British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BAS WASTE MANAGEMENT HANDBOOK

17th Edition, Vs. 1.0 - November 2024

Edition	Vs.	Date	Amendments	Status/Approver
17th	1.0	01.11.24	Changes throughout – full reprint required. Significant updates/new information in following chapters: – 1.2. BAS Waste Management Policy – 2.2.2 & 11.3.1 – SDA garbage related guidance – 6.13.1 – BAS kitbag clothing (NEW) – 6.10.2 – Shrink-wrap and Bubble-wrap (NEW plastic segregation guidance) – Updates to WEEE guidance (see 7.27) and specific WEEE headings: 7.6 (cables/wires), 7.12 (IT devices), 7.13 (light bulbs), 7.20 (solar panels). – Clinical waste is now split as below: ○ 8.5 Clinical/medical (human medicine) ○ 8.6 Clinical/research (labs/animal research. Also note avian influenza guidance. – Wastes previously consigned to SDA for incineration, now consigned to the UK. See: 7.10 (food, wet), 7.17 (sanitary), 8.13.6/8.13.7 (oily rags), 9.3.3. (Human waste from coastal field sites). – 8.5.5. – controlled drugs for island stations – All waste dangerous goods queries to be directed to cargo@bas.ac.uk and annlao@bas.ac.uk	FINAL Annal Malaos Environment Office

Edited by the Environment Office



THE BRITISH ANTARCTIC SURVEY
WASTE MANAGEMENT HANDBOOK

Update Procedures

If you have any suggestions for the revision of the BAS Waste Management Handbook, please contact the Senior Environmental Manager at BAS Cambridge. Revised versions will be distributed annually. Hard copies are not controlled but the following personnel will be advised when a revised version of the Handbook is released:

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Senior Environmental Manager	Rothera Bonner Laboratory Manager
Heads of Polar Operations	Rothera Facilities Engineer
Operations Programme Manager	Rothera Station General Assistants
Head of Field Operations	Halley Station Operations Manager
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Quick Check Guide to Waste Management

This is a summary guide only and lists the 'common' wastes generated at BAS Stations. Please refer to the WASTE MANAGEMENT HANDBOOK for more details.

If in any doubt please contact the Senior Environmental Manager at BAS, Anna Malaos annlao@bas.ac.uk before consigning waste – thank you.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Aluminium & Steel Cans See 6.1	FIBC	Green	Environmental Manager, UK.	"ALUMINIUM AND STEEL CANS" & recycling triangle. Mark with the case number.	No	Rinse cans that have had food inside them.
Cardboard See 6.2	FIBC	Green	Environmental Manager, UK.	"CARDBOARD" & recycling triangle. Mark with the case number.	No	Flat pack and bale.
Charity donation e.g., good condition clothing, books, CDs etc. that can be reused **(NOT WASTE)** See 6.3.26.3.1 and 6.10.5	Any sturdy container	None required	Logistics Co-ordinator FIs	"SECOND HAND CLOTHING/BOOKS FOR REUSE". Mark with the case number.	Yes	**Please check with the FI Logistics Co-ordinator prior to sending anything.** Good quality second hand clothing/books etc. can be sent to the Seaman's Mission in the Falkland Islands. Please ensure that the clothing is of a good quality and can be worn again.
Clothing (that cannot be reused), fabric and rags. See 6.3	FIBC or cardboard carton	Green	Environmental Manager, UK.	Stencilled top and sides with "WASTE CLOTH/TEXTILES FOR RECYCLING" and recycling triangle. Mark with case number.	No	Rags can be used in the workshop or separated and returned to the UK. Workshop rags are to be treated as oily waste once they have been used.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
General/Mixed (non-recyclable waste) See 6.6	FIBC	Orange 'FI' FIBC OR Blue 'UK General' FIBC	Environmental Manager, UK.	Place in an FIBC with orange 'FI' or Blue 'UK General Waste' lettering for general/mixed waste. **These should be consigned to the UK.**	No	**Please note that orange lettering 'FI' FIBCs are old stock which needs to be used up. The new blue 'UK General Waste' FIBCs can then be used. ALL general/mixed waste is consigned to the UK.**
Glass (All stations except KEP) See 6.7	Empty & clean (haz labels removed) 205 litre AVTUR drum	Green	Environmental Manager, UK.	"WASTE GLASS" and recycling triangle. Mark with case number.	No	Different colours of glass can be mixed. Do NOT crush glass.
Glass (KEP only) See 6.7	FIBC	None required	Public works Department FIs	"WASTE GLASS" and recycling triangle. Mark with case number.	No	Imploded glass is reused as aggregate in the FIs.
Metal, scrap See 6.8	**Pallets (preferable)** or empty & clean 205 litre drum (no haz labels OR skips (for Rothera) OR reusable orange bins (for KEP)	Green (except for skips/reusable bins – no colour)	Environmental Manager, UK	Stencilled top and sides with "WASTE SCRAP METAL". Mark with case number.	No	Preference is for waste to be securely palletised. Skips should be avoided where possible due to limited storage space on the SDA however can be used for Rothera for time being. If 205 litre drums used, then they need to be clean and free from fuel and all haz labels removed/painted over.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Plastics See 6.10	FIBC	Green	Environmental Manager, UK.	"PLASTICS" & recycling triangle. Mark with case number.	No	Rinse all containers. CDs, DVDs & polystyrene, and polythene foam can be recycled if separated from other plastics. Bubble wrap (unless reused for packaging) and plastic wrap (though not cling film) can be recycled with other plastics.
Resale Items (NOT WASTE)	Any sturdy container	None required	Logistics Co-ordinator FI	Do not label as waste - consign to FI Logistics Coordinator	Yes	Only items which are in good working order should be sent to the FI for resale. **Please contact the Falkland Islands office prior to sending items to ensure that they are suitable for resale.**
Rope See 6.11	FIBC or any sturdy container.	Green	Environmental Manager, UK.	Stencilled top and sides with "ROPE FOR RECYCLING" & recycling triangle. Mark with case number.	No	
Tetra packs - See 6.12	FIBC	Green	Environmental Manager, UK.	"TETRAPACKS" and recycling triangle. Mark with case number.	No	Rinse before storing.
Wood, untreated (refer to guidance in waste wood section) See 6.13	Pallet/Wooden case	Green	Environmental Manager, UK.	Stencilled top and sides with "Waste Non-Hazardous Wood", paint green. Mark with case number.	Yes	Good condition wood that has a resale value can be sent to the FI for resale. Seek advice in advance from the FI Logistics Coordinator. If no resale market is available, then consign to the UK.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Batteries - must be separated into (i) Lead acid (ii) Lithium (iii) Dry cell See 8.3	UN Approved 4DV or 4GV container for lithium batteries. Sturdy container, preferably 4DV plywood for batteries	Yellow	Environmental Manager, UK.	"WASTE BATTERIES" Label the container with the specific battery type, Case number, UN number and hazard class. Ensure terminals have been taped.	Yes	All types of batteries are to be returned to the UK for recycling. Please refer to Waste Management Handbook for specific packaging details. **Keep lithium batteries always dry.**
Chemicals (Hazardous and non-regulated) See 7.4 and 8.4	Reuse original containers if possible or UN approved container.	Yellow	Environmental Manager, UK.	Stencilled top and sides with "WASTE CHEMICALS" with appropriate UN number, hazard class and the case number.	Yes	All waste chemicals are to be returned to the UK. Please refer to the Waste Management Handbook for specific packaging details.
Food, old dried, tinned or packaged ONLY. See 7.9	Empty & clean (haz labels removed) 205 litre AVTUR drum OR original packaging on pallet	Yellow	Environmental Manager, UK.	Stencilled top and sides with "UE" (Unconsumed Edibles). Mark with case number.	Yes	**The BOL must provide detail on the types of dried/tinned/packaged food – refer to guidance in WMH.** **(SEE WMH FOR STATION SPECIFIC GUIDANCE ON THE DISPOSAL OF FRESH FOOD AND SCRAPS)**
Fuel (waste), MGO, Diesel, AVTUR, Petrol See 8.13	Empty 205 litre original drum	Yellow	Environmental Manager, UK.	"WASTE FUEL" Label the drum with the specific fuel and the appropriate UN number, hazard class and case number.	Yes	Do not mix petrol with other fuels. Refer to the Waste Management Handbook for **UN numbers and hazard class**.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Hazardous Waste General (for other hazardous materials please refer to SCL cargo@bas.ac.uk)	(See Waste Management Handbook)	Yellow	Environmental Manager, UK.	(See Waste Management Handbook). **For advice on packaging hazardous materials other than waste please contact SCL** cargo@bas.ac.uk	Yes	**There are a multitude of waste items which are hazardous either for transportation and/or disposal. Please refer to the Waste Management Handbook for the appropriate packaging, UN numbers and Hazard Class.**
Hard Drives - the storage (hard drive) of all old/end of life BAS computers, laptops, printers etc. should be removed by staff on station/ship.	See section Hard Drives 7.12.1 for guidance on hard drives – this varies depending on the station					
IT equipment **(only if their hard drives have been removed)** is treated as WEEE waste. See 7.12	Sturdy container – wood/fibreboard	Yellow	Environmental Manager, UK.	Stencil top and sides with "WASTE WEEE". Mark with case number.	Yes	BAS computers and printers that have had their hard drives removed before being consigned to the UK as WEEE waste.
Light bulbs –Tungsten (the old-fashioned style) See 7.13	Dispose with other general/mixed (non haz/non-recyclable) waste in FIBC with orange 'FI' lettering or blue 'UK general waste' lettering	Orange 'FI' or blue 'UK general' lettering FIBC	Environmental Manager, UK.	Place in an FIBC with orange 'FI' lettering or blue 'UK general waste' lettering for general/mixed waste. **These should be consigned to the UK.**	No	**Please note that orange lettering 'FI' FIBCs are old stock which needs to be used up. The new blue 'UK General Waste' FIBCs can then be used. ALL general/mixed waste is consigned to the UK.**

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Light bulbs – LED lights See 7.13.2	Sturdy cardboard or wooden container	Yellow	Environmental Manager, UK.	Stencil top and sides with 'WASTE LED LIGHT BULBS'. Mark with case number.	Yes	Non hazardous, can usually be recycled
Light bulbs – Fluorescent tubes, lamps, strips & CFLs See 7.13.3	Sturdy cardboard or wooden container	Yellow	Environmental Manager, UK.	Stencil top and sides with "WASTE FLUORESCENT TUBES/FLUORESCENT LAMPS/CFL BULBS". Mark with case number.	Yes	Fluorescent tubes, lamps and CFLs contain mercury and must be disposed of carefully. Please see the WMH if you are dealing with a broken bulb.
Oils/Lubricants (e.g., engine/hydraulic) See 8.13.4	Original container or new/clean 25L or 205L drum (if hazardous use a UN drum)	Yellow	Environmental Manager, UK	Stencil top and sides with "WASTE oils/lubricants". Label the drum with the specific oil/lubricant. Mark with case number.	Yes	Most lubricants/oils are non-hazardous but always check the MSDS to ensure appropriately packed and consigned. Do not mix different oils.
Oil, cooking See 7.5	Original container or new/clean 205L drum	Yellow	Environmental Manager, UK.	Stencilled top and sides with "WASTE COOKING OIL". Mark with case number.	Yes	Ensure all haz labels are removed/painted over if using 205 litre AVTUR drums
Oily rags/Oily Clothing See 8.13.6 and 8.13.7	See 8.13.6 and 8.13.7 for station specific guidance					
Oil filters See 8.13.5	New/clean open top 205L drum (removable lid)	Yellow	Environmental Manager, UK.	Stencilled top and sides with "OIL FILTERS" and the appropriate UN number, hazard class and case number.	Yes	Mark as UN 3077 Haz class 9 See section 8.13.5 for further info Open top drums must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane.

Waste Material (in alphabetical order)	Waste Packaging Type	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	BOL affixed to container	Comments
Toner and Inkjet cartridges See 7.22	Cardboard or wooden box	Yellow	Environmental Manager, UK.	Stencilled top and sides with "WASTE TONER CARTRIDGES" and recycling triangle. Mark with case number.	Yes	
Waste electrical and electronic equipment **(WEEE)** (including electrical cables) **N.B. PLEASE SEE ABOVE FOR BAS IT EQUIPMENT**	See section 7.27 and 8.22 for specific guidance based on the type of WEEE waste. WEEE should always be kept dry/stored indoors to avoid polluting local water courses or the surrounding environment.					All WEEE should be returned to the UK for recycling or disposal. This includes fridges & freezers. If you have an item of electronic/electrical equipment (**other than IT**) which is in good working order, contact Logistics Coordinator in the FI to establish if it can be resold.

Section 1

INTRODUCTION

1 INTRODUCTION

1.1 Purpose of the BAS Waste Management Handbook

The purpose of this handbook is to provide BAS staff with practical guidance on the handling, packaging, consignment, and disposal of waste generated in the Antarctic/South Georgia. It covers all aspects of BAS operations, including the research stations (Rothera, Halley, Signy, Bird Island and King Edward Point), field camps (Sky Blu, Fossil Bluff and temporary seasonal camps) and BAS ship (RRS *Sir David Attenborough* (SDA)). On the ship, the Waste Management Handbook is used as the Garbage Management Plan alongside the Shipboard Garbage Disposal Placard (SEA-SD-ECO-ANX-01) and the Garbage Management Marine Standing Instruction (SEA-SD-MSI-GEN-32) both of which are controlled within the ships ISM Code Safety Management System.

Wastes are listed individually by waste type within this handbook in Section 6, 7 and 8 to provide clarity on the correct handling procedures and to reinforce the importance of packaging and consigning waste appropriately.

BAS station wastes are only consigned for transport on the BAS vessel. The only exception to this is crushed glass and food waste from KEP which can be consigned to the FI on the GSGSSI vessel. If there is an operational need to remove waste from BAS stations on any other ship, then the BAS Environment Office must be consulted in advance to make the final decision. All waste removed from station must be accompanied by a BAS Bill of Lading (see sections 4.3.1 and 4.3.2).

1.2 BAS Waste Management Policy

The BAS Waste Management Policy objectives are:

- to minimise waste production in the first instance;
- reuse and recycle at source where possible;
- prevent environmental pollution from BAS waste;
- wherever possible, to remove all wastes (other than sewage, grey water or food waste) from the Antarctic and South Georgia for reuse, recycling or final disposal with an emphasis on diversion from landfill;
- to comply with, and where practicable exceed, Antarctic Treaty System, International and relevant UK, waste management legislation.

In order to meet the objectives of the BAS Waste Management Policy, BAS will ensure that:

- The Waste Management Handbook (WMH) details:
  - all waste management legislation and how to comply;
  - waste management procedures that BAS will follow at our research stations, field camps and aboard the vessel;

  - practical guidance for BAS staff on the handling, packaging, consignment and disposal of waste generated in the Antarctic and South Georgia.
- All station staff are aware of and adhering to the BAS WMH.
- All vessel staff are aware of and adhering to the BAS WMH which is used as the Garbage Management Plan and communicated via the ship safety management system.

Key waste management procedures that must be followed:
To ensure compliance with the BAS Waste Management Policy the following key waste management procedures must be followed (further detail is provided within the WMH):

<u>Station/field wastes*</u>

- All wastes must be consigned for import to the UK. The only exceptions to this currently are:
  - crushed glass from KEP consigned to the Falkland Islands (via Pharos) for reuse as road aggregate.
  - food waste from KEP consigned to the Falkland Islands (via Pharos) for incineration.
  - empty good condition drums from all stations which can be consigned to the Falkland Islands for reuse (in this case, these are not classed as 'waste').
  - Scrap metal for recycling and empty drums for reuse from Halley consigned to Cape Town, South Africa.
- Wastes are only consigned for transport on the BAS vessel. The only exception to this currently is crushed glass and food waste from KEP which is consigned to the FI on the GSGSSI vessel. Wastes from Halley may also be transported on charter vessels where it has been pre-agreed with the Environment Office.
- All waste must be accompanied by a BAS Bill of Lading.
- All waste loaded onto the BAS vessel for import to the UK, MUST remain on the vessel for the duration of the journey until final offload in the UK. Temporary offload or storage of station wastes at international ports is NOT permitted.
- The BAS vessel, whilst transiting northbound and carrying amber list wastes (defined as hazardous waste) from stations or the field, must only call at international ports where prior notification and permission has been received. The ship operations team must notify the Environment Office in advance if 'new' international ports are intended to be visited. **Please note that port calls to Uruguay with station amber list waste is NOT permitted.**
- The importation of waste to the UK requires prior notification and permission. This will be coordinated by the BAS Environment Office annually and information provided to the vessel.

**This guidance only applies to wastes produced from BAS stations and field activities (including the traverse) in Antarctica and South Georgia. It does not apply to wastes produced by the BAS vessel.*

BAS vessel garbage and sludge:

- Ship produced garbage and sludge will not be discharged for disposal in the Falkland Islands with the exception of glass that is consigned to the Public Works Department for road aggregate use. This is because there are currently no suitable landfill or recycling facilities in the Falkland Islands for garbage or hazardous waste disposal facilities for sludge. Wherever possible, vessel scheduling during the Antarctic season will include port calls in Punta Arenas to allow for discharge of garbage and sludge.

Deviation from BAS procedures:

- Where there is an operational need to deviate from these procedures then the BAS Environment Office must be consulted in advance.
- Where deviations have occurred, these must be reported as environmental incidents on Maximo.

1.3 How to use this handbook

All BAS staff should use this handbook to ensure that the correct procedures are followed when dealing with waste generated at any of the BAS stations or the ship. The success of the BAS Waste Management Policy is reliant on the enthusiasm, cooperation and diligence of individual staff members to follow the advice provided in this handbook.

This document is reviewed annually prior to the start of the Antarctic summer season by the BAS Environment Office. Any errors or amendments within the text and suggestions or recommendations on how to improve waste management procedures should be directed to the Environmental Manager.

A 'Quick Check Guide to Waste Management' is included at the front of this document as a summary guide only. This should be used in conjunction with the Waste Management Handbook which provides comprehensive detail on waste handling, packaging and disposal. If a waste material is not listed in this handbook or if further clarification is required on waste disposal, all enquiries should be directed to the Environment Office at BAS Cambridge, Anna Malaos annlao@bas.ac.uk.

Section 2

LEGISLATION

2 LEGISLATION

2.1 Antarctic Environmental Legislation

To ensure the protection of the Antarctic environment, the Antarctic Treaty nations adopted the Protocol on Environmental Protection to the Antarctic Treaty in 1991. The UK enforces the provisions of the Protocol through the Antarctic Act, 1994, the Antarctic Act, 2013, and the Antarctic Regulations, 1995/490 (as amended). By following the guidance provided in this document you will help ensure that BAS complies with the requirements of the Protocol and other national and international legislation listed below.

2.1.1 Annex III: Waste Disposal and Waste Management

Annex III of the Environmental Protocol sets out regulations both for waste management planning and disposal of wastes (see Appendix 1). The Annex obliges all operators to reduce the quantity of waste produced and or disposed of in Antarctica in order to minimise any impact on the environment. Emphasis is placed on the storage, disposal and removal of waste from the Antarctic Treaty area to the country responsible for generating the waste (e.g., the UK in BAS' case), as well as recycling and source reduction.

BAS complies with the requirements of the Annex by adhering to the conditions attached to the Operating Permit granted by the Foreign, Commonwealth and Development Office (FCDO).

2.1.2 Annex IV: Prevention of Marine Pollution

Within the Antarctic Treaty Area (south of 60° latitude) the discharge of all toxic and noxious chemicals, oil and oily wastes, plastics and other forms of non-biodegradable rubbish into the sea is prohibited (see Appendix 2). Annex IV largely parallels the international regulations controlling ship-generated pollution under MARPOL 73/78.

2.2 Maritime Antarctic Environmental Legislation

2.2.1 MARPOL 73/78

Since 1992, the Antarctic Treaty Area has been designated by the International Maritime Organisation (IMO) as a Special Area under Annex I (Oil) and Annex V (Garbage) of MARPOL 73/78 (Revised 2018, latest amendments to Annex V MEPC 70). This means that the discharge of any oil or oily mixture, bulk chemicals or garbage from a ship is prohibited in Antarctica. Most waste, other than food and sewage, is discharged at port reception facilities outside the Special Area (see Appendix 3).

Annex V has introduced a new Garbage Record Book (GRB) which requires that all waste discharges are recorded in the following categories:

A. Plastics
B. Food waste
C. Domestic wastes
D. Cooking oil
E. Incinerator ashes
F. Operational waste
G. Animal carcasses
H. Fishing gear
I. E-waste
J. Cargo residues (non-harmful to the marine environment)
K. Cargo residues (harmful to the marine environment)

The GRB discharge table requires that all waste discharges to sea, to reception facilities and to the ship's incinerator are recorded with further detail required on the date/time/position for the start/stop of each incineration.

BAS avoids the intentional discharge of processed bilge water from machinery spaces containing oily mixtures whilst in Special Areas. However, when there is a requirement to do so, and if the requirements of MARPOL are met, this is allowed in consultation with the Designated Person Ashore and the Head of Environment.

The RRS Sir David Attenborough maintains a garbage disposal record book as required under MARPOL. A copy of the *Marine Standing Instruction "*Garbage Management Marine Standing Instruction (SEA-SD-MSI-GEN-32)" is held by the ship and should be referred to whilst on board.

2.2.2 Polar Code

The International Code for Ships Operating in Polar Waters (Polar Code) came into force in January 2017 and was adopted by the International Maritime Organisation (IMO). The code was developed to supplement existing instruments in IMO in order to increase the safety of ships' operation and mitigate the impact on the people and environment in the remote, vulnerable and potentially harsh polar waters. Under the Polar Code, some additional requirements are added to:

1. MARPOL Annex V relating to the discharge of garbage into the sea in the Antarctic Treaty Area. Specifically for garbage, Polar Code Part II-A, Chapter 5.2.2. states that ships operating in the Antarctic area can only discharge garbage in accordance with regulations set out in MARPOL Annex V but shall also meet the additional requirement of preventing discharge of garbage from areas of ice concentration exceeding 1/10 but, in any case, not less than 12 nautical miles from the nearest fast ice. In addition, the discharge of food waste is not permitted on ice.
2. MARPOL Annex IV relating to the discharge of sewage into the sea in the Antarctic Treaty Area. Specifically for sewage, Polar Code Part II-A,

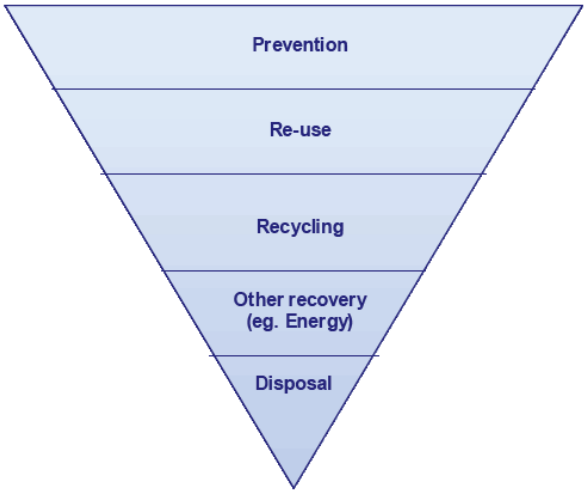
Chapter 4.2. states that discharges of sewage within polar waters are prohibited except when the ship has an approved sewage treatment plant (which meets the requirements of regulation 9.1.1 or 9.2.1 of MARPOL Annex IV) and which has been approved by the Administration and where discharges are as far as practicable from nearest land, ice-shelves or areas of ice concentration exceeding 1/10.

Further information relating to garbage and sewage requirements are detailed in PART II-A of the Polar Code in Appendix 4.

2.3 UK Environmental Legislation

2.3.1 The Waste (England and Wales) (Amendment) Regulations, 2014

The Waste Framework Directive, which is the primary European legislation for the management of waste, is implemented through the Waste (England and Wales) (Amendment) Regulations 2014. It places great emphasis on the waste hierarchy to ensure that organisations deal with waste in priority order. The waste hierarchy is partly implemented through the amended Duty of Care regulations.



2.3.2 The Duty of Care Regulations, 1991

Under the Environmental Protection (Duty of Care) Regulations, 1991, BAS is required to take all reasonable steps to keep its waste safe and secure so that it does not cause pollution or injury.

In particular, BAS must:

- Fulfil the legal requirement to apply the waste hierarchy.
- Ensure safe and correct packing and containment. This is of particular importance while the waste is in transit.
- Check that waste contractors are appropriately registered with the Environment Agency.
- Describe the waste on a Duty of Care waste transfer note so that the waste carrier can avoid committing an offence under the Regulations.

- Keep copies of all waste transfer notes/ waste transfer information for at least 2 years.

Failure to comply with the Duty of Care Regulations is a criminal offence, and could result in a fine of an unlimited amount. The Environment Office is responsible for compliance with the Environmental Protection (Duty of Care) Regulations, 1991 with regard to wastes returned by BAS from Antarctica for disposal in the UK.

2.3.3 The Hazardous Waste Regulations, 2005

Hazardous wastes are amongst the most harmful and difficult wastes to deal with. The Hazardous Waste Regulations, 2005, control the licensing, transfer and disposal of such waste in the UK. The main elements of these regulations which BAS must comply with are:

- Classification of our wastes as hazardous, where appropriate
- Correct separation and storage of hazardous waste
- Use of authorised businesses to collect, recycle or dispose of our hazardous waste
- Preparation of consignment notes for every movement of hazardous waste in the UK.
- Keep records for 3 years of all produced and stored waste.

The Head of Environment Office is responsible for compliance with the Hazardous Waste Regulations that apply to hazardous waste being returned by BAS from Antarctica and disposed of in the UK.

2.3.4 The Transfrontier Shipment of Waste Regulations (2007) and the Basel Convention (1992)

The Transfrontier Shipment of Waste Regulations (TFS) puts in place controls on the import and export of waste to and from the UK in order to prevent waste movements that could damage human health and the environment. The TFS Regulations are in line with the International Basel Convention to which the UK is a signatory and which puts in place controls for the cross-boundary movements of amber list waste.

The TFS and Basel Convention do not apply to wastes produced by vessels and in BAS' case only apply to wastes produced in Antarctica and South Georgia which are removed from the territories for disposal and recovery.

The main elements of these regulations which BAS must comply with are:

- Classification of our wastes as 'amber list' e.g. hazardous waste and 'green list' e.g. non-hazardous and destined for recovery.
- Preparation of appropriate TFS and Basel Convention paperwork

- Notify and seek permission from all countries through which BAS waste travels priot to the waste leaving our stations such as:
  - Transit countries - all countries through which BAS waste transits. For example where the BAS vessel enters the port of another country with station waste onboard this is consdered transit.
  - Import countries – all countries that BAS imports waste for disposal or recovery (e.g. FI and England)

The Environment Office is responsible for compliance with the TFS Regulations and the Basel Convention and is supported by BAS Operations, Supply Chain Logistics and the information provided by stations through the waste Bills of Lading.

Section 3

PROCEDURES & RESPONSIBILITIES

3 PROCEDURES AND RESPONSIBILITIES

3.1 BAS Waste Management Procedures

Waste management procedures vary slightly at each BAS station. However, the waste hierarchy (2.3.1) should be applied wherever possible to ensure that the best environmental option for waste has been sought.

3.1.1 Reduce

In the first instance all efforts should be made to minimise waste. All BAS staff should consider the following points**:**

- Remove excess packaging from personal effects and scientific equipment before leaving for Antarctica.
- When ordering equipment, consider the actual quantities required. Do not over order.
- Use rechargeable batteries for personal electronic items (e.g. stereos, shavers etc.) and for scientific purposes where possible.
- Reuse scrap paper.
- Break down cardboard boxes and reuse as packaging material.
- Open wooden crates and boxes with care so that they can be reused.
- Reuse timber and scrap metals where possible.

3.1.2 Reuse

Where possible, items should be reused on station. Certain items which are reusable and are in good working condition but are surplus to the owner's requirement should be offered to other BAS stations and the ship in the first instance.

This includes usable construction materials, electrical equipment and surplus furniture. This does not include food.

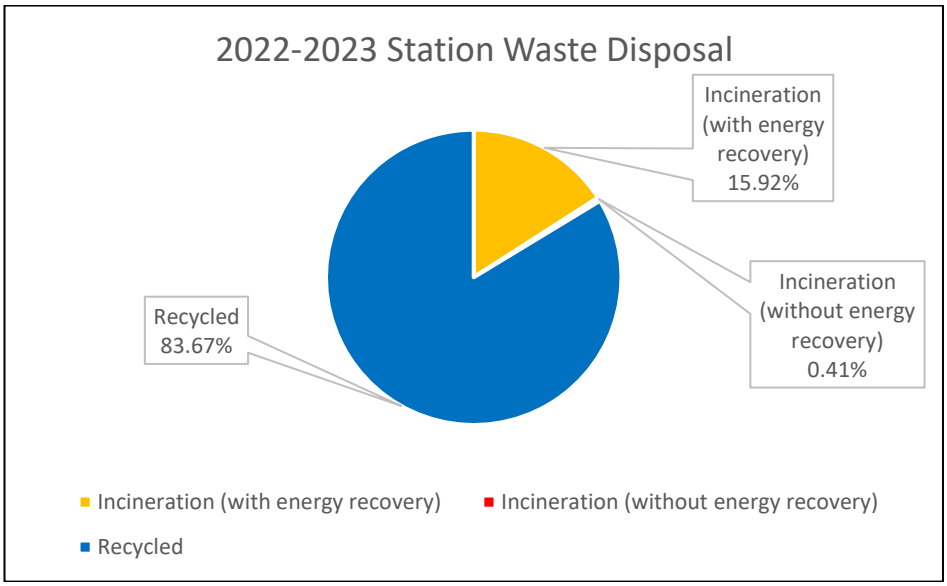
The goods must have marketable value and the budget holder responsible for the purchase of those goods must approve the resale or reuse in line with the BAS Goods and Equipment End of Required Life Disposal Policy.

Please contact the FI Logistics Co-ordinator prior to consigning resale or reuse items to the FI so that they can confirm whether there is a resale or reuse market available. For further advice, contact the Logistics Co-ordinator for the FI and/or the BAS Finance Team.

Items which are broken such as fridges and freezers should be sent back to the UK (as hazardous WEEE waste) for appropriate disposal.

3.1.3 Recycle

Approximately 84% of BAS waste generated on station is currently recycled and approximately 16% is incinerated with energy recovery (data from 2022-23 season). To maintain this recycling and recovery rate it is essential that waste is segregated at source. Each station is provided with Flexible Intermediate Bulk Bags (FIBCs) to enable recyclables to be stored separately. These include paper, card, cans, tetrapaks, plastics, glass, textiles and ropes. BAS Environment Office produces annual Station Waste statistics report that are shared with stations. Please contact your Station Leader or Environment Office to review the latest copy.



3.1.4 Disposal/Recovery

Whilst each BAS station has slightly different waste management procedures dependent on the specific waste arising, waste disposal or recovery can generally be categorised as per Table 1 below. For more specific details please see Sections 6, 7 and 8.

Table 1. Disposal Options

Waste Type	Specific Items	Disposal or Recovery Location
Recyclables	Segregated Paper, Card, Aluminium & Steel Cans, Glass (all stations apart from KEP), wood.	UK for recycling
Recyclables	Scrap metal	UK for recycling
Recyclables	Segregated Tetra-paks, Plastic, Textiles, Rope	UK for Incineration with Energy Recovery
Hazardous	Segregated Lab Chemicals, WEEE, Anti-freeze, Batteries, Paints, Glue, Photo chemicals, Radioactive waste, Medical sharps.	UK for appropriate disposal by licensed contractor (which may include incineration with or without energy recovery or recycling options)
Fuels	Any waste fuels	UK for recycling

Lubricants & engine oils / Cooking oil	Any waste oils and lubricants including cooking oil	UK for recycling
General/mixed Waste	Items which cannot be reused or recycled and are non- hazardous	UK for incineration with energy recovery
Reusable items	▪ Items in good working order no longer required on station ▪ Good condition wood for resale	FI for reuse or resale (always contact the FI Logistics coordinator prior to consigning reuse items)
Reusable items	Empty AVTUR and MGO drums	▪ Reused on station for collection of wastes as detailed in the WMH OR ▪ Consigned to Stanley Services in the FI for reuse
Biodegradable	Food, sewage sludge, human field waste	Dealt with on station either by incineration or local disposal

Under no circumstances should waste be consigned to Cambridge.
BAS does not have a licence to receive imported waste at Cambridge. Waste to be sent to the UK should be consigned to the Environmental Manager – "UK" (not Cambridge).

3.2 BAS Waste Management Responsibilities

The BAS Environment Office develops the Environmental and Waste Management Policy in conjunction with a range of BAS staff. This is largely via working groups involved in the planning of BAS activities in Antarctica but may also be guided by feedback from individual staff members. Whilst certain roles have specific waste management responsibilities, all BAS staff are expected to be proactive when dealing with waste.

3.2.1 Staff Responsibilities

- All Staff
  All staff have a responsibility to ensure that they dispose of waste in the most appropriate manner when working at a BAS station, ship or in the field. This will involve minimising waste where possible, segregating items and ensuring waste is clearly marked for identification prior to disposal.

- Ship's Master
  On board the BAS ship the Master has overall responsibility for ensuring that the waste management procedures comply with the Antarctic Treaty Regulations, MARPOL, Polar Code and the procedures outlined in this handbook.

- Chief Officers (CO)
  COs are responsible for consigning ship waste appropriately and maintaining the garbage disposal record book as required by MARPOL. The Chief Officer of the ship also receives the BOL for all station waste **prior** to the waste being loaded. The CO should also notify the FI logistics Co-ordinator of any waste consignments (only empty good condition drums for Stanley Service or crushed glass from KEP) or items for re-sale or charity which may get offloaded in the FI.

- Manager Supply Chain Logistics (SCL)
  Co-ordination of all shipping documentation relating to waste is the responsibility of the Manager of the SCL. The Manager of the SCL also receives the BOLs for all waste **prior** to the waste being loaded on the ship.

- Supply Chain Logistics (SCL) Team
  The SCL team advises on the correct packaging and transportation requirements of all hazardous materials including waste.

- Station Leaders
  Station Leaders have overall responsibility for waste management on station. They must ensure that all staff are appropriately briefed on waste procedures whilst living on station and that resources are available for waste to be collected and stored appropriately. The Station Leader is responsible for ensuring that the correct shipping documentation has been completed for all waste consignments. The Station Leader must email copies of all waste BOLs to the Manager of Supply Chain Logistics, the Chief Officer and to the BAS Environmental Manager prior to loading the ship. This is a requirement at every ship call where waste is loaded onto the ship. This is particularly important for last call when BOLs must be submitted to SCL, the Chief Officer and Environment Office at least one week prior to loading onto the ship.

- Station General Assistants (SGAs) and/or Station Leaders
  At Halley and Rothera the SGAs are responsible for the day-to-day operation of the station waste management system. This will involve segregation, crushing, compaction, storage and packaging of waste as well as the operation of incinerators and other waste management equipment. However, SGAs are not responsible for clearing up other people's mess. SGAs must follow the guidance in this Handbook, the Waste Management Risk Assessment and Standard Operating Procedures.

- Doctors
  Doctors are responsible for the correct storage and packaging of all clinical/medicl wastes. During the winter the doctors take on the same waste management responsibilities that the Station GAs undertake during the summer season.

- Domestic Assistants and staff on Gash duty
  At Halley and Rothera most staff will be included on a 'gash' duty rotation at some point during a station visit. This will involve among other tasks, emptying rubbish bins and

segregating the waste into the appropriate storage locations managed by the Station GAs.

- Field Operations Manager
  All field parties from Rothera will be required to segregate waste and return it to station. This includes human waste. The Field Operations Manager is responsible for ensuring that all field parties are issued with the appropriate field toilets and waste segregation bags.

- Field Guides (FGs)
  Waste management in the field is the responsibility of all team members. Field Guides should ensure however that the appropriate bags and containers have been supplied and that effective segregation of waste is being undertaken. On return from the field the FGs at Rothera are responsible for delivering waste bags and honey pots used for human waste to the Interim Waste Handling Facility (IWHF) for the Station GAs to deal with.

- Principle Scientists
  Principle Scientists are responsible for completing BOLs for hazardous laboratory waste or scientific hazardous waste generated in the field and ensuring they have the appropriate UN waste packaging for their hazardous scientific waste. These should be forwarded to the Station Leader prior to the waste being loaded on the ship. For scientific hazardous waste generated on the ship the Principle Scientist should liaise with the Chief Officer.

- Mechanics
  Mechanics are responsible for segregating, packaging and labelling garage wastes such as oils and fuels, fuel contaminated absorbents, oily rags, oil filters and antifreeze. Mechanics shall ensure that the aforementioned waste types are collected in separate, good condition drums to avoid any cross-contamination.

- Environment Office (Senior Environmental and Environmental Manager)
  The Environment Office is responsible for ensuring that the waste consigned to the UK is received, handled and disposed of appropriately by a registered waste contractor. They ensure that BAS notifies all competent authorities (including the Environment Agency for import of waste to the UK) regarding the Transboundary movements of our wastes in lines with the legislation detailed in section 2.3.4. The Environmental Manager, produces annual waste statistics report, revises and issues the Waste Management Handbook each year and advises BAS staff on day-to-day waste management issues.

- FI Logistics Co-ordinator
  The FI Logistics Co-ordinator ensures that the waste consigned to the FI is received as appropriate. They also co-ordinate the reuse or resale of good quality second hand items as consigned from stations.

- Bonner Lab Manager
  The packaging, labelling and completion of shipping documentation (section 4.3) for hazardous waste generated in the Bonner Lab is co-ordinated by the Bonner Lab Manager.

Section 4

PACKING, LABELLING, TRANSFER & SHIPPING DOCUMENTATION

4 PACKING, LABELLING, TRANSFER & SHIPPING DOCUMENTATION

The following guidance applies to all station waste and to ship produced waste where that waste is being consigned to the Environmental Manager in the UK. Where ship produced waste is being discharged at port facilities then this guidance is not exclusively applicable. It is essential that waste materials are securely packaged, are clearly marked and have the appropriate documentation attached. The following procedures should be followed to ensure consignments are safe for handling and are transported according to legal requirements.

4.1 PACKING

4.1.1 What not to use!

A variety of re-usable boxes are employed for transporting cargo to BAS stations. These should be opened and handled carefully so that they can be re-used for **cargo**. These include collapsible plastic 'unibox' boxes, aluminium 'zarges' boxes, other collapsible boxes, blue food boxes and BASMU medical boxes. They should **not** be used for packing waste under any circumstances.

4.1.2 Containers

BAS uses a variety of containers for packing waste as listed in the Table below. Please see Sections 6, 7 and 8 for advice on packing and labelling specific waste materials. All containers used for transporting waste must be in good condition and appropriate to the contents. The Chief Officer will refuse to load leaking, damaged or suspect containers.

Table 2. Waste Containers

Waste Category	Container	Example of packaging container	Waste Types
Recyclables and General/Mixed Waste	Flexible Intermediate Bulk Bags (FIBCs) - **With green recycling logo**		Segregated dry recyclable waste (e.g., paper, card, plastics, cans, tetra-pak)
	Flexible Intermediate Bulk Bags (FIBCs) - **With orange 'FI' (old type) or blue 'UK general' (new type) lettering**		General/mixed wastes (non-recyclable) **consigned to the UK**
	205 litre AVTUR drums (see drum de-heading SOP)		Glass or scrap metal
	Pallets/Wooden cases (reused cargo boxes or made up on station)		Wood waste and scrap metal
	Skips, reusable (12-yard builders skips)		Scrap Metal (for Rothera only) – skips will be discontinued in future due to limited space on SDA

	JJ or L Type reusable orang bin		Scrap metal (for KEP only) – these will be discontinued in future. 3 x JJ (1090x980x690mm) and 1 x L (1330x1020x1000mm) bins in use currently. They will be used until suitable replacement found.
FIBCs should not be used for general cargo or hazardous or non-regulated wastes!			
Non-regulated wastes	New closed top UN 205L drums or the original containers		Segregated liquid wastes such as: cooking oil, antifreeze, lubes, engine oils. Package either in original container or segregated in new/clean closed top 205L drum.
	205 litre AVTUR drums that have been de-headed and cleaned for re-use for non-regulated waste (see drum de-heading SOP)		Segregated non-regulated wastes such as: ash, oily cans, oily plastics, sawdust, unconsumed edibles
	Wooden boxes and crates, reused cargo boxes or made up on station (plastic lined)		Fluorescent light bulbs & WEEE

	Bio-bins (5L and 30L) – issued to island stations only as liner packaging – must be overpacked in griff bins.		Sanitary waste. Please note that bio-bins must be overpacked into a plastic Griff bin for consignment to the UK (this is a requirement of the UK contractor, also remove any UN codes from all packaging)
Hazardous Waste - Regulated Waste	Empty 205 litre AVTUR drums		Waste AVTUR (make use of empty AVTUR drums for waste AVTUR)
	Empty Petrol drums	As above	Waste petrol (make use of empty petrol drums for waste Petrol)
	New open top UN 205L drums *(Open top drums must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane)*		Segregated wastes such as: oil filters, oily absorbents (these drums are UN rated with removable lids)
	UN approved boxes 4GV fibreboard carton		Batteries, aerosols, empty paint containers etc.

	UN approved 4DV plywood cases		As above but prioritise for batteries
	UN Approved 25 litre, 30 litre, 60 litre metal and plastic drums		Waste Chemicals
	Yellow Griff Bins		Clinical Waste, food waste, food contaminated packaging
	Sharps bin		Sharps

4.1.3 Skips

Rothera currently uses 12 yard builders skips for bulky wastes such as scrap metal. Skips can be stored in the FI (if required) and should be ordered by the Station Leaders through the FI Logistics Co-ordinator prior to the summer season. However, skips are in the process of being discontinued because the SDA does not have the space to transport them. Rothera can continue using skips for scrap metal until an alternative packaging solution is found.

4.1.4 Packaging Materials

Packaging materials that have been sent in containers carrying items to stations should be reused as much as possible. For example:

- Vermiculite (for all liquids);
- Shredded paper;
- Bubble wrap; and
- Cardboard.

4.1.5 Packing Groups and UN Approved Packaging

All enquiries for general hazardous materials packaging and transportation should be directed to Supply Chain Logistics (SCL) cargo@bas.ac.uk at BAS, Cambridge.

All hazardous waste must be packed based on their hazard class (see Appendix 5) and on their correct packing group. The packing groups are based on the degree of danger associated with the material. Reference the *International Maritime Dangerous Goods* (IMDG) Code using the provided 'Hazcheck' software for additional advice. Only staff that have received the IMDG Code/Dangerous Goods training should package hazardous wastes.

Packing Group I	Materials are highly dangerous
Packing Group II	Materials are of medium danger
Packing Group III	Materials are of low danger

UN approved packaging guarantees the packaging has been tested to ensure that the contents will not leak when under pressure, in a stack or when dropped. All UN approved packaging bears the UN mark of approval.

BAS uses UN approved boxes which are either 4GV (fibreboard cartons) or 4DV (plywood cases) and tested to Packing Group X. 4GV/X or 4DV/X boxes is the highest rating of packing groups which means that they are suitable for all

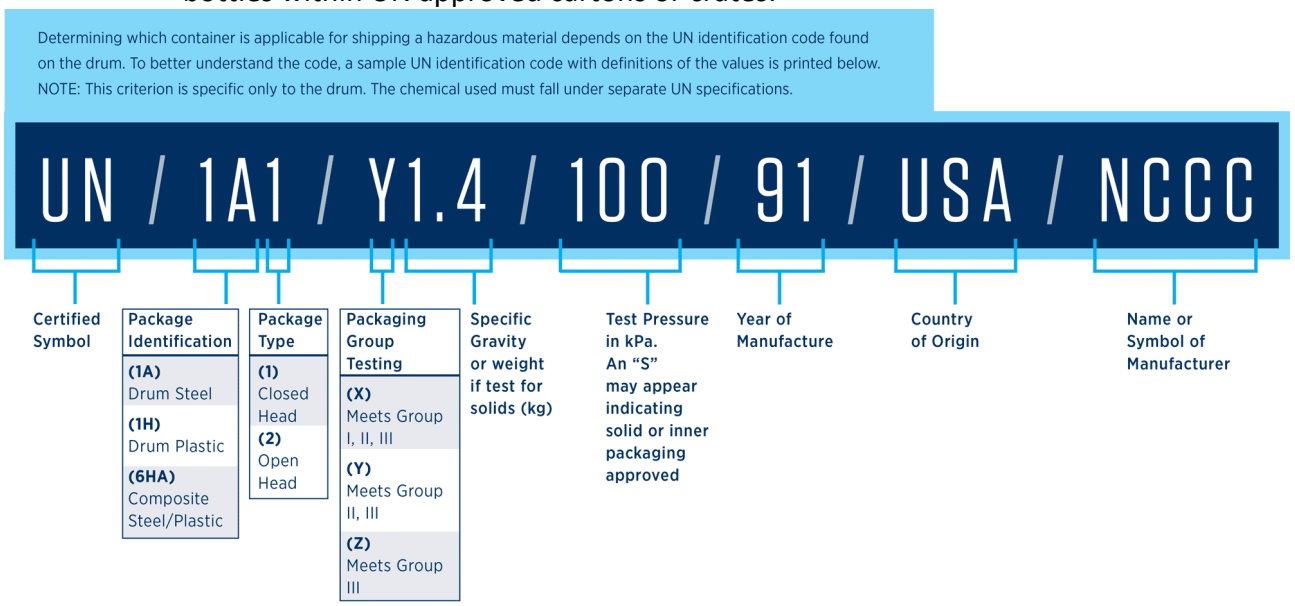
dangerous goods regardless of whether the hazardous item is Packing Group I, II or III.

4.1.6 Packing Hazardous Waste

Liquids

Hazardous liquid wastes are generally transported in UN approved 25, 30 or 60 litre chemical drums. Check the drums for leaks and that the seals on caps are intact. Be particularly vigilant when using dented or rust-marked drums. Also ensure that the UN drum meets the packing group specification of the hazardous liquid (refer to image below for a description of the UN drum specification).

Small bottles of hazardous liquids are sometimes transported in their original bottles within UN approved cartons or crates.



Solids

UN approved fibreboard cartons or plywood crates (4GV or 4DV) should be used to return solid hazardous waste (or small bottles containing hazardous liquids).

All contents must be sealed in heavy gauge plastic liners and packed with sufficient vermiculite to protect the contents and absorb any spillage. Do not overload boxes or cases beyond their 4GV or 4DV specified weight limit (as indicated on the packaging)

A copy of the Bill of Lading (BOL), sealed in a plastic wallet must be securely taped to the outside of any container containing hazardous wastes or non-regulated wastes (4.3.5). The following should be considered when packing **hazardous** or non-regulated waste:

- previous hazardous cargo labels and markings must be removed or painted over (not just crossed out);
- do not paint over container dimensions or UN marking (shown above);
- all sides (except the bottom) of the package must be labelled;
- all sides (except the bottom) must have the appropriate hazard class labels; and
- top and upper part of containers should be painted yellow.

4.1.7 Manual handling

All waste is handled several times over, from when it is first disposed of and packaged on station, to being loaded onto BAS vessels in the Antarctic, offloaded in the UK, loaded onto waste contractor lorries and then offloaded at its final disposal point.

It is essential therefore to pack waste appropriately to avoid injury to those handling it. The following points should be considered by anyone involved in packing waste:

- FIBCs should be checked prior to being hoisted by crane onto BAS vessels to ensure that they do not contain sharp objects which may injure handlers or tear bags;
- Boxes and crates must be in good condition and packed within the specified SCL weight limits for each station;
- Waste loaded onto pallets should be carefully packed to ensure there are no sharp edges and that protruding nails or screws are removed;
- Old fuel drums should be fully drained and wiped with absorbents to ensure no vapours or liquid remains;
- Drums should be in sound condition and part filled;
- Drums should not be over-filled as they become too heavy for people to easily handle;

- When storing liquids in drums, space should be allowed for expansion at warmer temperatures; and
- Drums that have been fitted with a lid and ring clamp must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane.

4.1.8 Storage

It is extremely important that waste ready for shipment is stored appropriately i.e. according to the hazard it may create. This could be inside the designated waste store, in an ISO container, or outside on the dockside. See Section 6, 7 and 8 for specific details on individual waste materials.

If waste is stored outside, it must be secured in case of strong winds (in particular empty drums), and properly sealed to prevent ingress of water.

Hazardous wastes must be kept in the designated storage facilities on station. **See Appendix 5 for advice on the IMDG Code Precedence of Hazards**. Drums should always be stored upright in designated waste stores on the stations and on the ship.

N.B. Lithium Batteries are a FIRE HAZARD when wet and must be kept dry at all times!

4.2 LABELLING

Each consignment of waste must have a BAS case number and must be appropriately colour coded and clearly marked with the type of waste it contains. See Section 4.3 for further details.

For hazardous waste the cases must also be marked on the outside with the following information:

- Proper shipping name (PSN)
- UN hazard class label(s)
- Flashpoint (if applicable)
- UN number

This information can be found listed in the IMDG Code and accessed through the 'Hazcheck' software tools used on BAS stations. As an example, a drum containing waste methanol/water mixture would be recorded as:

- ***waste methanol mixture (methyl alcohol) / water >70%***
- ***hazard class 3***
- ***flashpoint 20°C***
- ***UN No 1230***

If the waste has a primary hazard and a subsidiary risk then both hazard labels must be attached onto the package.

If the waste is also a marine pollutant (reference the Material Safety Data Sheet) then a 'Marine Pollutant' label must be attached.

The *Approved Carriage List*: Information Approved for the Classification, Packaging and Labelling of Dangerous Goods for Carriage by Road and Rail (Health and Safety Executive, 1994), available on stations and ship, contains a comprehensive listing of chemicals and hazardous substances.

4.2.1 **Case Numbers and Colour Coding**

Case numbers are usually assigned by the Station Leader or Chief Officer. They are required to produce a manifest with sequential case numbers based on the case numbering advice provided by SCL each season. These numbers must be **unique** and not repeated within a single season regardless of the number of waste collections by the SDA. The case numbers should be marked on each side of the consignment for ease of handling when loading and offloading the waste. Case numbers are required for all waste and other cargo that leaves station.

All containers carrying waste should also be colour coded (a few exceptions apply) to identify it as waste and so that it is easily distinguishable from cargo. The colour coding also reflects the final disposal or recovery location that will be used by the waste contractor in the UK. For solid containers this will involve painting the tops and upper part of the sides of the unit. FIBCs are generally ready supplied with a colour code in the form of a green recycling logo or with blue 'UK General Waste' lettering on the side. **All old labels and hazard markings for any previous contents must be removed or painted over.**

The following Table summarises the Case numbers and colour coding relevant to waste.

Table 3. Waste Case Numbers

Case Number	Colour Coding	Type of Waste	Destination
8001	None required	**From KEP only:** ▪ Crushed glass ▪ Food waste Transported on Pharos as agreed by BAS Environment Office and GSGSSI. BAS BOL and Pharos cargo booking note required.	▪ FI Public Works Department – glass used as road aggregate. ▪ FI Meat Company (FIMCo) – KEP food waste incinerated
8001/8901	None required	From islands: ▪ Controlled drugs	Return to SDA for controlled drug stock management
8901	None required	Empty, good condition drums for re-use by Stanley Services	FI (Stanley Services

9001	Green OR Blue	▪ Segregated recyclables (Green) ▪ General/Mixed waste (Blue) *Notes:* *FIBCs are issued pre-stencilled and therefore do not require additional colour coding.*	UK
9101	Yellow	Non-regulated/non-hazardous wastes (excluding recyclables as detailed above and hazardous as detailed below)	UK
9901	Yellow	Hazardous waste (e.g. UN number)	UK
The following are NOT classed as waste and should therefore be given appropriate cargo case numbers prior to consignment. They do not require colour coding: ▪ Reuse items (Interbase cargo for reuse) ▪ Reuse items for charity such as good condition clothing, books, DVDs. (Interbase cargo for charity) ▪ Resale items – good condition items with a resale value			

4.2.2 Hazardous Wastes Classification

Hazardous wastes must be carried in accordance with the *International Maritime Dangerous Goods (IMDG) Code*. This covers the carriage of dangerous goods at sea. It is the Chief Officer's responsibility to ensure that the regulations are followed onboard ship. Hazardous materials must be separated into nine different general classes based on the United Nations (UN) hazard classification. The general classes and subclasses are as follows:

Table 4. Hazard Classification

Hazard Class	Class Description
Class 1	Explosive
Class 2.1	Flammable gas
Class 2.2	Compressed gas (non-flammable, non-toxic)
Class 2.3	Toxic gas
Class 3	Flammable liquid *
Class 4.1	Flammable solid
Class 4.2	Spontaneously combustible
Class 4.3	Dangerous when wet
Class 5.1	Oxidising agent
Class 5.2	Organic peroxide
Class 6.1	Toxic
Class 6.2	Infectious substance
Class 7	Radioactive material
Class 8	Corrosive
Class 9	Miscellaneous substance
* Packing Groups for flammable liquid:	

I	Flammable liquids – flash point below -18°C
II	Flammable liquids – flash point -18°C up to +22°C
III	Flammable liquids – flash point +23°C up to +61°C

All hazardous cargo shipped into BAS stations are identified by one of the UN hazard classes. Check the Material Safety Data Sheet (MSDS) for information on how to pack and transport the cargo appropriately and submit a copy of the MSDS along with the hazardous BOL to SCL.

If chemicals of the same class are mixed a list should be attached to the container identifying the approximate volumes of each different chemical it contains.

NEVER mix non-compatible substances with different UN hazard classes. This is highly dangerous.

SPECIAL ATTENTION MUST BE GIVEN TO ENSURE THAT OXIDISING AGENTS (HAZARD CLASS 5.1) ARE KEPT SEPARATE FROM OTHER CHEMICALS.

Acids and Alkalis (hazard class 8) are not to be packed in the same outer packaging or stowed in the same container. They must be clearly labelled in separate containers.

4.3 SHIPPING DOCUMENTATION

4.3.1 Consignment for Transport on BAS vessel

Waste produced at BAS stations can ONLY be consigned for transport on the BAS vessel. The ONLY EXCEPTION to this currently is crushed glass from KEP which can be consigned to the FI Public Works Department and food waste from KEP which can be consigned to the FI Meat Company (FIMCo) – both are consigned on the GSGSSI Fisheries Patrol Vessel. If there is an operational need to consign wastes on any other ship, then the BAS Environment Office must be consulted with in order to make the final decision.
All consignments of waste must be accompanied by an accurate Bill of Lading (BOL) as detailed below – this also applies to waste from KEP transported to the FI by the GSGSSI Fisheries Patrol vessel.

4.3.2 What is a Bill of Lading (BOL)?

All waste sent out from BAS research stations and ship must be accompanied by an accurate Bill of Lading (BOL). BOLs are the principal documentation for waste removed from Antarctica. They are primarily used to ensure goods are loaded and transported appropriately and discharged in the correct location.

In addition, the BOLs for waste are used to meet legislation requirements for transboundary movements of waste, agree waste disposal contracts, verifying disposal invoices, auditing the BAS waste management system, and monitoring

the quantity of waste that is produced by BAS in Antarctica. **Waste data has to be reported to the Antarctic Treaty Parties, HM Treasury, NERC and the BAS Board.** It is therefore essential that the information provided on the BOL is complete, accurate and dated.

BOLs must be prepared by the person who is responsible for the waste, in conjunction with the Station Leader on the stations or the Chief Officer on the ship.

BOLs for major construction activity need to specify which project the waste arisings originated from so that these records can be attributed to the correct project.

Each station has been provided with a pallet truck which has built in scales. Standard weights and volumes for use on BOLs are shown below. These should be used **only** in the absence of weighing or measuring facilities. **It is important that the weights and volumes are as accurate as possible.**

Table 5. Weights and Volumes

Waste	Volume (m^3)	Weight (kg)
205 litre drum – Empty	0.3	20
205 litre drum - Filled e.g. fuel, seawater, glass (do not fill to the top – part fill only)	0.3	185
205 litre drum – Crushed	0.065	20
25 litre drum – Filled e.g. chemicals (do not fill to the top – part fill only)	0.04	30
ISO-container empty	25.0	As per tare plate on container
ISO-container full (crushed drums)	25.0	14,500
Skips	6	Dependent on contents
Small FIBC	0.5 (max)	Dependent on contents
Large FIBC	0.75 (max)	Dependent on contents

4.3.3 Completing a BOL

Examples of completed BOLs for both non-hazardous waste and hazardous wastes are shown at the end of this section.

The following information is required on all waste BOLs:

- Case number(new number for each individual item)
- Date
- Consignor
- Consignee
- Station/vessel generating waste

- Vessel used for transportation of waste
- Special stowage instructions (if applicable)
- Full description of contents
- Quantity and type of package
- Package dimensions (cm)
- Weight (kg)
- Volume (m^3) per item
- Estimated value (if applicable)
- Commodity code (see Appendix 7: Commodity Codes for BAS waste imports)

Under no circumstance should waste be consigned to Cambridge. BAS does not have a licence to receive imported waste at Cambridge.
Waste to be sent to the UK should be consigned to the Environmental Manager – "UK" (not Cambridge).

4.3.3.1. Completing a BOL for hazardous wastes

A hazardous BOL must be prepared for each individual case/drum of hazardous waste. The Material Safety Data Sheet (SDS) for each hazardous waste should also be submitted with the hazardous BOL.

The information listed in Section 4.3.3 must be included on a hazardous waste BOL as well as the additional following information:

- UN No.
- Flash Point
- Marine Shipping Name
- Marine Pollutant
- Packing Group
- Class
- Sub Class
- No Inner Packs
- Nett Weight Per Pack
- Nett Litre Per Pack
- Total Nett
- Total Litres
- Gross Weight
- Inner Packaging (refers to the inner packaging that contains the hazard so this could be e.g. a glass bottle, plastic container or metal or it could be battery casing containing the hazard. A UN drum containing liquid HCL does not have inner packaging)
- Outer Packaging (refers to the UN container e.g. UN 4G Fibreboard carton or UN 25L metal drum)

There are some situations where a waste is hazardous by nature but is not considered dangerous for transport and sometimes vice versa a non-hazardous item is considered dangerous for transport. In these situations a hazardous BOL must be prepared. Always refer to the SDS which will clarify whether a material is hazardous for transport as well as hazardous in nature. If in doubt, use a hazardous BOL for non-regulated wastes to ensure all details is included in the BOL.

Please see the example BOLs for hazardous waste in Sections 4.3.5, 4.3.6 and 4.3.7.

All enquiries for general hazardous materials packaging and transportation should be directed to SCL at cargo@bas.ac.uk at BAS, Cambridge.

4.3.4 Submitting a BOL

Before loading waste onto a ship, the Station Leader must e-mail copies of the relevant waste BOLs to the Manager of the Supply Chain Logistics (SCL) at BAS, Cambridge, to the Chief Officer of the BAS vessel taking the waste and the BAS Environmental Manager. This is a requirement at every ship call where waste is loaded onto the ship. This is particularly important for last call when BOLs must be at least one week prior to loading onto the ship.

The Chief Officer must notify the BAS FI Logistics Co-ordinator of details of the empty fuel drums (for reuse) to the Falkland Islands. Wherever practicable, the FI Logistics Co-ordinator must inform Stanley Services of the numbers of drums to be offloaded t at least three working days prior to collection and haulage in the FI.

The Manager of the SCL ensures that copies of the waste BOLS being consigned to the UK are provided to the Environmental Manager in the form of a waste manifest. The Environmental Manager then ensures that the required transfrontier shipment notification is submitted and informs the contractor of the waste to be offloaded in the UK.

4.3.5 Example BOL for non-hazardous wastes

BILL OF LADING - NORTHBOUND

BRITISH ANTARCTIC SURVEY			**CASE NO**	**R-C-17-9029**		
High Cross, Madingley Road			**DESTINATION**	**UK**		
Cambridge CB3 OET			**DIVISION**	**Environment**		
Tel: Cambridge 01223 221400			**VESSEL**	**Shackleton**		
Fax: Cambridge 01223 362616			**CASE TYPE**	**FIBC**		
STATION:		**Rothera**	**DIMENSIONS CMS:**	**L: 90 W: 90 H: 110**		**CMS**
SECTION REF:			**CUBE**	**2.67**		**CU M**
CONSIGNEE:		**Environment Manager**	**WEIGHT**	**375**		**KGS**
CONSIGNOR:		**RBGA**	**DATE**	**26/03/2017**		
THIS FORM IS FOR NON-HAZARDOUS CARGO ONLY			Please indicate of goods require special stowage			YES
			If yes specify details with description of goods			NO

Order number	Item number	Detailed description of ALL goods including Haz Class, UN No's, if applicable. A safety data sheet for any hazardous items must be appended.	Part Number	Quantity	Line cost
		BY SUBMISSION OF THIS BILL OF LADING AND THE GOODS DESCRIBED THEREIN; THE CONSIGNOR CONFIRMS THIS IS A TRUE AND FULL DECLARATION OF CONTENTS AND THAT ANY INNER OR OUTER PACKAGING AND ALL CONTENTS CONFORM TO THE REQUIREMENTS OF THE BAS BIOSECURITY HANDBOOK.			
		Cans for recycling		*1*	
VALUE:	**£0**	**TOTAL WEIGHT / CUBE:**		**375**	**2.67**

4.3.6 Example BOL for hazardous waste (metal UN drum)

BILL OF LADING - NORTHBOUND HAZARDOUS

BRITISH ANTARCTIC SURVEY			**CASE NO**	**R/C/17/9914**		
High Cross, Madingley Road			**DESTINATION**	**UK**		
Cambridge CB3 OET			**DIVISION**	**Environment**		
Tel: Cambridge 01223 221400			**VESSEL**	**Shackleton**		
Fax: Cambridge 01223 362616			**CASE TYPE**	**UN 25L Metal Drum**		
STATION:		**Rothera**	**DIMENSIONS CMS:**	**L: 26 W: 26 D: 52**		**CMS**
SECTION REF:			**CUBE**	**0.035**		**CU M**
CONSIGNEE:		**Environmental Manager**	**WEIGHT**	**21**		**KGS**
CONSIGNOR:		**Ali Massey**	**DATE**	**24/03/2017**		
PLEASE COMPLETE IN FULL HAZARD DETAILS BELOW			Please indicate of goods require special stowage			YES
			If yes specify details with description of goods			NO
Order number	Item number	Detailed description of ALL goods including Haz Class, UN No's, if applicable. A safety data sheet for any hazardous items must be appended.		Part Number	Quantity	Line cost

BY SUBMISSION OF THIS BILL OF LADING AND THE GOODS DESCRIBED THEREIN; THE CONSIGNOR CONFIRMS THIS IS A TRUE AND FULL DECLARATION OF CONTENTS AND THAT ANY INNER OR OUTER PACKAGING AND ALL CONTENTS CONFORM TO THE REQUIREMENTS OF THE BAS BIOSECURITY HANDBOOK.

HAZARDOUS WASTE

	1	***25L UN Plastic Lined Metal Drum containing 20 litres acid solution:***			*1*	*1*
		80 % water				
		20% Hydrochloric acid				

INFORMATION REQUIRED TO CONFORM TO IMDG/IATA/ADR REGULATIONS

UN NO:	*1789*	
FLASH POINT °c	*n/a*	
PROPER SHIPPING NAME:	*HYDROCHLORIC ACID*	
MARINE POLLUTANT:	*No*	
PACKING GROUP:	*II*	
CLASS:	*8*	
SUB CLASS:	*n/a*	
NO INNER PACKS:	*1*	
NETT WEIGHT PER PACK:	*1.5*	
NETT LITRE PER PACK:	*1.5*	
TOTAL NETT:	*1.5*	
TOTAL LITRES:	*1.5*	
GROSS WEIGHT:	*21*	
INNER PACKAGING:	*n/a*	
OUTER PACKAGING:	*UN 25L Metal Drum*	

VALUE:	**£1**	**TOTAL WEIGHT / CUBE:**	**21**	**0.04**

4.3.7 Example of a BOL for hazardous waste (UN Carton)

BILL OF LADING - NORTHBOUND HAZARDOUS

BRITISH ANTARCTIC SURVEY			**CASE NO**	**R/C/17/9942**		
High Cross, Madingley Road			**DESTINATION**	**UK**		
Cambridge CB3 OET			**DIVISION**	**Waste**		
Tel: Cambridge 01223 221400			**VESSEL**	**EN**		
Fax: Cambridge 01223 362616			**CASE TYPE**	**UN 4G Fibreboard carton**		
STATION:		**Rothera**	**DIMENSIONS CMS:**	**L: 58 W: 40 H: 47**		**CMS**
SECTION REF:			**CUBE**	**0.11**		**CU M**
CONSIGNEE:		**Environmental Manager UK**	**WEIGHT**	**15.5**		**KGS**
CONSIGNOR:		**Base GA**	**DATE**	**17/03/2017**		
PLEASE COMPLETE IN FULL HAZARD DETAILS BELOW			Please indicate of goods require special stowage			YES
			If yes specify details with description of goods			NO

Order number	Item number	Detailed description of ALL goods including Haz Class, UN No's, if applicable. A safety data sheet for any hazardous items must be appended.	Part Number	Quantity	Line cost
BY SUBMISSION OF THIS BILL OF LADING AND THE GOODS DESCRIBED THEREIN; THE CONSIGNOR CONFIRMS THIS IS A TRUE AND FULL DECLARATION OF CONTENTS AND THAT ANY INNER OR OUTER PACKAGING AND ALL CONTENTS CONFORM TO THE REQUIREMENTS OF THE BAS BIOSECURITY HANDBOOK.					
		HAZARDOUS WASTE			
		Waste Aerosols, assorted, box 1		*50*	
		INFORMATION REQUIRED TO CONFORM TO IMDG/IATA/ADR REGULATIONS			
		UN NO:	*1950*		
		FLASH POINT °c	*n/a*		
		PROPER SHIPPING NAME:	*AEROSOLS*		
		MARINE POLLUTANT:	*No*		
		PACKING GROUP:			
		CLASS:	*2.1*		
		SUB CLASS:			
		NO INNER PACKS:	*50*		
		NETT WEIGHT PER PACK:	*0.25*		
		NETT LITRE PER PACK:	*0.2*		
		TOTAL NETT:	*12.5*		
		TOTAL LITRES:	*10*		
		GROSS WEIGHT:	*15.5*		
		INNER PACKAGING:	*Metal*		
		OUTER PACKAGING:	*UN 4G Fibreboard carton*		
VALUE:	**£0**	**TOTAL WEIGHT / CUBE:**		**16**	**0.11**

Section 5

PROHIBITED PRODUCTS

5 PROHIBITED PRODUCTS

5.1 Prohibited products

Annex III of the Environmental Protocol prohibits the introduction of the following products to Antarctica:

- polychlorinated biphenyls (PCBs) (found in coolant fluid, electrical apparatus, cutting fluids etc.)[1];
- non-sterile soil;
- polystyrene beads, chips or similar forms of man-made packaging (not including vermiculite); and
- pesticides

None of these items are to be sent to the Antarctic by post, person or in cargo.

BAS also discourages the use of any poly-vinyl chloride (PVC) products and elemental mercury.

5.2 Non-native Species

The introduction of non-native organisms onto land or ice shelves in Antarctica is prohibited, except in accordance with a permit.

This includes:

- all non-native animals (e.g. dogs, rodents);
- plants or seeds (e.g. pot plants); and
- micro-organisms (e.g. viruses, bacteria and yeasts).
- Soil, rocks or sediment

The BAS Biosecurity Regulations (available on the BAS website) have been produced to provide practical measures for BAS personnel working and travelling to the Antarctic. These guidelines conform to current best practice regarding non-native species management produced by the Antarctic Treaty Consultative Meeting (ATCM), Committee for Environmental Protection (CEP), the Council of Managers of National Antarctic Programs (COMNAP) and the Scientific Committee on Antarctic Research (SCAR).

5.3 Items requiring a Permit

BAS staff who propose to import non-native species into Antarctica for scientific purposes must apply for a permit from the Foreign, Commonwealth and Development Office. These can be issued via delegated authority by the BAS Environment Office. Staff requiring a permit should contact the Environmental Manager at BAS Cambridge for advice.

[1] PCBs are persistent organic pollutants and are toxic to the environment.

Section 6

STATION RECYCLABLES & GENERAL WASTE

6 STATION RECYCLABLES & GENERAL WASTE

Recyclable and general waste produced by BAS activities in the Antarctic and South Georgia is returned to the UK for recycling or recovery. The only exception to this currently is crushed glass from KEP which is still sent to the FI. The table below summarises the case numbers and colour coding for recyclables wastes – this applies for all wastes detailed below unless otherwise specified under each heading in this chapter.

Case Number	Colour Coding	Type of Waste	Destination
9001	Green stencilled FIBCs or Green painted other waste packaging.	Segregated recyclables as detailed below	UK
9001	Blue stencilled FIBCs (or orange if still using old orange 'FI' FIBCs)	General/Mixed (inert) waste	UK
8001	None required	Crushed glass (from KEP ONLY)	FI

6.1 Aluminium Cans, Steel Cans & Foil

Aluminium and steel cans can be collected and transported in FIBCs (with green recycling logo). **Food cans must be thoroughly rinsed out.** Clean aluminium foil can also be included. Clean cans and foil should be compacted using a can crusher and packaged in an FIBC.

Use the pre-stencilled FIBCs with a green recycling triangle, mark with the case number and clearly mark the top and sides with the words "ALUMINIUM AND STEEL CANS". Consign to the Environmental Manager in the UK for recycling.

6.2 Cardboard

Cardboard no longer required for packaging should be broken down, compacted and baled and sealed inside a FIBC (with green recycling logo). Remove or flatten large staples where practicable as these may puncture the FIBC bags. Other staples and tape need not be removed. Use the pre-stencilled FIBCs with a green recycling triangle, mark with the case number and clearly mark the top and sides with the words "CARDBOARD". Consign to the Environmental Manager in the UK for recycling.

6.3 Clothing, Fabric & Rags

6.3.1 BAS Kitbag clothing

All work-related clothing/kit issued by the BAS clothing store should be returned to the UK in your kitbag regardless of any damage to the garments. Returned kit should be as clean as possible and biosecure. The clothing store

will assess kit on its return and make all decisions regarding reuse, reissue, disposal.
The only exception to this is garments that are heavily contaminated/soiled and need to be treated as waste e.g. with petrol, aviation fuel, asbestos, animal scats etc. If in doubt, please contact the BAS clothing store for advice.

6.3.2 Good quality personal clothing

Good quality clean second-hand personal clothing can be sent to the Seaman's Mission in the FI's. Please ensure that the clothing is of a good quality and can actually be worn again. In this case, the clothing is not considered waste and can be donated to charity. However, contact the FI Logistics Coordinator prior to consigning to confirm if there is a need for the clothing. There is no need to colour code the packaging and appropriate 'cargo' case number should be used. Mark as 'SECOND HAND CLOTHING FOR REUSE' and consign to the FI Logistics Coordinator.

6.3.3 Waste fabrics & personal clothing

Waste fabrics (including old bedding such as sheets, duvets, pillows) & personal clothing generated on station can either be used as rags in the workshops or separated and returned to UK. Use the pre-stencilled FIBCs with a green recycling triangle, mark with the case number and clearly mark the top and sides with the words "WASTE TEXTILES". Consign to the Environmental Manager in the UK for recycling or recovery.

6.3.4 Mattresses

Waste mattresses generated on station can be returned to the UK (strapped to pallets). Mark with the case number, mark with green paint and as "WASTE MATTRESSES FOR RECYCLING" and consign to the Environmental Manager UK.

6.4 Composite Packaging

Break down composite packaging into individual components where possible to maximise the recycling potential. Where this is not possible clean items should be treated as domestic waste and packed with general/mixed (non-recyclable) waste in FIBCs and consigned to the Environmental Manager in the UK (see 6.6).

6.5 Furniture

6.5.1 Seating furniture with upholstery

Damaged or unwanted domestic upholstered seating with any part that contains upholstery such as leather, synthetic leather, other fabric or foam e.g.

- Sofas or sofa beds
- armchairs
- chairs or stools or office chairs

- bean bags
- floor and sofa cushions

These furniture types should be segregated from other furniture without upholstery. This is because upholstered domestic seating may contain persistent organic pollutants (POPs) and UK legislation requires it to be segregated from other wastes to avoid contamination of wastes without POPs.

There are no specific packaging requirements so these can be palletised or packed in a wooden crate as required. Mark the packaging with the case number and 'Furniture, domestic seating waste potentially containing POPs' and consign to the Environmental Manager in the UK. Please note that the following do not fall into this category and are NOT at risk of containing POPs: other furniture without upholstery e.g., wooden chairs, other textiles such as mattresses, curtains, blinds etc. Guidance elsewhere in the WMH should be followed.

6.5.2 Furniture, other

All other furniture (that doesn't fall into the category above of upholstered seating) should be segregated by material type where possible e.g. plastic, wood etc. and consigned to the Environmental Manager in the UK.

6.6 General/Mixed (inert and non-recyclable) waste

General domestic wastes that are inert (non-hazardous) and unrecyclable can be collected in mixed FIBCs for disposal. These wastes can include crisp packets, plastic banding, domestic cling film, chocolate/sweet wrappers, tissue paper or kitchen/industrial roll and other non-recyclable and inert wastes.

Pack General/Mixed wastes in an FIBC – Use up the old stock of FIBCs with orange 'FI' lettering and then start using the new FIBCs with blue 'UK General Waste' lettering on the side. Mark the FIBC with the case number and consign to the Environmental Manager in the UK. Once in the UK, this waste is generally diverted from landfill and instead incinerated with energy recovery.

6.7 Glass

6.7.1 Clean, mixed glass

At all stations (apart from KEP) mixed glass should be rinsed out and collected in 205L drums (that have been prepared as per the drum deheading SOP). It should not be crushed or broken when stored. Waste glass does not need to be segregated prior to disposal. Drums should be part filled and in good condition.

Paint the drums green (make sure you paint over or cross out any old hazardous labels and markings), clearly marking the top and sides with the case number, a stencilled recycling triangle and the words "WASTE GLASS". Consign to the Environmental Manager UK and send to the UK. Mixed glass is generally recycled in the UK.

- **KEP**
  At **KEP** all clean waste glass should be passed through the glass imploder before it is transported. Crushed glass from KEP should be collected in FIBCs (with orange FI lettering) which are only partly filled (no more than a third), stacked on pallets and consigned to the Public Works Department (PWD) in the FI, where it will be reused as aggregate. Crushed glass from KEP can be transported to the FI on BAS vessels or the GSGSSI Fisheries Patrol Vessel. KEP staff must complete a BAS BOL even if the glass is being transported on the GSGSSI vessel and share this with SCL.

6.7.2 Laboratory Glassware

Glass that has been contaminated with chemicals should be treated as hazardous waste as per the chemicals section. See Section 8.4.

6.7.3 Pyrex

Pyrex should be collected separately from glass at all stations. Pyrex should be boxed up carefully, painted green with the green recycling logo and consigned as 'waste Pyrex glass' to the Environmental Manager UK.

6.8 Metal, scrap

Before sending out surplus equipment (containing metal) which is in good working order, check whether items can be used by other stations or the ship or are deemed suitable for resale by the BAS FI Office. See Section 3.1.2 for further details.

At most stations, scrap metal should be securely banded to wooden pallets (or within wooden crates) wherever possible. Please try and ensure that the metal fits neatly on the pallet, avoiding overhang, to allow for ease of transport and storage. It can also be transported in de-headed and cleaned 205 litre drums if they are appropriately packed and all hazardous labels have been removed or painted over. Make sure the drums are clean, not corroded in anyway and where possible bind them to a wooden pallet. Make sure that the drums are not overloaded. (Drums with banded tops cannot be lifted with vertical drum lifters and therefore have to handled manually if they are not bound to a pallet.)

Consignments of scrap metal should be marked with green paint and marked "SCRAP METAL". They should be consigned to the Environmental Manager in the UK for recycling.

Rothera and KEP

- At Rothera, scrap metal can also be collected in the 12 yard builders skips on station and consigned to the Environmental Manager in the UK. The skips should NOT be painted green. Please ensure that the BOL identifies the container as a 12 yard skip and provides the skip identification code.

- At KEP, scrap metal can be collected in the orange reusable JJ or L type bins and consigned to the Environmental Manager in the UK. The JJ/L bins should NOT be painted green. Please ensure that the BOL identifies the waste container as either reusable JJ or L orange bin.

Longer-term skips and JJ/L bins will be discontinued, and alternative waste packaging will be sought for scrap metal at Rothera and KEP. Skips are difficult for the SDA to transport because they do not stack once full and the JJ/L type bins are difficult to biosecure.

6.9 Paper

Paper should be reused for packaging where possible. Paper, newspaper and magazines can all be recycled and should be stored and transported in FIBCs marked with a green recycling triangle, the case number and the word "PAPER" written on the side. Waste paper should be consigned to the Environmental Manager and sent to the UK. Waste paper is sent to paper mills where it is shredded, pulped and cleaned. It is generally reused for newspapers.

Please note that tissue paper/kitchen or industrial roll (clean or otherwise) is not recyclable and should be included with general/mixed waste.

6.10 Plastics

6.10.1 General mixed domestic plastics, clean

Clean domestic plastics including all bottles, containers and any single polymer bags should be collected in the bins provided, compacted and returned to UK for recycling or recovery**.** Plastic containers/bags (soft plastics) previously used for food (e.g. cheese packets, bags for frozen vegetables etc.) will be accepted for recycling in the UK provided that they are clean, and no residues are remaining. (Please review the other plastic categories below for guidance on other plastic types).

Pack in FIBCs marked with a recycling triangle, mark the side of the bag with the case number and the word "PLASTICS". Consign to the Environmental Manager and send to the UK.

6.10.2 Shrink-wrap and bubble-wrap

Clean shrink-wrap and bubble-wrap used in cargo packing should be segregated from general mixed domestic plastics for recycling (please note that this should be re-used for cargo packing where possible prior to consigning as waste). This plastic is low-density polyethylene (LDPE) and if segregated in large enough quantities can be recycled.

Pack in FIBCs marked with a recycling triangle, mark the side of the bag with the case number and the words "LDPE Plastics". Consign to the Environmental Manager in the UK.

6.10.3 Polystyrene

Polystyrene plastics can also be recovered as long as they are segregated from other plastics. Pack in FIBCs marked with a recycling triangle, mark the side of the bag with the case number and the word 'POLYSTYRENE'. Consign to the Environmental Manager in the UK.

6.10.4 Foam, packaging

Foam can also be recovered as long as they are segregated from other plastics. Pack in FIBCs marked with a recycling triangle, mark the side of the bag with the case number and the word 'FOAM'. Consign to the Environmental Manager in the UK.

6.10.5 CDs, DVDs, VHS Tapes

The following plastics can also be recycled from both stations and ship if separated from other plastics. Pack in cardboard boxes, paint green with recycling logo and mark with case number and 'WASTE CDs and DVDs' or 'WASTE VHS'. Consign to the Environmental Manager in the UK:

- CDs and DVDs
- VHS tapes

Alternatively, good condition authentic (not copies) film DVDs and music CDs that can be reused are not considered waste and can be donated to charity. These can be sent to the Seaman's Mission in the FI by marking up the boxes as 'second hand CDs and DVDs for reuse' and consigning these to the FI Logistics Coordinator. Contact the FI Logistics Coordinator prior to consigning.

6.10.6 Non-recyclable plastic

Clean non-recyclable plastics e.g. cargo plastic banding/strapping, domestic cling film, crisp packets, chocolate and sweet wrappers should be collected with general/mixed (non-recyclable) wastes. Glass-Reinforced-Plastic (GRP) should also be treated this way. Package in FIBCs (with orange 'FI' lettering or blue 'UK General Waste' lettering) and send to UK for disposal. Consign to the Environmental Manager in the UK.

* Please continue to use the old orange 'FI' lettering FIBCs for general/mixed wastes but consign to the UK and NOT the FI. Once the old FI bags have been used up then please use the new blue 'UK General waste' FIBCs.

6.10.7 Contaminated plastics

See section 7.14 for guidance.

6.10.8 Non-domestic hard plastics

Non-domestic hard plastics such as plastic wheelie bins, plastic chairs (see 6.5.1 for guidance on upholstered chairs including office chairs) should be segregated from domestic plastics and consigned as 'hard plastics' to the Environmental Manager for recycling in the UK.

6.11 Rope

Large quantities of waste rope should be packaged in FIBC bags with green recycling logo whilst small quantities can be packaged in cardboard boxes painted green. All packages should be marked with the case number, 'ROPE FOR RECYCLING' and be consigned to the Environmental Manager in the UK. Disposal options for rope vary and final disposal will be dependent on current contractual arrangements in the UK but it is generally incinerated with energy recovery.

6.12 Tetra-pak

Clean tetra-pak and all waxed cartons (i.e. juice cartons) should be collected at stations for recycling. Cartons (with or without internal foil lining) should be washed out before being flattened and packed separately from other materials, into a FIBC (with green recycling logo). Mark with the case number and "TETRA-PAK" and consign to the Environmental Manager in the UK.

6.13 Wood, including packing cases

Where practicable, waste wood should be separated into two grades: unusable scrap and reusable timber.

6.13.1 Reusable Timber

- Surplus, unused 4DV plywood boxes are NOT waste and should be reserved for reuse on station or returned to SCL Cambridge for reuse.
- Reusable timber should be reused for buildings or other construction projects on site wherever possible. Crates, cases and pallets should be repaired if necessary and reused. Wood should be made safe by removing or turning over nails and screws.
- At Rothera and Halley, some waste timber is burnt to increase the calorific value of loads for incineration. Plywood should not be burnt unless absolutely necessary.
- If timber cannot be reused on station but is of good quality, it can be sent to the FI for resale. Label crates with case number and **"WOOD FOR RESALE"** and consign to the FI Logistics Coordinator. Do not paint crates for resale. Contact must be made with the FI Logistics Coordinator in advance to confirm whether there is a market in the FI for the wood to be resold – they will require detail and possibly photos of the wood in order to confirm this. **If there is no market for resale then the packaging should be painted green and this must be consigned to the Environmental Manager in the UK for disposal. Refer to 3.1.2.**

6.13.2 Unusable Scrap Wood

Waste wood that is not appropriate for reuse on site or for resale in the FI must be broken up and packed into wooden crates. Waste wood must be separated into two grades:

- **Non-hazardous wood:**

The following grades/ types of wood are non-hazardous and can be packed together – there is no need to segregate them into their individual grades.

- Grade A ‘Clean Wood’: hardwood packaging, scrap pallets, packing cases, solid softwood, off cuts and cable drums.
- Grade B ‘Industrial Feedstock Grade’: building waste wood, demolition waste wood and domestic furniture made from solid wood.
- Grade C “Fuel Grade”: flat pack furniture, fencing, chipboard, MDF, plywood and fibreboard.

Break up poor condition wood that falls into these categories and pack into wooden crates. Paint the upper parts of the sides and top of the crate green and mark “WASTE Non-Hazardous Wood”. Consign to the Environmental Manager in the UK.

- **Hazardous wood:**

Chemically treated or contaminated wood falls into the grade D category and is considered hazardous for disposal

- Grade D “Hazardous Wood Waste”: railway sleepers, transmission poles, fences and cooling towers.

Wood that falls into this hazardous category should be broken up and packed into wooden crates or secured to pallets. Paint the upper parts of the sides and top of the crate yellow and mark “WASTE Hazardous Wood”. Detail the types of wood and treatment method in the BOL and provide appropriate hazardous markings as per the SDS. Hazardous wood should also be given a 9901 case number. Consign to the Environmental Manager in the UK.

For any further information on the disposal of non-hazardous wastes please contact the BAS Environmental Manager.

Section 7

NON-REGULATED WASTES

7 STATION NON-REGULATED WASTE

All non-regulated waste (e.g. not hazardous for transport by sea but may be hazardous by nature or for disposal) produced by BAS activities in Antarctica and South Georgia is returned to the UK for recovery or disposal. The only exception to this currently is:

I. food waste from KEP which sent to the FI for incineration in the FIMCo incinerator as organised by GSGSSI and

The table below summarises the case numbers and colour coding for non-regulated wastes – this applies for all wastes detailed below unless otherwise specified under each heading in this chapter. Where relevant, the Safety Data Sheet (SDS) for non-regulated wastes should also be submitted with the BOL.

Case Number	Colour Coding	Type of Waste	Destination
8001	None required	From KEP only: food waste	FI – FIMCo
9101	Yellow	Non-regulated/non-hazardous wastes (excluding recyclables/general)	UK

7.1 Antifreeze

Waste antifreeze is returned to UK for safe disposal. It should not be mixed with other waste fuels. It is shipped in its original container or in new and clean closed top 205L UN drums. Do not overfill.

Antifreeze used by BAS in the Antarctic is generally mono ethylene glycol (MEG) or mono propylene glycol (MPG). They do not require hazard labels under the IMDG code for shipping. Paint upper band and top of drum yellow and write the case number and stencil “WASTE ANTIFREEZE” on top and sides. Consign to the Environmental Manager in the UK. Contact the Environmental Manager for advice on the disposal of antifreeze which is not MEG or MPG.

7.2 Biological Material Waste

Used/unwanted local biological material at all stations, which has been contaminated by chemicals (e.g. preservatives), is to be treated as per the hazardous nature of the chemical and returned to the UK for incineration. The only exception to this applies to small quantities of samples preserved in ethanol which at Rothera can be removed from the ethanol and incinerated on site – the waste ethanol would then be sent to the UK as waste ethanol.
Waste biological material that has been moved from one location in Antarctica to another (e.g. Signy to Rothera) is generally to be autoclaved and then incinerated (either on site or consigned back to the UK for incineration). Contact the Environmental Manager for advice.

Non-native species imported to Antarctica must be disposed of following the requirements laid out in the permit which authorised their import into Antarctica (see Section 5.3). Please see the BAS Biosecurity Regulations for further advice on non-native species.

Small quantities of used/unwanted **local uncontaminated** biological material (e.g. moss, lichen, seaweed, and fish) can be disposed of in the sea.

Please note that clinical/lab items (i.e. scat or diet sample bags, surgical gloves, paper towelling etc.) contaminated with animal/biological material should be disposed of as per Section 8.6 Clinical/Research Waste.

7.2.1 Micro-organism Cultures

i) Stations

Laboratory cultures of micro-organisms and plant pathogens, including petri dishes and other plastic lab equipment contaminated with cultures, are to be autoclaved where possible. Once autoclaved, they should be stored in a UN container and consigned back to the UK as "NON HAZARDOUS, AUTOCLAVED CULTURES AND DRY LAB WASTE" for incineration.

Where autoclaving is not available/not possible, cultures and any culture contaminated material should be treated with a proprietary laboratory disinfectant, which has proven efficacy for the biological contaminant, prior to storage in a UN container. The container should be marked with the case number and labelled as "NON HAZARDOUS, DISINFECTED CULTURES AND DRY LAB WASTE" and the BOL affixed. It should be consigned to the Environmental Manager in the UK for incineration. The BOL should identify the laboratory disinfectant used.

ii) Ship

The SDA does not currently have an autoclave therefore before carrying out any culture work, personnel should have completed a Preliminary Environmental Assessment and an appropriate method of disposal agreed with Environment Office and the Laboratory team. Please contact the Environmental Manager for advice if this has not been completed.

7.3 Building & Demolition materials

Building materials which are surplus to requirement (in particular after a building project is completed) should in the first instance be used on station. Consult the Station Leader and Facilities Technician as appropriate. Materials should not be left on station however, if they are not scheduled for use.

If materials are no longer required on station and have a value, then it may be possible to explore re-sale options – for any queries, please contact BAS Finance team for guidance on the UKRI policy on resale. If considering re-sale in the FI then you must consult the FI Logistics Co-ordinator prior to consigning the items (see Section 3.1.2). Mark with case number and "SURPLUS BUILDING MATERIALS FOR RESALE".

If materials are not saleable, see relevant section for waste disposal (metals, wood, plastics etc.). If in doubt, contact the Environmental Manager.

7.3.1 Polystyrene building (insulation) blocks

All polystyrene blocks used in buildings i.e. as insulation boards should be segregated from other building materials. Polystyrene blocks are assumed to contain the flame retardant HBCD (Hexabromocyclododecane) which has been used in insulation boards since the 1970s. HBCD is a flame retardant and all building related polystyrene boards should be segregated and sent to the UK where they will be destined for energy from waste through incineration.

Package appropriately, mark with the case number, paint the packaging yellow, affix the BOL, and mark as "WASTE POLYSTYRENE BUILDING MATERIAL – FOR INCINERATION". Consign to the Environmental Manager in the UK.

7.3.2 Insulation lagging

Insulation lagging from pipes cannot currently be recycled. Please pack in a crate, paint yellow, mark with case number, affix the BOL and mark 'WASTE INSULATION LAGGING' and consign to the Environmental Manager in the UK.

7.3.3 Gypsum powder

Gypsum and other wastes with a high sulphate content are (generally) non-hazardous. However, because gypsum will react with biodegradable materials to produce hydrogen sulphide gas (highly toxic) it can only be disposed of in certain landfills (within a separate cell away from biodegradable wastes) or in some cases can be sent for physiochemical treatment.
Gypsum waste should be segregated, packed in a wooden crate, painted yellow, mark with case number, affix the BOL and labelled as "WASTE GYPSUM MATERIAL" and consigned to the Environmental Manager in the UK.

7.3.4 Cement

Surplus bags of cement (where the cement is in powdered form and has not expired) may have a resale value – Consult with the FI Logistics Co-ordinator prior to consigning the items as waste to determine if there is a resale value for this in the FI. If the cement cannot be reused or resold it should be securely palletised, painted yellow, marked with case number, the BOL affixed and 'WASTE CEMENT' and consigned to the Environmental Manager in the UK for disposal.
Surplus bags of cement (where the cement has hardened and expired) should be returned to the UK as waste as detailed above.

7.3.5 Concrete

Pre-cast and broken up concrete should be palletised or packed in a wooden crate, painted yellow, marked with case number, the BOL affixed and 'WASTE

CONCRETE' and consigned to the Environmental Manager in the UK for disposal.

7.3.6 Fibreglass

Waste fibreglass should be segregated, securely palletised or packed in a wooden crate, painted yellow, marked with case number, the BOL affixed and 'WASTE FIBREGLASS' and consigned to the Environmental Manager in the UK. Fibreglass can only be recycled if it is provided in very large quantities but it can be used for energy from waste through incineration.

7.4 Chemicals (non-hazardous)

Non-hazardous chemicals should be packaged carefully, reusing their original packaging. The top and sides of the container should be painted yellow, labelled with a case number, the BOL affixed, labelled "WASTE CHEMICALS, NON-HAZARDOUS, NON-REGULATED" and with the BOL affixed. The BOL should provide details of the non-regulated chemicals and a copy of the SDS should also be provided. Non-hazardous chemicals are returned to the UK for safe disposal and should be consigned to the Environmental Manager UK.

7.5 Cooking Oil

Waste cooking oil generated on station (e.g. vegetable oil) is not to be disposed of with other food waste, and must be sent to the UK for disposal. Do not mix waste cooking oil with waste lubricants. (For solid fats see Section 7.5.1 below)

Store the oil in the original packaging or in new and clean closed top 205L drums. Paint sides and top yellow, and mark "WASTE COOKING OIL". The drums do not require hazard labels. Consign to the Environmental Manager in the UK.

(For waste fuel oil and other engine lubricants see Section 8.13)

7.5.1 Fats, oils and greases collected from the grease trap

- Rothera: the semi-solid mix of fats, oils and greases from the grease trap in New Bransfield House should be stored in new and clean closed top 205L drums, painted yellow and marked as 'GREASE'. The drums should be consigned to the Environmental Manager UK and sent to the UK for recycling.

7.6 Electrical Cables/Wires

Electrical cables/wires currently has a high value in the recycling market and should be returned to the UK for recycling as WEEE. Pack in sturdy container (such as wooden cases made up on station – do NOT package in FIBCs). Paint the packaging yellow, label with the case number, affix a copy of the BOL and mark as "WEEE – cables/wires." and consign to the Environmental Manager in the UK.

7.7 Flares, spent flares

Used or spent flares (i.e. flares which have been fired), can be transported in a cardboard box, painted yellow, marked with the case number, a copy of the BOL affixed and labelled "USED FLARES NON HAZARDOUS". These should be consigned to the Environmental Manager and sent to the UK. For unused and live (surplus, out of date, misfired) flares see Section 8.12 (Flares, live flares).

7.8 Food, Contaminated packaging

Thick paper bags which have been used to store flour can be treated as paper and returned to UK for recycling.

All other packaging contaminated with food should be washed in the first instance and segregated where possible for recycling.

Where packaging (including plastics) remains contaminated with food (e.g., tomato purée tubes, garlic purée tubes, tinfoil or clingfilm caked in food etc.) these should be incinerated at Halley and Rothera.

For BI, KEP and Signy, plastics and packaging contaminated with food must be stored in yellow plastic griff bins,marked with 'WASTE FOOD CONTAMINATED PACKAGING', the case number and BOL affixed (also remove any hazard labels from the griff bin) and consigned to the Environmental Manager in the UK.. Always give prior warning to the Chief Officer highlighting the case number so they can segregate the wastes for appropriate storage on the vessel (e.g. may require refrigeration).

7.9 Food, Dried or tinned

Surplus or out of date unopened tinned or dried food should be consigned to the Environmental Manager in the UK. Different packaging options are appropriate as below. Paint the tops and sides yellow, mark with case number and stencil the top and sides "Ues" (Unconsumed Edibles).

- Steel 205L AVTUR drums can be used. These would have to be cleaned/prepared in same way as for waste glass and all old hazard labels painted over. Paint the tops and sides yellow, mark with case number and stencil the top and sides "Ues".

- Original packaging can also be used. If the boxes/packaging of the "Ues" are in sound condition i.e. with no possibility of food odours/leakages, they can be left in original boxes/packaging and strapped to a pallet and then wrapped on the pallet in plastic. Paint the tops and sides yellow, mark with case number and stencil the top and sides "Ues".

  The BOL should provide a description of the unconsumed edibles detailing the preservation process e.g., tinned, dried, dehydrated, glass jar etc. and whether the contents are fruit,

vegetables, meat, fish, dairy or carbohydrates. There is no requirement to segregate "Ues" based on the type of food. If in doubt, please contact the Environment Office.

7.10 Food, Wet

Wet food waste is dealt with differently at each station and is detailed below.

Special care should be taken with waste poultry products (including eggs and eggshells) as they can carry avian viruses which may be a danger to Antarctic birds. To reduce this risk, only boneless poultry is sent to BAS stations. No poultry products other than egg powder should be supplied for field camps working near bird colonies.

Meat on the bone (poultry or otherwise) should not be sent to any of the stations due to the difficulties of disposing of bones. If, however this occurs by accident, then the bones should be segregated for disposal as below. (This should be reported on the incident reporting system)

Food scraps should not be fed to birds/animals under ANY circumstances.

7.10.1 Bird Island food waste

Discharge to sea

Most food waste (exceptions detailed below) can be discharged to sea. There is no macerator at Bird Island and therefore uncooked food waste should be pressure cooked, blended using a hand blender (where possible, as this allows the waste to more easily disperse and prevents scavenging by birds) before being discharged into the sea from the jetty.

Segregate for consignment to the UK

The following food wastes should be segregated, stored in yellow plastic griff bins marked with case number, the BOL affixed and labelled 'Food waste for incineration' (any hazardous markings on the griff bins should also be removed). They can be stored frozen on station, if necessary, before being consigned to the Environmental Manager in the UK. Always give the SDA Chief Officer prior warning so they can locate and segregate these wastes for appropriate storage on the ship (e.g. they will require refrigeration).

- Waste poultry products: such as eggshells, chicken/turkey fat, meat, skin etc. should be boiled or microwaved for ten minutes to sterilize viruses.
- Other foods that decompose slowly or can't be adequately pressure cooked/blended: such as bones, fats, mango/avocado stones, tea bags (only if they contain plastic), onion skins etc.
- Mouldy foods.

7.10.2 King Edward Point

Discharge to sea

Most wet domestic food waste should be macerated and discharged directly to the sea via the submerged discharge pipe except at Larsen House where it is collected in a septic tank. Onion skins, rice and other foods that do not break down easily should be pressure cooked and then macerated. Exceptions detailed below.

Segregate for incineration in FI

The following food wastes should be segregated, double bagged, marked with case number, the BOL affixed and labelled 'Food waste for incineration'. They can be stored frozen on station, if necessary, before being consigned to the FI Meat Company (FIMCo) via the Pharos for incineration in the FI. Griff bins do not need to be used. The Pharos can accommodate 5-6 bags of waste each rotation but the SL, GO and Chief Officer must agree this based on the vessel's available freezer space. A BAS BOL and Pharos Cargo Booking note must be issued and shared with SCL and Pharos in advance:

- Waste poultry products: such as eggshells, chicken/turkey fat, meat, skin etc. should be boiled or microwaved for ten minutes to sterilize viruses.
- Other foods that decompose slowly: such as bones, fats, orange peels, mango/avocado stones, tea bags (if they contain plastic), onion skins and items which the station leader or technical staff advise should not be macerated even after pressure cooking.
- Food waste produced from the biosecurity checks of fresh food deliveries including mouldy foods.

7.10.3 Signy

Discharge to sea

Wet food waste should be discharged into the sea after passing through the macerator. Alternatively, it can be pressure cooked before it's thrown into the sea at Gash cove from the shore. Exceptions detailed below.

Segregate for consignment to the UK

The following wastes should be segregated, stored in yellow plastic griff bins, marked with case number, the BOL affixed and labelled 'Food waste for incineration' (any hazardous markings on the griff bins should be removed). They can be stored frozen on station, if necessary, before being consigned to the Environmental Manager in the UK. Always give the SDA Chief Officer prior warning so they can locate and segregate these wastes for appropriate storage on the ship (e.g. they will require refrigeration).

- Waste poultry products: such as eggshells, chicken/turkey fat, meat, skin etc. should be boiled or microwaved for ten minutes to sterilize viruses.
- Other foods that decompose slowly: such as bones, fats, orange peels, mango/avocado stones, tea bags (only if they contain plastic), onion skins etc.
- Mouldy foods.

7.10.4 Rothera

All food waste generated at Rothera (including poultry waste) and from field parties returning to Rothera should be incinerated on station.

7.10.5 Halley VI

All food waste generated at Halley VI should be stored in plastic bags placed inside hessian sacks before being incinerated during the summer season. During the winter when the incinerator is not in use the bags should be stockpiled until the first burn of the summer season.

7.11 Incinerator Ash/Wood ash

Ash produced by the incinerators at Rothera and Halley and wood ash from BBQs should be placed in a 205L AVTUR drum which has been prepared (e.g., vented, de-headed and cleaned) by following the drum de-heading SOP. The drum should be painted yellow (painting over any hazard labels), marked with a case number and 'WASTE ASH' and consigned to the Environmental Manager in the UK.

7.12 I.T. /Computers/ Printers

7.12.1 Hard Drives

The storage (hard drive) of all old/end of life BAS computers, laptops, printers etc. should be removed by staff on station and either:

- **Bird Island, King Edward Point and Signy**

Hard drives should be returned as cargo to the IT department at BAS Cambridge for security clearance. Do not consign hard drives from the island stations as waste.

- **Rothera and Halley**

Hard drives should be given to the local IT support member of staff on site for security clearance. Once the hard drives have been security cleared, they can then be consigned as WEEE waste to the BAS Environmental Manager in the UK. Pack in a sturdy container (e.g. UN rated carton or wooden case, do NOT use FIBCs), paint yellow, label with the case number, affix a copy of the BOL and marks as "WASTE WEEE Hard drives" and consign to the Environmental Manager in the UK.

7.12.2 IT Devices

Old/end of life BAS computers, laptops, printers etc. (that have had their hard drives removed as described above) and other IT devices such as display screens, keyboards, mouse, circuit boards, HDMI cables etc. should be consigned as WEEE to the Environmental Manager in the UK. Pack in a sturdy container (e.g. UN rated carton or wooden case, do NOT use FIBCs), paint yellow, label with the case number, affix a copy of the BOL (the BOL should provide a detailed

description of the contents) and marks as “WASTE WEEE IT devices” and consign to the Environmental Manager in the UK.

7.13 Light bulbs and tubes

7.13.1 Incandescent and Hallogen light bulbs

Standard tungsten bulbs (the old type that generate light by heating a metal wire/filament in bulb) such as incandescent light bulbs and halogen bulbs are non-recyclable and non-hazardous. These should be disposed of in the general/mixed (non-recyclable) FIBCs, consigned to Environmental Manager UK and sent to the UK for disposal. Alternatively, if in larger quantities they can be segregated and boxed up and shipped out as ‘WASTE INCANDESCENT/ HALLOGEN BULBS’.

7.13.2 LED light bulbs

LED bulbs are energy efficient electric lights and are non-hazardous. They can usually be recycled so should be segregated from other types of light bulbs, boxed up and shipped to the Environmental Manager in the UK as ‘WASTE LED LIGHT BULBS’.

7.13.3 Fluorescent Tubes & Energy Saving CFL Lamps (containing mercury)

Fluorescent tubes, strips and lamps and energy saving compact fluorescent lamps (CFLs) bulbs and tubes contain a small amount of mercury and are therefore considered hazardous for disposal although they are not hazardous or regulated under IMDG. All waste fluorescent tubes and lamps are to be returned to the UK for recycling. 99% of the tube is recycled. Metal halide light bulbs (used in floodlights) also contain some mercury and should be segregated from other types of bulbs. Pack as described below.

Fluorescent and energy saving CFL bulbs should not be deliberately broken as they may release mercury-contaminated powders. Many tubes or lamps are filled to pressures above or below atmospheric pressure and if smashed may explode or implode. See guidance below for broken fluorescent bulbs.
Pack in the original cardboard boxes, if possible, then into a heavy duty polythene-lined wooden box (or plastic tube with end caps) filled with vermiculite. Packing should be carried out in a well-ventilated area.

Paint the upper sides and top of the case yellow, affix the BOL and label with the case number and “WASTE / FLUORESCENT TUBES /FLUORESCENT LAMPS/ ENERGY SAVING CFL BULBS” on the top and sides. They do not require hazard labels under the IMDG code for shipping**.** They must be consigned to the Environmental Manager in the UK.
Please note that broken tubes and bulbs can be packed with intact bulbs but the following H&S guidance and precautions must be taken by staff.

Broken fluorescent tubes & lamps

PPE including goggles, a mask and gloves should be worn when handling broken fluorescent or energy saving compact fluorescent bulbs.

If fluorescent strip lighting or an energy saving compact fluorescent bulb is broken there is a very small risk associated with mercury dust escaping from the unit. No adverse effects are expected from occasional exposure to broken lamps, but as a matter of good practice, prolonged or frequent exposure should be avoided through the use of adequate ventilation during disposal. Staff should follow these guidelines to minimise the risk of inhaling the dust or coming into contact with the dust.

Handling guidelines:

- Ventilate the room, by opening the windows. Leave them open for at least 15 minutes.
- Go out of the room while it's being ventilated.
- Wear rubber or plastic gloves, mask (ideally FFP2) and eye goggles while you're cleaning up the mercury and broken glass.
- Pick up the pieces of glass carefully and put them in a plastic bag or container. Use strips of duct tape for small pieces.
- Wipe the area with a damp cloth. Put the cloth in the same bag and seal it.
- If a broken fluorescent tube is thrown into a skip then the whole skip is considered to be hazardous waste. So please ensure that fluorescent tubes are packaged separately.
- Don't touch the mercury with your bare hands.
- Do not handle if you have an open undressed wound.
- Don't use a vacuum cleaner.
- Try not to create dust, but if there is any dust, avoid breathing it in.
- Don't put the mercury down the sink or the drain.
- Don't sweep the mercury up with a brush.
- Don't wash clothes with mercury on them in a washing machine – dispose of them in a sealed bag.

7.14 Plastics, Contaminated

The guidance below is for contaminated plastics. See section 6.10 for clean plastics.

7.14.1 Plastics (and other packaging) contaminated with food

Any plastics (and other packaging) contaminated with food must be incinerated if they cannot be reasonably cleaned. Please note that these should only be limited volumes of plastic/packaging that can't reasonably be washed e.g. tomato/garlic puree tubes, tinfoil or clingfilm caked in food e.g. through cooking etc. Please note that crisp packets, chocolate wrappers, bags for vegetables or cheese packets etc. are not considered food contaminated.

Food-contaminated plastics should be either be incinerated on station (Halley & Rothera) or consigned to the Environmental Manager in the UK for disposal (BI, Signy & KEP) – see section 7.8.

7.14.2 Plastics contaminated with chemicals

Plastics used in the lab or for domestic purposes such as cleaning which may be contaminated with chemicals should be treated as per the chemical they were contaminated with and packaged and labelled appropriately – refer to the SDS of the chemical. Do not package in FIBCs.

7.14.3 Plastics contaminated with oil

Empty plastic containers contaminated with small quantities of non-hazardous oily residue (including cooking oil where plastics can't be cleaned), lubes and fluids should be packaged separately in 205L AVTUR drums which have been prepared (e.g. vented, de-headed and cleaned) by following the drum de-heading SOP (DO NOT USE FIBCs), painted yellow making sure to cover any hazard labels, marked with the case number and labelled as 'OILY PLASTICS FOR RECYCLING'. Consign to the Environmental Manager and return to the UK.

7.15 Rat Poison

Most out of date/waste rat poisons are non-hazardous and non-regulated. However, the material safety data sheet (SDS) should always be referenced and submitted with the BOL to confirm this and to confirm how it should be packaged for transport. Most, non-hazardous, rat poisons should be packaged carefully, reusing the original packaging. The tops and sides of the container should be painted yellow, marked with a case number and "WASTE RAT POISON, NON-HAZARDOUS, NON-REGULATED" and the BOL affixed. It should be returned to the UK for safe disposal and should be consigned to the Environmental Manager UK.

7.16 Sawdust

Sawdust should be segregated from other wastes and returned to the UK for disposal.

Some sawdust may be classified as hazardous if the timber that produced it was treated (and the treatment itself was hazardous) – you must refer to the SDS of the timber to determine if the sawdust is hazardous and package and consign according to the SDS.

Regardless of whether the sawdust is produced from hazardous or non-hazardous timber, it will still need to be packaged and transported in a well-sealed container because sawdust has the potential for combustible dust. Pack it in a 205L AVTUR drums which has been fully cleaned and prepared (e.g., vented, de-headed and cleaned) by following the drum de-heading SOP. Paint the tops and sides yellow, remove any old hazard labels, mark with the case number and as 'WASTE SAWDUST" and consign to the Environmental Manager in the UK.

7.17 Sanitary Protection & Condoms

Sanitary wastes (e.g. tampons, sanitary towels) and condoms should be collected in the appropriate bins located on station. At some stations, sanitary bins are located in both

male and female toilets and at others there is a central sanitary bin location and/or individually issued sanitary collection boxes (this should be covered as part of station induction but if in doubt seek advice from the SL). Please note that sanitary waste should be collected separately from other clinical waste – it is not 'hazardous' by nature but is considered an 'offensive' waste therefore it should be segregated from wastes that are considered hazardous.

Collection of these wastes is arranged by the Station Leader:

- At Rothera or Halley, the waste should be stored in yellow plastic bags labelled "SANITARY WASTE" and incinerated on station.
- AT BI, KEP or Signy sanitary waste should be collected directly in yellow griff bins or initially in the cardboard biobins (5L or 30L). The small 5L biobins can be issued to individuals for personal use and once full should be placed in a yellow griff bins for consignment. The larger griff bins or 30L biobins can be left in a more accessible location for general station use. The biobins (5L or 30L) must be overpacked in a yellow griff bin prior to consignment (this is a requirement of the UK waste contractor). The griff bins should bemarked with the case number, labelled 'SANITARY WASTE' and the BOL affixed (remove any hazard labels including UN numbers from the container) prior to consigning to the Environmental Manager in the UK. Give prior warning to the Chief Officer highlighting the case number so they can segregate this waste for appropriate storage on the vessel (e.g. may require refrigeration).
- At Sky Blu & Fossil Bluff, the waste is collected in yellow bags and sealed in UN approved drums (poo bins) along with solid human waste and returned to Rothera for incineration.

7.18 Sewage & Urine/Grey Water

- **Bird Island**
  - Sewage & urine are macerated and discharged directly to the sea.
  - Grey water is also discharged into the sea via the waste pipe from the station or via the stream that runs past the station.
- **King Edward Point, South Georgia**
  - Sewage and urine are macerated and discharged directly to the sea, except at Larsen House where solids are collected in a septic tank.
  - Grey water is discharged to sea as described above.
- **Signy**
  - Sewage and urine are macerated and discharged to the beach beside the station jetty.
  - Grey water is discharged as above.
- **Rothera**

A primary filtration unit and sewage treatment plant treats sewage, urine and grey water. Dried untreated raw sewage sludge is passed to the incinerator for burning in 20kg porous bags, these should be placed in a bin liner prior to leaving the STP building. Requirements of the incinerator Standard Operating Procedure for handling raw sewage should be followed.

- **Halley VI**

Grey water is discharged into a common drainage system, which is fed directly into the sewage treatment plant (STP). The STP processes sewage, urine and grey water together, and clean outfall goes into the snow pit. The dried treated sewage from the STP is then incinerated. Grey water from the Drewry is untreated and goes directly to a snow pit.

7.19 Smoke/Heat Detectors

Conventional smoke and heat detectors (without an ionising chamber such as the 601P conventional optical smoke detector or 631H-F conventional heat detector) can be packaged up with other non-hazardous WEEE small appliances waste. As for all WEEE waste, please list the types of WEEE waste on the BOL. See section 7.27.

7.20 Solar Panels

Photovoltaic (PV) panels are now as WEEE under UK legislation. Pack in a sturdy container (e.g. wooden case, do NOT use FIBCs), paint yellow, label with the case number, affix a copy of the BOL (the BOL should provide a detailed description of the contents) and mark as “WASTE WEEE PHOTOVOLTAIC PANELS” and consign to the Environmental Manager in the UK.,

7.21 Sunscreen lotion

Expired sunscreen or sunscreen which has separated should be returned in their original containers. Tops must be securely fastened and sealed using plastic packing tape and packed in a UN approved box with a plastic liner to prevent leaks. Paint the container yellow, mark the box with the case number, 'Waste Cosmetics, Sun lotion, non-hazardous, non-regulated’, affix the BOL and consign to the Environmental Manager in the UK.

7.22 Toners and Inkjet Cartridges

Wherever possible, waste toner and inkjet cartridges should be placed in the original packaging that they arrived in. They should then be placed in a plastic-lined box or crate surrounded by vermiculite. Paint yellow, mark with the case number and “WASTE TONER CARTRIDGES” and affix the BOL. Consign to the Environmental Manager for recycling in the UK.

7.23 Tyres

Waste tyres are a controlled waste and operators giving rise to waste tyres have a legal responsibility to ensure that the waste is only passed to people authorised to receive it and that it is taken to a legitimate site. Therefore, waste tyres from stations should not be sent to landfill but instead they should be packed separately e.g., on a pallet, painted yellow, marked with the case number and 'Waste Tyres' and consigned to the Environmental Manager in the UK.

7.24 Vermiculite

Vermiculite consists of flakes of silica.

Clean vermiculite should be reused where possible for the repacking of liquids, hazardous chemicals or other hazardous waste for return to UK. Surplus clean vermiculite should be kept dry and returned to the UK for reuse. Consign as cargo to BAS Supply Chain Logistics (SCL) in Cambridge (please check with cargo@bas.ac.uk prior to consigning). Seal in polythene bags prior to sealing in cartons. Provide details on the BOLs with regard to the weight of your consignment as accurately as possible.

Contaminated vermiculite should be treated as waste (possibly hazardous depending on what it has been contaminated with) and consigned to the Environmental Manager in the UK. Seal in polythene bags prior to sealing in cartons. Paint yellow, mark with case number and 'WASTE VERMICULITE' and consign to the Environmental Manager in the UK.

7.25 Virkon, diluted solution

Virkon S disinfectant solution used for biosecurity purposes such as boot cleaning should be made up as per the manufacturer's instructions (and as detailed in the BAS Biosecurity Regulations) to a 1% solution. Once the Virkon S solution has been used and has become deactivated it will lose its pink colour and break down into harmless salts. Deactivation usually occurs after seven days - it is necessary to keep track of the date the solution was mixed. After seven days, the solution will have deactivated and can be disposed of safely down the drains with additional flushing of water.

7.26 Water seeking paste

Out of date tubes of water seeking paste can be transported in a cardboard box, painted yellow, labelled with the case number and "Water Seeking Paste - NON HAZARDOUS" and the BOL affixed. These should be consigned to the Environmental Manager and sent to the UK.

7.27 Waste Electrical and Electronic Equipment

If electrical equipment is still in good working order, then it may be possible to find a resale route. Contact the FI Logistics Coordinator to explore if there is a resale market in the FI. If you are interested in a resale route in the UK, please contact BAS Finance team for guidance.

All waste electrical and electronic equipment (WEEE) should be returned to the UK for recycling or disposal. Most WEEE is non-hazardous/non-regulated for transport but it is important to check the SDS for guidance.

Non-hazardous/Non-regulated WEEE consignments should be segregated by type wherever possible e.g. small appliances (toaster, kettle etc.) or gym equipment or electric power tools etc. or as per the specific WEEE categories below and packed in sturdy containers (such as

wooden cases made up on station but do NOT package in FIBCs). Paint the packaging yellow, label with the case number, affix a copy of the BOL and mark as “Waste WEEE & description of item e.g., washing machine.” and consign to the Environmental Manager in the UK. Make sure the BOL includes a detailed description of the specific WEEE waste.

For disposal of specific WEEE categories see:

- **Electrical cables/wires, see section 7.6**
- **BAS Hard drives (wiped), see section 7.12.1**
- **BAS IT equipment: computers, laptops, printers, display screens, keyboards, circuit boards etc. see section 7.12.2.**
- **Light bulbs and tubes, see section 7.13**
- **Smoke/heat detectors, see section 7.19**
- **Solar/photovoltaic panels, see section 7.20**
- **Toners and inkjet cartridges, see section 7.22.**
- **Section 8.22 provides more detail about WEEE containing hazardous components including guidance on identifying if fridges/freezers are hazardous or not.**

Section 8

HAZARDOUS WASTES

8 STATION HAZARDOUS WASTE

All hazardous waste produced by BAS activities in the Antarctic, South Georgia and Southern Ocean are returned to UK for safe disposal or recycling. Disposal practices are listed below in alphabetical order. **See section 4.3.3 for a list of hazardous waste information required on BOLs and ensure that this information has been recorded before the hazardous waste item has been packaged. The Material Safety Data Sheet for all hazardous waste should also be submitted with the BOL.**

The table below summarises the case numbers and colour coding for hazardous wastes – this applies for all wastes detailed below unless otherwise specified under each heading of this chapter.

Case Number	Colour Coding	Type of Waste	Destination
8901	None required	Empty, good condition drums for reuse by Stanley Services.	FI (Stanley Services)
9101	Yellow	Hazardous waste (e.g. UN number)	UK

8.1 Aerosols

Surplus full, part used, empty or damaged aerosols are to be returned to the UK for disposal. Seal tops of aerosols with packing tape and place in a plastic lined UN approved 4GV or 4DV carton or case filled with vermiculite.

Paint the sides and top of the case yellow and cover all previous markings. Mark with the case number and “WASTE AEROSOLS” on the top and sides and affix the BOL. It is best practice to pack waste aerosols of different classes separately (do not mix classes). Label the case as Class 2.1 (flammable gas), Class 2.2 (compressed gas) or Class 2.3 (toxic gas), depending on the contents. Read the manufacturer's labelling to determine the class. Affix appropriate hazard labels and label the case UN No. 1950. Consign to the Environmental Manager in the UK.

For leaking or damaged (e.g. deformed) aerosols please contact Environment Office for further advice.

8.2 Asbestos

It is dangerous to handle or inhale loose, soft fibrous or sprayed asbestos which may produce dust or fibres.
ONLY TRAINED PERSONNEL SHOULD HANDLE ASBESTOS
Contact the Health and Safety Manager for further advice.

All work involving asbestos is covered by *the Control of Asbestos at Work Regulations* 1987, as amended in 1992. This sets out requirements for protective equipment and safe working limits for working with asbestos.

- Handle asbestos waste with great care.
- Prevent the generation of asbestos dust (e.g. spray with water)
- Do not break up boards or sheeting.
- Wear appropriate PPE.

Contact the Health and Safety Manager for further advice on the handling, transportation and disposal of asbestos. Only trained personnel should handle asbestos.

8.3 Batteries

All types of waste batteries are returned to the UK for recycling and/or disposal. Some batteries are hazardous for transportation purposes whilst some are hazardous for disposal, and others are hazardous for both!

It is very important to package batteries with different UN numbers and different hazard classes separately.

Batteries must be segregated for packing as follows:

8.3.1 Lead-acid, Wet, Filled with acid

Wet lead acid batteries do not need to be decanted but the battery lids should be taped to avoid spillage. The terminals should also be taped up to prevent short circuiting. Pack in a polythene lined UN approved 4DV plywood case filled with vermiculite. Paint yellow and mark with case number and affix the BOL. Label as “BATTERIES, WET, FILLED WITH ACID”, UN No.2794, and affix Hazard class 8 label. Consign to the Environmental Manager in the UK.

8.3.2 Lead-acid, Wet, Non spillable

Sealed lead-acid or ‘gel’ batteries should be packed in a polythene lined UN approved 4DV plywood case filled with vermiculite. Paint yellow and mark with case number and affix the BOL. Label as “BATTERIES WET, NON SPILLABLE, FOR RECYCLING”, UN No. 2800 and affix Hazard class 8 label. Consign to the Environmental Manager in the UK.

8.3.3 Dry Cell, Lithium (general guidance)

There are two types of lithium battery. Both are high energy power sources and are potentially hazardous. They should be packaged separately:

- lithium metal; and
- lithium ion batteries.

Lithium is an alkali metal that reacts violently with water; in batteries it is used with non-water-based electrolytes. Misuse or damage of lithium batteries can result in fire, explosion and venting of hazardous substances.

Read the general lithium guidance below alongside the specific i) lithium metal and ii) lithium-ion guidance prior to packaging and consignment. Also refer to the separate guidance for damaged lithium batteries.

8.3.3.1. General Lithium Battery Guidance

- It is essential that lithium batteries are handled, packed and labelled correctly to avoid incident**. Do not pack with any other battery types.**
- To ensure batteries remain undamaged in transport, securely tape the terminals of each battery (to prevent shorting), bubble wrap or otherwise protect against damage and seal in a plastic bag. This must be done in dry conditions.
- Pack the sealed batteries in vermiculite in polythene-lined UN approved 4DV plywood cases which are impact resistant and have securely fitting lids to prevent ingress of water/moisture.
- If batteries are to be stacked they must be adequately separated in tiers by a layer of nonconductive material e.g. plywood.
- The batteries must be secured to prevent movement in transit. (Fill to the top with packing materials.)
- During storage and handling ensure that they are not exposed to high temperatures including direct sunlight.

Lithium batteries must be kept dry when stored, packaged and transported to avoid fire or explosion!

Likely mechanisms for adverse reactions involving waste lithium batteries include:

- *Short circuiting (i.e. unprotected or improperly protected terminals touching) causing overheating, venting of electrolyte and fire.*
- *Water ingress causing a short circuit or a reaction generating hydrogen and subsequent ignition of the hydrogen and/or vented electrolyte.*
- *Physical damage causing a rupture of the battery casing and possible subsequent spontaneous ignition.*
- *Exposure to heat (usually greater than 70°C but varies depending on battery)*

8.3.3.2. Lithium Metal Batteries

These are non-rechargeable batteries which contain metallic lithium. They are generally used in cameras, calculators and watches. Pack lithium metal batteries as above separate from other types of battery. Mark the case as hazard class 9, UN No. 3090, with the words **"LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING"** and affix the BOL and hazard labels.

Paint the case yellow mark the top and sides with the case number. Ensure the type, size and quantity of batteries are listed on the BOLs. Consign to the Environmental Manager in the UK.

Waste Electrical and Electronic Equipment (WEEE) known to contain lithium metal batteries which cannot be removed should be consigned as lithium batteries rather than WEEE. Mark the case hazard class 9, UN No. 3091 with the words **"LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT"** or **"LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT"** and affix the BOL.

8.3.3.3. Lithium Ion Batteries

These are rechargeable batteries used in mobile phones and laptops. Pack lithium-ion batteries as above separate from other types of battery. Mark the case as hazard class 9, UN No. 3480 and with the words **"LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING"** affix the BOL and hazard labels.

Equipment known to contain lithium-ion batteries which cannot be removed should be consigned as lithium batteries marked as hazard class 9, UN No. 3481 with the words **"LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT" or "LITHIUM ION BATTERIES PACKED WITH EQUIPMENT"** affix the BOL and hazard labels**.**

Paint the case yellow mark the top and sides with the case number. Ensure the type, size and quantity of batteries are listed on the BOLs. Consign to the Environmental Manager in the UK.

8.3.3.4. Damaged Lithium Batteries

Lithium cells or batteries identified as being defective for safety reasons, have leaked or vented, or that have sustained physical or mechanical damage should be packaged as below:

- As described above, damaged lithium ion and damaged lithium metal batteries must be packed separately.
- Ensure during handling and storage that the batteries are not exposed to high temperatures including direct sunlight.

- Securely tape the terminals of each battery, bubble wrap or wrap in cushioning material (non-combustible and non-conductive) to avoid short-circuiting and protect from further damage.
- Seal the taped/wrapped batteries in a plastic bag (ensure this is done in dry conditions)
- It is best practice to pack the damaged sealed and bagged batteries into a rigid metal intermediate packaging container.
- The metal intermediate container must then be packed into a polythene lined UN specification packaging container and filled to the top with vermiculite which will also prevent the batteries from moving during transit.
- Mark the container as "DAMAGED/DEFECTIVE LITHIUM-ION BATTERIES" or "DAMAGED/DEFECTIVE LITHIUM METAL BATTERIES", as applicable.
- The Chief Officer of the ship or the aircraft pilot must be informed of the dangerous goods in order to confirm safe stowage on the ship/aircraft.

8.3.4 Dry cell, Nickel Metal Hydride

Dry cell nickel metal hydride (NiMH) batteries which include many rechargeable AA or AAA batteries should be packaged separately from other batteries. Tape terminals and pack in a plastic lined UN approved 4GV carton or 4DV case, with vermiculite. Paint the container yellow, mark the top and sides with the case number and "WASTE NICKEL METAL HYDRIDE BATTERIES" mark with hazardous class 9, UN No. 3496 and affix the BOL and hazardous labels. Consign to the Environmental Manager in the UK.

8.3.5 Dry cell, Other

- The following dry cell battery types must be packed and consigned as such:
  - **zinc carbon;**
  - **zinc chloride; and**
  - **alkaline manganese.**

  Each battery must have its terminals taped up. Batteries should be separated into the different types where practicable, bagged and labelled accordingly. Pack these bags into separate sections of a plastic-lined UN 4DV plywood case filled with vermiculite. Paint the case yellow and mark the top and sides with the case number and "ASSORTED WASTE BATTERIES, NON REGULATED" and affix the BOL. They do not require hazard labels under the IMDG code for shipping. They can be consigned under a 9101 case number. Consign to the Environmental Manager in the UK.

- The following dry cell battery types much be packed as such:
  - **nickel cadmium (NiCd);**
  - **mercuric oxide;**
  - **zinc air; and**
  - **silver oxide**

  These batteries are all non-hazardous for transportation but are considered hazardous for waste disposal. They should be packaged together by individual type but packaged separately from all other types of battery (including other dry cell batteries). Tape the terminals and place the batteries in bags inside UN approved 4DV plywood cases filled with vermiculite. Paint the box yellow and mark the top and sides with the case number and name of the batteries e.g. "Nickel Cadmium Batteries, NON REGULATED" or "Mercuric Oxide Batteries, NON REGULATED" and affix the BOL. They can be consigned under a 9101 case number. They do not require hazard labels under the IMDG code for shipping. Consign to the Environmental Manager in the UK.

8.4 Chemicals

8.4.1 Individual Chemicals

All hazardous waste chemicals should be returned to the UK for safe disposal. For chemicals generated by the ship's laboratories/science also see Section 10.

No hazardous chemicals are to be disposed of down sinks.

Liquid waste chemicals are to be transported in 25 litre UN approved drums. Chemicals from different hazard classes must not be mixed together and should be disposed of into separate drums. **See Appendix 5 for advice on the IMDG Code Precedence of Hazards.**

Accurate records of the chemicals being used must be maintained by personnel undertaking the experiments. The records can then be used to document the type and concentration of the chemicals in each waste drum.

In general, unused chemicals are returned in their original containers (e.g. glass or plastic bottles). Tops must be securely fastened and sealed using plastic packing tape. When handling containers make sure that appropriate gloves, protective clothing and goggles are worn. Each taped container must then be sealed in a plastic bag and packed carefully into a wooden case or UN approved 4GV or 4DV carton or case with vermiculite.

All cases containing chemicals for disposal must be painted yellow. If a case is being reused then ensure that all previous identification, except for the case dimensions and marking indicating UN approved container, are painted over.

8.4.2 Mixed Chemicals

NEVER mix non-compatible substances with different UN hazard classes. This is highly dangerous.
Special attention must be given to ensure that oxidising agents (hazard class 5.10 are kept separate from other chemicals.
Acids and Alkalis (hazard class 8) are not to be packed in the same outer packaging or stowed in the same container. They must be clearly labelled in separate containers.

For mixed chemicals, the name and the UN number (where applicable) of all the constituent chemicals (including oxidisers and non-regulated chemicals) and their concentrations must be listed in the BOL. In addition, it must be made clear which the primary hazardous chemical is (based on the precedence of hazards) using the information provided in the IMDG Code which can be accessed through the 'Hazcheck' software and in Appendix 5.

Label cases or drums with the following information:

- case number;
- name of all the constituent chemicals (including non-regulated chemicals) and identify the primary hazardous chemical;
- hazard class of all constituent chemicals and identify primary hazardous chemical;
- UN No. of all constituent chemicals and identify primary hazardous chemical;
- Concentration of all constituent chemicals; and
- Flashpoint of all constituent chemicals and identify the substance with the lowest flashpoint. (*For example*, if a container contained methylated spirit (FP +18°C) and white spirit (FP +38°C), the flashpoint of the drum would be +18°C.)

If there is insufficient space to label the drum or case either affix a smaller version of the label with all the details or physically write the details on the drum/case. Also include a copy of the BOL sealed in a plastic cover inside the box before it is sealed.

The word "WASTE" should be added in front of the name of the chemical. E.g. "WASTE HYDROCHLORIC ACID". For wastes which are solutions or mixtures, the word "SOLUTION" or "MIXTURE" should be added. E.g. "WASTE ACETONE SOLUTION"

Fix the appropriate primary hazard class sticker to the case or drum with subsidiary hazard class stickers as necessary. If in doubt about the primary hazard contained in a case or drum of mixed chemicals, contact SCL cargo@bas.ac.uk at BAS, Cambridge.

Osmium tetroxide, perchloric acid, hydrogen peroxide, and glacial acetic acid all require special handling.
Contact the Health and Safety Adviser at BAS, Cambridge.

8.5 Clinical/medical waste (Human medicine)

The station Doctor or Station Leader Manager is responsible for the safe disposal of clinical/medical wastes arising from human treatment.

Wastes arising from human treatment must be segregated from wastes arising from science labs/animal research, and its origin identified. See section 8.6 for guidance on waste from labs/animal research.

8.5.1 Sanitary waste and condoms

See Section 7.17 (note that sanitary waste is not hazardous and should be segregated from clinical and medical waste).

8.5.2 General clinical/medical waste

General clinical/medical waste could be PPE, used dressings, tongue depressors and swabs etc.

- At Rothera and Halley, general clinical waste should be collected in the yellow plastic clinical labelled and incinerated on station.
- At all other stations general clinical waste should be collected in the UN approved plastic yellow griff-bins, labelled with the case number and "CLINICAL WASTE, UNSPECIFIED, N.O.S", hazard class 6.2, UN 3291. Affix the BOL to the griff bin (please note that the BOL should identify the origin of the clinical waste as from 'human treatment') and consign to the Environmental Manager in the UK. Always give the SDA Chief Officer warning so they can locate and segregate these wastes for appropriate storage on the ship.

8.5.3 General clinical/medical waste contaminated with chemicals

General clinical waste, as above, from the doctor's surgery which has been contaminated by chemicals (e.g. preservatives), is to be treated as hazardous waste as per the chemical (see Section 8.4) and returned to the UK for incineration.

8.5.4 Sharps, clinical/medical

'Sharps' (e.g. syringe needles, blades, scalpels, and empty syringes) which have been used on humans are treated as clinical/medical waste and collected in the yellow 'sharps' disposal boxes provided in the hospital. They are to be returned to UK for safe disposal.

Mark top and sides with case number and "CLINICAL WASTE, UNSPECIFIED, N.O.S, (SHARPS), hazard class 6.2, UN 3291 and affix the BOL (the BOL should identify the origin of the sharps waste as from 'human treatment') and consign to the Environmental Manager for return to the UK.

8.5.5 Controlled Drugs and Medicines

The Doctor and/or Station Leader is responsible for coordinating the safe disposal of controlled drugs and medicines (surplus, used or out of date). Controlled drugs are not returned to the UK – they are either destroyed on station or on the ship.

At Rothera and Halley controlled drugs should be incinerated on station in the presence of the Doctor and a witness. All disposals of controlled drugs must be recorded on the controlled drug register held on station.

At Bird Island, KEP and Signy controlled drugs should be consigned to the ship Doctor and Chief Officer (a Bill of Lading must be produced, and the box marked with the case number) as unused/expired stock and NOT waste. Direct communication (either in person or via email) is required with the ship Doctor/Chief Officer prior to consignment and following transfer to confirm receipt of the controlled drugs. The transfer of these controlled drugs should be recorded on the controlled drug register held on station. The ship's Doctor should liaise with the Chief Officer for the safe disposal of controlled drugs held onboard. On the ship, these should be incinerated in the presence of the Doctor, Chief Officer and another witness.

8.5.6 Non-Controlled Drugs and Medicines

The Doctor and Station Leader are responsible for the safe disposal of non-controlled drugs and medicines (surplus, used or out of date).

Non-controlled drugs are usually non dangerous for transport but should be packaged in a way to prevent breakages or spills. All non-controlled drugs should be packed in a UN approved 4GV fibreboard carton with a plastic liner to prevent leaks. Please note that the BASMU grey plastic reusable crates are not an acceptable container and should NOT be used for waste drugs and medicines. The UN box should be painted yellow, marked with case number and BOL affixed, consigned to the Environmental Manager in the UK and labelled as 'WASTE NON-CONTROLLED DRUGS, NON-HAZARDOUS, NON-REGULATED'. The BOL should include a detailed list of the contents.

Some non-controlled drugs (those which are cytotoxic/cytostatic) contain hazardous materials and need to be segregated from non-hazardous, non-controlled drugs and consigned as hazardous waste. The MSDS of drugs should be inspected to check whether they are hazardous or not.

8.5.7 Covid testing waste

Please consult with the Senior Lab Manager, BASMU and the BAS Environment Office, for the latest agreed protocols on covid testing procedures including disposal of related waste.

8.6 Clinical/research waste (laboratory and field/animal sampling)

The Station Leader or Lab Manager is responsible for the safe disposal of clinical/research waste arising from laboratory work and field sampling including animal handling.

Wastes arising from labs/animal research must be segregated from wastes arising from human medicine, and its origin identified. See 8.5 for clinical/medical waste arising from human medicine.

8.6.1 For biological material waste see Section 7.2

8.6.2 General clinical/research waste

This waste could be field, research and laboratory waste such as surgical gloves, disposable PPE, paper towelling, sample bags (scats/diet samples) etc. which has come into contact with animals or biological material or specimens.

- At Rothera and Halley, this waste should be collected in yellow plastic bio-bags and incinerated on station.
- At all other stations, they should be sealed in UN approved plastic yellow griff bins, marked as "(BIO) MEDICAL WASTE, N.O.S.", labelled with the case number and hazard class 6.2, UN 3291. Affix the BOL to the griff bin (the BOL should identify the origin of the (bio) medical waste as from 'animal research') and consign to the Environmental Manager in the UK. Always give the SDA Chief Officer warning so they can locate and segregate these wastes for appropriate storage on the ship.

8.6.3 Sharps, clinical/research

'Sharps' (e.g. syringe needles, blades, scalpels, and empty syringes) which have been used on animals or in the laboratory for environmental research are treated as (Bio) medical waste and collected in the yellow 'sharps' disposal boxes provided in the laboratories. They are to be returned to UK for safe disposal.
Mark top and sides with case number and "(BIO) MEDICAL WASTE, UNSPECIFIED, N.O.S, (SHARPS)", hazard class 6.2, UN 3291 and affix the BOL and consign to the Environmental Manager for return to the UK. Please note that the BOL should identify the origin of the sharps waste as from 'animal research'.

8.6.4 PPE waste & Sampling waste, HPAI (avian influenza) protocols.

The BAS HPAI procedure 'Response to the Avian Influenza epidemic in the Southern Hemisphere, Version 2.1, October 2024', describes the BAS standard actions in response to the HPAI risk for activities that involve close contact or handling of animals and the condition-based exposure risk (ER) assessment approach (with ER scenarios ER0-ER4) that staff must follow to determine whether their normal science work involving animals can proceed or not and the level of PPE that should be worn for normal science work and HPAI sampling activities.

The BAS HPAI procedure must be reviewed alongside this waste disposal guidance to ensure appropriate management of PPE for safe disposal and consignment:

- **Where normal animal handling science work is taking place for ER0 & ER1 scenarios**, any PPE worn by staff will be disposed of as normal and as per 8.5.2.2. Any sampling waste will be disposed of as normal and as per 8.5.2.2. and 8.5.2.3.
- **Where normal animal handling science work is taking place for ER2 & ER3 scenarios (e.g. handling asymptomatic animals) or ER4 scenarios (e.g. working in a colony but not handling animals)**, all PPE Level 1 worn by staff will be removed in the field and immediately bagged (unless there is visible biological contamination in which case prior to removal and bagging the contamination will be sprayed with bioguard for disinfection), for return to station and disposal as per 8.5.2.2. Any sampling waste will be disposed of as normal as per 8.5.2.2. and 8.5.2.3.
- **Where HPAI research sampling work is taking place** (e.g. sampling carcasses/seal brain biopsy), all PPE Level 2 and Level 3 will be removed in the field and immediately bagged (unless there is visible biological contamination in which case prior to removal and bagging the contamination will be sprayed with bioguard for disinfection), for return to station and disposal as per 8.5.2.2. In these cases, there should be no sampling waste e.g. sharps, sample bags etc.

Use of Biocide (Bioguard disinfectant cleaning solution concentrate)

- Biocide solution will be made up on station and diluted with water as per the provided laboratory documentation for use on station and in the field as required.
- Used biocide solution that has been used to disinfect PPE can be disposed of locally on station through laboratory drains and whilst flushing with water.
- Unused/expired biocide should be consigned to the UK as waste in its original packaging and as per the instruction in the Safety Data Sheet.

8.6.5 General research laboratory waste contaminated with chemicals.

General waste from laboratories which has been contaminated by chemicals (e.g. preservatives), is to be segregated and treated as hazardous waste as per the chemical (see Section 8.4) and consigned to Environmental Manager in the UK for disposal.

8.6.6 Veterinary Drugs and Medicines

Limited and small volumes of veterinary drugs are supplied to stations for routine long-term science at Bird Island and occasionally for seasonal project specific activities that have been assessed through an Environmental Impact Assessment.

The Station Leader in consultation with the station Zoological Field Assistant is responsible for coordinating the safe disposal of veterinary drugs and medicines (surplus, used or out of date).

Please contact the BAS Environment Office, the BAS Animal Welfare and Ethic Review Board (AWERB) and the Principal Investigator for the responsible science activity initially for guidance on veterinary drugs disposal. Please share details of the types/volumes of veterinary drugs for disposal including where known, whether these are:

- Non-controlled
- Controlled
- Hazardous drugs containing cytotoxic/cytostatic materials (the SDS should be inspected to verify this).

It's likely that these will need to be segregated as per the categories above and consigned to the UK. It's also important that these are segregated from drugs for human consumption and the packaging and BOL identify these as Veterinary drugs. However, detailed guidance will be provided by the Environment Office.

8.7 Compressed gas cylinders

Gas cylinders are returned to the UK as dangerous goods cargo not waste. They should therefore have cargo case numbers and not waste case numbers. Please contact SCL for further details cargo@bas.ac.uk.

All scientific gas cylinders incur a standing rental charge. It is the owner's responsibility to arrange return of cylinders to the supplier as soon as possible on return to Cambridge.
The calibration gases used by some scientific instruments can be very expensive. Observe the following instructions in the table below when preparing waste cylinders for shipment:

Table 6. Pre-transportation Instruction for gas cylinders

Gas	Instructions
Acetylene	Label ACETYLENE, DISSOLVED hazard class 2.1, UN No. 1001.
Calibration Gases	May have to be returned to the UK part full. Contact BAS SCL, Cambridge for further instructions.
Carbon dioxide	Label CARBON DIOXIDE, Haz Class 2.2, UN No. 1013
Entonox	Label COMPRESSED GAS, OXIDIZING, N.O.S., (Nitrous Oxide, Oxygen), hazard class 2.2 & 5.1, UN No. 3156
Helium	Label HELIUM, COMPRESSED Haz Class 2.2, UN No. 1046
Hydrogen	Label HYDROGEN, COMPRESSED, hazard class 2.1, UN No. 1049.
Nitrogen	Label NITROGEN, COMPRESSED, hazard class 2.2, UN No. 1066.

Oxygen	Label OXYGEN, COMPRESSED, Haz Class 2.2 & 5.1, UN No. 1072
Propane	Label PROPANE, hazard class 2.1, UN No. 1978.
Refrigerants R12, R502	Label hazard class 2.2, UN No. 1028 (R12). & UN No. 1973 (R502)
Refrigerants R404A	Label hazard class 2.2, UN No. 3337

All cylinders being shipped out must have their screw-on caps securely fastened.
Contact Supply Chain Logistics for guidance for cylinders that appear to be in bad condition.

All cylinders even those are empty through use should be marked as hazardous, in case any residue remains.

Oil or grease must not be allowed to contaminate the threads of regulators used on any compressed gas cylinder. Take particular care with oxygen bottles. A mixture of any oils or grease with oxygen forms a self-igniting explosive concoction.

8.7.1 Fire extinguishers

Fire extinguishers at BAS stations are routinely serviced and reconditioned. Please consult with the Station Facilities Engineer who will advise on servicing or disposal of fire extinguishers.

8.8 Detergents & Disinfectants

BAS generally uses non-hazardous, environmentally friendly detergents and disinfectants (e.g. Citra-clean) at its stations where practicable. Use up any surplus stocks of detergents and disinfectants on site. If detergents and disinfectants cannot be used then they must be returned to UK for safe disposal.

Hazardous detergents and disinfectants are best left in their original bottles. Caps must be sealed with packing tape. Each bottle must then be sealed in a plastic bag. Sealed bottles must be packed into UN 4GV or 4DV approved cartons or cases filled with vermiculite. The BOL should provide details of the detergents and disinfectants and a copy of the SDS should also be provided.

The top and sides of full cases must be painted yellow. Label the top and sides with the case number and “WASTE DETERGENTS AND DISINFECTANTS”. If flammable, label the container with the name of the substance which has the lowest flashpoint and the hazard class, and UN number. Check ‘Hazcheck’ for the correct shipping name, volume, hazard class, and UN number and flashpoint. Affix the BOL and appropriate hazard labels on cases. Consign to the Environmental Manager.

Empty, completely drained and rinsed detergent or disinfectant bottles can be included with recyclable plastics.

8.9 Drums (AVTUR, MGO), empty

The dregs from empty AVTUR or MGO fuel drums (or jerry cans) should be fully decanted and, where practical, the dregs used in station boilers or heaters. Make use of drip trays or absorbent mats provided in case of spillage.

Empty AVTUR, MGO drums can be used in the following ways:

8.9.1 Re-use for waste fuel

Empty and sound condition AVTUR or MGO drums can be used for waste AVTUR or waste MGO fuel respectively. See 8.13.1 and 8.13.2

8.9.2 Re-use for non-haz solid waste

Empty and sound condition AVTUR or MGO drums that have been decanted, vented and cleaned with absorbents can be reused for the collection of non-hazardous wastes such as: glass (and scrap metal in some cases), ash, oily cans, unconsumed edibles. All hazardous labels on drums must either be removed or painted over when being used for this purpose. The drum should be drained, vented and de-headed and cleaned by following the appropriate drum de-heading SOP. Once the drum has been filled with recyclables or other wastes (as above) it should be resealed with a metal plate riveted into place and secured with sealant to ensure there is no water ingress. Refer to the drum deheading Standard Operating Procedure.

8.9.3 Return to Stanley Services for reuse as fuel drums

Surplus good condition empty drums should be consigned to Stanley Services in the FI for reuse as fuel drums and are therefore not considered waste. These must be supplied with their drum caps. They do not require any preparation, colour coding or labelling. All drums sent to Stanley Services for reuse should be:

Empty, except for dregs
Free of any other contamination in the drum
Rust-free on the inside
Structurally sound - this means no holes or major dents (minor dents are fine)
Drums should still retain their original paint but some external weathering and rust is acceptable (if drums are fully covered with red rust and no external paint remains then these are not acceptable)

8.9.4 Return to the UK as scrap metal recycling

Damaged/poor condition drums that can't be reused as above, can be returned to the UK as scrap metal.Drums must be decanted, vented and cleaned with absorbents and hazard markings must be painted over/removed. The drums should be crushed, if possible (at Rothera, the hydraulic drum crusher can be used), and consigned to the UK Environmental Manager as scrap metal.

8.9.5 Return to the UK as hazardous empty fuel drum

Damaged/poor condition drums that can't be reused as above can be returned to the UK as hazardous empty containers in situations where it is not possible for them to be cleaned. In this case, the empty drums must be consigned to the

Environmental Manager in the UK as hazardous waste as per the fuel they originally held.

8.10 Drums (Petrol) empty

Empty petrol drums (or jerry cans) are potentially dangerous as explosive vapour can build up inside them. **They should never be crushed** and can only be reused for storing waste petrol. Empty petrol drums should be fully decanted and vented. Make use of drip trays in case of spillage and allow petrol to evaporate in a ventilated area – do not use absorbents as petrol is flammable. Retain original hazard markings (hazard class 3, UN No. 1203).

8.10.1 Re-use for waste petrol

Empty and sound condition petrol drums can only re-used for the collection of waste petrol. See 8.13.3

8.10.2 Return to Stanley Services for reuse as petrol drum

Surplus good condition empty petrol drums should be consigned to Stanley Services for reuse and transported on the ship's deck to the FI. They should be fully vented and decanted but otherwise do not require any preparation, colour coding or labelling (retain original hazard markings). All drums sent to Stanley Services for reuse should be:

- Empty, except for dregs
- Free of any other contamination in the drum
- Rust-free on the inside
- Structurally sound - this means no holes or major dents (minor dents are fine)
- Drums should still retain their original paint but some external weathering and rust is acceptable (if drums are fully covered with red rust and no external paint remains then these are not acceptable)

8.10.3 Return to the UK as hazardous empty petrol drum

Poor condition and damaged petrol drums (or other containers e.g. jerries) should be fully decanted and vented. Make use of drip trays in case of spillage and allow petrol to evaporate in a ventilated area – do not use absorbents as petrol is flammable. They should never be crushed! Empty petrol containers should be consigned as hazardous waste – retain original hazard markings (hazard class 3, UN No. 1203) – to the Environmental Manager in the UK.

8.11 Explosives

Under international shipping regulations BAS is unable to return unwanted explosives from the Antarctic to the UK for disposal. For the disposal of surplus seismic explosives, detonators and explosives packaging, contact the Explosives Officer, at BAS Cambridge. See also Explosives Code of Practice (Fifth Edition, 2020), for detailed disposal instructions (contact Andy Smith for latest copy). Packaging which has contained explosives is best disposed of by burning.

No person other than qualified shot-firers acting on the authority of the BAS Director shall be allowed to fire explosive charges.

8.12 Flares, live flares

8.12.1 In date flares – Smoke, Handheld and Parachute Flares

Surplus (in date) flares are to be fired off on station following the manufacturer's instructions, by trained personnel only and in accordance with the '*BAS Storage & Firing of Distress Flares'* SOP. The spent flare parts should be collected from the land and cooled in water (and parachute waste collected from the water) before being packaged as waste as detailed in section 7.7 (flares, spent flares). All efforts must be made to dispose of surplus flares in this way before they expire.

8.12.2 Out of date or mis-fired flares

If out-of-date flares are discovered on station or flares are damaged or mis-fired during use or training always follow the guidance provided in the '*BAS Storage & Firing of Distress Flares'* SOP. Out of date flares or misfired flares should be isolated and should be withdrawn from further use and prepared for consignment to the UK for disposal. For specific packaging and consignment guidance for potentially live flares you are advised to consult the SDS, 'HazCheck' software and if required also seek advice from SCL and Environment Office.

8.13 Fuel and Oil

Waste fuels and oils are to be re-used on site to the maximum extent possible. Otherwise, consign to the Environmental Manager in the UK for safe disposal or reuse.

Different waste fuels are not to be mixed.
Oily rags should be segregated by oil type and must not be mixed with waste fuels.

8.13.1 Diesel, MGO

Transfer waste diesel (e.g. MGO) into good quality 205 litre MGO drums. Do not overfill. Paint the top ring of the drum and the top yellow. Label the top and sides with the case number and "WASTE DIESEL FUEL". Label as UN No 1202, flashpoint +37.7°C to +55°C, hazard class 3, Marine Pollutant. Attach flammable liquid stickers on the top and sides. Consign to the Environmental Manager in the UK.

8.13.2 AVTUR, AVCAT and Paraffin

AVTUR (aviation turbine fuel) is essentially paraffin with extra additives which make the fuel more suitable for use in aircraft engines. Waste paraffin and AVTUR can therefore be mixed together and sent to the UK for safe disposal. Send out in good quality 205 litre AVTUR drums. Do not overfill. Paint the upper ring of the drum and the top yellow. Label the top and sides with the case number and "WASTE FUEL, AVIATION TURBINE ENGINE". Label as hazard class 3, UN No. 1863, flashpoint +40°C and Marine Pollutant. Also attach flammable liquid stickers on top and sides. Consign to the Environmental Manager in the UK.

8.13.3 Petrol

Waste petrol must be decanted into good quality petrol drums. Petrol is flammable and can be extremely dangerous. It must not be mixed with any other fuel. However, small amounts of methylated spirits contaminated with petrol may be added to waste petrol drums. Do not overfill petrol drums.

Waste petrol is sent to the UK for safe disposal. Paint top ring of the drum and the top yellow. Label the top and sides with the case number and "WASTE PETROL". Label the drums hazard class 3, UN No. 1203, flashpoint -40°C and Marine Pollutant. Stick flammable liquid stickers on the top and side. Consign to the Environmental Manager in the UK.

Under no circumstances is waste petrol to be incinerated at Rothera or Halley

8.13.4 Lubricants & Engine oil

The majority of lubricants and waste engine oils are non-regulated/non-hazardous. Keep individual oils and lubricant types separate, do not mix them. Do not mix lube oil with other fuels or with cooking oil. Store in the original fuel containers or good quality clean 25 litre drums or 205L drums. Each drum must have its sides and top painted yellow. Label the top and sides with the case number and "WASTE LUBRICANT" and specify the type of oil/lubricant. Consign to the Environmental Manager in the UK.

However, some (very few) lubricants are hazardous so always refer to the SDS to ensure that any hazardous lubricants are appropriately identified, painted yellow and consigned in a clean closed top UN rated container (e.g. drum must be intact and not deheaded) to the Environmental Manager in the UK.

8.13.5 Fuel and Oil Filters

At all stations, waste fuel and oil filters should be fully decanted, segregated by fuel type and collected in new open topped 205L UN drums (supplied with removable lid that is UN rated) and painted yellow. Open top drums must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane. The drums should be clearly marked as below and consigned to the Environmental Manager for return to the UK:

Oil Filters - "oil filters - UN 3077 Class 9 Environmentally Hazardous Substance, solid, N.O.S. (oil filters)".

Diesel, MGO Filters - "fuel filters – UN 1202 Class 3 Gas oil or Diesel fuel or heating oil, light".

AVTUR, AVCAT and Paraffin - "fuel filters – UN 1863 Class 3 Fuel, Aviation, Turbine Engine".

8.13.6 Fuel/oil soaked absorbents

- **At Rothera and Halley**, oily and waste absorbents soaked with MGO or AVTUR can be incinerated on site to initiate a good burn. Only small quantities of oily absorbents should be burned at any one time (refer to the incinerator operating procedure). However, if the quantities are excessive, they can be returned to the UK (in the same way they are from other stations) as described below.

  Rags and absorbents generated at Sky Blu, Fossil Bluff or in the field can be flown back to Rothera in UN approved drums (UN1H2) with the screw top lids secured and marked as 'WASTE ABSORBENTS' (these are the red lidded bins used as poo bins). Once returned to Rothera the contents can be incinerated.

  This only applies to diesel/MGO and AVTUR products NOT PETROL. Petrol should never be recovered with absorbents or rags but should be left to evaporate. Petrol soaked absorbents are flammable and a fire risk and should not be transported by plane or by ship.

- At all other stations AVTUR or MGO/diesel fuel soaked/ oily rags and/or absorbents should be segregated by fuel type (all except petrol) and should be packaged in a new open topped 205L (or smaller) UN drum (with a removable lid that is UN rated) and consigned to the Environmental Manager in the UK for disposal. Paint upper ring and top of the drum yellow and mark with case number. Label **'WASTE RAGS, OILY, AVTUR OR MGO', and allocate hazard class 4.2, UN No. 1856. It is important to identify the drum and BOL by the fuel type e.g. AVTUR or MGO**. Consign to the Environmental Manager in the UK
  - Note: open top drums must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane..

Rags that have been soaked with linseed oil should be incinerated immediately.
Linseed oil soaked rags are a fire risk if poorly managed – the linseed oil evaporates very rapidly causing an exothermic reaction and may eventually lead to the rags spontaneously combusting. Where linseed oil soaked rags cannot be incinerated immediately, they must be laid out flat on a non-combustible surface (e.g. concrete floor) away from flammable materials and allowed to completely dry out. This may take several days. The rags should then be incinerated. If this is not possible, they should be packed in a metal well sealed (airtight) container within a UN outer packaging box, label hazard class 4.2, UN No. 1856, and consigned to the Environmental Manager in the UK.

Petrol Soaked rags
Contact the Environmental Manager in the UK for guidance on how to dispose of petrol soaked rags.

8.13.7 Fuel/oil soaked clothing

PPE and other clothing which has been contaminated during an oil spill or clean up should be segregated by oil type and placed in new open topped 205L UN drum (supplied with removable lid that is UN rated, open top drums must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane). The drums should be consigned to the Environmental Manager in the UK for disposal. Paint upper ring and top of the drum yellow and mark with case number. Label 'WASTE RAGS/PPE, OILY, AVTUR OR MGO', and allocate **hazard class 4.2, UN No. 1856**. It is important to identify the drum and BOL by the fuel type e.g. AVTUR or MGO.

8.14 Glue

Dispose of glue following the procedure outlined in Section 8.8 for waste detergents and disinfectants. Cases being sent out containing glue must be painted yellow and have "WASTE ADHESIVE" and the case number marked on the top and sides. If flammable, label the case with the name of the substance and its hazard class, UN number and flashpoint. The BOL must list for each case the volume of each type of glue, its proper shipping name, hazard class, UN no. and flashpoint. Also check the SDS to find out the adhesive is a marine pollutant and if so add this to the label and BOL. Affix the BOL and appropriate hazard labels on cases. Consign to Environmental Manager in the UK.

8.15 Insecticide

8.15.1 Spray

Out of date insecticide spray and its empty containers should be consigned to the Environmental Manager in the UK as hazardous waste. Most insecticide spray provided to stations is permethrin based (check the product packaging and MSDS) and should be packaged in its original containers (tops securely fastened and taped shut) in a UN approved 4DV fibreboard carton painted yellow. Label the box with UN number 3082, hazard class 9 and packing group III and its shipping name "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CYPERMETHRIN)". Affix the BOL.

8.15.2 Fogger/Smoke bomb

Out of date insecticide smoke bombs or used empty packaging should be consigned to the Environmental Manager in the UK as hazardous waste. Most smoke bombs provided to stations are permethrin based (check the product packaging and MSDS) and should be packaged in a UN approved 4DV fibreboard carton painted yellow. Label the box with UN number 3077, hazard class 9 and packing group III and its shipping name "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains PERMETHRIN and POTASSIUM CHLORATE)". Affix the BOL.

8.16 Lighters

Used lighters should be packed in UN approved 4DV fibreboard cartons painted yellow with UN number 1057, under hazardous classification 2.1 (flammable gas) with the BOL affixed. They should be sent back to the UK consigned to the Environmental Manager.

8.17 Matches

Damp or damaged matches should be treated as hazardous waste, painted yellow and packaged and consigned appropriately. Guidance varies based on the type of matches. Refer to the matches' type, the SDS, 'HazCheck' and seek appropriate dangerous goods advice from SCL. Consign to the Environmental Manager in the UK.

8.18 Mercury

Mercury is highly toxic and must be handled with great care. BAS has phased out the use of all metallic/elemental mercury to reduce the risks to our operations, H&S and the environment. For further advice please contact the Environment Office. All waste mercury should be returned to the UK for recycling.

Mercury is most commonly found in thermometers. Thermometers should be sealed in a plastic bag. If a thermometer is broken then the mercury and any contaminated glass should be placed inside a heavy duty polythene bottle. Handle using rubber gloves, protective clothing and eye goggles. The cap of the bottle should be sealed with packing tape. Seal the bottle in a plastic bag.

The sealed bag should be placed in a heavy duty polythene container. To absorb any spillage the container should be filled with vermiculite. Label the top and sides of the container with the case number and "WASTE MERCURY". Label the container hazard class 8, UN No. 2809. The top of the container must then be fastened with packing tape and the container itself sealed in a plastic bag.

For final packing, sealed containers should be put into UN approved (4GV or 4DV) boxes filled with vermiculite. The case must be painted yellow and label with the case number and "WASTE MERCURY", hazard class 8, UN No. 2809 on the top and sides. Affix the BOL and corrosive hazard stickers. Consign to the Environmental Manager in the UK.

8.19 Paint, Thinners & Stripper

Use up any surplus stocks of paints, thinners or stripper on site where possible. If they cannot be used then they must be returned to the UK for safe disposal.

Paints, thinners and stripper are best left in their original bottles or containers. Caps and lids must be sealed with packing tape. Each container must then be sealed in a plastic bag. Sealed containers must then be packed into UN 4GV or 4DV approved cases filled with vermiculite. 25

litre UN approved safety drums can also be used for small quantities of waste paint and for used thinners and stripper.

Cases being sent out containing paint, thinners or strippers must be painted yellow and have case numbers and "WASTE PAINT" or "WASTE PAINT RELATED MATERIALS" marked on the top and sides. If flammable, label the case with the name of the substance with the lowest flashpoint, as well as its hazard class, UN number and flashpoint. Also check the SSDS to find out if the paint thinner or stripper is a marine pollutant and if so add this to the label and BOL.

All paints, unless they are water-based emulsions, are class 3 flammable liquids. The BOL must list for each case the volume of each paint, stripper or thinner, proper shipping names, hazard classes, UN nos. and flashpoints (see 4.3.6 or 4.3.7). Affix the BOL and appropriate hazard labels on cases. Consign to the Environmental Manager in the UK.

N.B. Empty paint containers (which cannot possibly be cleaned) should be treated in the same way as the waste paints they contain and packed in UN approved 4GV or 4DV boxes and labelled as described above.

8.20 Photochemicals

All waste photochemicals are returned to UK for disposal. If the silver content is high enough, it will be recovered by specialist recycling contractors. Pour into 25 litre UN approved safety drums. Only the final wash water can go down the sink.

Do not overfill drums; allow for expansion during transit. Paint the upper ring and top yellow, stencil and label with the case number and "WASTE CORROSIVE LIQUID, N.O.S. (POTASSIUM HYDROXIDE 2-5%)" on the sides and top. Mark Hazard Class 8, UN Number 1760. Affix the BOL and corrosive hazard stickers. Consign to the Environmental Manager in the UK.
X-ray waste is also returned to the UK for disposal. Check the MSDS for any hazardous chemicals and consign accordingly.

8.21 Radioactive waste

If you have any questions about radioactive waste disposal please contact the Radiation Protection Supervisor or the Health and Safety Manager at BAS, Cambridge after reading the information below.

8.21.1 Scientific Radioactive Waste

BAS produces small quantities of low level radioactive waste from its scientific research in the Antarctic. The research is very carefully reviewed and controlled to ensure that there is no risk to human safety or to the environment. The BAS Radiation Protection Supervisor has produced local rules governing the use of ionizing radiation in the Antarctic, which can be found on the BAS intranet.
http://basweb.nerc-bas.ac.uk/health_and_safety/Work%20with%20Radiation/index.php

These must be read and complied with by anyone using radio-isotopes.

The disposal route of radioactive waste from the BAS ship and Antarctica must be agreed with the BAS Radiation Protection Supervisor and the Environment Office **prior** to any work being carried out. Local Rules for Rothera and the SDA provide details of the local procedures that must be followed. The transport and disposal rules regulating radioactive waste are complex and specific to each isotope and activity level.

If BAS radioactive waste is carefully packaged, labelled and documented, it poses no risk to health or safety. All radioactive waste must be returned to the UK for safe disposal. Radioactive waste must never be mixed with other wastes, although radioactive waste may contain other hazards (e.g. scintillants).
The full cost to dispose of waste radioactive materials shall be paid for by the science project which produced it. No specific BAS budget exists for dealing with radioactive waste. For this reason, science projects (planning to use radioactive materials) will only be authorised when it has demonstrated it has the appropriate budgetary allowances allocated to the disposal of all expected radioactive waste.

Please also refer to the BAS Policy for Work with Ionising Radiation, Authorisation, Responsibilities and Arrangements found on the BAS intranet.
http://basweb.nerc-bas.ac.uk/health_and_safety/documents/procedures/BAS%20Radiation%20Policy%20HS%2013%20Jan%2011.pdf

Radioactive waste which is not packed, labelled or documented according to the instructions provided by the BAS Senior Radiation Supervisor will not be loaded by the BAS ship.
Wherever practical, radioactive waste must be separated by isotope.
Different isotopes should not be mixed in the same container.

A safe working system will be prepared by the Health and Safety Officer for the handling of radioactive waste in British Ports.

8.21.2 Ionisation Chamber Smoke Detectors

Ionisation chamber smoke detectors contain a very small, sealed, low-level radioactive source. They are to be carefully packaged in a wooden or cardboard box, painted yellow and consigned to the Environmental Manager in the UK. The boxes do not require hazard labels. The BOLs must include the details of the make, type and level of radioactivity of the smoke. This information is usually written on the back of the detector.

8.22 Waste Electrical and Electronic Equipment (WEEE)

All WEEE should be returned to the UK for recycling or disposal. Guidance for non-regulated WEEE is provided in section 7.27.

Some WEEE is classified as hazardous waste. This includes WEEE that contains hazardous components or substances WEEE waste containing hazardous materials should be packed and consigned as per the guidance provided for that particular hazardous substance. Some examples are provided below e.g. WEEE containing the following substances should be packaged as per the specific guidance for their component;

- polychlorinated biphenyls (PCBs), e.g. in capacitors/condensers **(prohibited in Antarctica)**
- asbestos (See Section 8.2)
- fluorescent tubes & compact fluorescent lamps (CFLs) containing mercury (See Section 7.13.3)
- lead acid, lithium or dry cell batteries (See Section 8.3)
- cathode ray tubes, e.g. in some televisions and older computer monitors
- radioactive components (e.g. beryllium coated parts). (Section 8.21)

Where no additional guidance has been provided for WEEE containing hazardous substances please contact the Environment Office for specific guidance.

8.22.1 Fridges, Freezers and Air-conditioning units

Fridges, freezers and air-conditioning units are WEEE which can either be classed as hazardous or non-hazardous/non-regulated waste.

<u>Non-Hazardous</u>

If they meet special provisions (SP) 119 and 291 as below they are exempt from the IMDG Code and therefore classed as non-hazardous.

- Refrigerating machines containing non-flammable, non-toxic-gases (less than 12 kg) or ammonia solutions (less than 12 L) meet SP 119 and should be shipped as non-hazardous WEEE waste. Pack on pallet or sturdy container and label with the case number and paint yellow. Mark the container with “WASTE REFRIGERATING MACHINES" and clarify in the BOL that it is “non- hazardous under SP 119: contains less than 12 kg of gas in class 2.2 or ammonia solutions (UN 2672)”. Consign to the Environmental Manager in the UK. Affix the BOL.

- Refrigerating machines containing flammable, non-toxic, liquefied gas (less than 12 kg of gas) meet SP 291 and should be shipped as non-hazardous waste. Pack on pallet or sturdy container and label with the case number and paint yellow. Mark the container with “WASTE REFRIGERATING MACHINES" and clarify in the BOL that it is “non-hazardous under SP 291: contains less than 12 kg of gas in class 2.1”. Affix the BOL and consign to the Environmental Manager in the UK.

Hazardous

If they do not meet the special provisions as listed above then fridges, freezers and air-conditioning units are classed as hazardous under the IMDG code.

- Paint the container yellow and label with the case number and "REFRIGERATING MACHINES containing non-flammable, non-toxic gases or ammonia solution (UN 2672)" on the sides and top. Mark Hazard Class 2.2., UN Number 2857 and affix the BOL. Consign to the Environmental Manager in the UK.

OR

- Paint the container yellow and label with the case number and "REFRIGERATING MACHINES containing flammable, non-toxic, liquefied gas" on the sides and top. Mark Hazard Class 2.1., UN Number 3358 and affix the BOL. Consign to the Environmental Manager in the UK.

8.22.2 E-cigarettes/Vapes

Vapes should be segregated from other batteries and WEEE waste. Please also segregate reusable vapes from single-use vapes and dispose of as below.

8.22.2.1. Single-use disposable vapes

Most single-use vapes contain a lithium-ion battery which is completely closed within the device and cannot be recharged or removed. At the end of its life (e.g. when e-liquid is used up) please dispose of as per the guidance 8.3 for 'lithium-ion batteries contained in equipment'. Please make sure that the BOL identifies the waste as a single use vape.

8.22.2.2. Vapes (reusable)

Reusable/rechargeable vapes either contain a built-in battery that is integrated into the device and cannot be replaced or removed OR have an external and removable battery. If the vape battery fails, please dispose of as such:

- If the battery is removable then dispose of the battery as per the guidance in batteries 8.3.
- If the battery is not removable then the whole device will need to be disposed of. Please follow the guidance as described above for single-use disposable vapes and ensure the BOL identifies the waste as a reusable vape containing battery. In addition, where possible remove the e-liquid pod prior to disposal, where this is not possible and the vape still contains e-liquid please ensure that the BOL details the hazards for both the battery and the e-liquid.

Section 9

ANTARCTIC FIELD WASTE

9 FIELD WASTE

All waste with the exception of grey water should be removed from the Antarctic and South Georgia field.

9.1 Food waste

On snow and ice, food waste should be collected in a UN approved container provided by the Field Operations Manager and returned to the ship or station for disposal.

At Sky Blu and Fossil Bluff food waste and food scraps strained from grey water should be collected and flown back to Rothera for incineration. For more advice, refer to the Sky Blu and Fossil Bluff operating manuals.

At the coast, some food waste can be discharged to the sea or seashore below the high water mark unless it contains avian products or decomposes slowly. However, the following food wastes should be segregated for return to station and disposal as per station guidance:

- Waste poultry products: such as eggshells, chicken/turkey fat, meat, skin etc. should be boiled or microwaved for ten minutes to sterilize viruses.
- Other foods that decompose slowly: such as bones, fats, orange peels, mango/avocado stones, tea bags (if they contain plastic), onion skins etc.
- Mouldy foods.

9.2 Grey Water

On snow and ice, grey water should be discharged to a snow pit. At the coast, grey water can be discharged to the sea or seashore.

At Sky Blu strained grey water is discharged to a snow pit. At Fossil Bluff strained grey water is discharged onto the scree slope outside Bluebell Cottage.

9.3 Human waste and Urine

9.3.1 Deep field via Rothera

All solid human waste generated in the deep field should be collected and stored in UN approved drums (poo bins) provided by the Field Operations Manager. These should be returned to Rothera, and the contents disposed of in the incinerator.

Urine should be discharged into a snow pit. At Fossil Bluff, urine should be discharged directly onto the scree slope in the demarcated area to the south of Bluebell Cottage.

9.3.2 Islands/Coastal locations via Rothera

All solid human waste generated from island and coastal visits from Rothera should be treated as above and either returned to Rothera in poo bins for incineration

Urinating should take place below the high tide line or through tide cracks during winter and avoiding any vegetation.

9.3.3 Coastal locations supported by the SDA.

Where possible (to be determined through the EIA), all solid human waste generated from coastal field trips supported by the SDA, should be treated as above and collected in UN rated poo bins. Where possible, the SDA will return these to Rothera for incineration on station alternatively, the bins will be returned to the UK for disposal. In these cases, as the poo bins are likely to be stored for a longer duration of time the field ops team will issue the field team with 'poo powder' to help solidify and reduce odours from the waste.

Urinating should take place below the high tide line or through tide cracks during winter and avoiding any vegetation

9.3.4 Signy/KEP/BI and coastal locations near the island stations

At the island stations there is no deep field science, but staff do spend long days away from station with occasional overnight stays in huts. In these situations, staff are advised to go to the toilet before leaving station and if caught out in the field then urine and human waste should be discharged on the shoreline, under the tidal high mark. Human waste should not be discharged into vegetated areas, freshwater lakes or streams under ANY circumstance.

9.4 Solid Waste

All general/mixed waste should be returned to the station or ship in the bags and waste packaging provided in the field boxes.

Small field parties should segregate their waste using the provided small colour coded tent bags as described in the table below:

Table 7. Field Waste Segregation for small field parties (2-4 people)

Type of waste	Tent Bag colour	Bag label
Glass, cans and metal	Red	WASTE METAL AND GLASS
Paper, card, plastics	Blue	WASTE PAPER, CARD AND PLASTIC
Sanitary, medical, condoms	Yellow	MEDICAL AND SANITARY WASTE
Hazardous waste (e.g. batteries)	UN rated packaging	HAZARDOUS WASTE

Larger field parties and campsites do not use the small colour coded tent bags but instead are provided with waste bins (and large black sacks) to allow for waste segregation of larger quantities of waste. The segregated waste in black sacks must be appropriately identified with the provided tape and labelled to describe their contents.

Bags containing medical and sanitary waste can be sealed and transported in the UN approved drums with human waste (poo bins) for incineration on station.

Hazardous waste must also be sealed in appropriately marked and labelled UN approved packages if they are to be flown out of the field in BAS aircraft. Hazardous waste must be declared to the pilot in advance. It is also necessary for any damaged hazardous waste e.g. batteries to be declared in advance so that the pilot can determine if they are safe to fly.

In some circumstances, waste can be segregated on return to BAS stations for recycling if previously agreed with the Station GA's.

Packaging contaminated with food that cannot be cleaned for recycling should be returned to Rothera for incineration.

Empty fuel drums can be loaded onto Nansen sledges. If removing large quantities of drums by aircraft, drums can have their tops cut off and can be flattened to reduce volume. However an appropriate spill kit should be present if this is undertaken.

Removal of waste is not required if removal by any practical option is likely to risk human life or cause a greater adverse impact than leaving in situ. Discuss with the Station Leader and Field Operations Manager (FOM) before leaving anything in the field and inform the BAS Environment Office at earliest opportunity.

Certain items may be required for future depots but always check with the FOM/Station Leader before removal.

9.5 The Sledge Code of Practice for Field Waste

- Minimise your waste - reduce output by completely using all consumables before consigning to waste.
- Reuse containers for everyday purposes (e.g. storage of used tea-bags, containers for jam/spreads etc.
- Reduce volume of waste - crush all cartons, cans, tins, boxes; fold paper and card flat if possible.
- Separate your waste into the allocated waste bags supplied (see table above).
- When full, compress tightly, pack securely and store safely around camp.
- Record the number and types of bags produced.
- When travelling, ensure bags are not damaged or ripped.

- Waste should never be left in the field. (If there are exceptional circumstances where waste cannot be removed from the field this **must be** discussed with the Field Operations Manager or the Station Leader **prior** to the waste being depoted.)
- A used fuel drum CAN be carried on a Nansen - take enough rope!
- Before you leave the crag, worksite or camp, look around for any loose rubbish and pick it up!
- Remember, the major factor governing the removal of your waste is YOU! There is little reason not to remove all your rubbish back to the station or ship.

9.6 Air Unit

9.6.1 Dash-7 Toilet

The Dash-7 toilet is intended for use during long flights. Passengers should be briefed to use the toilet facilities before they board the aircraft and where possible should only use the aircraft toilet for urine. Upon return to Rothera, the Air Unit Coordinator is responsible for removing the toilet cartridge and placing it outside the Sewage Treatment Plant (STP). Plumbers then empty the cartridge into to the sluice in the STP and waste is macerated. The plumbers wash the cartridge and return it to the aircraft.

9.6.2 Twin Otter Toilet

The Twin Otter aircraft does not have toilet facilities on board. Passengers are briefed to use the toilet facilities before they board the aircraft. Urine bottles can be retrieved from the field store for urine emergencies- urine should be flushed down the toilet on return to station, the bottle rinsed well and returned for reuse. WAG bags are available for faecal emergencies, these should then be disposed of by incineration on return to station.

Section 10

Ship's Laboratory/Science Cruise Waste

10 SHIP'S (SDA) LABORATORY/SCIENCE CRUISE WASTES

10.1 Antarctic/South Georgia/Southern Ocean science cruise wastes

Disposal of wastes generated by science cruises (on the SDA vessel) which operate in the Antarctic, South Georgia or Southern Ocean will be managed by BAS. Please consult with the SDA Laboratory Manager and the Chief Officer prior to preparing and consigning your wastes for disposal.

All science waste (excluding radioactive waste) produced on the SDA during science cruises within the Antarctic, South Georgia or Southern Ocean, should be consigned to the Environmental Manager in the UK for disposal and offloaded from the ship along with all station waste during the SDA's annual waste offload call in the UK. The Environment Office will then organise and pay for the disposal of this waste.

Please see the relevant sections for station waste management (see sections 6, 7and 8) within this document for guidance on the disposal of specific waste materials and how to consign and package them. Bills of Lading for all cruise science waste must be completed and shared with the Chief Officer and the Manager of Supply Chain Logistics prior to the ships arrival in the UK for waste offload.

Radioactive waste should also be consigned to the Environmental Manager in the UK. The project generating the waste will be charged for the transportation and disposal of this waste.

(Please see Section 8.21 before consigning radioactive waste.)

10.2 Rest of the world science cruise wastes

Waste generated by science cruises which operate outside of the Antarctic, South Georgia or Southern Ocean should be managed by the Principle Investigator (PI)/Principle Science Officer (PSO) and paid for by their own research institute/organisation.

If a scientist or individual consigns waste to their own institute (irrespective of where this waste has been generated) they must ensure that they are fully compliant with all appropriate legislation including;

- The Waste (England and Wales) (Amended) Regulations 2014
- The Duty of Care Regulations 1991
- The Hazardous Waste Regulations 2005.

These regulations affect the packaging, containment, storage, transportation and disposal of waste from source to final disposal. This includes transportation from the UK port where the waste is offloaded from the ship, to the research institute. The PI/PSO must provide confirmation that waste consigned to any organisation other than BAS, will be fully compliant with the legislation outlined above.

Section 11

Ship's (SDA) Operational Waste

11 SHIP'S (SDA) OPERATIONAL WASTES

The Waste Management Handbook is used by the BAS vessel as the ship's Garbage Management Plan. Ship produced waste is generally referred to as 'garbage', however the ship also produces other wastes such as sewage and oily sludge wastes and therefore throughout this document the term 'waste' when used for the ship will refer to garbage, sewage and oily sludges.

All ship produced waste (garbage, sewage and oily sludge) must meet the requirements of the BAS Waste Management Policy as detailed in section 1.2 and the requirements of the MARPOL, the Antarctic Treaty and the Polar Code as detailed in section 2. Garbage disposals/discharges must be recorded in the ship's 'Garbage Record Book' and oily sludge discharges must be recorded in the ship's 'Oil Record Book'.

This Handbook should be read alongside the following ship documentation which is controlled within the ships ISM Code Safety Management System:

- Shipboard Garbage Disposal Placard (SEA-SD-ECO-ANX-01);
- Garbage Management Marine Standing Instruction (SEA-SD-MSI-GEN-32);
- Sewage Treatment Marine Standing Instruction (SEA-SD-MSI-ENG-04); and
- Bilge and Waste Oil Marine Standing Instruction (SEA-SD-MSI-GEN-30)

The ship will be responsible for planning and coordinating the disposal of its own waste (garbage, sewage, oily sludge) through discharge to sea, discharge to port facilities (including consigning to the BAS Environment Office) or incineration on board, as detailed below.

11.1 Discharge of waste overboard

11.1.1 Food waste

Only food related garbage is permitted to be discharged overboard, and then only in accordance with MARPOL Annex V and the Polar Code which stipulate that when operating within the Antarctic Treaty Area (i.e. south of 60 degrees) and other polar waters, that it is prohibited to discharge food waste that is not comminuted or ground. In this situation, food waste should be passed through the ship's waste disposal unit, comminuted to less than 25mm and discharged (whilst the ship is enroute) at a distance not less than 12 nautical miles from the shore/ice shelves and as far as practicable (not less than 12 nautical miles) from areas of ice concentration exceeding 1/10.

However, additional restrictions exist for avian/poultry food wastes which should NOT be discharged overboard unless treated to be made sterile (see section 11.2.1 for guidance).

11.1.2 Sewage

Sewage shall be passed through the vessel's sewage treatment plant before discharge to sea in compliance with MARPOL and the Polar Code:

- The SDA has a Type Approved Sewage Treatment Plant (STP) in accordance with MEPC.227 (64) that meets the standards required by MARPOL 73/78 Annex IV (Reg 11.1.2) including:
  - the effluent shall not produce visible floating solids nor cause discolouration of surrounding water.
  - The STP meets the standards and test methods laid down by the IMO.
- The SDA must also meet the requirements of the Polar Code when operating in the Antarctic/Arctic which stipulates that sewage discharges from approved sewage treatment plants within polar waters should occur in areas as far as practicable from the nearest land, iceshelf, fast ice or ice concentrations greater than 1/10.

Sanitary waste or condoms should not be disposed of through the sewage systems. See Section 11.2.5 for disposal guidelines.

11.2 Incineration of garbage

Some garbage produced on the vessel is prioritised for incineration at sea. This includes:

11.2.1 Avian food waste

Avian food waste (poultry meat, bones, skin, egg and eggshells etc.) should NOT be discharged overboard (unless it has been treated to be made sterile e.g. through cooking). Non-sterile avian food waste must be segregated from other food waste for incineration on board or discharge ashore at European ports.

11.2.2 Other food wastes (can't go through ships waste disposal unit)

Meat bones and other food wastes such as fruit stones etc. that can't go through the ships waste disposal unit for discharge overboard must be segregated from other food waste for incineration on board.

11.2.3 Clinical wastes, general

General clinical wastes (e.g. used dressings, swabs, tongue depressors) should be incinerated on board the vessel at sea.

11.2.4 Controlled drugs

The Doctor or Chief Officer is responsible for coordinating the safe disposal of controlled drugs and medicines (surplus, used or out of date) by incineration on the ship whilst at sea.

These should be incinerated on the ship in the presence of the Doctor or Chief Officer and another witness. All disposals/transfers of controlled drugs must be recorded on the ship's controlled drug register.

(See section 11.5.1 for guidance on non-controlled drugs)

11.2.5 Sanitary wastes

Sanitary wastes (including tampons, sanitary towels, condoms etc.) should be incinerated on board the vessel at sea.

11.3 Discharge of garbage to shore or port facilities

Under normal operating conditions, most non-hazardous and hazardous garbage will be retained onboard until it can be discharged to suitable shore or port facilities. Refer to the ships' 'Shipboard Garbage Disposal Placard (SEA-SD-ECO-ANX-01)' for further detail.

The vessel should use the following order of priority/hierarchy in order to decide which ports/shore facilities to discharge its garbage to. Emphasis should be on using reputable and licensed waste contracts capable of offering recycling/recovery or diversion from landfill options for the vessels waste.

Please note that the port facilities in the Falkland Islands should NOT be used due to the lack of recycling infrastructure and lack of regulated landfill site, the only exception to this is glass as detailed below. This is also detailed in the BAS Waste Management Policy as detailed in section 1.2.

11.3.1 Glass – port/shore discharge to the Falkland Islands

Waste glass produced by the ship can be discharged in the FI and consigned to the Public Works Department (PDR) for crushing and use as local road aggregate. The FI PDR will accept any volume as long as they receive pre-notification, the glass is appropriately/safely packaged and delivered to the Pony's Pass Quarry. Notification and transport to the PDR must be coordinated via the BAS Stanley Office.

11.3.2 Non-Hazardous Garbage - port/shore discharge hierarchy

1. UK or European ports – coordinate waste collection via port agents. Vessel will request recycling or recovery collections for their segregated waste and recyclables. Intention is to divert waste from landfill wherever possible.
2. UK for BAS Environment Office to coordinate – the vessel will need to package and consign all non-hazardous waste as per the specific guidance in this Waste Management Handbook (see 4.3.3 for guidance on BOLs, section 6 and section 7 for detailed information for recyclables and non-regulated waste types). The Environment Office must be notified and BOLs shared in advance. Vessel waste must be offloaded with station waste during the UK port call at the end of the Antarctic season.

3. Non-UK or EU ports – the vessel will only discharge non-hazardous wastes outside of the UK/Europe where necessary. In this situation, the vessel will coordinate waste collections via the port agent and request recycling or recovery collections for segregated waste and recyclables.

11.3.3 Hazardous Garbage – port/shore discharge hierarchy

Hazardous waste will only be discharged to UK or EU ports in order of priority:

1. UK or EU ports via the port agent – coordinate hazardous waste collection of segregated hazardous wastes by a licensed hazardous waste contractor.
2. UK for BAS Environment Office to coordinate – the vessel will need to package and consign all non-hazardous waste as per the specific guidance in this Waste Management Handbook (see section 4.3 for guidance on BOLs and section 8 for detailed information by haz waste type). The Environment Office must be notified and BOLs shared in advance. Vessel hazardous waste must be offloaded with station waste during the UK port call at the end of the Antarctic season.
3. Non-UK or EU ports – the vessel will discharge hazardous wastes outside of the UK/Europe only when this can't be stored for return to UK and where there is sufficient evidence that hazardous waste is handled by an appropriate licensed/permitted waste contractor.

11.4 Discharge of oil residue sludge tanks to shore or port facilities

The discharge of oily residues from sludge tanks is prohibited at sea. The SDA will discharge its sludge tanks at appropriate shoreside reception facilities as detailed in the ships 'Bilge and Waste Oil Marine Standing Instruction (SEA-SD-MSI-GEN-30)' and all entries will be listed in the ships 'Oil Record Book'.

Wherever possible the SDA will prioritise discharge of its sludge tanks at UK or EU ports using approved hazardous waste contractors.

Where it is necessary to discharge sludge tanks outside of the UK/EU then the vessel should use government approved hazardous waste contractors that can demonstrate the end disposal of the sludge. Please note that the Falkland Islands do not currently offer a regulated hazardous waste disposal route and should therefore NOT be used for ship sludge disposal. This is detailed in the BAS Waste Management Policy in section 1.2. - where there is an exceptional operational/safety need to discharge in the FI then this can go ahead but with prior consultation of Environment Office and the discharge must be reported on Maximo as an environmental incident.

11.5 Garbage consigned to the BAS Environment Office

Where ship produced garbage is consigned to the BAS Environment Office (where port disposal facilities are not adequate/cannot meet waste hierarchy), the vessel must package and consign

waste as per the specific guidance for each waste stream provided in this Waste Management Handbook and as detailed in the following sections:

- Section 4 - PACKING, LABELLING, TRANSFER & SHIPPING DOCUMENTATION
- Section 6 - STATION RECYCLABLES & GENERAL WASTE
- Section 7 - STATION NON-REGULATED WASTE
- Section 8 - STATION HAZARDOUS WASTE

The Environment Office must be notified in advance and BOLs shared with the Environmental Manager. The vessel waste must be offloaded with station waste during the UK port call at the end of the Antarctic season.

The following waste types are generally prioritised for discharge and consignment to the BAS Environment Office during station waste offload at a UK port:

11.5.1 Non-Controlled Drugs and Medicines

The Doctor or Chief Officer is responsible for the safe disposal of non-controlled drugs and medicines (surplus, used or out of date).

Non-controlled drugs are usually non dangerous for transport* but should be packaged in a way to prevent breakages or spills. All non-controlled drugs should be packed in a UN approved box with a plastic liner to prevent leaks. Please note that the BASMU grey plastic reusable crates are not an acceptable container and should NOT be used for waste drugs and medicines. The UN container used for waste drugs should be consigned to the Environmental Manager in the UK and labelled as 'WASTE NON-CONTROLLED DRUGS, NON-HAZARDOUS, NON-REGULATED'. The BOL should include a detailed list of the contents.

*Please note, some non-controlled drugs (those which are cytotoxic/cytostatic) contain hazardous materials and need to be segregated and consigned separately as 'WASTE NON-CONTROLLED DRUGS, HAZARDOUS'. The Safety Data Sheet (SDS) of drugs should be referenced to confirm whether they are hazardous or not.

11.5.2 Sharps (clinical waste)

'Sharps' (e.g. syringe needles, empty syringes, scalpels, razor blades and disposal razors) which have been used on animals or humans are treated as clinical waste and collected in yellow UN rated 'sharps' disposal boxes. They are to be returned to UK for safe disposal. Mark top and sides with case number and "CLINICAL WASTE, UNSPECIFIED, N.O.S, (SHARPS)", hazard class 6.2, UN 3291 and consign to the Environmental Manager for return to the UK.

Appendix 1: Annex III to the Protocol on Environmental Protection

Waste Disposal & Waste Management

ANNEX III TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY: WASTE DISPOSAL AND WASTE MANAGEMENT

Article 1 *General Obligations*

1. This Annex shall apply to activities undertaken in the Antarctic Treaty area pursuant to scientific research programs, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.
2. The amount of wastes produced or disposed of in the Antarctic Treaty area shall be reduced as far as practicable so as to minimise impact on the Antarctic environment and to minimise interference with the natural values of Antarctica, with scientific research and with other uses of Antarctica which are consistent with the Antarctic Treaty.
3. Waste storage, disposal and removal from the Antarctic Treaty area, as well as recycling and source reduction, shall be essential considerations in the planning and conduct of activities in the Antarctic Treaty area.
4. Wastes removed from the Antarctic Treaty area shall, to the maximum extent practicable, be returned to the country from which the activities generating the waste were organised or to any other country in which arrangements have been made for the disposal of such wastes in accordance with relevant international agreements.
5. Past and present waste disposal sites on land and abandoned work sites of Antarctic activities shall be cleaned up by the generator of such wastes and the user of such sites. This obligation shall not be interpreted as requiring:
   a) the removal of any structure designated as a historic site or monument; or
   b) the removal of any structure or waste material in circumstances where the removal by any practical option would result in greater adverse environmental impact than leaving the structure or waste material in its existing location.

Article 2 *Waste Disposal by Removal from the Antarctic Treaty Area*

1. The following wastes, if generated after entry into force of this Annex, shall be removed from the Antarctic Treaty area by the generator of such wastes:
   (a) radio-active materials;
   (b) electrical batteries;
   (c) fuel, both liquid and solid;
   (d) wastes containing harmful levels of heavy metals or acutely toxic or harmful persistent compounds;
   (e) poly-vinyl chloride (PVC), polyurethane foam, polystyrene foam, rubber and lubricating oils, treated timbers and other products which contain additives that could produce harmful emissions if incinerated;
   (f) all other plastic wastes, except low density polyethylene containers (such as bags for storing wastes), provided that such containers shall be incinerated in accordance with Article 3 (1);
   (g) fuel drums; and
   (h) other solid, non-combustible wastes;

   provided that the obligation to remove drums and solid non-combustible wastes contained in subparagraphs (g) and (h) above shall not apply in circumstances where the removal of such wastes by any practical option would result in greater adverse environmental impact than leaving them in their existing locations.

2. Liquid wastes which are not covered by paragraph 1 above and sewage and domestic liquid wastes, shall, to the maximum extent practicable, be removed from the Antarctic Treaty area by the generator of such wastes.

3. The following wastes shall be removed from the Antarctic Treaty area by the generator of such wastes, unless incinerated, autoclaved or otherwise treated to be made sterile:
   (a) residues of carcasses of imported animals;
   (b) laboratory culture of micro-organisms and plant pathogens; and
   (c) introduced avian products.

Article 3 *Waste Disposal by Incineration*

Subject to paragraph 2 below, combustible wastes, other than those referred to in Article 2 (1), which are not removed from the Antarctic Treaty area shall be burnt in incinerators which to the maximum extent practicable reduce harmful emissions. Any emission standards and equipment guidelines which may be recommended by, *inter alia* , the Committee and the Scientific Committee on Antarctic Research shall be taken into account. The solid residue of such incineration shall be removed from the Antarctic Treaty area.

1. All open burning of wastes shall be phased out as soon as practicable, but no later than the end of the 1998/1999 season. Pending the completion of such phase-out, when it is necessary to dispose of wastes by open burning, allowance shall be made for the wind direction and speed and the type of wastes to be burnt to limit particulate deposition and to avoid such deposition over areas of special biological, scientific, historic, aesthetic or wilderness significance including, in particular, areas accorded protection under the Antarctic Treaty.

Article 4 *Other Waste Disposal on Land*

1. Wastes not removed or disposed of in accordance with Articles 2 and 3 shall not be disposed of onto ice-free areas or into fresh water systems.

2. Sewage, domestic liquid wastes and other liquid wastes not removed from the Antarctic Treaty area in accordance with Article 2, shall, to the maximum extent practicable, not be disposed of onto sea ice, ice shelves or the grounded ice-sheet, provided that such wastes which are generated by stations located inland on ice shelves or on the grounded ice-sheet may be disposed of in deep ice pits where such disposal is the only practicable option. Such pits shall not be located on known ice-flow lines which terminate at ice-free areas or in areas of high ablation.

3. Wastes generated at field camps shall, to the maximum extent practicable, be removed by the generator of such wastes to supporting stations or ships for disposal in accordance with this Annex.

Article 5 *Disposal of Waste in the Sea*

1. Sewage and domestic liquid wastes may be discharged directly into the sea, taking into account the assimilative capacity of the receiving marine environment and provided that:
    (a) such discharge is located, wherever practicable, where conditions exist for initial dilution and rapid dispersal; and
    (b) large quantities of such wastes (generated in a station where the average weekly occupancy over the austral summer is approximately 30 individuals or more) shall be treated at least by maceration.

2. The by-product of sewage treatment by the Rotary Biological Contacter process or similar processes may be disposed of into the sea provided that such disposal does not adversely affect the local environment, and provided also that any such disposal at sea shall be in accordance with Annex IV to the Protocol.

Article 6 *Storage of Waste*

All wastes to be removed from the Antarctic Treaty area, or otherwise disposed of, shall be stored in such a way as to prevent their dispersal into the environment.

Article 7 *Prohibited Products*

No polychlorinated biphenyls (PCBs), non-sterile soil, polystyrene beads, chips or similar forms of packaging, or pesticides (other than those required for scientific, medical or hygiene purposes) shall be introduced onto land or ice shelves or into water in the Antarctic Treaty area.

Article 8 *Waste Management Planning*

1. Each Party which itself conducts activities in the Antarctic Treaty area shall, in respect of those activities, establish a waste disposal classification system as a basis for recording wastes and to facilitate studies aimed at evaluating the environmental impacts of scientific activity and associated logistic support. To that end, wastes produced shall be classified as:

(a) sewage and domestic liquid wastes (Group 1);
(b) other liquid wastes and chemicals, including fuels and lubricants (Group 2);
(c) solids to be combusted (Group 3);
(d) other solid wastes (Group 4); and
(e) radioactive material (Group 5).

2. In order to reduce further the impact of waste on the Antarctic environment, each such Party shall prepare and annually review and update its waste management plans (including waste reduction, storage and disposal), specifying for each fixed site, for field camps generally, and for each ship (other than small boats that are part of the operations of fixed sites or of ships and taking into account existing management plans for ships):
(a) programs for cleaning up existing waste disposal sites and abandoned work sites;
(b) current and planned waste management arrangements, including final disposal;
(c) current and planned arrangements for analysing the environmental effects of waste and waste management; and
(d) other efforts to minimise any environmental effects of wastes and waste management.

3. Each such Party shall, as far as is practicable, also prepare an inventory of locations of past activities (such as traverses, field depots, field bases, crashed aircraft) before the information is lost, so that such locations can be taken into account in planning future scientific programs (such as snow chemistry, pollutants in lichens or ice core drilling).

Article 9 *Circulation and Review of Waste Management Plans*

1. The waste management plans prepared in accordance with Article 8, reports on their implementation, and the inventories referred to in Article 8 (3), shall be included in the annual exchanges of information in accordance with Articles III and VII of the Antarctic Treaty and related Recommendations under Article IX of the Antarctic Treaty.

2. Each Party shall send copies of its waste management plans, and reports on their implementation and review, to the Committee.

3. The Committee may review waste management plans and reports thereon and may offer comments, including suggestions for minimising impacts and modifications and improvement to the plans, for the consideration of the Parties.

4. The Parties may exchange information and provide advice on, *inter alia* , available low waste technologies, reconversion of existing installations, special requirements for effluents, and appropriate disposal and discharge methods.

Article 10 *Management Plans*

Each Party shall:

(a) designate a waste management official to develop and monitor waste management plans; in the field, this responsibility shall be delegated to an appropriate person at each site;

(b) ensure that members of its expeditions receive training designed to limit the impact of its operations on the Antarctic environment and to inform them of requirements of this Annex; and

(c) discourage the use of poly-vinyl chloride (PVC) products and ensure that its expeditions to the Antarctic Treaty are advised of any PVC products they may introduce into that area in order that these products may be removed subsequently in accordance with this Annex.

Article 11 *Review*

This Annex shall be subject to regular review in order to ensure that it is updated to reflect improvement in waste disposal technology and procedures and to ensure thereby maximum protection of the Antarctic environment.

Article 12 *Cases of Emergency*

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value or the protection of the environment.

2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

Article 13 *Amendment or Modification*

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the amendment.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

Appendix 2: Annex IV to the Protocol on Environmental Protection

ANNEX IV TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY PREVENTION OF MARINE POLLUTION

Article 1 *Definitions*

For the purpose of this Annex:

(a) "discharge" means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying;

(b) "garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship, except those substances which are covered by Articles 3 and 4;

(c) "MARPOL 72/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto and by any other amendment in force thereafter;

(d) "noxious liquid substance" means any noxious liquid substance as defined in Annex II of MARPOL 73/78;

(e) "oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined oil products (other than petrochemicals which are subject to the provisions of Article 4);

(f) "oily mixture" means a mixture with any oil content; and

(g) ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms.

Article 2 *Application*

This Annex applies, with respect to each Party, to ships entitled to fly its flag and to any other ship engaged in or supporting its Antarctic operations, while operating in the Antarctic Treaty area.

Article 3 *Discharge of Oil*

1. Any discharge into the sea of oil or oily mixture shall be prohibited, except in cases permitted under Annex I of MARPOL 73/78. While operating in the Antarctic Treaty area, ships shall retain on board all sludge, dirty ballast, tank washing waters and other oily residues and mixtures which may not be discharged into the sea. Ships shall discharge these residues only outside the Antarctic Treaty area, at reception facilities or as otherwise permitted under Annex I of MARPOL 73/78.

2. This Article shall not apply to:
   (a) the discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:
      (i) provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and
      (ii) except if the owner or the Master acted either with intent to cause damage, or recklessly and with the knowledge that damage would probably result; or

   (b) the discharge into the sea of substances containing oil which are being used for the purpose of combating specific pollution incidents in order to minimise the damage from pollution.

Article 4 *Discharge of Noxious Liquid Substances*

The discharge into the sea of any noxious liquid substance, and any other chemical or other substances, in quantities or concentrations that are harmful to the marine environment, shall be prohibited.

Article 5 *Disposal of Garbage*

1. The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags, shall be prohibited.

2. The disposal into the sea of all other garbage, including paper products, rags, glass metal, bottles, crockery, incineration ash, dunnage, lining and packing materials, shall be prohibited.

3. The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder, provided that such disposal shall, except in cases permitted under Annex V of MARPOL 73/78, be made as far as practicable from land and ice shelves but in any case not less than 12

nautical miles from the nearest land or ice shelf. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimetres.

4. When a substance or material covered by this article is mixed with other such substance or material for discharge or disposal, having different disposal or discharge requirements, the most stringent disposal or discharge requirements shall apply.

5. The provisions of paragraphs 1 and 2 above shall not apply to:
   (a) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken, before and after the occurrence of the damage, for the purpose of preventing or minimising the escape; or
   (b) the accidental loss of synthetic fishing nets, provided all reasonable precautions have been taken to prevent such loss.

6. The Parties shall, where appropriate, require the use of garbage record books.

Article 6 *Discharge of Sewage*

1. Except where it would unduly impair Antarctic operations:
   (a) each Party shall eliminate all discharge into the sea of untreated sewage ("sewage" being defined in Annex IV of MARPOL 73/78) within 12 nautical miles of land or ice shelves;
   (b) beyond such distance, sewage stored in a holding tank shall not be discharged instantaneously but at a moderate rate and, where practicable, while the ship is en route at a speed of no less than 4 knots.

   This paragraph does not apply to ships certified to carry not more than 10 persons.

2. The Parties shall, where appropriate, require the use of sewage record books.

Article 7 *Cases of Emergency*

1. Articles 3, 4, 5 and 6 of this Annex shall not apply in cases of emergency relating to the safety of a ship and those on board or saving life at sea.
2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

Article 8 *Effect on Dependent and Associated Ecosystems*

In implementing the provisions of this Annex, due consideration shall be given to the need to avoid detrimental effects on dependent and associated ecosystems, outside the Antarctic Treaty area.

Article 9 *Ship Retention Capacity and Reception Facilities*

1. Each Party shall undertake to ensure that all ships entitled to fly its flag and any other ship engaged in or supporting its Antarctic operations, before entering the Antarctic Treaty area, are fitted with a tank or tanks of sufficient capacity on board for the retention of all sludge, dirty ballast, tank washing water and other oil residues and mixtures, and have sufficient capacity on board for the retention of garbage, while operating in the Antarctic Treaty area and have concluded arrangements to discharge such oily residues and garbage at a reception facility after leaving that area. Ships shall also have sufficient capacity on board for the retention of noxious liquid substances.

2. Each Party at whose ports ships depart en route to or arrive from the Antarctic Treaty area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all sludge, dirty ballast, tank washing water, other oily residues and mixtures, and garbage from ships, without causing undue delay, and according to the needs of the ships using them.

3. Parties operating ships which depart to or arrive from the Antarctic Treaty area at ports of other Parties shall consult with those Parties with a view to ensuring that the establishment of port reception facilities does not place an inequitable burden on Parties adjacent to the Antarctic Treaty area.

Article 10 *Design, Construction, Manning and Equipment of Ships*

In the design, construction, manning and equipment of ships engaged in or supporting Antarctic operations, each Party shall take into account the objectives of this Annex.

Article 11 *Sovereign Immunity*

1. This Annex shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with this Annex.

2. In applying paragraph 1 above, each Party shall take into account the importance of protecting the Antarctic environment.

3. Each Party shall inform the other Parties of how it implements this provision.

4. The dispute settlement procedure set out in Articles 18 to 20 of the Protocol shall not apply to this Article.

Article 12 *Preventive Measures and Emergency Preparedness and Response*

In order to respond more effectively to marine pollution emergencies or the threat thereof in the Antarctic Treaty area, the Parties, in accordance with Article 15 of the Protocol, shall develop contingency plans for marine pollution response in the Antarctic Treaty area, including contingency plans for ships (other than small boats that are part of the operations of fixed sites or of ships) operating in the Antarctic Treaty area, particularly ships carrying oil as cargo, and for oil spills, originating from coastal installations, which enter into the marine environment. To this end they shall:
(a) co-operate in the formulation and implementation of such plans; and
(b) draw on the advice of the Committee, the International Maritime Organisation and other international organisations.

The Parties shall also establish procedures for cooperative response to pollution emergencies and shall take appropriate response actions in accordance with such procedures.

Article 13 *Review*

The Parties shall keep under continuous review the provisions of this Annex and other measures to prevent, reduce and respond to pollution of the Antarctic marine environment, including any amendments and new regulations adopted under MARPOL 73/78, with a view to achieving the objectives of this Annex.

Article 14 *Relationship with MARPOL 73/78*

With respect to those Parties which are also Parties to MARPOL 73/78, nothing in this Annex shall derogate from the specific rights and obligations thereunder.

Article 15 *Amendment or Modification*

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

Appendix 3: MARPOL Annex V - overview of the discharge provisions

Simplified overview of the discharge provisions of the revised MARPOL Annex V which entered into force on 1 March 2018

DISCLAIMER: Additional requirements may apply.

(Note: The table below is intended as a summary reference. The provisions in MARPOL Annex V and the Polar Code, not the table below, prevail.)

<table>
<tr><th rowspan="2">Garbage type[1]</th><th colspan="2">All ships except platforms[4]</th><th rowspan="2">Regulation 5
Offshore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such platforms[4]</th></tr>
<tr><th>Regulation 4
Outside special areas and Arctic waters
(Distances are from the nearest land)</th><th>Regulation 6
Within special areas and Arctic waters
(Distances are from nearest land, nearest ice-shelf or nearest fast ice)</th></tr>
<tr><td>Food waste comminuted or ground[2]</td><td>≥3 nm, en route and as far as practicable</td><td>≥12 nm, en route and as far as practicable[3]</td><td>Discharge permitted</td></tr>
<tr><td>Food waste not comminuted or ground</td><td>≥12 nm, en route and as far as practicable</td><td>Discharge prohibited</td><td>Discharge prohibited</td></tr>
<tr><td>Cargo residues[5, 6] not contained in washwater</td><td rowspan="2">≥ 12 nm, en route and as far as practicable</td><td>Discharge prohibited</td><td rowspan="2">Discharge prohibited</td></tr>
<tr><td>Cargo residues[5, 6] contained in washwater</td><td>≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)</td></tr>
<tr><td>Cleaning agents and additives[6] contained in cargo hold washwater</td><td rowspan="2">Discharge permitted</td><td>≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)</td><td rowspan="2">Discharge prohibited</td></tr>
<tr><td>Cleaning agents and additives[6] in deck and external surfaces washwater</td><td>Discharge permitted</td></tr>
<tr><td>Animal Carcasses (should be split or otherwise treated to ensure the carcasses will sink immediately)</td><td>Must be en route and as far from the nearest land as possible. Should be >100 nm and maximum water depth</td><td>Discharge prohibited</td><td>Discharge prohibited</td></tr>
<tr><td>All other garbage including plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse</td><td>Discharge prohibited</td><td>Discharge prohibited</td><td>Discharge prohibited</td></tr>
</table>

1 When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

[2] Comminuted or ground food wastes must be able to pass through a screen with mesh no larger than 25 mm.

[3] The discharge of introduced avian products in the Antarctic area is not permitted unless incinerated, autoclaved or otherwise treated to be made sterile. In polar waters, discharge shall be made as far as practicable from areas of ice concentration exceeding 1/10; in any case food wastes shall not be discharged onto the ice.

[4] Offshore platforms located 12 nautical miles from nearest land and associated ships include all fixed or floating platforms engaged in exploration or exploitation or associated processing of seabed mineral resources, and all ships alongside or within 500 m of such platforms.

[5] Cargo residues means only those cargo residues that cannot be recovered using commonly available methods for unloading.

[6] These substances must not be harmful to the marine environment.

Appendix 4: Polar Code Part II-A: Prevention of pollution by sewage and garbage from ships

PART II-A from the International Polar Code for Ships Operating in Polar Waters (Polar Code)
http://www.imo.org/en/MediaCentre/HotTopics/polar/Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf

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PART II-A
POLLUTION PREVENTION MEASURES

CHAPTER 1 – PREVENTION OF POLLUTION BY OIL

1.1 Operational requirements

1.1.1 In Arctic waters any discharge into the sea of oil or oily mixtures from any ship shall be prohibited.

1.1.2 The provisions of paragraph 1.1.1 shall not apply to the discharge of clean or segregated ballast.

1.1.3 Subject to the approval of the Administration, a category A ship constructed before 1 January 2017 that cannot comply with paragraph 1.1.1 for oil or oily mixtures from machinery spaces and is operating continuously in Arctic waters for more than 30 days shall comply with paragraph 1.1.1 not later than the first intermediate or renewal survey, whichever comes first, one year after 1 January 2017. Until such date these ships shall comply with the discharge requirements of MARPOL Annex I regulation 15.3.

1.1.4 Operation in polar waters shall be taken into account, as appropriate, in the Oil Record Books, manuals and the shipboard oil pollution emergency plan or the shipboard marine pollution emergency plan as required by MARPOL Annex I.

1.2 Structural requirements

1.2.1 For category A and B ships constructed on or after 1 January 2017 with an aggregate oil fuel capacity of less than 600 m^3, all oil fuel tanks shall be separated from the outer shell by a distance of not less than 0.76 m. This provision does not apply to small oil fuel tanks with a maximum individual capacity not greater than 30 m^3.

1.2.2 For category A and B ships other than oil tankers constructed on or after 1 January 2017, all cargo tanks constructed and utilized to carry oil shall be separated from the outer shell by a distance of not less than 0.76 m.

1.2.3 For category A and B oil tankers of less than 5,000 tonnes deadweight constructed on or after 1 January 2017, the entire cargo tank length shall be protected with:

.1 double bottom tanks or spaces complying with the applicable requirements of regulation 19.6.1 of MARPOL Annex I; and

.2 wing tanks or spaces arranged in accordance with regulation 19.3.1 of MARPOL Annex I and complying with the applicable requirements for distance referred to in regulation 19.6.2 of MARPOL Annex I.

1.2.4 For category A and B ships constructed on or after 1 January 2017 all oil residue (sludge) tanks and oily bilge water holding tanks shall be separated from the outer shell by a distance of not less than 0.76 m. This provision does not apply to small tanks with a maximum individual capacity not greater than 30 m^3.

PART II-A from the International Polar Code for Ships Operating in Polar Waters (Polar Code)
http://www.imo.org/en/MediaCentre/HotTopics/polar/Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf

CHAPTER 2 – CONTROL OF POLLUTION BY NOXIOUS LIQUID SUBSTANCES IN BULK

2.1 Operational requirements

2.1.1 In Arctic waters any discharge into the sea of noxious liquid substances (NLS), or mixtures containing such substances, shall be prohibited.

2.1.2 Operation in polar waters shall be taken into account, as appropriate, in the Cargo Record Book, the Manual and the shipboard marine pollution emergency plan for noxious liquid substances or the shipboard marine pollution emergency plan as required by MARPOL Annex II.

2.1.3 For category A and B ships constructed on or after 1 January 2017, the carriage of NLS identified in chapter 17, column e, as ship type 3 or identified as NLS in chapter 18 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk in cargo tanks of type 3 ships shall be subject to the approval of the Administration. The results shall be reflected on the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk or Certificate of Fitness identifying the operation in polar waters.

CHAPTER 3 –PREVENTION OF POLLUTION BY HARMFUL SUBSTANCES CARRIED BY SEA IN PACKAGED FORM

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CHAPTER 4 –PREVENTION OF POLLUTION BY SEWAGE FROM SHIPS

4.1 Definitions

4.1.1 *Constructed* means a ship the keel of which is laid or which is at a similar stage of construction.

4.1.2 *Ice-shelf* means a floating ice sheet of considerable thickness showing 2 to 50 m or more above sea-level, attached to the coast.[19]

4.1.3 *Fast ice* means sea ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shoals or grounded icebergs.[19]

4.2 Operational requirements

4.2.1 Discharges of sewage within polar waters are prohibited except when performed in accordance with MARPOL Annex IV and the following requirements:

.1 the ship is discharging comminuted and disinfected sewage in accordance with regulation 11.1.1 of MARPOL Annex IV at a distance of more than 3 nautical miles from any ice-shelf or fast ice and shall be as far as practicable from areas of ice concentration exceeding 1/10; or

.2 the ship is discharging sewage that is not comminuted or disinfected in accordance with regulation 11.1.1 of MARPOL Annex IV and at a distance of more than 12 nautical miles from any ice-shelf or fast ice and shall be as far as practicable from areas of ice concentration exceeding

1/10; or

[19] Refer to the WMO Sea-Ice Nomenclature.

.3 the ship has in operation an approved sewage treatment plant[20] certified by the Administration to meet the operational requirements in either regulation 9.1.1 or 9.2.1 of MARPOL Annex IV, and discharges sewage in accordance with regulation 11.1.2 of Annex IV and shall be as far as practicable from the nearest land, any ice-shelf, fast ice or areas of ice concentration exceeding 1/10.

4.2.2 Discharge of sewage into the sea is prohibited from category A and B ships constructed on or after 1 January 2017 and all passenger ships constructed on or after 1 January 2017, except when such discharges are in compliance with paragraph 4.2.1.3 of this chapter.

4.2.3 Notwithstanding the requirements of paragraph 4.2.1, category A and B ships that operate in areas of ice concentrations exceeding 1/10 for extended periods of time, may only discharge sewage using an approved sewage treatment plant certified by the Administration to meet the operational requirements in either regulation 9.1.1 or 9.2.1 of MARPOL Annex IV. Such discharges shall be subject to the approval by the Administration.

CHAPTER 5 – PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS

5.1 Definitions

5.1.1 *Ice-shelf* means a floating ice sheet of considerable thickness showing 2 to 50 m or more above sea-level, attached to the coast[21].

5.1.2 *Fast ice* means sea ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shoals or grounded icebergs[21]

5.2 Operational requirements

5.2.1 In Arctic waters, discharge of garbage into the sea permitted in accordance with regulation 4 of MARPOL Annex V, shall meet the following additional requirements:

.1 discharge into the sea of food wastes is only permitted when the ship is as far as practicable from areas of ice concentration exceeding 1/10, but in any case not less than 12 nautical miles from the nearest land, nearest ice-shelf, or nearest fast ice;

.2 food wastes shall be comminuted or ground and shall be capable of passing through a screen with openings no greater than 25 mm. Food wastes shall not be contaminated by any other garbage type;

.3 food wastes shall not be discharged onto the ice;

.4 discharge of animal carcasses is prohibited; and

.5 discharge of cargo residues that cannot be recovered using commonly available methods for unloading shall only be permitted while the ship is en route and where all the following conditions are satisfied:

PART II-A from the International Polar Code for Ships Operating in Polar Waters (Polar Code)
http://www.imo.org/en/MediaCentre/HotTopics/polar/Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf

.1 cargo residues, cleaning agents or additives, contained in hold washing water do not include any substances classified as harmful to the marine environment, taking into account guidelines developed by the Organization;

[20] Refer to resolution MEPC.2(VI), resolution MEPC.159(55) or resolution MEPC.227(64) as applicable.
[21] Refer to the WMO Sea-Ice Nomenclature.

.2 both the port of departure and the next port of destination are within Arctic waters and the ship will not transit outside Arctic waters between those ports;

.3 no adequate reception facilities are available at those ports taking into account guidelines developed by the Organization; and

.4 where the conditions of subparagraphs 5.2.1.5.1, 5.2.1.5.2 and 5.2.1.5.3 of this paragraph have been fulfilled, discharge of cargo hold washing water containing residues shall be made as far as practicable from areas of ice concentration exceeding 1/10, but in any case not less than 12 nautical miles from the nearest land, nearest ice shelf, or nearest fast ice.

5.2.2 In the Antarctic area, discharge of garbage into the sea permitted in accordance with regulation 6 of MARPOL Annex V, shall meet the following additional requirements:

.1 discharges under regulation 6.1 of MARPOL Annex V shall be as far as practicable from areas of ice concentration exceeding 1/10, but in any case not less than 12 nautical miles from the nearest fast ice; and

.2 food waste shall not be discharged onto ice.

5.2.3 Operation in polar waters shall be taken into account, as appropriate, in the Garbage Record Book, Garbage Management Plan and the placards as required by MARPOL Annex V.

Appendix 5: IMDG Code Precedence of Hazards

Precedence of Hazards Table (Source: IMDG Code/Hazcheck)

Class and Packing Group		4.2	4.3	5.1 I	5.1 II	5.1 III	6.1, I Dermal	6.1, I Oral	6.1 II	6.1 III	8, I Liquid	8, I Solid	8, II Liquid	8, II Solid	8, III Liquid	8, III Solid
3	I*		4.3				3	3	3	3	3	-	3	-	3	-
3	II*		4.3				3	3	3	3	8	-	3	-	3	-
3	III*		4.3				6.1	6.1	6.1	3†	8	-	8	-	3	-
4.1	II*	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	-	8	-	4.1	-	4.1
4.1	III*	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	-	8	-	8	-	4.1
4.2	II		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	8	8	4.2	4.2	4.2	4.2
4.2	III		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	8	8	8	8	4.2	4.2
4.3	I			5.1	4.3	4.3	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3	II			5.1	4.3	4.3	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3
4.3	III			5.1	5.1	4.3	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1	I						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1	II						6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
5.1	III						6.1	6.1	6.1	5.1	8	8	8	8	5.1	5.1
6.1	I, Dermal										8	6.1	6.1	6.1	6.1	6.1
6.1	I, Oral										8	6.1	6.1	6.1	6.1	6.1
6.1	II, Inhalation										8	6.1	6.1	6.1	6.1	6.1
6.1	II, Dermal										8	6.1	8	6.1	6.1	6.1
6.1	II, Oral										8	8	8	6.1	6.1	6.1
6.1	III										8	8	8	8	8	8

** Substances of class 4.1 other than self-reactive substances and solid desensitized explosives and substances of class 3 other than liquid desensitized explosives.*
† 6.1 for pesticides.
- Denotes an impossible combination.

Hazards not shown in this table

The precedence of hazard characteristics of the following substances, materials and articles have not been dealt with in the precedence of hazard table, as these primary hazards always take precedence:

- substances and articles of class 1;
- gases of class 2;
- liquid desensitized explosives of class 3;
- self-reactive substances and solid desensitized explosives of class 4.1;
- pyrophoric substances of class 4.2;
- substances of class 5.2;
- substances of class 6.1 with a packing group I vapour inhalation toxicity;
- substances of class 6.2; and
- materials of class 7.

Appendix 6: Hazardous Waste Transfer Documentation

Example of a completed Hazardous Waste consignment note

VEOLIA

HAZARDOUS WASTE CONSIGNMENT NOTE

Transfer note no. (where applicable): Job ticket: Sheet of

PART A: NOTIFICATION DETAILS

1. Consignment note number: SJDJ136B3094 BRITIS/Y3604

2. The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):

BRITISH ANTARCTIC SURVEY, RRS ERNEST SHACKLETON, BERTH A, IMMINGHAM DOCKS, SHED 8, MINERAL QUAY, IMMINGHAM, NORTH EAST

Contact name:
Tel:
Email: 01223 221400

3. Premises code (where applicable): BRITIS

4. The waste will be taken to (name, address and postcode):

VEOLIA ES (UK) LIMITED, STEWARTBY WASTE MANAGEMENT FACILITY, GREEN LANE, STEWARTBY, BEDFORD, MK43 9LY

Environment Agency licence(s): QP3237SC (TEL 01234 762163)

5. The waste producer was (if different from 2.) (name, address, postcode, telephone, e-mail, facsimile):

Consignment type: Single Succession Carrier's round Other (please specify)
Expected date of first consignment: Expected date of last consignment:

PART B: THE DESCRIPTION OF THE WASTE

2. SIC for the process giving rise to the waste: 71.12/2

The process giving rise to the waste(s) was:
. Description of waste:
hysical form: Colour: Temperature: List of wastes (EWC):
ontainer type and size: Exp. Qty: Exp. Weight (kg):

Empty Vehicle, Last Load		Proper shipping name (Technical name)	Class	Sub Class	PG	Tunnel Code
JN		SEE ATTACHED LIST				

mergency action code: Hazard code(s): TREM card:

Components and concentration

.5 Special handling requirements: See driver's notes (WMA) EHS diamond required:

PART C: CARRIER'S CERTIFICATE

(If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached, please tick here ☐)

certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are:

/

1. Carrier name: TIM COOK

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

VEOLIA WV107DG 01908 714610

2. Carrier reg./reason for exemption: CBDU95537
3. Vehicle registration no.: BX71DDA
Signature:
Date: 19/05/2016 Time: 13:20

PART D: CONSIGNOR'S CERTIFICATE

I certify that the information in A, B and C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements. I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1. Consignor name: CLAKE FOWLERGILL

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

AS AL

Signature:
Date: 19/05/2016 Time: 13:20

PART E: CONSIGNEE'S CERTIFICATE

Where more than one waste type is collected all of the information given below must be completed for each EWC)

EWC received	Qty of EWC(kg)	Accepted / rejected	Waste management operation (R or D code)
As listed	As listed	Accepted	D15

I certify that waste management licence / permit / authorised exemption no(s).: ..... authorises the management of the waste described in B at the addres given in A4.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are;

Name:
On behalf of (name, address, postcode, telephone, e-mail, fax):

1. I received this waste at the address given in A4 on:
Date: 20/05/2016 Time: 09:25
2. Vehicle registration no.: BX71DDA
3. Where waste is rejected, please provide details:

Signature:
Date: / / Time:

Appendix 7: Commodity Codes for BAS waste imports

Commodity codes are internationally recognised reference numbers. A commodity code describes a specific product when importing or exporting goods. The table below is a list of the usual waste types produced by BAS including the commodity description and code. Please use this as a reference. Where the code is not provided, please reference the government online tariff website: https://www.trade-tariff.service.gov.uk/find_commodity

Waste Category in WMH	Commodity Description	Commodity Code
Aluminium cans, steel cans & foil	•Articles of iron or steel Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment •Aluminium and articles thereof Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	•731021 •761290
Cardboard	Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibres; box files, letter trays, and similar articles, of paper or paperboard, of a kind used in offices, shops or the like	4819
Clothing & fabrics	Worn clothing and other worn articles	6309
Mattresses	Mattress supports; articles of bedding and similar furnishing (for example, mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered	9404
General/mixed waste	Municipal Waste	3825100000
Glass	Cullet and other waste and scrap of glass, excluding glass from cathode-ray tubes or other activated glass of heading 8549; glass in the mass	7001
Laboratory glassware	Laboratory, hygienic or pharmaceutical glassware, whether or not graduated or calibrated	7017

Pyrex	Glassware of a kind used for table (other than drinking glasses) or kitchen purposes other than of glass ceramics	701349
Scrap metal	Ferrous waste and scrap; remelting scrap ingots of iron or steel Other/scrap	7204499010
Paper	Paper and paperboard; articles of paper pulp, of paper or of paperboard	48
Plastic	•Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of ethylene •Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of propylene	•39151000 •39159011
Polystyrene	Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of styrene	39152000
Foam, polythene	Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of ethylene	39151000
CDs, DVDs, VHS Tapes	Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of propylene	39159011
Contaminated plastic	•Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of ethylene •Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of propylene	•39151000 •39159011
Rope	Used or new rags, scrap twine, cordage, rope and cables and worn-out articles of twine, cordage, rope or cables, of textile materials	6310
Tetrapak	Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, surface-coloured, surface-decorated or printed, in rolls or rectangular (including square) sheets, of any size, other than goods of the kind described in heading 4803, 4809 or 4810	4811
Wood	Sawdust and wood waste and scrap, not agglomerated Other	4401490000

Antifreeze	Anti-freezing preparations and prepared de-icing fluids Other	3820000090
Non-Hazardous, autoclaved cultures and dry lab waste	Clinical waste	3825300000
Polystyrene building insulation blocks	Plastics and articles thereof Waste, parings and scrap, of plastics Of polymers of styrene	39152000
Insulation lagging	depends on type TBC	TBC
Gypsum powder	Gypsum; anhydrite; plasters (consisting of calcined gypsum or calcium sulphate) whether or not coloured, with or without small quantities of accelerators or retarders	2520
Cement	Portland cement, aluminous cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers	2523
Concrete	Mineral substances not elsewhere specified or included	2530
Fibreglass	Glass fibres (including glass wool) and articles thereof (for example, yarn, rovings, woven fabrics)	7019
Chemicals non hazardous	depends on type TBC	TBC
Cooking oil	Animal, vegetable or microbial fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, blown, polymerised by heat in vacuum or in inert gas or otherwise chemically modified, excluding those of heading 1516; inedible mixtures or preparations of animal, vegetable or microbial fats or oils or of fractions of different fats or oils of this chapter, not elsewhere specified or included	1518
Grease/fat from cooking	Animal, vegetable or microbial fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, blown, polymerised by heat in vacuum or in inert gas or otherwise chemically modified, excluding those of heading 1516; inedible mixtures or preparations of animal, vegetable or microbial fats or oils or of fractions of different fats or oils of this chapter, not elsewhere specified or included	1518
Electrical cables/wires	Electrical and electronic waste and scrap	8549
Spent flares	Fireworks, signalling flares, rain rockets, fog signals and other pyrotechnic articles > Other	3604900000
Food contaminated packaging	Municipal Waste	3825100000
Food, dried or tinned	Municipal Waste	3825100000
Food, wet	Municipal Waste	3825100000

Incinerator ash	Municipal Waste	3825100000
IT, hard drives (only if have been wiped)	Electrical and electronic waste and scrap	8549
IT, devices	Electrical and electronic waste and scrap	8549
Tungsten light bulbs	NA - goes in general mixed	
LED lights	Light-emitting diode (led) lamps	8539520000
fluorescent bulbs and energy saving compact fluorescent lamps (CFLs)	Electric filament or discharge lamps, including sealed beam lamp units and ultraviolet or infra-red lamps; arc-lamps; light-emitting diode (led) light sources	8539 31 90
Plastics contaminated with food	Municipal Waste	3825100000
Plastics contaminated with chemicals	depends on chemicals TBC	TBC
Plastics contaminated with oil	Municipal Waste	3825100000
Rat poison	depends on type TBC	TBC
Sawdust	Sawdust and wood waste and scrap, not agglomerated Sawdust	4401410000
Sanitary protection/condoms	Municipal Waste	3825100000
Smoke/heat detectors	Electrical and electronic waste and scrap	8549
Solar Panels	Electrical and electronic waste and scrap	8549
Sunscreen lotion	Beauty or make-up preparations and preparations for the care of the skin (other than medicaments), including sunscreen or suntan preparations; manicure or pedicure preparations	3304
Toners and inject cartridges	Ink cartridges (without an integrated print head) for insertion into apparatus of subheadings 8443 31, 8443 32 or 8443 39, and incorporating mechanical or electrical components; solid ink in engineered shapes for insertion into apparatus of subheadings 8443 31, 8443 32 or 8443 39	3215902000
Tyres	Used pneumatic tyres > Other	4012200090
Vermiculite	Vermiculite, perlite and chlorites, unexpanded	2530100000
Virkon	Washing preparations and cleaning preparations	3402909000
Water seeking past	or measuring or checking the flow or level of liquids > Other >	9026108900
WEEE	Electrical and electronic waste and scrap	8549
Aerosols	Containers for compressed or liquefied gas, of iron or steel	73110011
Asbestos	Asbestos	2524

Battery, Wet cell, lead acid battery	Waste and scrap of lead-acid accumulators	8549119000
Battery, Lithium metal battery	Spent lithium-ion or nickel metal hydride electric accumulators	8549132010
Battery, Lithium ion battery	Spent lithium-ion or nickel metal hydride electric accumulators	8549132010
Battery, Nickel metal hydride battery	Spent lithium-ion or nickel metal hydride electric accumulators	8549132010
Battery, Dry cell other non regulated battery	Spent primary cells, spent primary batteries	8549131000
Chemicals, individual	TBC depends on type	TBC
Chemicals, mixed	TBC depends on types	TBC
Covid testing waste	Clinical waste	3825300000
Clinical/medical waste (human medicine)	Clinical waste	3825300000
Clinical/medical waste (human medicine) contaminated with chemicals	Clinical waste	3825300000
Sharps, Clinical/medical (human medicine)	Clinical waste	3825300000
Controlled drugs (human medicine)	Waste pharmaceuticals	3006920000
Non-controlled drugs (human medicine)	Waste pharmaceuticals	3006920000
Clinical/research waste (animals/science)	Clinical waste	3825300000
Sharps, clinical/research (animals/science)	Clinical waste	3825300000
Veterinary drugs (animals/science)	Waste pharmaceuticals	3006920000
Fire extinguishers	NA - they are usually sent out as cargo for refurbishment. If they are waste then either metal or plastic	
Detergents and disenfectants	Organic surface-active agents (other than soap); surface-active preparations, washing preparations (including auxiliary washing preparations) and cleaning preparations, whether or not containing soap, other than those of heading 3401	3402
Flares, out of date/misfired	Fireworks, signalling flares, rain rockets, fog signals and other pyrotechnic articles > Other	3604900000
Diesel, MGO	Waste oils	271091
Petrol	Waste oils	271091

Lubricants/engine oil	Waste oils	271091
Fuel and oil filters	Waste oils	271091
Fuel soaked absorbents	Waste oils	271091
Glue	Prepared glues and other prepared adhesives, not elsewhere specified or included; products suitable for use as glues or adhesives, put up for retail sale as glues or adhesives, not exceeding a net weight of 1 kg	3506
Insecticide	Insecticides, rodenticides, fungicides, herbicides, anti-sprouting products and plant-growth regulators, disinfectants and similar products, put up in forms or packings for retail sale or as preparations or articles (for example, sulphur-treated bands, wicks and candles, and fly-papers)	3808
Lighters	Cigarette lighters and other lighters, whether or not mechanical or electrical, and parts thereof other than flints and wicks	9613
Matches	Matches, other than pyrotechnic articles of heading 3604	3605000000
Mercury	Liquid-filled, for direct reading > Other > Other	9025118090
Paint thinners, stripper	Paints and Varnishes 3208 OR White spirit 27101221 OR Other paint thinners (depends on type)	3208 or 27101221 OR others (depends on type)
Photochemicals	Potassium hydroxide (caustic potash)	2815200000
Radioactive waste	TBC	TBC
WEEE hazardous	Electrical and electronic waste and scrap	8549