environment through activities within its estates, including impacts on biodiversity (both negative and positive); energy use; waste arisings and disposal; and effluent i.e. from cooking and ablution activities.

JSP 418 states:

"It is a requirement for all MOD organisations to have or be part of an Environmental Management System based on the international standard ISO 14001."

Therefore all TLB holders have responsibility for implementing an EMS on their sites.

Project Teams should advise other TLB holders, where for instance their equipment may need to be used, stored or maintained, of relevant environmental matters such as significant environmental risks, material components, required mitigation measures etc. In the particular case of the training estate Project Teams should provide Defence Estates, via DTE, with the relevant information.

This will enable the site authorities to include in their own site EMSs relevant environmental information about the capability especially in relation to particular impacts and control requirements. It will also allow site authorities to check that any existing environmental management arrangements are suitable and sufficient to deal with the potential environmental issues arising from the capability whilst on their site.

The site authorities should therefore be in a position to provide assurance to the Project Teams, Front Line Command, Operating Centres and other users that environmental impacts from the use, storage and maintenance of the capability will be effectively managed by the site EMS.

Key Messages

There are moral, legal and financial reasons why MOD has to strive to make its equipment environmentally robust throughout the lifecycle

MOD and other UK employers have a legal duty to ensure that their activities do not cause environmental damage

MOD activities are not immune from UK law, unless there is a clear case that complying with the legislation compromises national security

EU and UK legislation is considered to be more wide-reaching and stringent than in other areas of the world, therefore the MOD strives to comply with this legislation in the first instance

The MOD has a national commitment to climate change and carbon emissions as it contributes 1% to the UK's Carbon Budget targets

Environmental risk increases during times of conflict or abnormal situations caused by operating in less controlled circumstances when compared to training

During conflict or abnormal situations the Secretary of State for Defence can 'disapply' legislation on the grounds of national security

4.1 The MOD's Position

According to JSP 418, the MOD is committed to complying "with all environmental legislation" and "any additional requirements arising from international treaties and protocols to which the UK is a signatory". There are also some exceptions to this basic rule.

As mentioned in the previous section, the MOD no longer enjoys immunity from prosecution except in circumstances where it is deemed vital to sustain 'operational capability'. For example, there are defence exemptions to the recent Airport Controls Directives regarding aircraft noise, because MOD aircraft cannot comply whilst retaining the required level of operational performance. Action taken in such situations is described by the SoFS for Defence's Policy Statement on Safety, Health, Environmental Protection and Sustainable Development in Defence (September 2010):

"Where there are exemptions or derogations from either domestic or international law applicable to Defence, we introduce standards and management arrangements that produce outcomes that are, so far as reasonably

practicable, at least as good as those required by legislation.

Where there is no relevant legislation, our internal standards aim to optimise the balance between risks and benefits. This does not mean avoiding risks but managing them responsibly, on the basis of impact and likelihood."

4.2 The UK Environmental Regulatory Culture

In the policy context set out above, the MOD seeks to comply whenever possible with all Acts of Parliament as interpreted by the relevant regulations, rules and orders (except where it can demonstrate that it would be prejudicial to national security to do so).

Regulations of all kinds generally take the form of Statutory Instruments (available from legislation.gov.uk (www.legislation.gov.uk)). These may be supplemented with guidance in the form of Codes of Practice or Circulars which, although not always legally binding, may also be given statutory status by Statutory Instruments.

4. The MOD and Environmental Law

In addition, there is a body of common law - sometimes called the 'law of precedent' - built up over many years from decisions made by the courts. Project Teams should be aware that it is possible for 'environmental' actions to be taken under common law irrespective of the statutory context. In fact, in some cases, action under common law will be the preferred route, whilst in other cases it may be the only route available.

For instance, under common law, if someone was bothered by noise from MOD activities they might pursue an action for nuisance against the MOD through the courts. Where a nuisance is proven to the satisfaction of the courts, then the normal remedy would involve:

- An injunction to restrict or prohibit the activities giving rise to that noise nuisance
- Financial damages based on the degree and nature of the interference caused

An argument employing the 'Defence Imperative' might be successfully applied to prevent an injunction. However, it is unlikely to prevent the award of monetary damages. In fact, where the Defence Imperative is successfully applied to prevent an injunction, this can possibly result in the award of higher monetary damages.

4.3 The European Environmental Regulatory Culture

Much of the new environmental legislation arising in the UK comes as a direct result of EU legislation in the form of regulations, decisions or directives.

Regulations are directly legally binding upon Member States and do not need to be implemented through national law. They may not be binding upon the MOD or other defence forces and all activities of the state or Government. For instance, there may be exemptions to maintain airworthiness or for other safety and operational reasons.

Decisions are also legally binding, but they are generally targeted at a particular sector or area of activity rather than entire nations.

Directives usually outline a number of objectives which, though not legally binding in themselves, must be translated or 'interpreted' into national legislation and implemented in Member States by a particular date, often to meet objectives or targets specified in the legislation.

4.4 Global Variations

Environmental regulation can vary widely between countries and across continents. For example, parts of Asia, Africa, Central or South America and Eastern Europe have little or no environmental legislation, whereas the UK and USA regulate a wide range of environmental impacts.

"Overseas we apply UK standards where reasonably practicable and, in addition, comply with relevant host nations' standards."

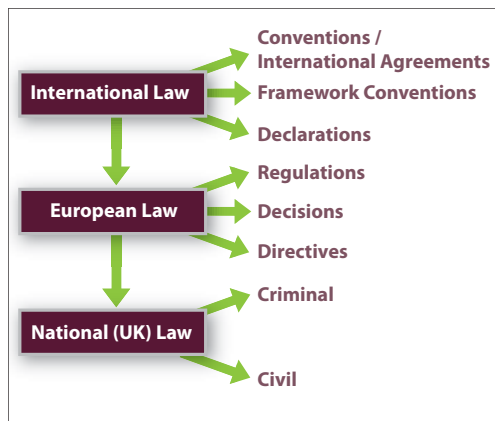
(SoS for Defence's Policy Statement September 2010)

It is the MOD's responsibility to educate itself with regards to relevant local environmental regulation and to ensure that it meets the relevant standards.

4.5 Future Regulation

It can be difficult to predict the timing and scope of new EU and UK legislation. Although the MOD's Safety, Sustainable Development and Continuity Division (SSD&C) do not maintain a comprehensive and up-to-date legal register, they do monitor policy and legislative developments to identify any future measures likely to have consequences for the MOD.

4. The MOD and Environmental Law



Worldwide, it is likely that new policy initiatives combined with increasing levels of regulation will be used to drive up environmental performance. SSD&C acknowledges that this trend poses a major challenge and that future measures are likely to have a considerable impact across the MOD.

Of particular note are the Freedom of Information Act and the associated, more stringent, Environment Information Regulations that came into force on 5 January 2005. This legislation introduces the right of individuals to request information from the MOD, subject to the provisions of the Data Protection Act, including that about environmental performance. There are very few exceptions and even classified information is subject to a public interest test.

See Chapter 10 for further information on Freedom of Information and Environment Information Regulations, as well as SSD&C and JSP 418 for more general information and guidance on environmental legislation.

Another piece of legislation that has recently had an impact on MOD activities is the REACH Regulations 2010. This legislation aims to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical

substances. The MOD is taking the stance that the REACH Regulations apply to the organisation and its suppliers' activities, unless there is a clear case for an exemption. DE&S has published guidance on the REACH Regulations and implementation (see Chapter 10).

Also of importance to MOD activities is legislation around waste management. As well as aiming to minimise the waste produced in the first place, the MOD must ensure compliance with waste regulations, such as the Duty of Care Regulations (i.e. handling and transport of waste) and Hazardous Waste Regulations (MOD waste will consist of hazardous components such as oils and heavy metals). As such the Project Teams and Front Line Command should work closely with the DSA to implement appropriate waste management options.

4.6 Environmental Risk during times of Conflict

The SofS for Defence can 'disapply' legislation on the grounds of national security, for instance, during times of conflict. As part of the acquisition cycle it is important, however, to assess the potential environmental impacts associated with the use of military equipment in normal, abnormal and emergency situations, during intensive operations and on major exercises.

When environmental management is applied to military operations, the aim should be to assess the likely environmental risks in advance and to have appropriate control measures and risk management integrated into military activities.

Environmental risks associated with particular equipment will increase in times of conflict or exceptional operation. Take refuelling at sea for instance. A 'normal' situation would be a refuel in good weather. The task becomes 'abnormal' when taking place in rough seas but may remain within specified guidelines even though there is a greater risk of spillage or leakage and a need for extra mitigation measures.

4. The MOD and Environmental Law

In an 'emergency' scenario the risk of an uncontrolled release will rise substantially, especially where refuelling is interrupted by a pipe failure or perhaps by the emergency disengagement of a receiving vessel coming under fire.

Environmental impacts may not be of great importance during emergency periods but their aftermath can be of grave concern. It is paramount that the likely environmental impacts of any equipment are known before deployment, even if this equipment must be deployed regardless of those findings. Knowing such information at an early stage allows much better planning of possible mitigation measures including safe and efficient pollution clean-up activities.

Calculating the potential environmental risk of equipment deployment at the acquisition stage is fraught with difficulty whether this occurs in peacetime or conflict. The severity of an impact can often be determined for a single incidence, but as the frequency of the impacts is unlikely to be known and usage will be determined by operational requirements, any assessment of significance may be educated guesswork at best.

An environmental assessment should provide commanders with assurance that their systems are environmentally sound for their intended military role, and with information to enable them to make good decisions when on operations. For military equipment, performance and reliability become part of the environmental characteristics when used operationally.

It may only be possible when reviewing deployment scenarios to provide a qualitative rather than quantitative assessment. However, qualitative analyses can still provide sufficient information to enable the MOD and its suppliers to take better precautions to minimise environmental impacts.

The user must be involved in discussions throughout the lifecycle, from setting appropriate environmental requirements through to managing risk and feeding back information on changes of

capability requirement, desired changes of use or problems in service. As it is the service personnel who will be managing most environmental risks in service, they are an integral stakeholder throughout the whole EMS process and must have a major role in saying what level of risk they will be prepared to tolerate for the benefits which the capability provides.

Such decisions are taken by operational commands and are not within the scope of the ASEMS, although they may be influenced by information from that EMS. Equipment procured as an Urgent Operational Requirement (UOR) is needed to satisfy an operational imperative, or fill an urgent capability gap. Environmental management activities are still necessary and may have to be done in compressed timescales.

Whilst the operational use of equipment will be the responsibility of the relevant armed service, much can still be done during the acquisition process to curb environmental impacts and to provide information critical to the management of residual effects.

Environmental management is the MOD's principal risk reduction process to protect the environment. To achieve this, environmental management must be a routine part of planning and executing operational missions.



5. Managing Environmental Performance

Key Messages

System-specific environmental requirements set early in a project lifecycle should drive the development to satisfy the needs of stakeholders

Environmental management is most successful when there is good engagement with stakeholders from an early stage of the lifecycle

The project safety and environment committee provides the forum for decision-takers to hold environmental discussion with stakeholders, and obtain support, where necessary, from subject matter experts

An EMS enables management of environmental aspects and impacts that arise from Project Team activities and decisions

Environmentally responsible organisations save money, improve recruitment and staff retention, and enhance the reputation of an enterprise

Project Oriented Environmental Management Systems (POEMS) requires the setting of Objectives and Targets in relation to the significant stakeholders and standards and priority impacts

Identifying the boundaries of a project through a Life Cycle Assessment ascertains which activities are in or out of scope when implementing an EMS

Over the last decade, competence of implementing EMS within the MOD has expanded as more personnel are trained and more Project Teams implement POEMS

5.1 How can environmental performance be managed?

An EMS provides a flexible framework within which an organisation's key environmental impacts can be managed appropriately to deliver continuous improvement in environmental performance.

Benefits associated with implementing an EMS include:

- Compliance with legislation
- Waste reduction and improved resource efficiency
- Minimisation of business risks
- Significant cost savings
- Enhanced public relations

For the MOD, the application of an EMS should not only help improve its environmental performance but also reduce the environmental liabilities of its equipment and related systems.

Cost Savings

The implementation of POEMS as well as investing in technologically improved equipment, can not only improve MOD capability and environmental performance, but in many instances also provides cost savings. For example, investment in technology that is more energy and fuel efficient will lead to less use and less expenditure on electricity and fuel, improve operational performance and reduce carbon emissions

Several existing EMS standards include: ISO 14001 (the international standard); EMAS (the EU's Eco-Management and Audit Scheme); and BS8555 (British Standard). As an international standard, ISO 14001 is more widely recognised in world markets. It focuses on what the system needs to achieve rather than the methodology.

Used during the acquisition process an EMS can help Project Teams improve design, reduce adverse impacts in the operational phase, identify appropriate mitigation measures and curb residual impacts from each acquisition project.

5. Managing Environmental Performance

In July 2004 the then DPA and DLO (now DE&S) introduced a series of technical procedures to steer Project Teams in this work. The Environmental Management Procedures (EMP), contained in POEMS, are mandated on all DE&S Project Teams. Their purpose is to provide a consistent and coherent approach to EMS that meets the requirements of the ISO standard.

Further details can be found in the next section, or through the Acquisition Operating Framework (AOF) (see Chapter 10).

5.2 Pre-requisites to Successful Environmental Management

Successful environmental management requires that organisations and Project Teams must follow good practices in areas such as:

- Quality
- Configuration management
- Use of Suitably Qualified and Experienced Personnel (SQEP)
- Management of corporate and project risk
- Design reviews
- Independent review
- Closed-loop problem reporting and resolution
- Focus on environment and sustainable development culture

5.3 Setting Environmental Requirements

One of the most difficult elements of the environmental management process is setting the level of required risk for the system in both peacetime and wartime. This should be based on the BPEO principle for tolerating risks to the environment.

The application of the BPEO principle to MOD systems is not straightforward. Individual projects will be guided by departmental environmental policy but must develop and record their own justification for the targets and criteria which they use.

The environmental requirements should also consider the influence of the operating context (or environment) on the consequences of environmental risks for the system. For example, the system may be part of a wider “system of systems” whose performance and ability to mitigate or prevent environmental consequences, must be taken into account.

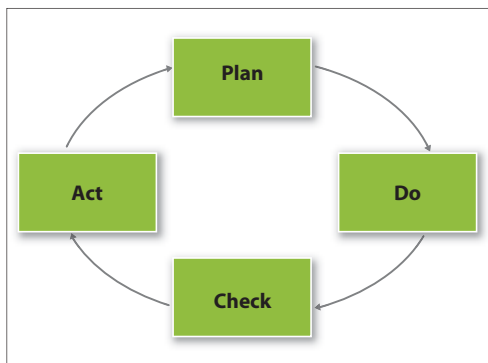
The requirements of an EMS will vary according to the system size, function, or role, but will include one or more of the following:

- Legal and regulatory requirements
- Environment related standards
- MOD policy or procedural requirements
- Risk targets (quantitative and qualitative)
- Eco-design criteria

5.4 The Structure of an EMS

The main components of any management system can be summarised in the Deming ‘Plan-Do-Check-Act’ Cycle.

Diagram of the Deming Cycle



5. Managing Environmental Performance

This continuous cycle involves four steps:

- Plan - to determine scope of the management system during the initial phase, which will continually develop throughout the project life cycle
- Do - to develop appropriate procedures and responsibilities in order to ensure that relevant issues are managed suitably
- Check - periodic monitoring and checking to ensure the system is working efficiently
- Act - appropriate measures to rectify any shortfalls and updating where circumstances change

The structure of an EMS that conforms to the ISO 14001 standard will closely align to the Deming Cycle and include all the checks required to ensure the system is relevant and operates effectively.

The complexity of an EMS will be influenced by each organisation's activities. It must however include the following elements:

- An assessment of environmental issues linked to activities and performance
- Setting performance objectives and targets within a programme of environmental action
- Identified responsibilities and procedures for the programme of environmental action
- Periodic auditing of the system to ensure it works effectively

To ensure success, top management must also make a commitment, at an early stage in the development of an EMS, to improve their organisation's environmental performance.

5.5 Life Cycle Assessment

Life Cycle Assessment (LCA) is a formal process to assess the environmental aspects and impacts throughout the lifetime of a process, product or service. This cradle to grave approach prevents displacement of environmental impacts to a different stage in the life cycle. For example, pollution arising from the production process may be reduced by changes in raw materials but this must not increase the wastes arising from usage or any other disposal impact at the end its life cycle.

The LCA can be captured visually in a 'Context Diagram'. This shows the various stages of a project from start to finish; which of the stages of the life cycle are in or out of scope of a particular project; and what the inputs, activities and outputs are at each stage of the life cycle.

Even during the earliest stages of the life cycle, the impacts of later stages should be taken into consideration, especially in relation to end-of-life disposal. This will help to minimise disposal costs, and to avoid unforeseen expenditure that may be required when disposing of equipment and materials.



5. Managing Environmental Performance

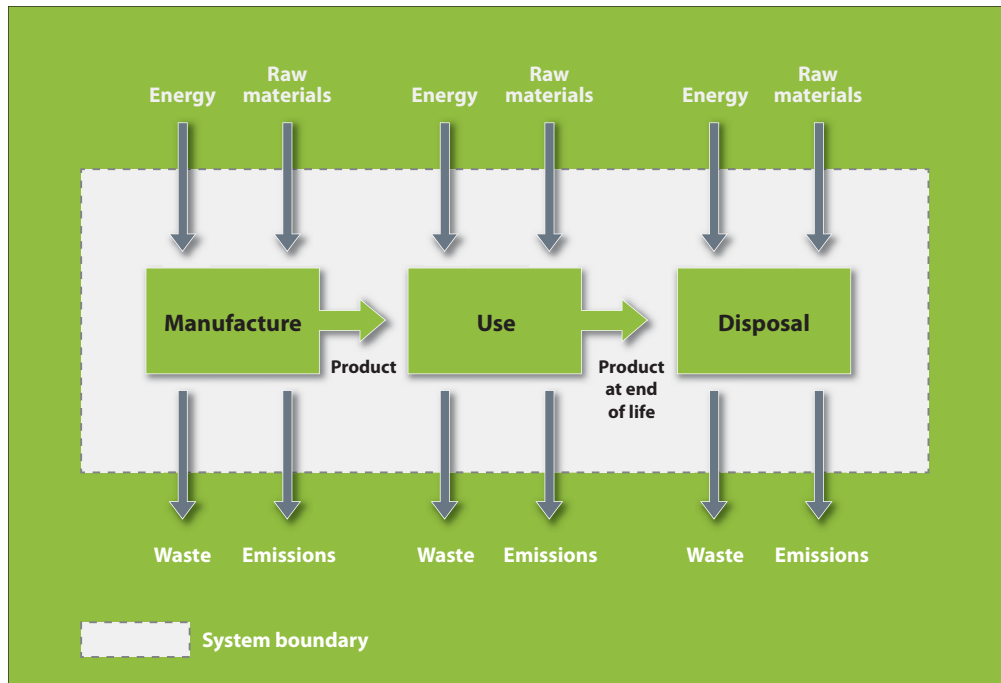


Diagram of LCA approach

5.6 MOD EMS competencies and training

The DE&S competency in implementing EMS has expanded significantly since 2003. This includes the majority of Project Teams within DE&S implementing various stages of POEMS. Many DE&S and contractor personnel have been trained to acquire knowledge of introducing POEMS to their relevant projects. The Defence Academy, sponsored by DE&S, provides training for individuals looking to implement POEMS for their Project Teams.

There are functional environment competence schemes developed for MOD personnel involved with environment-related systems. This allows the MOD to define the requirements for different roles and to assess and improve the competence of people assigned to those roles. Competence can be

improved by training and by practical application under supervision. Evidence that people and organisations are competent provides some assurance that their work and decisions relating to environmental management are good and so forms part of the Environmental Case.

However there is much wider EMS competence within MOD than that related to POEMS. For the MOD's vast training and other estate elements, the Defence Estates has also introduced EMSs at all training locations and most main sites. These site and facility based EMSs are the management systems by which many of the local aspects and impacts are managed. The relationship between POEMS and any site or unit EMS, and the competence to both understand and work across the systems, is essential to ensure that MOD discharges its overall environmental responsibilities.

5. Managing Environmental Performance

5.7 Environmental Committees

Environmental management is most successful when the decision-takers have good engagement with stakeholders from an early stage of a project. Firstly, the stakeholders must be identified and then there should be consultation to understand their requirements. The Project Team environmental committee provides the forum for decision-takers to consult stakeholders, with support where necessary from Subject Matter Experts (SMEs).

It is the decision of the Project Team Leaders whether to convene a separate Environmental Committee or to convene a combined Safety and Environmental Committee. It may even be appropriate to organise the Environmental Committee as a sub-committee to the Safety Committee. In any case it is expected that the Environmental Committee will liaise closely with the Safety Committee as there is often a natural synergy between the management of environmental and safety issues.

An Environmental Committee provides the environmental management focus of a system, equipment or group of equipments within the MOD. Committee membership should include representatives from all authorities that have environmental responsibilities for the system and/or equipment(s), typically consisting of:

- Project Team personnel (e.g. project environment manager and other technical, finance and contracts officers as required)
- Head of Capability SMEs
- Front Line Command (User) SMEs
- Trials team
- Maintenance specialists
- Prime contractor and/or design authority
- Specialist advisors (e.g. from industry, MOD or independent environmental specialists)
- Independent environmental auditors (where one is appointed)

The Front Line Command has a key role in the committee since they have the detailed knowledge of the usage. It is important that the Front Line Command are represented at an appropriate level to bring relevant operational experience and to have the necessary authority for any decisions that have to be taken.

There is most scope early in a project lifecycle to influence the development/acquisition for environment, taking account of stakeholder requirements and experience to set a good environmental management strategy. The committee should therefore be convened at project initiation, to ensure that environmental aspects are correctly considered and integrated into project activities as necessary.

The committee should co-ordinate the Environmental Management Plan (EMP), develop environmental requirements, and progress the production of the Environmental Case. The composition of the committee may change through the project lifecycle according to the work required at that stage.

An environmental committee should cover each system or piece of equipment throughout its lifecycle, although this is often achieved through grouping together similar equipments under one committee. For smaller projects, the committee may be integrated with other meetings, such as safety, but environmental issues should be a separate, and permanent, agenda item at these meetings.



5. Managing Environmental Performance

5.8 Continuous Improvement

The environmental risk arising from a project is not static and it will usually tend to degrade over time if not reviewed and updated regularly. Monitoring and feedback are therefore required to maintain or improve the environmental performance.

There are several ways of achieving the environmental management goal of continuous improvement. These include both active and reactive methods such as the following:

- Incident reporting, investigation and feedback - reactive
- Environmental reviews and audits - active
- Safety and Environment working groups and environmental committees - active and reactive
- Suggestion schemes which cover environment - active

Environmental management must not be viewed as a one off exercise: the MOD is continuously trying to improve its environmental performance. A strong environmental culture, with the necessary stimulation from reviews, audits, incidents and suggestions, will ensure that environmental performance improves.



6. The Acquisition Environmental Management System

Key Messages

The Acquisition EMS is consistent with ISO 14001, and is based on the following stages: Collect evidence; Analyse/evaluate evidence; Set priorities; Determine actions; Audit performance

POEMS procedures have been designed to manage environmental performance and environmental liabilities of equipment and services throughout the acquisition process

Measures of environmental risk should be treated as forecasts with a degree of uncertainty. Using input from people who know the system and its operation will give improved forecasts of risk

Risk forecasts should be used to focus effort and resources on the most significant environmental risks, to have the greatest influence on environmental performance

A context diagram is a visual tool to help identify POEMS boundaries in order to determine what activities are in or out of scope of the project's EMS as well as identifying responsibilities

Project Teams should have access to environmental expertise in the form of Environmental Committees in close liaison with the Safety Committee in order to manage environmental impacts effectively and with confidence

As a part of POEMS, regular audits of the procedures and their implementation are required

Audits ensure that an EMS is being applied properly e.g. through operational controls, appropriate training of staff and incident reporting

6.1 Overview of Structure

The MOD has already recognised the positive role of EMS in managing and improving environmental performance. Supported by the Defence Council and all areas of the Department, the MOD began to implement a corporate EMS in April 2001 based on the ISO 14001 standard. This is designed to provide *"a framework for managing environmental agendas and for tracking, evaluating and communicating performance,"* (JSP 418).

Against the backdrop of increasing assurance on all government purchasing, it is mandated that an EMS approach is applied to the MOD's acquisitions process to identify and manage potential environmental impacts and related risks throughout the life of its projects. See the MOD's AOF website (Chapter 10) for more information on how the MOD carries out business acquisitions. AOF is also the tool within which POEMS sits.

The controls and procedures inherent in an EMS make it possible to identify potential adverse or

beneficial environmental impacts much earlier in the acquisition process. This in turn makes it possible to design potentially adverse impacts out of the equipment system or to mitigate such potential impacts through better management and control arrangements. In the same way, beneficial environmental impacts can be identified and enhanced as early as practicable in each procurement project.

The Project Team Leader's role within the acquisition process requires acceptance of any residual environmental risk identified through POEMS implementation on a project. In very unlikely circumstances, the risk may be unusually high, i.e. it could pose a critical or catastrophic risk to the environment and even threaten the continuation of the project. This will require the identified risk to be categorised and, if the risk is deemed too high to tolerate, escalated through the DE&S risk referral process through the various chains of command up to, and including, the SoFS.

6. The Acquisition Environmental Management System

The Acquisition EMS is based on five main steps:

- Collect evidence (e.g. legislation and stakeholders)
- Analyse/evaluate evidence
- Set priorities
- Determine actions
- Audit performance

The Acquisition EMS has been structured to be consistent with the International EMS Standard ISO 14001 and the related ISO 14040 series. It has been designed to align with the main stages of the CADMID acquisition cycle and, where possible, the safety management processes managed by Project Teams. The Acquisition EMS has also been designed to be flexible to deal with the vast range of procurement projects that Project Teams deal with, in terms of size of project, equipment complexity and the procurement strategy employed. The methodology for the Acquisition EMS is intended to enable Project Teams to meet the steps outlined above and is set out in the POEMS, which is described in the next section.

6.2 The Project Oriented Environmental Management System

Overview

The POEMS procedures have been designed to provide Project Teams with an ISO14001 compliant methodology for the management of the environmental performance and environmental liabilities of equipment and services throughout the acquisition process. They enable Project Teams and others, such as contractors, suppliers and advisors to:

- Identify and apply appropriate mitigation measures to reduce adverse environmental impacts to tolerable levels

- Identify and manage any residual impacts
- Exploit positive environmental impacts of acquisition projects
- Set a benchmark for future acquisitions

The POEMS stresses the importance of identifying and consulting with stakeholders and SMEs so that Project Teams can discharge their delegated responsibilities. Environmental management can only be achieved and sustained through co-ordinated effort by authorities with responsibilities for operation, maintenance and training as well as design, manufacture and upkeep. Full details of the POEMS procedures for use by Project Teams can be accessed through the AOF System.

POEMS Scope

The scope of the POEMS is limited to the work of Project Teams in acquisition projects for equipment and services. The POEMS does not seek to directly manage operational use of equipment as this is the responsibility of the relevant service and is outside of the responsibility of Project Teams. However, the output of the POEMS will inform the operational communities' management of the possible environmental impacts arising from equipment use, and any operational mitigation that should be implemented.

The POEMS is designed to encourage a proportional response to the size, complexity and environmental challenge of projects. It follows the rationale of CADMID and is aligned with existing equipment safety management practices and procedures, where practicable. The assessment elements of the POEMS have also been developed to be consistent with current processes and procedures operated elsewhere within MOD.

In implementing POEMS, the Project Team should identify the project boundaries (this can be done visually in the form of a Context Diagram). This determines what activities are in or out of scope of the project's EMS as well as identifying responsibilities.

6. The Acquisition Environmental Management System

POEMS Structure

The procedures contained within the POEMS form three groups as follows:

- The Core Procedures
- The Support Procedures
- The Assurance and Audit Procedures

The structure and contents of each group of procedures is shown below:

POEMS Procedures

The Core Procedures cover the main tasks and activities required by the POEMS and comprise eight separate procedures. In outline:

- Procedures EMP01, EMP02 and EMP03 broadly cover collection and collation of relevant information and planning:
 - EMP01 identifies relevant Stakeholders and Standards
 - EMP02 Screening and Scoping identifies potential direct and indirect, positive and negative environmental aspects and impacts
 - EMP03 Impact Priority Evaluation prioritises the environmental impacts identified during EMP02

- Procedures EMP04 and EMP05 deal with undertaking and reporting environmental impact assessments:
 - EMP04 Environmental Impact Assessment Plans are intended to guide the Environmental Impact Assessment (EIA), by identifying whether a full EIA and Report are necessary
 - EMP05 Environmental Impact Assessment and Reporting will only be necessary if EMP04 has identified the need for an EIA. If so, then the EIA should establish appropriate mitigation measures for adverse environmental impacts and ways to optimise positive environmental impacts
- Procedures EMP06 and EMP07 cover the development of Environmental Management Plans:
 - EMP06 requires Objectives and Targets for the EMS to be set. These should be established taking into consideration any significant standards or stakeholder concerns, and medium to high priority impacts identified in the earlier stages of the POEMS procedures

Assurance and Audit Procedures

- System Audit
- Management Review
- Non-conformance and Corrective Action
- Monitoring and Measurement

Core Procedures

- Stakeholders and Standards Identification
- Screening and Scoping
- Impact Priority Evaluation
- Environmental Impact Assessment Plan
- Environmental Impact Assessment and Reporting
- Environmental Management Plan (Setting Objectives and Targets)
- Operational Controls
- Continuous Review

Assurance and Audit Procedures

- Communication Training and Awareness
- Document and Record Control

6. The Acquisition Environmental Management System

- EMP07 ensures that appropriate Operational Controls are established to achieve the Objectives and Targets identified in EMP06
- Procedure EMP08 covers review and continuous improvement of EMS outputs at specific set intervals or trigger points

The Core Procedures

The POEMS procedures (EMP01 – EMP08) follow the main structure of an EMS, which includes: Plan, Do, Check and Act. The first four procedures determine the scope of the management system and develop appropriate procedures and responsibilities in order to ensure that relevant issues are managed suitably. EMP05 – EMP08 includes the EMP and setting of Objectives and Targets, these stages focus more on the doing and acting processes of implementing an EMS. Many MOD Project Teams have implemented the first four procedures of POEMS. Moving forward action through procedures EMP05 – EMP08 is of high importance if improved environmental performance of MOD equipment and activities is to be realised.

The following elements form the principal parts of the EMS put in place by the POEMS procedures:

6.3 Environmental Management Planning

Environmental management planning is an important and integral part of the Acquisition EMS. It sets out the way in which the organisation intends to meet the environmental objectives and targets that it has set for itself. It should result in the formation of an EMP or Programme which:

- Sets environmental impact standards and improvement targets
- Describes the agreed, specific actions that must be carried out
- Indicates deadlines for the completion of actions
- Assigns responsibilities for carrying out the actions
- Includes any environmental performance monitoring and measurement requirements.

The EMP should cover the current life cycle stage of the project but also include draft provisions for the future stages. These will be updated as the project progresses. This plan, along with the Safety Plan, will form part of the equipment's Through Life Management Plan.



6. The Acquisition Environmental Management System

As disposal is an issue that arises throughout all the stages of a project's lifecycle, the EMP should take into consideration the issue of Through Life Disposal, as well as End Life Disposal.

Through Life Disposal requires that waste arisings are managed in compliance with legislation of storage, handling, transfer and disposal of waste. For example, assurance that appropriate measures and waste contractors are in place should be provided from various stakeholders, predominantly Defence Estates and Front Line Command. This is one of the points in the management where interaction between POEMS and any site or unit based EMS will be required.

End of life disposal should be considered as early as possible at initiation of the project, with possible routes identified and subsequent financial, commercial and environmental implications taken into consideration. Any financial funding requirements to cater for end-of-life solutions should be identified and communicated at the earliest opportunity.

6.4 Environmental Committee

It is useful for Project Teams to have ready access to environmental expertise to enable them to manage environmental impacts effectively and confidently. This expertise is represented in the project Environmental Committee. Members of the Environmental Committee should include representatives of the main internal stakeholder groups such as relevant Project Teams and Safety Management Offices (SMOs). It may also include external personnel such as industry or scientific experts, consultants or academics. The Environmental Committee's function is to provide advice and support to the Project Team on environmental issues related to the project.

It is the decision of the Project Team Leaders whether to convene a separate Environmental Committee or to convene a combined Safety and Environmental Committee. It may even be

appropriate to organise the Environmental Committee as a sub-committee to the Safety Committee. In any case it is expected that the Environmental Committee will liaise closely with the Safety Committee as there is often a natural synergy between the management of environmental and safety issues.

6.5 Environmental Monitoring and Audits

It is a fact of life that no system is completely foolproof. EMSs are no exception. This means that there is an inherent risk that accidents and incidents may still happen despite best efforts. The important issue is that lessons are learned from mistakes. Part of this process of learning and continual improvement is the requirement for regular monitoring and audits.

Monitoring and audit can occur at two levels, namely the equipment level or the EMS level.

For the equipment there may be environmental monitoring requirements such as noise and emission monitoring. This is important to ensure that legal limits are not exceeded and that any relevant targets are being met. It may also be necessary to identify where there may be a requirement to apply for exemptions from law. Audits must also ensure that the EMS is being properly applied to the environmental management of equipment, such as through the proper application of operational control procedures, adequate staff training and incident reporting. Any non-conformances should not only be reported but should also be addressed through the introduction of preventative measures.

With regards to the EMS there will need to be audits to ensure that the system is being operated to the desired standard. For example, that document control is adequate, that management reviews are taking place regularly etc.

6. The Acquisition Environmental Management System

These audits should be carried out regularly and should inform improvement measures so that the EMS itself is continually developing and improving.

Finally, monitoring regimes and audits are not just there to identify problems, they can also be used to share good practice between projects and lead to improvements throughout the Project Team, the Operating Centre, and DE&S.



7. Environmental Issues through the Life Cycle

Key Messages

Environmental assessment is an iterative process within the overall development of the system

Environmental assessment draws on a range of available techniques to identify and understand possible environmental risks

Possible environmental risks must be identified and understood so that they can be eliminated or controlled

Environmental risk identification is most effective when done systematically by a team of people with knowledge about the system, its design, usage and environment

Compliance with POEMS will ensure that any project's EMS is robust and proportionate to the project's levels of risk

Recent experience of the MOD acquisition community in implementing POEMS highlights that the majority of applications lie within the In-Service and Disposal stages

Before a project comes into service, the emphasis of environmental management is on influencing the development of the project to eliminate environmental risk and enhance environmental benefits

When a project is In-Service, the environmental management is principally concerned with controlling residual or remaining environmental risks

7.1 General

Different environmental issues arise through the stages in a system's lifecycle, and their successful management and mitigation requires a variety of approaches and skills. This section looks at these issues and indicates what should be done and when. Environmental management requires a close working relationship between the sponsor, the Project Team, the users, equipment developers and any environmental regulation or approval authorities.

The approaches required at various stages draw on different mental attitudes:

- Capability setting and inception (earliest stages) - imaginative and decision-making
- Execution (development, introduction) - meticulous and understanding
- Use - competent and disciplined
- Disposal – innovative approaches to reuse, recycling and recovery rather than dispose to landfill.

Most of the following discussion is based around the CADMID acquisition cycle, which is one example of a project lifecycle model. Although the CADMID cycle is usually represented as a sequence of discrete stages, elements of the cycle frequently take place in parallel rather than series. For instance, disposal activities occur throughout the lifecycle as well as the whole system disposal at the end of its life.

7.2 MOD's Acquisition Safety and Environmental Management System

The application of ASEMS is mandated across all DE&S acquisition projects. It is a flexible system that can be applied by Project Teams for projects of all acquisition strategies and technologies and across all domains to meet the requirements of domain-specific safety and environmental JSPs.

The ASEMS procedures will enable Project Teams to meet the requirements set out in this section in a consistent and appropriate way ensuring they deliver the right outputs at the right stage in the acquisition cycle.

7. Environmental Issues through the Life Cycle

At the core of the ASEMS there are two systems manuals: the Project Oriented Safety Management System (POSMS) and the POEMS. Each manual contains a number of procedures designed to assist Project Teams to manage safety risks and environmental impacts and to apply the appropriate mitigation measures. The manuals may also be utilised by contractors, suppliers, and advisors where appropriate. Compliance with the POSMS and POEMS will ensure that any Project's Safety and Environmental Management System is robust, proportionate to the project's levels of risk and is compatible with the DE&S corporate reporting requirements.

Access to the POSMS and POEMS procedures can be either through the manuals, or by accessing Business Process Maps. These maps define the safety and environmental activities that should happen at different stages in the project life cycle, and give users access to tools and forms that will help them produce the necessary outputs in a consistent way. The ASEMS is available throughout the acquisition community and, as part of the AOF, can be accessed through the Internet.

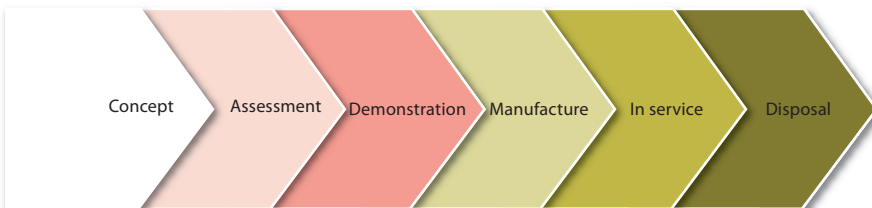
7.3 What is done and when?

As outlined above there are various operational and corporate risks associated with failing to manage the environmental impacts of equipment effectively. To fully manage both types of risk it is strongly recommended that separate consideration is given to each in reference to every stage of the life cycle.

Since July 2004, experience in implementing POEMS has grown. This has highlighted that the majority of the POEMS applications lie within the In-Service and Disposal stages of the CADMID cycle as opposed to ideally being introduced at the earlier stages. The majority of projects that POEMS has been applied to are legacy projects, some of which will be continuing for many more years. Over time, the emphasis of POEMS has switched to the earlier stages of the CADMID cycle, when new or replacement projects are introduced.

Environmental analysis should determine the environmental impacts and influence the design process. The environmental programme should therefore be integrated with the overall project programme. In an ideal world, the analyses would result in a system that was free from environmental risk. In practice, a new system should contain no surprises and strategies should be in place to control the risks that remain. The environmental programme should also be closely tied to project risk management activities so that potential project risks

The Acquisition Cycle



7. Environmental Issues through the Life Cycle

due to environmental impacts can be understood and managed with appropriate visibility.

The nature of environmental management for a project is different before and after the system comes into service. Until that point, the emphasis of environmental management is on influencing the development of the project to eliminate environmental risk and enhance environmental benefits. Once a system comes into service, the EMS is principally concerned with controlling residual or remaining environmental risks.

The Environmental Case is refined at each key stage of the lifecycle, or decision point. This should be seen as gradual refinement and extension of the same documentation. From the earliest stages it should be known what type of evidence will be required to demonstrate that management of environmental risks will be achieved. The environmental programme aims to fill in the known evidence gaps.

The rest of this section examines each of the CADMID stages and considers how environmental considerations should be incorporated.

7.4 Concept

This stage of the acquisition cycle is where the Project Team establishes whether the capability gap as identified by the Front Line Command can be met. Ideally, it should also be the first time that environmental issues are considered, however this cannot be the case for legacy projects.

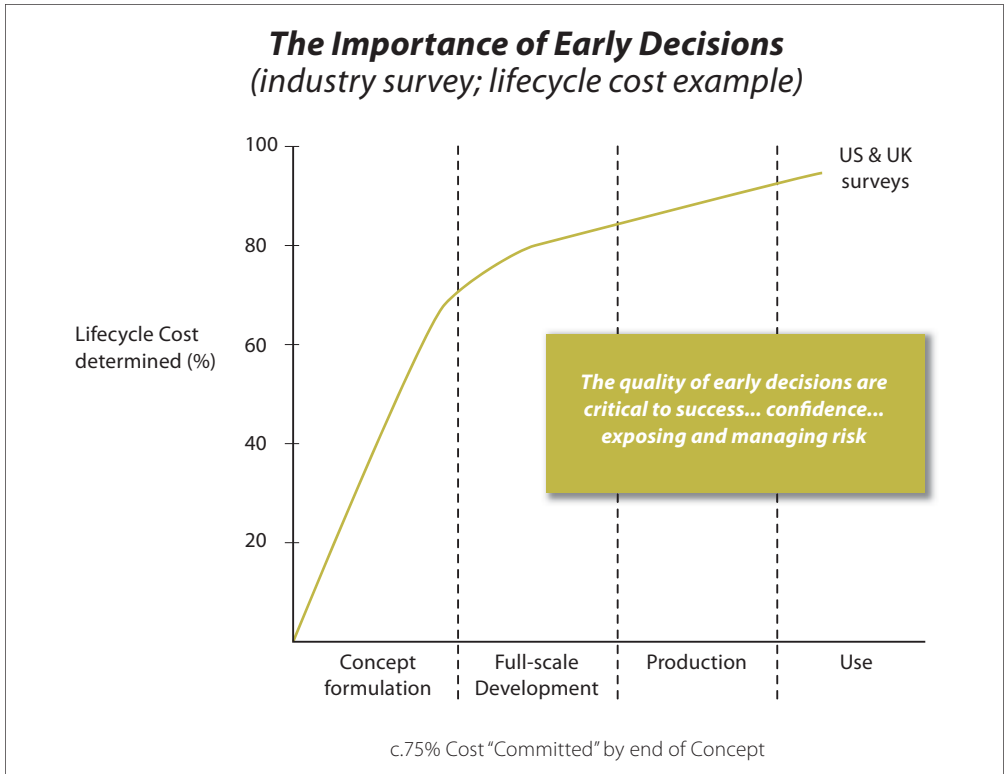
If possible, it would be useful at this stage to refer to Environmental Cases produced previously for similar equipment to see if there are any opportunities to improve environmental performance that can be transferred to the new Environmental Case. This first environmental assessment is an important step, because it may highlight opportunities to eliminate environmental impacts from various stages in the life cycle. For example, it may be possible to reduce or avoid the use of restricted substances during manufacture or

to design components for a new equipment system that are easily removed for recycling during the disposal stage.

The diagram (on page 36) is based on data from a large number of US and UK surveys covering projects in all sorts of markets and technologies, and is drawn from work undertaken by the Centre for Systems Engineering at Cranfield University. It shows that typically approximately 75% of the lifecycle financial cost is 'committed' as a result of decisions made by the end of the Concept phase. Experience tells us this is equally valid for environmental issues; by the end of the Concept phase the majority of significant environmental aspects and impacts through the lifecycle will have been 'fixed' within the project. Equally the major opportunities for reducing or eliminating environmental risk and enhancing environmental benefits also sit very early in a project's lifecycle.



7. Environmental Issues through the Life Cycle



The main environmental outputs from the Concept stage will be:

- Environmental aspects and impacts
- Environmental Case Report, including a conclusion on whether the capability requirement can be achieved without excessive environmental risk
- Environmental sections of the URD
- An EMP for subsequent phases of the project
- Environmental Committee
- Record of relevant stakeholders

- Record of relevant legislation and other standards

For some projects, it may be beneficial for the Project Team to include a preliminary Environmental Impact Statement (EIS) as part of the preliminary Environmental Case Report. Such a document could be used to respond to enquiries received under the Environmental Information Regulations. In deciding whether to produce a preliminary EIS at the Concept stage Project Teams may wish to consider the likely external interest in the project, the Project Team may also wish to take advice on this from the Environmental Committee. Any EIS produced will be reviewed and updated as part of any Environmental Case Report revision undertaken in subsequent CADMID stages.

7. Environmental Issues through the Life Cycle

7.5 Assessment

This stage of the acquisition life cycle is aimed primarily at achieving consensus on the design options for the equipment. It may compare competing designs that were put forward during the Concept stage in order to choose the most suitable. Although this assessment will centre on how well the equipment meets the user's operational and cost requirements it should also consider safety and environmental issues.

For each suggested design option there should be an assessment that considers environmental impacts throughout the equipment's lifetime including its potential operating geography, possible emissions and material usage. Once identified these impacts should be prioritised according to the EMS methodology. If further information is required, to establish whether an option is more or less environmentally damaging than another, this should be noted and followed-up.

The main environmental outputs of this stage will be:

- A separate Environmental Case Report for each design option that prioritises the options in terms of environmental aspects and impacts
- Environmental Impact Assessment
- Environmental Objectives and Targets for inclusion within the SRD
- An EMP for subsequent phases of the project
- Outline of any further assessments or information needs

7.6 Demonstration

At this stage the final design for the equipment will be agreed and commissioned. It is important therefore that any design alterations on environmental grounds are agreed and incorporated. This will involve following-up any outstanding information needs, a final comparison of design options and subsequent recommendations.

The environmental impacts arising from the rest of the equipment's lifetime should be identified or reviewed and the EMP drafted or updated accordingly.

The main environmental outputs of this stage will be:

- Input to the design process to influence environmental impact e.g. through eco-design
- Demonstration stage Environmental Case Report for the chosen design option
- Evidence that the environmental targets are being / will be met
- A Through-Life Environmental Management Plan
- Operational Control Procedures

7.7 Manufacture

During this stage the emphasis in terms of environmental considerations should be on ensuring that the manufacturing process follows any agreed design choices and meets any performance criteria agreed for this stage in the EMP.

Once the equipment has been produced, any further testing or assessment with regards to environmental performance is likely to be carried out prior to the equipment going into service. It may be necessary to draft or revise any operational control procedures and the EMP. These documents should in turn be referred to in the development of training programmes, monitoring and measurement regimes and maintenance programmes for the equipment.

The main environmental outputs of this stage will be:

- A full system / manufacture stage Environmental Case Report
- Results of verification tests
- Further evidence that the environmental objectives and targets are being met

7. Environmental Issues through the Life Cycle

- Verification of user and maintainer environmental documentation and training
- A Through-Life Environmental Management Plan
- Operational Control Procedures

7.8 In-Service

Once the equipment is In-Service the main actions specified within the EMS are designed to ensure that the equipment meets any agreed objectives and targets for environmental performance. They may also be intended to provoke specific action in response to any incidents or near-misses so that environmental implications are recorded and changes are made to avoid any repeat occurrence. This may require consequent activity such as drafting or revision of operational control procedures, changes to maintenance programmes or further staff training.

Inevitably this will require close liaison and cooperation with equipment users. There should be clear agreements between the user and the Project Team to ensure that redundant or abortive work is avoided.

The majority of current projects lie within this stage of the CADMID cycle as they are legacy pieces of equipment, which are an ongoing capability used by the MOD. Therefore, there is limited input that the Project Teams can impose on the project other than:

- Identifying and managing the environmental risks: Identify all activities where use of the equipment will create the potential for interaction with the environment ('environmental aspects'). Following this, a risk assessment should consider the likely environmental impacts of the equipment through the remainder of its life cycle, including impacts during use and disposal. This assessment should also consider every possible scenario where the equipment might be involved, including normal use, abnormal use and emergencies / accidents.
- Identify the stakeholders for all the remaining life cycle stages of the project: This might include other Project Teams that may be responsible for the platform from which the equipment is operated or the Defence Estates if the equipment is to be based at a particular location.
- Consider the environmental standards to which the equipment must conform: This should cover European and UK legislation, MOD and government policy and any other relevant standards.

During this stage there should also be an assessment of the planned disposal arrangements for the equipment, to ensure that these are still appropriate and still represent the best environmental option.

The main environmental outputs of this stage will be:

- Continuous environmental improvement through incident investigation and environmental audits.
- In-Service Environmental Case Report when the system is modified or there are changes in how it is used
- Updated Operational Control Procedures
- Ability to influence the design process for improved environmental performance if there are modifications or upgrades
- An EMP for changes and system disposal

7. Environmental Issues through the Life Cycle

ACQUISITION LIFE CYCLE MODEL						
	Concept	Assessment	Demonstration	Manufacture	In-Service	Disposal
Environmental Activities	Agree environmental requirements for the User Requirement Document	Environmental Impact Assessment to compare design and procurement options	Input to the design process to influence environmental impact	Monitor manufacture to ensure compliance with any identified objectives and targets	Continuous environmental improvement through incident investigation and environmental audits	Dispose of equipment in accordance with Disposal Plan
	Identification of stakeholders and standards		Finalise design issues and agree final design option	Further evidence that the environmental objectives and targets are being met	Identify preventative action	
Environmental Outputs	Identification of likely environmental aspects and impacts		Agree monitoring and measurement programme	Verification of user and maintainer environmental documentation and training	Influence the design process for improved environmental performance if there are modifications or upgrades	
	Environmental Case Report		Evidence that the environmental targets are being / will be met	Results of verification tests. A full system / manufacture stage Case Report	In-Service Environmental Case Report	Environmental Case Report for the disposal programme
	Environmental Management Plan		Demonstration Stage	Operational Control Procedures	Updated Operational Control Procedures	Final Disposal Plan
	Environmental Committee established		Environmental Case Report	Through-life Environmental Management Plan	Environmental Management Plan for changes and system disposal	
			Through-life Environmental Management Plan	Operational Control Procedures		
			Draft Operational Control Procedures			

Main Gate

Initial Gate

7. Environmental Issues through the Life Cycle

7.9 Disposal

This stage concerns the final disposal of the equipment that should be carried out in accordance with the Disposal Plan. Where it is found necessary to make changes to this plan, these should be documented and justified. Note that the term 'disposal' in this context means 'the way in which the capability ceases to be the responsibility of the MOD' and therefore includes the termination or gifting of a capability.

The majority of In-Service projects face Disposal as their next step in the CADMID cycle. As a consequence, the issue of final disposal should be included within the Environmental Case and the DSA should be a key stakeholder. Liaison with the

DSA will ensure that the equipment is appropriately managed, either for resale/reuse, recycling and/or landfill or other disposal. Without the DSA's involvement, there could be an environmental risk to the project, especially in relation to non-compliance with waste management and disposal legislation.

The main environmental outputs of this stage will be:

- Environmental Case Report for the disposal programme
- Finalised Disposal Plan



8. Some Practical Advice

Key Messages

POEMS has great flexibility to be appropriately applied to different acquisition strategies, and to projects at different stages of the acquisition life-cycle

The Environmental Case is a 'Structured Body of Evidence' about the environmental impacts associated with the equipment or capability

The Environmental Case is the collection of the most up to date POEMS documentation and outputs

The level of effort applied to the Environmental Case should be proportionate to the environmental risks posed by a project

An Environmental Case should demonstrate that a comprehensive and systematic approach has been taken to eliminate negative environmental impacts and enhance the positive impacts

As the Environmental Case evolves, considerations and decisions should be traceable and accountable

8.1 The Environmental Case

This section examines the how, why and when of gathering and storing information about environmental issues for MOD equipment. All such information should be collated throughout the equipment's lifetime. When taken together, this information will form the Environmental Case - the "structured and documented body of evidence" about the environmental impacts associated with the equipment or capability. This will be built up gradually over time and will contain information pertaining to each of the acquisition stages i.e. CADMID, that the equipment passes through. The Environmental Case is not a static document, but rather a structured body of evidence that will be supplemented and reviewed over the equipment's lifetime.

The Environmental Case should be able to fulfil the following important functions:

- Demonstrate that a comprehensive and systematic approach has been taken to identify and reduce or eliminate negative environmental impacts and to enhance positive impacts associated with the equipment including its interaction with other equipment systems.

- Justify any actions taken (or not taken) to reduce the environmental impacts of equipment.
- Ensure that relevant information about environmental issues is easily available and accessible to MOD staff, contractors and regulators.
- Demonstrate continual improvement in the environmental performance of the equipment.

Since mandating POEMS across DE&S, the experiences of implementing the EMS system have grown throughout the Project Teams, this ranges from large scale navy shipping vessels and aircraft, land-based vehicles and tanks, ammunition and guns, through to small pieces of equipment used for synthetic training. POEMS is designed to be proportionate to the size, complexity and environmental risk of a project, which is an inherently flexible system when applying to such a wide range of projects.

Environmental Cases should be proportionate to the environmental risks that the project poses. Therefore the effort of the risk assessment should be proportionate to the nature and scale of the environmental hazard involved.

8. Some Practical Advice

8.2 Building the Environmental Case

An easy way to understand the Environmental Case is to consider the following questions:

- What information needs do stakeholders have?
- What impact(s) on the environment could this equipment have when being manufactured, tested, used and disposed of?
- What impact(s) on the environment could this equipment have if involved in an accident or emergency situation?
- How serious are these impacts?
- Are any of these impacts covered by specified environmental standards, legislation or a specific piece of policy?
- What has or can be done to reduce negative impacts and who is responsible?
- How have the MOD's efforts to reduce negative impacts made a difference to the environmental performance of the equipment?

The Environmental Case should be able to answer the above questions for the whole system under consideration for its defined uses.

The key building blocks of an Environmental Case include:

- Environmental Aspects (i.e. actions or activities that can affect the environment)
- EIA and Priority Assessment
- Material Inventory
- EMP
- Operational Control(s)
- Equipment Performance and Audit Results
- Standards and legislation requirements

This information may be quantitative or qualitative and may include roles and responsibilities for

environmental management, environmental data, reports, environmental risk assessments, assessment methodologies, materials inventories, management plans, correspondence, minutes of meetings and any other relevant information. These are all outputs of the EMS and the Environmental Case can be seen as the primary deliverable of the EMS that is also maintained by it. The Environmental Case may also include information pertaining to other equipment which is similar in design and function. Such information can be used as supporting evidence or best practice guidance.

Initial Gate is the first approval point in a project's lifecycle and occurs before any Assessment work is undertaken. By the time of Initial Gate approval, the Concept will have been defined as part of the Business Case, which requires development of a Safety Case and an Environmental Case. This Environmental Case should identify the environmental risks, opportunities for environmental improvements and actions to manage the risks. The level of detail at the Initial Gate stage should be proportionate to how much information is known about the Concept.

At the Main Gate, a more robust Environmental Case is required. This should have removed any uncertainties during the Assessment phase, and should identify how environmental risks will be mitigated, and/or what steps are in place to manage environmental risks that cannot be eliminated.

Identification of potential environmental impacts at the early stages of Initial and Main Gate approvals can allow for avoidance or mitigation of any issues to be taken into account before moving onto the next step in the CADMID cycle.

Pre-Qualification Questionnaires (PQQ) or Invitations to Tender (ITT) are informed by the outputs of POEMS and allows the Project Team to include environmental issues when engaging with industry. The PQQ and ITT provide an opportunity for the Project Teams to obtain information from the supply chain regarding their environmental

8. Some Practical Advice

performance, and their understanding of environmental issues. This information can then be used by the Project Teams to score and rank each bidder, with those performing better environmentally, obtaining a higher score in the tendering process. In this way, the MOD will encourage the supply chain to become more environmentally aware as well as building better environmental performance and solutions into the project from the start.

Examples of requests for information in a PQQ or ITT could include:

- Demonstrate commitment to reducing the negative, and improving the positive environmental impacts towards climate change, resource efficiency, sustainable development and procurement;
- Provide information on experiences with eco-design and technological innovation to improve environmental performance;
- Provide evidence of historical and current environmental performance.

As the Environmental Case evolves, environmental considerations and consequent decisions that are made throughout the equipment's lifetime should be traceable and accountable. This working set of documents should be reviewed periodically. In addition, there are a number of situations that may prompt a further review of the Environmental Case such as:

- Changes or modifications made to the equipment
- Changes in the use of the equipment or the way that it is integrated with other equipment or platforms
- Changes in operational theatre and boundaries of use
- Changes in environmental legislation
- Changes in Government or MOD policy

- A discrepancy between actual performance and design intention

Ultimately, it will be the Project Team's responsibility to ensure that the Environmental Case is set up and maintained throughout the equipment's lifetime. In many cases, however, much of the information added gradually to the Environmental Case may be produced by suppliers or contractors outside the MOD.

Tips on how to apply POEMS to new projects or those in the early stages of CADMID

- Commence POEMS application as early as possible even if in the Concept stage
- More can be achieved by influencing design than can ever be done by 'end of pipe' abatement
- Ensure environmental concerns and issues have been incorporated within the decision making process of the project from the start, use POEMS to ensure the URDs and SRDs incorporate relevant key environmental objectives and requirements
- Identify and liaise at an early stage with stakeholders that may have environmental concerns relating to the capability
- Do not worry if things change and evolve, that is part of the process

8.3 Combining the Environmental Case with the Safety Case

In some projects it will be beneficial both administratively and for the purpose of expanding knowledge to combine both the Environmental and the Safety Case in order to produce a single set of information. In others, the advantages of combining the two may be outweighed by the disadvantages, which might involve unnecessary complexity and lead to an increased administrative burden. The decision on whether or not to combine both cases will rest with each Project Team Leaders.

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Note that if the Safety and Environmental Cases are combined, information must be marked as attributable to a safety or an environmental assessment, as appropriate. The segregation of environmental and safety information in this way will assist audits and enable the Project Team to respond efficiently to requests made under the Freedom of Information and Environmental Information Regulations.

8.4 Environmental Cases for Legacy Systems

Inevitably, there will be some equipment that was acquired before the introduction of the EMS that will not necessarily have undergone any formal environmental assessment. Nevertheless, it is likely that some information relating to the system's environmental impacts will be available. Such information should be collated to form a retrospective Environmental Case which can then be added to as required throughout the remainder of the equipment's lifetime.

In addition, the EMS contains procedural guidance on whether or not such inherited or 'legacy' equipment should undergo formal environmental assessment as the EMS is rolled out. Where required, such assessments will cover the operation and disposal of the equipment and will lead to the production of an Environmental Management Plan to be applied throughout the remainder of the equipment's lifetime.

A context diagram provides a visual tool with which to identify what stages are in and out of scope of an EMS. This is useful for legacy projects, where the initial stages of the CADMID cycle (Concept, Assessment, Demonstration and Manufacture) tend to be out of scope, whilst the last two stages, In-Service and/or Disposal will be in scope.

Tip on how to apply POEMS to a legacy project

- Identify, manage and mitigate the environmental risks that exist within the In-Service and/or Disposal stage. Influence the

environmental outcomes of any future modifications or upgrades

- There are 5 questions to apply to help determine the scope of POEMS for a legacy project:
 - 1) What is the Out of Service Date (OSD) of the equipment and will this remain fixed?
 - 2) Are there any modifications or upgrades planned?
 - 3) Have there been any environmental incidents associated with the capability's activities?
 - 4) Have there been any major changes in legislation/policy since the capability came into service?
 - 5) Who are the stakeholders that are likely to have any environmental concerns?

8.5 Environmental Cases for MOTS and COTS Equipment

The MOD procures a wide variety of Military Off The Shelf (MOTS) and Commercial Off The Shelf (COTS) equipment. In these cases it may not be possible for the MOD to exert any influence over the design of the products. Equally, it should be possible to:

- Incorporate environmental considerations into the choice of product
- Use and dispose of the product in such a way as to reduce environmental impact

For MOTS and COTS equipment it is important therefore that the Environmental Case should record information demonstrating that these points have been considered and support any purchasing decisions made as a consequence.

Of course, in those cases where the project involves the development of an existing commercial product there may be opportunities for the MOD to incorporate environmental considerations via minor modifications in the development phase.

In cases where the equipment is being procured from an overseas supplier there may be only limited scope for product modification to meet UK requirements. Once again, the Environmental Case for such products should show that environmental issues were considered when deciding if and how the design could be changed.

US capabilities are also subject to environmental risk review during acquisition. The Programmatic Environmental, Safety, and Health Evaluation (PESHE); the Pollution Prevention (P2) Strategic Plan and the 3D Plan can provide some level of environmental management assurance. However, working with any foreign and international capability may mean that the Project Team has limited opportunity to influence the environmental design and risks.

When procuring MOTS and COTS, the basic design of the equipment or service will be stable. In most cases the manufacturer or supplier will have an assessment of the main impacts of the equipment or service. The Project Team should obtain assurance from the supplier that the assessments relate to the requirements of POEMS, and hence show conformance with the requirements. If the supplier has not undertaken such an assessment, then they should be required to provide any available information to make good any deficiency, including the likely effects of any modifications.

8.6 Environmental Cases for PFI and PPP

Projects for Public Finance Initiatives (PFI) and Public Private Partnerships (PPP) should meet the same environmental standards as POEMS. It may be appropriate to transfer the requirement for conformance with POEMS to the PFI and PPP contractors. However, accountability for environmental management cannot be transferred. The contractor's approach in relation to POEMS objectives and outputs should be reviewed by the Project Team, through an environmental committee, and approved or endorsed.

The responsibility for the quality of the information in the Environmental Impact Statement and compliance with all legal and policy requirements lies with the Project Team Leaders. As such, they will need to be sufficiently involved with, and informed of, the contractor's competence, procedures and practices to satisfy them that all the environmental issues associated with the project are being adequately addressed.

Tips on how to apply POEMS to PFI and PPP

- Influence the supply chain by requesting information and action on environmental performance, including resource efficiency, eco-design and environmental commitment
- Use POEMS to identify the right contractor to work with, i.e. one that is environmentally competent
- Be clear which elements of POEMS implementation will rest with the contractor and which will be retained by the Project Team

8.7 Environmental Cases for UORs

Equipment procured as an Urgent Operational Requirement (UOR) is needed to satisfy an operational imperative. Environmental management activities are still necessary and may have to be done in compressed timescales. It is recognised that it may not be possible or practical to apply the full procedural requirements of POEMS before UORs come into service. Nonetheless, the potential environmental impacts of a UOR cannot be ignored.

The main principles of POEMS that should be applied to UORs include:

- Undertake all procedural elements of POEMS
- If it is proven that all or part of a procedure is impractical to apply then the reasons for this must be clearly documented, and agreement reached with ASE of an alternative action

8. Some Practical Advice

- Environmental Committees should be consulted to validate any agreements that may replace procedural outputs
- Reports within the Environmental Case must identify limitations if a procedure was not fully completed
- The Environmental Case must be continuously reviewed to show how the Project Team intends to reassess the outputs of the Environmental Case

A review of the Environmental Case applied to the UOR may merely require the collection and collation of information not previously available. However, in other circumstances, it could mean a significant review of parts of the POEMS procedures.

Tips on how to apply POEMS to UOR

- Make every effort to apply all or most of the POEMS procedures to the UOR. If this is not feasible, for example time is limited; apply any outstanding procedures at the next capability review
- Also record where gaps are, or assumptions have been used, and try to close out through the review process as and when opportunities arise

8.8 Environmental Cases for MLUs

A mid-life upgrade (MLU) could be anything from a small technical insertion improving the efficiency of a capability, to a major refit, for example, of naval vessel. Depending on the scale of the upgrade and to what extent POEMS has been applied to the original capability, the approach taken to apply POEMS will vary and it may be appropriate to revisit the whole Environmental Case.

Consideration should be given to the extent of the POEMS application to the MLU. This will be influenced by the significance and scale of the MLU,

the currency of any previous POEMS application and any evidence requirements for the approval process.

Tips on how to apply POEMS to MLUs

- Before applying POEMS, decide on the approach that is best suited for your capability. Make an informed judgement on the scale of the upgrade and identify to what extent POEMS has been applied to the original capability
- For major MLUs where POEMS has already been applied, a complete refresh of the system is usually warranted
- For major MLUs where POEMS has not already been applied, take the opportunity to apply POEMS to the whole capability including the MLU
- For technical enhancements and insertion projects, where POEMS has already been applied, consider a review of the existing system and the potential for an annex for the MLU

8.9 POEMS and Sustainable Development

Whilst POEMS was not designed with sustainable development specifically in mind, POEMS is suitable to provide a management system for a wide range of sustainable development impacts. Robust application of POEMS to most acquisition projects will identify opportunities for; resource efficiency, emission reduction, environmental protection and biodiversity enhancement, in addition to the mitigation or elimination of environmental risk. Careful consideration of the Environmental Features Matrix (EFM – see Section 9) will show how all such issues can be captured in the Screening and Scoping phase. Furthermore most sustainable development impacts are amenable to the approach of POEMS even if the impact is not normally considered 'environmental'.

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Therefore for most Project Teams, and within the MOD's current scope of sustainable development, the application of POEMS can provide the mechanism to identify, analyse, and manage wider sustainable development impacts, such as social and economic issues, arising from capability acquisition. These non-environmental issues and aspects can be included within the POEMS documentation under an appropriate section heading.

Bespoke versions of POEMS, which incorporate the approach advocated in the British Standard BS8900 (Guidance for managing sustainable development), have been applied to a number of acquisition projects. The system has been used to incorporate social aspects, and a number of financial aspects not dealt with by traditional financial systems. These bespoke applications of POEMS demonstrate the inherent flexibility of POEMS and the ability to tailor POEMS applications to suit a changing set of environmental policy requirements.



9. General Concepts and Analytical Techniques

Best Available Techniques (BAT)

BAT is a concept applied by regulations to limit pollutant discharges from industrial processes, with particular regard to the preferred abatement strategy. (See The Environmental Permitting (England and Wales) Regulations 2010).

Best Practicable Environmental Option (BPEO)

The best technically feasible option under the circumstances, to reduce the environmental impacts arising from a process or an organisation's activities.

Best Practicable Means (BPM)

BPM refers to options that are financially and technologically feasible. It can include such factors as the 'design, installation, maintenance and manner or periods of operation for a plant and machinery or for the design, construction and maintenance of buildings and structures'. BPM does not require that expenditure is incurred, whether in money, time or trouble, which is disproportionate to the benefits likely to be derived. However, lack of finance is not considered a reasonable defence.

Environmental Impact Assessment (EIA)

The term EIA can be used both in a narrow, legal sense for an environmental assessment required under planning law, and more generally, to describe a study that identifies the potential or actual environmental aspects and impacts of a project or process.

An EIA looks at how the environment might be altered by a proposed development and must reflect the outcome of consultation required with a range of statutory bodies and other stakeholders.

Some developments carry a mandatory requirement for EIA, others may be requested by the relevant (usually planning) authority and others can be submitted voluntarily by developers even when not formally required.

For certain developments, there is a legal requirement under UK planning law for an Environmental Impact Assessment to be undertaken by the relevant planning authority prior to any consent being given for the development to go ahead.

ISO 14042 sets out a standard for 'life cycle impact assessment' that includes the principles of identifying potential environmental impacts for all stages of a project or product and making whole life evaluations. This is the meaning of the term EIA within POEMS, in its more general application, and is consistent with the environmental management system approach used within the Project Teams for the MOD.

Environmental Risk Assessment

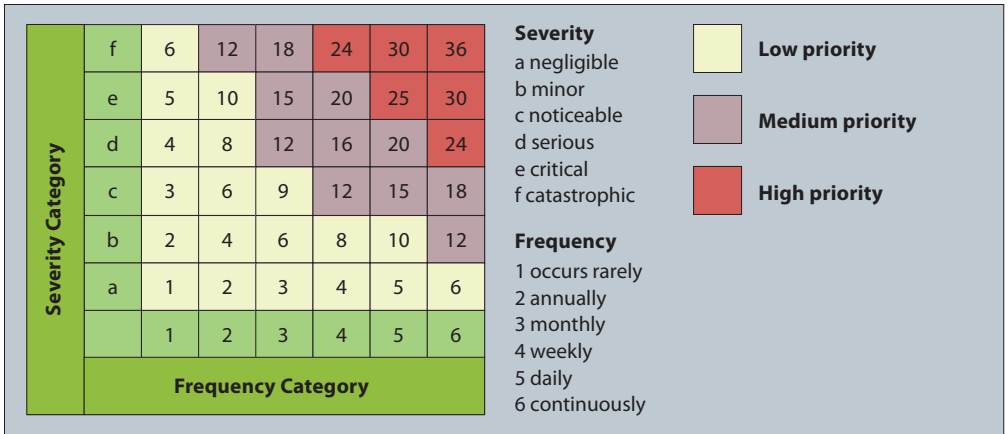
An assessment looking at all the environmental impacts likely to arise from a proposed equipment system in order to determine which of these are significant.

In an environmental risk assessment the equipment system's operations and activities and the way in which these may interact with the environment (i.e. aspects) are all considered. Such an analysis makes it possible to give priority later on in the project lifecycle to the potentially most environmentally damaging operations and activities. Most risk-based approaches to the evaluation of environmental impacts look at the probability of an adverse event occurring and the consequences should such an event occur. The overall risk is then the product of probability and consequence.

Sustainable Development

The widely accepted definition of Sustainable Development can be found in the 1987 Brundtland Report which states that SD is *"development which meets the needs of the present without compromising the ability of future generations to meet their own needs"*. At the global and national level SD is about finding a balance between economic growth, environmental stewardship and social progress which is sustainable for the long-term.

9. General Concepts and Analytical Techniques



For the MOD, this means achieving the Defence Vision in a way that considers the social and environmental impacts of decisions, alongside cost, taking into account the potential future impact of environmental, social and economic issues (e.g. climate change, migration, poverty etc) on the way our organisation functions.

Sustainable Procurement

Sustainable Procurement (SP) is *“a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment”* (Procuring the Future – Sustainable Procurement National Action Plan).

Sustainability Appraisal

In UK Planning Law a Sustainability Appraisal is an appraisal of the economic, environmental and social effects of a plan from the outset of the preparation process to allow decisions to be made that accord with sustainable development.

A Sustainability Appraisal is a formal systematic and iterative assessment of local development documents during their preparation which assesses the extent to which they encompass the aim of

working towards ‘sustainable development’ which the Government regards as: living within environmental limits. The Sustainability and Environmental Appraisal Tool (SEAT), is that used to assess Sustainable Development and environmental management on the Defence Estates.

Appropriate Assessment

An Appropriate Assessment (AA) is the process and documentation associated with the statutory requirement under the EU Habitats and Species Directive to avoid adverse effects of plans, programmes and projects on Natura 2000 sites and thereby maintain the integrity of the Natura 2000 network and its features

Benchmarking

A performance-based management technique that systematically compares the practices, processes and outcomes of organisations or projects against agreed standards, for example, ISO 14001.

Benchmarking usually involves regularly comparing performance with best practitioners, identifying gaps in performance, implementing improvements and following up to monitor further progress and improvement.

9. General Concepts and Analytical Techniques

Gap Analysis

A systems-based technique that looks at the differences between an organisation's current systems and those required for a particular standard such as ISO 14001.

A gap analysis is often used to determine the steps that need to be taken in order to move from "where we are" towards "where we want to be".

Clause	ISO 14001 Requirements	0	1	2	3	4
4.2	Environment Policy					
4.3	Planning					
4.3.1	Environmental Aspects					
4.3.2	Legal and other targets					
4.3.3	Objectives and targets					
4.3.4	Environmental management programme					

Screening

A process where agreed criteria are applied to a project in order to determine whether or not an EIA is necessary.

In a screening exercise the size and nature of a project and the interaction it will have with other projects should be considered, in order to identify whether the project warrants an EIA and, if so, the best party to carry out the EIA.

Scoping

Scoping is an exercise to determine the areas and circumstances that will be included in the Environmental Impact Assessment such as direct/indirect impacts; normal, abnormal and emergency situations and CADMID stage.

Techniques that may be used during the scoping process include checklists and matrices designed to identify items that are applicable to the impact assessment and to ensure that assessments are suitably comprehensive.

The majority of equipment purchased by the MOD will pass through the CADMID life cycle, or if not then through some process similar to this. It is likely that different environmental impacts will arise for each of these stages and it is important therefore to consider environmental impacts throughout the whole lifetime of the equipment.

Generally, the earlier attention is paid to environmental considerations during project development, the less it will cost to incorporate effective controls to reduce environmental impacts. Modifications made at the design stage are more effective than the application of 'end of pipe' technology once a new equipment system is in use.

In practice, this should mean that environmental issues for each and every project are given consideration during the Concept stage, so that all relevant issues are considered together - rather than 'added on' afterwards. For legacy systems this process may take place for the first time during the In-Service stage.

9. General Concepts and Analytical Techniques

The diagram below shows an extract of an example EFM, which identifies and assesses the environmental risks of top-level activities that might occur during the In-Service stage of a capabilities lifecycle.

Activity	Aspect	Environmental Receptors							Impacts
		Human	Land	Water	Air	Flora	Fauna	Climate	
Operation / Training	Noise, energy/fuel use and emissions	✓	✓		✓	✓	✓	✓	Nuisance upon human / fauna receptors; use of non-renewable resources; indirect impact on air quality and loss of biodiversity
Maintenance	Effluent, energy use and emissions, material use			✓	✓	✓		✓	Use of renewable and non-renewable resources; indirect impact on air quality and loss of biodiversity
Storage	Energy use and emissions				✓			✓	Use of non-renewable resources; indirect impact on air quality and loss of biodiversity
Transport	Noise, fuel use and emissions	✓			✓			✓	Nuisance upon human / fauna receptors; use of non-renewable resources; indirect impact on air quality and loss of biodiversity
Administrative	Material use, energy use and emissions		✓		✓	✓		✓	Use of renewable and non-renewable resources; indirect impact on air quality and loss of biodiversity

Final Thoughts

The approach outlined in this booklet is based on existing good practice in the environmental field and extensive MOD experience with environmental management in the acquisition process. The processes that MOD has initiated mean that it is one of the first major organisations in the public sector to apply environmental management to its acquisitions in such a structured and systematic manner. However, these are still early days for environmental management (as compared to safety management), so the application of the relevant principles and systems to the acquisition process will be challenging.

MOD, and especially Project Teams, should remember that no organisation can continue to

solve every environmental ill, and that whatever is required can't be done all at once. A process of improvement takes time to mature.

Reflecting on experience with safety and environmental management, if the MOD and its Project Teams can apply an incremental approach to environmental management, building competence and understanding as well as links to other related initiatives, then significant improvements in both equipment and MOD's environmental performance will result.

This booklet is for MOD the first step on a path towards a process of continuous environmental improvement in future acquisitions.



10. Further Sources of Information

ISO 14000 family of International Standards on environmental management:

Standards and MOD Publications	
ISO 14001:2004	Environmental Management Systems - Specification with guidance for use.
ISO 14004:2004	Environmental Management Systems - General guidelines on principles, systems and supporting techniques.
ISO/TR 14062:2002	Environmental management - Integrating environmental aspects into product design and development.
ISO 19011:2002	Guidelines for quality and/or environmental management systems auditing.
ISO Guide 64:2008	Guide for the inclusion of environmental aspects in product standards
ISO 14064-1:2006	Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.
ISO 14064-2:2006	Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements.
ISO 14040:2006	Environmental management - Life cycle assessment: Principles and framework
ISO 14044:2006	Environmental management - Life cycle assessment: Requirements and guidelines
BS 8555:2003	Environmental Management Systems - Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation.
BS 8900: 2006	Guidance for managing sustainable development
BS EN 16001: 2009	Energy Management System
BS EN 1050	Safety of Machinery – Principles for Risk Assessment
EMAS	The EU's Eco-Management and Audit Scheme.
JSP 815	Defence Environment and Safety Management
JSP 418	MoD Sustainable Development and Environmental Manual
JSP 520	UK MoD's Ordnance, Munitions and Explosives Safety Management System
JSP 317	Joint Services Regulations for the Storage and Handling of Fuels and Lubricants
JSP 553	Military Airworthiness Regulations
JSP 362	The Defence Lands Handbook

10. Further Sources of Information

Standards and MOD Publications	
JSP 375	MOD Health and Safety Handbook
JSP 392	Instructions for Radiation Protection
JSP 430	MOD Ship Safety Management. Part 1 is Policy and Part 2 is Accompanying Code of Practice
JSP 454	Procedures for Land Systems Equipment Safety Assurance

Websites	
MOD Sustainable Development Action Plan	http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/SSDCD/SustainableDevelopmentPolicy/SustainableDevelopmentStrategyReportsAndActionPlans.htm
MOD Sustainable Procurement Strategy	http://www.mod.uk/NR/rdonlyres/BECB4D28-EB95-4DB5-881E-DDA68AF53FC0/0/20100322MOD_SP_Strategygu.pdf
MOD Climate Change Strategy 2010	http://www.mod.uk/NR/rdonlyres/58799038-34D2-4A93-94C8-6BBF770B9EA0/0/MODClimateChangeStrategyFINAL.pdf
MOD Guidance to the REACH Regulations	http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/SSDCD/SustainableDevelopmentPolicy/ReachregistrationEvaluationAuthorisationAndRestrictionOfChemicals.htm

Purpose designed training courses for the defence acquisition community from Cranfield University at Shrivenham:

MOD training and awareness courses	
Environmental Management – Project Oriented Environmental Management System (POEMS) Practitioner Level Course, see;	http://www.cranfield.ac.uk/cds/shortcourses/environmentalmanagementpoems.html
Environmental Management – Sustainable Development within Defence Acquisition Course, see;	http://www.cranfield.ac.uk/cds/shortcourses/environmentalmanagementsustainable.html
Environmental Awareness and Compliance in Defence Course, see;	http://www.cranfield.ac.uk/cds/shortcourses/environmentalawarenesscompliance.html

10. Further Sources of Information

Introductory courses, at RAF Halton, although not acquisition specific, in; environmental protection; environmental law and policy; foundation in environmental auditing; waste management; land and water; air and noise; conservation; practical pollution prevention; environmental management systems implementation; see,

www.raf.mod.uk/rafhalton/aboutus/environmentalprotection.cfm

Other Useful Websites

www.netregs.gov.uk

This aims to make environmental legislation clearer and provides generic environmental management and sector-specific guidance

www.legislation.gov.uk

Another website from which UK Acts of Parliament, Statutory Instruments and Explanatory Notes can be downloaded. Also includes new and draft legislation

www.iema.net

Institute of Environmental Management and Assessment

http://ec.europa.eu/environment/gpp/index_en.htm

European Commission Green Public Procurement webpages

www.aof.mod.uk

Acquisition Operating Framework webpages, which provides information on policy and good practice for the MOD and industry partners concerned with acquisition

<http://wwf.panda.org/>

World Wide Fund for Nature

10. Further Sources of Information

Useful Periodicals (available on subscription)

The ENDS Report (www.endsreport.com)

A monthly title published by Environmental Data Services Ltd (ENDS), a subsidiary of Haymarket Publishing. One of the UK's leading journals on environmental policy and business that provides latest news and background analysis of UK/EU policy and legislation. Also offers subscribers access to an extensive electronic historical archive of its own coverage. Available in print and on the web.

Environment Watch Europe (www.agra-net.com)

A fortnightly title published by Agra Informa Ltd. News and business analysis relating to international treaties (trade and environment), the progress of new and existing EU legislation and key policy development arising in Member States.

Green Futures (www.greenfutures.org.uk)

A monthly business magazine on environmental solutions and sustainable futures. Available in print and on the web

The Environmentalist (www.iema.net)

Electronic versions of The Institute of Environmental Management and Assessment's (IEMA) publications

MOD Environmental Contacts

Safety, Sustainable Development & Continuity Division (SSD&C)

MOD Main Building, Horseguards Avenue, Whitehall, London, SW1A 2HB.

Royal Navy

CESO (RN)

NavyCom HQ, MP 4-3, Leach Building, Whale Island, Portsmouth, Hants, PO2 8BY.

Army

CESO (Army)

HQ Land Command, IDL420, Ramillies Building, Marlborough Lines, Monxton Road, Andover, SP11 8HJ.

Royal Air Force

CESO (RAF)

Room 12, Building 1, RAF High Wycombe, Bucks. HP13 4UE.

Defence Estates

Env Pol, DE, Blakemore Drive, Sutton Coldfield, West Midlands, B75 7RL.

DSTL

www.dstl.gov.uk

Meteorological Office

www.metoffice.gov.uk

10. Further Sources of Information

MOD Safety Management Offices:

Further guidance and information on Safety Management can be obtained from the relevant MOD Safety Management Office:

Acquisition Safety and Environmental Group (ASE)

DESSESEP-Acq-EnvMan@mod.uk

The Ship Safety Management Office (SSMO)

DESSESea-SSMO@mod.uk

The Land Systems Safety Office (LSSO)

DESSELand-LSSO@mod.uk

Military Aviation Authority (MAA)

MAA-Tech-Reg-1@mod.uk

Defence Ordnance Safety Group (DOSG)

DESWpns-DOSG-SMO@mod.uk

Other Useful Contacts:

Freedom of Information

www.mod.uk/DefenceInternet/FreedomOfInformation

AOF Sustainability Desk Officer Guidance

http://www.aof.mod.uk/aofcontent/tactical/sd/content/sp_desk_officer_guide.htm





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