

PART TWO: PEIMP STRATEGIC PLAN

Chapter 7: Waste management



PRINCE EDWARD ISLANDS
MANAGEMENT PLAN

Chapter 7



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7. Waste Management

Relevant legislation

- ❖ National Environmental Management Act (No. 107 of 1998)
- ❖ National Environmental Management: Protected Areas Act (No. 57 of 2003)
- ❖ National Environmental Management: Protected Areas Act Regulations for the Proper Administration of Special Nature Reserves, National Parks and World Heritage Sites (No. R 1061 of 2005)
- ❖ National Environmental Management: Waste Act (No. 59 of 2008)
- ❖ National Environmental Management: Air Quality Act (No. 39 of 2004)
- ❖ Dumping at Sea Control Act (No. 73 of 1980)
- ❖ National Environmental Management Integrated Coastal Management Act (Act No. 24 of 2008)
- ❖ Hazardous Substances Act (No. 15 of 1973)
- ❖ Carriage of Goods by Sea Act (No. 1 of 1986)

7.1 Legal provisions

As the management authority of the Prince Edward Islands (PEIs) Special Nature Reserve, it is the responsibility of the Department of Environmental Affairs (DEA) to ensure that the following legal provisions apply to waste management at the PEIs.

7.1.1 The National Environmental Management Act (NEMA)

NEMA requires of every person a duty of care and remediation of environmental damage. Under Section 28, every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. The EIA process for the decommissioning of the old Marion Island base must take cognisance of any activities that may be listed in terms of the NEMA EIA Regulations.

7.1.2 National Environmental Management: Protected Areas Act (NEMPAA)

Under the NEMPAA Regulations (No. R. 1061 of 2005), no one may deposit litter, polluting substances, offal, dead organisms, dung, domestic garbage, mineral or industrial waste in the PEI Special Nature Reserve. The regulations also prohibit any pollution of water (e.g. river, spring, groundwater, dam or lake) and the dredging of or removal of substrate from such water areas. In addition, no retaining walls or weirs may be constructed; or sand, soil or stone dumped into a water body without the express permission of DEA and adherence to conditions imposed.

In keeping with Section 28 of NEMA and the regulations under NEMPAA, every effort must be made to prevent pollution or degradation of the environment at the PEI. The management of waste and sewage must be handled in accordance with this principle, with the high conservation status enjoyed by the islands, and with the policies and guidelines of the South African National Antarctic Programme (SANAP).

For the purposes of this Prince Edward Islands Management Plan (PEIMP), the term 'waste' refers to waste material accumulated due to human activities on the islands since the end of the year 1948. All materials

deposited on the islands prior to 1948 or during the 1948 annexation are considered to be of historical interest and will be managed in terms of the policy set out in this plan (see Chapter 6, Historical conservation).

7.1.3 Environment Conservation Amendment Act

The Environment Conservation Amendment Act requires that all waste must be discarded or disposed of at a permitted site or in a way prescribed by the Minister. Because no waste disposal sites are permitted on the PEIs, this law thus means that all waste generated at the PEIs and on the supply vessel which requires disposal must be returned to South Africa and entered into the waste stream on the mainland.

7.1.4 National Environmental Management: Waste Act (NEMWA)

In terms of NEMWA, waste is defined as any substance that is surplus, unwanted, rejected, discarded, or abandoned, and that must be treated or disposed of. NEMWA regulates waste management in order to protect health and the environment. This is achieved by providing measures for preventing pollution and ecological degradation and for achieving ecologically sustainable development. The Act is aimed at reducing, re-using, recycling and recovering waste as far as possible, and provides for the remediation of contaminated land. Schedule 1 of the Act lists waste management activities in respect of which a license is required. Category A and B activities require a Basic Assessment or an Environmental Impact Assessment process, respectively, as stipulated in the environmental impact regulations under NEMA. The EIA process for the decommissioning of the old Marion Island base must take cognisance of any activities that may be listed in terms of NEMWA.

7.1.5 Water Services Act

Sewage sludge falls under the Water Services Act (No. 108 of 1997). This Act provides for the right to access basic water supply and basic sanitation. Here 'basic sanitation' refers to the prescribed minimum standard of services necessary for the safe, hygienic and adequate collection, removal, disposal or purification of human excreta, domestic waste-water and sewage (Section 1 (ii)). It is thus the responsibility of DEA to ensure that basic water supply and sanitation is provided for all those visiting the PEIs. However, this provision must be in line with the conservation management principles laid out in the PEIMP and all other national legislation.

7.1.6 National Environmental Management: Air Quality Act

The National Environment Management: Air Quality Act allows the Minister to list activities which he/she believes have a significant detrimental effect on the environment, including health, social/ecological/economic conditions or cultural heritage. In order to ensure quality of ambient air at the PEIs, DEA and the PEIMP must adhere to this Act and all regulations promulgated in terms of this Act. If any activities taking place on or around the PEIs fall under the Act's listed activities, then atmospheric emission licenses must be acquired accordingly. Likely sources of such emissions in the vicinity of the PEIs are the supply vessel and its ancillary vessels, helicopters, diesel generators, the braai area at the research base, and any incinerators that may be installed at the base. None of these are likely to produce enough emissions to negatively impact on the ambient air quality of the PEIs. However, should the Minister or DEA decide to set strict controls and thresholds on atmospheric emissions, then the PEIMP must be adapted accordingly and the necessary licenses acquired.

7.2 Principles of waste management at the PEIs

The main principle of the waste management policy for the PEIs is to ensure a waste-free and healthy environment. The objectives of the waste and sewage disposal policy are:

- To ensure that activities at the PEIs do not lead to unnecessary, unsightly or irreversible pollution, marring of the environment, or to the build up of waste or debris on the islands;

- To reduce the amount of waste which is introduced to, produced at or disposed of on or around the PEIs as far as possible;
- To consider the following in the planning and execution of activities: waste storage, disposal and removal from the PEIs as well as recycling and source reduction.

In general, waste generated at the PEIs must be disposed of in a way which does not modify or endanger the natural ecosystems or species. Therefore non-biodegradable and non-burnable waste is returned to South Africa and disposed of at a permitted waste site in accordance with South African integrated waste management policy and legislation.

7.3 Types of waste generated

Four major categories of waste are generated at the islands. These are treated in different ways according to the environmental risks they pose, and it is important that the procedures set out in this PEIMP are strictly observed. The waste categories can be understood as follows:

- *Reusable and recyclable waste:* Waste that can be reused on the island for a time (e.g. bubble wrap, plastic bags) but ultimately is stored and returned to SA for reuse or recycling (glass, cans and drums, plastics including field markers, composites, paper, cardboard, wood). Note that no loose polystyrene packaging (polystyrene beads and chips) may be taken to the PEIs.
- *Burnable human/medical waste:* Certain types of medical waste (i.e. tampons and sanitary towels, disposable garments and bedding, clean and soiled swabs and cotton wool, small quantities of human tissue etc.) that is burnable in a medical grade incinerator.
- *Environmentally hazardous biodegradable waste:* Waste that could cause environmental impacts if released into the environment in an uncontrolled manner, but is organic and biodegradable. This waste consists of two main types:
 - Waste water, including 'grey water' from normal household use and 'black water', i.e. sewage, but excluding waste water that has been in contact with uncooked fish, meat or poultry or poultry-derived products or fish/meat/poultry bones;
 - Food waste or 'slop', excluding any waste water that has been in contact with uncooked fish, meat or poultry.
- *Environmentally hazardous non-biodegradable waste:* Oils and mechanical waste (such as used oil filters, oily rags etc.), waste cooking oil, batteries, herbicides, and laboratory, photographic, radiographic chemicals.
- *Bio-hazardous waste:* Due to the risks of releasing poultry and other meat waste, this category also includes all uncooked fish, meat and poultry waste, melt water and all bones (cooked and uncooked), all stones and pips from dried fruit and olives etc., and all non-burnable medical waste including contaminated latex/plastics, sharps and low-risk ash produced by the incineration of burnable medical waste.

The only types of waste that are disposed of at the PEIs are sewage, food waste ('slop') generated at Marion Island. This waste is biodegradable and it is believed that no significant risk is posed to the environment through this method of disposal.

7.3.1 Treatment of waste at the Marion Island base

Of all the waste generated at the PEIs, most is generated at the Marion Island base. Therefore it is of utmost importance that waste management at the base is taken seriously by all expeditioners and all the guidelines set out in this PEIMP are implemented.

In practical terms, the most important waste management practice is the separation of waste at source. This enables different types of waste to be treated differently and their disposal to be tightly controlled.

A. Treatment of reusable and recyclable waste

| Waste type | Preparation | Destination | Container | Marking |
|--|---|--------------------|-------------------------|----------------|
| Cans (includes all metal containers and metal foils), excluding oil cans | Rinse and flatten | Mainland | Orange steel containers | Metal |
| Drums and oil cans | None | Mainland | Orange steel containers | Metal |
| Glass | Rinse (do not crush as container weight may then exceed the limitations of helicopters) | Mainland | Orange steel containers | Glass |
| Paper and cardboard | Flatten | Mainland | Orange steel containers | Wood |
| Wood | None | Mainland | Orange steel containers | Wood |
| Plastics | Rinse and flatten | Mainland | Orange steel containers | Plastic |
| Polystyrene | Seal in bags to avoid the release of beads | Mainland | Orange steel containers | Plastic |
| Composites, such as foil-lined milk and fruit juice cartons | Flatten | Mainland | Orange steel containers | Plastic |

B. Treatment of burnable waste

| Waste type | Preparation | Process |
|-------------------------------------|----------------------------------|--|
| Burnable human/medical waste | Place in burnable boxes and seal | Burn medical waste in incinerator and place ash in heavy-duty RED plastic bags, clearly marked as 'ash from medical waste incineration' and place in orange steel container with other medical waste |

C. Treatment of environmentally hazardous biodegradable waste

Environmentally hazardous biodegradable waste is all human waste, waste water and food waste generated on the PEIs that does not contain poultry products or bones (red meat, chicken or fish). This waste, although a product of human activities on the islands, is easily degraded and small in volume. Therefore its controlled release probably represents no more than a minor risk to the coastal environment.

However, grey water from domestic use such as washing of floors is known to collect small particles of non-biodegradable material (such as plastic and foil), therefore grey water must be sieved to separate out such material before it is discharged into the grey water system. No grey water may be disposed of onto the ground around the Marion base but must be poured into a drain or toilet. Untreated sewage, or 'black water', is contained in a holder tank prior to discharge. Food slop is macerated before being flushed into a holding tank where it is stored prior to discharge after dark.

At the Marion Island research base, the aforementioned waste is all discharged underwater into the sea via pipelines from the base into the gully between Seagull (north) and Cabbage (south) Points, where it is dispersed by wave action and diluted by flushing into the open ocean.

Soiled paper and cardboard cannot be recycled or burnt (burning results in air pollution and ash which is hazardous if it escapes into the environment) and is thus returned to South Africa for disposal along with other environmentally hazardous non-biodegradable waste.

| Waste type | Treatment | Destination | Time |
|---------------------------------------|---|--|--|
| Waste water ('grey' or black') | Grey water sieved out prior to discharge | Outfall into Seagull-Cabbage Point Gully | As required |
| Food waste or 'slop' | Maceration prior to discharge | Outfall into Seagull-Cabbage Point Gully | As required, only after dark to prevent scavenging by wildlife |
| Soiled paper and cardboard | Store in orange steel containers marked 'Paper: non-recyclable' | Mainland | Not applicable |

D. Environmentally hazardous non-biodegradable waste

Used oils, chemicals, batteries, light bulbs and mechanical and medical waste have the potential to devastate the environment in the event of spillage, leakage or neglect. For this reason stringent controls must therefore be used in the management of this waste.

| Waste type | Preparation | Destination | Container | Marking |
|--|-----------------------------|--------------------|--|---|
| Used oil (including cooking oil) | None | Mainland | 20 l non-corrodible oil drums in orange steel containers | Oil |
| Mechanical waste | None | Mainland | Orange steel containers | Mechanical waste |
| Vehicle batteries | None | Mainland | Dedicated containers | Vehicle batteries |
| Other batteries | None | Mainland | Dedicated containers | Used batteries |
| Chemicals (including laboratory, photographic and radiographic chemicals) | Place in original packaging | Mainland | Placed different types of chemicals in separate containers and clearly mark the contents | Clear markings for contents of each container, including hazard potential Marked against an inventory of waste chemicals |

| Waste type | Preparation | Destination | Container | Marking |
|--|---|--------------------|-------------------------|----------------|
| Light bulbs (Note that the phosphorus contained in bulbs is a potentially hazardous ground water contaminant and may be released when bulbs are broken) | Place in black bin bags, place bin bags inside strong cardboard containers to prevent breakage of bulbs | Mainland | Orange steel containers | Light bulbs |

E. Bio-hazardous waste

Given the large and globally significant populations of birds on the PEIs, the introduction of avian diseases is a serious risk. Uncontrolled release of poultry meat and products into the environment may place indigenous bird populations at risk of contracting diseases to which they have no immunity. When introduced into breeding colonies of birds which nest close together (e.g. penguins), these diseases can have disastrous results¹.

Although no known mammalian or fish diseases can be introduced into the environment through uncooked red meat and fish products, a maximally cautious approach is nevertheless adopted. Therefore all uncooked red meat (beef, lamb, pork etc.) and fish will be treated in the same way as poultry.

In order to minimise the risk of disease being transmitted to the PEIs' bird, mammal and fish populations, all uncooked meat, fish and poultry products (i.e. chicken and shell-free egg products) must be irradiated before transport to Marion Island. No poultry products or uncooked fish and meat whatsoever are allowed on Prince Edward Island.

The following are treated as environmentally hazardous non-biodegradable waste and returned to the mainland for disposal:

- Uncooked fish, meat and poultry and poultry waste, including shell-free egg products and melt water from thawing chicken, fish and meat;
- Bones of cooked poultry, including bones found in canned chicken products and the contents of chicken pies;
- Bones of all meat products, including fish;
- Dried fruit stones and pips;
- Certain types of medical waste produce ash containing toxic heavy metals when incinerated, resulting in high risk waste which may only be disposed of at a licensed medical waste disposal site. For this reason no medical waste other than legitimate burnable medical waste may enter into the burnable waste cycle at the PEIs, even if the correct standard of medical waste incinerator is installed at the new base.

| Waste type | Preparation | Destination | Container | Marking |
|--|---|--------------------|------------------|--------------------------|
| Uncooked fish, meat and all poultry waste (including eggs, chicken, melt water and bones), dried fruit stones and pips etc. | Freeze in separate freezer/compartments | Mainland | Black bins | Bio-hazardous food waste |
| Medical sharps* | Place in sharps | Mainland | Seal sharps in | Bio-hazardous |

¹ Kerry, K., Riddle, M. & Clarke, J. 2000. Disease of Antarctic Wildlife. A Report for SCAR and COMNAP. Australian Antarctic Division, Hobart.

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|---|--|----------|--|-----------------------------|
| | container and seal; only to be done by medical personnel unless in case of emergency | | containers placed in thick red plastic bags stored in orange steel container | medical waste |
| Bio-hazardous non-burnable medical waste | Place in red plastic bags and seal | Mainland | Red plastic bags (thick) in orange steel container | Bio-hazardous medical waste |

7.3.2 Waste management at field huts

Waste management at the field huts has become problematic due to infrequent hut clean-outs (mainly annual) and the ageing toilets at the huts. Most of the huts have a pit toilet system, while one, Katedraalkraans, has a removable bucket system. No chemicals are used and the toilet holes are filled with soil and closed when full. The pit toilets must be phased out as quickly as possible and replaced with a removable bucket or alternative system. The buckets should be changed during annual relief voyages, when the use of helicopters for transport is possible. This will ensure safer, more hygienic conditions at huts, although it is still not an ideal system should the number of visitors to the huts continue to increase. Alternative toilet systems for the field huts should be investigated by DEA as a matter of priority.

Food waste should be managed with care to ensure that no food is accessible to animals, including mice. Slop should be placed in the toilet, and cans and bottles rinsed and left in the hut waste bins along with all other waste that is not carried out from huts. If possible, other waste should be carried out, including paper and cardboard and all bones and poultry products. Small quantities of grey water may be disposed of directly onto the ground around the field huts, as long as it has been sieved first to remove any non-biodegradable materials picked up during the cleaning process. Every effort should be made to keep food waste to a minimum by not cooking more food than required or opening too many cans. Left-over food should be used at subsequent meals or carried out when feasible.

All washing (including bathing, washing of clothes, kitchen utensils etc.) must be done downstream of the point at which potable water is extracted for use at the hut.

7.3.3 Waste management on Prince Edward Island

Prince Edward Island is the most untransformed part of South African territory. Due to its near-pristine condition and its situation in the Southern Ocean, it represents a valuable scientific, educational and cultural resource for all South Africans. To maintain the island in its near-pristine state, no waste may be deposited on the island. All waste must be immediately secured, separated into categories and removed from the island at the end of every visit. All grey water and sewage must be containerised through the appropriate means (e.g. sealable slop buckets and the 'porta-loo' bag systems respectively) as it is produced. Where feasible, urinating on vegetated areas should be avoided, and should not occur within 20 m of camp sites to avoid nitrification over time.

On departure from a camp or research site or the island, all waste must be removed and must be entered into the supply vessel waste stream for processing. No waste should be returned to Marion Island because of risks of propagule or disease transfer. It is the responsibility of every individual visiting Prince Edward Island to adhere to this waste management policy.

7.4 Rehabilitation of un-used infrastructure and other impacted sites

Any rubble or building waste which has accumulated since the end of 1948, and therefore has no historical value, should be removed and the sites rehabilitated according to an approved restoration plan and the most recent SANAP document listing areas to be prioritised for waste removal (Appendix, 1.2). This also applies to parts of the old base that are no longer operational and that are to be decommissioned and removed. Rehabilitation should not involve removal of natural vegetation from other areas to the rehabilitated site. Removal of human constructions from the site and any appropriate stabilisation of soil should allow natural colonisation to take place. Disturbed areas are most likely to be colonised by alien species and should be kept off limits to non-conservation personnel.

Team members and other expeditioners should record the positions of new rubble sites (by GPS) and identify these (with photographs) to DEA to prioritise in future clean-up efforts. DEA must establish and maintain a database of long-term field markers, and the ECO should make sure, once every six months, that the site markers are in good condition. Markers must not be removed until it is clear that they are not part of a long-term study. The default assumption is that they are part of such a study and should be left in place, but a position taken.

No cleanup operations are currently under consideration for Prince Edward Island.

7.5 Guidelines for use of radioactive material

The use of radioactive material on the PEIs must be authorised in writing by DEA in accordance with the Hazardous Substances Act (No. 15 of 1973), the National Nuclear Regulator Act (No. 47 of 1999) and any regulations promulgated by the Nuclear Energy Corporation of South Africa (NECSA), the National Nuclear Regulator (NNR) or the Department of Health. Permits for the PEIs are to be endorsed accordingly (group 4 hazardous substances). Packaging of all radioactive material shall be in accordance with the instructions issued on the permit and in accordance with any instruction issued by the master of the supply vessel. The person responsible for the radioactive material must submit a full report on material used and returned, within 14 days of returning to the mainland.

No radioactive waste material may be deposited on the islands or within marine waters; all radioactive waste must be returned to South Africa for disposal at approved disposal sites. No radioactive material may be left on the islands for use at a later stage.

DEA and the Department of Minerals and Energy (DME) are currently developing a strategy for the management of radioactive waste², which will appear in the next version of the National Waste Management Strategy (intention to develop the strategy published in Government Gazette No. 33277, 8 June 2010). Management of radioactive waste on the PEIs must fall in line with this strategy.

² <http://www.info.gov.za/view/DownloadFileAction?id=70209>

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|--|--|--|---|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| A. Policy | | | | | |
| Consider waste management in planning processes at the PEIs | Consider waste management in planning processes for all works and activities at the PEIs | Prepare or commission an Environmental Management Plan (including waste management) as part of all EIA processes; the plan must be considered prior to authorisation | Peruse all planning documents, including scoping/EIA reports by D: IEA and D: SO & AS prior to decision-making | Action: Project planners; D: SO & AS Monitoring: D: IEA; PEIAC | If plan absent or inadequate, refuse authorisation |
| B. Education | | | | | |
| Raise awareness about waste management at the PEIs | Increased awareness of expeditioners regarding waste management at the PEIs | Present an onboard seminar during every voyage, with compulsory attendance by all expeditioners, describing waste management procedures and explaining the need for these | Keep a record of attendance at the seminar; Monitor knowledge of procedures on an ongoing basis | Action: DEA; ECO Monitoring: ECO; DCO | Re-iterate correct procedures if necessary; Anyone who does not attend seminar may not disembark at the PEIs |
| Raise awareness about waste management at the PEIs | Increased awareness of over-wintering team regarding waste management at the PEIs | Include training in waste management procedures during team training | Monitor knowledge of procedures on an ongoing basis | Action: D: SO & AS; D: IEA Monitoring: ECO | Re-iterate correct procedures if necessary |
| Raise awareness about waste management at the PEIs | Increased awareness of supply vessel personnel regarding waste management at the PEIs | Provide detailed instruction for supply vessel personnel in correct waste management procedures prior to arrival at the PEIs | Monitor knowledge of personnel on an ongoing basis but especially at the start of the annual relief | Action: D: SO&AS; Vessel operator Monitoring: ECO | Re-iterate correct procedures if necessary |
| Raise awareness about waste management at the PEIs | Vessels permitted by DEA to operate tourist trips in the waters around the island aware of correct waste management procedures | Provide tourist vessel operators with a copy of this management plan , and explain waste management procedures that will apply | None | Action: D: SO&AS, D: IEA | Explain correct procedures if tourist vessel near the islands appears to be unfamiliar with these |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|---|--|--|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| C. Minimisation of waste generated | | | | | |
| Minimise waste generated on the PEIs | Reduce amount of primary packaging entering the waste stream | Where possible, remove all superfluous plastic and cardboard packaging from supplies at stores and stow supplies in plastic bins before containerising | Observe the packing process at stores | Action: D: SO&AS; NDPW; SAWS (store managers) Monitoring: D: SO&AS; ECO | If excess packaging is not removed, instruct stores personnel accordingly |
| Minimise waste generated on the PEIs | Maximise recycling and re-use of packaging waste; Minimise use of non-biodegradable packaging | Liase with product suppliers to ensure maximum use of re-useable and recyclable packaging material; Avoid wood and polystyrene packaging materials, especially wood shavings (note that polystyrene beads and chips are prohibited at the PEIs) | Examine supplies at stores prior to packing into containers | Action: D: SO&AS; NDPW; SAWS (store managers) Monitoring: D: SO&AS; ECO | If non-biodegradable packaging is used, remove wherever possible; Renegotiate supply contracts |
| Minimise waste generated on the PEIs | Reduce amount of primary packaging and excess food entering the waste stream | Order catering supplies in appropriate quantities (large for base to reduce packaging material, small for huts to reduce wastage of food etc.) | Check quantities of goods received for base and huts | Action: D: SO&AS; NDPW; SAWS Monitoring: D: SO&AS; ECO; TL/DCO; team members involved in hut resupply | Modify catering supply contracts if problems are encountered |
| Minimise waste generated on the PEIs | Prevent accumulation of expired food products on Marion Island | Perform annual stores inventory at the base and all field huts and return all food that has expired or will expire in the next year to the mainland | Ensure that each field hut and the base are inventoried separately each year; Observe restocking process at the PEIs | Action: TL; D: SO&AS Monitoring: TL; ECO; hut re-supply teams | Modify catering supply contracts and ensure that annual inventory is done, if necessary by external independent inspector; Ensure appropriate disposal in South Africa of returned expired foods |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|---|--|---|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Minimise waste generated on the PEIs | Minimise generation of plastic waste | Use re-usable webbing straps with ratchet fasteners instead of plastic strapping | Examine supplies on delivery to island | Action: D: SO&AS, NDPW Monitoring: ECO | Inform D: SO&AS and request corrective action |
| Minimise waste generated on the PEIs | Minimise generation of battery waste | Use rechargeable dry cell batteries where possible; Avoid disposing of partially spent batteries; check all batteries with a volt meter before discarding and re-use partially spent batteries in other equipment if possible | Self-regulated | Action: All expeditioners Monitoring: TL; ECO | None |
| D. Waste generated on the vessel | | | | | |
| Appropriately treat waste generated on the vessels in the vicinity of the PEIs | Protection of the marine and coastal environment of the PEIs | Adhere to all sea waste disposal regulations (Merchant Shipping Act), e.g. do not deposit any galley or human waste within 12 nm of the PEIs | Monitor ship waste release practices and familiarity of crew with at sea garbage disposal regulations on an <i>ad hoc</i> basis | Action: Vessel operator; Ship's Master Monitoring: ECO; DCO | Inform D: SO&AS as soon as possible of any breaches; immediately take up the matter with the Ship's Master; Instruct crew as to correct procedures |
| Appropriately treat waste generated on vessels in the vicinity of the PEIs | Protection of the bird, fish and seal populations of the PEIs from human-mediated disease outbreaks | Freeze all uncooked meat and fish, uncooked and cooked poultry waste on the supply vessel, including eggshells, eggs products and melt water from chicken, meat, fish and egg, and returned to SA for disposal | Observe ship waste release practices and familiarity of crew with at sea waste disposal regulations on an <i>ad hoc</i> basis; Carry out spot checks of meat freezer containers on vessel | Action: Ship operator; Ship's Master Monitoring: DCO; ECO | Inform D: SO&AS of any breaches as soon as possible; and take up with the Ship's Master |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|--|--|--|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Appropriately treat waste generated on the vessels in the vicinity of the PEIs | Protection of the marine and coastal environment of the PEIs | Vessels or aircraft permitted by DEA for tourist trips in the waters around the PEIs to maximally implement waste treatment procedures described in this management plan | Observe ship waste release practices as far as possible | Action: Ship operator; Ship's Master Monitoring: All expeditioners | Inform D: SO&AS of any breaches as soon as possible; D: SO&AS to take matter up at the highest level |
| E. Waste generated on the PEIs | | | | | |
| Safe and appropriate treatment and storage of reusable and recyclable waste | Separate all reusable and recyclable waste | Separate all re-usable and recyclable waste (glass, plastic, metals, cardboard and paper) into clearly marked containers (also see Section 7.3.1) | Self-regulate; Regularly check waste room to ensure that waste is being separated correctly and check again before emptying into orange containers | Action: All expeditioners Monitoring: Chef; Kitchen skivvy; DCO/TL; ECO | Provide feedback to team members on waste separation |
| Safe and appropriate treatment and storage of reusable and recyclable waste | Separate all reusable and recyclable waste from the 'hospital' | Separate plastics and other uncontaminated waste (e.g. packaging) from the 'hospital' waste and enter into main waste stream at base | Check that uncontaminated medical waste is routed through the correct channels | Action: Medical Officer Monitoring: DCO/TL; ECO | If in doubt about the contamination status of medical waste, place in red bags clearly marked 'bio-hazardous medical waste' for return to the mainland |
| Safe and appropriate treatment and storage of reusable and recyclable waste | Prevent pollution resulting from runoff from unsealed waste containers | Store waste containers (including orange steel containers and black plastic bins) in enclosed, weatherproof areas | Regularly check waste containers to ensure that they are not exposed to rain or wave action | Action: D: SO&AS Monitoring: TL/DCO; ECO | Move waste containers to appropriate location, and construct a new building for storage if necessary |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|---|--|--|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of reusable and recyclable waste | Facilitate recycling and minimise odours from stored waste | Rinse all bottles, jars, cans and plastic packaging prior to separation in the waste room, except those containing high quantities of oil and those containing uncooked chicken, fish and meat products | Regularly check waste containers | Action: All expeditioners Monitoring: Kitchen skivvy; DCO/TL; ECO | Provide feedback to team members on rinsing of recyclable waste |
| Safe and appropriate treatment and storage of reusable and recyclable waste | Proper treatment of waste wood | Return waste wood to SA for re-use or disposal | Regularly check for waste wood around the base | Action: NDPW, D: SO&AS Monitoring: TL/DCO; ECO | Cut large pieces of wood into smaller sections that can be containerised; If amount of waste wood is large, ensure that sufficient containers are available during the following relief voyage |
| Safe and appropriate disposal of medical waste | Safe and appropriate treatment and disposal of burnable medical waste | Place contaminated burnable medical waste in special red burnable boxes, clearly marked 'medical waste', and incinerate (see Section 7.3.1) | Regularly check medical waste containers | Action: Medical Officer Monitoring: DCO/TL; ECO | Give feedback to Medical Officer on correct disposal of waste |
| Safe and appropriate disposal of medical waste | Safe and appropriate treatment and disposal of medical waste | Burn burnables daily, weekly or as required ; large burnables to be burnt immediately to prevent build up | Regularly check medical waste containers | Action: Medical Officer Monitoring: DCO/TL; ECO | Give feedback to Medical Officer on correct disposal of ash |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|--|---|---|--|--|---|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate disposal of medical waste | Safe and appropriate treatment and disposal of ash from incinerated medical waste | Burn all burnable medical waste immediately in clean incinerator (free of ash from other waste incineration) and containerise resulting ash promptly (see Section 7.3.1) | Regularly check incinerator | Action: Medical Officer Monitoring: DCO/TL; ECO | Give feedback to Medical Officer on correct disposal of ash |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Separation and storage of environmentally hazardous waste | Place toxic and environmentally hazardous waste such as batteries (vehicle-type and other), laboratory, photographic and radiographic chemicals in clearly-marked separate receptacles (see Section 7.3.1) | Regularly check waste room to ensure that waste is being separated correctly | Action: All expeditioners Monitoring: DCO/TL; ECO | Handle breaches in discussion with Science Coordinator and other team members as required |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Safe storage and transportation of light bulbs | Place spent light bulbs in black bags and store bags carefully inside sturdy clearly marked cardboard boxes; Store inside orange steel containers in such a way that other waste is not dumped on top of the boxes | Regularly check packing of bulbs and containers | Action: All expeditioners Monitoring: DCO/TL; ECO | Handle breaches in discussion with Science Coordinator and other team members as required |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Safe storage and transport of waste oil | Place all waste oils and fuels in clearly marked 20-l containers and return to South Africa for recycling at the earliest opportunity | Conduct a quarterly inventory of contents of flammables store; regularly check cleanliness and condition of containers | Action: Diesel Mechanic Monitoring: DCO/TL; ECO | Handle breaches in discussion with Science Coordinator and other team members as required |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Safe storage of flammables | Conduct quarterly inspection of flammables store ; ensure that no containers have been damaged or corroded; sign off each inspection on schedule posted inside the store | Check inspection schedule quarterly | Action: Diesel Mechanic Monitoring: DCO/TL; ECO | Conduct inspection as a matter of urgency |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Safe storage of flammables | Stack containers in flammables store in such a way that they are easily inspected, and so that they do not damage those underneath them | Check stacking method and condition of containers | Action: Diesel Mechanic Monitoring: DCO/TL; ECO | Re-stack containers appropriately |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Responsibility taken for consignment of environmentally hazardous non-biodegradable waste | Sign off final waste consignment at end of year | Check final manifesto and inspection schedule | Action: Diesel Mechanic Monitoring: DCO/TL; ECO | Draft consignment list as a matter of urgency |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Safe storage and transport of environmentally hazardous non-biodegradable waste; Maintenance of wilderness aesthetic | Identify any rubble and containers around the base and huts and in the field, correctly containerise and prioritise for removal from the island | Annual check of condition of base and huts and surrounds during annual relief voyages | Action: Diesel Mechanic; DCO/TL Monitoring: DCO/TL; ECO | Immediately remove rubble and containers, irrespective of value of contents |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Reduce accumulation of non-essential and/or expired chemicals | Draw up an inventory of all chemicals in laboratories and submit to Chief Scientist during annual relief | Shore-based Chief Scientist to inspect annually | Action: Laboratory personnel Monitoring: Shore-based Chief Scientist; ECO | Inform DCO/TL and ECO of all breaches; Remove all expired or unnecessary chemicals from the island; Permits for research can be revoked in the case of persistent offenders |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Reduce accumulation of non-essential and/or expired gas bottles and reduce risk of gas bottle corrosion | Draw up an inventory of all gas bottles at base and huts and submit to DCO during the annual relief; Report should include condition of bottles | TL to coordinate and DCO to inspect annually | Action: TL, laboratory personnel Monitoring: DCO/TL; ECO | Inform DCO/TL and ECO of all breaches; Remove all empty or corroded gas bottles from the island; Permits for research can be revoked in the case of persistent offenders |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Minimise the impact of cleaning products on the environment | Use biodegradable, low-phosphate cleaning products wherever possible | Examine supplies on delivery to island | Action: D: SO&AS Monitoring: DCO/TL; ECO | Inform D: SO&AS and request corrective action |
| Safe and appropriate treatment and storage of environmentally hazardous non-biodegradable waste | Prevent uncontrolled dispersal of packaging materials | Secure and sort packaging materials immediately after the contents have been removed in a closed room or under windless conditions; place in closed bins | Check that all packaging is secured and separated as soon as possible after product delivery | Action: All expeditioners Monitoring: DCO/TL; ECO | If packaging materials escape or are blown about, collect immediately and secure and dispose of appropriately; report uncollected material to the ECO |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe disposal of food waste | Freeze and store uncooked fish and meat , uncooked and cooked poultry and poultry-derived waste (including bones and melt water from thawing frozen chicken, fish and meat products and shell-free egg products) and return to SA for disposal | Check slop containers before emptying and freezing contents | Action: All expeditioners, especially chefs and kitchen skivvy Monitoring: ECO; DCO/TL | Separate raw meat, fish, poultry, eggs and bones from other food waste; If in doubt, treat entire slop bin as poultry/fish/meat/egg and freeze |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe disposal of contaminated food packaging | Freeze with poultry waste all packaging that contained poultry, egg products or meat and return to South Africa for disposal | Regularly check waste room to ensure that contaminated packaging is being separated correctly | Action: All expeditioners, especially chefs and kitchen skivvy Monitoring: ECO; DCO/TL | Inform chefs and kitchen skivvy of the correct procedures for disposal, and reiterate importance of upholding procedures |
| Safe and appropriate treatment and storage of bio-hazardous waste | Sterilisation of contaminated food containers | Clean all containers used to defrost chicken, fish or meat or frozen egg products using a concentrated bleach solution, before flushing into grey water system | Check regularly | Action: Chef; kitchen skivvy Monitoring: DCO/TL; ECO | Inform chefs and kitchen skivvy of the correct procedures for cleaning of containers, and reiterate importance of upholding procedures |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe disposal of yeast | Kill all unused yeast by boiling , including the boiling of instruments (bowls, utensils) used with yeast | Check regularly | Action: Chef; kitchen skivvy Monitoring: DCO/TL; ECO | Inform chefs and kitchen staff of the correct procedures for cleaning of containers; reiterate importance of upholding procedures |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of bio-hazardous waste | Sterilisation of contaminated medical waste water | Treat waste water and cleaning products contaminated with medical residues with disinfectant to render it sterile prior to disposal through the grey water system | Check regularly | Action: Medical Officer Monitoring: TL/DCO; ECO | Re-iterate the correct procedures to the Medical Officer |
| Safe and appropriate treatment and storage of bio-hazardous waste | Adequate containers provided for non-burnable medical waste | Order adequate supplies of containers , i.e. sharps bins, burnable boxes in different sizes and red disposal bags; Add these items to standard schedules; Include five sealable body bags in the event that hygienic storage of a human body is needed | D: SO&AS to check against Medical Officer's order list at least one month prior to departure | Action: Medical Officer; D: SO&AS Monitoring: DCO/TL | If any of the required equipment is not available, report at once to D: SO&AS and in the meantime improvise by using clearly-marked, preferably red or yellow containers for disposal; D: SO&AS to obtain equipment at earliest opportunity |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe and appropriate treatment and disposal of non-burnable medical waste | Place non-burnable, contaminated medical waste in red bags clearly marked 'medical waste' and return to SA | Regularly check waste containers | Action: Medical Officer Monitoring: ECO; DCO/TL | Immediately notify D: SO&AS and team members of breaches; dispose appropriately where possible |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe and appropriate treatment and disposal of non-burnable medical waste | Place all contaminated and uncontaminated medical sharps and ampoules in commercially supplied, strong, sealable sharps bins ; seal bins when full or at the end of the year and packed into red bags for return to SA (see Section 7.3.1) | Regularly check waste containers | Action: Medical Officer Monitoring: ECO; DCO/TL | Immediately remove any sharps that accidentally enter the normal waste stream, and dispose of as described |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Safe and appropriate treatment and storage of bio-hazardous waste | Safe and appropriate treatment and disposal of non-burnable medical waste | Place any sharps and ampoules used by researchers (e.g. darts used by seal researchers) in sharps containers provided by the Medical Officer | Regularly check waste containers | Action: Medical Officer; researchers Monitoring: ECO; DCO/ TL; Science Coordinator | Immediately remove any sharps that accidentally enter the normal waste stream, and disposed of as described |
| Safe storage, transport and use of radioactive materials | Safe storage, transport and use of radioactive materials | Handle all radioactive material according to the Guidelines for Use of Radioactive Material (Section 7.5) and all other relevant legislation and policy of SA | DCO and ECO to monitor at PEI; National Nuclear Regulator (NNR) to monitor by means of reporting system | Action: All users, D: SO&AS Monitoring: DCO; ECO; NNR | NNR to take appropriate action in case of breaches |
| F. Decommissioning of obsolete structures | | | | | |
| Safe and appropriate treatment of obsolete infrastructure; maintenance of wilderness aesthetic at the PEIs | Decommission and remove obsolete infrastructure | Design and implement a comprehensive decommissioning and restoration plan for redundant infrastructure, including safe shut down of facilities, dismantling of structures, removal of materials and restoration of affected vegetation communities | NDPW to submit annual decommissioning and restoration progress reports to D: SO&AS | Action: NDPW; D: SO&AS Monitoring: D: IEA, PEIAC; ECO | Inform CEC if cooperation on this matter cannot be achieved |
| G. Waste generated away from the research base | | | | | |
| Minimisation and safe handling and storage of waste away from base | Minimise pollution generated and minimise fire risk away from base; Maintain a wilderness aesthetic at the PEIs | Do not bury or burn waste in the field Collect, store and take photographs and GPS position of all waste found on the island | Self-regulate; Observe field activities on an <i>ad hoc</i> basis | Action: All expeditioners Monitoring: ECO; DCO/TL | Remove all ash and debris; and reiterate correct procedures and importance of these to field personnel |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|--|---|--|---|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Minimisation and safe handling and storage of waste away from base | Minimise pollution generated away from base | Record the GPS positions of all field markers and update this list annually; Ensure that all field markers are removed from the field at the end of the research programme | Ensure that all Group Leaders have provided the positions of new field markers by the end of the annual relief, and have indicated which old markers have been removed | Action: Group Leaders; Chief Scientist Monitoring: Chief Scientist; DCO/TL; ECO | Remove any field markers which are not on the list |
| Minimisation and safe handling and storage of waste away from base | Minimise pollution at field huts | Place food waste or 'slop' (excluding bones) in hut toilets , or carry back to base | Observe activities at huts on an <i>ad hoc</i> basis, but especially during the annual relief | Action: All expeditioners Monitoring: Overwintering team members; Group leaders; ECO | Inform expeditioners of correct procedures and the importance of following these; Inform D: SO&AS of repeated breaches |
| Minimisation and safe handling and storage of waste away from base | Minimise generation of bio-hazardous (high risk) waste at field huts | Do not take uncooked meat, fish, chicken or egg products to huts | Observe activities at huts on an <i>ad hoc</i> basis, but especially during the annual relief | Action: All expeditioners; D: SO&AS Monitoring: Overwintering team members; Group leaders; ECO | Containerise any bio-hazardous waste found at the huts, and return to base for freezing; Once origin of waste ascertained, D: SO&AS to follow up with appropriate penalties |
| Minimisation and safe handling and storage of waste away from base | Minimise waste accumulation at field huts | Wherever possible, carry out all bones, paper, cardboard, batteries etc. and enter into base waste stream | Observe activities at huts on an <i>ad hoc</i> basis, but especially during the annual relief | Action: All expeditioners Monitoring: Overwintering team members; Group leaders; ECO | Inform expeditioners of correct procedures and the importance of following these ; Inform D: SO&AS of repeated breaches |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|--|--|---|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Minimisation and safe handling and storage of waste away from base | Maximise recycling at field huts | Rinse cans and bottles and place in hut waste bins | Observe activities at the huts on an <i>ad hoc</i> basis, but especially during the annual relief | Action: All expeditioners Monitoring: Overwintering team members; Group leaders; ECO | Inform expeditioners of correct procedures and the importance of following these ; Inform D: SO&AS of repeated breaches |
| Minimisation and safe handling and storage of waste away from base | Safe storage and handling of sewage at field huts | Decommission and close or, where possible, remove contents of all pit toilets ; Replace with removable bucket or alternative system | Report annually to D: SO&AS | Action: DAI, Overwintering team members or other expeditioners Monitoring: ECO, TL/DCO; PEIAC | Annual reporting by D: SO&AS to DEA DG to point out lack of action |
| Minimisation and safe handling and storage of waste away from base | Safe storage and handling of sewage at field huts | Replace hut toilet containers at least once per year , whether full or not | Ensure that relief schedule accommodates resupply and waste removal at all huts | Action: DCO Monitoring: ECO | Remove waste at earliest opportunity |
| H. Waste generated on Prince Edward Island | | | | | |
| Maximally apply waste management policy | Strict adherence to specific waste management procedures | Adhere to all waste management procedures (refer to Chapter 7: 'Waste Management') | Inspect waste management practices of expedition personnel throughout duration of expedition | Action: All expeditioners Monitoring: Expedition Leader (EL); ECO | If waste management procedures are found to have been overlooked, implement these immediately; Immediately clean up any resulting damage and restore the area as possible within the period of the visit; Report incidents to D: SO&AS |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
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| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Prevent the disposal of any waste on Prince Edward Island | Minimisation of pollution generated at Prince Edward Island | Remove excess and loose packaging from food supplies before departure for the island; do not take small articles of packaging ashore | Check all food supplies prior to departure for the island | Action: All expeditioners Monitoring: EL; ECO | If excess packaging is found on the island, remove from supplies and store securely with other waste |
| Prevent the disposal of any waste on Prince Edward Island | Maximise recycling and safe storage and handling of waste on Prince Edward Island | Separate all waste into sealed containers and store out of contact with soil, vegetation and the elements | Check camping sites daily to ensure that all waste is secured as prescribed | Action: All expeditioners Monitoring: EL; ECO | Inform D: SO&AS as soon as possible of failure of waste control methods; D: SO&AS may revoke permits of parties responsible or refuse future visits |
| Prevent the disposal of any waste on Prince Edward Island | No waste left on Prince Edward Island | Remove all waste from the island | Thoroughly inspect camp sites prior to departure | Action: All expeditioners Monitoring: EL; ECO | Expedition party may not leave before all waste has been removed; Inform D: SO&AS of any breaches |
| Prevent the disposal of any waste on Prince Edward Island | Minimise impact of grey water waste on Prince Edward Island | Deposit grey water well below the high water mark (where possible at coastal areas) or remove it from the island (inland areas) | Self regulate; EL/ECO to raise awareness | Action: All expeditioners Monitoring: EL; ECO | Report any breaches to D: SO&AS |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|--|--|--|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Prevent the disposal of any waste on Prince Edward Island | Minimise impact of grey water and sewage waste on Prince Edward Island | As it is produced, containerise and secure grey water (produced inland) and sewage (excluding urine) , remove it from the island and enter into vessel waste stream | Self regulate; EL/ECO to raise awareness | Action: All expeditioners Monitoring: EL; ECO | Report any breaches to D: SO&AS† |
| F. Waste returned to South Africa | | | | | |
| Direct as much as possible of the waste generated by human activities at the PEIs into the waste stream of the mainland | Safe and organised transport of waste to facilitate disposal on the mainland | Seal waste containers to be transported; do not transport loose bags of waste | Check all waste destined for the mainland before loading onto the ship | Action: All expeditioners involved in cargo operations Monitoring: DCO/TL; ECO; Ship's Master | Re-pack waste containers before loading onto ship |
| Direct as much as possible of the waste generated by human activities at the PEIs into the waste stream of the mainland | Safe and organised transport of waste to facilitate disposal on the mainland | Clearly mark all waste containers bound for South Africa in the manner described in this management plan and in accordance with any instruction issued by the DCO or Ship's Master | Check all waste destined for the mainland before loading onto the ship | Action: All expeditioners involved in cargo operations Monitoring: DCO/TL; ECO; Ship's Master | Re-label waste containers before loading onto ship |
| Direct as much as possible of the waste generated by human activities at the PEIs into the waste stream of the mainland | Proper disposal of waste upon return to SA | Make arrangements with a registered waste disposal company to collect all ship and PEIs' waste from the harbour once supply vessel returns to SA | Observe offloading process on the mainland | Action: D: SO&AS Monitoring: D: SO&AS, Store manager | Take up matter with D: SO&AS |

| Goal 7-1. Appropriate and sustainable management of waste at the Prince Edward Islands | | | | | |
|---|---|--|--|--|--|
| Objective | Target | Action | Monitoring | Responsibility | Remedial action |
| Direct as much as possible of the waste generated by human activities at the PEIs into the waste stream of the mainland | Waste enters the waste stream in SA in the appropriate manner | Upon return to SA, only offload waste containers onto the vehicles of the waste disposal company and not onto the wharf | Monitor unloading of ship and collection of waste at the harbour | Action: Waste disposal company; vessel operator; Ship's Master Monitoring: D: SO&AS | D: SO&AS to renegotiate contract with vessel operator and waste disposal company |
| K. Disaster response procedures: Refer to Chapter 5, Goal 5-3 | | | | | |