

## NERC Arctic Research Programme Implementation Plan

### 1. Summary

This *Implementation Plan* details the method of execution of the *Arctic Research Programme*, the science of which is laid out in the programme's *Science Plan*. This plan describes the implementation of the four linked *Objectives* in a five-year research programme and the mechanisms for exploitation of the knowledge gained to inform policy and societal need for a greater understanding of the implications of Arctic change and its impact on the whole Earth System.

The *Implementation Plan* is a living document which will be periodically updated to address programme delivery issues such as project integration, partnership opportunities, science meetings, reporting and general programme coordination activities.

### 2. The Research Programme's Objectives

The overarching aim of the programme is to improve capability to predict changes in the Arctic, particularly over timescales of months to decades, including regional impacts and the potential for feedbacks on the global Earth System.

This will be achieved via four linked scientific objectives:

<i>Objective 1</i>	Understanding and attributing the current rapid changes in the Arctic
<i>Objective 2</i>	Quantifying processes leading to Arctic methane and carbon dioxide release
<i>Objective 3</i>	Reducing uncertainty in Arctic climate and associated regional biogeochemistry predictions
<i>Objective 4</i>	Assessing the likely risks of submarine hazards associated with rapid Arctic climate change

### 3. Delivering the Research Programme

The above programme *Objectives* will be achieved through research on a range of *Science Topics* and extensive knowledge exchange, programme coordination and outreach activities resulting in *Deliverables* which are detailed in the programme's *Science Plan*.

The programme will be delivered via two funding rounds (see Section 5) addressing research across the programme *Objectives* and *Science Themes*.

A budget of up to £10 million for research projects (including any fieldwork/facility costs) is expected to be available in the *First Funding Round*. In order to encourage wider participation in the programme and allow research at scales appropriate to the various topics proposed, it is anticipated that projects of a range of sizes will be supported. This will be as standard grants (up to £1 million total cost at 100% FEC) and consortium grants (£1 million - £3 million total cost at 100% FEC, multiple partners addressing more than one objective with a clear need for a consortium approach). The exact number of grants supported will depend

on the relatively quality and size of proposals received. Project studentships may be included as a component of standard and consortium grants; these may be held as CASE studentships if appropriate.

The *Second Funding Round* will be used to fill any gaps in coverage of the programme objectives and science topics, following the first funding round decisions. It will also support linking and synthesis activities and stand-alone PhD studentships. Depending on the outcome of the first funding round a budget of up to £3 million is expected to be available in the second funding round to support research grants and programme studentships.

To foster programme integration, achieve added-value and the production of high-quality deliverables the programme will support pre- and post-award events and activities to stimulate innovation and new collaborations, prevent duplication of effort and allow effective project alignment and interaction. The programme will incorporate both observational and modelling activities that will be coordinated from the outset, to ensure the modelling informs observations and vice versa.

#### **4. Programme Management**

Annex 1 details the inter-relationships between the different elements of the programme management structure. The roles and responsibilities of these groups are detailed below

##### ***4.1 Programme Executive Board (PEB)***

Swindon Office will have overall executive authority. The Senior Responsible Officer leading the Programme Executive Board will be a member of Swindon office staff, i.e. the Science and Innovation Manager – Atmospheric & Polar Sciences. The PEB will also include the chair of the Programme Advisory Group and representatives of any co-funders and key stakeholder/user groups.

##### ***4.2 Programme Advisory Group (PAG)***

A Programme Advisory Group (PAG) will advise the PEB on the delivery of the *Arctic Research Programme*. The PAG will consist of national and international experts. It will be chaired by Professor David Thomas. The PAG will work closely with the Programme Management Team. The PAG will be appointed by NERC by Q4 2009/10.

The **key responsibilities** of the PAG will be to:

- advise on the development of the programme plans (Science & Implementation, Knowledge Exchange, Data Management etc) and their execution;
- advise on the strategic direction of the programme, including scientific content of programme announcements of opportunity;
- advise on effective ways to achieve programme integration;
- advise on the development of international collaborative activities and UK partnerships, including emerging and future opportunities;
- advise on user engagement and programme impact;
- advise on appropriate ways to monitor and evaluate the progress of the programme towards its purpose and goal; and
- advise on managing the risks to the programme.

Members of the PAG may also participate in Grant Moderating Panels, along with other independent experts (including members of the NERC Peer Review College) to evaluate the proposals and make funding recommendations to NERC.

#### **4.3 Grant Moderating Panel (GMP)**

A Grant Moderating Panel (GMP) will have the responsibility for assessing research proposals, both in terms of quality of proposed science and their ability to deliver the requirements of the *Arctic Research Programme*. It will consist of national and international experts in the field, representatives nominated by any co-funders and at least one member of the NERC Peer Review College. These assessments will inform the PEB's decisions on the award of funding to deliver the programme's objectives.

#### **4.4 Programme Management Team (PMT)**

The PMT will be made up of three components that will work closely together to provide effective management of the programme:

- Programme Secretariat (Swindon Office)
- Science Management Team (BAS)
- NERC Arctic Office

#### **4.5 Programme Secretariat**

Swindon Office holds the overall research programme budget, the high-level budget management and allocation of resources, e.g. profiling of funds within the programme budget and awards for research and procurement for services.

Swindon Office/SSC staff will play a key role in delivery of programme funding rounds. They will be responsible for receipt of proposals, eligibility checking, the peer review and selection process, authorisation of funding decisions, issue of awards, post-award administration and payments, final reports and award completion.

Swindon Office will lead the secretariat for the PEB and PAG.

#### **4.6 Science Management Team (SMT)**

The SMT will be responsible for the day-to-day management and coordination of the programme, and will work closely with the NERC Arctic Office and the Programme Secretariat based in the Swindon Office in the delivery of its responsibilities. Both the SMT and the Programme Secretariat will report to the NERC Executive Officer, also based in Swindon Office.

The SMT will continue to develop the implementation plan (this document), plus a *Data Management Plan* in conjunction with NERC Data Centres. The SMT will also be responsible for the development and implementation of the *Knowledge Exchange Plan*. They will collaborate with all scientists in the programme in the coordination of impact activities (at the project and programme level) and liaise closely with users and stakeholders to ensure the successful delivery of the KE plan and maximum programme impact. The SMT will be responsible for programme leadership and promotion and the development and implementation of the programme *Communication Plan*.

The SMT will work to ensure coordination between the programmes *Objectives* and *Science Topics* being delivered via the programme projects. The SMT will organise workshops to facilitate interaction across the programme as well as annual science meetings. The SMT will also be responsible for monitoring and reporting the progress of the programme and maintaining an overview of the scientific progress made against the programme objectives.

The SMT will liaise with all programme participants, facilitate the development of the community and develop the links between this programme and international collaborators.

The SMT will work with the NERC Arctic Office to coordinate and facilitate the access to the Arctic and polar infrastructure required to address the programme deliverables, working with international partners wherever possible. They will provide advice on safety, health and environment issues.

The SMT will be appointed by NERC by Summer 2010.

#### **4.7 Award holders**

Programme participants will report regularly to the Programme Management Team on the milestones and outputs they have been funded to deliver. Principal Investigators will also be required to provide the standard reporting measures as per NERC terms and conditions i.e. annual Output and Performance Measures (OPMs) and a final report at project end. The reports will be discussed by the PAG at their meetings. Award holders will be required to participate in programme integration activities such as science meetings and workshops.

#### **4.8 Risk management**

The PEB, together with the SMT and the PAG, will be responsible for managing the risks to the overall programme. In the event that a project develops a problem with delivery that cannot be solved by the PI and their team, the SMT and/or members of the PAG will, at the request of the PEB, discuss options with the PI for how these can be addressed to ensure the delivery of the science over the lifetime of the programme.

### **5. Programme activities and schedule**

An overview of the programme schedule is available at Annex 2

Funding was approved for this programme by NERC Council in November 2009. The Programme Science & Implementation Plans were prepared by the Programme Advisory Group March-May 2010.

#### **5.1 First Funding Round**

The programmes *First Funding Round* will be via an open Announcement of Opportunity for research grant proposals to deliver against all programme *Objectives* and *Science Topics*. A budget of up to £10 million to support research and fieldwork/facility costs is expected to be available, although this could be increased if the quality of proposals is exceptionally high.

There will be two parallel opportunities:

- 1) Standard Grants (up to £1 million total cost at 100% FEC).
- 2) Consortium Grants (£1 million - £3 million total cost at 100% FEC) with multiple partners addressing more than one objective and the need for a consortium approach clearly justified.

Project studentships may be included as a component of standard and consortium grants.

The first funding round will involve a two stage application process. The first component will be an Expression of Interest (EoI) stage. It will be mandatory to submit an EoI in order to participate in the funding round at the full proposal stage. All EoIs received will be checked by NERC against programme scope and feasibility and those identified as unsuitable will not

be invited to proceed to the full proposal stage. Depending on the numbers received NERC reserve the right to sift EoIs and only invite a proportion to proceed to the full proposal stage. Information on all EoIs proceeding to the full proposal stage will be published on the NERC website; this will comprise details of project titles and investigators/institutions involved.

Individuals may be named on as many Expressions of Interest as they wish. At the full proposal stage individuals are limited to involvement in no more than two proposals, only one of these may be as the lead Principal Investigator.

A workshop is planned after the assessment of EoIs, with the aim of sharing information about the programme, supporting the formation of new collaborations and the integration and alignment of projects. EoI applicants will be invited to give short presentations on their research ideas. Information on National Capability, international opportunities and current project outputs will also be presented to inform the community on progress and on the resources and logistics available. This may be followed by break out groups to aid discussion. Attendance at the workshop will not be a prerequisite for proposal submission, nor any guarantee of funding.

Full proposals will be internationally peer-reviewed and final funding recommendations made by a moderating panel, consisting of a sub-set of members from the Programme Advisory Group (PAG) plus independent experts and members of the NERC Peer Review College. Applicants will be given the opportunity to provide a written response to peer review comments prior to the moderating panel.

It is anticipated that a mixture of standard grants and consortium grants, will be funded. The exact number of grants supported will depend on the relatively quality and size of proposals received. Awards made by NERC will have conditions attached that ensure that the funded projects contribute in a timely manner to the Arctic Programme deliverables and participate in programme integration. It is anticipated that first round projects will start during the period April 2011-April 2012 and will be no more than four years in duration. Projects will be encouraged to be inter-disciplinary, cutting across more than one *Science Topic* and *Objective*.

UK and International collaborations and partnerships will be strongly encouraged and should be explored and developed prior to proposal submission. NSF Division of Arctic Science are interested in US researchers developing cooperative links with the NERC Arctic Programme and it is intended to stage a workshop in the UK which will bring together UK researchers with relevant US Arctic scientists. Section 6 of the Science Plan provides further information on potential for collaboration and alignment. Applicants should form links with relevant users in order to maximise the impact of project outputs.

Arctic Programme first round projects will be required to:

- directly address one of more of the programme Objectives;
- focus research activities on one or more of the programme Science Topics;
- coordinate observational and modelling activities to ensure modelling informs observations and vice versa;
- be up to four years in duration with a start date between 1 April 2011 and 1 April 2012;
- include milestones and deliverables to ensure outputs are delivered effectively;
- be designed to aim to produce deliverables of one or more of the identified types;

- demonstrate evidence of and mechanisms for alignment of work-programmes and collaboration with other Arctic Programme projects wherever possible;
- identify appropriate Pathways to Impact and associated costs for delivery;
- engage with and input to programme-wide Knowledge Exchange activities led by the Programme Management Team;
- involve international partners (desirable);
- include a project team that is inter-disciplinary and crosses traditional boundaries marine, terrestrial, atmospheric etc (desirable);
- include team members who have not previously worked on the Arctic (desirable);
- be developed in the context of the emerging NERC Earth System Modelling Strategy;
- comply with the programme data management policy, including data sharing with other programme participants, and contribute to delivery of the data management plan; and
- report regularly on the outputs and outcomes they have been funded to deliver.

The expected timetable for the first funding round is as follows:

June 2010	Announcement of Opportunity
29 July 2010	EoI Closing Date
29-30 September 2010	Workshop
7 December 2010	Full Proposal Closing Date
March 2011	Awards Issued
2011-2012	Round 1 projects start

## 5.2 Second Funding Round

Depending on the outcome of the first funding round, a budget of up to £3 million is expected to be available in the second funding round. Please note it is possible that the second funding round budget may be significantly less than this or in extreme circumstances a second round may not be operated.

The programme's *Second Funding Round* is expected to include up to three parallel opportunities, but will be significantly smaller in scale than the first funding round.

- 1) Research grants to fill any gaps in coverage of the programme *Objectives* and *Science Topics*, identified following the first funding round decisions.
- 2) Research grants to undertake linking or synthesis activities.
- 3) Stand-alone programme PhD studentships addressing any of the *Science Topics*.

Details of the application and assessment processes in the second funding round will be confirmed at a later date. Second round research grants will be of shorter duration in order to complete within the programme period.

The provisional timetable for the second funding round is as follows:

June 2011	Announcement of Opportunity
September 2011	Closing Date
January 2012	Awards Issued
2012-2013	Round 2 projects start

### **5.3 Programme Integration**

Directly following the award of research grants in the first and second rounds *Programme Workshops* will be held. These will bring together all Principal Investigators (attendance compulsory) and a range of other project team members, to further integrate and align the individual work plans and coordinate activities and logistics.

The workshops will:

- give teams the opportunity to share their project plans;
- enable the Arctic Programme Advisory Group and Science Management Team to advise on links between projects; and
- start to identify additional programme activities that would complement and build on the awarded projects.

The programme will also hold three *Annual Science Meetings* for all programme participants and stakeholders to engage and report progress; these are scheduled to take place in 2012, 2013 and 2014.

## **6. Partnerships and Collaboration**

Research project collaborations between UK scientists, research institutions, disciplines and other national and international programmes are strongly encouraged, where appropriate, in order to deliver more effectively the programme's *Objectives*.

Programme partnerships will be sought, particularly with relevant UK government departments and Research Councils, to provide both direct funding and in kind contributions to the programme. The programme will work towards achieving Living With Environmental Change (LWEC) accreditation.

International partnerships will involve both scientific collaboration and working in partnership with polar operators to simplify and widen access for UK scientists to Arctic field sites and logistics. These partnerships will be facilitated by the Arctic Programme Science Management Team/NERC Arctic Office.

## **7. Knowledge Exchange**

The main aim for Knowledge Exchange (KE) in the *Arctic Research Programme* will be, to facilitate the communication and application of the science delivered from this programme to a variety of users including policy makers, industry and Arctic communities, resulting in the greatest impact. This will be achieved through various activities, at both the project level and programme level, coordinated by the Science Management Team.

A programme *Knowledge Exchange Plan* will be developed as part of the role of the Science Management Team, who will work closely with programme research projects, users, stakeholders and partners to ensure the successful implementation of activities. A high-level summary of the Knowledge Exchange Plan will be available in Autumn 2010.

All Arctic Programme research projects will consider their own knowledge exchange and impact potential. This will be described in each projects 'Pathways to Impact' document and associated resources may be requested to deliver project-specific knowledge exchange activities where this is appropriate and not duplicating programme KE activities. Further

information about research with impact can be found on the RCUK Pathways to impact website<sup>1</sup>.

## **8. Data Management**

NERC requires that research programmes implement data management activities, including practical arrangements during the programme and subsequent long-term availability of the data sets generated. In line with the NERC data policy<sup>2</sup>, the data from the programme will be lodged with the appropriate NERC Designated Data Centres. A programme *Data Management Plan*, covering these aspects and data sharing between programme participants, will be developed as part of the role of the Science Management Team. Data management will be resourced centrally by the programme, but Principal Investigators will be responsible for providing their data to the data management centre and ensuring that they have sufficient resource within their proposal to support this activity.

## **9. Science Plan**

The *Science Plan* for the *Arctic Research Programme* is available as a separate document on the NERC website and should be read prior to submitting proposals to the programme.

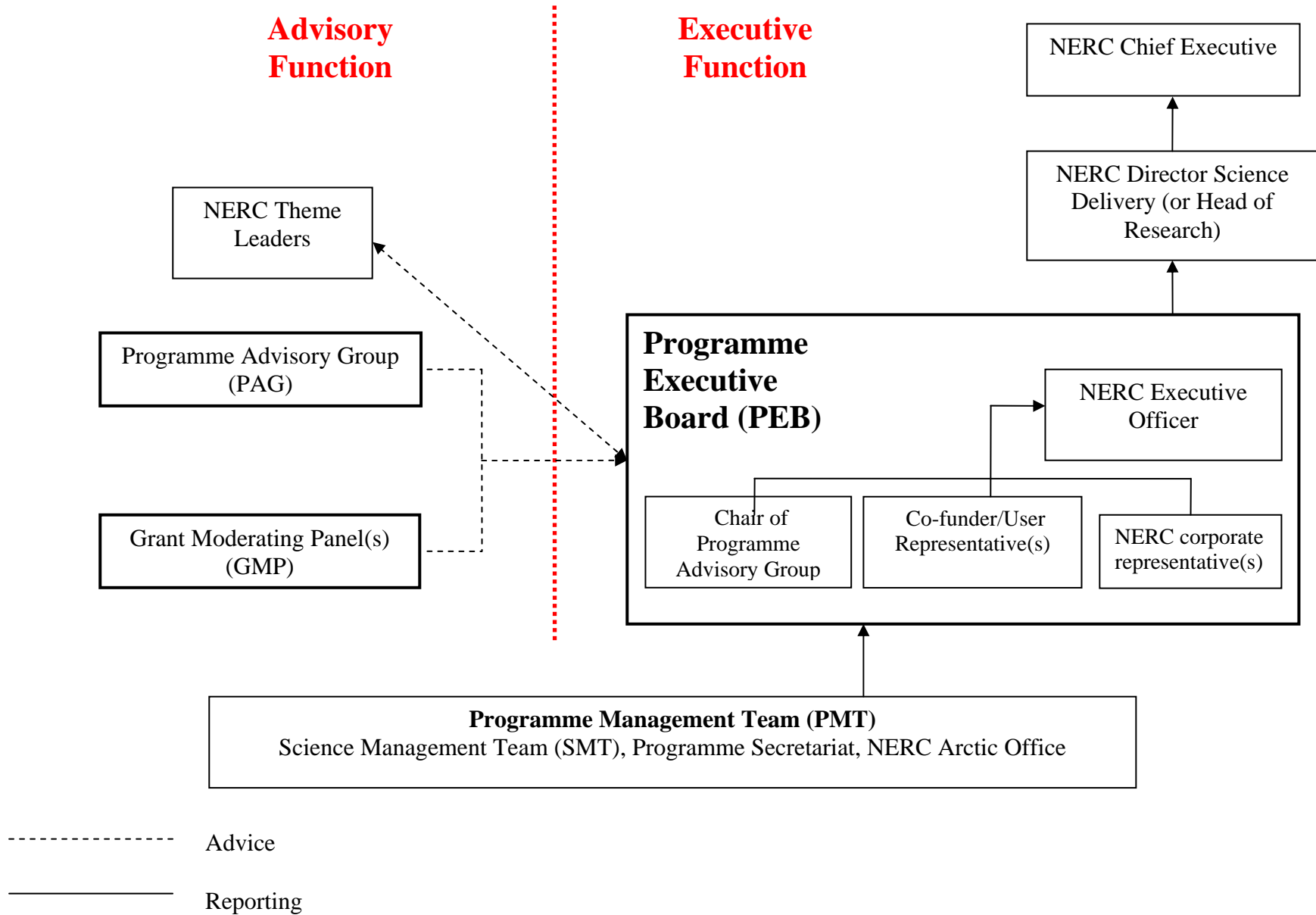
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<sup>1</sup> <http://impacts.rcuk.ac.uk/default.htm>

<sup>2</sup> [www.nerc.ac.uk/research/sites/data/policy.asp](http://www.nerc.ac.uk/research/sites/data/policy.asp)



**Annex 1: Arctic Research Programme Governance Structure**



## Annex 2: NERC Arctic Research Programme Schedule

	2010				2011				2012				2013				2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Programme Planning & Development	Orange	Orange	Orange	Orange	Orange	Orange																						
Science Management Team		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow				
Proposal Development/Workshops			Grey	Grey	Grey	Grey	Grey	Grey																				
First Funding Round			Red	Red	Red																							
Second Funding Round							Red	Red	Red																			
Projects Active					Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green				
Fieldwork						Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple								
Programme Meetings			Black								Black				Black				Black				Black					

Q1 = January - March  
 Q2 = April - June  
 Q3 = July - September  
 Q4 = October - December