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Ministry of Defence

JSP 886
DEFENCE LOGISTICS SUPPORT CHAIN MANUAL

VOLUME 7
SUPPORTABILITY ENGINEERING

PART 8.02
PACKAGING, HANDLING, STORAGE AND TRANSPORTATION

VERSION RECORD		
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1.0	13 Apr 12	Initial Issue.
1.1	17 Oct 12	New Chapter 4.
1.2	09 Nov 12	STCC's: Deleted Para 27 (Page 12). Revised Para 6 (Page15)
1.3	24 Jul 13	Changes to Content (Sidelined in Blue) and Reference to Elastomerics Def Stan 81-41.
1.4	09 Sep 13	New Chapter 6: Packaging, Handling, Storage and Transportation Management Maturity.
1.5	18 Dec 13	Change to POC for Handling Technical Enquiries.
1.6	22 Dec 14	Change of Cross-Reference to Chapter 10.

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CHAPTER 1: PACKAGING, HANDLING, STORAGE AND TRANSPORTATION (PHS&T)

CONTEXT

1. This chapter provides key points of policy to enable the compilation of a Packaging, Handling, Storage and Transport (PHS&T) Plan and for it to be effectively applied to the management of equipments (including Urgent Operational Requirements (UOR)), by Project Teams (PT), Inventory Managers (IM) and Front Line Commands (FLC), as part of Through Life Support (TLS). The purpose of a PHS&T plan is to aid compliance with ILS elements and Associated Disciplines (DEFSTAN 00-600), all appropriate legislation and the SSE.

POLICY

2. It is MOD policy that all PHS&T requirements for all items within the project are considered so that they are packaged and labelled, stored, handled and transported as appropriate via the supply chain so that items reach the user in a usable and acceptable state.

3. It is MOD policy that all items will have their PHS&T requirements set down in a Plan. This PHS&T Plan should be composed as part of the Integrated Logistic Support (ILS) procedure in accordance with JSP 886 Volume 7: Supportability Engineering and DEFSTAN 00-600. The consideration of the PHS&T plan needs to begin at the start of the CADMID cycle, eg, in the Use Study, and proceed throughout. The PHS&T plan will form part of the ILSP and be referenced by the Through Life Management Plan (TLMP). As such it will also form part of the eventual contractors ISP. For commodities, sub-assemblies etc., where a full ILS assessment is not appropriate, the underlying principles still apply.

PRECEDENCE AND AUTHORITY

4. Ownership of Logistics policy in support of the Logistics Process falls to the Assistant Chief of Defence Staff Logistics Operations (ACDS Log Ops) as CDM's Process Architect as described in JSP899: Logistics Process – Roles and Responsibilities. This role is exercised through the Defence Logistics Working Group (DLWG) and the Defence Logistics Steering Group (DLSG) reporting to the Defence Logistics Board (DLB).

5. PHS&T is an essential component within the Logistics Process and it is against this governance framework that sponsorship for PHS&T policy is delegated to Hd JSC SCM.

MANDATED REQUIREMENTS

6. Specified MOD requirements aside, statutory legislation applies throughout the process, at all stages of the defence support chain. These provide for a duty of care to protect personnel, the environment and property. See the Associated Standards and Documents listings.

PROCESS

7. The Project Team (PT) and Inventory Managers (IM) are required to detail all PHS&T requirements within the PHS&T Plan which shall be reviewed and developed at all stages through the CADMID cycle.

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8. The main outputs of a PHS&T Plan are described in the subsequent chapters and give the requirements for:

a. Packaging, for all non-munitions packaging with the added exceptions of Fuels, Lubricants, Clothing and Dangerous Goods.

b. Handling.

c. Storage.

d. Transport.

9. While the PHS&T plan will change with the evolving requirements of a project as it moves through the CADMID cycle at a minimum it needs to be in place at Main Gate and Logistic Support Date (LSD).

KEY PRINCIPLES

General

10. All aspects of PHS&T are interrelated and are not to be considered in isolation.

11. The full range of requirements across the project capability must be considered and early identification of specific requirements for items must be achieved to ensure that all information related to both technical and logistical aspects is captured and communicated to ensure successful transition of all items throughout the End to End (E2E) supply chain, including the Reverse Supply Chain (RSC). Factors informing specific requirements include:

a. Physical characteristics of the item.

b. Timing and mode of movements.

c. Movements agency requirements, both Defence and Commercial.

d. Specific asset management requirements, eg UID Tracking, Repair Loop.

e. Operational requirements.

f. Lifeing of articles, eg Shelf Life.

12. All PHS&T requirements must be reviewed and developed at all stages of CADMID and the impact of changes within each PHS&T element on the others must be considered and aligned to ensure an effective coherent TL support solution is in place.

13. The Reverse Supply Chain (RSC) should not be discounted when formulating a Plan.

Specialist and Hazardous Stores

14. When compiling a PHS&T plan it is necessary to consider first whether the store has specialist requirements, eg due to a ‘sensitivity’ (Magnetic and Electrostatic, ultra-violet, particular fragility etc), as this has a profound effect on each part of a PHS&T plan.

15. Whether a store is classifiable as hazardous should be established as soon as possible. Suppliers of such items should know and should pass the information onward. It

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should also be identified on the service inventory databases but this may not always be the case.

16. As a result of being considered hazardous the permissible forms of transport and types of packaging are tightly regulated and this must be included within the PHS&T plan.

17. When compiling a PHS&T plan it is necessary to consider if the item has a Shelf Life. If it does, an Expiry date needs to be determined and the packaging marked / labelled appropriately, see Def Stan 81-41 Part 6[12].

Environmental

18. The PHS&T Plan is also to consider the requirements set in place to protect the environment reflected in JSP 418 such as; The Producer Responsibility Obligations (Packaging Waste) Regulations (SI 1997 No. 648) (As amended), ISPM-15 and The Montreal Protocol etc.

OWNERSHIP

19. The PHS&T policy is sponsored by DE&S JSC SCM-TLS, the contact details are:

a. Packaging, labelling and marking technical enquiries are to be addressed to:

DES JSC SCM-TLS-Pkg
Tel: Mil: 9679 Ext 35353, Civ: 030679 35353

b. Handling technical enquiries are to be addressed to:

DES LE OIP-OIP-WTE
Tel: Mil: 9679 Ext 37813, Civ: 03067 937813

c. Storage technical enquires to:

ACDS LOGOPS-Def Log Pol-SO2b
Tel: Mil: 9679 Ext 80959, Civ: 030679 80959

d. Transportation technical enquiries are to be addressed to:

DSEA-DLSR-MovTpt Road Policy
Tel: Mil: 9679 Ext 80970, Civ: 030679 80970

e. Editorial enquires are to be addressed to:

ACCDS LOGOPS-Def Log Pol-ET1
Tel Mil: 9679 Ext 80953, Civ: 030679 80953

[1] See also Chapter 4; Storage and clauses 4. c, 16. d. and 19. d.

[2] The item itself may also need marking.

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ASSOCIATED STANDARDS AND GUIDANCE

20. General:

a. JSP 418: Sustainable Development and Environment Manual.

b. JSP 800: Defence Movements and Transport Regulations.

c. JSP 899: Logistics Process – Roles and Responsibilities.

d. DEFSTAN 00-600: Integrated Logistic Support Requirement for MOD Projects.

e. DEFCON 81-41: Packaging of Defence Materiel.

f. DEFCON 129: Packaging for articles other than; Fuels, Lubricants, Food, Medical Supplies and Munitions.

g. DEFCON 691: Timber and Wood – Derived Products

h. DEFFORM 96: Coding Sheet for Procurement Documentation.

i. ISPM-15: International Standard for Phytosanitary Measures-15.

j. Producer Responsibility Obligations (Packaging Waste) Regulations (SI 1997 No. 648) (As amended).

k. The Montreal Protocol on Substances that Deplete the Ozone Layer.

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ANNEX A: DEFINITIONS

Item	Definition
Dangerous Goods	See JSP 800 4a and 4b. Packaging Level A or C with mandatory national / International requirements.
Export Trade Pack (Packaging Level C)	The Package containing the required PPQ constructed using commercial grade materials and methods that will provide suitable protection to the item with n, during onward shipment to the end user when being moved and handled by any means. The item is expected to be transported to a destination outside the UK and may need a modified (usually more robust) design. Refer to DEFSTAN 81-41 and DEFCON 129
Level H	Items that are identified as needing to be packaged to a level in one or more parameters in excess of normal military level (J, N and P) packaging are designated Level H. The DEFSTAN 81-41 principles also apply to Level H packaging. The full packaging requirements shall be detailed in the contract, together with an appropriate test schedule.
Military Level Packaging (MLP) Levels J, N or P (Equivalent to NATO Packaging Levels 2, 3 and 4)	Packaging designed to meet the requirements of DEFSTAN 81-41. For items supplied for military usage and requiring greater protection as it passes though the military supply chain than its commercial equivalent can normally provide. The levels are a hierarchy of protection from the least to the most; P, N and J and depend on the H, S and T envisaged.
Service Packaging Index (SPIN)	The database of SPIS records held and maintained by the MOD in a DR on TDOL. It also holds a record of those items packaged to a SFS and certain legacy drawings.
Service Packaging Instruction Sheet (SPIS)	A document outlining the Military Packaging Level design and requirements. It may include; sketch and formal drawings, reference to material, processes, and reference to a SFS. MOD records maintained within SPIN. Refer to DEFSTAN 81-41 Part 4 and DEFCON 129
Special to Contents Container (STCC)	See Chapter 2 Annex A
Standard Family Specification (SFS)	A SFS is a Defence Standard prepared to cover a number of groups or 'families' of materiel which can be regarded for packaging purposes as identical or which can be given the same technical treatment because they differ only in regard to such features as dimensions. Packaging to a SFS complies with DEFSTAN 81-41 and, unless otherwise required, eliminates the need for a new SPIS and thus reduces costs. Extant SFS are listed in the DEFSTAN list of 81- series standards and are noted in DEFSTAN 81-41. Although SFS specified items do not have a SPIS for design for the purposes of SPIN at least one instance for a given NSN is recorded using a modified SPIS record
Trade Pack (Packaging Level A)	The package containing the required PPQ constructed using commercial grade materials and methods that will provide suitable protection to the item within, during onward shipment to the end user using enclosed transport. With handling predominantly by mechanical handling equipment. Normally, movement within the commercial supply chain within the UK. Commercial packaging is usually regarded as being suitable for one trip from the supplier to the consignee only, and as having limited capability for preservation of the item in long term storage, unless specified. Refer to DEFSTAN 81-41 part 1 and DEFCON 129
Packaging Code	Codes used within Inventory Management databases and systems to identify certain logistic aspects, eg, Packaging Levels (see DEFFORM 96)
Transport or Shipment	Transfer of an item for an appreciable distance (several km or more) using commonly available equipment such as; rail wagons, trucks, ships, or aircraft (the methods of transport).
Transportability	The inherent capability of an item to be moved; by towing, self-propulsion or common carrier via Land (road, railway), Waterway (canal, river), Air or Sea.
Modes of Transportation	The various ways in which items are physically shipped, i.e., road, rail, canal, air or sea.
Stowage	Storage aboard ship, airplane or within a freight container. This includes elements of segregation, safety, securing, access (where required) and efficient use of space.

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CHAPTER2: PACKAGING, LABELLING AND MARKING

CONTEXT

1. This chapter provides key points of policy to enable packaging and labelling within a PHS&T Plan to be effectively applied to the management of equipments (including Urgent Operational Requirements (UOR)), by Project Teams (PT), Inventory managers (IM) and FLC, as part of Through Life Support (TLS)[3]. The policy excludes the packaging and labelling policy for Food, Gases, Fuels and Lubricants (JSP 317), Medical Supplies (pharmaceuticals), Dangerous Goods (JSP 800) and Munitions (JSP 762).

2. Packaging and Labelling is a fundamental requirement to ensure that the correct item progresses from manufacturer to the user, efficiently and in accordance with operational priorities. The benefits of applying Packaging and Labelling policy include:

a. The correct item is issued to the user.

b. Issued items remain fit for purpose and within the supply chain (particularly in Storage and during Transport).

c. Optimum cost for defence is achieved (waste reduction etc).

d. Legislative compliance is achieved (eg safe-handling etc).

e. Items can be accurately recorded on MOD consignment tracking and warehousing systems.

f. Packaging itself should be considered in conjunction with Handling, Storage, Transport and or transportability.

POLICY

3. The Support Solution Envelope (SSE) matrix highlights Governing Policy (GP) 3.4 as a GP covering packaging and labelling. Advice, Guidance and identification of support risk against the GP within the SSE are provided by the DES JSC SCM Support Solution Improvement Team (SSIT).

PRECEDENCE AND AUTHORITY

4. The Defence Logistics Board (DLB) sponsorship for Packaging policy is delegated to Hd. JSC SCM and thence to TLS-Pkg. Project Teams are required to assess and show compliance with key policies and governance as signposted by the SSE.

MANDATED REQUIREMENTS

5. Dangerous Goods packaging shall comply with the requirements of JSP 800 Volumes 4A and 4B (also see Annex A), related DEFCONs, and must comply with legislative requirements.

6. The selection, use and disposal of packaging must comply with the current national and relevant international; environmental, health and safety legislation.

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[3] Military packaging is to comply with the Packaging (Essential Requirements) and Packaging Waste regulations. (See JSP 418, Leaflet 03).

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PROCESS

7. The PT and IM are required to detail all packaging and labelling requirements within the PHS&T Plan, which shall be reviewed and developed at all stages through the CADMID cycle. This means Packaging needs to be considered during the initial phases of the cycle and should not be left just to the latter phases.

KEY PRINCIPLES

8. All Packaging must be designed and specified to protect the item through the envisaged storage, handling and distribution process, from manufacturer to end user.

9. It is particularly necessary that all packaging be clearly and correctly labelled and marked as required as per DEFSTAN 81-41 Part 6, or as otherwise necessary to ensure correct receipt. Failure to do so increases costs and delays.

10. The standard of packaging specified should meet the requirements in the most cost-effective manner.

11. The contracted packaging suppliers are responsible for ensuring that packaging meets the requirements and that all specified and required regulations shall be met whether; MOD, national and/or international legislation based.

12. Any equipment which requires specialist packaging, handling or health and safety requirements shall be packaged and marked accordingly, to facilitate storage and handling throughout the supply chain, eg, magnetic / electrostatic sensitive devices, (the former are handled as per DEFSTAN 81-130, the latter in accordance with BS EN 61340-5-1), Rubber and Elastomerics (See Def Stan 81-41 Part 6, BS 4F68 etc).

Packaging Levels

13. The PT and IM support the contract and prime contractors by setting, and contracting for, appropriate packaging categories, (MLP, Trade Pack etc), levels (J, N, P and H - NATO 2, 3 and 4 etc), Primary Packaging Quantities (PPQ)[4][5], Unit of Issue (UOI) and labelling. If necessary, the PT / IM should seek advice from certificated packaging companies or the prime contractor, as appropriate. The packaging level and PPQ should be uploaded to the relevant inventory system(s) once set, or later modified, as soon as possible.

14. Where Military Level Packaging (MLP)[6] is required, it shall comply with DEFSTAN 81-41 which outlines the basic military packaging and labelling (including bar coding) criteria, (See also DEFCON 129). Only current military levels, (J, N, P (comparable to NATO levels 2, 3 and 4) and H), are to be specified, (See Annex A). On no account are obsolescent military standards and levels to be specified.

15. Where commercial packaging (aka trade pack) is specified in a contract the supplier shall ensure that the most cost effective methods and materials shall be used in order to

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[4] Primary Package Quantity (PPQ) - The quantity of an item of material selected as being the most suitable for packaging for issue to the ultimate user, (DEFSTAN 81-41 Part 1 Annex B Glossary).

[5] The PPQ should be informed by or be appropriate to the unit of issue (UI).

[6] MLP is represented as numeric codes in the CRISP and SCCS databases and as Alpha Codes in Store Systems 3 (SS3). (See also DEFFORM 96). In future systems (BIWMS) these may be harmonized.

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meet the requirements. See Annex A, DEFSTAN 81-41 and DEFCON 129 for definitions for Trade (Level A) and Export Trade Packaging (Level C).

Hazardous Stores and the Packaging Level

16. Where an item is classified as hazardous it should not be allocated a military packaging level. Such goods are otherwise regulated (see JSP 800 Vol. 4a and 4b) and should normally be identified as Level A or C and as being hazardous as per the relevant regulations.

Military Level Packaging Design

17. The MOD relies on industry to design and manufacture packaging fit for purpose. Industry is to have the capability to deliver to MOD requirements. To maintain the standard of design there is a certification system 'Military Packager Approval Scheme' (MPAS). The details of MPAS; the System (MPAS Part 1), its associated training scheme (MPAS Part 2) and Register of military packaging contractors and list of certificated designers (MPAS Part 3) can be sourced from the DES JSC SCM-TLS packaging website.

18. Industry is contracted in accordance with DEFCON 129, and other relevant DEFCON (eg 15, 68, 129j) and DEFFORM (eg, 96, 111, 129a and 129b) as referenced in the former. Contracting authorities shall use MPAS Certificated companies for MLP design and should use them for MLP manufacture and other packaging.

19. There may be exemptions in exceptional circumstances, eg, where it is only possible to have a single supplier, or none of the MPAS certificated organisations have a suitable scope, or it is a UOR. In these cases the PT / IM can opt to use an un-certificated contractor provided sufficient quality controls are used (MPAS equivalent) to ensure the resultant packaging meets fully and consistently the requirements of DEFSTAN 81-41 and the desired (shall be stated) performance. As these exemptions by-pass accepted and agreed controls they shall be short-term and only used in exceptional circumstances.

20. All military level packaging (J, N, P or Level H) and all STCC will have either a Services Packaging Instruction Sheet (SPIS) design or a Standard Family Specification (SFS), specifying all the materials and methods of packaging to be employed to package an Item. The use of a SPIS allows the re-use of all or part of previous designs, saving costs in obviating the need for new designs to be made or cutting the time to produce modified designs. The use of a SFS obviates the need for a SPIS.

21. All designs / packaging specifications shall reference the item's full NATO Stock Number (NSN). It is possible that the NSN changes during the life of an item, and the current NSN should be taken from UK ISIS, see JSP 886 Volume 2 Part 4: NATO Codification in the UK.

22. Where a MPL packaging design is required (new or modified) the chosen Certificated Packaging Design organisation shall record the packaging design in accordance with DEFSTAN 81-41 as a SPIS with drawings and other associated documents as appropriate. The organisation shall retain a copy of the SPIS to provide details for any subsequent order. They shall also provide a complete copy to the MOD, in accordance with DEFCON 129, for the MOD's retention and use.

23. The MOD retains a copy of the SPIS/SFS design as a record on the SPIN database for access by PT / IM and other authorised users to provide packaging contractors with the necessary information to pack equipment to an MPL. TDOL hosts the database; user

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instructions for access to the system are available on the DE&S SCM TLS website. The use of the database enables quick access to packaging designs for re-order and other purposes. Requests for designs or other design information from the database is made using DEFFORM 129A.

On Receipt

24. On receipt, packages shall be handled and transported in accordance with the packaging design and level. Where in the course of operations the packaging and handling requirement alters after receipt, (eg if equipment is shipped not to a UK depot but to theatre and so is outside the original performance criteria of the packaging), then the original packaging level may not meet the new requirement. As a consequence the item may need to be re-packaged or over-packed etc. The PT / IM shall liaise with the MOD storage and transport organisation or contractor as necessary, to make the appropriate arrangements[7].

25. Any items supplied that are not packaged and labelled in accordance with the specification (as per DEFSTAN 81-41) set by the PT / IM and contract will be rejected by the MOD.

26. When there is a packaging related cause of Non-Conforming Receipts (NCR) refer to JSP 886 Volume 2 Part 1 Chapter 10 and as engineering defects using the single service processes:

a. **RN Form S2022.** Report of Shortcoming in Material, Design, or Support. BR 1313 Chapter 7 refers.

b. **AF G8267A/B: Equipment Failure Report.** JSP 886 Volume 5 Part 2 refers. Note: May refer to D Pkg A Form G833 or MOD Form 833, both of which are obsolete and should not be used.

c. **MOD Form 760: Narrative Fault Report.** Refer MAP-01 Chapter 7 refers.

Packaging and the Environment

27. It is the policy of the MOD to use sustainable procurement where this meets performance and operational requirements, (See Annex B). The maximum use of re-used packaging materiel and reusable packaging should be made.

28. Wood based packaging and dunnage for export or import must conform to ISPM-15, where relevant, and so be heat treated and marked in accordance with the UK Wood Packaging Material Marking Programme, (see the Forestry Commission website: www.forestry.gov.uk/planthealth).

Reverse Supply Chain

29. Returns through the Reverse Supply Chain (RSC), see JSP 886 Volume 3 Part 13: Returns of Materiel and Equipment are to be packaged and labelled in accordance with JSP 379: 'The Packers Handbook', which provides guidance to FLC for packing equipments being passed back through the Joint Supply Chain or to other units.

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[7] Whereas packaging levels can be changed by the PT / IM they should not do so to items being received, this can generate unnecessary NCR. Any changes need to be updated in the inventory systems and to the contractor as soon as is practicable. A change in the contract may be needed.

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Packaging and Disposal

30. Disposal of any packaging is to conform to JSP 886 Volume 2 Part 4: Disposal of Inventory or JSP 886 Volume 3 Part 16: Unit Disposal.

APPLICABILITY

31. This policy is to be applied to all equipment acquisition projects including; Contractor Logistic Support (CLS) and Contacting for Availability (CFA).

ASSOCIATED STANDARDS AND GUIDANCE

32. Packaging:

a. JSP 317: Food, Fuels and Lubricants.

b. JSP 379: The Packers Handbook.

c. JSP 418: Sustainable Development and Environment Manual.

d. JSP 472: Financial Accounting and Reporting Manual.

e. JSP 762: Weapons and Munitions Through Life Capability.

f. JSP 800: Defence Movements and Transport Regulations.

g. JSP 886 Volume 2 Part 1: Policy

h. JSP 886 Volume 2 Part 4: NATO Codification in the UK.

i. JSP 886 Volume 2 Part 404: Disposal of Inventory.

j. JSP 886 Volume 3 Part 13: Return of Materiel and Equipment.

k. JSP 886 Volume 3 Part 16: Unit Disposal.

l. JSP 886 Volume 4 Part 1: Fundamentals of Materiel Accounting.

m. JSP 886 Volume 5 Part 2: Land Equipment Support.

n. DEFSTAN 81-41: Packaging of Defence Materiel.

o. DEFSTAN 81-130: Transportation, Handling, Storage and Packaging of Magnetically Sensitive Equipment.

p. DEFCON 117: Supply of Documentation for NATO Codification Purposes.

q. DEFCON 129: Packaging for articles other than; Fuels, Lubricants, Food, Medical Supplies and Munitions.

r. DEFFORM 96: Coding Sheet for Procurement Documentation.

s. BS EN 61340-5-1: Electrostatics: Protection of electronic devices from electrostatic phenomena – General Requirements.

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ANNEX A: SPECIAL TO CONTENTS CONTAINERS (STCC)

1. A Special to Contents Container (STCC) is a uniquely configured container designed for multiple journeys whilst supporting and protecting specific items during handling, storage and transportation throughout the Supply Chain. It is NSN codified and may have a value exceeding that of the contents. It is usually listed and accounted for as a repairable (P class) inventory store item.

2. The following applies to STCC when moved through the Supply Chain including repair and return loops (RSC):

   a. An STCC as a codified (NSN) container specific to particular (separately) codified item(s) shall not be used for other item(s).

   b. All STCC shall be marked as per DEFSTAN 81-41 Part 6[89].

3. Like any other codified item it is procured by a PT or IM and have a materiel classification of repairable (P Class).

4. All STCC designs shall be included as a SPIS within the SPIN database hosted on TDOL.

5. The finishing colour of an STCC is not specified. Therefore, the colour shall meet the relevant standards required to meet operational requirements.

6. The management of STCC's depends on adequate accounting visibility and traceability. This is to be achieved by:

   a. All STCC's are to be codified and allocated to the Inventory Management Code (IMC) / Domestic Management Code (DMC) of their contents.

   b. The policy for the accounting of STCC is laid down in JSP 472 and JSP 886 Volume 4. Empty STCC's are to be managed under their own NSN. Full STCC's are to be managed under the NSN of the contents for all issues, receipts and storage.

7. The disposal of an STCC with or without the associated equipment shall be in accordance with JSP 886 Volume 2 Part 404: Disposal of Inventory. Specifically, as Accounting Class P item, units have to have explicit approval from the managing PT to dispose of STCCs.

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[8] That various markings have been used for different Services and have changed over time. For example, naval ones may have two yellow bands and others may have 'STC' orange stencilled marks.

[9] The policy of separate identification markings for the three services is to be reviewed.

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ANNEX B: ENVIRONMENTAL CONSIDERATIONS

1. In the design of packaging, attention shall be taken of the need to minimise the packaging material used, and resultant waste due to its use. Also, that care shall be taken to ensure material certified as sustainable and/or less environmentally damaging than the alternatives be used, where feasible. The designer can do this by:

a. Enabling the maximum re-use of packaging, particularly for items that need to be returned (repairable or rotable (returned on a rota – planned maintenance)).

b. Using packaging materials and / or components that may be re-used.

c. Light-weighting where possible (reducing the amount of material used).

d. Using packaging materials and / or components that may be easily and conveniently separated for re-use or recycling.

e. Using packaging materials that minimise final disposal costs, eg compostable, do not contain hazardous constituents, or can be burnt for energy recovery.

f. Avoid the use where possible of materials which[10]:

(1) May conflict with the environmental policy / regulations of Nations where the packaged article will be transported or used

(2) Are known to be less environmentally friendly than existing alternatives

(3) Are known to cause a hazard, as a result of which are not preferred by one of the Services.

2. The above short list is not the only means of achieving the objective, see JSP 418: Sustainable Development and Environment Manual.

3. Most current packaging is thought of as ‘once only use’, but many can and ought to be re-used or the material re-cycled. Hence, within the MOD, economic recycling of packaging material is applied, to aid in the Reverse Supply Chain (RSC). The maximum use of packaging designed to be re-useable shall also be made. Such packaging is identifiably marked as “re-usable” and is managed in a similar manner to STCC. That is, it is NSN codified and accounted for in accordance with the requirements of JSP 886.

4. Re-use and refurbishment of packaging both reduce costs and assists in meeting Government / MOD sustainability targets. Reusable packaging is most often used in RSC activity.

[10] An example of one material which meets all three is “Expanded Polystyrene (EPS) loose filler” as referenced in Def Stan 81-41 Part 5, Process D1.

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CHAPTER 3: HANDLING

CONTEXT

1. This chapter provides key points of policy to enable handling within a Packaging, Handling, Storage and Transport (PHS&T) Plan to be effectively applied to the management of equipments (including Urgent Operational Requirements (UOR)), by PT, IM and FLC as part of Through Life Support (TLS). There may be specific policies for; Food, Fuels and Lubricants (JSP 317), Medical Supplies (pharmaceuticals), Munitions (JSP 762) and Dangerous Goods (JSP 800 Volumes 4a and 4b).

POLICY

2. The Support Solution Envelope (SSE) matrix highlights Governing Policy (GP) 3.x as a GP covering Handling. Advice, Guidance and identification of support risk against the GP within the SSE are provided by the DES JSC SCM Support Solution Improvement Team (SSIT).

PRECEDENCE AND AUTHORITY

3. The Defence Logistics Board (DLB) sponsorship for handling policy is delegated to Hd JSC SCM and thence to SCM-TLS. Project Teams are required to assess and show compliance with key policies and governance as signposted by the SSE.

MANDATED REQUIREMENTS

4. The handling of items and packaged items must comply with the current national and relevant international; environmental, health and safety legislation

PROCESS

5. The PT and IM are required to detail the handling requirements within the PHS&T Plan, which shall be reviewed and developed at all stages through the CADMID cycle. This means handling needs to be considered during the initial phases of the cycle and should not be left just to the latter phases.

KEY PRINCIPLES

Definition

6. Handling is the movement of items from one place to another within a limited distance. Handling is normally limited to a single area, such as;

   a. Between warehouses and within storage areas including movement from storage to the means of transportation.

   b. Within workshops including during assembly.

   c. During use.

General Considerations

7. All these separate areas where handling occurs should be considered but only the first is reflected in the PHS&T Plan. The others are covered by local considerations.

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8. When considering handling the following need to be accounted for; the items mass (weight, Kg), dimensions, centre of gravity, fragility assessment, safety considerations, special needs (Sensitivity to electrostatic and magnetic fields etc), proposed methods of transport, possible packaging attachments and style (fork lift base, top-hat construction, sling attachments, Handles etc).

9. Handling, or the movement of items for short distances, is normally accomplished either manually or by using Mechanical Handling Equipment (MHE). See JSP 886 Volume 3 Part 6: Equipment for the Handling, Storage and Transportation of Materiel.

10. The maximum weight of items to be handled manually is defined by the 'Manual Handling Operations Regulations 1992, as amended etc', approximately 25 Kg. However, another parameter, eg, the dimensions or centre of gravity may preclude its manual handling, even if the item weighs less than this amount. Packaging design should be inclusive of requirements for manual handling of items to ensure that allowable limits are not exceeded.

Handling Equipment

11. Every effort should be taken to use standard handling equipment when planning requirements for handling equipment. The specification or development of special handling equipment should be avoided, as it drives the overall system life-cycle cost up.

12. If specialist handling equipment is required for movement or handling of an item, it must be documented as additional support equipment. This is often overlooked as handling equipment is not always identified as a required piece of support equipment for operations or maintenance. Therefore, special attention must be given to the identification and documentation of specialist handling equipment early on.

ASSOCIATED STANDARDS AND REQUIREMENTS

13. Handling:

a. JSP 317: Food, Fuels and Lubricants.

b. JSP 762: Weapons and Munitions Through Life Capability.

c. JSP 800: Defence Movements and Transport Regulations.

d. Manual Handling Operations Regulations 1992.

APPLICABILITY

14. This policy is to be applied to all equipment acquisition projects including; CLS (Contractor Logistics Support) and CFA (Contacting for Availability) etc.

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CHAPTER 4: STORAGE

CONTEXT

1. This chapter provides the key points of policy to enable Storage element within a Packaging, Handling, Storage and Transport (PHS&T) Plan to be effectively applied to the management of materiel, including Urgent Operational Requirements (UORs), by Project Teams (PTs). Materiel is to be stored to ensure it is; secure readily located, identifiable, fully serviceable and fit for use when required.

POLICY

2. It is MOD Policy that materiel is stored in such a way as to maintain its materiel condition, be secure and be easily located.

MANDATED REQUIREMENTS

3. The storage of materiel must comply with the current national and relevant international; environmental, health and safety legislation.

PROCESS

4. The Support Solution Envelope (SSE) matrix highlights Governing Policy (GP) 3.x as a GP covering Storage. Advice, Guidance and identification of support risk against the GP within the SSE are provided by the DES JSC SCM Support Solution Improvement Team (SSIT). The PT is required to:

a. Create and maintain the packaging requirements in the PHS&T Plan, to allow their materiel to be stored in generic storage. Generic storage is considered to be dry and secure facilities at ambient temperature and humidity. This means storage needs to be considered during the initial phases of the cycle and should not be left till later. PT is to investigate specific storage facilities that will be used for their project and, where this is more demanding than generic storage, revisit the PHS&T Plan.

b. Ensure that Industry to supplies the volumetric data associated with the packaged item(s) by the use of DEFCON 117. The volumetric data of individual package designs is required to be compiled as part of the codification data set.

c. Identify materiel that requires to be maintained in storage to identify deterioration (for example corrosion) or to exercise the equipments. PTs are to arrange for the maintenance to be carried out by qualified personnel; this may require the materiel to be removed from storage, unpacked, inspected, repacked and returned to storage. PTs are not to assume that the Storage Provider can provide Maintenance in Store.

d. Through life; in consultation with the Storage Provider, Industry and DES JSC SCM-TLS-Pkg; to manage and resolve specific storage issues that arise.

STORAGE

Physical

5. **General.** Storage can be provided in warehouses, covered in open areas, uncovered in open areas, in a controlled environment, or in special facilities. The

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envisaged storage environment can determine the packaging to be applied. Conversely, the packaging of an item already packed can determine the storage it requires.

6. **Specialised Storage.** Requirements for special storage, such as environmentally controlled areas, segregated storage required by the nature of the contents of the package, special security requirements, or other considerations that preclude straight forward handling, should be identified as early in a program as possible so that alternative approaches to storage can be developed. Special storage requirements can have a waterfall effect, generating additional requirements for special facilities, handling, and transportation. In this respect, special requirements inevitably mean increased costs, and are to be avoided if possible. There are special requirements for certain types of materiel include, for example the storage of Dangerous Goods (particularly munitions) and magnetically sensitive items.

7. **Physical.** Floors capable of taking the loading from stacked materiel, storage media and MHE. Not susceptible to flooding or infestation. Stores should be dry, clean and dust free. Maximum storage capability commensurate with the total current and predicted stock requirement. Dedicated free space to allow access to locations by personnel, materiel and handling equipment.

Control

8. **Security.** Security and stability of materiel and accounting records. Access to the storage area and records are to be restricted to personnel required to work in the area. All materiel requiring higher security levels, such as Attractive, Attractive to Criminal and Terrorist Organisations (ACTO) or Classified materiel is to be securely stored and safeguarded.

9. **Control.** Use of a stock management system providing visibility of quantity, condition and location of stock. Store labelling, signage and layout are to allow the easy location of stock.

10. **Legislation.** The Defence Fire Risk Management Organisation (DFRMO) should be consulted in order to advise on fire safety precautions and materiel, appropriate risk management strategies and business continuity planning. Stock segregation is to be implemented were operational or financial reasons apply. HASAW and COSHH legislation and regulations are to be met.

Operation

11. All Materiel Conditions should be stored separately. Unserviceable materiel is to be clearly labelled, stating condition and stored separately to serviceable stock to prevent cross-contamination.

12. Hazardous items or materiel is to be clearly identified as such and given appropriate storage and handling conditions.

13. Storage risk management plans are in place for strategic stocks and this may include either enhanced protection or storage in multiple locations.

14. Stock locations are permanently marked on racks, bins, pallets etc. Chalk or other impermanent markings are not to be used.

15. The storage is to be routinely inspected to identify stock and storage media that has

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been damaged. The cause of the damage is to be investigated, the damage rectified where possible and loss action taken where it is not. Action is to be taken to prevent reoccurrences of the damage. Storage areas are kept clean and clear of accumulations of rubbish or excess packing materials.

16. **Putting Materiel in Storage.** When storing materiel the following guidelines are to be followed:

a. Items can be easily and safely moved by hand or by the use of MHE.

b. Heavy items, where possible, are to be placed on the bottom shelves or on pallets near the entrance.

c. Package labels are to face the front.

d. Shelf Life items are to be stored to facilitate issue of oldest stock first, with life remaining clearly visible.

e. Loose items are to be correctly labelled.

f. Irregularly shaped items are to be positioned to prevent excess weight damage.

g. Hazards are to be correctly identified, labelled and stored appropriately. Hazardous stores are managed in accordance with the JSP 515: Hazardous Stores Information System, which provides a link to current safety data sheets.

17. **Issues.** When issuing from stock the following principles are to be observed:

a. The oldest stock is to be issued first, unless specific serial numbered items are identified for issue or specific operational needs dictate otherwise.

b. Loose items are to be issued before boxed or packaged items.

c. Items stored in Special to Contents Container (STCC) are to be issued in that STCC.

d. Items of uncertain materiel condition, or suspect stock, are to be quarantined pending inspection by suitably qualified personnel prior to being stored or issued.

e. Clear segregation of MOD owned and contractor owned stock is to be maintained where required through Contractor Logistics Support (CLS) requirements.

f. Clear segregation is to be maintained between un-issued stock, stock for return action, defective and repairable action items and stock yet to be bought to charge.

g. Primary Package Quantities (PPQ) should not be broken open but if this is necessary due to restrictive storage conditions, the PPQ is to be re-sealed following issues and the label is to be amended to reflect the new quantity.

Scrutiny

18. Fire precautions and warnings are appropriate to the store contents and procedures in the event of fire are regularly exercised. The advice of DFRMO is to be sought as necessary. The Non-Smoking regulations in storage areas are strictly enforced; smoking materials are not to be carried into hazardous areas.

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19. Logistics staff are to conduct managerial and compliance assurance checks of storage areas as specified in local orders ensuring that:

a. Items are stored appropriately.

b. Storerooms are clean and free of arisings that may constitute a fire hazard.

c. Hazardous materiel is safely stored.

d. Proper management of Shelf Life items. (Lifed Items)

e. Security managerial checks are being conducted on all stores offices and stockholding area out of normal working hours.

f. Managerial checks are being properly conducted and recorded in appropriate registers with full details recorded of any incidence found.

20. TLB storage instructions for additional managerial checks because of storage or materiel constraints are to be conducted and recorded in accordance with local orders.

ASSOCIATED STANDARDS AND REQUIREMENTS

21. Storage:

a. JSP 515: Hazardous Stores Information System.

b. DEFCON 117: Supply of Documentation for NATO Codification Purposes.

APPLICABILITY

22. This policy is to be applied to all equipment acquisition projects including; Contractor Logistics Support (CLS) and Contacting for Availability (CFA) etc.

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CHAPTER 5: TRANSPORT

CONTEXT

1. This chapter provides key points of policy to enable transport within a Packaging, Handling, Storage and Transport Plan (PHS&T) to be effectively applied to the management of equipments (including Urgent Operational Requirements (UOR)), by Project Teams (PT) and Inventory managers (IM) as part of Through Life Support (TLS).

POLICY

2. The Support Solution Envelope (SSE) matrix highlights Governing Policy (GP) 3.7: Equipment Transportability as a GP covering transportation. Advice, Guidance and identification of support risk against the GP within the SSE are provided by the DES JSC SCM-Support Solution Improvement Team (SSIT) and Delivery Assistance and Advice (DAA) Team.

PRECEDENCE AND AUTHORITY

3. The Defence Logistics Board (DLB) sponsorship for Transportation policy is delegated to Hd JSC SCM and thence to SCM-TLS. Project Teams are required to assess and show compliance with key policies and governance as signposted by the SSE.

MANDATED REQUIREMENTS

4. The transportation of items and packaged items must comply with the current national and relevant international; environmental, health and safety legislation

5. Transportation shall comply with the requirements of; JSP 800 (all parts) but particularly Volumes 4A and 4B, related DEFCONs, and must comply with legislative requirements

PROCESS

6. The PT and IM are required to detail the transportation / transportability requirements within the PHS&T Plan, which shall be reviewed and developed at all stages through the CADMID cycle. This means transportation / transportability needs to be considered during the initial phases of the cycle and should not be left just to the latter phases.

KEY PRINCIPLES

Transportability

7. The transportability of an item is the foundation for a cost-effective PHS&T. It should be a primary consideration in the planning and design of new equipment. The capability of equipment to be moved efficiently by all required modes of transportation will result in a higher operational availability and lower life-cycle cost.

8. Guidance for the transport and design in transportability of equipment is found in the Interim DEFSTAN 00-3: Design Guidance for the Transportability of Equipment.

9. Incorporation of handling, tie down, and sling points into designs for equipment is necessary to optimize transportability and complement storage, maintenance, and other handling requirements. Equipment should be designed so that it can be handled and

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transported safely. Sectionalisation and disassembly capability for transport purposes, with ease of reassembly for operational use or maintenance, should be a design consideration.

Physical and Volumetric Limits

10. Equipment designs that exceed standard dimensions when prepared for transport should be avoided, since they will require special handling and transportation. If equipment is to be transported inside cargo trucks or standard cargo shipping containers, the standard limits including carrying mass are defined by the container.

11. Note: The volumetric data of individual package designs is required to be compiled as part of the codification data set, under DEFCON 117. This information is necessary to enable establishment of physical requirements for Storage and transport.

Physical Characteristics and Transportability

12. During the design process PHS&T evaluates the equipment design to identify transportability problems and propose solutions. At an early stage those characteristics that affect transportability should be identified. Typical examples of these design characteristics are illustrated in Figure 1 below. These include designs that result in equipment being oversized, overweight, fragile, dangerous or hazardous.

Figure 1: Item Characteristics affecting Transportability

Physical properties	Dimensions; Width, Height, Length Net weight Gross weight Centre-of-Gravity
Dynamic limitations	Acceleration—Allowable acceleration, pulse time, and pulse shape along each of the mutually perpendicular axes. Vibration—Critical resonant frequencies in plane of shipping attitude. Deflection—Maximum allowable bending in plane of shipping attitude. Skin loading—Maximum allowable skin pressure loading diagrams. Securing—Maximum allowable dynamic load on tie-down, mounting, and handling fittings along each of the mutually perpendicular axes. Leakage—Maximum allowable solid, liquid, or gaseous emission rates.
Environmental limitations	Temperature, Pressure, Humidity, Cleanliness and sterilization.
Hazardous effects	Personnel safety—Toxicity of fumes or liquids on contact with humans. Radiation, electromagnetic or radioactive. Electrostatic (Grounding requirements). Explosives: Sensitivity to deterioration from impact or penetration. Etiologic or biologic—Personal or public health debilitation or lethality potential.

Dynamic Limitation

13. Sensitive or fragile equipment may require special handling or unique packaging because of the type of material used or the design. The addition of fixtures for securing the equipment during transit reduces the possibility of damage from induced stress.

Environmental Limitations

14. Although military equipment is normally considered rugged and able to withstand extreme environmental conditions, that is not always true. Many items of equipment can be damaged or have their reliability affected by extreme temperature, atmospheric pressure, or humidity. Design features that cannot be avoided which cause these limitations require special attention. Special containers that provide environmental control

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may be required to protect these items.

Hazardous Effects

15. Equipment that is hazardous or dangerous to transport creates special PHS&T problems because of safety considerations. These problems should be at the top of the list for resolution. The protection of personnel involved with the physical PHS&T aspects of equipment is always a priority issue. (See JSP 800 Volumes 4a and 4b).

Modes of Transportation

16. The movement of equipment is done using standard modes of transportation for shipment, i.e. land, air, and sea. Means of transport include; cargo vehicle, rail, ship, and aircraft. The MOD uses both commercial and military assets for equipment transportation.

Note: Marking for large items may include additional lines for dimensions and weight.

17. All transportation of military equipment is requested, coordinated, and documented using the procedures contained in JSP 800.

18. The mode of transportation used depends on the priority of the item being shipped, the availability of transportation assets, its mass and the dimensional constraints. Most programs consider movement of an equipment item by all possible modes of transportation. The actual mode used in a specific situation is based on operational priority.

ASSOCIATED STANDARDS AND REQUIREMENTS

19. Transportation:

a. JSP 800: Defence Transport and Movements Regulations.

b. Manual Handling Operations Regulations 1992 (as amended).

c. Interim DEFSTAN 00-3: Design Guidance for the Transportability of Equipment.

APPLICABILITY

20. This policy is to be applied to all equipment acquisition projects including; Contractor Logistics Support (CLS) and Contacting for Availability (CFA) etc.

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CHAPTER 6: PACKAGING, HANDLING, STORAGE AND TRANSPORTATION MANAGEMENT MATURITY

INTRODUCTION

1. The maturity of the product packaging, handling, storage and transportation management can be assessed during the life cycle of a project using the nine Support Maturity Levels (SML) which are defined, along with suggested milestones, in Volume 7 Part 2 Chapter 2.

2. To enable the project to assess maturity against the success criteria, the measure of effectiveness for each SML detailed in Table 1 is to be agreed with the Contractor and included in the development or support contract.

ULTIMATE SUCCESS CRITERIA

3. The following Ultimate Success Criteria will apply:

a. All items that require packaging, handling, storage and transportation have been identified.

b. The MOD supply chain PHS&T requirements are fully defined and stated. These will include but are not limited to:

(1) Packaging levels.

(2) Handling and size restrictions.

(3) Locations.

(4) Special operational deployment requirements.

c. The PHS&T requirements are fully documented within a PHS&T Plan.

d. The entire forward and reverse supply network has been mapped and defined including those elements that the contractor has control and influence over and those elements that they do not.

e. For all items that require PHS&T, item logistics data pertinent to PHS&T, has been specified including for example:

(1) Dimensions.

(2) Mass.

(3) Accessibility.

(4) Storage and Maintenance.

(5) Labelling requirements.

(6) Handling and Transportability.

f. The resources required to deliver the required PHS&T have been mapped.

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g. The contribution PHS&T makes in the context of the overall capability is understood.

h. The cost of providing PHS&T is understood and actions has been taken to minimise it.

Figure 2: Support Maturity and Effectiveness

Support Maturity Level	Measure of Effectiveness	Risk if not in Place
1	• Identify constraints • Draft PHS&T Plan in ILS Plan to show how PHS&T will be managed • The operational and logistics environments and constraints have been identified and specified.	• Contractors will define no PHS&T objectives • Contractors will define PHS&T objectives that do not meet the URD
2	• Plan for the management of PHS&T firmed • Applicable standards identified • Impact statement of operational requirements (environment, handling [eg Replenishment At Sea] storage transportability) • Required Packaging Level identified (eg Military, Trade or Commercial) • Input into design to minimise special to type P&H • Justification for special to type P&H • Relationship of PHS&T with product design understood	• Contractors will define PHS&T objectives that do not meet the SRD • The Contractor may not be capable or able to met the PHS&T requirements • Correct Packaging Level not identified • Packaging will not be fit for purpose • Minimisation & Justification for special to type P&H not achieved • Relationship of PHS&T with product design not understood • Not all applicable standards identified • Hazardous goods may not be adequately considered • Costs will not be minimised
3	• Initial identification of items requiring PHS&T and through life support costed • Special to Type Packaging, Handling, & Storage requirement, (eg magnetic, electro-static, environment sensitivity) identified and impact on support chain management assessed • Special To Contents Containers (STCC) requirement identified and impact on support chain management assessed • Input into design to minimise special to type PHS&T • Justification for special to type PHS&T • Transport limitations identified and impact assessed • Identify hazardous product items and PHS&T impact • Asset tracking requirements specified • Initial logistic data available for each support option	• PHS&T may not be available to meet the required delivery timescale • Instructions for packing, handling, transporting and maintenance may not be available to meet project timescales • Facilities may not be available

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4	• List of items requiring PHS&T updated • Packaging Level confirmed • Detailed packaging design • Detailed mechanical handling equipment design • Transport policy and procedures agreed • Storage and Transport requirements finalised including special storage conditions • Draft Service packaging instruction sheets, (SPIS) • Draft Technical Documentation input • PHS&T training requirements identified • COSHH implications identified • Requirements for maintenance of Special to Type containers defined • Requirements for maintenance of STCC defined • Requirements for maintenance to product in store defined • Requirements for the maintenance of Handling Equipment defined • Long lead items identified • Facilities identified (new and modified) • Disposal impact assessed and input into Disposal Plan • Supply chain mapped and implications and impact assessed and notified to SCM	• PHS&T may not be available to meet the required delivery timescale • Instructions for packing, handling, transporting and maintenance may not be available to meet project timescales • Facilities may not be available • Packaging design process not begun or considered • Environment & Disposal may not consider eg, the packaging waste, as legislative regulations not addressed

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5	• List of items requiring PHS&T finalised • First Packaging & Handling equipment manufactured • SPIS finalised • ISP and ILS Plan updated • Updated input into Technical Documentation • Storage and Transport capability including special storage conditions demonstrated • Appropriate facilities to allow support solution validation are available • logistic data updated • Initial PHS&T training delivered • Management of COSHH demonstrated • Maintenance of Special to Type containers in store demonstrated • Maintenance of STCC in store demonstrated • Maintenance of product in store demonstrated • Maintenance of Handling Equipment demonstrated • Long lead items procured • Disposal impact assessment updated and input into Disposal Plan • Transport capability demonstrated • Supply chain implications and impact updated.	• PHS&T may not be available or fit for purpose • Packaging may be inappropriate, SPIS may not be useful • Handling requirements may not be known • Storage applicable to store may not be available • Transportability may be compromised
6	• Initial scale of Special to Type Containers delivered • Initial scale of STCC delivered • Initial scale of Handling Equipment delivered • Facilities modified or built • In service impact assessment of PHS&T including product modifications and operational changes and incorporated into PHS&T design	• PHS&T may not be available or fit for purpose • None of what you expect to see would be in place – so supply chain would be compromised
7	• Final scale of PHS&T delivered • Analysis of in-service data • In-service LSC input and assessment of PHS&T impact of product modifications and operational changes assessed and incorporated into PHS&T design	• PHS&T may not be fully available resulting in a reduced capability

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8	• Continued IS LSC input and assessment of PHS&T impact of product modifications and operational changes assessed and incorporated into PHS&T design • PHS&T reviewed as part of periodic support reviews • Update PHS&T Plan • Input PHS&T into Disposal Plan updates	• User feedback, product modifications, operational and environmental changes may not result in corresponding changes to PHS&T
9	• Execute the PHS&T Disposal Plan	• PHS&T not disposed of in accordance with legislation and best value to the Crown