Ministry of Defence

JSP 815

Element 7: Equipment Design, Manufacture and Maintenance

Contents

Amendment record

This element has been reviewed by the Defence Directorate of Safety (DDS) together with relevant subject matter experts and key Safety stakeholders. Any suggestions for amendments **should** be sent to COO-DDS-GroupMailbox@mod.gov.uk.

Version No	Date	Text Affected	Authority
1.0	Dec 22	BETA version for consultation	Dir HS&EP
1.1	7 Jun 23	Final version	DDS
1.2	10 Sep 24	Annual revision and combined element and assurance framework	DDS

Terms and definitions

General safety terms and definitions are provided in the Master Glossary of Safety Terms and Definitions which can also be accessed on GOV.UK.

Must and should

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

Where this element says should, this means that the action is not a compulsory requirement but is considered good practice.

Introduction

1. This element provides the direction that must be followed and the guidance and good practice that should be followed and will assist Defence organisations to comply with the expectations for equipment design, manufacture and maintenance.

Note: The term ‘Equipment’ used in this element refers to all types of equipment, including vehicles, platforms, systems or services that are acquired to meet a capability requirement.

Purpose and expectations

2. This element ensures that the Defence organisation has put in place frameworks and working practices to incorporate safety considerations into the design, acquisition, manufacture, operation, modification, and maintenance of equipment, including Defence digital systems. References to ‘equipment’ throughout this element are considered to include its design, manufacture, import, supply, in-service use and disposal within Defence.

The CADMID/T lifecycle

3. After Defence has identified and expressed a capability requirement it uses a six-phase lifecycle approach for the acquisition of equipment to meet that capability requirement, the six phases are: Concept, Assessment, Demonstration, Manufacture, In-service and Disposal / Termination (CADMID/T).

4. 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. Requirements should be set against key stage-gates to evaluate and consider the suitability and purpose of equipment against approved performance envelopes.

5. Approval points across the CADMID/T lifecycle correspond to the overall ownership of the equipment and key information deliverables align to those approval points such as safety case reports where they are applicable.

Concept, Assessment and Demonstration (CAD)

6. During the initial phases of CADMID/T, there is the greatest opportunity to embed safety by design into equipment. Hazards to be managed by the equipment, as well as those caused by the equipment should be evaluated and risk assessed. The risk assessment should not be limited to operation of the equipment, but also maintenance, training and other activities. In most cases, this will include identification of critical safety controls, instrumentation and systems required for safe operation of the equipment, and the different contributions of the various Defence Lines of Development (DLOD). The safety case within the CAD phases should progressively inform how the equipment will be maintained and disposed of under current expectations and known safety risks.

7. During concept and design stages and within the safety case, the proposed operating envelope for the equipment should be determined. Any potential commission, life extension or uses outside of the planned and approved scope may also be considered. The risks of such extensions or further scope of operation should be evaluated so they are known and understood in advance.

Manufacture (M)

8. During manufacture, key decisions related to design amendments, or changes to materials or systems design may impact the safety risks in future operation and maintenance. A change management process owned by the Senior Responsible Owner (SRO) or the User should be followed to re-assess risks and evaluate the impact of the proposed changes.

In-service (I)

9. The appropriate and compliant use of equipment should be included in the relevant risk assessments and aligned with the safety case. The safety case should be proportionate to the risks being faced. Guidance on safety cases relating to equipment is below, with additional guidance provided in Element 4 of this JSP and in more detail in JSP 376 - Acquisition Safety Policy.

10. Risks must be assessed if there are any shortfalls in maintenance, operator training or levels of crewing and controls put in place where necessary to ensure continued safe operation, for example by imposing operational limitations until the situation can be remedied. The risk assessment should also consider the hazards and risks of conducting maintenance or other remedial activity, and the cumulative effect of multiple shortfalls.

11. During the in-service phase, many factors can change how equipment is used, such as changes in operator training, operating procedures, environment of use, or other interfacing equipment. Where equipment is planned to be used outside standard operating procedures and scope that have previously been approved, the risk assessment should be updated to reflect these situations and scenarios. Operating limits should be regularly reviewed and re-assessed so that equipment is maintained and operated within defined parameters. Mechanisms should be in place to communicate these operating limits to those who operate and maintain the equipment.

Disposal and service termination (D/T)

12. The Defence organisation should address any safety considerations during their assessment of how equipment will be taken out of service and appropriately disposed of or how any services are terminated. The Disposal and or termination phase should be considered and planned for throughout the equipment lifecycle and constantly updated and refined throughout each subsequent phase.

Compliance with legislation and regulations

13. Section 6 of the Health and Safety at Work etc Act 1974 (HSWA) requires any person who designs, manufactures, imports, or supplies equipment for use at work to:

a. make sure, so far as is reasonably practicable, that the equipment is designed and constructed to be safe and without risks to safety when it is being used, cleaned or maintained;

b. take necessary steps so that those using equipment have adequate information about its use. It also expects that the equipment is used in a safe manner, without risks to safety, including when it is being dismantled or disposed of; and

c. take necessary steps to provide all relevant and revised information to users, so they are made aware of anything which may give rise to a serious risk to safety.

14. The Provision and Use of Work Equipment Regulations (PUWER) 1998 is secondary legislation raised under HSWA, to amplify Section 6. It requires that equipment provided for use at work is:

a. suitable for the intended use;

b. safe for use, maintained in a safe condition and inspected to ensure it is correctly installed;

c. used only by people who have received adequate information, instruction and training; and

d. accompanied by suitable safety measures, such as protective devices. and controls.

15. Defence must comply with all H&S legislation, unless covered by a disapplication, exemption or derogation (DED). Defence organisations may be able to apply for a DED for certain equipment in certain circumstances but any DEDs must be clearly approved and set for a defined period and reviewed prior to their expiry date and throughout the equipment lifecycle. DEDs are covered in more detail in Element 3 of this JSP.

16. Safety should be considered at all stages of equipment integration and across the eight DLODs which are: training, equipment, personnel, information, logistics, doctrine & concepts, organisation and infrastructure. The DLODs are a checklist for capability deliverers to ensure all key factors relevant to the capability have been considered, and that issues that require resolution have been identified. It is the responsibility of the SRO / User to make sure that safety risks are considered along with all other DLOD risks and issues and their effects, however this responsibility may change as the equipment moves through the CADMID/T phases. Issues from the integration of equipment should be documented so that lessons can be learned and proactively communicated across the Defence organisation and wider Defence to help prevent future recurrence.

17. The SRO or the User (designated individual) must make sure that a Safety Assurance Model (SAM) is established and implemented as part of the programme's safety management arrangements which should demonstrate how safety assurance is delivered across all projects / DLODs and all assurance Lines of Defence (LODs). The SAM will enable the SRO across the programme to see when safety assurance was last delivered and where there may be safety assurance gaps. The SAM is covered in more detail in JSP 376.

Equipment design and safety cases

18. As part of their strategy for demonstrating safety, the SRO for equipment should consider whether a safety case will be required and what form it should take. Safety cases are described in Element 4 of this JSP and considerations for safety concurrent with JSP 655 (Defence Investment Approvals) and MOD acquisition processes are set out in JSP 376.

19. Considerations affecting the need for a safety case for equipment include the following:

a. Whether a safety case approach is proportionate given the complexity of the equipment and the level of risk involved, or whether a simple risk assessment would be more appropriate;

b. Whether a standalone safety case is required for the equipment, or whether it would be better incorporated in the safety case for the activity, capability, or higher-level system that the equipment is used in;

c. Whether separate safety cases are necessary for different applications of the equipment, or different contexts of use (for example, test and evaluation[1], training);

d. Whether legislation or Defence regulation mandates particular requirements for the safety case;

20. Development of the safety case for equipment should start as early in the acquisition lifecycle as possible and should be an integrated part of the equipment design, rather than a supplementary activity. As well as providing a justification that the equipment is (or will be) safe to use, the safety case should be an aid to its design and the planning of the acquisition programme. Planning in advance the safety argument that the SRO hopes to be able to make when a system is delivered and used in service should inform the safety requirements for the equipment, and the type of activities that will be necessary in the acquisition programme and during operation to generate the evidence to support the safety case. This information should in turn support decisions such as the choice of supplier and whether to use a bespoke, off-the-shelf or customised design.

21. Safety cases for equipment should be forward-looking and take into account activities beyond normal operation and training. They must also consider how equipment can be manufactured, tested, commissioned, transported, stored, maintained and disposed of safely. Stakeholder input will be required to validate assumptions made by the safety case about the contribution of other DLODs. Input from human factors specialists is also likely to be required to ensure these activities can be carried out safely and easily. Risk controls that cannot be put into practice easily are unlikely to be effective.

22. Safety cases should be updated to match the configuration of the equipment and when there is a ‘material change’ to the understanding, risk profile, design or operation of the equipment. Safety performance monitoring of the equipment should be maintained throughout the in-service phase for sustaining the safe performance of that equipment, any safety related issues identified must be acted upon. They should also be recorded in the safety case to demonstrate in an auditable way that the safety of the equipment is being achieved.

23. When equipment has been in service for a long time, it is particularly important to check that the assumptions made by the safety case are still valid and have not been undermined by factors such deterioration in the material state of aging equipment, obsolescence of the parts or services necessary to support them, or demographic changes in the user community.

Operational Requirement to use Equipment in line with the Parameters of its safety case.

24. The Defence organisation should implement risk control measures so that identified equipment are ‘safe to operate.’ Those managing other DLODs will work together so that the overall system capability will ’operate safely’ within the bounds of a defined Statement of Requirements (SOR) and comply with any additional requirements within Defence regulations.

[1] For further Test and Evaluation Directive and Guidance please refer to JSP 376 Chapter 3.

25. Actions taken to make equipment safe should be able to demonstrate:

a. that equipment is safe for use within its specified parameters of application and environment through a documented and structured argument with supporting evidence;

b. how risks will be managed to levels that are ALARP and tolerable and that the required information, instruction, training and other control measures are proportionate and adequately communicated to the user;

c. that all safety related information has been collated, whether generated by contractors or Department stakeholders;

d. that all safety requirements, including relevant process and procedural requirements have been identified and complied with. If safety requirements have not been fully complied with, the residual risk and any further mitigating activity should be clearly set out;

e. that safety requirements are valid, i.e., they have been derived by thorough analysis of appropriate specifications and artefacts, and that they correspond to the equipment as designed and implemented. Safety requirements should be updated through the equipment lifecycle, to reflect any changes to operating requirements and conditions;

f. that the assessment undertaken of the equipment is proportionate to the level of safety risk;

g. suitable records of the arrangements for effective planning, organisation, control, monitoring and review of preventive and protective measures to maintain risk to ALARP are maintained;

h. that staff undertaking key roles with defined responsibilities have the appropriate competencies for those roles; and

i. that all contractual safety requirements have been discharged.

26. The receiving users should be able to demonstrate:

a. formal acceptance of ownership and ’holding to account’ of the supplying party for the delivery of all safety control measures, documentation and training requirements;

b. that protective devices and controls, information, instruction and training requirements were received from the delivery organisation and implemented; and

c. adequate supervision was provided and risk assessments reviewed prior to the equipment entering service.

Management of change

27. The Defence organisation should introduce mechanisms to become aware of new equipment requirements and changes when they arise. It may be possible that the change is tolerated within the existing safety case and expected equipment operation. Otherwise, a change to the safety case should be undertaken to reflect the updated means of operation.

28. Changes may occur due to adjustments to statute, technology, social, environmental or political influences, along with alterations in the way that equipment is being used.

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

30. Where an operational requirement exists to use equipment outside of the parameters of their safety case, the Commanding Officer 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).

31. The evaluation, risk assessment, approval, implementation and documentation of all physical changes should consider the following essential elements:

a. agree and evaluate the technical justification for the change at the appropriate management level;

b. risk assess the proposed change using a multi-disciplinary team of competent people, including specialists, contractors, vendors and suppliers when their particular experience and knowledge is required;

c. put in place a rigorous design approval process 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; and

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.

32. Prior to implementing the physical changes of any item of equipment, a pre-start up safety review should be conducted to:

a. ensure that all actions from the risk assessment process have been incorporated into the design and any deviations from established standards or practices have been approved at the appropriate level;

b. confirm that all necessary testing has been successfully completed;

c. confirm that procedures for operating the equipment are in place and personnel are trained in the use of these procedures; and

d. confirm the change has been communicated to all stakeholders.

33. Once the physical changes to the item of equipment have been completed, these changes should be monitored closely. Feedback and lessons learned should be recorded for the benefit of continuous improvement and future projects.

Equipment and supply chain

34. Additional equipment safety risks can be generated in the supply chain. Selection of suppliers should take into account their competence and capability to meet safety requirements, and the availability of information to support their safety assessment. Access to safety information can be impacted by issues such as commercial confidentiality, national regulation, and the necessary information may not exist for previously developed equipment. Such issues should be addressed before the supplier is selected.

35. In accordance with JSP 940: MOD Policy for Quality, robust and rigorous processes should be put in place to assure the quality of equipment supplied to MOD. These should include processes to assist the MOD to get the product 'right first time', as well as to provide appropriate feedback to supply chain and suppliers when defects in equipment are discovered on acceptance or later in the equipment lifecycle.

36. Defence organisations should proactively manage risk within the supply chain of equipment they use or rely on, ensuring that ownership of risks is clear.

37. Change of supplier or provider requires consideration and increased quality assurance to verify equipment is suitable for purpose and of the required quality.

Lessons learned

38. Defence organisations should undertake regular, lessons learned reviews relating to any incidents or safety occurrences. These reviews should focus on informing and updating their Safety Management System (SMS) and capturing new understanding in a learning from experience (LfE) log. Lessons learned should also provide updated feedback into relevant safety cases and equipment users. Lessons learned 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 activities.

39. When a safety concern is raised (faults, safety occurrences, near-misses in-service or other concerns at any point in the equipment's life cycle) an assessment or re-assessment of related safety controls should be undertaken and formally documented. Assessments (including any necessary investigations) should seek to:

a. understand what contributed to the specific safety concern;

b. understand the potential consequences, what prevented the outcome from being worse, and the reliability of those controls;

c. identify related safety concerns (similar procedures or equipment such as vehicles with turrets or same type of weapon system; and more generically such as vehicle blind-spots and so on);

d. address any systemic weaknesses identified in the overall SMS for example a lack of certification or suitable quality checks;

e. update the safety case and communicate these changes as necessary;

f. present recommendations to the appropriate stakeholders to address the above; and

g. use the outcome of the assessment to review the effectiveness of the safety occurrence management process.

40. 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. Raising safety concerns is set out in Element 11 of this JSP and reporting safety occurrences is set out in Element 10 of this JSP.

41. Defence organisations should set out recall and urgent safety advice procedures to manage all equipment determined to be defective or inappropriate for specific uses. Urgent safety advice procedures that are put in place must have a plan to mitigate and solve the requirement for equipment to operate safely as soon as possible and maintain safety ALARP status.

42. Processes and controls to manage safety risks should be regularly updated, following identification of new risks and re-assessment of existing risks. Any changes to risk management should be revised in the Defence organisation's SMS and communicated to key stakeholders.

Element assurance framework

43. The focus of this element requires that the Defence organisation has put in place frameworks and working practices to incorporate safety considerations into the design, acquisition, manufacture, operation, modification, and maintenance of equipment, including Defence digital systems.

44. 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 safety risks 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 associated with equipment are adequately controlled and mitigated through its entire lifecycle and where necessary elevated to the appropriate Duty Holder, 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, an exemption / 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. 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, risk assessed, approved, and documented.

E7.6 The Defence organisation has mechanisms to accurately identify and manage the safety risks and dependencies in their equipment supply chain.

E7.7 Lessons learned from previous equipment design, acquisition, manufacture, operation, modification and maintenance 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 platform safety.

Documents often associated with this element:

- 10-year infrastructure management plan
- ABC planning (for inclusion of safety 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 SMS
- Equipment plan
- Exemplar safety case reports (specifically all category A safety cases, high risk / high complexity B & C)
- Key user requirements including safety
- 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
- Safety cases for software developments

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

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that the Defence organisation have a mechanism in place to identify and assess equipment safety risks. • There is little or no evidence to demonstrate that the Defence organisation has considered the safety impact of environmental conditions on equipment design, storage, and use. (e.g., Geographic location, hot, cold, wet, dry).	• The Defence organisation has a mechanism to identify and assess safety risks throughout the equipment lifecycle, however significant weaknesses exist. • The Defence organisation has considered limited safety impact of environmental conditions on equipment design, storage, and use. (e.g., Geographic location, hot, cold, wet, dry).	• The Defence organisation has a mechanism to identify and assess safety risks throughout the entire equipment lifecycle with only minor weaknesses. • Equipment risk assessments include specific consideration of usage context. • The Defence organisation has considered some safety impact of environmental conditions on equipment design, storage, and use. (e.g., Geographic location, hot, cold, wet, dry).	• The Defence organisation has a mechanism to identify and assess safety risks throughout the entire equipment lifecycle. • Risks are formally re-assessed on a continuous basis throughout the rest of its lifecycle (including change of use and/or retrofitting). Lessons learned are shared and applied across the Defence organisation. • The Defence organisation has considered the safety impact of environmental conditions on equipment design, storage, and use. (e.g., Geographic location, hot, cold, wet, dry).

Expectation 7.2 The Defence organisation has mechanisms in place to ensure risks associated with equipment are adequately controlled and mitigated through its entire lifecycle and where necessary elevated to the appropriate Duty Holder, Senior Responsible Officer (SRO) and competent person.

Unsatisfactory	Limited	Moderate	Substantial
• Equipment safety risks are identified but there is little or no evidence to demonstrate mechanisms are in place to control and mitigate those risks.	• The Defence organisation has a mechanism to control and mitigate equipment safety risks however does not take account of the lifecycle. • The risk is elevated to the appropriate Duty Holder, SRO, and competent person however it is not consistent across the Defence organisation.	• The Defence organisation has a mechanism to control and mitigate equipment safety risks throughout the entire lifecycle and are formally documented. • Those operating equipment are aware of the risk elevation procedures if risk controls are insufficient.	• Processes and controls to manage safety risks are regularly updated, following identification of new risks and re-assessment of existing risks, lessons learned are applied. • Duty Holders, SROs and competent persons act on risks elevated and ensure risks are 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, an exemption / waiver / concession is in place where compliance is not achievable.

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that the Defence organisation have mechanisms in place to ensure equipment is compliant with statute and Defence regulation. • Exemptions / waivers / concessions are not routinely in place where statutory and regulatory compliance is unachievable.	• 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. • Exemptions / waivers / concessions are put in place where statutory and regulatory compliance is not achievable, but this only occurs late in the lifecycle.	• 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. • 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.	• 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. • 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. Mechanisms are in place to communicate these operating limits to those who operate and maintain equipment.

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that the Defence organisation has no processes in place to always maintain and operate within defined design and operating limits. • There is little or no evidence to demonstrate that operating limits are defined or communicated to those who operate and maintain equipment.	• 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.	• The Defence organisation has successfully implemented an effective preventative maintenance regime which includes a prioritisation process. • Safety critical systems are identified and are subject to specific procedures and protocols. Risks which impact their effectiveness are elevated promptly and use of the equipment is avoided where necessary. • 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.	• There is robust evidence of an effective and predictive maintenance regime across the Defence organisation. • 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, risk assessed, approved, and documented.

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that physical changes to equipment are formally evaluated, risk-assessed and documented.	• 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.	• The Defence organisation has mechanisms in place 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.	• Physical changes to equipment are 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 safety risks and dependencies in their equipment supply chain.

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that there is consideration for equipment safety risk management throughout the Defence organisation's supply chain.	• Equipment safety risk management is reliant upon the supply chain providing details of Safety risks. • Risk ownership along the supply chain is not well defined with respect to dependencies between Defence organisations and the supply chain.	• Equipment safety risks are shared openly between Defence organisations and their supply chains. • Risk ownership is understood along the supply chain and dependencies between Defence organisations documented.	• Equipment safety risks 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.

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

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that equipment information is held centrally for the whole Defence organisation to access. • There is little or no evidence to demonstrate that lessons learned from previous equipment design, acquisition, manufacture, operation, modification, and maintenance activities are formally documented or applied to future operations. • There is little or no evidence to demonstrate that recall and urgent safety advice procedures are in place to notify users of equipment determined to be defective or inappropriate for specific uses.	• Equipment information is maintained centrally, however is not communicated across the Defence organisation. • There is some, but not enough evidence that lessons learned from previous equipment design, acquisition, manufacture, operation, modification, and maintenance activities are documented and communicated across the Defence organisation. • There is some, but not enough evidence that recall and urgent safety advice procedures are in place and are consistently used for equipment determined to be defective or inappropriate for specific uses.	• Equipment information is maintained centrally and is communicated across the Defence organisation. • There is some but could be improved evidence that lessons learned from previous equipment design, acquisition, manufacture, operation, modification, and maintenance activities are documented and communicated across the Defence organisation. • There is some but could be improved evidence that recall and urgent safety advice procedures are in place and are used to notify potential users for most equipment determined to be defective or inappropriate for specific uses.	• There is robust evidence that lessons learned from previous equipment design, acquisition, manufacture, operation, modification and maintenance activities are documented and are proactively communicated across the Defence organisation and wider Defence and have been proven to prevent recurrence of safety issues. • There is robust evidence that recall and urgent safety advice procedures are in place and are used for all equipment determined to be defective or inappropriate for specific uses.

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

Unsatisfactory	Limited	Moderate	Substantial
• There is little or no evidence to demonstrate that there is a mechanism in place to assess the risk from integration of equipment and systems.	• There are limited mechanisms in place. Not all equipment and system integration risk is assessed. • Lessons learned from previous integration of equipment and systems are not documented nor communicated across the Defence organisation.	• Integration risks are assessed, recorded and communicated across the organisation. • Lessons learned from previous integration of equipment and systems are documented and communicated across the Defence organisation.	• 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 safety issues. • 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.