South Georgia Habitat Restoration Project, Phase 1

Health and Safety Plan
(including occupational risk assessments)

South Georgia Heritage Trust

21 December 2010

Contents

1 NON-TECHNICAL SUMMARY

The South Georgia Habitat Restoration (SGHR) project aims to remove rodents from South Georgia using helicopters to distribute cereal-based brodifacoum bait.

This Health and Safety (H&S) Plan defines the H&S policies and practices for Phase 1 of the project and how these will be implemented in order to minimise risks to staff and to promote a safe and effective working environment.

The H&S Plan identifies the roles and responsibilities of staff for H&S and reporting. Risk Assessments (RAs) have been prepared for tasks which will be undertaken by staff and are included in the appendix to the Plan.

The H&S Plan is one of a number of documents which have been prepared for the SGHR project.

2 INTRODUCTION

2.1 Summary of South Georgia rodent eradication

The SGHR project aims to remove rodents from the entire island of South Georgia. This will be undertaken using helicopters to distribute the anticoagulant poison brodifacoum in cereal-based bait.

The eradication will take place in two phases, with different geographically isolated sub-populations of rats being treated each season. The island has been divided into a series of 18 ‘baiting zones’ and one application of bait is planned for each zone.

The first phase of the eradication will take place in the period February – April 2011 on Thatcher and Greene Peninsulas, a promontory on the NW side of Mercer Bay and Saddle Island. All of these zones apart from Saddle Island are close to the operational centre at King Edward Point (KEP) / Grytviken, which is also the main centre of population on South Georgia.

South Georgia is a harsh and extreme environment with changeable weather conditions, mountainous terrain and few support facilities. During Phase 1 of the operation, flying will be limited to areas which are within 16km of the operational base at Grytviken. The inside of buildings and structures will be treated by hand baiting.

Monitoring will be undertaken following Phase 1, to check for the complete eradication of rodents, assess the effects of bait on non-target species and assist in the optimisation of logistics and operational procedures for Phase 2 (2013 – 2015).

Fifteen further baiting zones will be cleared during Phase 2, requiring temporary depots of fuel and bait and yacht support for more remote operations.

The SGHR project is being managed by the South Georgia Heritage Trust (SGHT).

2.2 Scope and purpose of Health and Safety Plan

This H&S Plan will assess the risk of activities to be undertaken by project staff as part of Phase 1 of the project. Measures will be outlined to reduce the risk of injury or ill health to all project staff and others affected by the SGHR operations.

Key aims of the H&S strategy for the SGHR project are to ensure good working practises and instil a sound safety culture within the operational team.

The H&S Plan will be made available to all staff working on the project and will be discussed during training briefings with all staff prior to the onset of operations. H&S during the project will be managed and implemented by the Assistant Project Director (see section 3.1).

The H&S Plan will be revised and updated for Phase 2 of the operation.

2.3 Health and Safety requirements on South Georgia

There is no formal H&S legislation for South Georgia. However, H&S standards have been established by the British Antarctic Survey (BAS) for their operations, including working procedures and RAs.

Government of South Georgia and the South Sandwich Islands (GSGSSI) staff comply with BAS protocols when working at KEP. GSGSSI expect UK H&S standards (as a minimum) to be applied in so far as is practicable on South Georgia, and for staff to have appropriate training and qualifications (R. McKee, pers. comm.).

The UK *Health and Safety at Work Act* requires for the provision of safe places of work, safe plant and equipment, the provision of competent persons and provision of information, instruction and training. The *Management of Health and Safety at Work Regulations* requires RAs to be carried out in order that significant risks are identified and that suitable and sufficient control measures are utilised.

2.4 Project documentation

The H&S Plan is one of a series of documents which have been prepared as part of the planning process for the SGHR project, including the following:

- Operational Plan for Phase 1
- Environmental Impact Assessment (island wide) and Initial Environmental Evaluations (for each treatment zone)
- Biosecurity Plan
- Oil Spill Plan
- Search and Rescue Plan
- Monitoring Plan
- Crash Recovery Plan

An Operational Procedures Manual and Safety Plan for Rat Baiting Operations on South Georgia has also been prepared.

The consent of the GSGSSI is required to undertake the eradication project.

3 HEALTH AND SAFETY RESPONSIBILITIES

H&S is as important as productivity, quality and cost. **The safest way is always the best way.** Everyone is responsible for safety performance and for maintaining safe working conditions.

Safety awareness must be developed through training, motivation and cooperation. With the commitment and diligence of every team member, operations can be free of unacceptable risks.

All staff will be briefed by Project Director (PD) and the Chief Pilot (CP) on arrival at South Georgia regarding operational and safety procedures. The Assistant Project Director will have delegated responsibility for ensuring that the H&S plan, RAs and safe working procedures are followed effectively and that processes are regularly assessed to ensure that they are carried out safety.

3.1 Responsibilities within the Project team

Managers: Project Director (PD), Chief Pilot (CP)
(and Assistant Project Director (APD) and/or Second Pilot (SP) where appropriate)

Managers and supervisors should lead by example and promote good safe working practices. They are accountable for taking all practicable steps to create a safe and healthy work environment for all staff, contractors and others. They have a responsibility for:

- promoting a positive attitude towards safety
- their own personal H&S and anyone who may be affected by their actions
- the H&S of any person(s) under their direct control
- ensuring that H&S is a part of all job descriptions and that staff understand that compliance with H&S procedures is an essential part of their duties
- ensuring that the project team is appropriately trained and briefed on the work to be carried out, the risks and hazards that might be encountered and the appropriate H&S practices
- assign participants only to tasks they are capable of performing
- provision of appropriate equipment and protective clothing and ensuring that these are used and properly looked after
- ensuring that clear procedures are developed and reviewed for each work task
- identification of all hazards associated with the project, conducting RAs, implementing appropriate control measures and communicating these to staff
- ensuring that the H&S Plan is comprehensive, applicable, reviewed regularly and properly implemented
- conducting regular H&S inspections and correcting any deficiencies
- involving staff in the improvement of H&S
- ensuring that accidents, incidents and near-misses are reported, recorded and investigated, and that appropriate mitigation is put in place to avoid future incidents of a similar nature
- ensuring appropriate provision of medical and first aid facilities
- leadership, commitment and clear line of responsibility to support safe work practices

Assistant Project Director

The Assistant Project Director (APD) will have designated responsibility for H&S on site and will ensure, so far as is reasonably practicable, that all workers, visitors and others associated with the project are safe from injury and risks to their health. This role will include:

- planning, development, implementation and monitoring of H&S and injury prevention measures
- ensuring that leadership, commitment and direction are provided to support safe work practices
- recording and reporting to the PD on all H&S matters including programmed audits, actions arising from audits, hazard identification, incident investigations and outstanding and required actions associated with incidents
- coordinating publication and distribution of H&S updates to all project staff on site
- reviewing, updating and maintaining the H&S Plan including RAs

Project team
All of the project team have the following responsibilities with regard to H&S:

- ensure own personal H&S; evaluate the risks associated with every activity and refrain from performing high risk operations
- ensure the H&S of others; prevent others from performing high-risk operations
- comply with procedures and work instructions issued under the Operational Plan and H&S Plan and accepted safe work practices
- wear correct personal protective equipment (PPE) provided
- maintain tools and equipment properly

- follow training received when using any work items
- co-operate with manager on H&S and safe work practices
- report incidents to APD as soon as possible including near misses
- report any activities that may affect personal H&S or if you think the work or inadequate precautions are putting anyone's H&S at risk
- take actions promptly where necessary to reduce risks: for example label, disable or remove from site faulty equipment so that other people do not use it
- take immediate steps to correct any violation of safety rules
- control high risks associated with essential tasks so that they can be performed with little risk of injury, illness or loss of property

3.2 GSGSSSI and BAS personnel at KEP

A Memorandum of Understanding will set out the roles and responsibilities regarding BAS and GSGSSI staff and facilities. This may include the use of the KEP surgery and doctor, communication facilities etc. by project staff.

BAS have their own H&S regime, including RAs and these are available from the Base Commander. If SGHR project team members are undertaking an activity which is associated with BAS operations, they should follow the BAS procedures and appropriate H&S measures.

4 MEDICAL AND EMERGENCY ARRANGEMENTS

The SGHR Project team includes a qualified doctor who will deal with medical issues. Other members of the project team will also have first aid qualifications. First aid equipment will be taken to KEP and Grytviken for the use of the project team. For serious medical issues, the BAS facility at KEP will be utilised in collaboration with the BAS doctor at the station.

Search and rescue procedures and emergency equipment are included in the Search and Rescue (SAR) Plan, which has been prepared to deal with any incidents which occur away from the operational base.

5 RISK MANAGEMENT

Safe operation of the SGHR project will be key to its success. The remoteness and difficult operating conditions on South Georgia mean that everyone must routinely evaluate and continually re-evaluate the risks associated with each task or operation. Staff must be vigilant and not proceed with a task until unacceptable risks are controlled or eliminated. For emergencies in the South Georgia environment, it may take hours or days before help arrives.

5.1 Definitions

A **hazard** is something (e.g. chemicals, electricity, weather conditions or an activity such as working from ladders) that can cause harm.

A **risk** is the likelihood that a hazard will actually cause harm, together with an indication of how serious the harm could be if it does occur (risk factor).

Risk assessment is the process of:

- identifying the hazards of the activity
- evaluating the risk associated with each hazard
- determining appropriate ways to eliminate or control each hazard

Risk assessments should be completed by a competent person prior to undertaking the activity and should be reassessed when new factors are introduced to an activity.

Risk assessments should be reviewed and monitored regularly.

5.2 Preparing a Risk Assessment

Risk assessments should be completed prior to undertaking an activity and for any activities which have not been previously performed at a workplace.

Risk Assessment forms have been prepared for this project, based on the latest forms used by the British Antarctic Survey for their operations in South Georgia (see Appendix 1). Completion of the Assessment involves the following steps:

1. Describe the project or process area
2. Name those involved in the project or process area
3. Identify the hazards or hazardous activities
4. Identify what harm is likely to occur with no controls
5. Assess the level of risk with no controls (see section 4.3)
6. List controls measures which will be used to eliminate or control each hazard (see section 4.4)
7. Assess the level of risk with controls implemented (see section 4.3)
8. Identify who is responsible for implementing controls
9. Approval of RA by Project Director
10. Copies of the relevant risk assessments should be read and signed by the project team and signed copies kept on file.

Risk assessments should be regularly reviewed and should be updated if there is a change in the type or work or if new information becomes available.

5.3 Ranking and prioritising risks

Risk levels can be categorized in a numbered format. Each hazard is given a rating and this is multiplied by the probability that these hazards will occur, as shown in the following equation.

Risk level = Hazard severity x probability of occurrence

Hazard severity and probability of occurrence are both assessed on a scale of 1 to 5. The risk levels are shown in Table 1, below.

Table 1. Calculation of risk levels for hazardous activities

	Remote possibility	Possible	Likely	Highly probable	Virtual Certainty
Minor injury or illness	1	2	3	4	5
Injury/illness requiring medical attention	2	4	6	8	10
Injury/illness: more than 3 days off work	3	6	9	12	15
Major injury or long term illness	4	8	12	16	20
Fatal injury or illness	5	10	15	20	25

Table 2 indicates the level of risk indicated by the numerical values above and what type of further action is required.

Table 2. Assessment of risk and further actions

Rating	Risk	Action
1-2	Negligible	No further action
3-5	Low	Further action as resources allow
6-9	High	Requires action; Set timetable for improvements
10-15	Very high	Priority action; Control as soon as possible
16-25	Unacceptable	Stop activity until risk reduced

Tables from Natural Environment Research Council (NERC) Guidance Note: Risk Assessment HS3/95.

5.4 Control and elimination of risks

Sources of hazards shall be controlled through careful planning, appropriate work procedures, training, inspections, and the proper use of protective equipment and clothing.

The control or elimination of risks due to a person's exposure to a hazard can be achieved via the following steps:

1. Eliminate the hazard from the workplace
2. Substitute the hazard with something that is a lesser hazard
3. Isolate the hazard from the person who is being put a risk
4. Engineering control of hazard
5. Administrative control of hazard, including the adoption of safe working practices
6. Use Personal Protective Equipment

5.5 Risk assessments for SGHR project

Risk Assessments have been prepared for activities associated with the project.

Where possible these RAs are based on British Antarctic Survey (BAS) documents which are currently in use on South Georgia, and also on the *Occupational Health and Safety Plan for the Macquarie Island Rabbit and Rodent Eradication Project* (TASPAWS, 2010) which has been prepared for a similar eradication project currently underway on Macquarie Island.

The following RAs have been prepared for this project. The full assessments are attached in Appendix 3.

1. Moving loads and working around ship
2. Helicopter operations
3. Vehicle operation and maintenance
4. Handling and loading of brodifacoum bait
5. Hand baiting around station and field huts
6. Overland travel (on foot) and working away from operational base
7. Working with dogs
8. Working outdoors in sub-Antarctic weather conditions

6 CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH)

Hazardous substances are substances or articles that are potentially dangerous to people, property or the environment. Hazardous substances required for the SGHR project may include items such as fuels, paints or solvents.

The *Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended)* is a UK law requiring employers to control substances that can harm workers' health.

An inventory of all hazardous substances used for the project will be prepared and Material Safety Data Sheets (MSDS) for these substances made available. An MSDS is also available for brodifacoum cereal bait (see Appendix 4), although it is not classified as hazardous and is below the threshold for dangerous goods for shipping.

Exposure to hazardous substances can be prevented or reduced by:

- finding out what the health hazards are
- deciding how to prevent harm to health (risk assessments)
- providing control measures to reduce harm to health and making sure they are used
- keeping all control measures in good working order
- providing information, instruction and training for employees and others
- providing monitoring and health surveillance in appropriate cases
- planning for emergencies

(HSE; http://www.hse.gov.uk/coshh/basics/whatiscoshh.htm)

Use of hazardous substances will be monitored and reviewed by the APD.

7 ACCIDENT, INCIDENT AND NEAR MISS REPORTING (AINM)

One of the best ways to avoid accidents is to understand how an accident occurred and how to prevent that type of accident happening again. Accident reporting and investigation is a tool and is not about laying blame.

Any person involved in, or witnessing, an accident or potentially dangerous incident, no matter how minor, must report it to the APD as soon as possible. Accidents and incidents may include injuries, spills, near misses or unsafe conditions and should be investigated within 48 hours of occurrence and measures implemented where applicable.

7.1 Accident

An accident is an undesired event or sequence of events causing injury, ill-health or property damage.

7.2 Incident or injury

An incident is an unplanned, undesired event that hinders completion of a task and may cause injury or other damage.

7.3 Near miss

A near miss or dangerous occurrence is where something happens that does not result in an injury, but given a slight shift in time or distance could have done. It is important to record

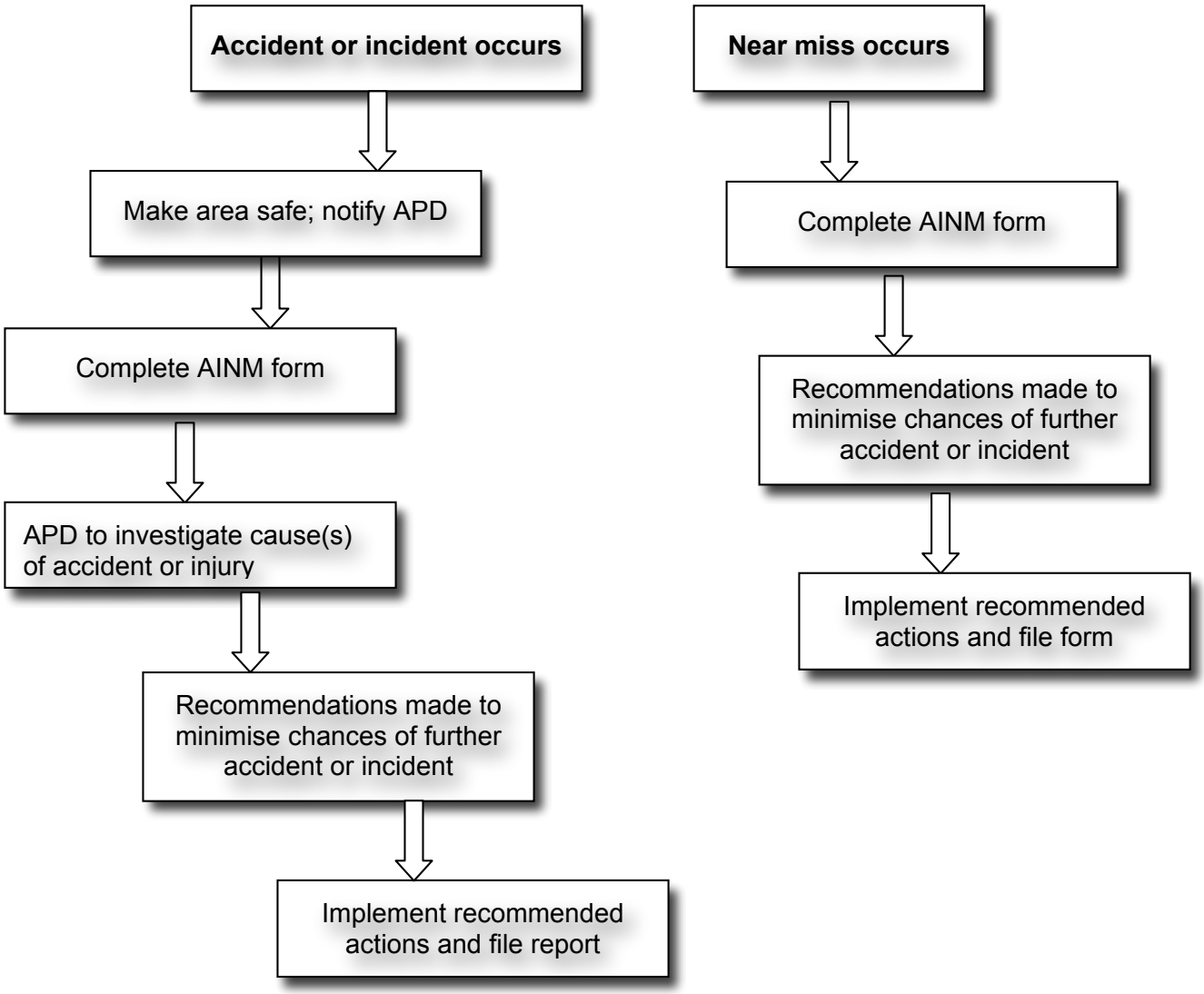
and investigate near misses, as lessons can be learnt and measures put in place before an accident or incident occurs.

7.4 Reporting procedures

All accidents, incidents and injuries should be reported to the APD within 48hours. Details of the accident or incident should be reported on the AINM form (see Appendix 3). This reporting is essential for reducing the likelihood of further accidents or incidents.

An investigation should be conducted as soon as possible following the event to gather all the necessary facts, determine the true causes of the event, and develop recommendations to prevent a recurrence. The PD should get there as quickly as possible, ensure that the area is safe and make sure that any injured persons have medical attention. Witnesses should be interviewed and photos taken to record the scene and establish what happened.

The following flow chart shows the actions which should be taken if an accident, incident or near miss occurs during the project:



The GSGSSI Government Officer and BAS Base Commander will be notified of any accident, incident or near miss and subsequent investigation.

8 PREPARERS AND ADVISORS

This H&S Plan was prepared by Dr Liz Pasteur and Prof. Tony Martin. Many thanks to Keith Springer (Tasmania Parks and Wildlife Service) for allowing us to use the *Macquarie Island Pest Eradication Project Occupational Health and Safety Plan* as a basis for this plan. Assistance and advice and access to BAS health and safety documents were provided by Les Whittamore, Steve Marshall and Rod Arnold (British Antarctic Survey). Comments on the draft were provided by Simon Gill (Morrison Falklands).

9 REFERENCES

Tasmania Parks and Wildlife Service (TASPAWS). 2010. Occupational Health and Safety Plan for Macquarie Island Pest Eradication Project – Part D. Version 5.

UK Health and Safety Executive. http://www.hse.gov.uk . Information taken April 2010.

10 ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
AGL	Above Ground Level
AINM	Accident Incident and Near Miss
APD	Assistant Project Director
BAS	British Antarctic Survey
COSHH	Control of Substances Hazardous to Health
CP	Chief Pilot
DGPS	Differential Global Positioning Systems
EIA	Environmental Impact Assessment
FOB	Forward Operating Base
GPS	Global Positioning System
GSGSSI	Government of South Georgia and the South Sandwich Islands
H&S	Health and Safety
HSE	Health and Safety Executive (UK)
IEAG	Island Eradication Advisory Group (New Zealand)
IEE	Initial Environmental Evaluation
KEP	King Edward Point
OP	Operational Plan
PD	Project Director
PPE	Personal Protective Equipment
RA	Risk Assessment
SAR	Search and Rescue
SGHR	South Georgia Heritage Restoration
SGHT	South Georgia Heritage Trust
UK	United Kingdom

11 APPENDICES

11.1 Appendix 1: Risk Assessment Form

Description of your project or process area:		**Date:**	Click here to enter a date.	**Assessor:**	
Name of those involved in the project or process area:		**Review date:**	Click here to enter a date.	**Reviewer:**	

What are Hazards or hazardous activities? *(List individually below)*	**What harm could occur?** *(with no controls)* **What is the risk?**	**What control measures will be used? What is the residual risk** *(with controls)***?**	**Responsible person (s) / actions needed**

11.2 Appendix 2: Accident, incident, near miss report form

CONFIDENTIAL

Accident, incident, near miss report

Report Date	Location	Your name

Accident Date	Report Type				Exact Location
	Accident	☐	Near miss	☐	
	Incident	☐	Environmental	☐	

Personal Details

Injured Person	Nature of Injury	Treatment Received

Time off work due to the accident ☐ **Yes** ☐ **No**

Date Off	Date Back	Witness Names

Details

Statement of what happened	
Are there any H&S documents (e.g. Risk assessments or safety policies) that cover the work you were carrying out?	
Suggestions or lessons learned	

Contributory Factors (Please indicate below where applicable)

☐ Inexperience
☐ Lack of Concentration
☐ Lack of Supervision
☐ Lack of Training
☐ Weather (Cold / wet / heat etc.)
☐ Lack of Maintenance
☐ Tiredness
☐ Faulty or Wrong Equipment
☐ Other (specify below)

NOTE: Please ensure you forward this document to the Assistant Project Director

11.3 Appendix 3: Risk Assessments

Description of your project or process area:	**Moving loads and working around ship** • Manual handling • Slips and trips • Working around ship • Moving cargo to operational area	Name of those involved in the project or process area:	All of project team		
		Date:	31/05/2010	**Assessor:**	Liz Pasteur
		Review date:	01/06/2011	**Reviewer:**	TBC

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
Lifting and carrying objects • Heavy and bulky items • Awkward shapes • In awkward spaces • Repetitiveness • Tiredness • Weather	• Muscular or skeletal injuries resulting from lifting or dropping items • Cuts and abrasions on sharp edged objects • Injuries from chemical handling / spills • Weather related injuries **Risk factor** = 16 Unacceptable Stop activity until risk reduced	• Use mechanical assistance where possible • A person should only lift what weight they are comfortable with (varies from person to person) • Seek assistance of others to help to spread the load • Increase awareness of manual handling hazards by regular training and supervision • BAS Manual handling video to be shown before intensive periods of cargo handling • Advise all staff that rushing/ peer pressure/ work pressure are unsafe factors • Regular breaks during poor weather • Ensure any chemicals are packed correctly and transported upright • Wear PPE; safety boots, gloves, hard hats, overalls as appropriate to the task **Residual risk factor** = 4 Low Further action as resources allow	PD/APD
Working around the wharf during loading/unloading • Interaction with loading equipment • Items being dropped on staff	• Impact injury from plant ops • Cold water immersion, possible injury • Crush injury • Strains, sprains, cuts from handling lines, cold injuries from handling wet ropes, impact injury from parting mooring lines.	• SGHT PD will liaise with the GSGSSI Government Officer and/or KEP BC (if appropriate) and Ship's captain to establish best procedures for assisting with unloading and loading operations • Project staff will be briefed on their role in unloading procedures at KEP • Non-essential staff to stand away from mooring operations (e.g. at the boatshed) until ship is secure • Staff should be physically capable and inexperienced staff supervised	PD/APD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
• Falling off wharf • Entrapment between wharf side and ship • Handling mooring lines • Icy surfaces • Gangway positioning and use • Slips and trips	• Slip and fall injuries on icy surfaces. • Fall injury from gangway • Skin irritation, fume inhalation **Risk factor** = 12 High Requires action; set timetable for improvements	• PPE – compulsory use of hard hats, steel toecap footwear and waterproof, warm work gloves, high visibility gear for cargo operations • Never stand under slung loads • Wharf edges to be cleared of snow and ice • Operate 1m minimum from wharf edge next to ship • Take care to avoid trapping fingers between lines, bollards and shackles as the rope tightens. Use safe techniques to loosen/tighten shackles with tools • Await clear instruction from shipside before helping position the gangway • Await shipside acknowledgement that gangway is safe to use before use **Residual risk factor** = 4 Low Further action as resources allow	
Noise • Noisy vehicles • Noisy machinery	• Deafness • Tinnitus **Risk factor** = 6 High Requires action; set timetable for improvements	• Ear protection to be provided and worn • Limit working times in noisy areas **Residual risk factor** = 2 Negligible No further action	PD/APD

Description of your project or process area:	**Helicopter Operations SGHR Project including:** • Working around helicopters during landing and take off • Helicopter loading and unloading • Bait spreading • Flights over water • Passengers on board • Refuelling aircraft • Refuelling sowing buckets • Landing sites • External loads and slinging operations • Emergency landing • Accident due to poor weather conditions	**Name of those involved in the project or process area:**		Chief Pilot, 2nd pilot, Project Director, Assistant PD. Project team	
		Date:	31/05/2010	**Assessor:**	Liz Pasteur
		Review date:	01/06/2011	**Reviewer:**	TBC

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
Working around helicopters during landing and take off • Contact with moving helicopter main or tail rotors • Flying debris and dirt • Empty bait bags near helicopter • Noise	• Cuts, bruises, sprains • Eye injury (dust or dirt) • Discomfort to ears or temporary hearing loss • Serious injury or death **Risk factor** = 20 Unacceptable Stop activity until risk reduced	• Briefing by CP of **all** project staff at start of season on safe aircraft operations • Detailed pre-flight briefing for **all** project staff each day by PD and CP • If any staff are not present for briefing, safety information must be communicated to them by radio/phone • Clear safe operating procedures for activities in and around aircraft • Identify clear zones around helicopter landing site(s); staff must not be positioned under the aircraft approach or departure paths • Ensure emergency and first aid equipment available on the ground and in aircraft and that staff know locations • Wear appropriate PPE including ear protection • Stay clear of landing site when helicopter is landing or taking off • Secure any loose materials in the area of the helicopter including clothing/hats • Do not approach helicopter unless authorised by pilot • Wait for OK signal from pilot before approaching helicopter • Always approach the helicopter from the front	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
		• Stay away from the tail rotor at all times • Never walk under the tail boom of the helicopter • On uneven ground, approach from the down slope side to allow maximum rotor clearance • Eyewash stations near to landing sites **Residual risk factor** = 4 Low Further action as resources allow	
Helicopter loading and unloading • Main or tail rotor strike • Flying debris • Noise • Incorrect placing of loads • Heavy, bulky loads • Uneven ground • Awkward shapes • Awkward spaces • Chemical spills • Insecure loads • Overloading leading to flying problems	• Muscular or skeletal injuries • Cuts and abrasions • Hearing damage • Eye injury • Serious injury • Death **Risk factor** = 20 Unacceptable Stop activity until risk reduced	• Duty Ground Controller to supervise all loading procedures • Cargo / passenger weights should be recorded • Briefing before operations • Selection of project staff with previous experience • See RA for moving loads and working around ship – use correct lifting and handling techniques • Beware of sharp tools – use protective covers • Never throw anything towards or away from the helicopter • Always pass equipment directly from person to person • Long objects should be carried horizontally at below waist level to avoid contact with the main rotor blade • Any dangerous items should be declared to the pilot and should be stored in approved containers • Heaviest items in centre of helicopter • All cargo to be secured • Ensure cargo doors properly closed • Stop any person doing something to place themselves or others in danger **Residual risk factor** = 4 Low Further action as resources allow	CP/APD/PD
Bait spreading • Difficult terrain • Low level flights • External load	• Cuts, bruises, sprains • Eye injury (dust or dirt) • Serious injury or death	• Detailed daily briefings to all staff • Trained and experienced ground staff • Clear communications procedures including good air-air and air-ground comms.	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
• Adverse weather • Pilot unfamiliar with location (initially) • Loading crews operating near or under helicopter • Wet helipad surfaces – risk of skid • Empty bait bags and loose material • Proximity of telehandler to aircraft operations • Tiredness • Tourists in vicinity of bait spreading	**Risk factor** = 20 Unacceptable Stop activity until risk reduced	• Staff who may be impacted by change of plans or aircraft malfunction to carry radio • Appropriate bait loads for flying conditions • Procedure for safe handling of items susceptible to downwash, particularly empty bait bags • Field helicopter landing sites constructed in sufficient space to safely operate and have a separate area for hot refuelling clear (30m clearance) • Site inspections prior to use to consider ground firmness and obstacles • Use of "bear paws" to increase skid footprint and reduce sinking into soft surfaces where appropriate • No bait spreading on beaches when tourists are present **Residual risk factor =** 4 Low Illness or injury requiring medical attention: further action as resources allow	
Flights over water • Emergency landing in water • Escape from submerged helicopter • Cold water immersion • Crash into ship or other vessel	• Serious injury • Drowning • Cold injury/exposure **Risk factor** = 12 Very High Priority action: control as soon as possible	• Briefing by CP for all passengers on procedures for emergency landing and location of survival equipment and how it operates • Pilots and passengers to wear immersion suits and life jackets for over water flights • Search and Rescue procedure to be prepared • Second aircraft in immediate vicinity to provide assistance if no waterborne transport options available • Aircraft float equipped with raft to be carried • Helicopters to follow standard operating procedures: no flying above cruise ships, fishing vessels or any other vessels **Residual risk factor** = 4 Low Further action as resources allow	CP/APD/PD
Passengers on board helicopter • Interfering with pilots concentration during departure and landing • Unfastened seatbelts	• Emergency/crash landing • Serious injury • Death **Risk factor** = 12 Very High Priority action: control as soon as	• Staff training; briefing by CP • Ensure all doors closed properly • Ensure seatbelts fastened • If available put helicopter headset on • Limit conversation with pilot during take-off and landing • Keep clear of and do not touch controls • Keep alert to hazards (wires, other aircraft, seabirds etc.)	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
• Interfering with aircraft controls • Damaging perspex	possible	**Residual risk factor** = 4 Low • Further action as resources allow	
Aircraft refuelling • Spills • Fire and explosion • Fuel contamination (water) • Fuelling aircraft with contaminated fuel	• Emergency/crash landing • Serious injury • Death **Risk factor** = 12 Very High Priority action: control as soon as possible	• Clear refuelling procedures and briefing on safe refuelling practices • Eliminate all ignition sources; no smoking • Use non-sparking equipment and earth metallic nozzles before use • Earth aircraft or provide electrical connection between nozzle and aircraft before refuelling starts • Use fit for purpose containers, hoses and pumps • Use appropriate spill containment equipment **Residual risk factor** = 4 Low Further action as resources allow	CP/APD/PD
Refuelling sowing buckets • Fuel igniting • Fuel blown by wind into person's face and eyes • Lose clothing items caught in spinner/belts • Burns from spinner motor muffler	• Burns • Serious injury • Death **Risk factor** = 12 Very High Priority action: control as soon as possible	• Briefing on safe refuelling work practices including avoiding muffler burns • No smoking by refuelling crew anywhere near the re-fuelling depot • Tuck in loose items of clothing and use eye protection • Turn spinner motor off before starting to refuel • Use of pourer or funnel and have back to wind when refuelling • Use appropriate spill containment equipment **Residual risk factor** = 2 Negligible No further action	CP/APD/PD
Helicopter landing sites **Grytviken** • Landing site preparation and size inadequate • People and vehicles close to fuel and aircraft • Smoking close to fuel and aircraft • Hazards nearby (buildings,	• Damage to aircraft • Burns • Serious injury • Death **Risk factor** = 12 Very High Priority action: control as soon as possible	• All persons assigned to aircraft operations are responsible for safety compliance including use of PPE • Non-essential staff and vehicles to remain clear of aircraft (30m) • Landing at any site remains at the pilot's discretion • No smoking and no flame sources within 30 metres of aircraft • Loose material must be secured around landing site • Landing sites should have a reliable wind indicator • Landing sites should have a fire extinguisher suitable for use for helicopters • Mark the touchdown site where feasible (spray paint)	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
structures) **Remote sites** • As above • Site characteristics: slope, size local weather • Approach and departure path		• Landing zone 25m or more diameter with a 40 degree maximum angle of approach • Helicopters not permitted to overfly occupied station buildings • Station landing pad must be clearly marked • Clear approach and departure path into the prevailing winds • Known hazards outside the landing area should be identified and marked with coloured flagging tape • If poor landing site is selected, which does not meet safety requirements, move to a more appropriate site if possible • Wear safety goggles if watching landings, departures and hovering at proximity of 30m or closer • If blinded by swirling dust and grit, STOP, kneel down and wait for assistance **Residual risk factor** = 4 Low Further action as resources allow	
External loads and slinging operations • Inappropriate tasking of aircraft and/or equipment • Helicopter capacity • Changes to aircraft handling characteristics • Objects falling from sling • Swinging long line hook • Heavy unsuitable loads • Flying with un-weighted net or sling • Static electricity discharge possibility from long line	• Damage to aircraft • Serious injury • Death **Risk factor** = 12 Very High Priority action: control as soon as possible	• Safety briefing before slinging operations. Include all aspects such as hand signals to all ground crews/pilots • Pilot has ultimate responsibility for flying external loads • All ground crews use PPE; no loose fitting clothing • Ensure staff are familiar with aircraft and equipment capability and operations • Avoid flight paths with loads over people or buildings (apart from baiting operations) • Understand the possibility of static electricity discharging from the helicopter during hook-up • Take care not to get entangled in the net or load • Never stand under a load or between the load and an immovable object in slinging operations • If the load requires readjusting, direct the pilot to land while load is re-rigged • Beware of hook at all times • Never fly with un-weighted sling or net • Hook should weigh at least 6-7 kg to allow safe flight	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
		Residual risk factor = 4 Low Further action as resources allow	
Emergency landing • Engine malfunction • Aircraft damage • Failure due to poor maintenance, shipping damage, salt damage • Bird strike • Contaminated fuel	• Damage to aircraft • Serious injury • Death **Risk factor** = 10 Very High Priority action: control as soon as possible	• Use of experienced pilots and ground staff • Care to adequately protect helicopter during shipping • Well maintained equipment: experienced mechanic on site • Servicing of helicopter as soon as possible before use • Flying conditions as stipulated in contractors manual and CAA regulations • Consideration of weather forecast and existing conditions • Prevention of pilot error through fatigue by alternating flying time between pilots • Availability of aircraft wash-down facilities to reduce the build up of salt • Provision of adequate fuel to complete the full operation safely • Comprehensive spares kit and emergency equipment (see SAR Plan) • SAR Plan has been prepared. SAR briefing and exercise for all staff • Plan for getting further spares to SG quickly if necessary **Residual risk factor** = 4 Low Further action as resources allow Impact preparation • Follow instructions of the pilot • Secure any loose items in the cabin • Remove glasses and items in pockets and roll down shirt sleeves to help protect from fire • Know procedure for fastening/releasing seatbelt clip • Ensure the seatbelt of shoulder harness is fitted firmly • Brace for impact	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
		• Forward facing seats (lap belt): Rest head and chest against legs, grasp ankles or lower legs or wrap both arms around thighs behind knees; face down in lap, not to one side. • Seats with shoulder harness: sit back with chin on sternum • Rear facing seats: sit back with head on seat head rest • Grasp seat edge – Don't grip harness • If contact with interior is likely, passenger should place body against the object to be impacted before impact occurs Over water • Ensure immersion suit is worn (should be on before boarding) • If life vest worn, do not inflate in cabin, only when clear of aircraft • If helicopter is equipped with a life raft, do not accidentally pull the lanyard and inflate within the cabin or allow it to become entangled with the helicopter After impact • Move clear of helicopter after rotor blades stop • Activate ELT Transmitter • If possible get first aid kit and assist those who are injured or in shock • Stay near the aircraft – do not wander away from the site	
Accident due to poor weather conditions • Low cloud, rain, snow: reduced visibility • Risk of collision with obstacles • Freezing temperatures: ice accumulation on aircraft, breaking antenna wire, affect on engine performance ie. Failure to start • Strong winds affecting	• Damage to aircraft • Serious injury • Death **Risk factor** = 10 Very High Priority action: control as soon as possible	• Do not fly if any uncertainty about suitability of weather conditions • Allow generous amount of down-time in calculations of project duration • Arrange the provision of best available weather forecasts • As far as possible ensure that other factors do not inhibit flying in good weather. **Residual risk factor** = 4 Low Further action as resources allow	CP/APD/PD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s) / actions needed
flight path • Glare from low or reflected sun can obscure vision of pilot or make helipad hard to locate			

Description of your project or process area:	**Handling and loading of brodifacoum bait** • Unloading bait from ship and moving to loading site • Loading bait bags into spreaders • Attaching sowing bucket • Disposal of empty bait bags • Eating and drinking • Dispersal of bait in the environment and watercourses	**Name of those involved in the project or process area:**		Assistant Project Director, Project Director, Chief Pilot, Assistant Chief Pilot, Project team	
		Date:	31/05/2010	**Assessor:**	Liz Pasteur
		Review date:	01/06/2011	**Reviewer:**	TBC

What are Hazards or hazardous activities?	**What harm could occur?** *(with no controls)* **What is the risk?**	**What control measures will be used?** **What is the residual risk** *(with controls)***?**	**Responsible person (s)**
Unloading of bait from ship and moving to loading site • Damage to bait bags through poor handling • Lifting injuries • Use of forklift • Accidental spillage	• Exposure to bait due to spillage • Bruising/impact injury • Crush injury **Risk factor** = 8 High Requires action; set timetable for improvements	• Briefing by person responsible for ship unloading and PD to all personnel involved in unloading and moving of bait • Clear plan of where bait will be moved to and stacked • Wear appropriate PPE including high visibility vest • Only trained personnel to operate vehicles • Use clear hand signals when directing machinery • Where bags break, use suitable tape to repair tears **Residual risk factor** = 2 Negligible No further action	PD/APD
Attaching sowing bucket • Sling failure • Bucket attachment failure	• Bruising/impact injury • Crush injury **Risk factor** = 8 High Requires action; set timetable for improvements	• Proper maintenance of slings and sowing bucket • Slings certified as required • Maintain loads within Safe Working Load • Check attachment points pre start – hook and release **Residual risk factor** = 4 Low Further action as resources allow	CP/PD/APD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Loading bait bags into spreaders • Cutting bags open with a knife • Lifting bags into hopper bucket • Inhalation of dust when bait drops into bucket • Person being knocked by sowing bucket • Noise	• Fatigue • Bruising/impact injury • Strain/sprain/break • Crush injury • Knife injury • Poisoning • Noise induced hearing loss **Risk factor** = 12 Very High Priority action; control as soon as possible	• Only designated staff should be in the vicinity of the loading sites • All staff involved in opening bait bags must wear correct PPE including hearing protection and high visibility vests. No loose clothing items • Train all loading staff on correct lifting technique, potential hazards and spillage and accident procedures. MSDS, risk assessment and instructions on use of PPE to be made available to all staff at all times • Full safety briefing and practical demonstration given to all loading staff before loading commences; instructions on how to behave in an emergency situation • Staff to be in radio contact with helicopter • Experienced baiting pilots selected to undertake sowing bucket work • Use short bladed knives and replace knife in pouch after each bag is opened • Ensure hopper bucket is in correct position on the ground with hood attached and experienced driver used • Ensure that bucket/hopper is closed before filling begins • When fully loaded, ensure that the bait does not sit above the top edge of the bucket • Designate helicopter approach path. Helicopter to move forward and away from loaders • Establish a clear landing zone. All staff working in this zone to be well briefed **Residual risk factor** = 4 Low Further action as resources allow	CP/PD/APD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Disposal of empty bait bags • Empty bait bags sucked up into helicopter blades causing emergency landing	• Damage to aircraft • Serious injury to ground crew • Death **Risk factor** = 8 High Requires action; set timetable for improvements	• Safe bag disposal system at loading site • Comprehensive team briefing on how to handle empty bait bags • Observation and assessment of process by PD/APD • Designated bag handlers to dispose of **ALL** empty bags • No bait bags shall be re-used for any other purpose **Residual risk factor** = 4 Low Further action as resources allow	CP/PD/APD
Eating and drinking • Ingestion of bait dust • Skin contact with bait dust • Transfer of bait dust to living environment for subsequent ingestion or skin contact	• Poisoning **Risk factor** = 4 Low Further action as resources allow	• Remove protective clothing and equipment and thorough washing of hands/arms/face at the end of a task or before eating, drinking, smoking or using the toilet **Residual risk factor** = 1 Negligible No further action	PD/APD
Dispersal of bait into station water supply catchment • Possible transfer of brodifacoum into station drinking water supplies	• Reduction in clotting factor (increased bruising rates, excessive bleeding from cuts, occasional nose and gum bleeds, blood in faeces or urine, pale mouth, cold gums, general weakness) **Risk factor** = 4 Low Requires action; set timetable for improvements	• Following aerial baiting, flush station water system and ensure that intake pipe is in open water • Remove bait immediately following bait spreading from within 2m of main water systems feeding base supply where possible • Animal carcasses to be removed from within 20m of waterways feeding base water supply where possible • Measures to be taken to ensure that bait does not enter domestic water supplies via sediment (micro filtration) • Supplies of Vitamin K antidote to be kept at station (see also further information in the EIA) **Residual risk factor** = 1 Negligible No further action	

Description of your project or process area:	**Operation of vehicles and vehicle maintenance** • Vehicles and mobile plant operation • Vehicle maintenance (including helicopters)	**Name of those involved in the project or process area:**		Designated drivers and mechanic and those working in the vicinity of vehicles	
		Date:	31/05/2010	**Assessor:**	Liz Pasteur
		Review date:	01/06/2011	**Reviewer:**	TBC

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Vehicles & mobile plant operation • Contact with people, buildings & services • Overturning due to unstable load, high speeds, rough terrain. • Unsafe loads • Cables & antennas • Various impact injuries • Bad weather • Lone working	• Muscular, skeletal, whiplash or crush injuries. • Injuries resulting from electric / RF shock • Damage to vehicle can affect project operations • Injuries exacerbated by lone working **Risk factor** = 12 Very High Priority action; control as soon as possible	• Drivers should possess an industry recognised qualification • Only designated driver(s) to use vehicles • The vehicles are maintained regularly. Records are to be kept in good order. • Do not use the vehicle if alone on base • Do not use any vehicle after alcohol has been consumed **Residual risk factor** = 4 Low Further action as resources allow	Project Director / Mechanic
Vehicle Maintenance • Moving Parts • Hazardous Substances • Slips, trips and falls • Manual Handling • Electricity • Failure of vehicle supports • Noise • Small Power tools • Falls from heights • Exhaust fumes • Accidental starting of machinery • Lone Working • Flying Objects	• Entrapment injuries • Injuries from contact with harmful substances • Muscular or skeletal injuries • Injuries from contact with electricity • Deafness • Injuries relating from power tools • Carbon Monoxide poisoning • Eye injuries • Noise related injuries • Injuries exacerbated by Lone Working **Risk factor** = 16 Unacceptable Stop activity until risk reduced	• Switch off machinery before working on it • Ensure all guards are correctly fitted • Remove keys from ignition when working on the vehicle • Disconnect battery as required, reconnect correctly • Provide ear protection • Avoid contact with potential harmful substances; wear gloves if necessary to protect hands • When testing vehicle do so in a well ventilated area. • Wear eye protection if there is a risk of small flying objects • Use only certified lifting equipment and stands. Ensure it is in date and good condition before use • Access vehicle using steps provided on the vehicle • Do not work on vehicles whilst alone **Residual risk factor** = 4 Low Further action as resources allow	Project Director / Mechanic

Description of your project or process area:	Hand baiting around station and field huts Travelling within Phase 1 zones	Name of those involved in the project or process area:		All of project team	
		Date:	31/05/2010	Assessor:	Liz Pasteur
		Review date:	01/06/2011	Reviewer:	TBC

- Preparation of bait for distribution
- Laying baits underneath station buildings and field huts
- Laying baits in roof cavities of building and field huts
- Working outdoors in sub-Antarctic weather conditions
- Checking gutters after aerial baiting
- Working away from base at night
- Staying in field huts

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Bait preparation for distribution • Manual lifting of heavy bags • Use of knives to open bags • Pouring bags into smaller containers	• Cuts • Inhalation of dust • Back injury **Risk factor =** 4 Low Further action as resources allow	• Manual handling training • Training on opening and handling toxic baits • Wear appropriate PPE **Residual risk factor** = 2 Negligible No further action required	PD/APD
Laying baits underneath station buildings and field huts • Crawling into enclosed spaces	• Bruising • Getting trapped **Risk factor** = 6 High Requires action; set timetable for improvement	• The Project Director will liaise with the GSGSSI Government Officer and/or KEP BC (if appropriate) • Wear appropriate PPE **Residual risk factor** = 3 Low: Further action as resources allow	PD/APD
Laying baits in roof cavities of building and field huts • Crawling into spaces • Working off ladders	• Bruising • Sprain/strain/break • Getting trapped **Risk factor** = 6 High Requires action; set timetable for improvement	• Assess confined spaces prior to entry • Train staff who undertake this task • Supervisor to ensure adequate space and lighting is available before accessing roof cavity • Ensure that one staff person holds ladder while other staff person is working up ladder **Residual risk factor** = 3 Low : Further action as resources allow	PD/APD
Checking gutters after aerial baiting • Working off ladders • Accessing gutters with hands	• Bruising • Sprain/strain/break • Cuts **Risk factor** = 6 High : Requires action; set timetable for improvement	• Ensure that one staff person holds ladder while other staff person is working up ladder • Wear gloves or use scoop tool to remove cereal baits from gutters **Residual risk factor** = 3 Low : Further action as resources allow	PD/APD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Travelling within Phase 1 zones • Travel over rough and isolated terrain • Travelling over steep terrain • Variable walking surfaces – boggy, icy, slippery, rocky • Hazardous coastline • Communication (non-coverage) in some areas • Aggressive wildlife	• Sprain/strain/break • Repetitive sprain • Dehydration • Bruising • Animal attack; eye injury • Drowning • Exposure • Death **Risk factor** = 9 High Requires action; set timetable for improvement	• Select staff with outdoor skills and experience of this type of environment • No lone working • Induction and field training • Ensure that staff have adequate local knowledge of conditions within Phase 1 zones • Staff briefing on weather, tide, wave conditions and appropriate areas to travel along coastal areas • Appropriate training on communications equipment and schedule requirements • Staff to carry VHF radio, satellite phone and EPIRB (Emergency Position Indicating Radio Beacon) as directed by PD • Each person must meet daily radio schedule requirements; SAR procedures followed when scheds not met. • Keep to daily plans; any changes notified to PD • Use of appropriate clothing, eye protection and footwear. Carry necessary survival equipment (ie. Dry clothes, bivvy bag, first aid) • Ensure that rest breaks are taken throughout the day • Take regular drinks prevent dehydration • Follow emergency procedures if assistance required **Residual risk factor** = 4 Low Further action as resources allow	PD/APD
Working outdoors in sub-Antarctic weather conditions • Working in snow, ice, rain, strong winds and poor visibility	• Sprain/strain/break • Dehydration • Exhaustion • Drowning • Exposure • Hypothermia • Death **Risk factor** = 9 High Requires action; set timetable for improvement	• Use of weather forecast to predict poor weather conditions • Don't work in unsuitable conditions • Work in pairs where possible and monitor each others' condition • Wear appropriate clothing and keep spare clothing in pack in case of change in conditions • Keep moving during the day; take short regular rests • Select rest spots which are protected from poor weather conditions • Maintain communications with operational base • Return to shelter when conditions are hazardous or expected to become hazardous **Residual risk factor** = 4 Low	PD/APD

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
		Further action as resources allow	
Working away from base at night • Travel over rough, isolated terrain in darkness • Poor weather • Disorientation • Poor communications • Carrying pack	• Sprain/strain/break • Dehydration • Exhaustion • Animal attack • Exposure • Hypothermia • Death **Risk factor** = 12 Very High Priority action; control as soon as possible	• As for travelling in Phase 1 zones and working outdoors in sub-Antarctic weather conditions above • Preplanning of night time works • Take survival blanket, bivvy bag, thermarest, flask of hot drink and food • Avoid unnecessarily heavy packs • Work in pairs and monitor condition of other person • Ensure staff have adequate local knowledge of local topography and appropriate outdoor experience for working at night • Meet radio schedule requirements as agreed; SAR procedures followed when scheds not met. **Residual risk factor** = 4 Low Further action as resources allow	PD/APD
Staying in field huts • Use of gas appliances in field • Preparation and consumption of meals	• Carbon monoxide poisoning • Burns • Cuts • Slips and falls • Food poisoning **Risk factor** = 6 High Requires action; set timetable for improvements	• Follow established procedures and RAs for use of field huts (BAS) • Keep hut clean and tidy • Careful and hygienic preparation of food • Maintain agreed communications with operational base **Residual risk factor** = 2 Negligible No further action	PD/APD

Description of your project or process area:	Working with dogs	Name of those involved in the project or process area:	Dog handler / PD		
		Date:	31/05/2010	Assessor:	Liz Pasteur
		Review date:	01/06/2011	Reviewer:	TBC

What are Hazards or hazardous activities?	What harm could occur? *(with no controls)* What is the risk?	What control measures will be used? What is the residual risk *(with controls)*?	Responsible person (s)
Hunting with dogs • Tripping • Dog dislodging rocks from above • Dog knocking handler off steep slope • Losing dog or dog falling down slope and subsequent search for and rescue of dog • Retrieving dog from seal wallow	• Sprain/strain/break • Bruising • Impact injury • Exhaustion • Exposure • Hypothermia • Death **Risk factor** = 12 Very High Priority action: control as soon as possible	• See also RA on Overland travel and working outdoors • Comprehensive training of dog handler • Safe dog handling procedures • Ensure dog is always under full control and command when working away from handler • Vigilance when working in steep slope areas • When crossing steep faces the dog is not between the handler and slope face • Handler to ensure it is safe to approach a dog trapped in a wallow • Dog to always wear collar to grab hold of • If dog falls, hunter to fully evaluate situation and appropriate response • Contact another team member and wait for assistance before attempting to retrieve a dog in steep and difficult terrain • If dog lost, record last known sighting of dog on GPS. Activate tracking equipment • Contact another team member and wait for assistance before attempting to search for a dog in steep and difficult terrain **Residual risk factor** = 4 Low Further action as resources allow	Dog Handler /PD

Description of your project or process area:	**Working in sub-Antarctic weather conditions** • Exposure to cold weather • Exposure to UV radiation • Frost burn on cold surfaces	**Name of those involved in the project or process area:**	All of project team		
		Date:	31/05/2010	**Assessor:**	Liz Pasteur
		Review date:	01/06/2011	**Reviewer:**	TBC

What are Hazards or hazardous activities?	**What harm could occur?** *(with no controls)* **What is the risk?**	**What control measures will be used?** **What is the residual risk** *(with controls)***?**	**Responsible person (s)**
Exposure to cold weather • Working in snow • Icy conditions • Strong winds • Poor visibility	• Sprain/strain/break • Exhaustion • Exposure • Hypothermia • Death **Risk factor** = 12 Very High Priority action; control as soon as possible	• Use of weather forecast to predict poor weather conditions • Do not work in unsuitable or unsafe conditions • Monitor condition of other members of the team • Wear appropriate clothing for the conditions • Keep moving during the day; take regular rests • Maintain communications with operational base **Residual risk factor** = 4 Low Further action as resources allow	APD/PD
Exposure to UV radiation • Working in sunny or hazy conditions	• Sunburn • Skin Cancer • Damage to eyes **Risk factor** = 10 Very High Priority action; control as soon as possible	• Use high factor sun cream and lip protection. Reapply regularly as necessary • Wear sunglasses and/or sunhat when working in bright, sunny conditions **Residual risk factor** = 2 Negligible No further action	APD/PD
Frost burn on cold surfaces • Frozen metal surfaces	• Skin damage **Risk factor** = 4 Low Further action as resources allow	• Do not touch cold metal surfaces with bare skin or lips. Use gloves **Residual risk factor** = 1 Negligible No further action	APD/PD

11.4 Appendix 4: Material Safety Data Sheet for Bell Labs bait

Trade Name: Brodifacoum 25W Conservation Date Created: 13 August 2010
Supplier: Bell Laboratories, Inc. Page 1 of 2

BRODIFACOUM 25W CONSERVATION MSDS

SAFETY DATA SHEET ACCORDING TO EEC DIRECTIVE: *93/112/EEC*

DATE OF ISSUE: 13 August 2010
PREPARED BY: CAR

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

PRODUCT NAME:

BRODIFACOUM 25W CONSERVATION

USE: Anticoagulant Rodenticide
FORM: Formulated Dry Bait
MANUFACTURER/IMPORTER:

Bell Laboratories, Inc.
3699 Kinsman Blvd.
Madison, WI 53704
USA

EMERGENCY PHONE NO.:

1-877-854-2494 (United States/Canada)
+1-651-917-6125 (Outside United States/Canada)
or Local or Regional Poison Control Center

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPOSITION: Brodifacoum [3-[3-(4'-Bromo-[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one]

% BY WEIGHT: 0.0025 %

CAS NO.: 56073-10-0

EEC NO.: Not Established

3. HAZARD IDENTIFICATION

PRIMARY ROUTES OF ENTRY: Ingestion.

4. FIRST AID MEASURES

EYE CONTACT: Flush with cool water for at least 15 minutes. If irritation develops, obtain medical assistance.

SKIN CONTACT: Wash with soap and water. If irritation develops, obtain medical assistance.

INHALATION: None

INGESTION: Call physician or emergency number immediately. Do not give anything by mouth or induce vomiting unless instructed by physician.

SYMPTOMS: Ingestion of excessive quantities may cause nausea, vomiting, loss of appetite, extreme thirst, lethargy, diarrhea, bleeding.

ADVICE TO PHYSICIAN: If ingested, administer Vitamin K_1 intramuscularly or orally as indicated by bishydroxycoumarin overdoses. Repeat as necessary as based upon monitoring of prothrombin times.

5. FIRE-FIGHTING MEASURES

EXTIGUISHING MEDIA: Extinguish with water, foam or inert gas.

MEASURES UNSUITABLE FOR SAFETY REASONS: None

PROTECTIVE EQUIPMENT: Firefighters should be equipped with protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION: Gloves should be worn during clean up.

ENVIRONMENTAL PROTECTION: Avoid entry to watercourses.

CLEAN UP AND DISPOSAL: Sweep up spilled material, place in properly labelled container for disposal or re-use. Dispose of all wastes in accordance with all local, regional and national regulations.

7. HANDLING AND STORAGE

HANDLING: Keep product in the original container. Do not handle the product near food, animal foodstuffs or drinking water. Keep out of reach of children. Do not use near heat sources, open flame, or hot surfaces. Wash thoroughly with soap and water after handling.

STORAGE: Store in a cool, dry place inaccessible to children, pets and wildlife. Keep container tightly closed when not in use. Avoid contamination of lakes, streams and ponds by use, storage and disposal.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

SPECIAL PROTECTIVE EQUIPMENT: Not Required

VENTILATION: Not required

RESPIRATOR TYPE: Not required

SKIN PROTECTION: Rubber gloves (recommended)

EYE PROTECTION: Not required

HYGIENE RECOMMENDATIONS: Wash thoroughly with soap and water after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Blue pellets with sweet grain-like odor.

BOILING POINT: N/A

MELTING POINT: N/A

FREEZING POINT: N/A

FLASH POINT: N/A

DENSITY: N/A

VAPOR PRESSURE: N/A

SOLUBILITY: N/A

10. STABILITY AND REACTIVITY

STABILITY: Stable if stored in original container in a cool, dry location

INCOMPATIBILITY/CONDTIONS TO AVOID: Strongly alkaline materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon.

11. TOXICOLOGICAL INFORMATION

LD50, ORAL (INGESTION): >5000 mg/kg (rats)

LD50, DERMAL (SKIN CONTACT): > 5001 mg/kg (rats)

LC50, INHALATION: N/A

EYE IRRITATION: None (rabbits)

SKIN IRRITATION: None (rabbits)

DERMAL SENSITIZATION: Not Considered a Sensitizer

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL BEHAVIOR: Solid, non-volatile. Material is essentially insoluble in water.

ENVIRONMENTAL TOXICOLOGY: Prevent access to non-target mammals and birds.

EFFECTS ON WASTEWATER TREATMENT: Unlikely to have any effect on wastewater treatment.

13. DISPOSAL

WASTE DISPOSAL METHOD: Wastes resulting from use may be disposed of on-site or at an approved waste disposal facility. Dispose of all wastes in accordance with all local, state and national regulations.

14. TRANSPORT INFORMATION

CLASSIFICATION: Not regulated or not classified as dangerous by DOT (USA), IATA (Air), or IMDG (Vessel).

SHIPPING NAME: Rodenticide containing Brodifacoum.

15. REGULATORY INFORMATION

CLASSIFICATION: Not classified as Dangerous for supply/use.

16. OTHER INFORMATIONS

The information provided in this Safety Data Sheet has been obtained from sources believed to be reliable. Bell Laboratories, Inc. provides no warranties, either expressed or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your consideration and investigation. The user is responsible to ensure that they have all current data relevant to their particular use.