



Ministry
of Defence

JSP 418 Element 7: Equipment Design, Manufacture and Maintenance



Element 7: Equipment Design, Manufacture and Maintenance

Contents

Title	Page
Amendment record	1
Terms and definitions	1
Scope	2
Introduction	2
Purpose and expectations	2
The CADMID/T lifecycle	3
Compliance with legislation and regulations	4
Equipment design and environmental cases	5
Management of change	5
Equipment and supply chain	6
Lessons learned	7
Element summary	8
Plan-Do-Check-Act (PDCA) Cycle	8
Element assurance framework	9
Expectations and performance statements	10

Amendment record

1. This chapter has been reviewed by the Directorate Climate Change and Environment together with relevant subject matter experts and key environmental stakeholders. Any suggestions for amendments should be sent to:

SPOCCE-EP@mod.gov.uk

Version No	Date	Text Affected	Authority
1.0	Feb 22	BETA version for consultation	Dir CCE
2.0	Dec 23	Final version	CCE
2.1	Dec 24	Annual revision and combined element and assurance framework.	CCE

Terms and definitions

2. General environmental protection terms and definitions are provided in the Master Glossary of Environmental Terms and Definitions.

Must and should

3. Where this chapter says must, this means that the action is a compulsory requirement.

4. Where this chapter says should, this means that the action is not a compulsory requirement but is considered best practice to comply with the policy.

Scope

5. This policy applies to all those employed by Defence (military or civilian) as well as those working on behalf of Defence (for example, contractors). It applies to all Defence activities carried out in any location (UK or overseas).

Introduction

6. This element provides the guidance and best practice that should be followed and will assist Defence Organisations to comply with the expectations for equipment design, manufacture and maintenance. The term 'equipment' used in this element refers to all types of equipment, vehicles, platforms, systems or services that are acquired to meet a capability requirement.

Purpose and expectations

7. This element ensures that the Defence Organisation has put in place frameworks and working practices to incorporate environmental considerations into the conceptualisation¹, design, acquisition, manufacture, operation, modification, and maintenance of equipment, including Defence digital systems. The focus for this guidance is establishments or units and TLB headquarters for oversight and coordination. References to 'equipment' throughout this Element are considered to include its design, manufacture, import, supply, in-service use and disposal within Defence.

E7.1 The Defence Organisation has mechanisms in place to identify and assess environmental risks, impacts and requirements associated with equipment throughout its entire lifecycle; from Concept, Assessment, Demonstration, Manufacture, In-service and Disposal/Termination (CADMID/T).

E7.2 The Defence Organisation has mechanisms in place to ensure risks and impacts associated with equipment are adequately controlled and mitigated through its entire lifecycle and where necessary elevated to the appropriate SRO and competent person.

E7.3 The Defence Organisation has mechanisms in place to ensure equipment is compliant with statute and Defence regulation throughout its lifecycle. Where necessary, a derogation, exemption or disapplication (DED) / waiver / concession is in place where compliance is not achievable.

E7.4 The Defence Organisation has processes in place to ensure equipment is always maintained and operated within defined design and operating limits to avoid environmental damage. Mechanisms are in place to communicate these operating limits to those who operate and maintain equipment.

E7.5 The Defence Organisation has mechanisms in place to ensure physical changes to equipment, (including major software changes), materials and associated specifications are evaluated, the environmental risk and impacts assessed, approved and documented.

¹ This could include pre-requirements setting for candidate Key User Requirements (KUR) meetings, FLC engagement, initial Investment Approvals Committee (IAC) and Outline Business Case (OBC).

E7.6 The Defence Organisation has mechanisms to accurately identify and manage the environmental risks, impacts and dependencies in their equipment supply chain.

E7.7 Lessons learned from previous equipment design, acquisition, manufacture, operation, modification, maintenance and end of life activities are shared effectively across the Defence Organisation.

E7.8 The Defence Organisation has mechanisms in place to assess the risk from integration of equipment and systems and its effects on the environment.

The CADMID/T lifecycle

8. After Defence has identified and expressed a capability requirement it uses the six-phase CADMID/T lifecycle approach for the acquisition of equipment to meet that capability requirement.

9. Factors and requirements relating to environmental management are prevalent throughout and they help to inform every phase of the CADMID/T cycle. They are proactive rather than reactive in nature. As it is likely that different environmental impacts will arise for each of these stages, it is important to consider environmental impacts throughout the whole lifecycle of any particular piece of equipment. Specifically, it is important to attempt to maximise the environmental performance of equipment during the concept phase (requirements setting and sustainable procurement, circular principles). This requirement and process for military equipment is supported by the use of ASEMS (Acquisition Safety and Environmental Management System).

10. The CADMID/T lifecycle approach adheres to the HMT Green Book (which provides guidance to Government Departments on how to appraise policies, programmes and projects). In particular the MOD's lead organisation for acquisition (DE&S) has an EMS in place supported by an Environmental Management Plan (EMP)². Requirements should be set against key stage-gates to evaluate and consider the suitability and purpose of equipment against approved performance envelopes. Approval points across the CADMID/T lifecycle correspond to the overall ownership of the equipment, and key information deliverables such as environmental case reports align to those approval points. Environmental management should be considered at critical stages of the CADMID/T lifecycle and especially during the handover phase.

Concept, Assessment and Demonstration (CAD)

11. During the Concept phase, the outcomes of the initial environmental assessment can identify opportunities to promote positive environmental outcomes and exploit positive environmental impacts. An assessment should then be undertaken for each suggested design option considering environmental impacts and risks throughout the equipment lifetime. This may include its potential operating envelope, possible emissions and material usage and end of life.

12. The final design will have been agreed and commissioned through the agreed governance process (which should include consideration of environmental impacts and risks). Any identified environmental impacts and risks identified at this stage should be reviewed on a periodic basis for the remainder of the CADMID/T cycle.

² An Environmental Management Plan (EMP) defines the strategy for assessing environmental matters and the Environmental Management System.

Manufacture (M)

13. Manufacturing military equipment is resource and energy intensive, and utilises specialist production facilities, complex international supply-chains, and typically rare materials which are also energy intensive to extract and refine. The manufacturing process should strive to maximise environmental performance and should follow any agreed design choices and meet the performance criteria agreed in the EMP.

14. During this, key decisions related to the design amendments, or changes to materials or systems design which may affect environmental impacts and risks in future operation and maintenance should be reviewed. A change management process owned by the Senior Responsible Owner (SRO) or accountable person should be followed to re-assess risks and evaluate the impact of the proposed changes, this should include any identified environmental risks.

In-Service (I)

15. The use of military equipment commonly leads to considerable greenhouse gas emissions as well as numerous, significant environmental impacts including pollution of land, water and air. In times of conflict or exception operation, environmental risks associated with equipment will increase.

16. Planned preventative maintenance systems should be implemented to facilitate optimum equipment operating conditions and minimise unnecessary environmental impacts as a result of inefficiency or in-service failure. A range of computerised maintenance management systems (CMMS) are commercially available which can be used to facilitate the planning and implementation of planned and corrective maintenance. Operating limits defined as part of the environmental case should only be exceeded following a risk review which should be addressed as part of management of change.

17. Incidents or near-miss reports should be monitored to ensure that the environmental implications are recorded, and actions are put in place to avoid any repeat occurrences, including activities such as revision of operational control procedures, changes to maintenance programmes or further training requirements. Consideration to environmental impacts and risks should also be given to through-life disposal (e.g. mid-life upgrades, maintenance, parts replacement).

Disposal and service termination (D/T)

18. The Defence organisation should assess how equipment will be appropriately disposed of and taken out of service, specifically considering any environmental factors. The Disposal phase in particular should be considered throughout the equipment lifecycle from pre-concept phase onwards and updated and refined throughout each subsequent phase in accordance with POEMS procedures/processes.

Compliance with legislation and regulations

19. The Defence organisation is bound by domestic and international regulations and legislations which aim to conserve and protect natural resources, whilst acting in an environmentally responsible manner. When deployed overseas, Defence must follow legislation that applies at the appropriate location. If laws that apply overseas fall short of UK requirements, Defence will apply UK standards, so far as is reasonably practicable. Legislation is covered in more detail in Element 3 of this JSP.

20. Defence must comply with all environmental legislation, unless covered by a disapplication, exemption or derogation (DED) where such an exception is required to maintain operational capability. Applications for DEDs should only be made where absolutely necessary, and where the DED is not already written into legislation. They may be applicable for certain equipment or circumstances but must be clearly approved and set for a defined period as well as reviewed prior to their expiry date and throughout the equipment lifecycle. DEDs are covered in more detail in Element 3 of this JSP.

21. The increasing demands and scope of environmental legislation provide the ability to protect the environment and create opportunity for improved environmental outcomes, and ever stricter limits on negative impacts such as air emissions, effluent discharges, noise, and waste. Legislation is designed to require those who manufacture, market or use equipment to be responsible for understanding and managing their risks and impacts.

Equipment design and environmental cases

22. A formal environmental case should be generated for equipment, that delivers sound environmental performance³. This will require collaboration across Defence given the multiple stakeholders often involved.

23. The environmental case is a structured argument, supported by a body of evidence. It should provide a compelling, comprehensible, and valid case that a system has avoided environmental impacts and identified that they are sufficiently mitigated. It usually includes evidence of test results (including technical annexes), detailed environmental analysis, modelling and expert judgement, together with the context to explain how this information supports the claim that use of the equipment is of sound environmental performance.

24. The environmental case should be maintained so that any claims made within it draw on current evidence and enable an environmental case report to be published at major review points, decision milestones and scrutiny points.

25. It is expected that an environmental case will develop throughout the equipment lifecycle and is typically summarised in environmental case reports at the end of each phase or prior to a major decision point.

26. Environmental cases should be updated when a 'material change' to the understanding, risk profile, design or operation of the equipment occurs. Environmental performance monitoring of the equipment should be maintained throughout the in-service phase for sustaining the environmental performance of that equipment, any environmental related issues identified must be acted upon.

Management of change

27. The Defence Organisation should introduce mechanisms to become aware of new equipment requirements and changes when they arise, for example adjustments to statute, technology or policy decisions. Horizon-scanning at a local or TLB-level could be a useful activity to ensure coherence and understanding of incoming regulation. The impacts of any changes in environmental legislative or regulatory requirements should be considered within the existing environmental case and expected equipment operation.

³ Further information can be found in DE&S Safety and Environmental Protection Leaflet 18/2023.

Otherwise, a change to the environmental case should be undertaken to reflect the updated means of operation.

28. Defence organisations should formally re-assess the risks they face on a continual basis through equipment lifecycle, including environmental risks, to remain up to date with their use.

29. Where an operational requirement exists to use equipment outside of the parameters of their environmental case, the Head of Establishment/Unit commander should be able to demonstrate evidence of possession of a formal written dispensation from their Chain of Command or the Operating Duty Holder (if one is in place).

30. The system for the evaluation, risk assessment, approval, implementation and documentation of all physical changes should consider the essential elements listed below (the emphasis on these various elements will alter depending on where the organisation is within the CADMID/T cycle in relation to a specific piece of equipment). It should also integrate an assessment of any environmental impacts that may arise (or current environmental impacts that may change in severity and duration) with the change:

- a. agree and evaluate the technical justification for the change at the appropriate management level.
- b. risk assesses the proposed change using a multi-disciplinary team of competent people, including specialists, contractors, vendors and suppliers when their particular experience and knowledge is needed.
- c. put in place a rigorous design approval system to ensure that the appropriate engineering standards are applied to the design, and any deviations from design are approved by a suitably qualified and competent person with sufficient knowledge and experience. If the Defence organisation does not have control of the design, it should request confirmations from the design holder on its rigour.
- d. write formal procedures to implement the change, train all personnel who are directly affected by the physical change and obtain confirmation that training has been effective.
- e. confirm the change has been communicated to all relevant stakeholders, maintain records of the change and share feedback and lessons learned for the benefit of continuous improvement.

31. Once the physical changes to equipment have been completed, these changes should be monitored closely, and potential environmental impacts and risks considered. Feedback and lessons learned should be recorded for the benefit of continuous improvement and future projects.

Equipment and supply chain

32. Where equipment is procured information regarding the supplier's approach to environmental performance can be requested (pre-selection checks can be included in tendering). Setting standards and promoting positive environmental performance will encourage the supply chain to become more environmentally aware as well as building better environmental performance and solutions into the CADMID/T cycle for equipment.

33. A material may be considered a risk to capability when it is essential and there is no alternative to it or where supply problems are encountered. Acquisition projects should ensure that capability solutions are future-proof against material security or supply chain availability risks.

34. Robust and rigorous quality assurance on equipment acceptance should be established with appropriate feedback to supply chain and suppliers. This is not only on initial purchase but throughout the life of the contract.

35. As the end user, the Defence organisation has a responsibility to ensure that selected suppliers can demonstrate compliance with environmental legislation and regulation through the commercial process.

Lessons learned

36. Defence organisations should undertake regular, lessons learned reviews relating to any environmental-related incident or occurrence. These should focus on informing and updating their EMS and capturing new understanding in a Learning from Experience (LfE) log. Lessons learned should also provide updated feedback into relevant environmental cases and equipment users. They should be documented and communicated as widely as possible across the organisation. Where available Defence organisations are to consider lessons learned from previous equipment design, acquisition, manufacture, operation, modification, and maintenance activity (see [ASEMS EMP 09](#) for further information).

37. When a concern relating to environmental protection is raised, an assessment or re-assessment of related environmental controls should be undertaken and formally documented. Assessments (including any necessary investigations) should seek to:

- a. understand what contributed to the specific environmental concern.
- b. understand the potential consequences, what prevented the outcome from being worse, and the reliability of those controls.
- c. identify related environmental concerns.
- d. address any systemic weaknesses identified in the overall EMS.
- e. update the environmental case and communicate these changes as necessary.
- f. present recommendations to the appropriate stakeholders to address the above.
- g. use the outcome of the assessment to review the effectiveness of the occurrence management process.

38. All concerns and required actions should be communicated to the relevant stakeholders in a timely manner as identified in the Defence organisation's communications plan.

39. Processes and controls to manage environmental impacts and risks should be regularly updated, following identification of new risks and reassessment of existing risks. Any changes to risk management or practical use of equipment should be revised in the Defence organisation's EMS and communicated to key stakeholders.

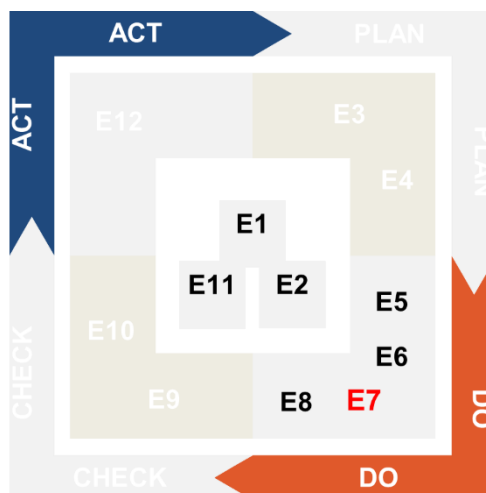
Element summary

40. Defence organisation leaders at all levels are to make sure that their organisation has:

- a. mechanisms in place to identify and assess environmental impact associated with equipment throughout its CADMID/T lifecycle.
- b. mechanisms in place to adequately reduce, control and mitigate environmental impacts associated with equipment through its entire lifecycle and where necessary elevated to the appropriate level within the chain of command.
- c. processes in place so that equipment in a way to avoid environmental damage wherever possible.
- d. mechanisms in place to ensure physical changes to equipment, (including major software changes), materials and associated specifications are evaluated, the environmental risk and impacts assessed, approved and documented.
- e. mechanisms to accurately identify and manage the environmental risks, impacts and dependencies in their equipment supply chain.
- f. processes in place to share lessons learned from previous equipment design, acquisition, manufacture, operation, modification, maintenance and end of life activities are shared effectively across the Defence organisation.
- g. mechanisms in place to assess the environmental risks (actual or projected) and operational impacts from integration of equipment and systems.

Plan-Do-Check-Act (PDCA) Cycle

41. This diagram is designed to illustrate where this, and all the elements of JSP 816, fit into the PDCA cycle.



Element assurance framework

41. The focus of this element requires that the organisation has put in place controls to incorporate Environmental requirements into the lifecycle of equipment, including Defence digital systems.

42. The expectations and performance statements for this element are set out in the following pages.

Expectations and performance statements

Element 7: Equipment Design, Manufacture and Maintenance

The Expectations in this element are:

E7.1 The Defence Organisation has mechanisms in place to identify and assess Environmental risks, impacts and requirements associated with equipment throughout its entire lifecycle; from Concept, Assessment, Demonstration, Manufacture, In-service and Disposal (CADMID).

E7.2 The Defence Organisation has mechanisms in place to ensure risks and impacts associated with equipment are adequately controlled and mitigated through its entire lifecycle and where necessary elevated to the appropriate SRO and competent person.

E7.3 The Defence organisation has mechanisms in place to ensure equipment is compliant with statute and Defence regulation throughout its lifecycle. Where necessary, authorisation to utilise a derogation, exemption or disapplication (DED) / waiver / concession is in place where compliance is not achievable.

E7.4 The Defence Organisation has processes in place to ensure equipment is always maintained and operated within defined design and operating limits to avoid environmental damage. Mechanisms are in place to communicate these operating limits to those who operate and maintain equipment.

E7.5 The Defence organisation has mechanisms in place to ensure physical changes to equipment, (including major software changes), materials and associated specifications are evaluated, the environmental risk and impacts assessed, approved and documented.

E7.6 The Defence Organisation has mechanisms to accurately identify and manage the Environmental risks, impacts and dependencies in their equipment supply chain.

E7.7 Lessons learned from previous equipment design, acquisition, manufacture, operation, modification, maintenance and end of life activities are shared effectively across the Defence Organisation.

E7.8 The Defence Organisation has mechanisms in place to assess the risk from integration of equipment and systems and its effects on the Environment.

Documents often associated with this element

- 10-year infrastructure management plan
- ABC planning (for inclusion of environmental requirements)
- Acquisition, Safety and Environmental Management System (ASEMS) compliance document
- Agenda and minutes of the Capability Management Group meetings
- Agenda and minutes of the Equipment and support steering group meetings
- Annual Budget Cycle (ABC) options
- Asset register
- Capability management strategy and plans
- Command / corporate plan
- Contract management and supply chain management plans •
- Corrective action plans arising from Assurance, Equipment Design and Infrastructure design
- Defence organisation business plans
- Defence organisation Operating Model
- Defence organisation EMS
- Equipment plan
- Exemplar environmental case reports
- Key user requirements including Environmental management
- Operation and Maintenance (O&M) management system for high-risk equipment
- Major equipment acquisition or replacement of equipment at end of life (e.g., weapons) plan / schedule
- Routine calibration
- Standard Operating Procedures

Expectation 7.1 The Defence Organisation has mechanisms in place to identify and assess Environmental risks, impacts and requirements associated with equipment throughout its entire lifecycle; from Concept, Assessment, Demonstration, Manufacture, In-service and Disposal (CADMID).

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> • The Defence Organisation does not have a mechanism in place to identify and assess Environmental risks and impacts. • The Defence Organisation has not taken into account the effects of equipment usage on the Environment and impact of Environmental conditions on equipment design, storage, and use. 	<ul style="list-style-type: none"> • The Defence Organisation has a mechanism to identify and assess Environmental risks and impacts throughout the equipment lifecycle, however significant weaknesses exist. • The Defence Organisation has taken into account limited effects of equipment usage on the Environment and impact of Environmental conditions on equipment design, storage, and use. 	<ul style="list-style-type: none"> • Mechanisms are in place to identify and assess Environmental risks and impacts throughout the entire equipment lifecycle with only minor weaknesses. • Environmental risk assessments include specific consideration of usage context. • The Defence Organisation has taken into account some of the effects of equipment usage on the Environment and impact of Environmental conditions on equipment design, storage, and use. 	<ul style="list-style-type: none"> • Mature mechanisms are in place to identify and assess Environmental risks and impacts throughout the entire equipment lifecycle. • Risks are formally re-assessed on a continual basis throughout the rest of its lifecycle (including change of use or retrofitting). Lessons learned are shared and applied across the Defence Organisation. • The Defence Organisation has taken into account the effects of equipment usage on the Environment and impact of Environmental conditions on equipment design, storage, and use.

Expectation 7.2 The Defence Organisation has mechanisms in place to ensure environmental risks and impacts associated with equipment are adequately controlled and mitigated through its entire lifecycle and where necessary elevated to the appropriate SRO and competent person.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> Environmental risks and impacts are identified but there are no mechanisms in place to control and mitigate or elevate those risks or impacts. 	<ul style="list-style-type: none"> The Defence Organisation has a mechanism to control and mitigate Environmental risks and impacts however it does not address the full lifecycle or is not well implemented. Risks are infrequently elevated to the appropriate SRO, and competent person and when elevated rarely addressed. 	<ul style="list-style-type: none"> The Defence Organisation has a mechanism to control and mitigate Environmental risks and impacts throughout the entire lifecycle and this is substantially implemented. Risks are consistently elevated to the appropriate SRO, and competent person. When elevated the SRO or competent person act on elevated risks, however responses are sometimes insufficient. 	<ul style="list-style-type: none"> Processes and controls to manage Environmental risks and impacts are fully implemented and regularly updated, following identification of new risks and re-assessment of existing risks, lessons learned are applied. SROs and competent persons act on risks elevated and ensure risks are effectively controlled and mitigated.

Expectation 7.3 The Defence Organisation has mechanisms in place to ensure equipment is compliant with statute and Defence regulation throughout its lifecycle. Where necessary, authorisation to utilise a derogation, exemption or disapplication / waiver / concession is in place where compliance is not achievable.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> • The Defence Organisation does not have mechanisms in place to ensure equipment is compliant with statute. • The Defence Organisation does not have mechanisms in place to ensure that any requirements for legislative DEDs are identified, recorded and implemented at the earliest possible stage. • Exemptions / waivers / concessions are not routinely in place where statutory and regulatory compliance is unachievable. 	<ul style="list-style-type: none"> • The Defence Organisation has mechanisms in place to ensure equipment is compliant with statute and Defence regulation, but these are not reviewed when there are changes to the organisation's equipment portfolio. • The Defence Organisation has some mechanisms in place to ensure legislative DEDs are identified. However, these are not implemented at the earliest stage, or monitored for expiration and change during the equipment lifecycle. • Exemptions / waivers / concessions are put in place where statutory and regulatory compliance is not achievable, but this only occurs late in the lifecycle. 	<ul style="list-style-type: none"> • The Defence Organisation has mechanisms in place to ensure equipment is compliant with statute and Defence regulation and these are reviewed throughout the equipment lifecycle. • Legislative DEDs are identified, recorded and implemented at the earliest possible stage. There is some monitoring in place to identify expiration and change during the equipment lifecycle. • Exemptions / waivers / concessions from compliance with statute and Defence regulations are well understood, recorded, and monitored centrally. All exemptions / waivers / concessions are requested early in the lifecycle. 	<ul style="list-style-type: none"> • The Defence Organisation actively monitors changes in statute, Defence regulation, technology, social, environmental and political influences, and applicability to retrofitted equipment to remain compliant with changing requirements. • Well established mechanisms are in place to identify, record and implement derogations and disapplication's at the earliest possible stage. These are actively monitored for expiration and change during the equipment lifecycle. • Exemptions / waivers / concessions are approved for defined periods early in the lifecycle and compliance with statute and Defence regulation is reviewed prior to the expiry date.

Expectation 7.4 The Defence Organisation has processes in place to ensure equipment is always maintained and operated within defined design and operating limits to avoid environmental damage. Mechanisms are in place to communicate these operating limits to those who operate and maintain equipment.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> • The Defence Organisation has no processes in place to always maintain and operate within defined design and operating limits. • Operating limits are not defined or communicated to those who operate and maintain equipment. 	<ul style="list-style-type: none"> • The Defence Organisation has a largely reactive approach to maintenance. • Where planned maintenance is in place there is no consistent prioritisation process and delays are evident. • Operating limits are defined, but not well communicated on a timely basis to those who operate and maintain equipment. 	<ul style="list-style-type: none"> • There is evidence of an effective and predictive maintenance regime across the Defence Organisation. • Operating limits are clearly defined and communicated to those who operate and maintain equipment. This includes changes made to the defined design or operating limits of equipment out of its initial intended use. Where operating limits are exceeded, these are monitored, with documented action taken to maintain operating capability. 	<ul style="list-style-type: none"> • The Defence Organisation has successfully implemented an effective preventative maintenance regime which includes a prioritisation process. • Operating limits are regularly re-assessed so that equipment is maintained and operated within defined design and operating limits. Those who operate and maintain equipment are actively consulted during risk reviews and findings are communicated to them. Where operating limits are exceeded, these are documented and monitored, with action taken.

Expectation 7.5 The Defence Organisation has mechanisms in place to ensure physical changes to equipment, (including major software changes), materials and associated specifications are evaluated, the environmental risk and impacts assessed, approved and documented.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> Physical changes to equipment are not formally evaluated and impacts and risks not assessed and documented. 	<ul style="list-style-type: none"> The Defence Organisation has mechanisms in place to ensure physical changes to equipment are evaluated. However, a suitable and sufficient risk assessment is not consistently performed, and controls are not formally documented or communicated. 	<ul style="list-style-type: none"> The Defence Organisation has mechanisms in place which are substantially implemented to ensure physical changes to equipment are evaluated, risk-assessed and documented. Those who operate, maintain, inspect, and manage equipment are consulted in the evaluation process. Mitigating controls are formally approved by an appropriately competent person before being communicated across the Defence Organisation. 	<ul style="list-style-type: none"> Physical changes to equipment are consistently and proactively anticipated based on ongoing risk-assessments of the Defence Organisations equipment portfolio. Changes are evaluated and risk assessed on a timely basis. Input is encouraged from stakeholders who maintain, use, and are affected by the operation of this equipment.

Expectation 7.6 The Defence Organisation has mechanisms to accurately identify and manage the environmental risks, impacts and dependencies in their equipment supply chain.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> There is no consideration for Environmental risks and impacts from equipment throughout the Defence Organisation's supply chain. 	<ul style="list-style-type: none"> Management of Environmental risks from equipment are reliant upon the supply chain providing details of Environmental risks and impacts. Risk ownership along the supply chain is not well defined with respect to dependencies between Defence Organisations and the supply chain. 	<ul style="list-style-type: none"> Environmental risks from equipment are shared openly between organisations and their supply chains. Risk ownership is understood along the supply chain and dependencies between Defence Organisations documented. 	<ul style="list-style-type: none"> Environmental risks from equipment are shared between Defence Organisations, and these are recorded, regularly monitored, and collaboratively mitigated and managed. Risk ownership along the supply chain is proactively managed and deconflicted will all dependencies between Defence Organisations well documented and understood.

Expectation 7.7 Lessons learned from previous equipment design, acquisition, manufacture, operation, modification, maintenance and end of life activities are shared effectively across the Defence Organisation.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> • Equipment information is not held centrally for the whole Defence Organisation to access. • Lessons learned are not formally documented or applied to future operations. • There is no evidence that lessons learned have occurrence or recurrence of Environmental impacts. 	<ul style="list-style-type: none"> • Equipment information is maintained centrally, however not effectively communicated across the Defence Organisation. • Lessons learned are documented but are not effectively communicated across the Defence Organisation. • There is some evidence that lessons learned have occurrence or recurrence of Environmental impacts. 	<ul style="list-style-type: none"> • Equipment information is maintained centrally and is communicated across the Defence Organisation. • Lessons learned are documented and well communicated across the Defence Organisation when required. • There is good evidence that lessons learned have occurrence or recurrence of Environmental impacts. 	<ul style="list-style-type: none"> • Lessons learned are documented and are proactively communicated across the Defence Organisation and wider Defence. • There is widespread evidence that lessons learned have occurrence or recurrence of Environmental impacts.

Expectation 7.8 The Defence Organisation has mechanisms in place to assess the risk from integration of equipment and systems and its effects on the Environment.

Unsatisfactory	Limited	Moderate	Substantial
<ul style="list-style-type: none"> • There is no mechanism in place to assess the risk from integration of equipment and systems and its effects on the Environment. 	<ul style="list-style-type: none"> • There are limited mechanisms in place. Not all equipment and system integration risk are assessed. • Lessons learned from previous integration of equipment and systems are not documented nor communicated across the Defence Organisation. 	<ul style="list-style-type: none"> • Integration risks are substantially assessed, recorded and communicated across the Organisation. • Lessons learned from previous integration of equipment and systems are documented and communicated across the Defence Organisation. 	<ul style="list-style-type: none"> • Lessons learned from previous integration of equipment and systems are documented and are proactively communicated across the Defence Organisation and wider Defence and have been proven to prevent recurrence of Environmental impacts. • Risks are managed through a structured approach and aligned to appropriate delegations. • Integration risks are formally reassessed throughout the lifecycle of the equipment and systems.