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4.1 Through Life Environmental Management

4.1.1 The concept of whole life assessment and management underpins the POEMS. IPTs must ensure that appropriate consideration is given to the potential environmental impacts and other related concerns arising from activities at each life cycle stage, operational condition and equipment or service status (Procedure EMP02). Within the POEMS an impact is generally an effect that the equipment or service may have on the environment. A related concern includes legal compliance, MOD Policy requirements, or stakeholder interest, all of which need to be addressed and managed if risks to the project are to be avoided.

4.1.2 Through life environmental management is achieved by:

- Planning for the whole life cycle from the earliest steps;
- Considering environmental management to include the effects of 'Lines of Development' such as supporting systems, personnel, training and facilities;
- Consultation with stakeholders;
- Setting meaningful environmental objectives and targets;
- Appointing environmentally-competent contractors;
- Independent environmental assessment where appropriate.

4.1.3 Wherever possible, potential impacts and related concerns should be identified and assessed as early as practicable in the acquisition process. This is to ensure that there are no surprises later. It should also ensure that wherever possible, potentially adverse impacts are designed out of the equipment or service through related design decisions, or mitigated by management and control arrangements. For instance, if the equipment is a land vehicle, activities at different stages in the life cycle may include those outlined in Table 4.1 overleaf:

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Table 4.1: Example conditions/status and activities associated with the stages of CADMID for a land vehicle

CADMID	Condition/Status	Activities
Concept	Project Planning/Normal	Capability (URD) and system (SRD) requirement
Assessment	Design/Normal	Design development and evaluation
Demonstration	Testing and trials/Normal	Testing and trials of vehicle
Demonstration	Testing and trials/Emergency Situation	Road traffic accident, fire or explosion
Manufacturing	Manufacturing/Normal	Manufacture of components, assembly, transport to location where system will be in-service
In-service	Operation/Normal	Transport of personnel and equipment, refuelling, noise and atmospheric emissions, training activities
In-service	Operation/Abnormal	Secondary use of vehicles
In-service	Operation/Emergency	Road traffic accident, fire or explosion
In-service	Routine Maintenance/Normal	Routine servicing and repair, waste components, oils etc
In-service	Deep repair and Modification/Abnormal	Replacement of worn or obsolete parts, modifications
Disposal	Sale/Normal	Selling on of redundant vehicles
Disposal	Scrap or Recycling/Normal	Transport to site for disposal, disposal/recycling of vehicle components

4.1.4 In outline, the POEMS causes IPTs to examine the project through the application of an **EIA** process and use the findings of the EIAs to determine relevant environmental objectives and targets and an Environmental Management Plan for the equipment or service.

4.1.5 In reality, it will be unlikely that all potential concerns and impacts are known at the outset of a project. In fact, until design freeze, it is entirely possible that major design changes could be made, leading to subsequent changes in potential environmental impacts. Periodic and planned review is therefore essential to ensure that the project EMS (based on the POEMS) and its findings remain relevant.

4.2 System of Systems

4.2.1 The POEMS has been designed to be applied at an ‘equipment or service system’ level and to all stages during the equipment’s or service’s life cycle. However, there are numerous situations where equipment or services are used in

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combination, some of which may be legacy systems. There will also be situations where equipment or services are supplied to one or more platforms which will be systems in themselves. For instance, a naval ship may be equipped with an aircraft, which may have a weapons system, which may be fitted with detection and targeting systems, each of which is being managed as a distinct project. Environmental issues for all systems should be coordinated in the same way that operational requirements and constraints need to be coordinated. In particular, the interfacing and scope of relevant EIAs needs to ensure that issues are not missed or are assumed to be addressed elsewhere.

- 4.2.2 In the vast majority of cases the platform has primacy as is the case with safety management arrangements. Whatever the situation in practice, it is important to determine whether the project stands alone (highly unlikely) or is part of a 'system of systems'. In the latter case, it is important to ensure that all relevant IPTs are consulted in the stakeholder processes and that there are clear agreements on assessment and mitigation responsibilities. Because of the interaction of different equipment and services, it will also be important to ensure that other IPT stakeholders get early visibility of significant issues arising from an individual sub- or supra- system. If this is done it will be easier to make related design changes to accommodate environmental issues.

4.3 Aligning Safety and Environment

- 4.3.1 At the present time the degree of alignment between safety (through the POSMS) and environment (through the POEMS) is likely to be decided on a project by project basis and will be influenced by relevant personnel and their respective responsibilities. The IPT can also decide the degree and extent of this aligned or combined approach to be adopted depending on the complexity of the project and the issues that are likely to arise. Examples of possible alignment activities include conducting combined studies, setting up joint Safety and Environmental Committees, and combined Safety and Environmental Cases and Case Reports.
- 4.3.2 In situations where safety and environment are being considered separately it should be ensured that common issues are not overlooked and that the implications of safety measures on environmental performance (and vice versa) are fully considered through the project risk register.
- 4.3.3 For instance, if noise tests are to be undertaken it makes sense to ensure that the data collected will be suitable for both occupational and environmental exposure assessments. By the same token just because an occupational assessment for noise is being undertaken it should not be assumed, without checking, that the safety work will automatically cover environment as well.
- 4.3.4 Where occupational and environmental issues have different legislative or policy requirements or threshold limits, an IPT may decide to separate the management of environmental and safety issues.
- 4.3.5 It is also likely that common control or mitigation measures and strategies can be considered especially where the safety improvement solution involves control at

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source. Where this proves impracticable or controls are developed separately, the IPT must be careful to ensure that the wider implications of solving a safety (or environmental) issue are considered. It might be entirely sensible and reasonable to deal with the occupational exposure risks of an accidental release in an enclosed space by rapid discharge to air thereby relying on removal and subsequent dispersion and dilution. However, this is likely to give rise to environmental impacts which have to be considered and evaluated.

4.3.6 It will assist IPTs to ensure that they have adequately considered any common issues by cross referencing the results of Hazard Identification under the POSMS and Environmental Features under POEMS.

4.4 What about Estates Issues?

4.4.1 As stated earlier, the scope of the POEMS is limited to acquisition projects for equipment and services. If the acquisition project involves developments to the estate or acquisition of new estate or estate based assets it will be appropriate for the IPT to determine how the 'estate' based issues will be dealt with. In practice there are three scenarios to consider:

- The project is wholly estates based;
- The project is equipment related only (for export or agreements where MOD acts on behalf of third parties);
- The project is both estates based and equipment or service based

4.4.2 If the project is wholly estates-based then the methodology outlined in the 'Sustainability Appraisal Handbook for the MOD Estate' should be followed and there should be no need to consider the POEMS, other than to ensure the correct interface with any other equipment which may be deployed.

4.4.3 In cases where the project involves both estates based and equipment or service based elements there may be a need for both methodologies to be used ie the Sustainability Appraisal Handbook methodology for the estates elements and the POEMS for the equipment and service based elements. In this case, Procedures EMP01 and EMP03 can be used to record this decision along with the project elements to be covered by each methodology. The same procedures should also be used to document details of those with responsibility for ensuring that the assessments are carried out.

4.5 Showing Conformance

4.5.1 The POEMS includes a number of procedures. Within each procedure there are defined objectives and outputs. The procedures also include guidance to facilitate the production of the required outputs. The prescriptive use of the guidance is not mandatory, providing the IPT demonstrates a case for an alternative procedure which provides equivalent actions, documentation and outcomes and which ASEG are satisfied achieves the same objectives. Therefore, four options exist when following the POEMS procedures to demonstrate conformance:

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- Use the recommended guidance and tools contained within the procedure, including allowed variations and options, and document the outcomes.
- Use an equivalent process and tool-set generated elsewhere – document evidence of procedural equivalence along with the outcomes.
- Use a bespoke process and tool-set for the project – document how the bespoke procedure achieves the system/procedure objectives along with the outcomes.
- Where it is possible to omit a procedure, or part of a procedure, the basis for the decision must be documented (in the Environmental Case) before progressing to the next applicable step or procedure.

4.5.2 A version of the above list appears at the head of each procedure to remind readers of the means of demonstrating conformance.

4.5.3 Table 6.2 which can be found in Section 6 shows a summary of the responsibilities, timing, inputs and outputs associated with each core procedure.

4.6 Procurement Strategies

4.6.1 There are many procurement strategies employed by the MOD. In the majority of cases, where new or enhanced capability is being procured, the POEMS can be applied in its entirety. However, there are procedural differences in some situations, for example UORs, where it may not be possible to complete all the steps and procedures of the POEMS in the same time frame as acquiring the capability. In these cases potential environmental impacts should not be ignored and at least a screening and scoping study (EMP 02) must be undertaken. This may, in some cases, necessitate the user undertaking retrospective studies and mitigation strategies. There are also minor differences in how the POEMS should be applied to legacy systems, where the equipment is already in service or has reached design freeze, compared to conventional development projects.

4.7 Development

4.7.1 The POEMS has been developed on the basis of a conventional development acquisition project, whilst ensuring that the majority of likely variations and procurement strategies can be accommodated. As discussed in previous sections, the POEMS is also aligned with the main phases and stages of the CADMID cycle. Therefore, if an IPT is managing a conventional development project all procedures and processes in the POEMS should apply. Any variations that are required are likely to be a result of two factors. First, whether the IPT is using contractors or advisors to support their work, in which case it may be appropriate for the IPT to use these third parties to complete the relevant procedures. Second, whether the equipment or service (and its potential impact) is so straightforward as to warrant the various streamlining and simplification options available within the POEMS.

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4.8 PPP/PFI

4.8.1 PPP/PFI projects should meet the same environmental standards as if they were developed solely by, and for, MOD. In these cases, it may be appropriate, once a decision has been made to proceed by way of a PPP/PFI solution, to contractually transfer the requirement for conformance with the POEMS to the PPP/PFI contractor, but not responsibility for environmental management. The IPT (and Environmental Committee) should then be able to review and approve the contractor's approach in relation to the POEMS objectives and outputs. The IPT Leader remains responsible for the quality of the information in the EIS and for compliance with all policy and legal requirements.

4.8.2 Supplementary Guidance for PPP/PFI Projects

Please refer to section 4.a (c) below for further information and guidance on PPP/PFI projects.

4.9 Collaborative Projects

4.9.1 International collaborative projects should also meet the same environmental standards as if they were developed solely by and for MOD. If it is likely that the procurement is to proceed by way of a collaborative solution, then the IPT must make it clear to the partner(s) that MOD will require conformance with the POEMS. The IPT should ensure that the POEMS' requirements are contractually transferred to the main or lead contractor and the specification of requirements in contractual clauses should accommodate this. The IPT (and Environmental Committee) should then be able to review and approve the partner's and contractor's approach to environmental management and its outputs (in relation to the POEMS objectives). The IPT Leader remains responsible for the quality of the information in the EIS, and for compliance with all policy and legal requirements.

4.9.2 Supplementary Guidance for Multinational Collaborative Projects

Please refer to section 4.a (b) below for further information and guidance on Multinational Collaborative Projects.

4.10 COTS, MOTS, and Modified COTS and MOTS

4.10.1 In these procurement options the basic design of the equipment or service will be stable. In many cases it is likely that the manufacturer or supplier will have undertaken, or have available, some form of assessments covering the main impacts of the equipment or service. In all cases the supplier should be required to demonstrate how the assessments (and hence design decisions already made) relate to the requirements of the POEMS, and hence show conformance with these requirements. If such assessments have not been undertaken the supplier should be required to make good any deficiency in the available information, including the likely effects of any modifications required, as part of acceptance into service. It should be noted that the IPT Leader remains responsible for the quality of the information in the EIS.

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4.11 Urgent Operational Requirements (UOR)

4.11.1 Environmental management should apply to UORs as it does for any other type of project. However, 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 cannot merely be ignored in the early stages of the project.

4.11.2 The main principles under which the POEMS will be applied to UORs are:

1. Every effort must be made to conduct all the procedural elements of the POEMS;
2. Where it is proven to be impractical to apply a procedure or part of a procedure, the IPT must clearly document the reasons and seek the agreement of ASEG to the proposed alternative action;
3. The Environmental Committee should be used to validate judgements which may replace procedural outputs;
4. All reports included in the Environmental Case must indicate any limitations as a result of not being able to fully complete a procedure. In such cases, it is particularly important that these limitations are communicated to the user;
5. Procedure EMP08 (Continuous Review) must be used to show how the IPT intends to revisit the EMS outputs and the Environmental Case (typically within 12 months) in order to 'backfill' incomplete POEMS requirements.

4.11.3 In some cases this last principle may require little more than the collection and collation of data which may not have been available earlier. In other circumstances, especially for any equipment or service brought into service under an UOR and retained in-service, this could mean repeating significant elements in the procedures or parts of the POEMS. Alternatively, it may be possible to consider the equipment or service as a legacy system and deal with it as such. The IPT must consider the best approach on a project by project basis, which should be validated by the Environmental Committee.

4.12 Legacy Systems

4.12.1 Legacy systems include those systems where the design has already been accepted (design freeze) although the system may not yet be in service, and those systems which are already in service (mature) and where the potential environmental impacts have not been considered in a way which can be shown to be in conformance with the POEMS.

4.12.2 In the case of the former it will not be possible to influence the design of the equipment or service. Consequently the POEMS should be used to develop a project level EMS which concentrates on the in-service management of the equipment or service and the disposal or termination stage. Although the design will have been frozen the environmental impact assessment process should be no

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less comprehensive or robust for the in-service and disposal stages than if it had been undertaken earlier in the CADMID cycle. This will ensure that all significant impacts have been identified along with appropriate control measures.

- 4.12.3 For the latter, where the equipment is already in-service, it is appropriate to consider the following issues when deciding the environmental assessment plan.
- The remaining length of time of the equipment's or service projected service life;
 - Whether the legislation review has highlighted a need for mitigation that has not already been put in place;
 - Future plans for major modifications and capability enhancements, and their timing;
 - Historic evidence of actual environmental incidents and impacts;
 - Any legal compliance problems to date or issues with regulators;
 - Any stakeholder (particularly external to MOD) interest to date (for example Parliamentary Questions or enquiries regarding the equipment's environmental performance).
- 4.12.4 These are best considered as additional questions to be answered in the screening and scoping procedure (EMP02) for mature legacy systems. However, they are helpful questions to return to in subsequent procedures when considering mature legacy systems.
- 4.12.5 The key to dealing with legacy systems is to develop an environmental impact assessment plan which is proportional to both the risk of environmental impacts and the remaining life of the equipment or service.
- NB It should be remembered that if a legacy system is to be given an extended life, as a result of a major system modification, then the modification programme itself could be considered as a new project.
- 4.12.6 As with new projects, the POEMS procedures should be used to identify relevant stakeholders, standards and potential environmental issues. Additional information should also be collated on the remaining life and future plans for the equipment or service, and environmental incidents and actual impacts from those systems in service.
- 4.12.7 In general, a system that is close to the end of its service life, and with a low environmental risk (based on historical performance) will only require planning and preparing for disposal.
- 4.12.8 For most legacy systems there will already be substantial system documentation such as operating procedures, maintenance procedures and training manuals. You may therefore identify a potential environmental impact which is already adequately controlled by an existing control measure. Reference to the existing control should be made in the Operational Control Index (Form EMP07/F/01).

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4.12.9 Also common for all legacy systems is the creation (if one does not already exist) of a materials inventory as part of the environmental assessment process (EMPs 04 and 05) and Environmental Feature Matrix (EMP02) for the equipment or service. A cursory treatment of CAD stages within the EISS may still be important and useful in identifying issues relating to subsequent legislation applying retrospectively upon which, mitigation or management measures can be based.

4.12.10 **Supplementary Guidance – Legacy Systems**

Please refer to section 4.a (a) below for further information and guidance on Legacy Systems.

4.13 Precautionary Principle

4.13.1 At all times, within the POEMS, IPTs should be applying the precautionary principle to assessments, the evaluation of evidence, and decisions. In practice, this means that if there is an absence of information, or if the information available is inadequate, then the IPT (or its advisors) must base assessments on worst case assumptions and scenarios. These assessments will form the basis of subsequent actions and decisions until better or more complete data and information is available and the assessments can be revised or repeated accordingly. Exceptions to this general principle may include applying the POEMS in certain UORs or legacy systems situations where it may be allowable to proceed on some other basis, such as expert judgement, or a firm commitment to backfill data and assessments. This must be fully described and documented for the project, as this action may represent increased project and organisational risk. In such cases, it may be appropriate to also make an entry in the overall project risk register.

4.14 Benefits

4.14.1 Implementing the POEMS on acquisition projects should reduce environmental liabilities and assist with legal compliance issues. However, the POEMS should also assist IPTs to identify any environmentally beneficial or positive features and aspects of an acquisition project. For instance, if equipment or a service has significant energy demands, any energy efficiency measures that can be built into the system could repay themselves many times over, during the life of the project. There may also be features which can have both operational and environmental benefits. Again using the case of energy efficiency it may be possible to secure operational improvements such as greater range and achieve reduced emissions.

4.14.2 As a consequence, many of the POEMS procedures remind IPTs to consider both potentially adverse and beneficial impacts, and most of the supporting tools are designed to deal with either type of impact.

4.15 Environment Knowledge Base

4.15.1 It is important to capture and share experience and information from current projects to benefit both future projects and other current projects dealing with

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similar issues. The capture of relevant environmental data, environmental impact assessments, and staff skills will be undertaken via the Assurance and Audit procedures. The management of this information, “the knowledge base”, is co-ordinated by ASEG and can be found on the ASEMS pages in ASEG’s area of the Defence Intranet. From a technical EMS stand point, the knowledge base sits outside the POEMS. The knowledge base will be created from information gathered as a result of following the Assurance and Audit procedures as well as information provided in the Environmental and Safety Cases for the acquired system.

4.a Supplementary Guidance Documents

4.a.1.1 Contained in this section are supplementary documents that are designed to provide guidance on establishing and maintaining some of the more technical aspects of POEMS/POSMS.

4.a.1.2 Supplementary Guidance Documents include:

- (a) Legacy Systems**
- (b) Multinational Collaborative Projects**
- (c) PPP/PFI Projects**

(a) Supplementary Guidance for Legacy Systems

This additional guidance is intended to provide advice on the application of POEMS and POSMS to projects that involve legacy systems.

(a.1) Lack of design data makes it difficult to develop safety and environmental cases for legacy systems.

Possible Issues:

- Original design information may not be available for legacy systems.
- Justifications for safety and environmental-related assumptions or decisions may not be available.
- Information on hazardous material used in the equipment may not be available.
- The software used in legacy systems may be of unknown pedigree.
- It may not be feasible or easy to implement safety and environmental-related design changes for equipment that is already in service.

Corresponding Advice:

- Use suitably qualified and experienced personnel to undertake a gap analysis and decide what additional information is required to comply with POEMS and POSMS, in particular to produce robust safety and environmental cases.

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The gap analysis should take into account the life-cycle phases under consideration.

- The gap analysis will inform what further safety and environmental activities are to be undertaken. Retrospective documentation for past life-cycle phases will not be required. For remaining phases, the analysis should investigate whether full assessments are needed. Any decisions to streamline the assessment (and audit and assurance arrangements) should be agreed with key stakeholders and recorded.
- Where key information gaps appear, it may be necessary to undertake safety and environmental studies and analyses to verify that existing operations do not pose unacceptable levels of risk. Be aware that there may be a legal requirement to undertake some studies and analyses e.g. to determine hazardous materials that have been used in the equipment.
- In order to determine if such safety and environmental analyses will be worthwhile or useful, compare the potential benefits against the cost of undertaking the work.
- Make allowances for such studies and analyses when planning budgets and resources.
- It may be possible to use historical data in safety and environmental justifications. Seek expert advice on the extent to which reliance can be placed on historical data in the safety and environmental cases. In particular, assess whether the historical data is still relevant to the system's current usage and operational environment.
- For safety-related software issues refer to the guidance within Def Stan 00-55. For Software of Unknown Pedigree (SOUP), meeting Def Stan 00-55 evidence requirements can be very expensive. In order to determine if demonstrating Def Stan 00-55 compliance is useful or worthwhile compare the potential benefits (for example in terms of lives saved) against the cost of undertaking the work. Use expert advice where necessary.
- Document important decisions and supporting evidence to produce an audit trail record that will be useful for the future.
- Continue to log in-service incidents and look for trends. Consult with user organisations to identify if operational procedures are being carried out and if they are effective. Revisit the safety and environmental cases as necessary when in-service issues are identified.

(a.2) Proportional implementation of POEMS and POSMS for In-Service Changes:

- Mid-Life Updates/Modifications;
- Changes to the Operating Environment;

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- Changes to the Legislative Environment.

Possible Issues:

Despite the potential lack of design data, POEMS and POSMS:

- Are to be implemented for all legacy equipment.
- Require safety and environmental cases to be revisited on a regular basis and specifically before:
 - A change in role, e.g. deployment to a different environment;
 - A change in the equipment;
 - Major investment decisions, including:
 - Mid-life update;
 - Decision to postpone Out of Service Date'
 - Repeat purchase of major equipment.
- Constituent components become obsolete;
- The introduction of major legislative changes.

Corresponding Advice:

- POEMS and POSMS allow for some flexibility of approach. With agreement from appropriate Systems Safety Groups, it is possible to tailor the manner in which POEMS and POSMS are implemented to suit the project under consideration. Gain such agreements with System Safety Groups and apply POEMS/POSMS in a proportional manner, taking into account the size and complexity of the project.
- Consider necessity for in-service safety and environmental assessments if there is only a short in-service period left. Use a screening exercise, a comparison of the potential benefits (for example in terms of lives saved) against the cost of undertaking the work, or refer to system's accident/incident history to justify the need for assessments, considering issues such as any change in usage patterns prior to the disposal phase. If assessments are not justified, record the reasons.
- Agree with relevant systems safety and environmental groups what further activities would constitute an acceptable level of compliance with POEMS/POSMS, taking into account the residual levels of risk associated with the equipment and its operations:
- For a mid-life update or a major modification it may be appropriate to revisit the whole safety case and environmental case;
- For smaller and simpler modifications, rather than developing a safety and environmental argument anew from first principles, it may be appropriate to

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focus efforts on ensuring that the modification does not adversely affect the existing safety and environmental cases;

- Changes to operational usage should trigger a review of the safety and environmental cases. Include planning organisations such as Planning Joint Head Quarters (PJHQ) in the stakeholder engagement process. Ensure they understand their responsibilities and that they inform the IPT before any change of role is undertaken.
- There is scope to request dispensations in order to use equipment outside the safety case defined limitations. Ensure that the process for doing this is clear and that it is understood that this is not an exemption. Details on dispensation processes can be obtained through the relevant safety System Safety groups.
- Seek expert advice on what issues of standards/regulations to apply to the modification. Applying more recent versions of standards/regulations can either be beneficial or result in complications.
- Be aware that legislation that is not retrospectively enforced may apply to modified systems despite not being applicable to the system in its original form.
- For design initiated modifications, ensure that arrangements are in place for the designer to provide sufficient technical information to support the update of the safety and environmental cases.

(a.3) Keep the Safety and Environmental Legislation Registers Up to Date (SMP 01 and EMP 01)

Possible Issues:

- There may not be legislation registers or they may be out of date.
- Having up to date registers can de-risk the project significantly as understanding the legislative requirements can ensure relevant risks are identified and mitigated.
- IPTs may not have the skills to complete such a register.

Corresponding Advice:

- Identify if safety and environmental legislation registers:
 - Have already been developed for the project;
 - Are up to date;
 - Provide sufficient information to be useful in managing the project. The register should explain what the actual impact of the legislation on the project is, rather than just listing it.
- Secure sufficient budget and resources to develop and maintain the legislation registers.

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- Safety and environmental policy offices, similar projects or the contractor can help in identifying a comprehensive list of applicable legislation.

(a.4) Dissemination of information (SMP 01, 03 and EMP 01).

Possible Issues:

- For legacy equipment there is potential to assume that all relevant safety and environmental stakeholders are involved, when this may not be the case.
- Most equipment interfaces with other systems and all equipment has users. If no relevant stakeholders are included from the teams responsible for these systems, there is a risk that the safety and/or environmental risks will be missed.
- Stakeholders may not recognise the importance of their role and may send unqualified people to represent them at meetings. Decisions may therefore be taken by unqualified personnel.
- Instructions may not be clearly disseminated to appropriate people.

Corresponding Advice:

- Be proactive in formally defining and agreeing stakeholders' responsibilities.
- Develop and maintain a formal stakeholder register. For cluster IPTs with numerous small legacy projects, an IPT level stakeholder register may suffice. Ensure that there is sufficient budget and resources to do so. Ensure that stakeholders understand the importance of the role they play in your project.
- Ensure that the planners such as PJHQ are identified as stakeholders and have been informed of their responsibilities.
- Ensure that that experienced users and maintainers are involved in hazard identification and analysis and in environmental risk and impact identification.
- Safety and environmental management plans should:
- Include the method of dissemination of information (the method may vary depending on the criticality of the safety and environmental information);
 - Communicate assumptions, boundaries and interfaces;
 - Emphasise the importance of communicating the safety and environmental information to the user;
 - State who receives the safety and environmental case, who holds it and who reviews it;
 - Ensure there is a feedback loop from the user to ensure they receive and act upon the information.

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- Refer to the domain specific Joint Service Publications for additional information.
- Safety and Environmental evidence should be retained until after system disposal (either on hard or electronic copy). There may be legal requirements for the retention of some data, such as health monitoring records. See System Support Procedure 03 for more details.
- Information on any changes initiated by the IPT should be fed through to the end users, and visa versa.

(a.5) Safety and environmental meetings for legacy systems.

Possible Issues:

- Safety and environmental panel meetings are required through-life.

Corresponding Advice:

- Ensure that:
 - Stakeholder organisations send suitably qualified and experienced personnel to safety and environmental panel meetings;
 - Ensure military planners such as PJHQ and DEC organisations are aware of panels and attend if planning changes to the equipment;
 - Ensure emerging legislation is an agenda item;
 - Ensure the review of accident/incident occurrence data when available.
- Agree when to periodically review safety and environmental cases;
- Gain periodic assurance from user organisations that procedural mitigations are being implemented and are effective.

(a.6) Disposal.

Possible Issues:

- Developing a disposal plan should be considered as soon as possible in the project. Waiting until it is approaching out of service can incur unnecessary expense.
- The disposal plan should include how obsolescence is to be addressed.
- The IPT needs to be aware of its responsibilities for disposal.

Corresponding Advice:

- Obsolescence can be divided into 2 issues:
 - Obsolescence of main equipment. Produce a plan to show how obsolescence will be addressed.
 - Obsolescence of Spares. Safety and Environmental cases should address component and sub-system change due to obsolescence.

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For both issues agree who is responsible for obsolescence management - the IPT or the Contractor.

- Disposal can be divided into 2 areas:
 - Through life disposal. Emergency procedures should be written to cover disposal of equipment lost through accidents, this should also be covered in the risk registers. The IPT needs to understand it's responsibilities for waste disposal (this should be identified in the legislation register). Routine disposal of consumables, items replaced by modifications and mid-life upgrades are also the responsibility of the IPT to dispose of in line with legislative requirements.
 - End of life disposal. Put a plan in place as soon as reasonably practical, identifying how to dispose of equipment and anticipated cost of disposal.
- If planning to sell equipment, the MOD must understand its legal obligations to provide safety and environmental statements and data for the equipment. The MOD may also have a duty of care as an equipment supplier. These obligations should be captured in the safety and environmental legislation registers.
- Ensure that safety and environmental cases are in place for the disposal process.

(b) Supplementary Guidance for Multinational Collaborative Projects

This additional guidance is intended to provide advice on the application of POEMS and POSMS to multi-national collaborative projects.

(b.1) Safety and environmental delegations and risk management may have some unique issues attached to them (Safety Management Procedure (SMP) 01 and Environmental Management Procedure (EMP) 01).

Possible Issues:

- The respective Letters of Delegation will be the same for Multi-National projects as any other project; however the IPTL may not have sufficient visibility of information to provide the same level of assurance to senior managers as would normally be expected.
- A multi-national board may accept safety and environmental risks that would be classified as intolerable in the UK regime.
- Although other nations may have good regulatory frameworks, their requirements and expectations may be different to those of the UK.
- The ALARP principle may be unknown or interpreted differently by other nations.

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- Other nation's may define and classify hazards/risks in a different manner to the UK.
- Other nations' regulatory frameworks may lead to decisions based on different criteria.

Corresponding Advice:

- Identify up front the information required to produce robust safety and environmental cases. This includes the information necessary to comply with:
 - UK legislative and regulatory requirements;
 - MOD Policy and Certification requirements;
 - Civil or MOD Standards;
 - Safety and environmental targets;
 - Tolerability criteria; and
 - The defined risk management methodology.

Safety and environmental information requirements can also be derived from initial assessments of the capability or concept being developed.

- Where possible ensure safety and environmental information requirements are captured as deliverables in the contract:
 - Be as specific as possible about what information is required to support safety and environmental cases;
 - Be specific about the format of the required information;
 - Be specific about the benefits to the project through the provision of this information.
- Identify any lack of visibility of required information as soon as possible and consult with/inform appropriate policy and senior stakeholders. Develop and implement safety and environmental management programmes of work to address the resultant risks.
- Ensure that there is a clear audit trail for all decisions made, especially when they are at odds with UK policy.
- Do not always take data received at face value. Information provided should be checked and verified. IPT desk officers need:
 - To understand and be well informed about safety and environmental issues;
 - To be able to report on the quality of the delivered documents;
 - To understand how their decisions can have safety and environmental impacts; and,

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- To understand when to seek expert advice.
- Explain the benefits and importance of the ALARP principle to partner nations. Assess differences in approach between UK and other nations' ALARP judgements. Request or provide further risk analyses, assessments and mitigations if required.
- Review the results of hazard identification activities and risk classification matrices against UK tolerability criteria. If necessary, ask for further hazards to be considered and provide further risk mitigation.
- IPT staff should be ready to make the case for the benefits of using the UK approach, where this is more rigorous.

(b.2) Variations in Stakeholder's Approaches to Safety and Environmental Management (SMP 03 and EMP 04).

Possible Issues:

- Partner nations may be happy to accept varying levels of risk and there may be a political dimension to decisions taken.
- Commercial and finance personnel may not fully appreciate the importance of safety and environmental issues.
- Equipment capability and military planning organisations may have a different perception of what is a tolerable level of risk than the IPT.

Corresponding Advice:

- To de-risk a project satisfactorily the IPT needs:
 - Desk officers with suitable qualifications and experience;
 - IPTL support and championing;
 - Sufficient resources set aside for safety and environmental activities;
 - To be able to explain the benefits of the UK's thorough approach to safety and environmental management to other nations;
 - A comprehensive audit trail and scrutiny of all information supplied and decisions made.
- Involve commercial and finance officers as key stakeholders. Ensure they understand the benefits of good safety and environmental management.
- Ensure that the audit regime for the contract is clear and concise, and gives access to the necessary information.

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(b.3) There will be many complex interactions between stakeholders (SMP 01 and EMP 01).

Possible Issues:

- The IPT may find it difficult to identify international stakeholders. If they can be identified, there may still be difficulties obtaining the necessary information and input.
- There may be language barriers particularly with different user communities (in particular feedback occurrence/incident reports from other nations' operators and maintainers).
- International committees may take longer to reach decisions than single-nation IPTs.

Corresponding Advice:

- Be proactive in stakeholder management. Define stakeholders' roles and responsibilities up front. Ensure they understand these responsibilities and agree to take ownership.
- Consider the need for using a translator when required.
- Allow sufficient time in safety and environmental management plans and programmes of work to gain international agreement on issues.

(b.4) An up to date Legislation Register ensures key risks are identified (SMP 01 and EMP01).

Possible Issues:

- The International Project Office may opt to specify non-UK legislation in safety and environmental contractual requirements.
- Different nations and contractors may have different interpretations of legislation and what constitutes an acceptable means of compliance.
- The UK may use the equipment in a different manner to other nations and therefore the UK safety, environmental and certification requirements may not be fulfilled by the contract.
- Whilst other nations may specify robust regulatory requirements, discrepancies may exist in the extent to which they ensure compliance with these regulations.
- Other nation's legislation/policy requirements may not be as comprehensive as the UK. For example other nation's may not require:
 - Independent safety and environmental audits;
 - Assessment of contractor's competency;
 - Safety and environmental issues associated with disposal to be addressed during the procurement;

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- The production of safety and environmental cases;
- The implementation of a Failure reporting and Corrective Action System (FRACAS).
- Overseas contractors may lack understanding of UK safety and environmental requirements.
- Variations may exist between nations on the extent of reliance on military exemptions from safety and environmental legislation.
- Whilst compliance with certain international health and safety and environmental legislation will mean that less hazardous materials are used in a system, such materials may be less functionally effective and therefore in turn lead to derived safety and environmental risks.

Corresponding Advice:

- Consult with the relevant System Safety Groups to identify key legislative requirements and work with other nations to influence their inclusion in the contract.
- Review non-UK legislation to judge its equivalence and check if it gives rise to unacceptable constraints or risks. Provide risk mitigation if needed. Seek expert advice where appropriate. The IPT should note that recommendations from independent bodies can add weight to the UK position and therefore sway the other partner nations and contractors.
- Set aside time and resources to agree a common interpretation of existing and emergent legislation and associated acceptable means of compliance both before contract award and through-out the project life cycle.
- If it is not possible to persuade the international collaborative project office to meet all of the UK's safety and environmental requirements, it may be necessary set aside time and resources to undertake extra UK-specific safety and environmental work, such as:
 - Independent safety audits;
 - Assessing the contractor's competency;
 - Ensuring that issues associated with disposal are addressed during the procurement;
 - Reviewing the impacts of differences between UK and non-UK legislative requirements;
 - Implementing of FRACAS;
 - Certification submissions.

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- Implement a methodology to ensure that contractors inform the IPT when they change their design to meet emerging legislative requirements. When they do so consider the need to review the safety and environmental cases as required.

(b.5) The IPT may have little control over the technical and commercial aspects of the contract (SMP 10 and EMP 06).

Possible Issues:

- As multi-national contracts are negotiated by the international project office, the IPT may have limited opportunities to influence the contract.
- The IPT may have limited opportunities to influence the Terms and Conditions of the Contract and/or ensure they are flowed down to Sub-Contractors.
- It may not be possible to use standard MOD contract terms and DEFCONs in international contracts.
- The IPT may be required to use a company who does not have a good track record for Safety and Environmental work.
- As the contract communication chain may be complicated, the IPTL may not be certain he/she will obtain sufficient information to discharge his/her responsibilities.

Corresponding Advice:

- Ensure that commercial officers understand the importance of including clauses to enable the IPTL to carry out his/her delegated safety and environmental responsibilities. This should include a requirement to flow clauses down to all Sub-Contractors.
- Influence the international collaborative project office to give due consideration to safety and environmental management track record during bid assessments. Where this is not possible, mitigate the risk through continual oversight and competent and proactive review of the contractor's safety and environmental work.
- Identify up front the information required to produce robust safety and environmental cases. Where possible ensure these information requirements are captured as deliverables in the contract.
- Identify, assess and manage the risks due to the inability to obtain the specific data. Risks that present a significant business impact should also be escalated up the delegation line. Where directed to do so, request and document decisions from higher management.
- Keep a clear record of decisions, identify where they deviate from UK policy.

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(b.6) Disposal (SMP 03, 13 and EMP 06, 07)

Possible Issues:

- There may be difficulties where the project spans the implementation of new disposal legislation.
- Lack of visibility of design information can lead to difficulties for the IPTL in:
 - Ensuring compliance with disposal requirements;
 - Discharging safety and environmental responsibilities if selling the equipment on to a third party.

Corresponding Advice:

- Produce a comprehensive disposal plan at an early stage of the project. Use and maintain it to ensure that any relevant issues are taken into account when negotiating the original contract.
- Assume that the UK will have to dispose of its equipment and ensure sufficient funds to do so are in place. These funds should also allow for changes in disposal legislation. To do so it will be necessary to:
 - Maintain safety and environmental legislation registers;
 - Update and maintain the disposal plan.
- If planning to sell equipment, the MOD must understand its legal obligations to provide safety and environmental statements and data for the equipment. The MOD may also have a duty of care as an equipment supplier. These obligations should be captured in the safety and environmental legislation registers.
- If selling the equipment onto provide clear limitations on how the equipment is to be used.

(c) Supplementary Guidance for Public Private Partnerships and Private Finance Initiative projects

Public Private Partnerships (PPPs) are partnerships that bring together, for mutual benefit, a public body and a private company in a long-term joint venture for the delivery of high quality public services. PPPs cover a wide range of different types of contractual and collaborative partnerships including Private Finance Initiative (PFI) projects. A PFI project is a project that involves the public sector contracting to purchase quality services with defined outputs, from the private sector on a long term (typically 25 years) basis, and including maintaining and constructing the necessary infrastructure so as to take advantage of the private sector management skills and incentives by having private finance at risk.

Potential differences in areas such as the balance of shared MOD/contractor safety and environmental responsibilities, contracting methods, information flow and the

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use of civilian staff in the military environment requires the intelligent application of POSMS and POEMS to PPP and PFI Projects.

There are different types of PPP and PFI projects, each with the potential for different permutations of:

- MOD/Contractor equipment and facility ownership; and
- MOD/Contractor interaction in providing the service.

As such, it is not possible to apply a common prescriptive process to ensure the appropriate safety and environmental management of PPP and PFI projects. This additional guidance aims to provide advice in applying POSMS and POEMS to PFI and PPP Projects.

(c.1) Safety and Environmental Responsibilities May Hinder a Total ‘Hands Off’ Output Specification Approach (SMP 01 and EMP 01)

Possible Issues:

In many instances with PPP and PFI contracts, the IPTL will be aiming to contract for a service based upon an output specification and not define the way in which the Service Provider will achieve the outputs. Such an approach allows the Service Provider room for innovation and freedom in fulfilling the contract. However, there is potential that safety and environmental regulations can constrain this approach. Depending on the project circumstances, the IPTL is or can be:

- The representative of the organisation who instigated the work; and/or,
- An ‘intelligent customer’.

As the IPTL will retain overall responsibility for safety and environmental performance, he/she will need to be sufficiently involved with, and informed of, the Service Provider’s competence, procedures and practices to satisfy him/herself that all the safety and environmental issues associated with the project are being adequately addressed.

Corresponding Advice:

The IPTL is to establish as early as possible his/her safety and environmental management responsibilities and what actions are to be taken in order to discharge these responsibilities. It is recommended that:

- The IPTL consults with appropriate System Safety Groups, regulators, and legal advisors in order to establish:
 - The IPTL’s safety and environmental management roles and responsibilities;
 - The extent to which the IPTL can transfer safety and environmental activities to the Service Provider. Whilst ownership of safety and environmental risks should be transferred to other parties best placed to address them (such as the Service Provider), overall responsibility will

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still reside with the IPTL. Even if direct risk can be transferred, the consequent reputational risk from an incident will remain with the IPTL, and may be influenced by public perceptions of PPP/PFI projects and private sector priorities;

- If the risk owner has the correct skill set to hold any delegated authority;
- The extent of assurance activities that an IPTL has to undertake in order to discharge his/her responsibilities. Here, over and above meeting any legal requirements, the IPTL should consider a risk based approach where oversight and assurance activities focus on those aspects of the service provision that pose the greatest safety and environmental risks;
- The division of safety and environmental work, obligations and authority between the IPT and the contractor, on issues such as:
 - Holding and updating the safety and environmental case documentation;
 - Authority to make ALARP decisions for hazards of different risk levels;
 - Obligations under environmental Duty of Care legislation regarding waste;
 - Planning for and undertaking continual review of the effectiveness of operational controls.
- Decisions are formally recorded and reflected in the IPT Safety and Environmental Case Reports, Strategies and Plans.

(c.2) Interaction of Civilian and Military Equipment, Personnel, Procedures and Facilities will be complex (SMP 01 and EMP 01).

Possible Issues:

PPP/PFI Service Provision Contracts can involve:

- The interaction of civilian and military equipment, personnel, procedures and facilities;
- Contractor personnel undertaking activities that were once undertaken by MOD personnel;
- Activities that are undertaken under a mix of military and civil regulatory regimes.

Corresponding Advice:

- Define and document the detailed boundaries between civil and military operations and manage the interfaces between the two.
- Do not underestimate the effort and resources required to define the interfaces between the contractor and the MOD. The overarching interface

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between the stakeholders is to be recorded in the project safety and environmental management systems.

- Potential safety and environmental risks may be reduced if interface issues can be addressed early in the project life, for example via Customer Supplier Agreements (CSAs), Service Level Agreements (SLAs) and Internal Business Agreements (IBAs).
- Engage early with Defence Estates (DE). Failure to do so may result in breach of environmental-related planning law.
- The hazard assessment process should give consideration to the safety risks that result from civilians working in a military environment.
- Ensure that the IPT and the contractor thoroughly understand all aspects of the service to be provided and the environment in which it is to be provided. Be wary of contractor over-optimism in taking on responsibilities that they are not able to discharge. Ownership of risks should be transferred to the organisation best-placed to address them; however, the IPTL will retain overall responsibility for safety and environmental performance.
- It is good practice to allow bidding contractors access to relevant MOD stakeholders to ensure that they have good understanding of what they are being asked to do. However, it is important that the IPT manages and controls the communication of information between the contractors and other MOD stakeholders. During a tender process, MOD must ensure that the same information is given to all potential bidders.
- Do not assume that MOD exemptions will apply to contractors undertaking activities. MOD exemptions apply only to MOD staff and organisations; they do not apply to contractors.
- The draft contractual requirements should be informed by safety and environmental assessments and reviewed by all appropriate stakeholders and against other stakeholder requirements as defined in the interface management documents to ensure coherency and consistency.
- At some point in the project life cycle, the immediate responsibility for managing the use of the equipment and services may transfer to the front line command chain of command. Include front line commands in an up-front stakeholder engagement process, and in particular ensure that they are involved in the hazard identification and analysis and in the environmental and risk assessment process to ensure that mitigations are actually achievable on the ground.
- Ensure that IPT and Contractor Safety and Environmental Management Systems agree and document how other line of command issues are to be addressed, such as:

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- How civilians are to respond to orders from military personnel, especially if the order is to operate equipment outside the safety and environmental case limitations or if emergency procedures rely on execution of commands;
- How military personnel are to work under civilian instruction;
- Who has overall jurisdiction/liability/responsibility for the activities.

Note that legal health and safety obligations between the employee and the employer will continue to be applicable.

(c.3) The Contract Must Include Safety and Environmental Requirements to De-Risk the Project (SMP 10 and EMP 06).

Possible Issues:

- Some PPP/PFI and Provision of Service Contracts can extend over a lengthy period. Requisite standards of safety and environmental management have to be established and maintained.
- It is unlikely that necessary safety/environmental activities or information requirements omitted from the original contract will be undertaken or satisfied at no extra cost to the IPT.
- Variations to contract post-award can be disproportionately expensive. It is much better to plan ahead to ensure that the contract adequately covers all assessment, management and assurance obligations.
- The contractor may employ various levels of sub-contractor who may or may not conform to the prime contractor's required standards.

Corresponding Advice:

- Any potential contractor can be asked to demonstrate their performance in EMS and SMS by completing a Pre-Qualification Questionnaire (PQQ). It is also considered good practice to perform a PQQ for single source contracts.
- It is important that the IPT has clearly identified the Safety risks and Environmental impacts/risks at an early stage to ensure they understand the extent of management and assurance they will require from a potential contractor.
- Any contract should clearly stipulate exactly what is required but not how the contractor should produce it. The IPT may contract for the production of an EMS and SMS or simply the required components in order to produce their own. However, the contract may include provisions for the MOD to agree/endorse contractors' plans as to how particular activities are to be undertaken.
- ISO14001 is a recognised standard for environmental management of an organisation. However, it does not necessarily provide assurance that environmental risks are being well managed. Placing ISO14001

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requirements on a contractor will not go as far as satisfying the IPT's obligations under POEMS. ISO14001 should not be used as a general requirement on contractors without suitable consideration of the implications, shortcomings and supplementary provisions necessary.

- For projects that involve new acquisitions made by the contractor, put in place a mechanism to ensure a consistent flow down of contractual and sub-contractual requirements such that they adequately and comprehensively reflect the IPT, contractor and sub-contractor safety and environmental obligations.
- The contract should include a requirement stipulating the level of safety performance to be achieved.
- Ensure that correct sub-contractual arrangements are set in place and in particular that appropriate safety and environmental contract clauses and requirements are flowed down to sub-contractors. Where possible encourage the prime contractor to use Def Stan 00-56 in sub-contracts.
- Ensure suitably qualified and experienced personnel review draft safety and environmental contract clauses.

(c.4) The Contract Must Include Safety and Environmental Requirements (continued) (SMP 10 and EMP 06).

Possible Issues:

- IPTL will have through-life safety and environmental responsibilities.

Corresponding Advice:

- Continual Review Arrangements: - it is recommended that the contract allows for review of the effectiveness of operational controls early after the contract is placed or in the service provision and, if necessary, the implementation of remedial changes. Revised safety and environmental assumptions or operational changes (like using equipment in a different operational theatre to that originally intended etc.) should trigger review of operational controls.
- To ensure the provision and transparency of contractors' processes, the IPT should consider including contract clauses to giving them the right to see any information (including inspection and audit of activities) deemed necessary to satisfy the IPTL that his/her safety and environmental responsibilities are being satisfied.
- The review mechanism defined in a contract depends largely on the nature of the project itself. MOD has mandatory safety and environmental reporting procedures. Requirements for safety and environmental committee meetings should ensure review of safety hazards and environmental impacts/risks.
- Ensure that the contract allows for IPT access to the contractor and sub-contractor facilities and records for audit purposes.

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- Ensure that the contract comprehensively captures all necessary safety/environmental activities or information requirements, such as:
 - The safety and environmental activities to be undertaken by the contractor;
 - Information to be delivered in the correct format and in a timely manner to other stakeholders who have safety or environmental management and assurance responsibilities;
 - Access to contractor documents and facilities for audits and reviews.

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