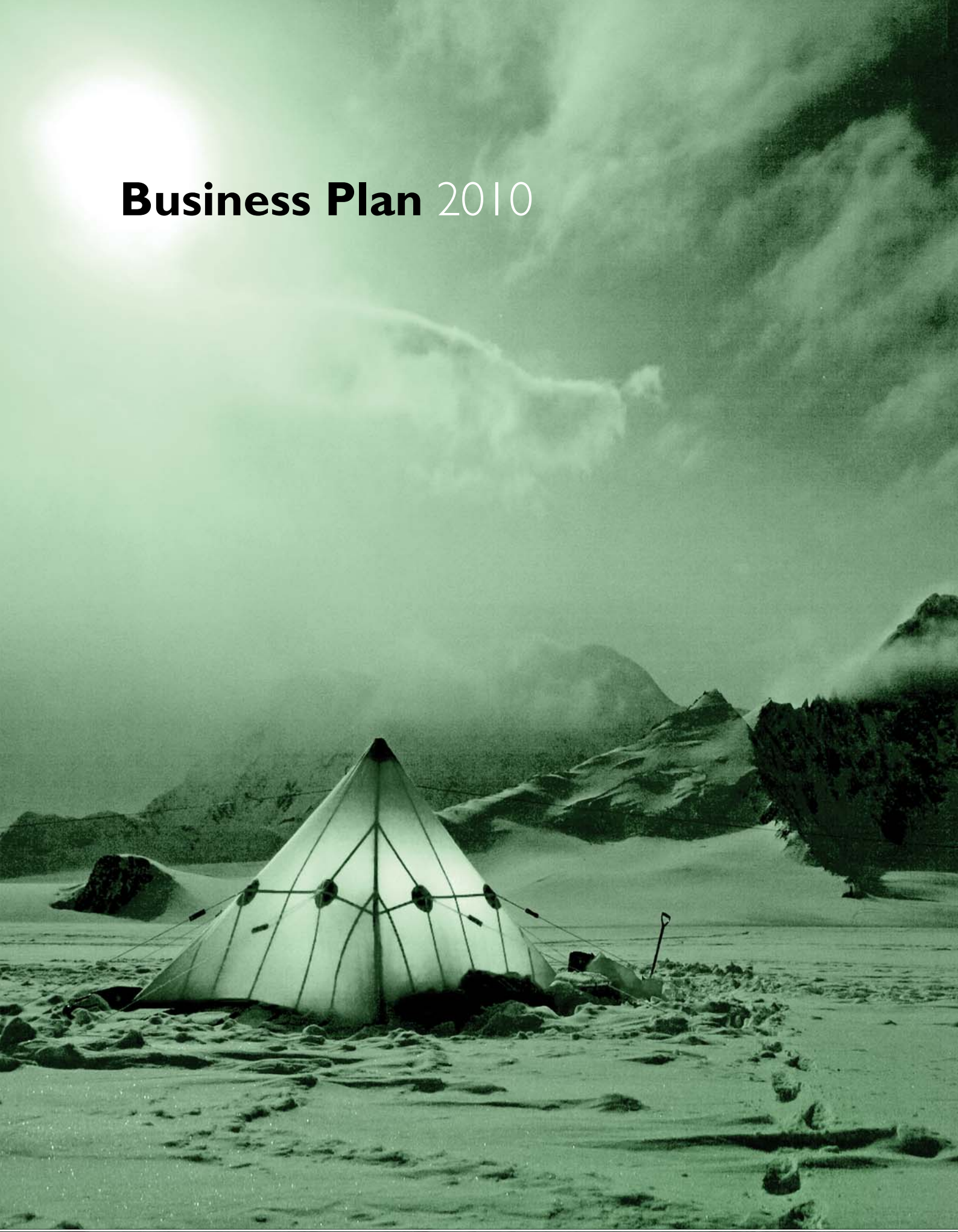
Business Plan 2010



British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

POLAR SCIENCE
FOR PLANET EARTH

Executive Summary

The British Antarctic Survey (BAS) Business Plan 2010 sets the agenda and priorities for the Survey to achieve its objectives during the financial year 2010/11. The year sees us entering a period of significant change, a different funding regime, new operational structure and leadership and further embedding the second year of the 'Polar Science for Planet Earth' science programme. The Business Plan is relevant to the work of everyone in BAS and is published on the BAS Intranet (*http://basweb.nerc-bas.ac.uk/information/business_plan*).

BAS Vision

By 2020 the British Antarctic Survey will be recognised as a world-leading centre for polar research and expertise, addressing issues of global importance.

BAS Mission

- To deliver a world-class programme of scientific research, national capability and long-term observations, concentrating on the regional and global role of polar processes in the Earth System
- Through our science and impact, sustain for the UK an active and influential Antarctic regional presence, and a leadership role in Antarctic affairs

BAS provides a focus for national and international co-operation in polar science, and access for scientists to the polar regions. BAS delivers and co-ordinates major research programmes, including those requiring significant technology or infrastructure. It exploits research outcomes, engages with the public, provides expert independent advice to the British Government and other stakeholders, and helps to discharge the UK's responsibilities under the Antarctic Treaty System and to administer the British Antarctic Territory.

The British Antarctic Survey is part of the Natural Environment Research Council (NERC).

BAS Priorities for the Financial Year 2010/11

- Embed the BAS Vision, Mission and BAS Management Tool throughout BAS
- Continue the delivery of the six science programmes that make up Polar Science for Planet Earth (PSPE)
- Enhance the effectiveness of BAS through the implementation of corporate and operational re-organisation
- Support the full range of NERC strategic objectives, within the scope of our vision and mission
- Develop our science fund-winning capability in an increasingly challenging financial environment
- Meet Her Majesty's Government requirements for presence in the Antarctic region and leadership in Antarctic affairs
- Maintain expenditure within budget in 2010/11 and sustainability thereafter
- Secure NERC capital maintenance funding to meet priority safety needs and put the upkeep of the Antarctic infrastructure on a sustainable footing
- Deliver the next phase of the Halley VI project as planned
- Embed the use of the Resource Management System (RMS), a key element for resource planning and operation

Resources

The BAS budget is in balance over the early period of the Business Plan, recognising the need to win increasing science funding and with the support of transition funding from NERC. BAS manages capital and resource expenditure separately, ensuring that expenditure is held within budget. The BAS Board imposes appropriate controls during a financial year if it is necessary to avoid any forecast overspending. The Board will closely monitor BAS's longer-term sustainability during 2010/11.

Cover: *A glaciology field camp on Adelaide Island, Antarctic Peninsula.*

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Image: *Rothera Research Station, British Antarctic Survey's largest Antarctic facility, at Rothera Point, Adelaide Island, Antarctic Peninsula.*

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1. Director's Foreword

This is the third introduction to the BAS Business Plan I have written and feel it is the most important so far, for a number of reasons. The new NERC funding model is beginning to take shape, our Polar Science for Planet Earth (PSPE) science programmes and associated new science management structure are bedding in and we have new arrangements in place for the leadership and management of the science support side of BAS. These, together with an uncertain external environment, mean we are in a period of considerable change. One of the key tools available to us to be successful in a changing world is this, our Business Plan. It sets out our top level objectives for the medium and longer term and in detail our intentions for the forthcoming year. These in turn are backed up by detailed financial forecasts.

Professor Nicholas Owens
Director British Antarctic Survey

We have introduced a new BAS management tool that captures these objectives in what we consider are BAS's three 'sectors' of activity: Science, Expertise and Impact. Importantly, these radiate outwards from our core Vision and Mission to specific team and group targets and activities, which in turn will inform all individual Forward Job Plans (FJP). In this way, each one of us will be able to see our role and contribution to making BAS a successful organisation. Thus, even though we live in changing times, this Business Plan provides us with a foundation upon which we can build. For external readers, this Business Plan will, I hope, prove useful in providing you with information about our activities and intentions. For BAS staff this is a very important source of information, please keep it easily to hand.

2. Scope and Purpose of the Plan

BAS Business Plan 2010/11 marks the second full year of the new BAS science programme, PSPE. It contributes to the Natural Environment Research Council's Strategy, Next Generation Science for Planet Earth 2007-2012, through a programme of world-class polar research and by the delivery of National Capability (NC) to provide survey, long-term observations and interdependent research. In a complementary and additional manner the BAS science programme helps sustain for the UK an active and influential regional presence and leadership in Antarctic affairs. The Business Plan reflects BAS's strategic Centre Activity and Resource Plan (CARP), submitted to the NERC Chief Executive in December 2009, and sets the agenda and priorities for BAS to achieve its Mission during Financial Year 2010/11. It also informs planning over the succeeding three years. The Business Plan was approved by the BAS Board and is used to shape the work, direction, and management of BAS during 2010/11. It is published on the BAS Intranet (*http://basweb.nerc-bas.ac.uk/information/business_plan*) and on the external website (*www.antarctica.ac.uk/about_bas/publications/corporate.php*).

3. BAS Vision

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An overview of the Vision, Science, Impact and Expertise of BAS

Our science

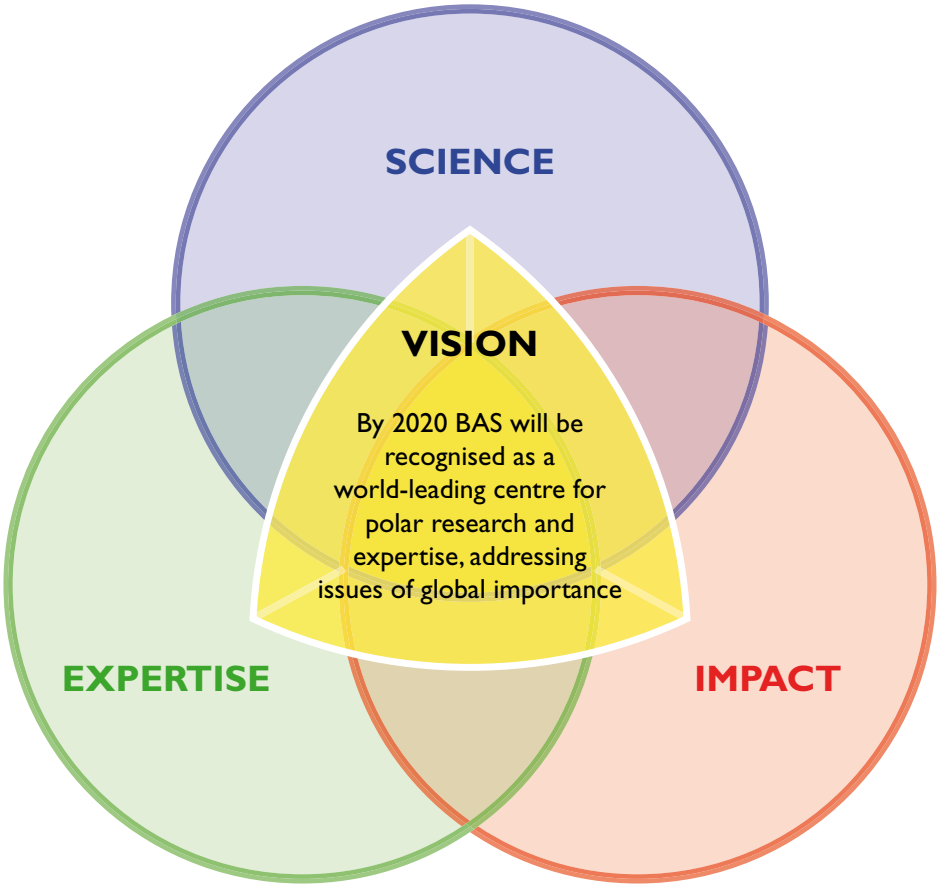
- Chemistry and Past Climate
- Ecosystems
- Environmental Change and Evolution
- Climate
- IceSheets
- Polar Oceans

Our expertise

- World leading health, safety and environmental managment in polar regions
- Integrated logistics delivery
- Integrated science delivery
- Polar science management
- Polar engineering
- People, development and skills
- Sustainable operations

Our impact

- Public engagement
- Citations/publications
- Polar/climate policy
- National and international collaboration and recognition
- Economic/social benefit
- Antarctic policy and Treaty



5. BAS Strategic Priorities

5.1 **Short-term overview.** Polar Science for Planet Earth is the science centrepiece of the BAS Vision and was launched to a wide audience in November 2009. BAS is committed to ongoing support and delivery of the UK's polar science in an excellent, effective and efficient way. To that end, BAS recognises that strategic choices will need to be made after thorough and informed discussion with NERC and wider stakeholders over the coming 6-18 months. Halley VI Research Station is due to be completed in February 2012.

5.2 **Medium-term overview.** Within three to five years, we expect PSPE to be an established programme producing very strong scientific results and to be in the implementation phase of any changes to National Capability (NC) introduced through the NC Action Plan. In this time-frame, BAS expects to demonstrate evidence of leadership in Arctic science and to be assisting NERC with the delivery and management of the Arctic Research Programme. A decision will be required either to extend the RRS *Ernest Shackleton* (ES) contract (from 2014 to 2019) or to replace the vessel. In this time-frame, the next phases of Rothera Research Station refurbishment should have commenced.

5.3 **The longer-term (+5-10 years).** BAS will continue to respond flexibly to changes in the strategic direction of NERC science. The major infrastructure issues will be the replacement in 2019 of the RRS *James Clark Ross* (JCR), or a significant mid-life refit to extend the life of the vessel as per the RCUK Large Science Facilities Roadmap. NERC may also allocate funds for the replacement of BAS Cambridge Science Block One during this period.

5.4 **Supporting NERC's strategic actions.** In addition to the wide ranging engagement with and contribution to NERC's corporate activities, BAS will:

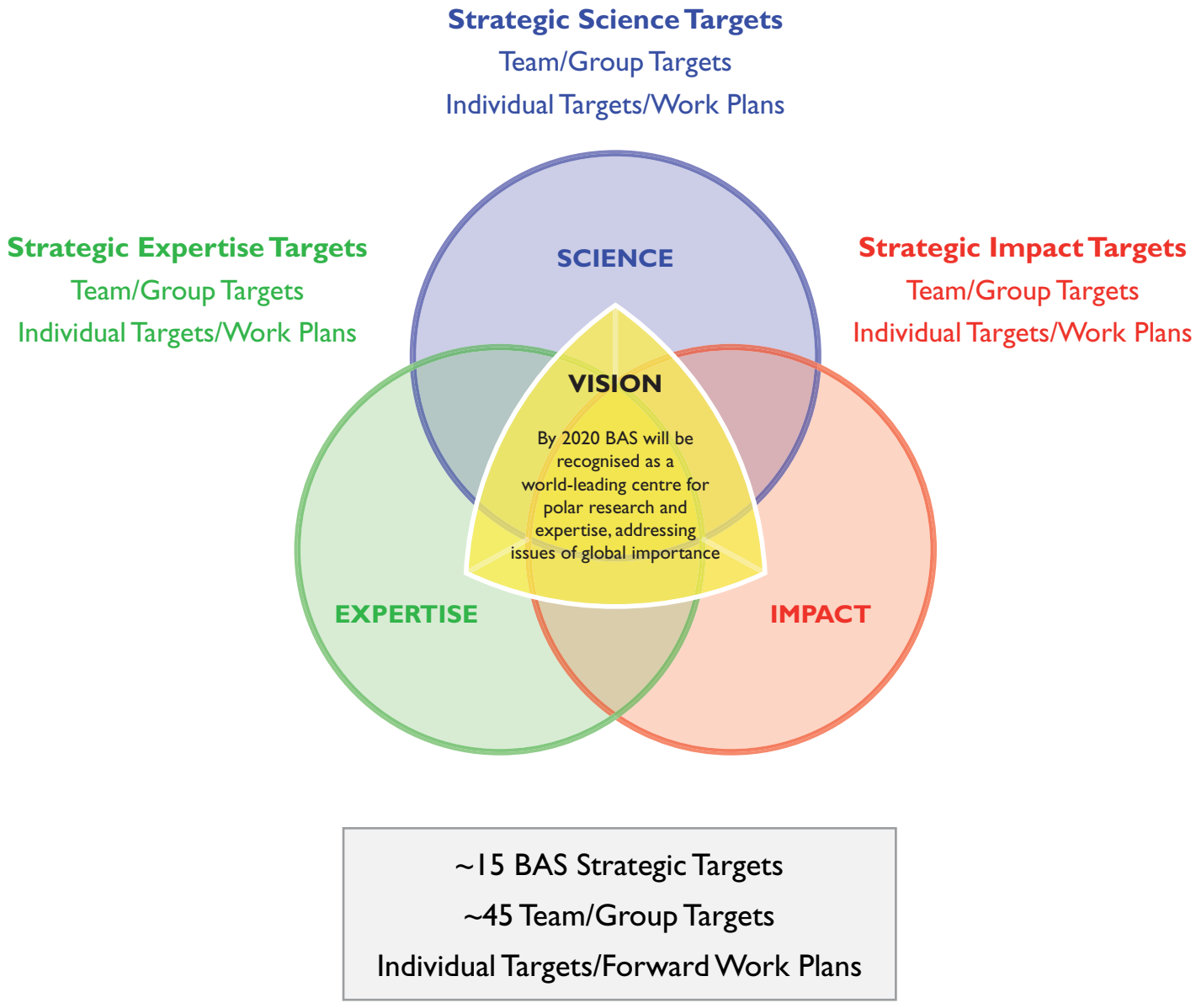
- Contribute proactively to the development and delivery of the Theme Action Plans (TAP)
- Lead the Polar Pillar within the NC Advisory Group
- Engage in the development of 'delivering more NERC science for less'
- Bid for the management of the NERC Arctic Research Programme and the West Antarctic Ice Sheet Stability programme

- Develop the role of the NERC Arctic Office at BAS Cambridge
- Transition the Antarctic Funding Initiative into the NERC standard grants round processes
- Manage activities within NERC's Delivery Plan. These are the PSPE science programmes, and the construction of Halley VI
- Support NERC's transition to the RCUK Shared Service Centre.
- Collaborate with NERC Centres and Surveys and with the wider NERC community in Universities and HEIs
- Continue to work with NERC on commercialisation and business engagement including design and development of bird loggers, business workshops (following the example of the highly successful 'Biotechnology from Antarctica' workshop) and the continued education of business leaders with the Cambridge Programme for Sustainability Leadership
- Continue to support Science into Policy: including hosting visits to Antarctica, the Arctic and Cambridge by senior Ministers and officials across UK Government (BIS, FCO, DEFRA, DECC, BIS and MoD)
- BAS is committed to long-term workforce planning. 'The Deal' people policy guidelines from NERC will provide the foundation for this critical activity

6. BAS Management Tool

BAS ensures linkage between its strategic objectives and its operational activities through use of the BAS Management Tool (BMT). An illustration of how the tool aids the directing of the work of all employees of BAS is shown below. Employees prepare a forward job plan for the coming year and guidance for this is provided via the BMT. By linking the Vision and Mission to strategic targets, group targets and to individual work plans we aim for aligned, efficient and effective delivery of organisational objectives.

BAS Management Tool



~15 BAS Strategic Targets

~45 Team/Group Targets

Individual Targets/Forward Work Plans

7. BAS Culture

BAS promotes the core expectations that NERC has defined for its staff through a culture that is:

Positive – Positive attitude, energy, realism, enjoy the work

Responsible – Safety conscious, environmentally friendly, accountable for one's actions, honourable, ethical, respectful towards one another, open and fair

Imaginative – Creative, flexible, thinking of better ways, constructively challenging, learning from experience, problem solving, entrepreneurial and outward looking

Co-operative – Open, communicative, loyal to one another, working in the best interests of BAS and science

Excellent – Professional, efficient and effective, successful and recognised, high quality, applying best practice and developing our people

These BAS cultural values are a fundamental element in the way it operates and are used when judging organisational performance in the contribution that individuals make to the Survey. These cultural values are embedded in day-to-day business processes and reward mechanisms.

8. BAS Deliverables

Utilising the combination of our science, organisational responsibilities, strategic objectives, operational activities, management tools and the culture of our organisation, BAS will aim to:

- Deliver and co-ordinate major polar scientific research programmes aligned with NERC's science strategy
- Provide a focus for national and international co-operation in polar science
- Provide access for scientists to the polar regions
- Exploit research outcomes
- Engage with the public
- Broaden the range of its funding opportunities
- Provide expert independent advice to the British Government and other stakeholders
- Discharge the UK's responsibilities under the Antarctic Treaty System
- Assist with the administration of British Antarctic Territory

9. NERC's Science Strategy

Next Generation Science for Planet Earth. NERC's science strategy, Next Generation Science for Planet Earth 2007-2012, introduced fundamentally different ways of working across the UK's environmental science community. The quinquennial funding of Research Centre programmes has been replaced by long-term funding for National Capability (NC), and a strategically-directed, competitive Research Programme. NERC has allocated transitional Research Programme funding that will ramp down over six years, and BAS will have to earn £4.5M/yr by 2014/15 to maintain the existing volume of BAS research. BAS has made good progress in adapting to the new funding regime. BAS has significantly increased the number of grants submitted in the last two years – nearly 100 grant applications were submitted in 2009.

10. Grant Funding and Submissions

10.1 **Preparing submissions for external funding.** Staff discuss emerging ideas for external funding bids with the most appropriate Science Programme Co-ordinator and Science Leader. All external funding bids are subject to scrutiny prior to submission by a 'Gateway Panel' to ensure they are of sufficient quality and fit to the PSPE strategy. The BAS Programme Office co-ordinates the submission of all external bids and can help substantially in their preparation (see *http://basweb/departments/programme_office* for further details). BAS aims to improve the success rate of BAS-led grant proposals, which is comparable to the best performing universities and research institutes in the UK. To achieve this, support is provided through the BAS Programme Office. Handling the increasing volume of grants effectively will require strict adherence to the deadlines published on the BAS Intranet.

10.2 **Research Programme (RP).** RP is largely based on time-limited grants, with a strong emphasis on UK collaboration. Its key purpose is to strengthen NERC's capability to deliver its strategy, the main focus of which is to provide science that will enable society to respond to climate change and the increasing pressures on natural resources. RP opportunities for BAS in 2010-11 include the Arctic Research Programme, West Antarctic Ice Sheet Stability, the Changing Water Cycle and Life and the Planet.

Images: Top: *British Antarctic Survey's Royal Research Ships James Clark Ross and Ernest Shackleton.* **Bottom:** *Microbial studies in the laboratory at BAS Cambridge.*

For more information, please visit our website: **www.antarctica.ac.uk**

10.3 **Responsive Mode (RM).** NERC's approach to RM research is unchanged, except for the Antarctic Funding Initiative which will be incorporated into the NERC standard grants rounds from July 2010.

11. BAS National Capability

NERC's National Capability Action Plans (NCAPs) and implications arising from the Theme Action Plans (TAPs) will be developed further by NERC in 2010/11. BAS has positively embraced and is the lead for the Polar Pillar on the NC Advisory Group (NCAG). This successful model ensures efficient delivery of NC across the wider NERC organisation through the 'cross-pillar' strategy groups. No fundamental changes are envisaged to the nature of BAS NC activities or to the principal National Good role in maintaining the UK's Antarctic presence. The main BAS elements of NC are:

- A programme of long-term observations, mapping and survey, which will be adjusted as necessary in response to emerging NCAP and TAP requirements
- A programme of excellent interdependent research to maintain the long-term observations at the cutting edge
- Maintaining a body of nationally and internationally recognised scientists to provide leadership in strategic and discipline based polar science
- Maintaining the Antarctic infrastructure, providing the UK's Antarctic regional presence and developing the UK's access to Arctic infrastructure
- Maintaining our excellent Safety, Health and Environment (SHE) management systems
- A leadership role within the Antarctic Treaty System, especially management of collaborative international research projects in Antarctica
- Hosting NERC's Arctic Office, and the management of NERC's Arctic research station at Ny Ålesund, Svalbard
- Active programmes for knowledge exchange, commercialisation, and public engagement
- Data and information management for the UK polar community
- Providing the British presence on South Georgia, funded in full by the FCO and the Government of South Georgia and the South Sandwich Islands (GSGSSI)
- Scientific leadership and advice to policy makers in UK Government, (including BIS, the FCO, DECC, DEFRA, MoD and DoT) and in the Overseas Territories (BAT, GSGSSI, FIG)
- Advice to UK Government on other polar issues as required
- Scientific leadership and advice to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), for sustainable fisheries in the Southern Ocean and the setting of the fishing licences that provide the GSGSSI's main income
- A vibrant and excellent research studentship programme

12. Polar Science for Planet Earth (PSPE)

12.1 PSPE addresses questions of global importance or of a fundamental nature through research that is best undertaken in the polar regions. The themes of PSPE are to unlock the past, understand the present, predict the future, and explore the unknown. The BAS Science Board provides advice on scientific priorities and requirements to deliver PSPE.

PSPE comprises six interdependent science programmes:

- **Climate**
  The Climate programme uses observations from both polar regions to improve our understanding of how natural and human-induced factors contribute to climate change
- **Chemistry and Past Climate**
  BAS scientists investigate how different parts of the Earth System interacted to produce the large climate changes that occurred naturally in the past, and complement this with investigations on how changing sea-ice and ocean conditions affect the present chemistry of the polar atmosphere
- **Ecosystems**
  The Ecosystems programme undertakes integrated analyses of Antarctic and Arctic ecosystems and develops understanding of the role of polar ecosystems in the Earth System
- **Environmental Change and Evolution**
  The Environmental Change and Evolution programme addresses key aspects in the polar regions of geological and ice-sheet structure, marine and terrestrial biodiversity, and natural complexity, that influence the unique role of the polar regions in environmental change and evolution
- **IceSheets**
  The IceSheets programme examines the role of ice sheets in the Earth System, and the processes that control ice-sheet change. It monitors current change and sets this in context with the past. BAS scientists produce tools to predict how ice sheets will change over time, allowing more accurate projections for increases in global sea level
- **Polar Oceans**
  The Polar Oceans programme investigates the role of processes and changes both in the shelf sea and in open-ocean environments, and will further our understanding of polar control of the Earth System

12.2 **Science review.** In 2010, BAS will establish a new external science advisory structure to give the BAS Director independent advice on the progress and quality of PSPE.

12.3 **Science quality assurance.** BAS fully endorses the NERC Ethics Policy (*www.nerc.ac.uk/publications/corporate/documents/ethics_policy_leaflet.pdf*) and the RCUK Policy and Code of Conduct on the Governance of Good Research Conduct (*www.rcuk.ac.uk/cmsweb/downloads/rcuk/reviews/grc/goodresearchconductcode.pdf*). All staff have a responsibility to ensure that these high standards are maintained. Countersigners have oversight of specific areas of science.

13. Collaboration and Partnerships

13.1 **UK collaboration.** BAS continues to strengthen its links and collaborations within the UK, across NERC, with Higher Education Institutes (HEIs) and with Government departments. The existing scientist-to-scientist collaborations within the NERC research centre community and with HEIs are an excellent foundation for the increased collaboration required by the NERC Strategy. All arrangements involving BAS resources are codified, normally in Letters or Memoranda of Understanding (*http://basweb/departments/programme_office/agreements.html*).

13.2 **International leadership.** The leadership of international partnerships is a strategic BAS priority, in line with NERC's requirement for Research Centres to provide a focus for international co-operation and the co-ordination of major programmes solving complex scientific problems. The aim is to build on BAS's world-class science reputation programme and leadership role for the UK in polar affairs. This includes maintaining a leading role within the Scientific Committee for Antarctic Research (SCAR) and the Council of Managers of National Antarctic Programmes (COMNAP). BAS has strong and active working agreements with Canada, Germany, the Netherlands, Norway, China, South Korea, and the USA. BAS is also involved in several European polar science initiatives.

13.3 **NERC Arctic Office.** BAS hosts and manages the NERC Arctic Office to facilitate the development and delivery of NERC's scientific interests in the Arctic and to respond to the growing UK national requirement in this area. It initiates the co-ordination of Arctic science opportunities, and provides a source of advice for the safe execution of Arctic fieldwork. The Arctic Office is the UK point of contact for the UK-Canada Memorandum of Understanding on polar research for mutual access to Canadian facilities in the Arctic and British facilities in Antarctica.

14. Antarctic Funding Initiative (AFI)

The Antarctic Funding Initiative is administered by NERC, who fund a co-ordinator located at BAS to deal with day-to-day liaison with grant holders and other interested parties. From July 2010, Antarctic research proposals will be incorporated into the NERC standard grants processes. The administration of the remaining AFI activities continues (*www.antarctica.ac.uk/afi*).

15. Research Studentships within BAS

15.1 BAS maintains a vibrant community of about 40 research students. Research students are seen as vital to the maintenance of strong research groups and project teams, and thus to the achievement of key aspects of the BAS Vision and Mission.

15.2 All aspects of the admission and management of research students are included in the BAS Student Manual, which is published on the BAS Intranet. BAS will normally agree joint studentships with any leading university department within the UK. BAS currently enjoys recognised research institute status with the University of Cambridge and was one of the first Affiliated Research Centres of the Open University. Training and development of research students is centrally funded by Roberts Skills Training Funds and implemented under the auspices of the Vitae East of England Hub.

15.3 BAS recognises the value students bring to the organisation and equally the importance to students of gaining field experience in the Antarctic. Nevertheless students can only be taken to the Antarctic if there is a strong science case, the research undertaken will enhance the project and sufficient funding has been identified to cover the costs *(http://basweb.nerc-bas.ac.uk/information/student-information)*.

16. People, Culture and Skills

16.1 The NERC and BAS Strategy will be delivered through having a core resource of talented and engaged people with the right skills. BAS has a People and Skills Action Plan to address the four key challenges that underpin NERC's Strategy in this area:

- Creating flexibility/adaptability in the people within our community
- Delivering training priorities to meet skills gaps in our community
- Attracting the best people for employment and developing them
- Identifying the role NERC can play in attracting young people into environmental science

16.2 **Training priorities.** BAS training priorities, within both the local and NERC context, are set during the Board's annual review of training and development. The review considers achievements, resource costs and priorities, and it sets the direction for the forthcoming financial year. Activities undertaken in 2009/10 focused on grant writing, supervisory management, change management and SSC transition training. Priorities under consideration for 2010/11 include ongoing grant writing, leadership skills at all organisational levels, change facilitation and the more effective use of objectives and appraisals. BAS increased its active participation in Leadership for NERC and the BAS Board will pilot a NERC initiative for developing high performance strategic leadership teams.

16.3 **Attracting and developing the best people.** BAS actively uses its world-renowned reputation to underpin the employment philosophy that 'excellence attracts excellence'. Fundamental to ensuring we attract the best people is the need to maintain BAS's national and international reputation for scientific and operational excellence. We have a culture of fairness and transparency and, apart from in exceptional circumstances, BAS vacancies are advertised externally. Recruitment campaigns are carefully designed and the BAS recruitment website is the main source of job applicants. Development and training are BAS Board priorities, using mechanisms such as Investors in People, Career Development Panels and a Staff Development Forum drawn from a cross-section of disciplines and grades. A cornerstone to having the best people with the right skills in place is the development of tools such as workforce planning, succession planning and creating and supporting vibrant integrated research communities.

Images: Top: *Seismic mapping on the Rutford Ice Stream, Antarctica.* **Bottom:** *His Royal Highness the Duke of Edinburgh examines a slice of ice core during a visit to BAS Cambridge.*

17. Supporting Science – Operations, Logistics and Infrastructure

17.1 The planning for field operations seeks to optimise the use of the logistic infrastructure for approved science and its support within the available capacity and funds. The Operations and Logistics Group will be evolving the effectiveness of the planning and co-ordination of field activity and the management of aircraft, ship and research station programmes in response to the changes introduced by NERC's Strategy and PSPE.

17.2 **Project management.** NERC has adopted PRINCE 2 as its project management methodology. BAS has used this approach since 2001 and continues to apply it widely. All capital acquisitions are assessed to establish those that need to be managed as formal projects. New BAS guidance on project management was issued in 2008.

17.3 **Marine operations.** BAS marine operations are complex, highly cost-effective and delivered in a professional manner. NERC conducted a Ships' Review in 2008/09 into the operation of its four ships: the *James Cook* and the *Discovery* (run by NOC) and the *Ernest Shackleton* and *James Clark Ross*. NERC Council approved the finding that there should be no fundamental changes to existing ship-related organisational structures and governance arrangements within NERC. The recommendations of the review most directly involving BAS were:

- The introduction of joint ships' programming led by the NERC marine team – this effectively formalised the existing practice of ensuring the most efficient tasking of the NERC fleet for the delivery of science whilst recognising the constraints of the need for support of Antarctic infrastructure
- Joint NOC/BAS studies into improvements to the marine technical support function across the whole fleet, and into the scope to bring closer together the terms and conditions of service of NERC seagoing staff. This work will be completed during 2010

17.4 **Rothera Research Station.** A phased redevelopment programme has been established for Rothera. This is a major undertaking over a number of years, including the replacement of site services and the introduction of sustainable energy solutions. The first phase of redevelopment was completed in February 2008. Phase two will depend on when new money can be made available through NERC's Asset Management Strategy.

17.5 **Halley Research Station.** A new Halley station (Halley VI) is being built and the existing station (Halley V) demolished and removed. The project delivery strategy combines the construction and demolition phases while maintaining the innovative design for the new station. The extremely successful 2009/10 build season has significantly underpinned the planned operational start date of the 2011/12 season, with the focus for 2010/11 being on mechanical, engineering and commissioning activity.

18. Support to the Foreign and Commonwealth Office (FCO) and Other Government Departments

18.1 BAS provides a range of support to the FCO, as part of its mission to sustain for the UK an active and influential regional presence and a leadership role in Antarctic affairs. BAS experts are key members of the UK Government delegation to: Antarctic Treaty Consultive Meetings, CCAMLR, the Committee for Environmental Protection and COMNAP. BAS also helps administer the British Antarctic Territory.

18.2 BAS has a responsibility to provide scientific advice to policy-makers in other Government departments, such as BIS, DECC and DEFRA, MOD, and DoT and Non-Departmental Public Bodies, such as the Joint Nature Conservation Committee and the Marine and Coastguard Agency. For example, DECC is particularly interested in the results of BAS research on climate change and sea level, whilst DEFRA is interested in the ecosystem management of fisheries, conservation of albatrosses and petrels, and the environmental sustainability of BAS activities in Antarctica. BAS is increasing its efforts to transfer BAS science results into these policy fora. There is also considerable interest across Whitehall in the implications of the warming Arctic, and this is becoming a new area of policy work for BAS.

18.3 **Support for South Georgia.** BAS took over the UK's presence at King Edward Point (KEP) in South Georgia from the Ministry of Defence in March 2001. The arrangements that define this commitment are set out in an MOU between BAS, the FCO and the Government of South Georgia and the South Sandwich Islands (GSGSSI). The MOU codifies the BAS directed fisheries research programme and the operational support of the research station at South Georgia for the FCO and GSGSSI.

19. Environmental Management

19.1 **Environment Office.** Environmental issues have increasing prominence within the Antarctic Treaty System, and 'minimising our effects on the environment' is a strategic priority to achieve the BAS Vision. The BAS Environment Office acts as the focal point for environmental activity, with appropriate research and monitoring organised jointly with the science programmes. BAS is registered to the ISO 14001 standard for environmental management for the Cambridge site and the ships, which are audited at least annually by the British Standards Institute.

19.2 **Abandoned facilities.** BAS has completed a major programme of work to remove abandoned facilities and waste dumps to satisfy Antarctic Treaty requirements. The clean-up of other legacy facilities or old buildings from Antarctica and South Georgia, when bases are redeveloped, is now part of business as usual. Funding is provided centrally from NERC.

19.3 **Carbon Reduction Strategy.** BAS is implementing a Carbon Reduction Strategy, that was agreed in June 2007, with targets to reduce emissions over a period of five years. Energy monitoring equipment is being installed at stations and a greater emphasis is being placed on the need to manage energy demand. Sustainable energy solutions will continue to be introduced on stations and at BAS Cambridge, as finances allow. For example, a solar panel system has been installed at Rothera thanks to a grant from the NERC Greening Fund.

19.4 **Carbon reduction targets.** The BAS Board has decided to reduce carbon usage, whilst maintaining the normal BAS operations, by:

- Reducing carbon usage by 20% by 2012 against the 2006 baseline at Cambridge and on the stations, and by 5% on the ships
- Monitoring, educating, and carbon efficient retrofits (maximising the opportunities for obtaining extra funds from external sources)
- Reinvesting in energy efficiency activities wherever possible
- An annual review of progress

19.5 **Environmental improvements within NERC.** BAS is fully involved with the NERC Environmental Management Group, the corporate group that is taking forward environmental initiatives. BAS is able to bid to NERC for additional 'green' Environmental Management funds for environmental improvements.

In recent bidding rounds, BAS was awarded funding to provide sustainable energy systems for Antarctic field camps (including the development of a portable solar snow melter, portable solar power and wind turbines), and for further energy efficiencies at Cambridge (comprising solar hot water, improved insulation, LED lights and additional lighting sensors).

20. Finance

20.1 **Income and expenditure.** This Business Plan marks a period of unusual uncertainty for BAS income because of the transition to NERC's new funding framework. The process has been aided by the introduction of the annual strategic Centre Activity and Resource Plan (CARP). Planning assumes that the targets for grant income to replace the ramp-down in allocated research income will be achieved. Pay expenditure is indexed for inflation but otherwise budget holders are expected to absorb the impact of inflation by securing better value for money, increased efficiency or reprioritisation.

20.2 **Sustainability of the BAS programme.** The BAS Board judge the budget situation to be broadly manageable in the short term, but the many cost pressures and the funding uncertainties make the longer-term position less certain. Budget pressures include exchange rates, fuel prices and the infrastructure maintenance costs. The CARP process has identified the cost pressures of maintaining ageing elements of Antarctic infrastructure and NERC's capital maintenance programme now includes research stations as well as BAS Cambridge. The NERC budget is also under pressure and BAS is actively engaged in identifying ways to contribute to savings measures. The BAS Board will be monitoring BAS's sustainability carefully through 2010/11 and is implementing a procurement-focused programme to leverage the purchasing power of the RCUK Shared Service Centre in combination with the professional know-how of BAS personnel in their field.

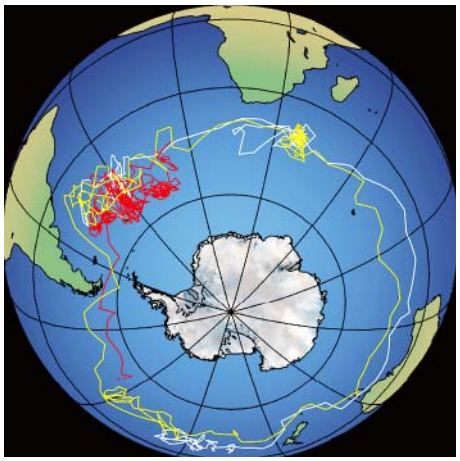
20.3 **Fuel prices.** Fuel price volatility is a key risk. The cost of Brent crude provides a 'proxy' price for fuel, but this is only a broad indicator because the purchase price is also affected by exchange rate fluctuations and by where the fuel is bought. Each $1 increase in the average Brent crude price roughly equates to about £35k/year in BAS fuel expenditure. NERC provides corporate funding stability to help BAS (and NERC Marine Facilities Sea Systems) to pay for actual marine gas oil costs for BAS research vessels, but there is no such mechanism to offset the volatility in costs of other fuels (aviation, heating and vehicle).

20.4 **Managing BAS budgets.** BAS budget holders are effective in managing within their financial allocations. In recent years, forecast expenditure has been very close to the end of year position. This forecasting accuracy provides confidence in the overall financial management, and it helps the BAS Board to judge the appropriate level of expenditure controls during a financial year when these are needed to avoid forecast overspending.

20.5 **Capital Investment Programme.** There is an ongoing need for capital investment in BAS science equipment and infrastructure. BAS maintains a formal approval process for all capital investment activity and options, supported when necessary by investment appraisals, are required for the larger projects – especially for enhancements to the logistic infrastructure.

20.6 **Large facilities replacement.** The new Halley VI Research Station on the Brunt Ice Shelf is due to be completed by February 2012. The RCUK Roadmap of the large facilities identified by Research Councils as being of the highest strategic importance over the next 10-15 years includes the renewal and upgrade of Rothera, and the replacement of the *Ernest Shackleton* and *James Clark Ross*. NERC's long-term Asset Management Strategy includes these projects and the replacement of BAS Cambridge Science Block One.

20.7 **Pricing guidance.** Special arrangements continue to apply to certain funding schemes, such as EU and AFI, whilst others involve a judgement within the overall Treasury accounting guidelines. Advice should be sought from the Finance when required.



21. Information Management

21.1 The BAS Information Policy Committee sets the strategic direction for information in BAS and provides information governance, including risk, security and compliance. It ensures that all BAS data and information assets are managed effectively and fully exploited. BAS is committed to implementing the NERC Science Information Strategy and will continue to play a key role in the implementation team. The Polar Data Centre at BAS is central to the delivery of the NERC and BAS Science Strategies and to ensure maximum exploitation of our data assets. BAS will continue to improve the security and accessibility of its data in line with NERC Data Policy, developing innovative ways to collect, transfer, curate and visualise data.

21.2 BAS will focus on how it manages its business information in 2010. A project to redevelop our Intranet will aim to make it the definitive source for accurate and useful information for BAS staff. BAS gives its full support to NERC-wide information management initiatives and expects to roll out Microsoft SharePoint for collaboration and document management through the iShare project during the year.

Images: Top: *Loading and refuelling a BAS Twin Otter aircraft at Rothera Research Station.* **Centre:** *Heavy machinery operating at Rothera Research Station.* **Bottom:** *Tracking wandering albatross as they circumnavigate the globe.*

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22. Knowledge Exchange – Commercialisation

Ensuring that our science and knowledge is used to contribute to economic well-being and quality of life has become increasingly important. BAS is committed to NERC and wider Government objectives to use and exchange knowledge to address environmental issues. BAS achieves this by working with policy makers, business and industry and non-Government organisations, and engaging with the public. BAS also plays a part in NERC's commercialisation activities facilitating the commercial exploitation of research outputs and intellectual property. BAS has an excellent track record in this area within NERC. The recent NERC Commercialisation Review will suggest improvement for the future operation of commercialisation activities and BAS will play its part in implementing these. More generally, BAS will continue to play an active role in the NERC Knowledge Exchange Network.

23. Science and Society

The BAS Communications portfolio is a blend of corporate communications and public engagement activities designed to promote, support, and deliver the BAS, NERC and Government's strategic aims. BAS participates in the NERC 'Engaging Young people in Science' (EYES) Scheme, the UK-wide STEM Ambassadors' Scheme and in a partnership with the FCO Polar Regions Unit and the Royal Geographical Society for the continued development of *Discovering Antarctica* (*www.discoveringantarctica.org.uk*), an online learning resource.

24. Management of Externally-Funded Projects

BAS manages a number of externally-funded projects, for example the NERC Arctic Station, South Georgia and Lake Ellsworth. All external arrangements with a call on BAS resources are codified through an MOU or LOU.

25. Mandatory Requirements

25.1 BAS is determined to implement employment, safety, health and environment and other workplace legislation effectively and pragmatically. This includes maintaining a culture that is ethical, nondiscriminatory and safety conscious.

25.2 **Safety.** BAS aims to be positive, open, pragmatic and effective in its approach to health and safety. BAS safety policy is firmly embedded in the NERC Safety Management System, tailored in detail to meet the special needs of the BAS operation. Our approach to accident, incident and near miss reporting (all of which is done online) allows safety performance to be improved through lessons learnt. BAS is accredited to the OHSAS 18001 standard for safety management for the Cambridge site and the ships, which is audited annually by the British Standards Institute. Safety Management and Environmental Protection are integrated into a cross-BAS SHE Management Team led by the Deputy Director. Regular discussions with the trade unions combine the three elements of SHE which has proved efficient and beneficial. SHE is a mandatory item on all BAS Committee agendas.

25.3 **International Safety Management (ISM).** ISM is an international maritime safety standard that all ship operators must meet. BAS Cambridge, the *James Clark Ross* and the *Ernest Shackleton* have achieved continuous accreditation since 2002. The Maritime and Coastguard Agency audits Cambridge annually and the ships every two-and-a-half years. These audits also cover the International Ships and Ports Security Code (ISPS).

25.4 **Aircraft regulation.** BAS fully meets the requirements of Air Safety Support International (ASSI), who assumed regulatory authority for the airworthiness of BAS aircraft in September 2006. A period of intensive ASSI scrutiny to validate some 25 years' of previous approvals has been costly and disruptive. No modifications have had to be made to any of the aircraft for safety reasons. In December 2009, BAS achieved IS-BAO accreditation through IBAC for its air safety management system. In January 2010, BAS received new FAA approvals for its Twin Otter operations.

25.5 **Antarctic permits.** BAS activities in Antarctica are regulated by FCO permits under the Antarctic Act 1994. This requires the regular re-approval of BAS activities, including permission for significant changes such as major new science projects and logistical activities. All planning for science projects and programmes and their support must satisfy the permitting regulations. During 2010, BAS will participate in the Government consultation, led by FCO, regarding the Antarctic Bill. This will update the Antarctic Act and improve the permitting process.

25.6 **South Georgia permits.** The Government of South Georgia and the South Sandwich Islands (GSGSSI) has a permitting regime similar to that used for Antarctica. BAS works with GSGSSI to refine the procedures in the light of experience.

25.7 **Risk management.** NERC has a risk management policy and a risk strategy to meet Treasury corporate governance requirements. The purpose is to ensure that organisations identify, evaluate and manage their key risks. The Board Member for Corporate Services is the BAS Risk Manager, and the risk register is on the BAS Intranet (*http://basweb.nerc-bas.ac.uk/busplan/risk-register.pdf*). All BAS Board papers include a mandatory assessment of the risk implications. BAS also inputs into the NERC risk assessment process.

25.8 **Business continuity management.** The BAS Incident Plan is our primary Business Continuity Management (BCM) mechanism to meet NERC-wide corporate governance requirements. The Incident Plan provides a flexible response to unexpected events that are not covered by standard management practices for business interruption, such as system redundancy and off-site back-up of data. The Research Councils' Internal Audit Service provided BAS with a Substantial Assurance for BCM in 2007. The Board reviews its BCM position annually.

25.9 **Research Councils' Shared Services.** Responsibility for BAS Finance and Personnel administrative transactions will transfer to the RCUK Shared Service Centre (SSC) in Swindon during 2010. Formal responsibility for strategic procurement transferred to the SSC on 1st April 2008. BAS is heavily engaged in supporting the work leading to the establishment of the SSC. Care has been taken throughout to retain within BAS the resources and expertise necessary to maintain Antarctic-specific administrative functions, such as support of the Antarctic Employment Pool and personal accounts.

Planning Assumptions

1. BAS planning supports and is consistent with NERC's mission and strategic aims.

a. NERC Mission

- The Natural Environment Research Council delivers independent research, survey, training and knowledge transfer in the environmental sciences, to advance knowledge of planet Earth as a complex, interacting system
- Our work covers the full range of atmospheric, earth, biological, terrestrial and aquatic sciences, from the deep oceans to the upper atmosphere, and from the poles to the equator
- Our mission is to gather and apply knowledge, create understanding and predict the behaviour of the natural environment and its resources, and communicate all aspects of our work.

b. NERC's Strategic Goal is to deliver world-leading environmental research at the frontiers of knowledge

- Enabling society to respond urgently to global climate change and the increasing pressures on natural resources
- Contributing to UK leadership in predicting the regional and local impacts of environmental change from days to decades
- Creating and supporting vibrant, integrated research communities

2. Planning is based on the defining characteristics of NERC Research Centres, which are to provide within NERC's mission and science strategy:

- Excellent scientific research, monitoring and survey not obtainable elsewhere within the UK at competitive quality, timeliness and cost
- An integrated, well-managed national capability to provide reliable and independent advice to Government and other interested organisations
- A focus for international co-operation; for technology expensive projects, and for co-ordinating distributed major programmes solving complex scientific problems

The term 'national capability' covers the development and maintenance of trained staff, enabling infrastructure, data gathering, and data curation, management and delivery.

3. **Costing principle.** Costings are to be realistic, based on approved requirements and levels of service. New requirements are not to be funded without appropriate prior approval. Pay inflation is handled centrally. Non-pay inflation has to be absorbed except where there is unavoidable cost growth.

4. **Staff numbers.** The tables on the following page set out the profiles of approved posts (Full Time Equivalents) in BAS over the period of the Business Plan, excluding casuals. The numbers represent the control totals for planning purposes. Personnel have revalidated all the figures and have a system to track any changes to approved numbers during the financial year. Costings in the financial tables reflect actual salaries, and they assume that a proportion of pay settlement awards will be met centrally from NERC funds.

Image: Top: *Panorama across Ryder Bay, close to Rothera Research Station, Adelaide Island, Antarctica.*

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Core Funded Staff	2009/10	2010/11	2011/12	2012/13
Antarctic Employment Pool – Science	13.67	14.33	17.58	18.50
Science Delivery	133.16	130.92	131.01	131.92
Science Strategy	7.00	7.00	7.00	7.00
Programme Office	2.20	2.20	2.20	2.20
Polar Data Centre	7.53	7.53	7.53	7.53
Directorate	4.33	4.33	4.33	4.33
Corporate Services	39.83	39.63	38.08	38.08
Operations and Engineering	72.96	77.71	77.96	77.96
Antarctic Employment Pool – Operations	52.00	57.96	58.54	59.54
Ships	95.00	96.00	96.00	96.00
Safety, Health and Environment	5.00	5.00	5.00	5.00
Total	**432.68**	**442.62**	**445.24**	**448.08**

Externally Funded Staff	2009/10	2010/11	2011/12	2012/13
Science Delivery	12.73	16.04	14.04	9.54
Programme Office	0.47	1.00	1.00	1.00
Polar Science Information Services	1.50	1.50	1.50	1.50
Directorate inc IPY	3.00	2.16	1.00	1.00
Operations and Engineering	10.08	8.92	8.42	8.42
Antarctic Employment Pool	13.00	14.42	13.92	14.42
Total	**40.78**	**44.04**	**39.88**	**35.88**

Grand Total	473.46	486.66	485.12	483.95

5. **Science.** Costings reflect the approved programmes, long-term monitoring and survey and well-found laboratory support for delivering Polar Science for Planet Earth.

6. **Cambridge facilities.** Maintenance (and associated expenditure) has been costed on the long-term assumption that the BAS Cambridge site will be maintained in accordance with NERC Estate Management standards, the recommendations of periodic condition surveys and in conformity with existing and anticipated safety, fire and security regulations. Facilities management will be reviewed in this business plan period.

7. **Halley Research Station.** Planning assumes that Halley VI will be constructed by 2012 and Halley V demolished by 2013. Construction and demolition waste will be removed predominately by BAS ships in the subsequent years. The outline construction timetable is:

2009/10 2nd year of construction (externals)

2010/11 3rd year of construction (internals)

2011/12 Move to Halley VI site and commissioning before first operational winter in 2012

2012/13 Demolition of Halley V and commence clearing waste

Maintenance expenditure on Halley V is to be progressively reduced in line with the closure timetable. Science activities at Halley V were reduced from February 2008, but will commence again in 2012. Demolition of Halley V is geared to the Halley VI construction progress.

8. **Other research stations (less Halley).** Support for Bird Island, King Edward Point (KEP), Rothera and Signy is planned on the assumption of a long-term presence. The KEP station is governed by an MOU with the FCO and GSGSSI. Expenditure on field stations, such as Sky-Blu and Fossil Bluff is planned on a year-to-year basis. These facilities are managed by Rothera and the arrangements are monitored by the Rothera Operations Working Group.

9. **South Georgia.** The opportunities for fieldwork and the use of King Edward Point Research Station have been recently re-appraised. South Georgia is now part of BAS's normal operating area, subject to sui funding, space and personnel availability, and agreement with the Government of South Georgia and the South Sandwich Islands.

10. **Ships.** Expenditure plans for the BAS ships are based on maintenance in class with the respective Classification Societies (Lloyds Register and DNV). Maintenance and refit assumes an annual average of 315 operational days for each ship and no mid-life updates.

- RRS *James Clark Ross* – an operational life until 2020, with about a 160 days per year in the Antarctic. NERC partially funds and uses the ship for 60 days per year
- RRS *Ernest Shackleton* – hire from the owners, Rieber, until at least 2014 with a possible extension of up to 2019, with about 130 days per year in the Antarctic. The ship's owner has exercised the annual option for 2010 to charter, which provides an annual income to BAS. Discussions will be held with Reiber this year to review the annual option process

11. **Aircraft.** Plans for the maintenance of the BAS aircraft are in accordance with the schedules laid down by Air Safety Support International to the standards required for a Corporate Operator's Category Certificate of Airworthiness. The operational life of the aircraft is assumed to be:

- Twin Otters until 2015, with an overall total of 1660 hours per year for field operations per season
- DHC-7 until 2015, with an average of 450 hours per year for field operations

12. **KEP.** Funding of KEP is through an MOU with the FCO and GSGSSI and is ring-fenced. Core science money is not used to fund the project (nor vice versa). The BAS presence is assumed to be long-term.

13. **Vehicles.** Expenditure plans are based on maintaining a vehicle fleet to meet the needs of the approved field programme and specific station requirements.

14. **Health and safety.** General infrastructure and project expenditure plans take into account the health and safety of BAS staff and known and anticipated UK and EU legislation, qualified only by the practicalities of implementation in Antarctica.

15. **Environment and waste management.** Capital and recurrent expenditure plans are based on the UK's obligations under the 1991 Protocol on Environmental Protection to the Antarctic Treaty and 1994 Antarctic Act (conditions attaching to permits issued by FCO).

16. **Information and technology support.** Plans are based on the requirements of approved projects, scientific cruises, the maintenance and support of Antarctic and ship-based networks and Cambridge computing.

Images: Top: *A remote field camp near Sky-Blu Field Station on the Antarctic Peninsula.* **Bottom:** *A marine biologist studies a giant sponge in the waters off Rothera Research Station.*

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Income and Expenditure Summary

	2010/11 £000's Budget	2011/12 £000's Plan	2012/13 £000's Plan	2013/14 £000's Plan	Four Year Totals
INCOME – ALLOCATION					
Resource					
National Capability	33,338	34,615	35,765	36,436	140,154
National Capability – Competitive	227	216	151	151	745
Research Programme – Transition	3,085	2,427	1,593	736	7,841
Research Programme – Variable Element	593	608	623	638	2,462
Capital					
Equipment and Vehicles	1,386	1,455	1,401	1,401	5,643
Capital assumed for ships and estates	1,480	1,411	1,465	1,465	5,821
Total Allocation[1][2]	40,109	40,732	40,998	40,827	162,666
OTHER INCOME					
External	2,966	3,394	3,011	3,065	12,436
Sales	323	325	332	339	1,319
Collaborative Funding	305	293	242	75	915
Responsive Mode	5,044	2,470	3,182	1,603	12,299
Research Programmes	4	4	4	-	11
Ramp-Down Secured[3]	456	537	446	31	1,470
Ramp-Down Unsecured[3]	522	1,294	2,325	3,679	7,820
Total Other Income	**9,620**	**8,317**	**9,540**	**8,793**	**36,270**
TOTAL FUNDS AVAILABLE	**49,729**	**49,049**	**50,538**	**49,620**	**198,936**
EXPENDITURE					
Science Allocated	11,754	11,891	12,275	12,414	48,334
Science Competitive Funding	2,046	1,450	1,945	499	5,940
AFI Support	275	301	307	576	1,459
Science Support	34,234	33,680	34,569	34,401	136,884
Arctic Office and Station	252	258	195	201	906
South Georgia	1,311	1,469	1,247	1,529	5,557
Flexibility	(144)	-	-	-	(144)
TOTAL EXPENDITURE	**49,729**	**49,049**	**50,538**	**49,620**	**198,936**

Notes:
(1) No SSC amendments are included.
(2) Capital for ships and estates is yet to be confirmed.
(3) BAS is subject to reduced funding over the period. Ramp-down secured refers to income that BAS has generated to alleviate this. Ramp-down unsecured represents income yet to be confirmed.
- Marine gas oil will be adjusted in line with actual costs
- Excludes Halley VI
- Any overspend from 2009/10 will be reflected in the 2010/11 allocation

ANTARCTIC STATIONS CAPITAL EXPENDITURE					
Halley VI	6,227	1,868	1,077	-	9,172
Rothera Replacement[1]	-	5,000	6,000	4,000	15,000
Total Expenditure	**6,227**	**6,868**	**7,077**	**4,000**	**24,172**

Note:
(1) Earmarked funding which cannot be committed until Council have approved the allocation.

Business Plan Distribution List

BAS

Director
Deputy Director
Board Member for Corporate Services
Board Member for Science Delivery
Board Member for Science Strategy
Board Member for Operations and Engineering
Individual Merit Promotees
Science Leaders
Head of Finance
Head of Operations
Head of Human Resources
Head of Technology and Engineering
Safety Advisor and Head of Cambridge Facilities
Master RRS *James Clark Ross*
Master RRS *Ernest Shackleton*
Halley Research Station
Rothera Research Station
Bird Island Research Station
Signy Research Station
King Edward Point Research Station
Mrs P Sackett (Stanley Office, Falkland Islands)
Prospect/Whitley Chair
Library
Archives

External to BAS

Ed Wallis	Chairman, NERC
Professor A Thorpe	Chief Executive, NERC
Dr S Wilson	Director of Strategy and Partnerships, NERC
Mr N F D Bloomer	Director of Finance and Operations, NERC
Mrs J Timberlake	Director of People, Skills and Communication, NERC
Dr P Newton	Director of Science Delivery, NERC
Professor D Wingham	Chair of SISB
Mr T Rachwal	Chair of NCAG
Ms Judy Parker	Communications Business Manager, NERC
Ms L Porter	Planning and Communications Directorate, NERC
Mr J Bates	Head of People and Skills, NERC
Mr Steve Allsopp	Head of Corporate Personnel, NERC
Mr Ned Garnett	Science and Innovation Manager for Polar Science, NERC
Dr Gina Adams	Head of International Affairs, NERC
Mr R Harris	Director of RCIAS, Swindon
Mr N Yates	RCIAS, Swindon
Ms Jane Rumble	Foreign and Commonwealth Office, London
Mr Scott Wightman	Foreign and Commonwealth Office, London
Mr P Williams	BIS, London
Dr Miles Parker	DEFRA
Dr Chris Sear	DECC
Mr I Grant	BASMU, Plymouth

BAS Intranet *http://basweb.nerc-bas.ac.uk/information/business_plan*

Images: Top: *The BAS Dash-7 aircraft lands on the blue-ice runway at Sky-Blu Field Station in the Antarctic Peninsula.*
Bottom: *Aurora glow in the sky above one of the newly-constructed modules of Halley VI Research Station.*

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BAS Images and Maps

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Feedback and further information

We welcome your feedback and comments on this document. These should be addressed to:

Board Member for Corporate Services
British Antarctic Survey
High Cross, Madingley Road
Cambridge, CB3 0ET, UK

Email: **iann@bas.ac.uk**

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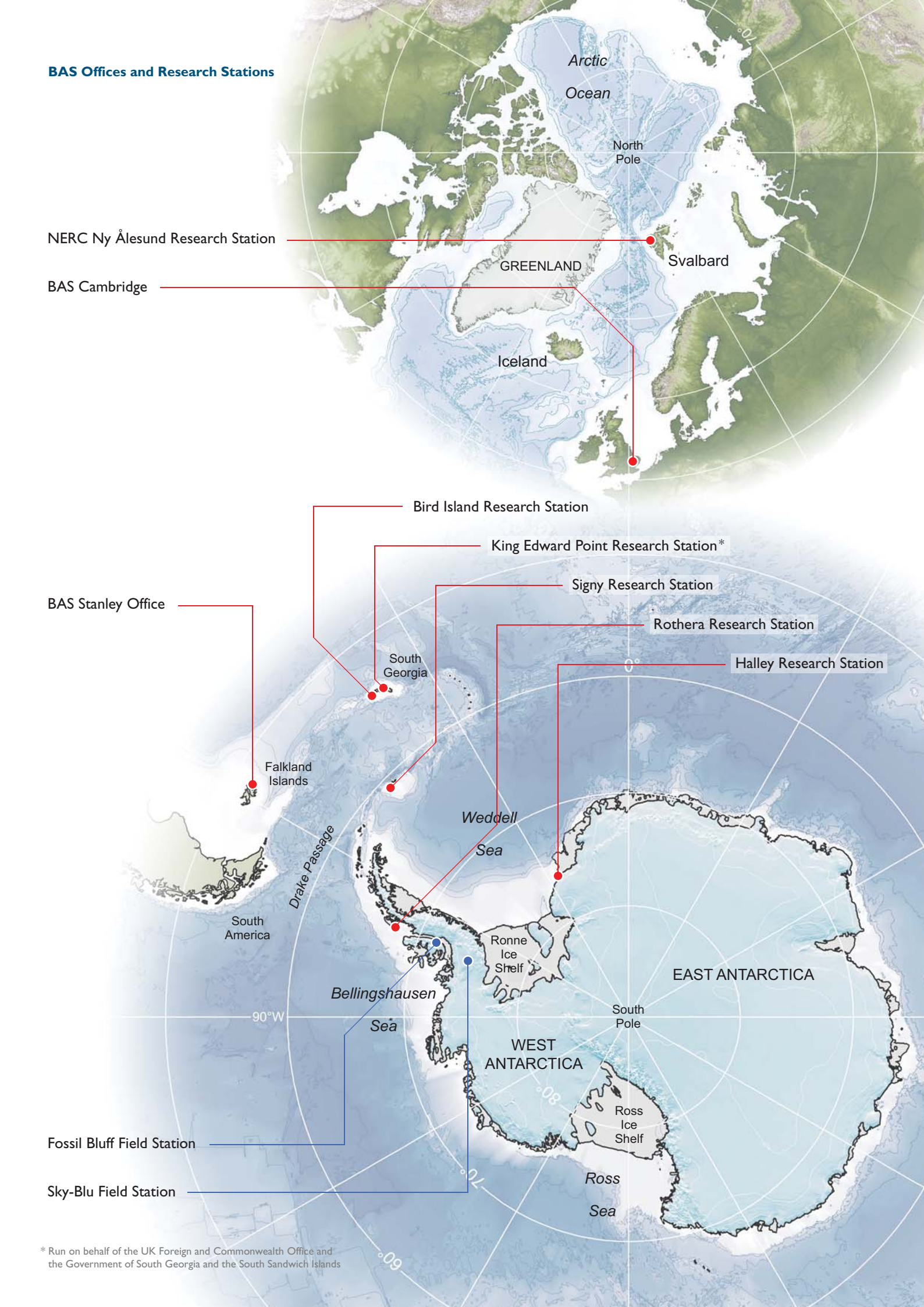
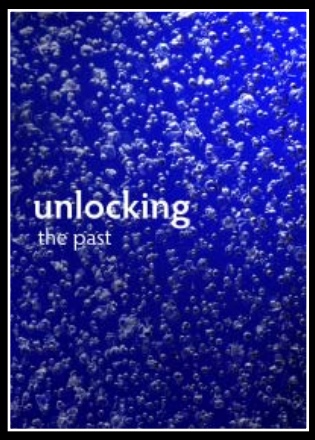
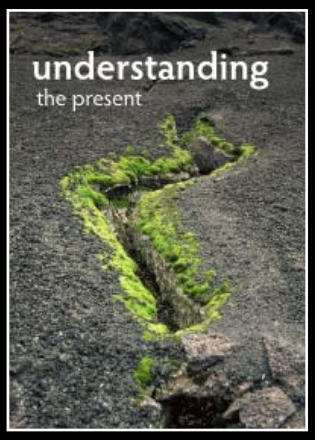
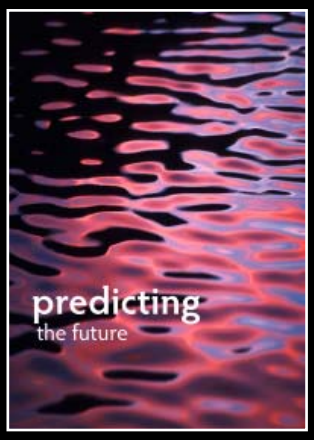
BAS Offices and Research Stations



* Run on behalf of the UK Foreign and Commonwealth Office and the Government of South Georgia and the South Sandwich Islands







British Antarctic Survey (BAS), a component of the Natural Environment Research Council, delivers world-leading, interdisciplinary research in the polar regions. Its skilled science and support staff based in Cambridge, Antarctica and the Arctic, work together to deliver research that underpins a productive economy and contributes to a sustainable world. Its numerous national and international collaborations, leadership role in Antarctic affairs and excellent infrastructure help ensure that the UK maintains a world-leading position. BAS has over 450 staff and operates five research stations, two Royal Research Ships and five aircraft in and around Antarctica.

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NATURAL ENVIRONMENT RESEARCH COUNCIL