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# **BRITISH ANTARCTIC SURVEY ROTHERA MODERNISATION PHASE 1 – RMP SITEWIDE SERVICES 2023-2024 SEASON PRELIMINARY ENVIRONMENTAL ASSESSMENT (PEA)**

**BRITISH ANTARCTIC SURVEY  
ROTHERA MODERNISATION PHASE 1 – RMP SITEWIDE  
SERVICES 2023-2024 SEASON PRELIMINARY  
ENVIRONMENTAL ASSESSMENT (PEA)**

Project name **Rothera Modernisation Phase 1 – RMP Sitewide Services 23-24 Season**

Project no. **1620013003-001**  
Client **British Antarctic Survey**  
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## INTRODUCTION

The completion of an Environmental Impact Assessment (EIA) is a requirement of the Protocol on Environmental Protection to the Antarctic Treaty (1991)<sup>1</sup>, the provisions of the Antarctic Act (1994, 2013)<sup>2</sup>, and accompanying Antarctic Regulations 1995/490<sup>3</sup>. The minimum level of EIA required is the completion of a Preliminary Environmental Assessment (PEA). This document is a review of Rothera Modernisation Phase 1 – RMP Sitewide Services 23-24 Season PEA.

**Privacy Notice:** The British Antarctic Survey (BAS), a constituent organisation of the Natural Environment Research Council (NERC), will retain the personal data provided as confirmation of agreement with the conditions in this PEA and Specialist Activity Permit Application Form. A copy of the completed form may be circulated to all or any of the named participants, internally to BAS colleagues and to the Foreign and Commonwealth Development Office (FCDO)/or other relevant permitting authority in accordance with the guidelines set out in the Antarctic Act, 1994 & 2013. No personal data will be supplied to any other third party without consent. The personal data on this form and all other information provided will be retained for long-term environmental monitoring purposes.

<sup>1</sup> BAS, 1991. Protocol on Environmental Protection to the Antarctic Treaty (1991). [Online] Available at: <https://www.bas.ac.uk/about/antarctica/the-antarctic-treaty/environmental-protocol/protocol-on-environmental-protection-to-the-antarctic-treaty-1991/>

<sup>2</sup> Legislation.gov.uk, 1994. Antarctic Act 1994. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1994/15>

<sup>3</sup> Legislation.gov.uk, 1995. The Antarctic Regulations 1995. [Online] Available at: <https://www.legislation.gov.uk/uksi/1995/490/made>

# 1. PROJECT DESCRIPTION

<b>1.1. OSPQ number</b> <i>(where applicable<sup>1</sup>/ known)</i>		<b>1.2. Title of Project</b>	Rothera Modernisation Phase 1 – RMP Sitewide Services 23-24 Season
<b>1.3. Personnel involved.</b> <i>Please provide names, organisation and job titles of all personnel involved and identify their specific project role e.g., Principal Investigator/Project Lead, Field Leader, external collaborators/contractors etc.</i>			
<b>Full Name</b>	<b>Organisation and Job Title</b>		<b>Project Role</b>
Dave Brand	BAS – Rothera Modernisation Senior Project Manager		Project Lead
Matt Ivory	BAS – Rothera Modernisation Construction & Commissioning Manager		Site Supervision Lead
Robert Kerr	BAM – Project Manager		BAM PM
Naz Jones	Ramboll – Project Manager		Ramboll PM
Juan Guerrero	BAM – Section Engineer		Section Engineer
<b>1.4. Location</b> ■ Name each location to be visited with a description of the area, and state whether the site has been visited before.			
<b>Location Name</b> <i>(including depot sites)</i>	<b>Location Description</b> <i>(e.g. coastal, ice-free, glacier, open ocean etc.)</i>		<b>Has the location been visited previously?</b> <i>Please provide detail.</i>
Rothera Station	New underground services installation between STP and BAM Fitter’s Workshop		Yes – Rothera Station
Rothera Station	Repairs to Sitewide Services routing (North and South Station)		Yes – Rothera Station
<b>1.5. Please provide a brief description of your project including:</b>			
<b>(1)</b> <i>Proposed dates and duration of your project;</i>			
1 <sup>st</sup> Nov – 1 <sup>st</sup> May. To be scheduled around other Rothera Modernisation Phase (RMP) project and Rothera Station priorities.			
<b>(2)</b> <i>Summary of the main aims (scientific of otherwise) of your project;</i>			
To provide new sitewide services (SWS) infrastructure (power, water, sewage, fuel, data) to Rothera Station in support of Rothera Modernisation Project and delivery of Net Zero commitments.			
<b>(3)</b> <i>Outline of project plan (e.g., referring to locations as above, route and mode of travel, number of persons and time spent at each location);</i>			
Works being conducted by BAM and GA Barnies (BAM sub-contractor) as part of the RMP (Phase 1). 4-6 persons will be allocated to SWS construction in support of this task. These personnel will be part of the wider construction team and would be on station anyway to deliver other RMP works (covered by project EIA).			
<b>(4)</b> <i>Details of methodology (including equipment required); and</i>			
<p><b><u>Underground Services Between STP and BAM Fitter’s Workshop</u></b>                      Excavator to dig trench between STP and BAM Fitter’s Workshop (around 10m in length and 3m across up to 2m deep) for the laying of ductwork for power, fuel, water electrical and data services to support Admirals House and to connect fuel services up to the fuel farm. All material removed will be screened alongside material excavated from the south of the hangar under the RunSur Project and reused in the backfill of the trench. Any excess excavated material will be stored in the existing stockpile west of the runway near the balloon launch containers. A wacker plate or roller to then be used to compact the base of the trench, prior to a layer of Type 1 gravel fill (0-30mm particle size). This material will be taken from the screened material on the western runway stockpile which have been quarried from Rothera Point in previous seasons and has been screened and stockpiled under 14/2022-23 . Expected amount of Type 1 fill is to be 1-2 loader buckets worth. Pipes and cable ducts will then be laid in the trench on top of the Type 1 fill. The trench will then be partially backfilled and sections of steel sheet pile laid horizontally across the trench to provide load protection to the services below in order to allow heavy vehicles to drive above. The remainder of the trench will then be backfilled and compacted using a roller and/or wacker plate. Back filling of the trench will be using the original material that was excavated and stockpiled adjacent. There may be a requirement to provide a cement footing for the sheet pile sections, subject to site assessment during the works. Total volume of cement footings is not expected to exceed 1 cubic metre. The mixing of cement will follow the process articulated in the EIA and Activity Plan risk assessments for grouting operations (BAA4008-BAM-ZZ-YYY-MS-WA-0034) whereby cementitious wash waters will be neutralised prior to discharge. Discharge quantities will be recorded and reported to BAS. Cement will be mixed in a dedicated area with sheeting to control wind on the BAM yard next to the BAM Workshop.</p> <p><b><u>Sitewide Services Structural Repairs</u></b>                      Structural repairs are required to a number of areas of the new Sitewide Services installation following damage by excessive snow loading over the previous 2 winters. All works will be carried out in accordance with the original project methodologies outlined in the RMP 1 IEE (Section 4.5.2).</p>			

(5)	<i>Brief justification of the environmental impact, as applicable</i>
<b><u>Underground Services Between STP and BAM Fitter’s Workshop</u></b>	<p>This is a revised piece of work due to a change in the original design/project works outlined in the RMP Phase 1 EIA. The original proposal for Sitewide Services installation in this area was for the services to run above ground on a metal framework. The decision was taken to run the services in the area outlined in this PEA underground in order to facilitate essential vehicle access to the Waste Handling Facility, STP and also provide an alternate access to North Cove and NBH, which was deemed essential by BAS Operations. As conveyed in the EIA, all services will have leak detection, whether above or below ground. The risk of leaks is very low given that fluid services are protected by a multiple sheath pipework, housed within underground ducts and protected by a sheet pile. Nonetheless, the methodology for installation of the sheet pile allows for it to be removed following re-excavation of material lying above so that remedial work could be completed if a leak was detected. if remedial works are required following detection of a leak.</p>
<b><u>Sitewide Services Structural Repairs</u></b>	<p>Essential repairs required following structural damage from previous winters. This work must be completed to achieve project completion and handover of new Discovery Building as planned in March 2025. The repair work includes addition of a steel sheath that fits over the existing steel upright and steel branches to increase the universal loading of the existing infrastructure. There is no wastage or removal of existing steel from the structure.</p>

## 2. IDENTIFICATION OF POTENTIAL IMPACTS

<p><b>2.1. Chemicals and Hazardous Substances</b> If you intend to use any chemicals, hazardous substances, radioactive material or stable isotopes you must submit a <a href="#">CAR form</a> (with the associated RAs, COSHH assessments &amp; SOPs) to the BAS Laboratory Manager for review and approval (Station/Field projects: <a href="mailto:emfi@bas.ac.uk">emfi@bas.ac.uk</a>; SDA projects: <a href="mailto:SDALabManager@bas.ac.uk">SDALabManager@bas.ac.uk</a>).</p> <p>Please also contact Kath Nicholson for advice on how to package hazardous goods and hazardous waste for shipping - <a href="mailto:kani@bas.ac.uk">kani@bas.ac.uk</a></p>		
2.1.1.	Do you intend to use any chemicals, radioactive material or stable isotopes likely to interact with the environment outside of the laboratory/ in the field? If so, please provide detail here (or attach a copy of your CAR form for our information only) explaining how you intend to use them and list the mitigation measures you intend to use to safeguard the environment.	No
2.1.2.	Do you intend to use any other hazardous substances e.g. paints, batteries etc.?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
2.1.3.	If so, please list substances likely to interact with the environment here and provide detail on how you intend to use them listing the mitigation measures you intend to use to safeguard the environment.	
<p><b>2.2. Waste Management</b> Please refer to the <a href="#">BAS Waste Management Handbook</a> for further information on waste packaging and consignment.</p>		
2.2.1.	How much waste (hazardous, radioactive and/or non-hazardous) will the project produce? ▪ <i>Please include approximate weights/volumes (and radioactive levels where applicable) by waste type anticipated.</i>	Some additional steel framework waste will be created from the sitewide services repairs, following removal of damages sections. This waste will be processed and removed by BAM in accordance with the existing RMP 1 IEE.
2.2.2.	Is your project taking place on a BAS station or supported by BAS in the field?	YES <input checked="" type="checkbox"/> <i>Please go to 2.2.3</i> NO <input type="checkbox"/> <i>Please go to 2.2.4</i>
2.2.3.	Please indicate the anticipated quantities and type(s) of waste packaging required, in particular for hazardous waste. ▪ <i>Environment Office will review this against the standard station supply and advise whether additional waste packaging for your project is required.</i>	No additional packaging required
2.2.4.	Is your project taking place on the <i>Sir David Attenborough</i> or other NERC vessel?	YES <input type="checkbox"/> <i>Please go to 2.2.5</i> NO <input checked="" type="checkbox"/> <i>Please go to 2.2.6</i>
2.2.5.	Please provide the quantities and type(s) of waste packaging required, in particular for hazardous waste. ▪ <i>BAS Environment Office will procure and provide the necessary waste packaging materials and ensure they are delivered to the vessel. If you do not provide any details here, you will be responsible for organising your own compliant packaging prior to boarding the ship.</i> ▪ <i>All project waste produced on the SDA (or NERC vessels supporting BAS science) within the Antarctic should be consigned to the BAS Environmental Manager in the UK for disposal. BAS Environment Office will then organise and pay for the disposal of this waste. However, please note that radioactive waste transport and disposal costs will be charged back to the responsible project.</i>	N/A
2.2.6.	If your project is logistically supported by a non-BAS Antarctic operator or non-BAS/NERC vessel, please provide further details. ▪ <i>BAS Environment Office will not supply waste packaging or provide waste disposal. Please confirm that the project/operator/vessel will provide appropriate and compliant waste packaging and</i>	Logistics and waste processing/removal remains in accordance with current Rothera Modernisation Phase 1 IEE

<i>confirm how the waste will be disposed of in accordance with all relevant waste legislation<sup>4</sup>.</i>		
<b>2.3. Oil Spill Response (for field activities only)</b>		
2.3.1. Please confirm the type and quantity of fuel that will be taken into, used, and stored in the field.	N/A	
2.3.2. Please confirm that you have discussed your field fuel needs and requirement for spill kits with the BAS Field Operations Manager. All field parties must be familiar with the BAS fuel spill protocols.		
<b>2.4. Deployment and Installation of Equipment</b>		
2.4.1. Do you intend to install or deploy any equipment in the field or ocean (including data loggers/markers on animals, moorings, gliders, etc.)?	YES <input type="checkbox"/> <i>Please complete questions 2.4.2 – 2.4.6.</i>	NO <input checked="" type="checkbox"/> <i>Please go to 2.5</i>
2.4.2. Provide a brief description of the equipment including details of the materials, dimensions, weight, and any hazardous substances such as batteries or oils.	N/A	
2.4.3. Provide a brief summary of the location where equipment will be installed or deployed (including coordinates).	N/A	
2.4.4. Provide details of how the equipment will be labelled and referenced (equipment should be easily identifiable as science instrumentation and be able to be traced back to the organisation or project).	N/A	
2.4.5. Describe how and when the equipment is to be maintained and removed. Confirm if funding and operational support is in place for your retrieval plans.  <i>If any of the equipment you deploy in the field or ocean is lost or cannot be retrieved as planned you will need to report this at the time of the incident on Maximo<sup>5</sup> and to the Environment Office on the <a href="#">EIA Post Season Questionnaire</a>.</i>	N/A	
2.4.6. Is the intention for any of your equipment to remain in the field/ocean permanently (e.g. mooring anchors, buried seismic conduits, etc.)? If, so please detail the equipment to be left behind intentionally and explain why it cannot be retrieved.	N/A	
<b>2.5. Remotely Piloted Aircraft Systems (RPAS) or other remotely operated marine or terrestrial vehicles (ROVs)</b>		
RPAS includes drones, quadcopters or any remotely operated or autonomous aircraft whether rotary or fixed wing. If you are operating RPAS contact Carl Robinson for further advice – <a href="mailto:carob@bas.ac.uk">carob@bas.ac.uk</a> .		
2.5.1. Does the project intend to utilise RPAS or other remotely operated marine or terrestrial vehicles? If so, please provide detail including the size, make, model and operating capacity (e.g. maximum wind resilience, flight time, fail safes, etc.)	No	
2.5.2. Does the project involve Beyond Visual Line of Sight (BVLOS) operations for RPAS? If so, please provide details.  <b>If yes, this will require review by the Air Unit.</b>	No	
2.5.3. Describe the location in which the RPAS/ ROV will be operated (e.g. off a ship, deep field, near a station, over wildlife, etc.)	N/A	
2.5.4. Do you require BAS Ops to provide the RPAS/ ROV and/or pilot?	N/A	

<sup>4</sup> Waste (England and Wales) (Amendment) Regulations 2012, The Duty of Care Regulations 1991, and the Hazardous Waste (England and Wales) (Amendment) Regulations 2009. These regulations affect the packaging, containment, storage, transportation and disposal of waste from source to final disposal. This includes transportation from the UK port, where the waste is offloaded from the ship, and to the waste disposal site.

<sup>5</sup> [Maximo](#) is the BAS Incident Reporting System

	<ul style="list-style-type: none"> <li>▪ If yes, contact Carl Robinson to coordinate the request and confirm here that you have done so.</li> </ul>	
2.5.5.	Do you intend to provide your own RPAS/ ROV and/or pilot?	N/A
2.5.6.	Confirm the names of all the pilots/vehicle operators.	N/A
2.5.7.	Detail number of hours flown in the last 3 months and number of hours in total flown on proposed platform.	N/A
2.5.8.	Do the pilots hold a General Visual Line of Sight Certificate (GVC) or equivalent? Please provide details of qualifications held.	N/A
2.5.9.	Please confirm you have read and will commit to follow the <a href="#">BAS Regulations on RPAS use in Antarctica</a> .	YES <input checked="" type="checkbox"/>
<b>2.6. Construction and Maintenance Work</b>		
2.6.1.	Do you intend to import natural materials to Antarctica (e.g. untreated wood, aggregate, sand etc.)? Provide details of type, quantity and from where the materials will be sourced. Please refer to Section 4.4 of the <a href="#">BAS Biosecurity Regulations</a> and discuss with Environment Office as appropriate.	If cement footings are required for the sheet piles as described in Section 1.5 then the intention would be to use pre-mixed grout (bagged) which has already passed bio-security checks and is currently held at Rothera. This material has been used previously in Discovery Building construction.
2.6.2.	Will the work require concrete mixing on site? Provide details of the expected quantity and working methods.	As above, may require on-site mixing using dry bagged grout mix. All procedures will be in accordance with general BAS/RMP/BAM biosecurity and site procedures. Total quantity not expected to exceed 1 cubic metre. Risk Assessment completed for mixing of materials and discharge of cementitious wash waters in a controlled area.
2.6.3.	Will the project require the removal of any asbestos? Provide details of the expected quantity.	No
2.6.4.	Do you anticipate the alteration, removal or destruction of equipment, buildings or structures (or parts of buildings or structures) that may be considered to have heritage value?	No
<b>2.7. Biosecurity</b>		
2.7.1.	Please confirm that you have familiarised yourself with the biosecurity guidance provided by BAS in the <a href="#">Biosecurity Regulations</a> and by SCAR in the <a href="#">Environmental code of conduct for terrestrial scientific field research in Antarctica</a> .	YES <input checked="" type="checkbox"/>
2.7.2.	Do you intend to move terrestrial or marine specimens, including unfixed biological samples, soils, sediments, rocks, or other mineral resources between different areas of Antarctica (including returning materials to research stations)?  If 'yes', please describe the precautions you will take to prevent the transfer/release of indigenous species between distinct <a href="#">Antarctic Conservation Biogeographic Regions<sup>6</sup> (ACBRs)</a> or between Antarctic and sub-Antarctic locations.	No
<b>2.8. Sensitive sites with restrictions or guidelines</b>		
2.8.1.	Do you intend to visit any CCAMLR registered <a href="#">Vulnerable Marine Ecosystems (VMEs)</a> , <a href="#">CCAMLR Ecosystem Monitoring Programme (CEMP) Site(s)</a> or	No

<sup>6</sup> Note: On '[Antarctic Conservation Biogeographic Regions](#)' select 'Antarctic conservation biogeographic areas' from the 'Layer List' at the top right hand corner symbol, to see the ACBRs displayed.



	<a href="#">Marine Protected Areas (MPAs)</a> <sup>7</sup> ? Please provide details.	
2.8.2.	Do you intend to visit any <a href="#">Important Bird Areas</a> (IBAs)? Please provide details.	No
2.8.3.	Do you intend to visit any <a href="#">Antarctic Specially Managed Areas (ASMAs)</a> ? Please provide details.	No
2.8.4.	Do you intend to visit any of the most visited locations in Antarctica (excluding research stations) as identified by the Antarctic Treaty System? Please confirm which locations you will visit and that you have read and understood the associated <a href="#">Visitor Site Guidelines</a> .	N/A

<sup>7</sup> Geographic details (positions, area) of these sites can be viewed in the CCAMLR GIS (select the appropriate designation(s) from the layers list on the left-hand side.

### 3. IDENTIFICATION OF SPECIALIST ACTIVITIES IN ANTARCTICA

<p><b>Specialist activities in Antarctica are prohibited without issue of a specialist activity permit under the Antarctic Act 1994; 2013 (Sections 6-10):</b></p> <ul style="list-style-type: none"> <li>▪ Mineral resource activities (Section 6 permit)</li> <li>▪ Disturbance/harmful interaction with fauna and damage to flora (Section 7 permit)</li> <li>▪ Introduction of non-native species (Section 8 permit)</li> <li>▪ Entry into protected areas (Section 9 permit)</li> <li>▪ Damage or disturbance of Historic Sites and Monuments (Section 10 permit)</li> </ul> <p>Specialist Activity Permits may be issued by the UK Foreign, Commonwealth and Development Office or by the BAS Director under delegated authority in accordance with the UK Antarctic Act (1994; 2013) or by another competent authority. The BAS Environment Office will advise you upon review of your application.</p>		
<p><b>3.1. Do you intend to undertake any of the following specialist activities in Antarctica? If you answer 'yes' to any of the below questions please also complete parts 4, 5 and 6 of this form. If you answered 'no' to all of the below questions, you only need to complete parts 4 and 6.</b></p>		
<p>3.1.1. Do you intend to undertake any of the following mineral resource activities?</p> <ul style="list-style-type: none"> <li>a. Drill, dredge or excavate for mineral resources; or</li> <li>b. Collect/use any samples of mineral resources; or</li> <li>c. Do anything else for the purpose of identifying specific mineral resource occurrences or deposits.</li> </ul>	<p>YES <input checked="" type="checkbox"/></p>	<p>NO <input type="checkbox"/></p>
<p>3.1.2. Do you intend to sample, capture, kill or harmfully interfere with any marine or terrestrial flora or fauna (including invertebrates)?</p>	<p>YES <input type="checkbox"/></p>	<p>NO <input checked="" type="checkbox"/></p>
<p>3.1.3. Do you intend to take to the Antarctic any non-sterile soil or non-native marine or terrestrial animal, plant, microorganism, seed or other propagule?</p>	<p>YES <input type="checkbox"/></p>	<p>NO <input checked="" type="checkbox"/></p>
<p>3.1.4. Do you intend to visit any <a href="#">Antarctic Specially Protected Areas (ASPAs)</a>?</p>	<p>YES <input type="checkbox"/></p>	<p>NO <input checked="" type="checkbox"/></p>
<p>3.1.5. Do you intend to damage or disturb <a href="#">Historic Sites and Monuments</a> and/or their artefacts?</p>	<p>YES <input type="checkbox"/></p>	<p>NO <input checked="" type="checkbox"/></p>

## 4. ENVIRONMENTAL IMPACT MATRIX

### 4.1. Environmental Matrix (please complete as per guidance and examples provided in the table below)

<b>Science and logistical activities undertaken as part of your project</b>  <i>e.g. collection of samples, deployment of monitoring equipment, storage/ handling of fuels and chemicals, waste production and camping</i>	<b>Identify possible impacts - direct, residual and/or cumulative<sup>8</sup></b>	<b>Mitigating measures</b>  <i>Please provide details of the mitigation measures you intend to implement to ensure that <b>negative impacts are minimised or avoided.</b></i>
Installation of new underground fuel pipework	<i>Direct/Cumulative</i> - Possibility of future fuel leakages from new pipework	All new pipework will be pressure tested (dry) to ensure quality of jointing prior to any commissioning and operation with fuel.  New fuel pipe system is double-walled with in-built leak detection, which will raise an alarm to the station maintenance team if any leak is detected. This will allow fuel pumps to be switched off immediately to minimise any leakage volume until the issue can be investigated and repaired as necessary. There is no change to BAS operational procedure in addressing a leak underground in which BAS Estates teams on Station immediately attend to a leaking pipe to contain spillage. The underground services are close to the surface as the sheet pile provides structural support. All cover material will be excavated and the sheet pile lifted to gain access. Any spills are then contained at source, contaminated material removed and the leak is fixed.  <i>Fuel leakages will be managed by the following mitigation measures:</i> <ul style="list-style-type: none"> <li>• <i>A trained core oil spill response team of a minimum of 24 station staff will be formed at the start of each working season. Pre-deployment oil spill response training led by the BAS Environment Office and delivered by BAS and Oil Spill Response Ltd.;</i></li> <li>• <i>Oil Spill Kits to be on hand and ready to deploy if necessary. Spill kits to be kept in every vehicle; and</i></li> <li>• <i>All spills will be reported to Rothera Station Lead and BAS Environment Office.</i></li> </ul>
Excavation/Trenching Works	<i>Direct/Cumulative</i> – Noise. Digging and trenching activities will create noise emissions which could disturb wildlife.  <i>Direct/Cumulative – Vibration</i>	Works will only take place between 0800-1800. Area of works is within main station activity zone and is not within proximity to sensitive bird nest sites. Every plant move whereby visibility is restricted includes a banksman who is responsible for ensuring a safe zone around the vehicle, checking to ensure that personnel and animals are not within the operation of the plant. Only trained individuals will move animals from the work area and in accordance with wildlife interaction guidelines. All incidents of interaction are reported.

<sup>8</sup> Direct impacts of your activities on flora, fauna, air quality, water quality (fresh and marine), geology, soils, permanent ice, noise levels or cultural heritage. Residual impacts once your project is complete such as leaving equipment in the field longer term, permanent removal of samples from the field, and impacts on the value of the locality for future science. Cumulative impacts: If you are aware of any other projects or activities in the past, present or foreseeable future then these could, combined with your proposed project, result in a significant environmental impact.

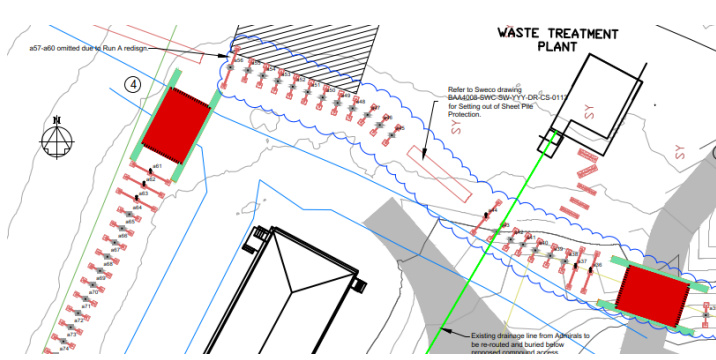
<p><b>Science and logistical activities undertaken as part of your project</b></p> <p><i>e.g. collection of samples, deployment of monitoring equipment, storage/ handling of fuels and chemicals, waste production and camping</i></p>	<p><b>Identify possible impacts - direct, residual and/or cumulative<sup>8</sup></b></p>	<p><b>Mitigating measures</b></p> <p><i>Please provide details of the mitigation measures you intend to implement to ensure that <b>negative impacts are minimised or avoided.</b></i></p>
	<p><i>Direct/Cumulative</i> - Removal/relocation of rock/mineral material</p>	<p>All material removed during excavation will be stockpiled local to the works area and replaced by backfilling into the trench on completion. Excess material will be screened and stockpiled west of the runway in an existing stockpile under extant work permits.</p> <p><i>Noise and Vibration will be managed by the following mitigation measures:</i></p> <ul style="list-style-type: none"> <li>• <i>10 mph speed limit maintained and enforced on site;</i></li> <li>• <i>Plant items will be positioned to ensure exhaust outlets point away from sensitive receptors;</i></li> <li>• <i>Regular maintenance of all plant and vehicles to ensure they are working efficiently and generating as little noise as possible; and</i></li> <li>• <i>A soft-start procedure , outlined in the IEE, will be implemented if necessary as detailed in the IEE. Consideration of the impact of noisy activities to all wildlife in the vicinity will be given.</i></li> </ul> <p><i>The removal/relocation of rock/mineral material is a physical or mechanical disturbance on land and will be managed by the following mitigation measures:</i></p> <ul style="list-style-type: none"> <li>• <i>Minimise the footprint of works;</i></li> <li>• <i>Where possible, trenches/excavations will be backfilled at the end of a shift, however if this is not feasible, trenches/ excavations will be suitably covered, fenced, and signed and not be left open for longer than necessary; and</i></li> <li>• <i>If contamination is encountered during the trenching/excavation, all equipment will be cleaned between trial pits to prevent cross contamination. Any occurrences of contamination to be reported.</i></li> </ul>
<p>Installation of underground pipework and cabling (general)</p>	<p><i>Direct/Indirect/Cumulative</i> - Man-made materials will have been introduced underground and will require removal and disposal when they reach end-of-life. Design life planned for 60 years, with first major works 25 years after the Project Completion Date.</p>	<p>Details and locations of all materials installed below ground will be provided to BAS by the Contractor,, BAM as part of the as-built drawings, allowing BAS to identify and locate all elements for future removal when they reach end of life, no earlier than 25 years from handover (Mar 2025)</p> <p><i>The potential for hazardous man-made materials to enter the environment will be managed by the following mitigation measure:</i></p> <ul style="list-style-type: none"> <li>• <i>During replacement or decommissioning, material will be over-excavated to compensate for any potential degraded plastic in the surrounding material.</i></li> </ul>

<b>Science and logistical activities undertaken as part of your project</b>  <i>e.g. collection of samples, deployment of monitoring equipment, storage/ handling of fuels and chemicals, waste production and camping</i>	<b>Identify possible impacts - direct, residual and/or cumulative<sup>8</sup></b>	<b>Mitigating measures</b>  <i>Please provide details of the mitigation measures you intend to implement to ensure that <b>negative impacts are minimised or avoided.</b></i>
Laying of fine grade gravel/rock bed for pipework and cable ducts within trench	<i>Direct/Cumulative</i> - Cables and pipes will be bedded on a fine grade gravel. This will be taken from stockpiles already quarried from the Rothera point location and processed on site. This rock will have been moved from Rothera Point to the Sitewide Services Run A location between the STP and BAM Fitter’s Workshop.	Fine grade gravel will have been taken from within Rothera Station footprint (processed under permit 14/2022-23) and has been quarried from a nearby area, the location it is to be infilled. Volumes will be kept to the minimum required to meet construction specification. Remainder of trench will be infilled with original material that was removed during excavation. Excess material is stockpiled west of the runway.
<i>Construction and Maintenance Work</i>	<i>Direct – Cement footings.</i>  <i>Direct – The generation of Dust</i>	<i>Construction and maintenance works will be managed by the following mitigation measures:</i> <ul style="list-style-type: none"> <li>• <i>Pre-mixed cement will be stored inside a building or within a container.</i></li> <li>• <i>As far as possible, all unused pre-mixed cement should be returned to the UK on completion of project works.</i></li> </ul> <i>All material to be used must have passed all biosecurity checks.</i>  <i>Dust will be managed in by the following mitigation measures:</i> <ul style="list-style-type: none"> <li>• <i>If required dust suppression should be used;</i></li> <li>• <i>Where practicable, keep activities which create dust downwind of sensitive receptors and avoid close proximity to known vegetation and ice locations;</i></li> <li>• <i>All routes used by vehicles and plant will be well maintained and have compacted surfaces;</i></li> <li>• <i>10 mph speed limit maintained and enforced on site;</i></li> <li>• <i>All plant and equipment will be maintained on a regular basis; and</i></li> <li>• <i>Any cementitious wash waters produced during construction will be neutralised to a pH of 7.0 using citric acid prior to discharge to ground. Cementitious materials will be mixed in a designated container next to the BAM Fitters Workshop and the wash water, once neutralised, will be discharged away from sensitive receptors to the west of the BAM Fitters Workshop.</i></li> </ul> <i>Dust will be monitored using environmental monitors, positioned across the construction site. Any exceedances are recorded and reported to the BAS Environment Team and updated on the Project Variation Register. On immediately being notified by the monitors of an exceedance, the BAM Environmental Manager will investigate, and stop activity creating dust. The BAM Environmental Manager will develop the Activity Plan, with appending Risk Assessment, to include actions to mitigate further excess production of dust. The Activity Plan will be signed off by the BAS Contract Administrator.</i>

<p><b>Science and logistical activities undertaken as part of your project</b></p> <p><i>e.g. collection of samples, deployment of monitoring equipment, storage/ handling of fuels and chemicals, waste production and camping</i></p>	<p><b>Identify possible impacts - direct, residual and/or cumulative<sup>8</sup></b></p>	<p><b>Mitigating measures</b></p> <p><i>Please provide details of the mitigation measures you intend to implement to ensure that <b>negative impacts are minimised or avoided.</b></i></p>
<p><i>Site Wide Services</i></p>	<p><i>Direct - The creation of additional steel framework waste following the removal of damaged sections.</i></p> <p><i>Direct - Logistics and waste processing/removal.</i></p> <p><i>Direct/Indirect/Cumulative - Atmospheric emissions.</i></p> <p><i>Direct/Cumulative – Potential disturbance to biodiversity</i></p>	<p><i>The damaged sections of SWS are behind Vikings accommodation and between Giants and the Bonner Laboratory along Giants Road. These areas do not have any sensitive flora and are away from known locations of fauna. The moss bank is not in the immediate vicinity but will be photographed monthly and included in the BAM environmental monitoring spreadsheet as per standard procedures. The BAS site supervisor will also regularly check the area during daily site visits.</i></p> <p><i>Additional waste will be segregated and managed by the following mitigation measures:</i></p> <ul style="list-style-type: none"> <li><i>• Metal/carbon steel waste generated will be managed, segregated and stored in accordance with the BAS Waste Management Handbook and the SWMP;</i></li> <li><i>• Packaging to be minimised where possible;</i></li> <li><i>• A dedicated BAM staff member will ensure that all waste is managed appropriately; and</i></li> <li><i>• Daily checks to ensure waste is contained to avoid being blown around site.</i></li> </ul> <p><i>Atmospheric emissions will be managed by the following mitigation measures:</i></p> <ul style="list-style-type: none"> <li><i>• Regular inspection and maintenance will be carried out to ensure all vehicles, plant and generators operate efficiently; and</i></li> <li><i>• Where practical, all drivers will be instructed to turn off engines during periods of waiting for 15 minutes or more.</i></li> </ul> <p><i>Potential disturbance to biodiversity will be managed by the following mitigation measures:</i></p> <ul style="list-style-type: none"> <li><i>• In the unlikely circumstance of the displacement of any species, only trained personnel will be involved – the BAS Wildlife Interaction Manual will be referred to for any contact with wildlife; and</i></li> <li><i>• All vehicles will be inspected, and wheels checked for the presence of seals and penguins before engines are started.</i></li> </ul>
<p><i>Working in Low Light Conditions</i></p>	<p><i>Direct – Light Emissions</i></p>	<ul style="list-style-type: none"> <li><i>• Minimise use of lighting rigs during low light or darkness</i></li> <li><i>• Rigs to be angled towards the ground, not horizontal.</i></li> <li><i>• Lights to be turned off when not in use.</i></li> <li><i>• Lights switched off immediately if more than 5 strikes in one period of works.</i></li> <li><i>• SL and BAS Environment Office to be informed should there be any bird strikes.</i></li> <li><i>• Continued use of lighting rigs will only be allowed after consultation with the BAS Environment Office.</i></li> </ul>

<b>Science and logistical activities undertaken as part of your project</b>  <i>e.g. collection of samples, deployment of monitoring equipment, storage/ handling of fuels and chemicals, waste production and camping</i>	<b>Identify possible impacts - direct, residual and/or cumulative<sup>8</sup></b>	<b>Mitigating measures</b>  <i>Please provide details of the mitigation measures you intend to implement to ensure that <b>negative impacts are minimised or avoided.</b></i>
<b>Examples</b>		
<i>E.g. Travel on foot between ice-free areas</i>	<i>E.g. Possible introduction or intra-regional spread of non-native species (vegetation and/or invertebrates, including those in soil)</i>	<i>E.g. Biosecurity briefing provided to all team members prior to departure Boots, clothing and equipment to be cleaned thoroughly before departure from the UK. Visual checks/cleaning between sites to check no soil is stuck to boots or equipment. Follow guidelines in Scar Code of Conduct for Terrestrial Scientific Field Research and BAS Biosecurity Regulations.</i>
<i>E.g. Camping on ice sheet</i>	<i>E.g. Generation of domestic waste and human waste</i>	<i>E.g. All team members to read and be briefed on the 'Field Operations Manual' relating to Environmental Management and the BAS Waste Management Handbook. Waste bags and poo bins to be issued by Field Ops Manager. All domestic waste will be segregated in the field and returned to Rothera prior to final disposal outside of the Antarctic. Human waste will be incinerated at Rothera.</i>
<i>E.g. Deploying retrievable sensors in the field</i>	<i>E.g. Impact to wilderness and aesthetic value of the region. Risk of equipment becoming waste if not recovered.</i>	<i>E.g. Design phase of project has identified low toxic materials to be used in the construction of the sensors. The Environment Office will be informed of sensor deployment locations if equipment is not retrieved, and the details will be added to the 'lost equipment' log.</i>
<b>Reference guidance documents</b>  <i>Please review the guidance documents provided below (please note that this is not an exhaustive list) and where applicable, reference these and any other environmental guidance relevant to your activities in the mitigation measures in the Environmental Matrix above.</i> <ul style="list-style-type: none"> <li>• <a href="#">SCAR Codes of Conduct</a> for Antarctic field work and the use of animals in Antarctica</li> <li>• <a href="#">BAS Wildlife Interaction Manual</a></li> <li>• <a href="#">BAS Waste Management Handbook</a> for guidance and advice on waste management in Antarctica</li> <li>• <a href="#">BAS Biosecurity Regulations</a> for guidance and advice on appropriate biosecurity measures</li> </ul>		

## 5. SPECIALIST ACTIVITY PERMIT APPLICATION

<p>If you have answered 'yes' to any of the questions in part 3 you may require a Specialist Activity Permit to carry out your planned activities. You must complete this Specialist Activity Permit application and confirm the details of all personnel involved in the proposed permitted activities.</p>				
<b>4.2. Application Details</b>				
	Full Name	Job Title and Organisation/Employer	Nationality (as listed on passport)	
4.2.1. Permit applicant/holder (this is usually the PI/Project Lead)	Dave Brand	BAS – RMP Senior Project Manager	British	
4.2.2. Full list of people actively participating in sampling/specialist activities	Matt Ivory	BAS – Rothera Modernisation Construction & Commissioning Manager	British	
	Robert Kerr	BAM – Project Manager	British	
	Juan Guerrero	BAM – Section Engineer	Mexican	
<b>4.3. Mineral Resource Activities (Section 6 Specialist Activity)</b>				
<p>Mineral resources include (but not exclusively) rock, soil, peat, sediment, seabed nodules, fossils, meteorites and coal.</p>				
4.3.1.	Do you intend to undertake any of the following activities: drilling, dredging or excavating for mineral resources? If so, please describe the activity you plan to undertake, the type of mineral resource and the purpose of the activity.	<p>Excavating of rock to form new underground service trench between the STP and BAM Fitter's Workshop next to road immediately north of Admirals, to place services below a road. Area indicated outlined by red rectangle in the centre of the image below.</p>  <p>New trench maximum dimensions: L: 10m W: 3m Depth: 2m</p> <p>All material will be locally stockpiled and replaced to backfill trench on completion of new services installation. Any excess material, although unlikely Will be thinly spread in the vicinity of the trench.</p>		
4.3.2.	Do you intend to collect and or use any mineral resources? If so, please provide a description of the mineral resource type and the collection/use activities you intend to undertake.	<p>Fine grade gravel (up to 2 loader buckets of 0-30mm grade) will be collected from existing Rothera stockpiles located on the west side of the Runway ( processed under permit 14/2022-23). Area and used within new trench as a peas shingle bed for new underground pipes and cable installations.</p>		
4.3.3.	Do you intend to undertake any other activity for the purpose of identifying mineral resource occurrences or deposits? e.g. assessing suitability of ground for use as construction site or suitability of soil or rock as construction material? Please provide a description.	No		
4.3.4.	Do you intend to sample mumiyo (solidified, waxy deposit produced when snow petrels vomit up their stomach oils) during your activities?	No		
4.3.5.	Provide information on estimated quantities and volumes or mass of mineral resource samples and the number and location of sampling sites:			
Mineral resource	Estimated number and	Total quantity of mineral	Number and locations of sampling sites (please also provide coordinates)	Method of extraction/collection




	<b>volume/mass of individual samples to be collected</b>	<b>resource to be collected</b>			
Rothera shale/loose rock top layer between STP and BAM Fitter's workshop	1 trench, total volume to be excavated up to 60 cubic metres	1	1 – Trench between STP and BAM Fitter's Workshop	Mechanical Excavator	
4.3.6.	Provide a brief justification for the requested quantities of samples.	Rock excavation required following changes to the Rothera Modernisation Phase 1 Sitewide Services design. This work is essential in order to complete the project and deliver the planned handover of the new Discovery building as planned in March 2025			
4.3.7.	Are the mineral resources being requested available, in an appropriate form, from publicly accessible collections outside of the Antarctic Treaty area?	N/A			
4.3.8.	Do you intend to import any biological samples (soil) to the UK?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
If you answered 'yes' to the above question, please take note: You must ensure you have read and understood the separate import licence requirements detailed in point 5.3.5.					
<b>4.4. Disturbance/harmful interaction with fauna and damage to flora (Section 7 Specialist Activity)</b>					
4.4.1.	Do you intend to sample, capture, kill or harmfully interfere with any marine or terrestrial flora or fauna (including invertebrates)? Please provide detail of the activities you intend to undertake which involve interaction with flora and fauna.				
4.4.2.	Complete the table below detailing the species that would be affected by the activity. Provide information on estimated quantities and volumes or mass of biological samples and the number and location of sampling sites:				
	<b>Species (including sex/life stage, where appropriate)</b>	<b>Estimated: (i) numbers of individuals to be handled or collected and/or (ii) total volume/mass of samples</b>	<b>Individual sample size/mass/volume</b>	<b>Total number of samples to be collected.</b>	<b>Sampling location (please also provide coordinates)</b>
	e.g. female breeding adult Gentoo penguin	e.g. 12 x penguins/12ml blood, 12 feathers	e.g. 1 x 1ml blood sample and 1 feather from each penguin handled	e.g. 12 x 1ml blood samples (12ml of blood) and no more than 12 feathers	e.g. Gourlay Peninsula, Signy Island
	e.g. colobanthus quitensis	e.g. 10 x plants/c. 50 g total dry weight	e.g. each plant sample is ~ 5g (dry weight)	e.g. 10 x 5g plant samples	e.g. Bernsten Point, Signy Island
4.4.3.	If your project involves working with vertebrates and/or cephalopods, has it been subject to Animal Welfare and Ethics Review? If so, please include details of the reviewing body, date of review and a copy the approval document.	Reviewing body and date of review:  Copy of approval document attached YES <input type="checkbox"/> NO <input type="checkbox"/>			
4.4.4.	Do you consider any of your activities as 'biological prospecting'? Do you intend to utilise the requested samples for commercial applications?				
4.4.5.	Do you intend to import any biological specimens (animals or plants) to the UK?	YES <input type="checkbox"/> NO <input type="checkbox"/>			

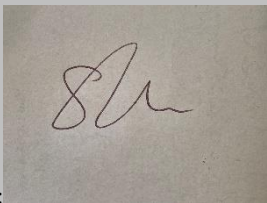
<p>If you answered ‘yes’ to the above question, please take note:</p> <p>(1) Importation of biological or soil samples to the UK requires a relevant DEFRA/CITES import/export licence which is not covered by this ‘Specialist Activities Permit application’.</p> <p>(2) How and where your fauna/flora samples will be stored and curated may have an impact on the import/export licences required.</p> <p>(3) If you require storage at BAS Cambridge, please agree this in advance with the Cambridge Laboratory Team.</p> <p>(4) If samples are to be transferred to another institute, you must ensure you have any required site registration/import permissions in advance of collection.</p> <p>Please contact Elaine Fitzcharles in the first instance: <a href="mailto:emfi@bas.ac.uk">emfi@bas.ac.uk</a>. For details on the protocols and procedures for consigning biological samples from all Antarctic stations and ships please refer to <a href="https://www.bas.ac.uk/for-staff/polar-predeployment-prep/intro-guidelines-and-forms/importing-biological-samples-into-the-uk/">https://www.bas.ac.uk/for-staff/polar-predeployment-prep/intro-guidelines-and-forms/importing-biological-samples-into-the-uk/</a></p>	
<p><b>4.5. Introduction of non-native species (Section 8 Specialist Activity)</b></p>	
<p>4.5.1. Do you intend to take to the Antarctic any non-sterile soil or non-native marine or terrestrial animal, plant, microorganism, seed or other propagule?</p> <p><i>Importation of non-sterile soil into Antarctica is prohibited under the Protocol on Environmental Protection to the Antarctic Treaty.</i></p>	<p>No</p>
<p>4.5.2. Provide a species list and estimate of quantity and volume.</p>	
<p>4.5.3. Provide an outline of the scientific purpose of the proposed introduction and why it is considered essential.</p>	
<p>4.5.4. Outline the measures you will take to prevent escape or spread of the introduced species or their contact with native fauna or flora.</p>	
<p>4.5.5. Describe the method of removal of the introduced species or its/ their disposal.</p>	
<p><b>4.6. Entry into Protected Areas (Section 9 Specialist Activity)</b></p>	
<p>4.6.1. Do you intend to visit any <a href="#">Antarctic Specially Protected Areas (ASPAs)</a>? Please provide detail.</p>	<p>No</p>
<p>4.6.2. Is the reason for your visit to the ASPA(s) for scientific research or for environmental management/conservation activities?</p>	
<p>4.6.3. What activities do you intend to undertake in the ASPA(s)? Please explain why these activities cannot be carried out outside the protected area.</p>	
<p>4.6.4. Provide a short justification of how your project meets the requirements of the protected area Management Plan.</p>	
<p><b>4.7. Damage or Disturbance to Historic Sites and Monuments (Section 10 Specialist Activity)</b></p>	
<p>4.7.1. Do you intend to visit any <a href="#">Historic Sites and Monuments (HSMs)</a>? Please provide details and explain the purpose of your visit. Please note that HSMs are protected and any damage to sites or removal of objects is prohibited.</p>	<p>No</p>

## 6. STATEMENT OF AGREEMENT

In signing this form, you the PI/Project Lead (or other designated deputy) are confirming the following:

- I have read and agree with the 'Privacy Notice'.
- The information provided in this form is accurate and up to date. Any deviation from the information provided in this form will be communicated to the BAS Environment Office at the earliest opportunity.
- The information I have provided in this form, and the mitigation measures including those relating to biosecurity to which I have committed, will be communicated to all members of the project team.
- Should any environmental incidents occur, I will report these on the [Maximo](#).
- I understand that this Preliminary Environmental Assessment (once agreed) and any associated Specialist Activity Permits (once issued) are activity/ person/time specific and are not transferrable to other locations in Antarctica, or to another person and are only valid for the period specified.
- I agree to provide feedback and a retrospective review of my activities by submitting the BAS [EIA Post-Season Questionnaire](#) to the Environment Office upon completion of my project or by the 30th of April (whichever is soonest).
- In accordance with Regulation 2 of the Antarctic (Amendment) Regulations 2008/3066, brief details (applicant name and job title, description of project and planned dates) of all permit applications (issued by the FCDO or the BAS Director) will be published on the FCDO website. My signature below will be taken as consent to publish this information.

Applicant/PI Name	Applicant/PI Signature	Date
Matt Ivory (on behalf of Dave Brand)		03/07/2023
		Revision date (s)

This section to be completed by the BAS Environment Office only.		
Project to proceed with mitigating measures in place	<input checked="" type="checkbox"/>	
An Initial Environmental Evaluation is required	<input type="checkbox"/>	
Project requires Specialist Activity Permit to proceed. The BAS Environment Office will advise.	Section 6 <input checked="" type="checkbox"/>	
	Section 6 BAS authorisation letter <input type="checkbox"/>	
	Section 7 <input type="checkbox"/>	
	Section 8 <input type="checkbox"/>	
	Section 9 <input type="checkbox"/>	
	Section 10 <input type="checkbox"/>	
	Project requires permit from another national authority <input type="checkbox"/>	
Signature: 	Date: 6 <sup>th</sup> December 2023 Revision Date(s):	

