The Demonstration, Manufacture and In-service support of the Combat Water Supply System (CWSS) Prime Contract for Provision and Support of Expeditionary Water Services

In Service Water Equipment Usage Study

Annex G to

DEFFORM 47

FOR INFORMATION ONLY

Annex G to DEFFORM 47 OSP/0050

In Service Water Equipment Use Study

To support the Combat Water Supply System (CWSS) project

PROVIDED FOR INFORMATION ONLY

Subject to Contract

Defence Equipment & Support

MINISTRY OF DEFENCE

AMENDMENT RECORD

No.	Issue	Author	Date	Changes
1.	0.1	BFU Water-ILS Officer	May 08	BFU Internal Circulation
2	0.2	BFU Water-ILS Officer	Oct 10	Updated following project restart
3	1.0	BFU Water-ILS Officer	Dec 10	Formal Issue
4	1.1	BFU Water2b – WO2 Hogben	May 11	Minor updates following SDSR and URD/SRD review
5	1.2	DI Water ILSM – SSgt Taylor	Oct 12	Minor updates for Assessment Phase
6	1.3	DES LE OSP-PgMO-TLS-sp2	Sep 14	Minor updates for Concept Phase
7	1.4	DES LE OSP-PgMO-TLS-ILSM2	Feb 16	Minor Updates for Assessment Phase
8	1.5	DES LE OSP-PgMO-TLS-SnrMgr2	Mar 16	S&TE and CES update
9	1.6	DES LE OSP-PgMO-TLS-SnrMgr2	May 16	S&TE Appendix update
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FIGURES

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Appendix

RELATED DOCUMENTS

1. For continuity, issue numbers and dates have not been included in the references below; please refer to the CWSS Document Control Log (Ref 1) to confirm the latest issue of a reference document.

Reference Documents List

Reference	Document Identify	Document Title
1	RA12-CWSS-3000-DCL	CWSS Document Control Log
2	RA18-CWSS-3019-TNASS	CWSS TNA Scoping Study (2015)
3	RA9-CWSS-3012-SRD	CWSS System Requirements Document
4	RA9-CWSS-3011-URD	CWSS User Requirements Document
5	RA12-CWSS-3001-CMP	CWSS Configuration Management Plan
6	RA18-CWSS-3006-ISoR	CWSS ILS Statement of Requirement
7	Issue 2 2013	Battlefield Equipment Support Doctrine
8	RA9-CWSS-3042- CONEMP	CWSS Concept of Employment
9	RA9-CWSS-3087-BfM	Battlefield Mission
10	RA7-CWSS-3090-PQMP	Project Quality Management Plan
11	RA18-CWSS-3088-EHFA	Early Human Factors Analysis
12	RA18-CWSS-3003-ILSP	Integrated Logistic Support Plan

Abbreviations

AESP	Army Equipment Support Publication
AR&M	Availability, Reliability & Maintainability
BDR	Battle Damage Repair
BER	Beyond Economical Repair
BESD	Battlefield Equipment Support Doctrine
BFM	Battlefield Mission
BFU	Battle Field Utilities
BISA	Battlefield Information System Application
BIT/BITE	Built In Test/Built In Test Equipment
CBA	Cost Benefit Analysis
CBRN	Chemical, Biological, Radiological and Nuclear
CDRL	Contract Data Requirements List

CES	Complete Equipment Schedule
CFC	Chlorofluorocarbons
CIWG	Capability Integrated Working Group
CMP	Configuration Management Plan
ComBAT	Common Battlefield Applications Toolset
COSHH	Control of Substances Hazardous to Health
COTS	Commercial Off The Shelf
CST (W)	Close Support Tanker
CWSS	Combat Water Supply System
DCR	Daily Consumption Rate
Def Stan	Defence Standard
DEFCON	Defence Condition
DEME(A)	Director of Electrical and Mechanical Engineers (ARMY)
DID	Data Item Description
DMS	Defence Medical Service
DofQ	Designation of Quantity
DOS	Days Of Supply
DP	Distribution Pack
DROPS	Dismountable Rack Off-Load and Pick-up System
EFR	Equipment Failure Report
EHO	Environmental Health Officer
EHT	Environmental Health Team/Technician
EPDI	Expeditionary Port Deployable Infrastructure
ESDS	Electrostatic Discharge Sensitive Devices
ESM	Equipment Support Manager
ESPD	Equipment Support Policy Directive
ETP	Electronic Technical Publications
FLC	Front Line Command
FOC	Full Operational Capability
FP	Filtration Pack
FRC	Free Residual Chlorine
GFA	Government Furnished Assets
GS	General Service
HASWA	Health And Safety at Work Act
HFI	Human Factors Integration
HLDC	Heavy Load Distribution Capability
HQ	Headquarters
HUMS	Health Usage Monitoring System
IER	Inspectorate of Engineer Resources
ILS	Integrated Logistic Support
ILSM	Integrated Logistic Support Manager
ILSP	Integrated Logistic Support Plan
ISP	Integrated Support Plan
ITT	Initiation To Tender
JSC	Joint Supply Chain
JSCS	Joint Support Chain Services
JSP	Joint Services Publication
JWP	Joint Warfare Publication
LCpl	Lance Corporal
LCT	Large Collapsible Tanks
LESPA	Land Environment Sustainability Planning Assumptions
LORA	Level of Repair Analysis

LRU	Line Replacement Unit
LSAP	Logistic Support Analysis Plan
m3	Cubic Metres
MILSM	MoD Integrated Logistic Support Manager
MJDI	Management of the Joint Deployed Inventory
MMLC	Medium Mobility Load Carrier
MoD	Ministry of Defence
NATO	North Atlantic Treaty Organisation
NBC	Nuclear, Biological and Chemical
NCO	Non Commissioned Officer
OEM	Original Equipment Manufacturer
OHS	Operational Hygiene System
OIP	Operational Infrastructure Programme
OSD	Out of Service Date
OSP	Operational Support Programme
PASE	Planned Assumption of Service Entry
PDF	Portable Document Format
PDS	Post Design Services
PECOC	Personal Equipment and Common Operational Clothing
PgMO	Programme Management Office
PHS&T	Packaging Handling Storage & Transportation
PQQ	Preliminary Qualification Questionnaire
QA	Quality Assurance
RCM	Reliability Centred Maintenance
RDS	Requirement Definition Study
REACH	Registration, Evaluation and Authorisation of Chemicals
REME	Royal Electrical and Mechanical Engineers
RETDT	Royal Engineers Training and Development Team
RLC	Royal Logistic Corps
RO	Reverse Osmosis
RoHS	Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
RSME	Royal School of Military Engineering
SA	Supportability Analysis
SAG	Studies Assumption Group
SOM	Support Options Matrix
SoR	Statement of Requirement
SRD	System Requirement Document
STANAG	Standard NATO Agreement
STRE (WD)	Specialist Team Royal Engineers Water Development
STS	Seawater Transfer System
SV(C)	Support Vehicle Cargo
TDOL	Technical Documentation On Line
TDS	Total Dissolved Solids
TNA	Training Needs Analysis
U&P	Utilities& Petroleum
UOR	Urgent Operational Requirement
URD	User Requirement Document
VfM	Value for Money
VVD	Variable Volume Doser
WCP	Water Carriage Pack
WDR	Water Dispensing Rack

WP	Water Point
WPU (S)	Water Purification Unit Standard
WPU (SG)	Water Purification Unit Small Groups
WPU(NBC)	Water Purification Unit Nuclear Biological & Chemical
WT	Wheeled Tanker
WTK (B&C)	Water Test Kit Biological & Chemical

1. **PREFACE**

INTEGRATED LOGISTIC SUPPORT

2. Integrated Logistic Support is a management discipline that enables:-

- The best Reliability and Maintainability and hence Availability to be achieved at an optimum life cycle cost.
- The design or selection of a product to be influenced by support considerations.
- The identification and procurement of the most suitable support for a product.

INTRODUCTION

CWSS Requirement

3. The Combat Water Supply System (CWSS) must be able to support future UK forces (deployed within the land environment), configured and equipped to conduct high tempo, expeditionary operations. CWSS should deliver an end-to-end solution spanning the provision of water from its source to the point of issue.

CWSS Project Aim

4. CWSS is a tri service programme that seeks to provide potable, palatable and packaged water to all components deployed on operations in the land environment. CWSS will sit at the heart of water provision within the land environment. It will include the capability to cover the full spectrum of operations in diverse climatic conditions for extended periods. In order to ensure security of supply and to reduce the logistic supply chain CWSS will source as close to the point of need as possible and will have an optimised logistic footprint, minimising the resources required to operate and support it at the availability levels required.

CWSS Objectives

5. The CWSS project shall seek:

a. To provide the water capability to support Defence Service Directive 2013 (DSD13) covering eight discrete areas (source, treat, test, package, store, issue, dispose and manage)
b. To support UK forces deployed within the land environment, configured and equipped to conduct high tempo, expeditionary operations, ensuring a level of self sufficiency for the deployed force commensurate with the desire to achieve a full expeditionary capability
c. To take water from its source and provide doctrinally mandated levels of potable, palatable and packed water to the point of issue
d. To address integration issues with the current in-service equipments as required
e. To deliver water capability that can be deployed in line with concepts of utilisation specified within the endorsed Concept of Employment (CONEMP) (Ref 8)

The Use Study Report

6. This Use Study Report supports the Combat Water Supply System (CWSS) project. The ILS elements are managed by the MoD ILS Manager (MILSM) of the Programme Management Office Operational Infrastructure Programme Project Team (PgMO OIP PT).

Scope

7. This Use Study is not a contractual document. It details how the MoD currently supports the In-Service equipment and satisfies the requirements of Defence Standard 00-600 and JSP 886. It is provided without commitment or prejudice to external parties including potential bidders and contractors to provide important background information to assist the interpreting the MoD's requirements detailed in the Statement of Requirement (SoR) - however, it should not constrain innovation.

8. The information is provided for the use of the designers of new equipment to enable, where possible, the design to be tailored to meet existing MoD support practices and procedures. By designing equipment around present support services, the new equipment can be brought into service with minimum need for specialised training and special tools and test equipment to support it.

9. Information in the Use Study is gathered from various sources including the PT, the Equipment Capability Customer, and the various support agencies within the MoD.

Content

10. This Use Study Report contains information (as applicable) on the intended use of the system to be procured, a description of the system(s) to be replaced, the support strategy envisaged including any constraints and support infrastructure both in existence and from future provisions.

Iteration

11. This Use Study Report will be updated as required but not less than upon completion of each discrete acquisition project stage when the results of that stage will be incorporated in the updated plan.

12. Not all entries made so far will have an immediate use in early Project stages or contain quantitative data. The deletion or further inclusion of data will be a function of the Project stage and development of a system option against this baseline information.

ILS DOCUMENTATION

13. The following documents will be used in the management of ILS for this project. Documents may be contractual or for information purposes only. Unless clearly indicated as contractual nothing within these documents should be interpreted as contractual:

The ILS Strategy

14. ILS Strategy, included in the ILSP document (Ref 12), identifies the MoD's approach to the application of ILS to the System/Equipment.

The ILS Plan

15. The ILS Plan (Ref 12) describes the MoD's approach to ILS, tailored in accordance with JSP 886 & Def Stan 00-600, to meet the needs of this project. The plan is provided to external parties including potential bidders and contractors to provide guidance in interpreting the MoD's requirements detailed in the Statement of Requirement (SoR).

SA Strategy

16. The SA Strategy, included in the ILSP document, identifies how the SA tasks will be tailored to meet the needs of this particular Project when analysing and optimising the proposed equipment and its support environment. The selected SA Tasks and SA programme is addressed in the SA Plan.

ILS Work Breakdown Structure

17. The ILS Work Breakdown Structure (WBS) is to assist both the MoD and Bidders ILS Managers in planning their ILS programmes and provides the mechanism for controlling elements of the ILS programme.

The ILS Statement of Requirement

18. The ILS Statement of Requirement (SoR) (Ref 6) is a contractual document. It describes the activities that the Bidder is required to complete. It includes the tasks to be undertaken, the reporting requirements and the requirement for and timing of reviews. The SoR has been produced with an SRD style compliancy matrix. The aim of this matrix under Def Stan 00-600 is to reduce the amount of nugatory effort and plethora of plans that Def Stan 00-600 required. The SoR is supplemented where required by the Contract Data Requirements List (CDRL) and Product Descriptions (PD) as appropriate.

The Contract Data Requirements List

19. The Contract Data Requirements List (CDRL) is included at Annex B of the ITN and, as such, is a contractual document. The CDRL specifies the information to be delivered under the terms of the contract. It defines the delivery requirements (including timings) and configuration control for each deliverable. Where the amount of detail requires it, a specific PD will be used to expand the CDRL by providing further details.

Product Descriptions

20. The Product Descriptions (PD) specify the format, content, preparation and delivery requirements of project data where it requires further clarification.

The SA Plan

21. The Supportability Analysis Plan (SAP) proposed will, upon contract award, become contractual. It is to be prepared by the Bidder and describes in detail the Bidder's LSA organisation and the activities planned to fulfil the SA contractual requirements detailed in the SoR.

ILS Element Plans

22. The ILS Element Plans are an integral to the ILS Plan. They specify how the elements of the support system are to be designed, implemented, operated and validated.

The Integrated Support Plan

23. The Integrated Support Plan (ISP) proposed will, upon contract award, become contractual. It shall be prepared by the Bidder and describe in detail the Bidder's ILS organisation and the activities planned to provide the contractual deliverables. The ISP is the principle document by which the ILS content of a Bidder's bid will be assessed; as such the inclusion of a comprehensive draft with the tender response is mandatory. The ISP should normally initially closely mirror the ILSP.

Support Strategy

24. The aim of the CWSS Support Strategy is to support CWSS in the most efficient manner whilst reducing Through Life Finance (TLF) and increasing value for money to Defence. The support strategy will be determined iaw. the policies and principles laid down in the Support Options Matrix (SOM) found in Joint Service Publication (JSP) 886 Vol 7 Part 2. Smart support arrangement studies will be undertaken during the Assessment phase to determine the most effective support strategy.

ILS Strategy

25. Defence Standard 00-600 Integrated Logistic Support describes the MoD requirement for the application of Integrated Logistic Support to the acquisition of equipment. All ILS activities undertaken as part of this acquisition process will comply with the requirements of Def Stan 00-600 except where specific exclusions are detailed.

26. ILS Element plans and in particular Supportability Analysis (SA) tasks must be co-ordinated across the breadth of the project to prevent duplication and ensure the optimum support arrangements are identified.

27. The use of Commercial Off The Shelf (COTS) equipment limits the opportunity for support considerations to influence design, where design freedom does exist; ILS will be used to ensure support is considered during the design process. Where no design freedom exists; ILS will be used to evaluate the supportability of the systems proposed.

Functional Analysis

28. As part of Human Factors Integration (HFI), an Early Human Factors Analysis (Ref 11) on the current water capability has been completed by Frazer-Nash. This has identified the Human Factor issues relating to the current equipment and has also assigned risk ratings to be used for feedback into the CWSS procurement process.

29. A CWSS Training Needs Analysis (TNA) Scoping Study (Ref 2) has been completed by Qinetiq. This has identified the defence wide training requirement, identified the implications for training.

SUMMARY OF SYSTEM BEING REPLACED

Water Purification Unit (Small Groups)

30. The Water Purification Unit (Small Groups) (WPU (SG)) is intended to support early entry forces or independent sub-units with a purification system that can be operated by infantry Assault Pioneers up to company group level (200-man). Completely self-contained with its own generator, it utilises coarse and fine cartridge filters, a carbon polisher and chlorine resin dosing. Throughput is 5 m^3 day. It should not be used for longer than 30 days and is not suitable for use in an NBC environment. See Figure 1.

Figure 1 - WPU Small Groups

31. The WPU (SG) is a modular water supply equipment, on similar lines to the WPU(S) but much smaller in size and capability. It incorporates modern, basic sub-components and is designed to be simple and foolproof to operate. It has a very high technical specification and great confidence can be assumed in the quality of its product providing the set is operated properly. Its output is rated at 8 litres/min of potable water from a freshwater source during a 12-hour cycle.

Electrics Pack

32. The Electrics Pack contains a diesel engine 110 volt generator supplying power to the whole set through two distribution boards. The pack also contains two 25m and two 10m cables, one 5m submersible lead, 25m trace heating, two field lights, an earth spike and a fire extinguisher.

Filtration Pack

33. The Filtration Pack contains the float/weight assembly, the filter unit and delivery pump, suction hose and tools. The filter unit contains three disposable filter cartridges (one primary (coarse) 7 µ filter, one secondary (fine) 5 µ - 1 µ filter, and one carbon absorption filter) and two disposable chlorinating cartridges. A Lovibond Checkit is included for testing for free residual chlorine.

Distribution Pack

34. The Distribution Pack contains the distribution (pillow) tank, anchor sets, hoses, distribution pump, Water Carriage Pack (WCP) adapter, jerry can filling nozzle and dispensing manifold. The dispensing manifold contains a detaste cartridge only in line with the water bottle taps, not the WCP or jerry can outlets.

Source Pack

35. The Source Pack contains one 2,500 litre open-topped tank including a separate tank filter screen, suction hoses and the electric submersible pump. This pack is used for pre-sedimentation of very dirty water or for drawing water from wells.

Water Purification Unit (Standard)

36. The Water Purification Unit (Standard)(WPU (S)) equipment is intended to provide filtered and disinfected water for drinking, cooking and washing in sufficient quantity for units from battalion to brigade size. See Figure 2. It cannot purify water contaminated by NBC agents or many civil contaminants such as pesticides and chemical fertilisers, nor can it purify water of any significant salinity. The output of a water point using the WPU(S) is dependent on the ambient temperature, the height of the pump above the source and the total head.

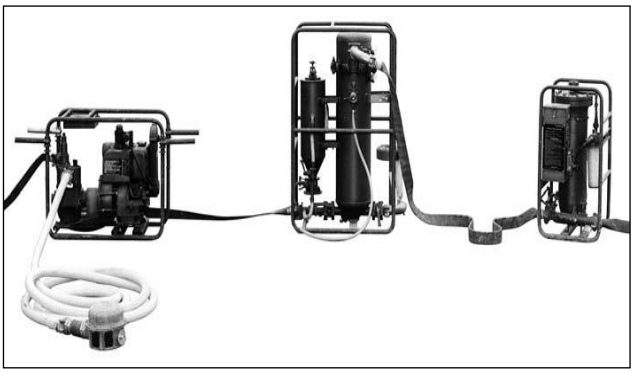


Figure 2 - WPU Standard

Main Components.

Engine.

37. The engine is a single cylinder Petter Type AB1 diesel engine. The engine speed is governed to a constant 3,000 rpm. The 5.1 litre fuel tank gives an endurance of about 8 hours.

Pump.

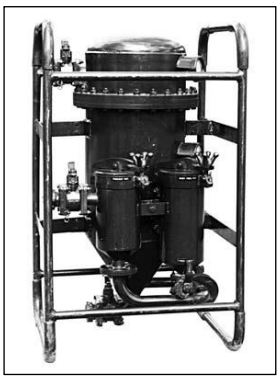
38. The pump is a Hamworthy positive displacement type FGB7. Under average conditions, a pumping capacity of 6,820 litres/hr may be assumed.

Filters.

39. Two types of filter are in use with the WPU(S) (Vokes and Stella-Meta). They are illustrated in Figures 3 and 4. The operating procedures in the User Handbook differ slightly but the dimensions and performance are similar.

Chlorinator.

40. The chlorinator is the Variable Volume Doser (VVD). It enables a variable volume of concentrated calcium hypochlorite to be dosed into the water



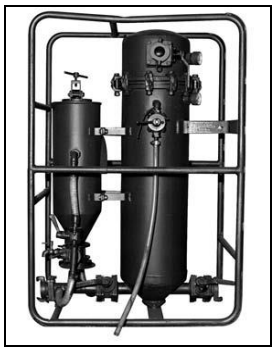


Figure 3 & 4 - Vokes Filter & Stella-Metta Filter

Method of Operation.

41. Raw water is drawn through a floating suction strainer from either a ground water source or a sedimentation tank and is pumped to the filter unit. In the filter unit, powder is mixed with the water and fed on to the filter elements as a pre-coat charge, and subsequently as a filter aid, which holds back the solid particles. The filtered water is passed through the VVD where a concentrated solution of calcium hypochlorite is metered into the main flow. The chlorinated water passes through delivery hoses to the storage tanks for dispensing.

Water Purification Unit (Nuclear, Biological and Chemical)

42. The Water Purification Unit (Nuclear, Biological and Chemical (WPU (NBC)) is a self-contained trailer-mounted equipment utilising both cementacious earth filter technology against a conventional filter challenge and reverse osmosis (RO) technology against an NBC challenge.

43. The equipment is designed primarily for transportation on a trailer. See Figure 5. The equipment is packaged on its trailer ready for movement. The equipment may be airlifted; either mounted or dismounted from its trailer, as an under slung load from a Support Helicopter (SH) or as cargo within a C130/C17 aircraft. It may not be air dropped. Both technologies utilise a carbon polisher and chlorine doser. The RO capability is also effective against a mild brackish challenge.

Figure 5 - WPU (NBC)

Manpower.

44. It is operated by a Royal Engineers field troop. A working party of an NCO and four men is required to set up and run a water point using a WPU (NBC).

45. Throughput is 165 m³./day in conventional mode and 45 m³/day in RO mode. The Complete Equipment Set (CES) contains storage and dispense capability

Main Components.

46. Everything can be stored and transported within the frame mounted on the trailer. The main components of the system are listed below:

Source Pump.

47. A diesel-driven pump with associated hoses and fittings.

Water Purification Unit.

48. Contained in a frame mounted on a trailer and comprises:

Stellasep filter and Filtraider.
High-pressure pump set (diesel driven).
Four 400 mm diameter RO modules.
Four Stellacarb carbon absorption columns.
Calcium hypochlorite dosing pump and disinfectant tank unit.

Fabric Storage Tanks.

49. Two 13,640 litre (3000 gal) tanks.

Distribution Pump.

50. A diesel-driven pump with associated hoses, manifolds and dispensing equipment.

Water Purification Unit (Saline).

51. The Water Purification Unit (Saline) (WPU (Saline)) is a self-contained trailer-mounted equipment, primarily intended for operation in the littoral area against a seawater challenge where very high total dissolved solids (TDS) levels of salt are present. It can also be used in desert conditions where the majority of surface and groundwater is highly brackish.

52. The WPU (Saline) uses similar RO technology to the WPU (NBC) but at higher pressure and throughput is 43 m³/day. The CES contains a store and dispense capability. When used in a littoral environment, it is operated in conjunction with the Seawater Transfer System (STS), which is a hydraulically-operated pump able to take water from up to 100m off-shore, away from the wave beaten zone. It is operated by a Royal Engineers field troop.

Figure 6 - WPU (Saline)

53. The equipment, three onion tanks, hydraulic power pack, submersible pump and flotation equipment comprises all items required to pump and store seawater. All items, less the three settlement tanks, which are packed into valises, and the hydraulic power pack, which is a stand-alone unit, pack into a storage box for transportation. The hydraulic power pack is fuelled from a diesel jerry can.

54. The output of the seawater pump is 186 litres/min and each settlement tank has a capacity of 10,000 litres.

55. The whole equipment set is normally transported in the prime mover of the WPU (NBC Saline) but can be transported in any GS cargo vehicle which has the space and weight capacity.

Water Storage

Pillow Tank

56. Two pillow tanks are supplied with the WPU (NBC) see Figure 7. They should be positioned on as level ground as possible (maximum slope 1:15 or approximately 4° slope); otherwise they are liable to roll away during filling. The tanks are manufactured from black, flexible, NBC agent proof material

- Dimensions. Length 4.5 m; width 4.4 m; height 0.5 m; capacity 13,640 litres.

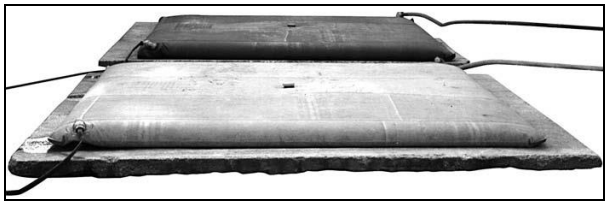


Figure 7 - WPU (NBC) Pillow Tank.

Large Collapsible Tank

57. The Large Collapsible Tank (LTC) is made from two-ply polychloroprene-coated polyester, which is non-porous and very durable. It has a 350-mm inflatable ring around the top that gives rigidity and prevents spillage during filling. An outlet pipe is located near the base. It is issued in a valise that also contains a cover with a rubber inflatable ball housed in a net, a foot pump and a repair kit. The ball is for keeping the cover clear of the water surface. A pocket in the valise contains a diagram showing how to fold the tank. The LCT capacity and dimension are.

Nominal capacity 11,400 litres.
Useable capacity 11,000 litres.
Useable capacity (sedimentation tank) 8,000 litres.
Useable capacity (gravity) 9,100 litres.
Diameter at base 3.75 m.
Depth of water (full) 1.2 m.
Dry weight 39.5 kg.

Figure 8 - LCT 11,400ltr

Bulk Water Installation

Bulk Water Installation (Forward) (BWI (Fwd)).

58. BWI (Fwd) consists of two 12 m³ NBC proofed, collapsible pillow storage tanks complete with a receipt and pumped dispense capability. Receipt is from water tankers and dispensing is to water unit carriage packs. BWI (Fwd) are generally used in the brigade or divisional support area and are operated by the unit B echelon. It should be noted that BWI (Fwd) has an identical CES to that of the storage and dispense group of WPUs (NBC) and (Saline).

Bulk Water Installation (Rear) (BWI (Rear)).

59. BWI (Rear) consists of four 50 m³ collapsible pillow storage tanks complete with a pumped receipt and dispense capability. BWI (Rear) are generally operated in conjunction with the ROWPU and dispense water to wheeled tankers or water dispensing racks.

OXFAM Tanks. This equipment is **Out** of Scope for CWSS.

60. OXFAM tanks are cylindrical tanks made of corrugated metal sheets, fitted with a synthetic liner and covered with a conical, corrugated metal roof. See Figure 9. OXFAM tanks are generally found at third line and are used as break tanks for bore holes or as storage tanks for expeditionary campaign infrastructure. Usual capacity is 70 m³ but they are available in other sizes, such as 35 and 95 m³.

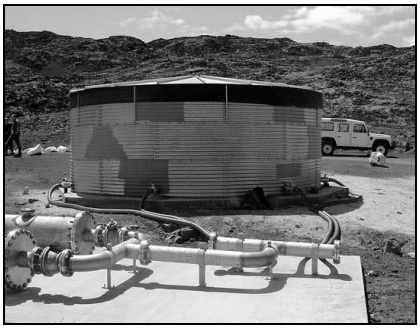


Figure 9 - OXFAM Tank

Water Transportation – Bulk Water Distribution Capability

Water Tankers.

61. The Close Support Tanker (Water) (CST (W)) is an articulated 18m ³ MMLC vehicle consisting of a 6x6 off-road tractor and a triple-axle trailer which entered service in 2005. See Figure 10. CST(W) is held and operated by Royal Logistic Corps third line units and distributes bulk potable water from third to second line where it normally dispenses into Water Dispense Racks (WDR) for onward distribution. In addition, CST (W) also directly supports units with high demands for water such as medical and NBC units.

62. This equipment is **Out** of Scope for CWSS.

Figure 10 - Close Support Tanker

Water Dispensing Racks

63. The Water Dispensing Racks (WDR) is a tank of 9 m³ capacity integrally mounted within its own ISO frame and fitted with a pump and manifold system. See Figure 11. It is designed to carry bulk potable water from third and second line through to first line. At first line, WDR can be ground dumped if required. When either MMLC/EPLS mounted or ground dumped, it can bulk into BWI (Fwd) and Water Carriage Packs (WCP) and can dispense to jerry cans and water bottles.

64. This equipment is **Out** of scope for CWSS capability but is to be supported by the CWSS support service.

Figure 11 - Water Dispensing Rack.

Water Carriage Packs

65. The Water Carriage Packs (WCP) is a small 680-litre tank which can be mounted singly or in groups on first line unit transport. See Figure 12. It can be fitted with a jerry can and water bottle manifold. WCP is the only method a unit has to collect water from Royal Engineers water points (WP), Royal Logistic Corps Distribution Points (DP) or unit bulk storage in the brigade support area.

66. This equipment maybe **In** Scope for CWSS. The Contractor may use WCP to satisfy elements of the CWSS requirement, but does so at their own risk. The Authority is not responsible for any failings during validation, verfification or continued in-service of the WCP that is taken on by the Contractor. All or any remaining WCP that the Contractor does not take on will be disposed of.

67. The WCP is made from low-density rigid polyethylene. The container is fitted with a 38-mm outlet valve and a Numan & Stove hose coupling adapter to enable the hose and dispenser to be connected. The dispenser is fitted with four taps. A filler cap is located on the top of the pack and an access cover allows the interior to be inspected and cleaned. An insulation jacket is available for use in cold conditions.

68. The WCP can be fitted to vehicles in the following configurations:

Single pack in either the GS Land-Rover or ¾ tonne trailer.
Twin packs in the 3 tonne GS trailer.
Four packs in the 4 tonne GS cargo vehicle.

Figure 12 - Water Carriage Pack

Water Testing Equipment

Water Test Kit (Biological & Chemical)

69. The Water Test Kit (Biological & Chemical) (WTK(B&C)) (see Figure 13) is designed to provide a rapid, generic, qualitative test for assessing the quality and safety of water at both the source and at the point of production. In addition to this generic capability, the kit includes a range of supporting, direct reading tests to check for specific parameters, including a number of chemical warfare agents.

70. It is used by Royal Engineers and Defence Medical Services staff. The test kit comes complete in a mission case, with two consumable packs of chemicals to be unpacked and loaded into the case prior to use and within 72 hours of an operation. Also included in each consumable pack is a pad of fifty self-duplicating Test Record Sheets. There are enough chemicals in Consumable Pack 1 to carry out fifty tests of each determinant.

71. The eight determinants that are reportable on an initial sample from a water source or a sample of product water from a water point are:

Arsenic.
Nerve agents/pesticides.
Chlorine.
Colour.
Total dissolved solids (TDS).
PH Measure of acidity/alkalinity.
Chemiluminescence.

Figure 13 - Water Test Kit (Biological Chemical)

Lovibond Checkit.

72. The Lovibond Checkit equipment is used to determine the free residual chlorine (FRC) content of treated water. It is found in the WPU(S) and WTK (B&C) Complete Equipment Schedules (CES).The equipment is illustrated in Figure 14 and consists of:

A container divided into three compartments with viewing slots and a graded colour scale.
No 1 DPD tablets.
A plastic spatula.
A cleaning brush.
Stowage box.

Figure 14 - Lovibond Checkit

Universal Indicator Paper.

73. The equipment is used to determine the pH value of water. It is located in the WPU(S) CES. The equipment is illustrated in Figure 15 and consists of:

A plastic container.
A colour coded pH scale.
100 pH indicator paper strips. Instructions for its use are provided with the equipment.

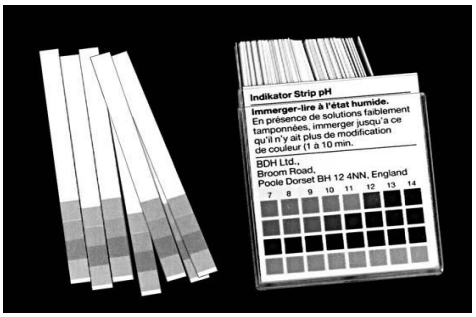


Figure 15 - Universal Indicator Paper

Other Water Equipment

MAKEFAST.

74. Makefast is a Battlefield Information System Application (BISA) introduced for the Land Component of the UK Armed Forces. Its purpose is to support the Royal Engineers (RE) in carrying out military engineering functions in the identification, task planning, reconnaissance, design, resourcing, management, reporting and recovery of engineering tasks.

75. Makefast is a software application, providing computer support to enable the storage and distribution of engineering information and the necessary data processing and calculations to support common and task-specific tools.

76. Water Supply is one tool within Makefast that enables the Royal Engineers to recce and plan a water point and produce a water a sedimentation plan.

77. MAKEFAST is currently **Out** of scope for CWSS.

CURRENT MAINTENANCE AND SUPPORT PLAN

Responsibilities

78. Responsibilities for repair are in accordance with current doctrine with user units being responsible for ensuring that all records of use, servicing, maintenance and repair are recorded in equipment documents and that they are kept with the equipment. Broadly, responsibilities for repair are as follows:

Maintenance Level	Responsibility
Level 1 Maintenance	User (Unit personnel who have been trained to operate and maintain the equipment at level 1 will carry out this maintenance at first line).
Level 2 Maintenance	User/Maintainer as stated above, however repair tasks may be more complex and require longer time periods to effect and so the training required for those maintainers may be more in depth. These tasks will also be carried out at first line.
Level 3 Maintenance	Maintainer (These tasks will be more complex and will take longer to complete). This normally involves the contractor being tasked to carry out on site repair or at a 2nd line location close to the point of failure.
Level 4 Maintenance	Contractor (This level of maintenance normally involves major overhaul or refurbishment at the contractors premises where in- depth knowledge and specialist equipment is required to carry out the repair).

Table 1 – Repair Responsibilities

Existing Manpower

79. The sourcing, treatment and storage of bulk raw water is currently the responsibility of STRE (WD) and RE, testing the responsibility of the DMS and the distribution of bulk water by the Royal Logistic Corps (RLC).

80. The existing manpower requirement breakdown is detailed below in the tables for the equipment currently in service.

Operators

81. The following manpower is used to sustain operation per equipment:

Equipment	Rank/Grade	Branch/Trade/Profession	Number Required
WPU Saline& STS	Spr - Cpl	RE Cbt Engr / RE Fitter U&P	Section to set up (8 men) 2 men to operate.
WPU NBC	Spr - Cpl	RE Cbt Engr / RE Fitter Eqpt	Section to set up (8 men) 2 men to operate.
WPU (SG)	Pte - Cpl	All Arms / RE Cbt Engr	Section to set up (8 men) 2 men to operate.
WPU Standard	Spr - Cpl	RE Cbt Engr / All Arms / RE Fitter Gen	Section to set up (8 men) 2 men to operate.
Gilkes Pumpsets	Spr - Cpl	RE Cbt Engr / RE Fitter General	2 men to set up.1 man to operate.
Lovibond Check-kit	Any Rank/Grade	DMS / EHO / EHT	1
Lovibond Check-kit	Spr - SSgt	RE Cbt Engr	1
WTK (NBC)		STRE (WD)	
PalinTest 7000	Any Rank/Grade	DMS / EHO / EHT	1
PalinTest 7000		RE	1
WCP	Pte - Sgt	All Arms	1
WDR	Pte - Sgt	All Arms	1

Table 2 – Operator manpower required to sustain operation of current system

Maintainers

82. The following manpower is used to sustain operation per equipment:

Equipment	Rank/Grade	Branch/Trade/ Profession	Number Required
WPU Saline& STS	Spr - LCpl – Class 1	RE / Ftr U&P	1
WPU NBC	Spr - LCpl – Class 1	RE / Ftr U&P	1
WPU (SG)	Spr - LCpl – Class 1	RE / Ftr U&P	1
WPU Standard	Spr - LCpl – Class 1	RE / Ftr U&P	1
Gilkes Pumpsets	Spr - LCpl – Class 1	RE / Ftr U&P	1
WTK (NBC)	N/A	Manufacturer	N/A
PalinTest 7000	N/A	Manufacturer	N/A
WCP	Cfn - Sgt	REME / Vehicle Mechanic (VM)	2
WDR	Cfn - Sgt	REME / Vehicle Mechanic (VM)	2

Table 3 – Maintainer manpower required to sustain operation of current system

Inspectors

83. The following manpower is used to perform inspections:

- **The Inspectorate of Engineer Resources** (IER) are used to inspect all equipments operated and maintained by the RE including STRE (WD) and also WPU (SG). The external inspections are normally carried out on an annual basis.

- **REME** Class 1 Vehicle Mechanics are used to inspect and classify the WCP and the associated base platform(s) i.e. ¾, 2 ½ & 3 Tonne Trailers.

- **The Defence Medical Services (DMS**), the Environmental Health Team and trained Environmental Health Technicians are used to test and inspect water samples taken at source and post treatment.

Lessons Identified

84. The sourcing, purification, distribution and storage of water for the deployed force have, historically, been regarded as discrete capability areas. This has prevented the problems of water

purification and delivery being viewed from ‘end to end’; for example: from water source to the point of purification and then to the point of consumption. Subsequently, gaps have been created where discrete capabilities interface, for example:

Bulk ground storage
Water testing
Quality assurance
Borehole construction systems
Water pipelines
The ability to deliver bulk water by air

85. A number of these capability shortfalls have been solved by the UOR process or by one off purchases within the Defence Equipment & Support (DE&S). As a result the ability to provide water to the deployed force is increasingly incoherent and in some instances unsupported.

86. Two major factors leading to problems with in-service support for a large percentage of the equipments listed is the training received by the maintainers and operators and also the complexity of the equipment. Whilst the training given is of a high quality it has generally been delivered as part of a module within a long trade course and/or Combat Engineers Course, and not as a specific equipment course, subsequently leading to ‘skills fade’ when the operators and/or maintainers are required to operate or repair the equipment at a much later date. This is especially evident on the NBC Fresh and Saline Water Purification Units normally resulting in damage to the equipments to such a degree that the equipment has been sent back for costly level 4 repairs.

87. The introduction of original equipment manufacturers (OEM) courses in the past few months (2010) has made a marked difference to the serviceability rate of the above equipments. It has shown that focussed training delivered to the appropriate target audience has a major beneficial effect.

88. The lack of equipment familiarity coupled with the complex nature of the equipment is the key driving force behind the over use of the WPU (SG) deployed on operations. These are being operated far beyond their intended usage periods.

Supportability Cost Drivers

89. Post Design Services (PDS) account for a large proportion of the funding allocated to supporting the equipment through life. This is divided into 2 areas detailed below:

Obsolescence Issues

90. Due to the age of the equipment much time and effort has been spent on modifying the equipment as spares become increasingly difficult to obtain. Safety tasks and the extensive re-writes by the contractor-written Army Equipment Support Publications (AESPs) have also driven the amount of PDS tasks required to keep the equipment serviceable and in line with current legislation.

Training

91. Funding spent on training has been a constant throughout the life of the equipment for those equipments that are the sole responsibility of the RE. Training has been delivered by RETDT for the Corps, however training is also delivered by the design authority when pre-deployment training is required for the WPU NBC Fresh & Saline and also adhoc prior to major exercises etc.

92. Training is also required periodically at the Joint Support Chain Services (JSCS) for the maintenance teams and also for the IER as and when required. The complexity of the use and maintenance of the equipment coupled with a lack of dedicated operators have increased the costs required to support the equipment significantly.

QUANTITATIVE SUPPORTABILITY FACTORS

Operational Factors – New System

93. The quantity of water required for operations is calculated by Daily Consumption Rate (DCR) values and the scenarios and quantities are contained in Joint Warfare Publication (JWP) 4.01.1. CWSS is required to provide water to support Simple Intervention (SI), Complex Intervention (CI) and Enduring Stabilisation (ES) operations concurrently, in accordaned with DSD13.
94. CWSS seeks to provide water to all components deployed on operations in the Land environment. It includes the sourcing, processing, testing, storage and distribution of palatable & potable for human consumption and potable water for other uses across the full spectrum of operations. UK forces are able to be self sufficient and possess the capability to produce potable water as far forward as possible. The construction and development of boreholes is out of scope for CWSS.

System Mission Profile

95. The system mission profile will be based on the Battlefield Mission (BFM) (Ref 9). This identifies that the system shall have to sustain operations for a period of 6 months continuous operation.

Equipment Mission Profile

96. The equipment mission profile will initially be defined in the Systems Requirement Document (SRD) (Ref 3). It shall be based on the ability of the equipment to maintain the DCR storage requirements as defined in the BFM and JWP4.01.1 for the deployed force.

Operational Usage Rates

97. The BFM and JWP4.01.1 shall be used to extract all operational usage rates.

Operational Environment

CBRN Conditions

98. The system will be required to operate in a Chemical, Biological, Radiological and Nuclear (CBRN) environment and have the capability to remove all biological and chemical agents during the treatment and testing process.

Environmental Conditions

99. The environmental conditions that the system will be required to operated in, including survivability ranges is detailed within the User Requirement Document (URD), detailing the applicable extracts from Def Stan 00-35.

Basing Concepts

100. These will be identified within the Capability Integration Working Groups (CIWG).

Fielding Plan

101. HQ LAND will formulate a Fielding Plan and promulgate this information as required in line with the Introduction into Service schedule of CWSS.

Interoperability

102. CWSS capability shall facilitate joint interoperability within a UK joint force package and coalition allies, particularly NATO Allies. Specific interoperability requirements will be detailed in the URD & SRD. **Standardisation**

103. CWSS shall be cognisant of the requirements of NATO Standardisation Agreements (STANAG) 2136 & 2885. CWSS shall conform with the Joint Warfare Publication 4-01.1 which is the authoritative document providing the framework for the planning and management of water distribution and supply on joint operations. It also provides broad guidance on the required potability standards and sourcing through to bulk distribution of potable water. CWSS will be GBA compliant but the specific standards required of the System will be detailed in the CWSS SRD.

Interfacing and Supporting Systems

104. CWSS capability has to be developed within a rapidly changing environment, and system solutions to meet specified User Requirements that have to be selected to maximise through-life value for money. Other capabilities, both in service and planned, may have impact on, or be impacted on by, CWSS solutions, and are likely to include, but are not limited to, the following:

a. CST (W)
b. WDR
c. Personal Equipment and Common Operational Clothing (PECOC)
d. Future Power (FP) / Field Power
e. In-Service and planned Strategic and Tactical Air Transport
f. The Support Helicopter (SH) Fleet
g. Expeditionary Deployable Port Infrastructure (EDPI)
h. Civilian Road Tankers and Infrastructure
i. Dismountable Rack Off-Load and Pick-up System (DROPS)
j. Heavy Load Distribution Capability (HLDC)
k. Support Vehicle Cargo (SV(C))
l. Enhanced Palletised Load System (EPLS)
m. Expeditionary Campaign Infrastructure (ECI)
n. Operational Hygiene System (OHS)
o. Standard sized ISO Containers

QUANTITATIVE SUPPORT FACTORS

System Function Overall

105. The CWSS system functional requirement is to abstract, treat, package, store and distribute potable water.

Availability, Reliability and Maintainability (AR&M)

106. The Availability, Reliability and Maintainability (AR&M) requirements for CWSS are defined in the CWSS URD and SRD.

Maintenance Constraints/Requirements

107. Maintenance operations shall be kept to a minimum over the operational life of the system. Design consideration shall be given to the ease of technical inspections and maintenance that will mean the system will have a higher overall availability. The maintenance requirements are defined in detail within the CWSS URD, SRD and BFM.

Maintenance Concept

108. The overarching maintenance policy is contained in Section 3 of the Battlefield Equipment Support Doctrine (BESD) at Ref 7.

Levels of Maintenance/Support

109. The current in-service water equipments are supported by a 1st to 4th line repair policy. Lines and levels of repair are covered in more detail in Section 3 of the BESD.

110. The operator (level 1) is currently responsible for the assembly from storage of the equipment and then operating and maintaining the system. If the equipment fails the operator requests further support from RE / REME personnel attached to the Unit/Sub-Unit. If the equipment cannot be repaired at a local level it is then back-loaded through the military stores system to the appropriate level of repair facility to conduct the repair or initiate the disposal process.

Maintenance Planning

111. A Level of Repair Analysis (LORA) shall be carried out to identify where maintenance activities will take place and who will be responsible for them.

Preventive Maintenance

112. The equipment user and supporting repair organisation currently carry out checks as follows:

Daily.

113. Daily checks are carried out by the user prior to, during and after operation. The checks are not carried out on the days when the equipment remains in storage and not in use. These checks are for serviceability, degradation and fluid/fuel level checks

Scheduled.

114. Specific inspection and maintenance is carried out annually or after a specified period of usage, normally calendar or running hours based.

Engineering Authority Inspections.

115. These inspections are carried out at pre-determined periods, by an independent organisation, normally annually unless otherwise specified at organisational level. These inspections are in carried out to ascertain the serviceability and standard of the equipment to ensure it is fit for purpose.

Corrective Maintenance

116. Corrective maintenance policy is based on the following principles:

a. Support is based on the war requirement and adapted for peace.
b. Repair is undertaken as far forward and as near to the location of the failure as is technically feasible, economically sensible and operationally possible.
c. Use of minimal levels of manpower and high levels of professional expertise (leading to minimal trade groups).
   I. Maximum use of Built-In Test/Built-in Test Equipment (BIT/BITE).
   II. Maximum utilisation of existing common user and in-service tools and test equipment.
   III. Maximum flexibility in the provision of operational support.
   IV. Minimising the problems associated with transporting and using increasingly complex test equipment in the field.

117. Corrective maintenance generally falls into the following categories:

Unscheduled Maintenance.

118. Unscheduled maintenance occurs when a component does not perform as specified resulting in the need to replace that component to return the system or sub-system to a fully operational state. In short, unscheduled maintenance generally rectifies a sub-system failure.

Scheduled (Preventative) Maintenance.

119. This entails the replacement or overhauling an assembly/component at or before a specified interval, regardless of its condition at the time. Scheduled maintenance may all include scheduled discard where the item is replaced and discarded regardless of its condition on removal.

On-Condition Maintenance.

120. On-condition maintenance relies on the capability to detect failures before they happen so that preventive maintenance can be initiated. Many failure modes exhibit signs of warning as they are about to occur. If, during an inspection, maintenance personnel can find evidence that the equipment is approaching the end of its life, then it may be possible to delay the failure, prevent it from happening or replace the equipment at the earliest convenience rather then allowing the failure to occur and possibly cause severe consequences.

Expedient Repair

121. Expedient repair includes both Battle Damage Repair (BDR) usually conducted to rectify damage arising from enemy action, and temporary repairs carried out, on operations, to rectify faults developed through normal use. They are undertaken to return equipment to the current

mission or to allow it to move itself to a location for a more permanent repair. Whilst all repairs are conducted to the highest standard feasible, an engineering decision must be made as to the standard of repair acceptable, having balanced the operational imperative against the risk of applying a repair where its integrity may fail to reach the standards required in peacetime. Commonality, modularity, redundancy, simplicity of systems and training ensure that BDR is feasible in the tactical environment.

Discard/Repair

122. The levels of Repair/Discard will be defined within the support strategy that is adopted. This decision will be informed by the Level Of Repair Analysis (LORA) and Reliability Centred Maintenance (RCM) analysis which will provide data to support these decisions.

Supply Support

123. The supply support solution selected will be decided by the OIP PT CWSS Project Team in conjunction with the Key Stakeholders using the Support Options Matrix (SOM). This will allow for informed decision making and ensure the most appropriate supply support solution is selected.

Complete equipment Schedule (CES)

124. Any support tools required by the user (level 1) are annotated as Complete Equipment Schedules (CES).

125. The CES used on current water equipment are detailed in the appropriate Army Equipment Support Publication (AESP) Chapter 711. The CES allows the operator (level 1) to identify individual components by description, its NATO Stock Number or manufacturer's part number, its Designation of Quantity (DofQ) and its figure or item number on a drawing. These items are codified and supplied as an integral part of the equipment.

Support and Test Equipment (S&TE)

126. Items that are required by the maintainer (level 2/3) are known as Support and Test Equipment (S&TE). Support, Test equipment and calibration is covered in JSP 886 Vol 7 parts 8.06, 8.07 and 8.17.

127. It is MoD policy to minimise the need for S&TE for both preventative and corrective maintenance where possible. The final CWSS solution should be such that no S&TE will be required unless it can be fully justified. There is no S&TE associated with any of the current in-service water equipment.

Manpower and Human Factors

128. Manpower costs are a significant element of the Defence Budget. New requirements are not to entail additional operator or maintenance staff in excess of those supporting the existing equipments without full justification as directed by the URD. Ideally application of new technology and increased reliability should result in a staff reduction where possible. Detailed information of HFI is included within the SRD.

Environmental and Safety

129. As a signatory to the Montreal Protocol and European Community Regulation 1005/2009, Her Majesty's Government is committed to a reduction in production and consumption of the

controlled substances which includes Chlorofluorocarbons (CFCs) and Halons. Specifications for new equipment which include fire extinguishers must not call for the incorporation of controlled substances within the design or their use during the production of the equipment. Confirmation of the absence of controlled substances shall be sought as part of the process for accepting any new equipment.

130. The MoD has no general exemptions from the provisions of the UK Health and Safety at Work Act (HASWA) or the Factories Act. They are equally applicable to civilian and service working environments under peacetime operating conditions. Inspection, maintenance, operation or repair procedures and instructions must therefore comply with the appropriate requirements of both these acts.

131. Under Control Of Substances Hazardous to Health Regulations (COSHH) a written assessment of any health hazards and precautionary measures necessary to minimise or remove such hazards is required for all work with hazardous substances to which operators may be exposed. If any maintenance or repair task involves the use of hazardous substances, it will be necessary for the contractor, without assuming the responsibility of local management, to identify any such known hazardous substances and to provide Safety Information as necessary iaw. the HAWSA and the COSHH and other associated regulations.

132. The current in-service water purification equipment uses hazardous substances in the process of purifying water and is safeguarded against polluting the environment accidental or otherwise, including water tables, water courses or controlled water as laid down within the Water Resources Act 1991. This includes the ‘waste-water’ or ‘reject’ that is produced as a by-product of the purification process. CWSS will need to demonstrate that it is compliant with the appropriate regulations if hazardous substances are to be used. CWSS shall be compliant with Registration, Evaluation and Authorisation of Chemicals (REACH) legislation.

133. If the chosen solution contains electrical/electronic components, the MoD is governed by the Waste Electrical & Equipment Regulations and the Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment Regulations (RoHS), therefore the proposed solution shall be compliant with these regulations.

Training and Training Equipment

134. It is a MoD requirement that a Training Needs Analysis (TNA) is carried out to establish the training requirements for all new equipments. The TNA will determine the scope and level of training required for both operators and maintainers of CWSS. It will also explore the requirement for dedicated training equipment or whether synthetic training could be achieved by methods such as the use of computer based simulation.

135. There will be a requirement to train MoD & military staff on the operation and maintenance of the CWSS system. The successful Bidder shall design the service training courses in conjunction with the output of the TNA. These courses will be based on the “train the trainer” concept.

136. The personnel who will operate CWSS will receive specialist training on the new equipment. They will also be expected to carry out servicing, fault finding, and fault rectification at Level 1. Subject to the TNA output it is envisaged that he/she will be trained by service instructors, who have completed a ‘train the trainer’ package.

137. Assuming there will be a requirement for maintenance to be conducted on CWSS, it will be carried out by service personnel utilising the extant trade structure and skills sets.

Technical Documentation

138. Technical Publications are utilised by the User and Maintainers of the equipments to facilitate the operation and maintenance of an equipment or system in accordance with agreed parameters and safe practices. The information contained within the Technical Publications should be unambiguous and identify all of the actions required to be performed for the safe operation and maintenance of equipment.

139. Def Stan 00-600 mandates the requirement for Electronic Technical Publications (ETP) JSP 886 states that this requirement may be met by the use of Portable Document Format (PDF) documents mounted on the Technical Documentation On Line (TDOL) system. In some cases existing commercial documentation may be acceptable. The decision on which type of publication to procure is made as part of the trade off analysis based on a number of factors including number of systems supported, existence of current documentation and number of remaining years in service.

140. The specifications for Technical Documentation are dependant upon the media in which the documentation is presented. PDF format will be acceptable in conjunction with hard copies to facilitate TDOL.

141. Currently the amendment process for these documents once accepted into service is conducted following approval and authorisation of the Equipment Support Manager (ESM). Request for amendment is instigated by the user to the ESM using AESP Form 10, Request for Amendment.

Packaging, Handling, Storage and Transportation (PHS&T)

142. Military packaging for spare parts used In Service support and repair agencies should be utilised unless commercial packaging is more appropriate. Military levels of packaging are defined in Defence Condition (DEFCON) 129 (Packaging, including Spares Price Labelling).

143. All electronic components are treated as Electrostatic Discharge Sensitive (ESDS) Devices in accordance with BS EN 61340 (Protection of Electronic Devices from Electrostatic Phenomena). This also includes mechanical items containing electronic components.

Disposal Planning

144. The declaration of disposal requirement will be made by the ESM upon the equipment being replaced, reaching the termination of its anticipated service life or becoming Beyond Economic Repair (BER).

145. A policy for disposal of non-Government Furnished Assets (GFA) items procured to constitute the system must be developed to comply with all legal and environmental legislation. Equipment and software that may contain information of a classified nature must be disposed in accordance with JSP 886 Vol 9.

In-Service Monitoring of Logistic Performance

146. The current policy states that users and/or maintainers are to report all equipment defects and the action taken to rectify the system to the Equipment Support Manager (ESM) by completing an JAMES Component Report (JCR). Defective spares, Line Replaceable Units (LRUs) or capital items returned for repair will be controlled and managed by OIP PT.

147. None of the current in-service water equipment has data collected for analysis using a Health Usage Monitoring System (HUMS).

Software Support

148. JSP 886 Vol 7 Pt 4 provides authoritative policy and procedures in the development, acquisition and maintainability of supportable software.

Standardisation, Commonality & Interoperability

149. CWSS will need to be developed to be interoperable with the systems previously identified under Quantitative Supportability Factors, Interfacing and Supporting Systems. CWSS shall, where possible, use common parts and spares across modules, systems or sub-systems.

Security

150. System security should be developed in accordance with the SRD and JSP 440 (Defence Manual of Security). All documentation must be marked and handled in accordance with these guidelines.

Configuration Management

151. Configuration Management for CWSS will be in accordance with the CWSS Configuration Management Plan (Ref 5) and will be controlled by the designated CWSS Configuration Manager.

Quality Assurance

152. The current policy for Quality Assurance (QA) is defined in the Project Quality Management Plan (Ref 10) which applies the OSP Quality Management Strategy to the CWSS project.

153. The Quality Assurance process aims to ensure that the required capability is procured against agreed Performance, Time and Cost parameters, whilst ensuring compliance with the CWSS Requirements Documentation and relevant standards, regulations and legislation

EXISTING SUPPORT AVAILABLE FOR NEW SYSTEM

Support Organisations and Agencies

154. Whilst the aim of CWSS is to minimise the logistic footprint, the system will continue to be supported by the Joint Supply Chain (JSC) and utilise the Purple Gate process. The equipment will remain under the direction and control of the OIP PT.

Maintenance

155. The extant levels of maintenance will remain and CWSS shall be developed to align its maintenance policy with the Battlefield Equipment Support Doctrine (BESD).

Supply Support

156. The military supply and distribution system is to be incorporated within any logistical supply line in support of the system. The system ensures the forward transit of spares and consumables at periods when commercial freight services may be unable to operate in areas of conflict. The point of insertion for contractor repaired items to the system will be documented in the Equipment Support Policy Directive (ESPD) and the awarded Contract. The point of entry is known as the Purple Gate with the mandated requirements detailed in JSP 886 Volume 3 Part 3.

157. Set out below are the basic principles that apply to the supply of any commodity. Operational requirements will always be paramount in the operational/deployed supply chain whilst cost effectiveness will be the main driver in the base and non-deployable supply chain. The non-deployable supply chain must remain sufficiently robust and flexible to meet all sustainability and readiness requirements. The non-deployable supply chain is defined as those units and installations that have no deployable role away from their peacetime locations on operations.

158. The Bidders proposed supply chain interfaces shall integrate seamlessly with the extant MoD systems.

Support and Test Equipment (S&TE)

159. There is currently no specialist tools or test equipment employed on In Service water purification equipment. There is a requirement that CWSS will not introduce any new support or test equipment unless justified and approved by the Authority.

160. Should S&TE be identified, required, (part of the current MoD S&TE catalogue or not) and agreed. The contractor is to supply the required information in the format provided at Appendix 1 of this document as part of technical information.

Manpower and Human Factors

161. The proposed solution shall be operated and maintained by the Trade Groups & skill sets identified in Section 2 of this report. There be shall no increase in manpower requirement.

Training and Training Equipment

162. In order to satisfy the requirements for training for the current in-service equipment, training is carried out by the following organisations at the locations specified. Each training establishment holds relevant training assets on their Unit Equipment Table and/or operational equipment for training purposes. These may be available for training of CWSS.

163. The Royal Engineers and the Environmental Health Team provide dedicated facilities and trainers complete with a comprehensive training course. The other establishments listed below, only provide the facility with minimal training aids, but are suitable for use due to their geographical location (suitable water source). The units or formations using these establishments provide their own personnel to conduct the training or the contractor can be used in certain circumstances when the equipment is of a complex nature. A detailed breakdown of the training requirements will be given in the TNA.

a. Royal Engineers
Combat Engineer School, Minley, Surrey (Operators)
b. 1 Royal School of Military Engineering (RSME), Chatham, Kent (Maintainers)
Army Recruit &Training Division
c. Wyke Regis Training Area, Weymouth, Dorset (Operators)
Royal Navy
d. Commando Logistic Regiment, Chivenor, Barnstaple (Operators)

Facilities

164. The Joint Support Chain Services (JSCS) is the default storage and distribution solution for new and renewed business, unless it can be demonstrated that better value for Defence in the round can be justified from buying their services elsewhere and agreeing the justification with JSCS. This policy should be read in conjunction with JSP 886 Volume 3 Part 3 – Seamless Supply Chain, which describes in further detail, the assurance requirements of the Standard Priority System (SPS) and Purple Gate (PG) policies, both of which are related to storage and distribution considerations.

165. All possible options for the identification of storage and maintenance facilities including Contracting for Availability for CWSS will be decided on completion of the SOM and Cost Benefit Analysis (CBA). There will be no purpose built facilities or locations for the purpose of storage. The majority of the current equipment holdings are located at JSCS Ashchurch. Training stock is held and maintained at JSCS Longmoor, Minley, Waterbeach and Ripon for UK use.

Standardisation, Commonality and Interoperability

166. All materiel procured and deployed in support of the MoD is a corporate resource and as such will be allocated and processed on a Defence-wide basis according to priority. Materiel, particularly technical spares, can have the fit, form and function that makes it applicable to more than one platform. Current emphasis is on driving down the MoD's inventory by implementing support contracts that are increasingly reliant on contractor-owned stock. Thus there will be growing pressure on PTs to allow common spares to be used on other platforms and equipments, especially in times of operational need.

167. Visibility of stock across Defence, including contractor and MoD-owned stock is a key enabler for allocating scarce resources, especially to meet the operational need. The support solution is to provide visibility of materiel through NATO codification of all items entering, or likely to enter the Joint Supply Chain using the UK National Codification Bureau (UKNCB). Def Stan 00-600 identifies the requirement for codification which defined in JSP886 Vol 2 pt 4.

168. The primary principle upon which convergence towards a Single Defence Inventory is predicated should be that each item must have a unique NATO stock number (NSN), a single (PT) owner and be hosted on only one base inventory management system. This principle is often referred to as, 'One Item, One NSN, One Owner, hosted on One Base Inventory System'. In addition to this, Stores System 3 (SS3) is to be regarded as the target base inventory management

system and the default system against which all new to Service equipments and support solutions are to be tested. However, during the procurement of CWSS, the inventory management will migrate from SS3 to the Management of the Joint Deployed Inventory (MJDI) system.

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PICTURE IF NO PICTURE THEN DELETE

ET SCALE NO To be issued by MoD **Dated TBC**

EQUIPMENT TABLE SCALE
OF SPECIAL TOOLS AND TEST EQUIPMENT

NAME OF CAPABILITY

LIST OF CONTENTS

This Equipment Table Scale supersedes ET Scale: TBC DATED: TBC

SECTION 1 REPAIR SET NSNS

NOTE SERIAL	DETAILS	REMARKS
(a)	(b)	(c)
1	This Equipment Table Scale (ETS) lists the essential tools and test equipment required to inspect, repair and carry out tasks given in AESP: XXXX-X-XXX OCTAD. Top level NSN's are set for the following Level's of Repair: XXXX-X-XXX-XXXX A1 Level of Repair	

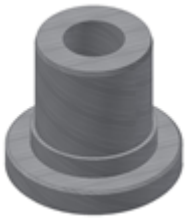
SECTION 2 INSTRUCTIONS TO UNITS

NOTE SERIAL	DETAILS	REMARKS
(a)	(b)	(c)
1	**Where the Unit is to support the equipment, demands for initial entitlement or replacement items are to be submitted to:- OSP, OIP, MoD Abbey Wood, BRISTOL, BS34 8JH.**	
2	When received, items are to be accounted for as follows: NAVY - To be accounted as Permanent Accountable items ARMY - To be accounted for in the Unit Equipment Table of Entitlement, Section 11 or REME attached Supplement as applicable; deficiencies/surpluses of complete sets or individual items are to be supported by the Demand Book (AB 595) AF B6717 as appropriate. RAF - Entered on the Unit Inventory	

NOTE SERIAL	DETAILS			REMARKS
(a)	(b)			(c)
3	This scale has been laid out to show Unit requirement as a set of tools and test equipment.			
	Line of Repair	Sets	Unit/Sub Unit	
	1st Line	A1	LAD HQ, Wksp HQ, Garrison and Station LADs and Regt'l Wksp	
		A2	Sqn, Bty, Coy Sections, att REME Tradesmen, Garrison and Station LAD Repair sections	
	2nd Line	B1	GS Coy/Wksp Coy (V) of REME Bn	
		B2	CS Coy FD repair REME Bn	
		B3	Forward repair Teams CS Coy REME Bn	

NOTE SERIAL	DETAILS	REMARKS
(a)	(b)	(c)
4	Where an increase in entitlement is required, AFs G8088 with full justification in accordance with JSP 886 Volume 4 Part 204 Sections 4 & 7 must be submitted via Formation HQ to:- **OSP, OIP, MoD Abbey Wood, BRISTOL, BS34 8JH.**	Current Sponsor Is **OSP, OIP, MoD Abbey Wood, BRISTOL, BS34 8JH.**

SECTION 3 STTE ET SCALE

SER NO	NSN and Catalogue Designation	Repair Level					Image / PMT remarks
		A1	A2	B1	B2	B3	
1	NSN: XXXX-XX-XXX-XXXX MPN: XXXXXX Designation: XXXXXXXXX Accounting Class: X D of Q: XX	1	-	-	-	-	
1.1	NSN: XXXX-XX-XXX-XXXX MPN:XXXXXX Designation: XXXXXXXX Accounting Class: XXXX D of Q: XX	1	-	-	-	-