Schedule C5 Site Waste Management Plan

This declaration is to be used in conjunction with and uploaded into BAM Site – the web-based sustainability monitoring and reporting tool

Project reference	BAS.2066
Project title	Rothera Runway Resurfacing and Lighting
Client	UKRI / British Antarctic Survey
Principal contractor	BAM
Site waste coordinator / Environment engineer	Neil Goulding
Contract value	
Address/location	Rothera Research Station, Rothera Point, Adelaide Island, Antarctica **Position Lat. 67°35'8"S, Long. 68°7'59"W**
Project description	This project will: • Replace the runway lighting with efficient LED lights including the associated cabling and ducting. • Extend the usable length of the runway and provide a turning circle for aircraft at southern end of runway • Improve the runway surface drainage • Restore the runway running surface • Improve runway/roadway safety with the provision of road barriers
Document prepared by	Neil Goulding

Declaration:

We the client and principal contractor confirm that all reasonable steps will be taken to ensure that:

a) all waste from the site is dealt with in accordance with the duty of care in section 34 of the Environmental Protection Act

b) materials will be handled efficiently and waste managed appropriately

Client:	Signed:
Principal contractor:	Signed:
Key subcontractor(s):	Signed:

This plan is reviewed at least every three months by the site waste coordinator and updated as necessary to ensure that waste management practices are in accordance with this plan.

Reviewed by	Date	Rev no.	Revision details (where applicable)

Introduction

This site waste management plan identifies and monitors:

- Legislative requirements for waste management
- Types and quantities of waste expected to be generated during the Rothera Modernisation works
- reuse of materials on the project e.g. cut and fill, site won materials
- waste minimisation methods to be implemented on the project
- waste management options for waste generated during the works including waste generated by subcontractors
- Storage and disposal options for each waste stream
- any cost savings achieved through waste minimisation

Materials identified within this SWMP are not necessarily statutory waste as they do not fall within the legal definition of waste i.e. 'any substance or object which the holder discards intends to discard or is required to discard.' There is no intention to discard materials such as:

- site won excavated materials
- aggregates crushed in accordance with the WRAP Quality Protocol (on or off site)
- pre-planned use of materials

All materials whether they are imported, reused 'as is' on site, recycled (on or off site) or sent off site for disposal are identified within the plan.

(See Appendix 1 for roles and responsibilities.)

Legislation

Antarctic Environmental Legislation

Protocol on Environmental Protection to the Antarctic Treaty

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). Following the guidance provided in this document will ensure that BAM complies with the requirements of the Protocol and other national and international legislation listed below.

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, as well as recycling and source reduction.

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

Annex IV: Prevention of Marine Pollution

Within the Antarctic Treaty Area (south of 60o 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. Annex IV largely parallels the international regulations controlling ship-generated pollution under MARPOL 73/78.

International Legislation

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 2013). 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.

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 the Environment Office.

BAS vessel the RRS James Clark Ross, maintains a garbage disposal record book, as required under MARPOL. A copy of the *Marine Standing Instruction MSI/Gen/21 Bilge and Garbage Disposal* is held on the ship and should be referred whilst on board.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The Basel Convention regulates the transboundary movements of hazardous wastes and other wastes. It obliges its Parties to ensure that such wastes are managed and disposed of in an environmentally sound manner.

UK Environmental Legislation

International Waste Shipments Regulations 2019

These regulations state the requirements for the import and export of waste from the UK. Types of waste are classified as either red, amber or green, with red waste being prohibited and green waste being the least hazardous. The regulations confirm the UK commitment to the Basel convention.

Although waste from Antarctica is exempt from these regulations, it has been agreed with the Environment Agency that BAS and BAM will notify them of any waste returned to Antarctica. We are also obliged to inform all countries that the waste travels through of the quantities and nature of the waste. If a ship moors at a port, any waste aboard is deemed to have travelled through that country.

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 the priority order of:

The waste hierarchy is partly implemented through the amended Duty of Care regulations.

The Duty of Care Regulations, 1991

Under the Environmental Protection (Duty of Care) Regulations, 1991, BAM 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, BAM 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 transfer note so that the waste carrier can avoid committing an offence under the Regulations.

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 Manager is responsible for compliance with the Environmental Protection (Duty of Care) Regulations, 1991 with regard to wastes returned by BAM from Antarctica for disposal in the UK.

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 element of these regulations which BAM must comply with is preparation of consignment notes for every movement of hazardous waste in the UK. And ensure legal disposal

The Head of the Environment Office is responsible for compliance with the Hazardous Waste Regulations, for hazardous waste being returned by BAS from Antarctica which is disposed of in the UK. BAM will be responsible for the removal of our Hazardous construction waste.

Materials resource efficiency

The following waste reduction and reuse measures have been included in the design and/or specification for this project and will be further developed as the design progresses:

Design specifications	Aggregate specification to be amended from British standards to suit materials available on site
Choice of materials	Use of site won materials for pipe bedding. Concrete ducting replaced by plastic ducting, reducing the weight of waste
Choice of Materials	Replacing concrete ducts with plastic ducting proposed by BAM and accepted.
Pre-fabrication off site	All concrete elements will be pre-cast outside of the Antarctic region and shipped to Rothera.

Forecast of the types and quantities of waste

It is estimated that this site will produce the following types and quantities of waste: These figures will be updated as the design is developed. All waste that cannot be re-used at Rothera will be returned to the UK for recycling/disposal at a licenced waste management facility.

Excavation Waste

Type of Waste	EWC Code	Estimated Quantity t (m^3)					Waste Management Action in Detail
		Total	Re-Use	Recycle	Recover	Dispose	
Inert Soil and Stone	17 05 04	630 (300)	630 (300)				Stockpile for re-use on site

Construction Waste

Type of Waste	EWC Code	Estimated Quantity kg/(m³)					Waste Management Action in Detail
		Total	Re-Use	Recycle	Recover	Dispose	
Concrete	17 01 01	2800 (2.8)					Whole lengths of pipe retained as spares. Remainder crushed and stockpiled for re-use.
Plastic	20 01 39	3800 (15.2)	1900 (7.6)	1900 (7.6)			Ducting and accessories retained as spares. Offcuts and damaged parts returned to UK for recycling.
Timber	17 02 01	2,500 (5.0)	1,000 (2.0)	1,500 (3.0)			Re-use offered to BAS for fuel for incinerator, remainder returned to UK for recycling.
Cable Off-Cuts	17 04 11	30 (0.5)			30 (0.5)		
Oil	13 02 07	750 (0.75)			750 (0.75)		Return to UK for use as fuel
Oil Filters	16 01 07	20 (0.2)		20 (0.2)			Return to UK for recycling
Oil Contaminated Rags	15 02 02	10 (0.5)				10 (0.5)	Return to UK for disposal
Alkaline Batteries	20 01 33	5 (0.05)		5 (0.05)			Return to UK for recycling
Clothing / Textiles	20 01 10	10 (0.5)		10 (0.5)			Return to UK for recycling
Cardboard	20 01 01	50 (0.8)		50 (0.8)			Return to UK for recycling
Paper	20 01 01	10 (0.2)		10 (0.2)			Return to UK for recycling

Management of waste

The production of waste material on this site during the construction phase is avoided wherever possible by following the '*reduce, reuse, recycle, recover*' measures outlined below. Only where these options have been exhausted is waste sent for disposal.

Waste will be stored in the same containers as waste from the Discovery Building project. In order to monitor waste produced by the Runway Resurfacing and Lighting project, waste quantities are to be estimated before waste is transferred to the containers.

Reduction and reuse measures

The following measures will be employed to reduce and reuse waste on this site:

General	
Reduction measures	**Reuse measures**
• Packaging to be discussed with suppliers and reduced a much as possible.	• All excavated material (except any hazardous material) to be re-distributed at Rothera.
• Accurate measurement, and minimal wastage will be allowed when ordering materials	• All construction waste materials to be offered to the Research Station Manager for re-use within the station
• Materials are to be stored and transported correctly to avoid damage	•
• Materials are to be kept off the ground by the use of pallets or timber bites	•
• All operatives are to receive training on the agreed reduction measures	•
• *(any other measures)*	•
Concrete and hardcore	
Reduction measures	**Reuse measures**
• Concrete ducting to be packed and transported with care to avoid damage	• Waste concrete to be crushed and re-used as aggregate.
Excavated material (soil & stones)	
Reduction measures	**Reuse measures**
•	• Excavated soil and stone to be re-distributed on site
Timber	
Reduction measures	**Reuse measures**
•	• All construction waste materials to be offered to the Research Station Manager for re-use within the station

Recycle and recovery measures

The following waste streams are to be segregated for recycling/ recovery off site:

Waste stream	EWC code	Storage option	Management option
• Concrete	21 01 39	Unused ducting stored carefully. Broken concrete stockpiled	Unused ducting kept as spares. Remainder crushed on site and re-used as aggregates
• Wood	17 02 01	Stored in ISO container	Offered to BAS for re-use or to fuel incinerator. Remainder returned to UK for re-use where possible or sent to waste to energy plant.
• Mixed Plastics	21 01 39	Stored in FIBC within ISO container	Return to UK for segregation into different plastic waste streams and recycled where possible
• Cable Off-Cuts	17 04 11	Stored in FIBC within ISO container	Return to UK for re-cycling
• Cardboard	20 01 01	Stored in FIBC or bales within ISO container	Broken down and baled or packed into FIBC. Returned to the UK for recycling
• Paper	20 01 01	FIBC marked “PAPER” and with the recycling triangle in ISO container	Return to the UK for recycling
• Alkaline Batteries	20 01 33	Tape up terminals. Stored in plastic lined re-used wooden crates labelled “ASSORTED WASTE BATTERIES, NON REGULATED”	Return to the UK for recycling
• Clothing / Textiles	20 01 10	Stored in FIBC within ISO container	Return to UK. Disposal to follow waste hierarchy

• Empty Aerosols	16 05 04 16 05 05	Store in plastic lined re-used wooden crate, marked “WASTE AEROSOLS”	Return to the UK for disposal
• Oil Filters	16 01 07	Empty oil filter before storing. Stored in 205 ltr drum marked “OIL FILTERS” and “UN 3077 Class 9 Environmentally Hazardous Substance, solid, n.o.s.” Place inside hazardous waste ISO container	Empty oil filter before storing. Return to the UK for disposal.
• Oil Contaminated Rags	15 02 02	Stored in FIBC within hazardous waste ISO container and labelled “WASTE OILY RAGS”. Allocate hazard class 4.2, UN no. 1856	Return to the UK for disposal
• Oil	13 02 07	Stored in re-used 25 ltr plastic containers marked “WASTE LUBRICANTS”	Returned to the UK for recycling

Hazardous Wastes Classification

Hazardous wastes must be carried in accordance with the *International Marine 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 are divided into nine different general classes based on the United Nations (UN) hazard classification.
The general classes and subclasses are as follows:

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 liquids:**	
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

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 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 container. They must be clearly labelled in separate containers.

Shipping Documentation

All waste sent out from BAS research stations and ships 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 BOL's for waste are used to agree waste disposal contracts, verifying disposal invoices, auditing the waste management system and monitoring the quantity of waste that is produced in Antarctica. **Waste data has to be reported to BAM Nuttall, UKRI and the BAS Board.** It is therefore essential that the information provided on the BOL is complete, accurate and dated.

BOL's must be prepared by the person who is responsible for the waste, in conjunction with the Station Leader.

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

Standard weights and volumes for use on BOL's 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.**

Waste	Volume (m^3)	Weight (kg)
205 litre drum – Empty	0.3	20
205 litre drum - Filled e.g. fuel, seawater (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

Completing a BOL

The following information is required on all waste BOLs:

Date	Full description of contents
Consignor	Case / drum number
Project	Case dimensions (cm)
Vessel used for transportation	Weight (kg)
Special stowage instructions (if applicable)	Volume (m3)
BOL number	Estimated value
Quantity and type of package	

Actual Waste Volumes

To be filled out on completion of the contract

Excavation Waste

Type of Waste	EWC Code	Estimated Quantity Tonnes/(m^3)					22/23 Season Quantity kg/(m^3)					23/24 Season Quantity kg/(m^3)				
		Total	Re-Use	Recycle	Recover	Dispose	Total	Re-Use	Recycle	Recover	Dispose	Total	Re-Use	Recycle	Recover	Dispose
Inert Soil and Stone	17 05 04	630 (300)	630 (300)													

Construction Waste

Type of Waste	EWC Code	Estimated Quantity kg/(m³)					22/23 Season Quantity kg/(m³)					23/24 Season Quantity kg/(m³)				
		Total	Re-Use	Recycle	Recover	Dispose	Total	Re-Use	Recycle	Recover	Dispose	Total	Re-Use	Recycle	Recover	Dispose
Concrete	17 01 01	2800 (2.8)														
Steel	17 04 07						190 (Oil Drums)		190 (Oil Drums)							
Plastic	20 01 39	3800 (15.2)		1900 (7.6)	1900 (7.6)											
Timber	17 02 01	2,500 (5.0)		1,000 (2.0)	1,500 (3.0)		1123 (2.25)		561 (1.12)	561 (1.12)						
Cable Off-Cuts	17 04 11	30 (0.5)				30 (0.5)										
Oil	13 02 07	750 (0.75)				750 (0.75)	589 (0.59)			589 (0.59)						
Oil Filters	16 01 07	20 (0.2)			20 (0.2)		11.4			11.4 (0.11)						
Oil Contaminated Rags	15 02 02	10 (0.5)														
Alkaline Batteries	20 01 33	5 (0.05)			5 (0.05)											
Clothing / Textiles	20 01 10	10 (0.5)			10 (0.5)											
Cardboard	20 01 01	50 (0.8)			50 (0.8)		191		191 (3.1)							
Paper	20 01 01	10 (0.2)			10 (0.2)											

Appendix 1 Roles and responsibilities

The Clients' Representative will:

- Appoint a Principal Contractor
- Provide the Principal Contractor with details of all decisions taken before the site waste management plan was drafted on the nature of the project, its design, construction method or materials employed in order to minimise the quantity of waste produced on site
- Ensure a construction phase SWMP is produced

The agent for the Principal Contractor will:

- Ensure the SWMP for the construction phase is produced, and distributed to all staff and subcontractors
- Ensure that within three months of project completion:
  - that the plan has been monitored on a regular basis
  - that estimated quantities are compared with actual
  - that any deviation from the plan are explained
  - that estimates of cost savings achieved have been made
- Keep a copy of the SWMP for a minimum of two years after project completion

The site waste co-ordinator / environmental engineer for the Principal Contractor will:

- Produce the construction phase SWMP prior to works starting on site
- Obtain from the client details of all decisions taken before the site waste management plan was drafted on the nature of the project, its design, construction method or materials employed in order to minimise the quantity of waste produced on site, for inclusion in the construction phase SWMP
- Keep a copy of the SWMP on site and display in suitable locations for information
- Review the plan monthly and update where necessary to accurately reflect progress
- Ensure the following waste data is recorded within BAM Site when any waste is removed from site:
  - a description of the waste, including the 6 figure EWC code
  - the name of the company collecting the waste (waste carrier)
  - the site where the waste is being taken to (waste destination)
  - the quantity of the waste and whether it was;
  - reused on site
  - taken for reuse at an exempt or standard permit site
  - taken to a transfer station for segregation and onward recycling
  - taken to a dedicated recycling facility
  - sent to landfill (only if all other options have been discounted)
- Ensure details of recycling figures for the transfer stations used within the region are obtained and entered onto BAM Site on a quarterly basis
- Ensure details of all waste carrier registration numbers, environmental permit numbers and exemption references for the carriers and disposal sites used within the region are checked and sent to the area environment advisor for input onto BAM Site