

Benefits Management Plan				
Category	Benefit 2019 V5.0	Achievement Indicator	Owner	Status (RAG)
Scientific	Satisfying the demand of research communities in the UK for a world-class marine research platform	Ship to provide -450 science days in first three full years of operation - be awarded 15 barter point on the international scale	Jane Francis	●
	Providing a platform for leading-edge, multi-discipline marine science  Strengthening UK training, skills, opportunities and capabilities  Attraction and retention of talent at BAS	Ship to provide: • Low Noise signature • Seismic survey capable using containerised systems • Multi-beam and sub-bottom profiling. • Oceanographic winch suite. • Large CTD handling. • Subsea coring. • 4m x 4m scientific moonpool and enclosed science hangar. • Over- the-side handling of scientific equipment. • Deployment and recovery of large remotely-operated and autonomous marine vehicles (e.g. Autosub and ISIS). • Permanent and flexible laboratory spaces. • Space and docking stations for portable/containerized laboratories		●
	Capability to provide a platform for Arctic science	To develop a five year plan for the vessel which clearly demonstrates that the ship is available for two 15 days science cruises in the Arctic. World Class Science of high impact using frontier science capabilities of the new ship subject to science funding.		●
Antarctic presence	Maintaining the UK regional presence in the Southern Atlantic	Ship to visit all five stations within first two years of operation Ship to provide: • Heli-deck and hangar to support two Eurocopter EC365 N3 Helicopters		●
	Technical performance of the ship in relation to the science demand;	Ship to provide: • 60 days endurance • Range 19,000 nautical miles. • 13 knot economic cruising speed. • Ability to support complex multi-disciplinary scientific missions in the Polar Regions. • Ice breaking capability – 3 knots through 1m ice (ice permitting). • Accommodation for 30 officers and crew. • Accommodation for an additional 60 personnel. • Cargo volume - 2150m3. • Cargo handling - 50 tonnes @ 18m reach and 20t @ 33m, self-sustaining for logistics and science mobilisation. • Aviation fuel cargo tank volume (cargo) 660m3. • Aviation fuel cargo in drums (up to 2000 in number).		●
	Ensure effective UK engagement in COMNAP (Council of Managers of National Antarctic Programmes)	Active attendance at CONMAP seminars in 2015, 2016, 2017, 2018		Complete
Spend to save	Providing a research capability which is matched to current and future UK priorities, with corresponding economic impact	Science Case approved by the NERC Science and Innovation Strategy Board as fit for purposed before Statement of requirement is complete in March 2015		Complete
	Minimise long-term maintenance cost	Whole life maintenance cost to be less than £225m		●
	Operational efficiency of the ship	Cost of Ship Operations to be less than 80% of 2014/15 baseline equivalent cost of the current two vessels.		●
	The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	There are three headline infrastructure efficiencies planned: - Implement cargo containerisation - Improve heating efficiency at Rothera - Improve MGO storage		●
	Minimise environmental impact	Ship to use only light marine gas oil		●
	Structured approach to operational resilience	Implementation of the predictive and planned maintenance system Maximo		●
Public engagement	Enable greater public engagement	- Stimulate science-industry engagement - Increased public awareness of BAS and NERC - Add to UK Government and regional campaigns, like: - Polar explorer - Year of engineering - GREAT - Apprentices - Northern Powerhouse - Liverpool's Year of Environment Campaign - Wirral Borough of Culture 2019 - Hull launch event (Reach over 1 bn) - Local and staff engagement		●



UK Research  
and Innovation

# **UK Research and Innovation**

## **Benefits Management Framework**

  
March 2022

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# 1 Document Information

## 1.1 Revision History

Version	Comment	Date	By
0.1	Initial version	27 October 2020	[REDACTED]
0.2	Revised version	24 November 2020	[REDACTED]
0.3	Extended version	17 March 2021	[REDACTED]
0.4	Extended version	22 June 2021	[REDACTED]
0.5	UKRI version	15 February 2022	[REDACTED]
1.0	Published on SharePoint	04 March 2022	[REDACTED]

## 1.2 Related Documents

Version	Document	Comments
1.0	Benefit Profile and Realisation Plan	[REDACTED]

## 1.3 Definition of Terms

The terms listed in the table below have the associated definition within this framework.

Term	Definition
Academic Impact	The demonstrable contribution that excellent research makes in shifting understanding and advancing scientific method, theory and application across and within disciplines <sup>1</sup>
Associated Strategy Document	The document which demonstrates the rationale for the project being undertaken
Baseline	The reference levels against which a benefit measure or indicator is monitored and controlled.
Benefit	The measurable improvement from a change, which is perceived as positive by one or more stakeholders, and which contributes to organisational objectives.
Benefit Dictionary	A collation of benefit profiles, including standard definitions, measures and indicators which enables harmonisation in benefit identification, tracking, and realisation.
Benefit Map	A pictorial representation of the business and enabling changes on which benefits realisation depends, and how these benefits contribute to organisational objectives. The assurance scoring matrix for UKRI benefit maps is shown in Table 3
Benefit Measure	The primary measure of the benefit. This is categorised according to the definitions provided by HMT Green Book.
Benefit Profile	The document used to record and reach agreement (with the benefit owner) on the key details about a benefit (or

<sup>1</sup> <https://esrc.ukri.org/research/impact-toolkit/what-is-impact/>

	dis-benefit) including categorisation, scale, measure, and any dependencies. The assurance scoring matrix for a UKRI benefit profile is shown in Table 4
Benefit Owner	The individual responsible for the realisation of a benefit and who agrees the benefit profile.
Benefit Realisation Plan	Document that provides a consolidated view of the benefits forecast by type/category and which represents the baseline against which benefits realisation can be monitored and evaluated The assurance scoring matrix for UKRI benefit realisation plan is shown in Table
Economic and Societal Impact	The demonstrable contribution that excellent research makes to society and the economy, and its benefits to individuals, organisations and/or nations <sup>2</sup>
Emergent Benefit	Also known as an unexpected benefit. A benefit that arises as a result of the project outcomes, but not that was originally anticipated as part of the business case.
Evaluation	Assessment undertaken after an initiative has been implemented to assess both the initiative delivery and impact.
Impact	Net changes including wider social and economic impacts
Indicator	What you might want to know or expect to see to indicate you were on track to achieve your benefits. Indicators often have a less certain link with the benefit than the benefit measure.
Intangible Benefits	Benefits that are difficult to quantify and measure reliably such as improved staff morale and decision-making. In such cases proxy indicators of such benefits can be developed to support narrative evidence
Monitoring	The ongoing collection and analysis of data (specified indicators) about an intervention to understand progress against its objectives.
Outcomes	The changes that resulted from delivered products
Outputs	The delivered products that result from project activity

## 1.4 Guide to Roles and Responsibilities

SRO	The SRO for a project or programme is accountable for the benefits realisation. This includes the values forecast during the project lifecycle and the realisation in BAU after the project closes.
Project Manager	The Project Manager is responsible for the benefits management artefacts being generated, kept up to date, and informing the stakeholders
Benefit Owner	The Benefit Owner is the person responsible for the realisation of the named benefit. Benefit Owners have

<sup>2</sup> <https://esrc.ukri.org/research/impact-toolkit/what-is-impact/>

	<p>direct responsibility for the outcomes delivered by change. The Benefit Owner should be consulted throughout the project lifecycle, especially around the forecast values of the expected benefits, and will assume responsibility for monitoring, realising the benefit in BAU, including ensuring changes necessary for benefits to be realised are made to the organisation, and reporting the evidence of realisation to project/programme/portfolio boards in the form of regular benefit reviews.</p>
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## 1.5 Document Review and Approval

Name	Role	Signature/Email Confirmation	Date
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
Project Delivery Profession Steering Group			
People, Finance and Operations Committee			October 2021

## 1.6 Document Circulation / Readership

This framework is designed to be high level guidance in benefits management, aligned to best practice. It is recommended that the framework be supplemented by council-level approaches which are tailored to their specific types of delivery. The guidance was originally developed for the Reforming Our Business (RoB) portfolio and has been adapted to be appropriate across the whole of UKRI. The UKRI Benefits Management Specific Interest Group (SIG) are a cross-council group of benefits practitioners who have helped develop this guidance. The guidance is intended to provide all those working within the Project Delivery Profession with the tools necessary to undertake effective benefits management.

## 1.7 Expected Future Updates

The framework will be a living document updated to reflect changes within UKRI, BEIS or wider HM Government. In particular, it is expected that new Green Book supplementary guidance on Project/Programme Outcome Profile, developed in conjunction with the Infrastructure and Projects Authority, will become mandatory for all investments above £50m. Guidance will be updated to reflect these requirements when mandated. Further guidance around the process of benefits management after project closure will be provided in a future update.



## **2 Version Notes (v1.0):**

This is the first version of the framework to be published on SharePoint. References to the RoB Pilot and RoB-specific requirements have been removed. This issue is intended to provide high level guidance for Benefits Management; individual Councils or Portfolios may wish to supplement this guidance with other, Council- or Portfolio- specific guidelines to enable effective Benefits Management in the context of the type and size of investments made.

As the maturity of benefits management across UKRI is growing, this version provides the foundation for establishing a robust and comprehensive benefits management approach and starting to incorporate active benefits management in reporting, assurance, and other project management processes.

This version of the Framework outlines activities to bring UKRI Projects in line with best practice in Benefits Management, and so may require some retrospective benefit management activities. It is intended that as the maturity increases, the need for retrospective benefits management will end; the majority of UKRI projects will be onboarded in line with current best practice in Benefits Management and this Framework will be updated accordingly.

Practitioners across UKRI have been engaged with the continued development of this Framework, and so applications beyond the RoB Portfolio pilot are beginning to be represented in the guidance.

This Framework will be supplemented by facilitation, guidance, and training provided by Project Services and the Benefits SIG.



### 3 Aim

This Framework outlines the processes by which benefits will be managed and reported. It will outline key activities that should be undertaken, and the documentation expected in the benefits lifecycle.

This framework should be used in conjunction with other guidance available from the Project Delivery Hub and the Business Case Hub. These include:

- Business Case Process
- BEIS Integrated Approvals and Assurance Strategy
- UKRI Monitoring and Evaluation Framework

The processes and documentation for benefits management outlined in this Framework will provide assurance on public money through:

- outlining the minimal level of information all projects must include in their benefit plans,
- providing a consistent format for benefits management documentation,
- ensuring benefits management documentation is subject to appropriate levels of assurance,
- enabling consistent tracking and reporting of benefits at the portfolio level, and
- facilitating impact assessment for project change requests.

### 4 Background

Benefits management is a programme management approach that aims to make sure the desired business change or policy outcomes have been clearly defined, are measurable and provide a compelling case for investment. Good benefits management, with input from key stakeholders and customers, will help:

- identify what you are aiming to achieve with the intervention;
- establish end goals – the desired positive outcomes and benefits from the intervention;
- set out a process to help monitor and track progress towards the end goals, so you know when you've achieved what you set out to deliver, as well as putting measures in place to mitigate risks and increase benefits;
- identify both the positive and negative effects from change.<sup>3</sup>

Benefits management relates to the activity of identifying, quantifying, monitoring and realizing benefits from change activity. It ensures projects funded by the public purse can deliver real benefit to stakeholders and typically consists of five main stages:

1. Identification and quantification of benefits,
2. Valuation and appraisal of the benefits,
3. Planning for benefits realisation,
4. Realising the benefits,

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<sup>3</sup> BEIS Monitoring and Evaluation Framework

## 5. Reviewing as a basis for learning and continuous improvement.

A project will have defined inputs, including FTE and funding, in order to undertake activities and deliver benefits to the business. These activities will result in deliverable outputs for the project, which are often in terms of an improved capability, capacity, resource, or functionality. The changes derived from the use of these outputs are the outcomes of the project, and it is the measurable improvement resulting from these outcomes (perceived as an advantage by one or more stakeholders) that can be considered the benefit.

Benefits must contribute to one or more organisational objectives, and therefore linked to strategic objectives, and be specific, measurable, achievable, realistic, and time bound (SMART).

### 4.1 Relationship between Business Case Development and Benefits Management

In the development of business cases, it is expected that the authors will abide by the principles of benefits management laid out in this framework. The process of benefit mapping at the initial stage of a project enables identification of benefits that can then be reflected within business cases. The information gathered during the profiling of a benefit, including the baseline and target value of the measure enables a consistent valuation and appraisal of the options from the business case, through to the benefits realisation.

There should be a proportionate approach to benefits mapping and profiling; at an early stage of a project the map might be expected to be high level to represent the current thinking and awareness of the project outcomes. As the project matures, the benefit map is expected to be updated to reflect the increase in understanding of the project scope and anticipated benefits.

For major investment business cases (typically those greater than £20m whole life cost requiring Investment Advisory Working Group review), economic appraisal within the business case may wish to use benefits designed in collaboration with BEIS for research & innovation projects. However we would recommend that clearly defined benefits be set out within Benefit Profiles and Benefit Realisation Plan that align with this guidance. The benefits recommended for economic appraisal are included in Annex D.

**Error! Reference source not found.** Shows the alignment between the Business Case Guidance and Benefits Management Framework.

Table 1 Benefits and Business Case Alignment for Projects

Project Business Case		
Element	Guidance	Benefit Management Framework
Strategic Outline Case	<u>Determine benefits, risks, constraints, and dependencies</u> - Identify main benefits of the programme	<u>Benefit Map</u> to identify benefits and demonstrate how the programme will deliver them
		<u>Early stage benefit profiles</u> and realisation plan to demonstrate an understanding of how the benefit will be monitored
Outline Business Case	<u>Undertake benefits appraisal</u> - Appraise all benefits and explain why these are important enough to affect the decision for the ranking of the options	<u>Benefit Profiles</u> , to include: - baseline and forecast values - owner - risk, dependencies & assumptions
	<u>Plan benefit realisation strategy</u> - Put in place the management arrangements required to ensure that the programme delivers its anticipated benefit	Medium Confidence Benefit Profile and Realisation Plans, providing revised forecast of benefit values and forecasts for indicators identified in the Early Stage Realisation Plan
Full Business Case	<u>Finalise benefits realisation arrangements and plans</u> - Revisit the benefits realisation arrangements and plans that were outlined in the OBC and explain what has been agreed and finalised for the successful delivery of the project in accordance with best practice	High Confidence Benefit Profile and Realisation Plans, providing revised forecast of benefit values and forecasts for indicators identified in the Early Stage Realisation Plan
	<u>The benefits register</u> - The organisation's plan for the ongoing management and delivery of benefits should be captured within the benefits register, which must be completed in full and attached to the FBC. It should cover all the benefits – financial, non-financial and qualitative – identified during the implementation and operational phases of the project. - The 'owner' of the benefits register should be named and their reporting line identified to the senior responsible owner (SRO), who is ultimately responsible for benefits delivery. It should be confirmed that the benefits register will be reviewed regularly and form part of the standing agenda for future project boards.	

## 4.2 Relationship between Monitoring and Evaluation and Benefits Management

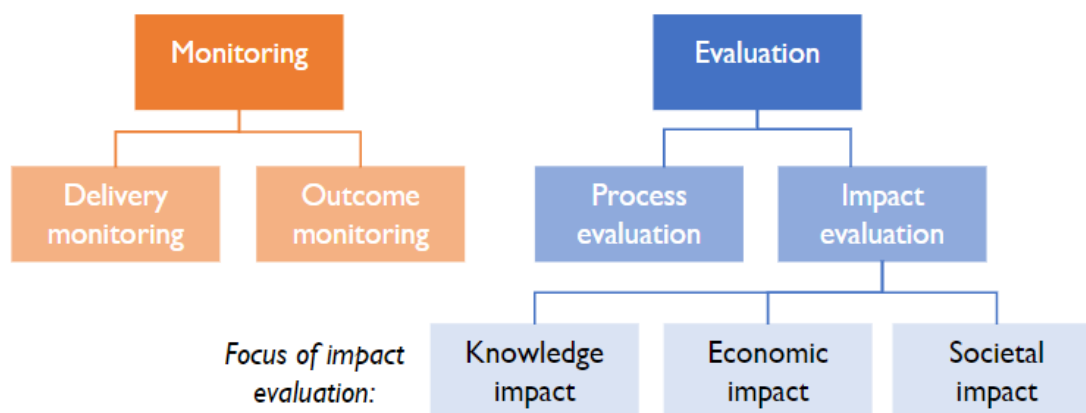


Figure 1 Overview of Monitoring and Evaluation Functions in UKRI (UKRI M&E Plan 2019)

Whereas the M&E Framework provides guidance on whether a bespoke approach to M&E is required, above and beyond the existing UKRI default outcome monitoring processes, all projects are requested to follow the benefits management framework, ensuring a proportionate level of detail is provided.

Monitoring data relates to information collected and used as part of the ongoing project delivery to understand progress against objectives.

Projects should develop proportionate good quality monitoring to assess and improve performance and inform learning, ahead of and throughout implementation. This allows assessment and explanation of progress towards realising the intended benefits - benefits management. As such benefits management provides valuable evidence and data to help in evaluating policies including whether they have delivered what was intended.

Regular reporting of key performance indicators will provide management assurance that an intervention is on track. Using emerging evaluation evidence to understand why this is the case, the evidence can inform changes to the intervention to manage performance and help realise the anticipated benefits.<sup>4</sup>

Evaluation may take place during or after delivery of a UKRI investment, depending on the overall aims. Evaluating a process during delivery has the potential to inform positive changes to live delivery as part of benefits realisation. Evaluating a process after delivery is likely to produce a more complete assessment, which may increase learning and thus the overall value to UKRI of the evaluation.

<sup>4</sup> BEIS Monitoring and Evaluation Framework

## 5 Application of the Framework

As the maturity of benefits management across UKRI is low, there may entail some retrospective identification and valuation of benefits for in flight projects, as necessary for assurance purposes. For new projects, these stages will be undertaken as an integral part of business case development as part of the project validation review and business justification.

It is intended that all business change projects, along with major UKRI projects (as defined by the IPA), will follow the full benefits management lifecycle, and produce the artefacts outlined in this Framework. The framework is also available to be adopted by Research Councils for projects under £20m.

In order to ensure there is a proportionate application of the framework, assurance reviews will be based on the risk potential assessment for each project, in line with the project assurance approach, ensuring the requirements are commensurate with the size, impact, return on investment, and risk of the project.

This Framework is intended to work in synergy with existing monitoring and evaluation approaches.

Benefits reviews should occur at key stages throughout the project lifecycle, and where the project is introducing a change that may impact the benefits.

### 5.1 Project Sizing

It is recommended that all projects, regardless of size, undertake benefits workshops and follow the benefits lifecycle.

Artefacts should reflect the scale and complexity of the investment, ensuring a proportionate level of resource is deployed.

### 5.2 The Benefits Lifecycle

Figure 2 illustrates the Benefits Lifecycle. When following the lifecycle, there are three primary artefacts required to effectively demonstrate assurance.

It should be noted that while the activities are defined within stages (in both the project lifecycle and benefits lifecycle), an iterative approach can often be required, especially for complex projects.

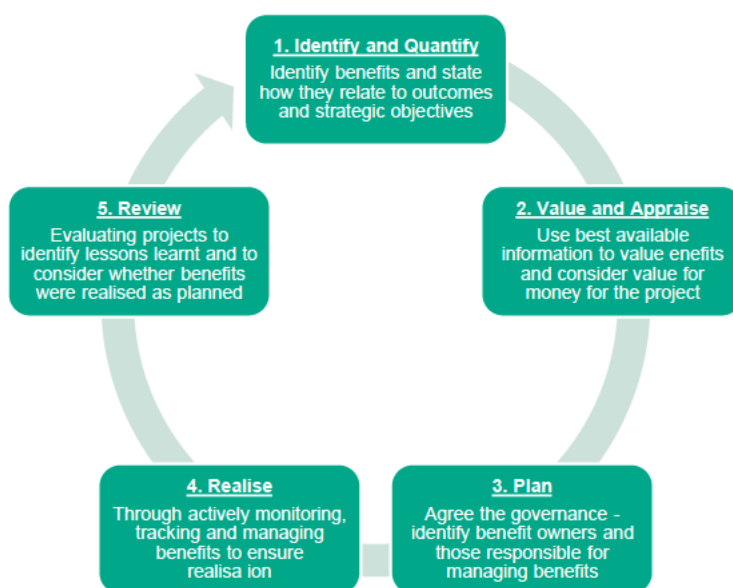


Figure 2 Benefits Management Lifecycle

Table 2 Summary of artefacts in benefits management

	Identify and Quantify	Value and Appraise	Plan	Realise
Artefact	Benefit Map	Benefit Profiles	Benefit Realisation Plan	
Key information	A pictorial representation of change showing the relationships between project activities, benefits and disbenefits, and objectives	<p>How each benefit will be measured</p> <p>Risks, assumptions and dependencies associated with each benefit</p> <p>Benefit owner and associated subject matter expert</p>	<p>Measures and indicators captured to demonstrate progress towards realising the benefit</p> <p>Baseline and forecast values of the measures and indicators</p>	Benefit Realisation Plan used to capture indicator data and benefit measures during project delivery and following project closure.

## 6 Identify and Quantify

In the first stage of the Benefits Management lifecycle, the benefits of a project are identified, and the relationships are mapped to show how project activities ultimately deliver the benefits, which in turn feed into broader strategic objectives.

### 6.1 Artefact: Benefits Map

The primary artefact required for the first stage of benefits management is a benefits map (also known as a logic model or theory of change diagram). This is a pictorial representation of change showing the relationships between project activities, benefits and disbenefits, and objectives. It is generated at the start of a project, and the identified benefits will feed into business cases. A template for a benefits map is shown in Annex A, and the matrix against which maps will be reviewed is shown below in Table 3.

Table 3 Quality Assurance Matrix for a Benefits Map

	7,8,9	4,5,6	1,2,3
	Good Practice	Acceptable	Improvements needed
Benefit Map	There is a clear thread linking the project activities to benefits and strategic or organisational objectives.	There are some connections between project inputs and activities, benefits and organisation or strategic objectives. Some elements of the map only have partial connections.	There are few, or incomplete, connections between the project inputs and activities, benefits, and strategic or organisational objectives.
	The map is comprehensive, covering the main elements of the project.	There are some elements of the project missing, which would add value to the map in demonstrating the contributions of the project on the benefits and organisational objectives.	There are several elements of the project missing from map, resulting in the map not fully representing the projects contributions to the objectives of the organisation.
	The map is up to date and reflective of current project activities.	The map has not been updated to reflect the most recent changes to the project	The map has not been updated for several changes and no longer represents the project accurately

The 'line of sight' from objectives and benefits to the initial investment Benefits can be identified and mapped through a benefits workshop, which engages stakeholders and builds consensus around the 'line of sight' of the project from the initial investment through to the benefits realisation.

The requirement for the Reforming our Business (RoB) Portfolio is that all projects should produce a benefits map and it should be uploaded to Verto.

A benefit should be specific in its success criteria. For example, a benefit that is written as an improvement, or enhancement is open to interpretation. A useful



acronym to use is **MEDIC**: **M**aintain, **E**liminate, **D**ecrease, **I**ncrease, **C**reate. If a benefit is defined with one or more of these terms, it is clear to other stakeholders what is intended by the benefit, and what measures can be used to evidence its realisation.

Tangible benefits are those which are relatively easy to measure, whilst intangible benefits refer to those that are generally more challenging to measure directly. Intangible benefits may include benefits such as improved staff morale and decision-making, and will depend on clear qualitative evidence, although in a lot of cases proxy indicators of such benefits can be developed.

### 6.1.1 Benefits Workshop

A benefits map for a project is typically generated in a benefits workshop. The workshops should be reflective of the size, scope and risk of the project so as not to unduly overburden the portfolio office and project stakeholders, and the attendees should reflect the stakeholder groups and have the authority required to appropriately represent the stakeholder interests. Typically, a Benefits Manager will facilitate workshops.

A benefit workshop is undertaken to bring together all stakeholders to consider the potential benefits (and disbenefits) resulting from a project, and ensuring the benefits identified are sound. This a facilitated session where stakeholders will be asked to consider the benefits that are likely to arise as a result of achieving strategic objectives, what outcomes will support the realisation of those benefits, and what project activities and interventions will enable those outcomes to be delivered.

It may be useful to consider the categorisation of benefits, as outlined in Section 7.1 when developing the benefits map. This may help consolidate streams of work and provide a focus when aligning project activities against strategic objectives.

**Timing:** Typically held in the formative stages of a project and business case, likely requiring several iterative workshops for more complex projects.

**Aim:** Identify benefits of project; profile benefits; agree connections between project activities and project benefits (via outputs and outcomes).

#### Output:

Project benefits map

- Pictorial representation of how the project, through delivering outputs and achieving outcomes, will result in benefits and dis-benefits being realised.
- The assurance scoring matrix for evaluating a benefits map is included in Table 3

## 7 Value and Appraise

The objective of the value and appraise stage is to ensure resources are allocated to the projects that individually and collectively represent the best value for money.

Valuing benefits in monetary terms provides a consistent basis on which to undertake options analysis, investment appraisal, and portfolio prioritisation.

In this stage of the benefits management life cycle, projects are expected to produce benefit profiles for each of the identified benefits in their benefits map.

### 7.1 Artefact: Benefit Profiles

The primary artefact required for the second stage of benefits management is a benefit profile for each of the identified benefits from the Identify and Quantify stage. A benefit profile records key details about the benefit and is agreed by the benefit owner. Benefit profiles are generated after the map has been agreed, and the valuation of the benefits will feed into the business case. A template for a benefit profile is shown in Annex B and a quality assurance matrix is shown below in Table 4. The following section outlines the type of information that should be included in the benefit profile.

Table 4 Quality Assurance Matrix for Benefit Profiles

	7,8,9	4,5,6	1,2,3
	Good Practice	Acceptable	Improvements needed
Benefit Profile	The benefit has an owner, and an associated subject matter expert if appropriate. It is clear how the measures will be captured.	The benefit is owned, but more clarity is needed around how the measure will be captured - including if a subject matter expert is required to effectively measure the benefit	The benefit does not have an owner or associated subject matter expert (if appropriate). It is not clear how the measures will be captured
	The benefit is linked to the UKRI balanced scorecard and other applicable organisational objectives; this is backed up by an associated benefit map for the project.	The benefit is not linked to the balanced scorecard or other organisational objectives, but this information is available in the associated benefit map.	There is no information as to which organisational objectives the benefit supports, or how it contributes to the balanced scorecard.
	The benefit is clearly described, and dependencies, assumptions and risks are all detailed.	The benefit has some information provided in the description, dependencies, assumptions and risks fields, but it is incomplete	There is limited information provided in the description, dependencies, assumptions, and risks fields.

For new projects, the main purpose of Value and Appraise is to model and monetise the relevant costs and benefits during development of the business case. While maturity builds in benefit management, this activity will also be required of in-flight projects.

Once the benefits have been collated from the Identify and Quantify stage, they can be valued by the projects with the support of subject matter experts and the benefit owners, and the achievability of assigned targets should be determined.

Optimism bias and sensitivity analysis should be considered for both the costs and benefits. This allows stakeholders to assess the maximum and minimum level of costs and benefits that can be expected. Benefits can be overestimated, and costs largely underestimated, in business case development. Therefore, clearly documenting the minimum and maximum values for benefits and costs is required for effective decision-making and financial planning.

Identifying benefits dependencies and benefit risks are also part of the Value and Appraise stage. Dependencies should be identified using the benefits map.

At a Portfolio level, an exercise should be undertaken to understand how projects and programmes contribute towards a benefit being realised, and how benefits support strategic objectives. The reporting will also support decisions around project change requests and be able to identify critical dependencies and risks to the portfolio.

Benefits are required to be associated with the balanced scorecard, a strategy document and related objective, a category, the stakeholder group(s) they will benefit, and a type. This is summarised in the graphic in Figure 3, and further detail is provided in the following sections.

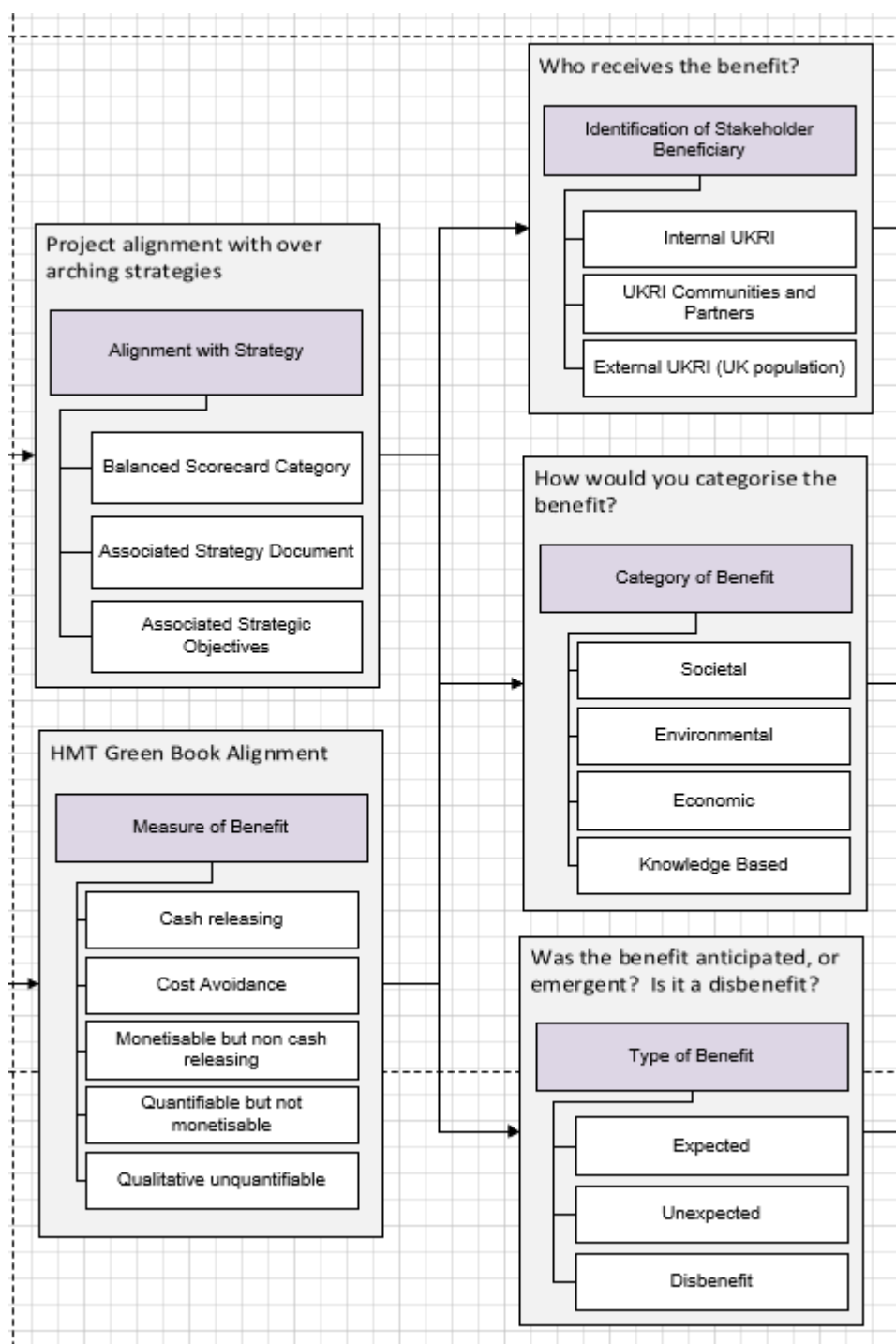


Figure 3 Benefit Classification

### 7.1.1 Reference, Title and Description

The benefit should be assigned a unique identifier.

The title of the benefit should indicate the nature of the benefit, with the description adding further detail.

### 7.1.2 Benefit Status

The benefit profile, and benefits realisation plan should have an up to date RAG status to provide a high-level indicator of progress. The UKRI RAG definitions are listed below in Table 5.

*Table 5 RAG Status Definitions*

Status	Delivery confidence:	End of Financial Year Budget Forecast:
Green	Recognised by UKRI and / or BEIS as achieving the agreed outcome within tolerances is likely and there are no outstanding issues at this stage that threaten delivery.	In year budget has 0% to -2% underspend variance.
Amber / Green	Recognised by UKRI and / or BEIS as achieving the agreed outcome within tolerances is probably and there are no major issues at this stage that threaten delivery significantly	In year budget has -2% to -5% underspend variance.
Amber	Recognised by UKRI and / or BEIS as achieving the agreed outcome within tolerances is feasible but issues exist requiring management attention. These appear resolvable at this stage and if addressed promptly should not represent significant long-term issues.	In year budget has -5% to -15% underspend variance.
Amber / Red	Recognised by UKRI and / or BEIS as achieving the agreed outcome within tolerances is in doubt with major issues apparent in several key areas. Urgent action is needed.	In year budget has -15% or more underspend variance.
Red	Recognised by UKRI and / or BEIS as achieving the agreed outcome within tolerances appears to be unachievable. There are major issues which at this stage do not appear to be manageable or resolvable	In year budget is overspent with +0.01% or more variance.
Blue	Recognised by UKRI as Completed. For example, a decision may have been that the project or the task is now complete.	
Turquoise	Recognised by UKRI as On Hold. For example, a decision may have been made to revisit the project or task later.	
Grey	Recognised by UKRI as Not yet identified.	
Black	Recognised by UKRI Stopped. For example, a decision may have been made to stop pursuing the project or the task.	

### 7.1.3 Benefit Type

By assigning a benefit a type, it enables the identification of emergent benefits that arise from project activities, as well as the monitoring and mitigation of dis-benefits, to ensure there is value for money from the expenditure of public money.

There are three types of benefit in this framework, defined in Table 6.

*Table 6 Benefit Types*

Type	Description
Expected	This benefit was identified at the start of the project as key driver to undertaking the project.
Unexpected	This benefit emerged during the design, development, or deployment of the project, rather than being identified at the start of the project
Disbenefit	The change identified is perceived as negative by one or more stakeholders, and it detracts from one or more of the associated strategic objectives

### 7.1.4 Benefit Measure

Wherever possible, economic and efficiency benefits should be valued in monetary terms. The assumptions and calculations associated with these benefit values should be clearly articulated and attached as a related document if appropriate.

This field in the profile is aligned with the HMT Green Book; this is to ensure we can effectively report on benefits in a harmonised way.

#### *7.1.4.1 Financial Benefit Measures*

Economic benefits will primarily be financial benefits which can be quantified in monetary terms. Government financial benefits can be categorised using the Green Book categories of cash releasing, and non-cash releasing (including cost avoidance). Cash releasing benefits (also known as cashable) are benefits that will directly reduce a departmental budget. Non-cash releasing benefits result in a departmental efficiency but not necessarily a budget reduction.

##### *7.1.4.1.1 Cost Avoidance Benefits*

Cost avoidance benefits are the avoidance of incurring future costs. Examples are provided in

Table .

#### 7.1.4.1.2 Cashable Benefits:

Financial benefits that include instances where: Current output is maintained but at lower input cost so that budgets can be reduced. Additional output or throughput is achieved but for the same input cost i.e. budgets are unaltered, but unit costs fall. These benefits can be measured in terms of the increased throughput or output, or in financial terms i.e. the value of the reduction in unit costs. Improving the quality of current activity with consequent savings elsewhere in the system. Increased productivity that enables savings to be achieved elsewhere –for example, staff time savings can allow staff to take on extra tasks that would otherwise have required the recruitment of additional staff. The crucial point here is that additional staff would otherwise have been recruited –if not, the benefit is an opportunity value, see below. As in the second category above, these benefits can be measured in terms of the additional activity undertaken or in financial terms, as the costs avoided from not having to employ new staff.

#### 7.1.4.1.3 Monetisable Non-Cashable Benefits

The value of staff time saved where there is no immediate saving in budgets, unit costs or costs avoided. Rather the staff time saved can be re-deployed to activities that would otherwise not have been undertaken. The result maybe an improvement in quality, outputs and outcomes.

#### 7.1.4.2 Non-Financial Benefit Measures

Other, non-financial benefits can be separated into quantitative and qualitative benefits, whereby quantitative benefits can be objectively measured using a numerical value. Qualitative benefits are those that are either difficult to measure or can be measured using a numerical value but is subjective, such as customer satisfaction or staff morale. Examples are provided in Table 7.



Table 7 Examples of Benefit Measures

Financial (Monetisable) Benefits			Non-Financial Benefits	
Cash Releasing	Cost Avoidance	Non-Cash Releasing	Qualitative	Quantitative
Reduction in FTE required for a team which enables a reduction in budget.	Elimination of future additional headcount through process improvements.  Elimination of a subcontract cost due to establishing internal capability.	Time savings due to process improvements but not a direct reduction in FTE; e.g. staff are redeployed to different activities.	Survey statistics, website analytics, application numbers.	Survey responses, case studies, success stories.

### 7.1.4.3 Risk Reduction or Legislative Requirement

When there is not a measurable benefit to an action, but it is considered necessary for reduction of risk (and that can be clearly articulated) or is a legislative requirement.

### 7.1.5 Balanced Scorecard Objective

Within UKRI, a balanced scorecard is being developed<sup>5</sup>, which outlines 12 key objectives aligned to four key areas. This scorecard is shown below in Figure 5. Projects are required to identify which objectives each benefit contributes towards.

What do we achieve for our stakeholders?	<b>OUTCOMES &amp; IMPACTS</b>	1a: Improving understanding of ourselves and the world around us 1b: Improving lives and increasing prosperity 1c: Addressing industrial and societal challenges (including COVID-19)
How our stakeholders experience us?	<b>OUR COMMUNITIES &amp; PARTNERS</b>	2a: Being a trusted steward and champion of the R&I system 2b: Supporting and developing a strong, diverse and inclusive R&I culture and environment 2c: Shaping an R&I system that gives everyone the opportunity to engage, contribute and to benefit
What we must excel at?	<b>OUR ORGANISATIONAL STRUCTURES &amp; PROCESSES</b>	3a: Identifying, incentivising and supporting people and their ideas across the UK 3b: Convening and catalysing ground-breaking R&I on a national and international scale 3c: Investing in and conducting R&I responsibly and effectively
How can we learn & create value?	<b>OUR RESOURCES, LEARNING &amp; GROWTH</b>	4a: Increasing the efficiency of our processes 4b: Becoming a more evidence-based organisation 4c: Attracting, supporting and empowering our staff

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Figure 4 UKRI Balanced Scorecard

### 7.1.6 Category and Benefit Recipient

#### 7.1.6.1 Benefit Recipient

Benefits are classified by the stakeholder group impacted by the realisation of the benefit. There are three primary stakeholder groups in this framework:

- Internal UKRI – UKRI as an organisation, and the employees of UKRI

<sup>5</sup> <https://ukri.sharepoint.com/sites/ukri/f>

- UKRI Communities and Partners – Those who apply for, and receive funding through UKRI, and the UK research community that is supported by UKRI activity
- External Stakeholders – The wider population of the UK and beyond, in terms of the UK economy, and the ability to address and overcome societal, industrial, and environmental challenges

It is not necessary to identify benefits from a project for each stakeholder group.

#### *7.1.6.2 Benefit Categories*

Additionally, benefits should be categorised. There are four primary categories identified for the UKRI framework, that use the acronym SEEK:

- Societal
- Environmental
- Economic
- Knowledge Based

This SEEK acronym is a move away from the more traditional PESTLE categorisation. This is intended to be adopted by the wider UKRI benefits community and has been developed in conjunction with the ISCF Benefits Lead.

It is useful to consider all four categories when developing a benefits map for a project, but it is not a requirement to identify benefits in each category.

#### *7.1.6.3 Summary*

The categorisation and classification of benefits in these ways are summarised with examples in Table 8 below.

*Table 8 Benefit Categories and Stakeholder Groups*

Category	Stakeholders		
	Internal UKRI	UKRI Communities and Partners	External Stakeholders
<b>Societal</b>	The culture within UKRI; staff well-being; ED&I within the organisation	The customer experience/satisfaction of engaging with UKRI; ED&I of the UKRI customer base; the reputation of UKRI as an organisation from a customer perspective	The impact UKRI funding has on addressing societal challenges including the maintenance and increase in health and wellbeing, widening ED&I and the Covid19 response and recovery
<b>Environmental</b>	Decreasing the environmental impact of UKRI as an organisation	Decreasing the environmental impact of following UKRI processes as a customer	The impact of UKRI funding on addressing environmental challenges
<b>Economic</b>	Business change activities that typically result in financial benefits - cost avoidance, cash releasing, non-cash releasing	Improved processes - time savings in accessing UKRI systems	The impact of UKRI funding on increasing economic growth
<b>Knowledge Based</b>	Increase skills in workforce. Increase in understanding of customer requirements. Increase in understanding the industrial, economic, environmental, and societal challenges faced by the UK	Information on UKRI opportunities and processes is clearly articulated to UKRI customers. The organisation is recognised as understanding and responding to the needs and challenges faced by the customer base and the UK.	Increased body of knowledge arising from UKRI funding

### 7.1.7 Linked Strategy Document and Linked Objectives

Additionally, each benefit should reference a UKRI strategy document, which provides some rationale for the investment into the project, and the objectives within that document that the benefit is contributing towards. This ensures there is a clear link between the project activities and a formal UKRI strategy and provides additional detail on the decision to fund the project, beyond that provided by the balanced scorecard.

**Our priority objectives for this year include:**

**Responding to global emergencies, we will:**

- inform and contribute to the national response to COVID-19 by continuing to fund research and innovation delivering impact within 12–18 months and deploying our capabilities to tackle the challenges presented by the pandemic
- support preparations for the 2021 United Nations Climate Change Conference of the Parties (COP26), so that researchers and innovators will influence the discussions.

**Enabling a dynamic, diverse and inclusive system of research and innovation, we will:**

- work collaboratively with the Department for Business, Energy and Industrial Strategy on a People and Culture Strategy
- develop an equality, diversity and inclusion programme that will deliver a research and innovation system 'for everyone, by everyone'
- reduce bullying and harassment in research and innovation, by bringing together funders and regulators to promote culture change and the adoption of institution-wide approaches to prevention
- work with communities across the UK, to hear their priorities for the future of research and innovation and how it affects their lives.

**Connecting international communities, we will:**

- set out an ambitious international offer for our partners and stakeholders in the UK and overseas, providing a clear direction for our international activities and opportunities for collaboration
- play our role in attracting and retaining global talent to the UK, including through our funding programmes and as an endorsing body for the Global Talent Visa
- maintain and grow key bilateral and multilateral relationships with the world's leading and emerging funding agencies for research and innovation through our UK teams and the UKRI offices in North America (US and Canada), Brussels, China and India.

**Strengthening networks across the research and innovation landscape, we will:**

- work in a more proactive and coherent way across councils to engage with industry and innovation leaders
- continue to invest in networks and programmes that support these stronger connections, such as the Connected Capability Fund (CCF), Prosperity Partnerships and Knowledge Transfer Partnerships.

*Figure 5 Priority Objectives taken from the UKRI Corporate Plan (2020)*

### 7.1.8 Benefit Assumptions

The assumptions associated with the benefit realisation and timing should be noted. E.g. It is assumed that reduced staff turnover within the team is an indicator of improved team morale; it is assumed that each employee of UKRI will access the new leave booking system a minimum of 8 times a year.

### 7.1.9 Benefit Risk

The risks associated with the benefit realisation and timing should be noted.

### 7.1.10 Benefit Dependencies

The dependencies of the benefit should be noted, along with any appropriate references for tracking purposes.

### 7.1.11 Cost Centre

For financial benefits, the cost centre where the benefit is anticipated to be realised should be noted.

### 7.1.12 Benefit Unit of Measure

This is the unit of the benefit measure. For financial benefits, this would be £. Wherever possible, benefits should be measured using a financial metric, and any conversions (e.g. between time and cost) should be documented.

### 7.1.13 Benefit Measure Description

This is the description of the benefit measure, which should include all pertinent information.

#### **7.1.14 Baseline Value of Benefit**

This is current value of the benefit. Depending on the measure of the benefit, this may be a process time, financial value, survey result, or current performance statistics. Clarity should be provided around the scope of the value, for example, where a process time is a factor, the elements of the process which are explicitly included, and those which are considered out of scope.

#### **7.1.15 Anticipated Benefit Value**

This is the target value for the benefit. This should be in the same units as the baseline value. Where a factor (e.g. process time) is converted to a financial value, both figures should be provided.

#### **7.1.16 Benefit Delivery Date**

This is the date the target value of the benefit is anticipated to be realised. This will likely be after the project has been completed and the intervention has been embedded into the business.

#### **7.1.17 Related documents**

Here, documents relating to the identification, definition and measure of the benefit need to be referenced and linked. This includes any details behind the calculation of the benefit measure and target value to ensure there is full transparency for everyone associated with the benefit.

#### **7.1.18 Benefit Owner**

The benefit owner is responsible for the realisation and measurement of the benefit throughout the project delivery and into BAU. They are required to approve the benefit profile and realisation plan, including ensuring the indicator data includes sufficient baseline and forecast data. The benefit owner should be based within the area of the organisation the benefit is anticipated to be realised, such that tracking, and realisation can continue once the project outputs are embedded within BAU.

#### **7.1.19 Owners (other)**

This field enables any subject matter experts that may be associated with the benefits or its measure to be identified. This enables consistency in data throughout project delivery and into Business as Usual.

### **7.2 Benefits Dictionary**

A Benefits Dictionary is the collation of all benefit profiles, which simplifies the identification of benefits that are associated with existing practices within the organisation.

For the development of major investment business cases, a list of benefits for economic appraisal has been developed, and these are included in Annex D.



## 8 Plan

In the Plan stage of the lifecycle, Benefits will be validated and prioritised. Project and Programme teams will ensure the business and users are ready for the transition to the new way of working enabled by the project outputs, and appropriate benefits measures and indicators will be selected. This incorporates work undertaken previously in identifying, quantifying and valuing benefits, with a focus on ensuring the measurement approach is efficient, effective and sufficient.

### 8.1 Artefact: Benefits Realisation Plan

In planning for benefits realisation, projects should identify the indicators and measures that will be monitored during and after the project delivery that demonstrate progress towards benefit realisation. Where appropriate, these indicators should have a baseline value and forecast projection, as well as a regularly updated actual value. This data is captured in the Benefit Realisation Plan. The template for a benefits realisation plan is provided in Annex C, with quality assurance detail provided in Table 9. The suite of indicators spanning from project delivery into business as usual provides confidence that the benefit is likely to be realised, and the expected timeline.

Table 9 Quality Assurance Matrix for a Benefit Realisation Plan

	7,8,9	4,5,6	1,2,3
	Good Practice	Acceptable	Improvements needed
Benefit Realisation Plan	Each benefit is associated with a suite of measures that will provide sufficient data to demonstrate progress towards the realisation of the benefit.	There are measures associated with each benefit, but additional measures may be required for a comprehensive data set	There are benefits without appropriate measures.
	The measures are fully baselined (where appropriate) and have a forecast that has been approved by the benefit owner and associated SMEs.	There are gaps in the baseline or forecast data, or the forecast has not been approved by the benefit owner and associated SMEs	There is limited data provided for the baselines and forecasts.
	The Benefit Realisation Plan is up to date and reflects the most recent reporting of data.	The Benefit Realisation Plan is being used, to record data, but does not reflect the most recent reports.	There is limited data provided on the realisation of the benefits.

#### 8.1.1 Indicators

Whilst it is important to value and appraise a benefit, in order to make effective and informed investment decisions, there are often multiple indicators that demonstrate the benefit is on track to being realised.

Benefits may have multiple indicators, in a range of types. For example, a benefit around increasing the effectiveness of a customer facing software system may be measured in financially, based on the time saved by the updated software, quantitatively based on the number and range of users, and qualitatively using a customer feedback system.

All indicators associated with a benefit should be included in the benefit realisation plan, and where required, subject matter experts needed to capture the information should be named.

#### *8.1.1.1 Leading Indicators*

Indicators that can be measured before the benefit is anticipated to be realised are known as leading indicators. They provide confidence that the project outcomes are on course to enable the benefits to be realised.

#### *8.1.1.2 Proxy Indicators*

Some benefits may not be directly measured in an efficient or effective way. In this case, indirect, or proxy, indicators can be used to evidence progress towards the realisation of the benefit. When this is the case, the assumptions around the link between the proxy indicators and the benefit should be clearly articulated in the benefit profile.



## 9 Realise

In the Realise stage of the benefits life cycle, Benefits are tracked and monitored on behalf of the benefit owner and SRO to ensure a constant focus on delivering outcomes as outlined within the business case; in line with the strategic objectives of UKRI.

Without effective monitoring processes in place, it will not be possible to properly validate that benefits have been realised. It also ensures that if projects are not delivering as planned, or the scope of projects change, then action can be undertaken to get projects back on track. Effective benefits management will enable project teams to flag up when benefits are off-track and escalate these through the project/programme governance structure. Benefit owners can then put in place remedial plans to ensure benefits are realised as per the Business Case.

At the same time as tracking benefits, any potential dis-benefits should also be observed and monitored, which may lead to a change in plans to mitigate against these extra costs to the business. It is possible that new benefits will be identified during project delivery, therefore the Benefits Realisation Plan should be updated to reflect this, and these emerging benefits should be quantified, monitored, tracked and reported.

### 9.1 Benefit Reporting Requirements

In its totality, reporting needs to state whether both the business change, i.e. the capability which enables benefits to be observed, and the subsequent benefits have been realised; at the scale and timescale set out within the business case.

The Benefit Realisation Plan provides a scorecard to enable tracking and monitoring of the benefits being delivered, both through direct measures of a benefit and by leading, proxy, or other key indicators that demonstrate sound progress towards the realisation of the benefits.

## 10 Review

Benefit Artefacts should be reviewed on a regular basis and when any changes are made. As the benefit identification and valuation and appraisal are intrinsically linked to the business case, they should be reviewed as part of the decision to make the investment.

In flight reviews should take place in each stage, phase or tranche of the project to confirm that:

- Planned benefits are on track to be realised, and understand the causes of variances from the forecast
- Emergent benefits are being identified
- Dis-benefits are being effectively mitigated
- The updated benefit forecast remains achievable
- Lessons learned are being captured and disseminated

- Continued investment is justified
- Benefits management is being applied efficiently and effectively.

### 10.1 OGC Gateway 5 Review

The OGC Gateway 5 Review<sup>6</sup> confirms that the benefits set out in the Business Case are being achieved and that the operational service (or facility) is running smoothly. The Review is repeated throughout the life of the service, with the first Review typically 6-12 months after handover to the new owner and a final Review shortly before the end of a service contract. The Review can also be used on a one-off basis, to check that a project has delivered its intended outputs.

Guidance on the OGC Gateway 5 Review is provided in the .pdf linked below in the footnote.



## 12 References

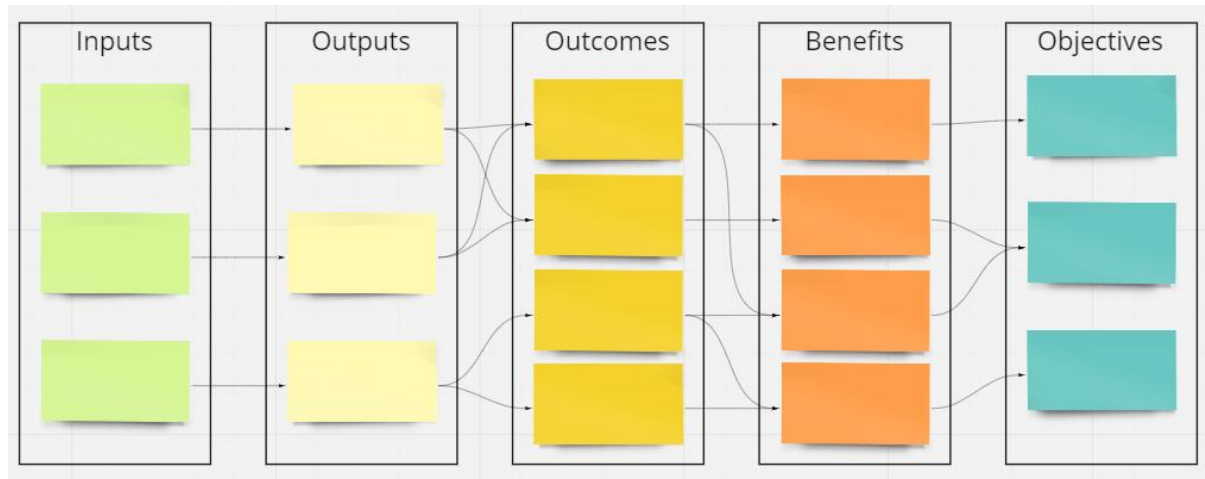
- [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/671452/Guide for Effective Benefits Management in Major Projects.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/671452/Guide_for_Effective_Benefits_Management_in_Major_Projects.pdf)
- <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>
- [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/947722/beis-monitoring-evaluation-framework.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/947722/beis-monitoring-evaluation-framework.pdf)

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## 13 Annex A: Benefit Map Template



Suggested Software: Miro, Microsoft Visio, Microsoft Power Point

## 14 Annex B: Example of Benefit Profile

Project Name	
Date	
Author	

Reference	Unique identifier for the benefit.
Title	Title of benefit.
Description	Description of benefit
Status	RAG Status. Please see the Benefits Management Framework for the UKRI RAG status definitions
Type	Is the benefit <u>expected</u> , <u>unexpected</u> , or a <u>dis-benefit</u> ? Please see the Benefits Management Framework for definitions and further details.
Benefit Measure	Based on HMT Green Book Guidelines: <u>Cash releasing or monetisable</u> ; <u>Monetisable but non cash releasing</u> ; <u>Cost avoidance</u> ; <u>Quantifiable but not monetisable</u> ; <u>Qualitative unquantifiable</u> .
Balanced Scorecard Objective	Referencing the Balanced Scorecard in the UKRI Corporate Plan; which categories does the benefit contribute to?
Category	Is the benefit <u>societal</u> , <u>environmental</u> , <u>economic</u> , or <u>knowledge</u> based? Please see the Benefits Management Framework for definitions and further details.
Benefit Recipient	Who is the benefit recipient - is it an <u>internal UKRI benefit</u> (including organisational and staff benefits), a benefit for <u>UKRI's communities and partners</u> , or will the <u>wider UK population</u> benefit?
Linked Documents	Are there any documents that provide additional rationale for the project being funded? E.g. strategy documents, audit papers.
Linked Objectives	Which objectives from the referenced document(s) does this benefit contribute towards?
Benefit Assumptions	What assumptions are being made in order for this benefit to be realised?
Benefit Risk	What are the main risks that would prevent this benefit from being fully realised?
Benefit Dependencies	Are there any key dependencies that this benefit is dependent on?
Cost Centre	Which costs centres are expected to benefit from financial benefits being realised?
Benefit Unit of Measure	The unit of the benefit measure.
Benefit Measure Description	The specific definition of the benefit measure
Baseline Value of Benefit	What is the baseline value for the benefit? This information is requested in more detail in the Benefit Realisation Plan.
Anticipated Benefit Value	What is the anticipated value of the realised benefit?
Benefit Delivery Date	When is the benefit expected to be realised? Please also provide an overview of the time line for the anticipated savings in the benefit realisation plan
Related documents	Upload files containing evidence and rationale for the baseline value, anticipated value, and benefit delivery date.
Benefit Owner	Who owns this benefit? The benefit owner is responsible for the realisation of the benefit (as captured in the benefit realisation plan) and who agrees the key details within this benefit profile.

<b>Owners (other)</b>		<i>Who else is associated with this benefit? Are there subject matter experts required to capture and/or ratify the forecast and reported values during realisation?</i>
<b>Narrative</b>		<i>Is there a narrative associated with this benefit that is not covered in the fields above?</i>

## 15 Annex C: Benefit Realisation Plan Example

Quantifiable Benefits:	FY20/21 Q1	FY20/21 Q2	FY20/21 Q3	FY20/21 Q4 ...etc
Benefit Value Profile - Forecast				
Benefit Actual				
Comments on changes to benefit forecast				
Benefit Indicator 1 Forecast				
Benefit Indicator 2 Forecast				
Benefit Indicator 3 Forecast				
etc				
Benefit Indicator 1 Actual				
Benefit Indicator 2 Actual				
Benefit Indicator 3 Actual				
etc				
Qualitative Benefits:	FY20/21 Q1	FY20/21 Q2	FY20/21 Q3	FY20/21 Q4
Benefit Indicator 1 Forecast				
Benefit Indicator 2 Forecast				
Benefit Indicator 3 Forecast				
etc				
Benefit Indicator 1 Actual				
Benefit Indicator 2 Actual				
Benefit Indicator 3 Actual				
etc				
	Year 1			
Narrative Review of Benefit Realisation				

## 16 Annex D: Economic Benefits Dictionary for Major Investment Economic Cases

A list of 24 benefits for the development of major investment business cases in research & innovation projects. These have been developed in conjunction with BEIS economists.

Impacts on the stock of knowledge	KNO1	Generation of new knowledge as a (quasi) public good, with <b>direct use, option and/or non-use value</b>
Impacts on UK R&D productivity and capability	RAD1	More efficient R&D infrastructure and processes, which <b>reduce the cost of R&amp;D activity</b>
	RAD2	Improvements in the capability of R&D infrastructure opens up new research/ innovation opportunities for users, <b>unlocking any benefits associated with this novel R&amp;D</b>
	RAD3	Established infrastructure or asset has <b>residual value</b> at the end of a project
	RAD4	Clustering of R&D activity leads to agglomeration and network effects, which <b>raises productivity</b>
	RAD5	Greater equality, diversity and inclusion in the research and innovation community, which <b>raises productivity</b>
	RAD6	Increased foreign investment or subsidisation (cash or in-kind) of UK R&D, which <b>reduces the cost of R&amp;D for the UK</b>
Impacts on UK R&D labour	LAB1	Skills and career development for UK R&D personnel and students, which <b>raises their productivity or productive potential</b>
	LAB2	Attraction of highly skilled and educated people from other parts of the world to the UK, which <b>raises the productivity of UK R&amp;D</b>
	LAB3	Better working conditions (including workplace safety) for R&D personnel, which <b>directly increases their welfare and/or raises their productivity</b>
Impacts on UK business	BUS1	Product innovation - UK firms (new or existing) create and produce <b>new, higher value goods or services</b>
	BUS2	Direct process innovation - UK firms (new or existing) learn of new or improved production or delivery methods, which <b>raises their productivity</b>
	BUS3	Wider technological diffusion and adoption (spillovers) - <b>UK firms made more productive</b> by adopting new product and/ or process innovations
	BUS4	The UK develops expertise in emerging technology areas, securing more internationally mobile or foreign investment, which means <b>higher value added work/ wages for UK workers</b>



Impacts on UK society	SOC1	National security benefits - acquired knowledge and innovations improve the UK's national security, <b>protecting the welfare of the nation and supporting it to realise its future growth potential</b>  * Note, R&D-affiliated infrastructures can directly provide a national security service (e.g. the UKRI Airborne Laboratory being deployed to deal with natural disasters)
	SOC2	Public health benefits - acquired knowledge and innovations <b>protect or improve the health and wellbeing of the nation</b>
	SOC3	Environmental benefits - acquired knowledge and innovations help protect and develop our natural capital and environment, <b>delivering direct value to users of the environment and non-use value</b>  * Note, interventions may have direct environmental benefits where they improve the environmental performance of R&D operations, e.g. reducing carbon emissions of infrastructures.
	SOC4	Equality benefits - acquired knowledge and innovations help address inequality, <b>raising the welfare of the least well off and helping to ensure all individuals realise their economic potential</b>
	SOC5	New knowledge from scientific research and/ or improved awareness, understanding and trust of science/ technology, <b>improves consumer decision making and raises welfare</b>
	SOC6	Growth in the value of UK cultural and heritage assets, including greater public accessibility, <b>brings welfare to the general public who can enjoy these assets and possibly generates tourism with its associated economic benefits</b>
	SOC7	<b>Public enjoyment of scientific discussion and outputs</b> via mediums such as art, movies, books, podcasts, etc. This includes where science inspires these consumer goods.
Impacts on UK policy	POL1	<b>More efficient and effective policy making and public services</b> , resulting from the application of new knowledge and innovations  * Including in this is better R&D policy and developing standards/ regulations around new technologies
	POL2	Science diplomacy leads to stronger international partnerships and foreign relations, which <b>potentially brings about economically productive collaborations and trade</b>
Impacts on a UK region	REG1	Locating new R&D activity in a region of the UK promotes the development of that region with <b>direct, indirect and induced GVA and employment impacts</b>

## 17 Annex E: Reforming Our Business Portfolio Benefits Definitions

Balanced Scorecard Objective	RoB Primary Benefit		RoB Common Benefits	
4a	1	Cost Reduction	1.1	Reduction in FTE from current levels
			1.2	Reduction in future FTE requirements or costs
			1.3	Reduction in process, system, infrastructure, or running costs
			1.4	Cost avoidance from risk reduction
	2	Time Savings	2.1	Process Time Savings
			2.2	Reduction in time spent on low value add / inefficient processes or activities
	3	Increase in productivity and capability	3.1	Ability to move resources between services
			3.2	Ability to respond rapidly to unexpected change
			3.3	Increase in user output, system capacity, or service levels
			3.4	Reduction in number of errors / failures / issues
			3.5	Increase in tools and resources
			3.6	Increase in role specific training uptake
4b	4	Increase in quality and use of data	4.1	Increase in use of data in decision making

			4.2	Increased quality and consistency of reporting
			4.3	Increased quality and consistency in data capture & storage
			4.4	Increased linkage and integration of data and information systems across UKRI
4c	5	Increased Staff Satisfaction, Well Being, and Morale	5.1	Increased levels of stakeholder satisfaction
			5.2	Increase in training & development opportunities / uptake of opportunities
			5.3	Increased accessibility to information and systems
			5.4	Increased clarity and awareness of roles, responsibilities, and processes
			5.5	Increased ability to recruit high quality candidates to meet UKRI needs
			5.6	Increased ED&I
			5.7	Timely and consistent messaging
			5.8	Shared, inclusive vision and value of staff
			5.9	Increase in levels of staff welfare & wellbeing
2a	6	Improved reputation of UKRI	6.1	Increased ability to respond to BEIS robustly and in a timely manner
			6.2	Applying frameworks and delivering initiatives inline with civil service guidelines
			6.3	The systems and processes within UKRI are found to be robust, reliable, efficient, and effective by UKRI communities and partners
3c	7	Risk Reduction	7.1	Compliance with legislation

			7.2	Maintenance of a safe working environment
			7.3	Increased awareness of policies & practices
			7.4	Reduction of risk to UKRI Operations
			7.5	Reduction of risk of fines, lawsuits, cyber attacks, security breaches etc

## 18 Annex E: Benefit Management Resources

### 18.1 UKRI Project Delivery Profession

[Benefits SIG Sharepoint Site](#)

[UKRI Project Delivery Profession Site](#)

### 18.2 Infrastructure and Projects Authority

[IPA Guide for Effective Benefits Management in Major Projects](#)

[IPA Cost Estimating Guidance](#)

### 18.3 Project Management Institute

[Benefits Realization Management, A Practice Guide](#)

[Thought Leaders: Establishing benefit ownership accountability](#)

### 18.4 Association for Project Management

[A guide to using a benefits management frameworks](#)

[APM Learning Modules](#)

### 18.5 Government Guidance

[OGC Gateway 5 Review](#)

[HMT Green Book](#)

[HMT Business Case Guidance for Projects](#)

[HMT Business Case Guidance for Programmes](#)

[HMT Magenta Book \(Evaluation\)](#)

[HMT Aqua Book \(Analysis\)](#)

### 18.6 Benefits Management Webinars

[APM Introduction to Benefits Mapping](#) – Judge Matharu webinar

[Achieving effective benefits management in major projects](#) – Laura Geddes-Brock and Hannah Bullingham webinar

[Benefits and Value Management](#) – Dr Hugo Minney webinar

### 18.7 Other

[UK Aid Theory of Change](#)

[Lit Review Theory of Change for DFID](#)

[The Information Paradox - John Thorp](#)

### 18.8 UKRI Resources

[AHRC Understanding the Value of Arts and Culture](#)

### 18.9 Training

[APMG Benefits Management](#)

[Managing Successful Programmes](#)

[Management of Portfolios](#)

## NPRV Benefits Report

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### Purpose

1. This paper provides an update on the status of the benefits contained within the New Polar Research Vessel (NPRV) business case and makes two recommendations designed to increase the likelihood of successful benefit delivery.

### Summary

2. The business case sets out 20 benefits, whose current status is:

Delivered	3
Forecast to be delivered	13
Can be delivered	3
Item will be 95% delivered	1
Total	20

3. The project is on track to deliver its intended benefits. Full details are included in the attached *Benefit Plan & Profile for New Polar Research Vessel*.

### Discussion and Recommendations

4. The benefits should be updated to reflect the latest information. The benefits were written in 2014 and last updated in 2016. An IPA action exists to update the full business case in 2019 including the revision of the expected benefits. For example:
  - The item 95% delivered relates to the number of crew required for the new ship. Current plans have the number of crew reduced from 90 to 60, where we had targeted a reduction to 58. A strategic decision was made to increase the number of crew by 1 FTE in each of the two crews to support 24 hour a day science operations. This action increases the overall science benefits of the vessel; and
  - Originally we did not identify any benefits linked to public engagement with either the ship or UKRI research outcomes.
5. The three AMBER recommendations are grouped around the theme of vessel utilisation and science optimisation. Whilst plans are already in place to increase our interaction with NERC marine science planning it is recommended that the NERC Science Director is asked to appoint a representative to the portfolio board to ensure all benefit owners are included and increase the profile of benefit delivery within NERC Science and Innovation.



Stakeholder group	Benefit type	Benefit description	Planned benefit action(s)	Benefit ID	Intermediate or end benefit?	RAG	Benefit owner	KPIs / Indicators used to track progress	Key assumptions	Other dependencies	Information source	Measurement lead	Costs	Comments
Which stakeholder group does the benefit best align to?	Which benefit type does the benefit fall under? - See guidance for definitions & examples	More detailed description of the benefit. (Used in Highlight report)	A short high level descriptor. (Used in Highlight report)	Unique identifier for each benefit (Used in the Highlight report)	An intermediate benefit leads to an end benefit (Used in Highlight report)	Rating for whether the benefits is on track to be delivered (Only complete in delivery stage)	Named individual who has been delegated responsibility for the realisation of the benefit from the SRO	KPIs now or in the future that will be used to check if on track to realise the benefit	What are you assuming will happen for the benefit to be realised?	Cross reference to other benefits or list any external dependencies	System or information sources required for measurement	Individual leading on the measurement of the benefit and indicators	Any costs associated with measurement	Any points to note
UK Scientists represented by NERC Science Board	Frontier Science Benefits	Satisfying the current and predictable future demand of research communities in the UK for a world class marine research platform  And  Opening up new remote locations for research by providing science mission duration of 60 days  And  Ability to conduct science in extreme conditions using the hanger enclosed Moonpool	Design and build of new polar research vessel	NPRV_BEN_01	NERC Science Board approval of science case				Board approve science case	None	Science Board Minutes		/A	Approved in 2014, Science case was part of the Business case and went to Gateway 2.
				NPRV_BEN_02	Ship Statement of Requirements approved by lead science user and science consultation group. Includes: - CTD - Low noise signature - Oceanographic winch suite - Scientific Moonpool - Deployment of large remotely-operated autonomous vehicles - Range 24,000 nautical miles - Ice breaking capability : 3 knots through 1m ice				Acceptance of Sea Trials	None	Test and Acceptance Documentation		BAS Resource Cost - Ship in Service Plan	April 2015 - this was part of the tender pack. SOR was frozen when it went out to tender.  Benefits wont be realised until the sea trials commence in 2018.
				NPRV_BEN_03	Ship accepted as meeting SOR			Independent evaluation by the NERC Marine facilities Advisory Board	Ship accepted by NERC	None	Building Contract		Ship Project Management Budget	31st October 2018 - formal contract will be signed by Houlder, AJ and PB to confirm acceptance.
			Design and purchase of containerised laboratory systems, so future lab requirements can be 'plug and play'	NPRV_BEN_04	Three labs available for use by 2019 one of which is seismic capable				Labs are compatible for the Ship	None	Acceptance Documentation and Sea trails		AP Project Management Ship in Service	2019
			Development of 42 meter sediment piston corer Ship designed as a platform for Arctic science	NPRV_BEN_05	Corer passes sea trials test				Corer passes Sea trails	None	Test and Acceptance Documentation		Ship in Service	Corer been built and accepted by manufactures.  To happen in Spring 2019.
			Ship designed as a platform for Arctic science	NPRV_BEN_06	Ship to provide two 15 day cruises in the Arctic within first two years of operation				Ship to be programmed for Arctic missions	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	There is a Northern hemisphere science trials in the 1st year and the rehearsal year.
UK Scientists represented by NERC Science Board	Frontier Science Benefits	Providing a platform for leading edge multi-discipline polar marine science; and Strengthening UK training, skills, opportunities and capabilities by ensuring the ship is large enough to carry doctoral students	New ship will have 60 scientist berths	NPRV_BEN_07	Average occupancy rate, during science missions, 80%			Independent evaluation by the NERC Marine facilities Advisory Board	Cruise planned to maximise Ships Capability	Post Cruise review Reports	Cruise Planning Review Group		NERC BAU	Ship has been designed for 60 berths  Why do we need 80% occupancy? What value does it add?
UK Scientists represented by NERC CE	Frontier Science Benefits	Providing 150 'science days' in a typical year	Provision of containerised logistics handling at Rothera	NPRV_BEN_08	Reduction in mob/demob time at Rothera from 4 to 2 days by 2022			Forward plan and historic data agreed by BAS with NERC CE at CAB meeting	Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	Amber, This can not be tested until the Rothera wharf is complete and all of the associated container handling systems and processes are in place. 2020 earliest.



Stakeholder group	Benefit type	Benefit description	Planned benefit action(s)	Benefit ID	Intermediate or end benefit?	RAG	Benefit owner	KPIs / Indicators used to track progress	Key assumptions	Other dependencies	Information source	Measureme nt lead	Costs	Comments
Which stakeholder group does the benefit best align to?	Which benefit type does the benefit fall under? - See guidance for definitions & examples	More detailed description of the benefit. (Used in Highlight report)	A short high level descriptor. (Used in Highlight report)	Unique identifier for each benefit (Used in the Highlight report)	An intermediate benefit leads to an end benefit (Used in Highlight report)	Rating for whether the benefits is on track to be delivered (Only complete in delivery stage)	Named individual who has been delegated responsibility for the realisation of the benefit from the SRO	KPIs now or in the future that will be used to check if on track to realise the benefit	What are you assuming will happen for the benefit to be realised?	Cross reference to other benefits or list any external dependencies	System or information sources required for measurement	Individual leading on the measureme nt of the benefit and indicators	Any costs associated with measurement	Any points to note
			Secure additional logistics capability when affordable (another ship or aircraft)	NPRV_BEN_09	Annual Cruise plan has an average of 150 science days in 2021/22 and 2022/23				Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	Amber, as limited availability of other ships and aircraft.
NERC BEIS FCO MOD Security Council represented by the BAS Review Group	Greater geographic coverage and continuing presence	Secure the UK regional presence in the Southern Atlantic by ensuring the new vessel and station arrangements will enable access to, and potential scientific study of, every part of the British Antarctic Territory and South Georgia & the South Sandwich Islands.  And  Greater geographic coverage.	Work to be planned to ensure operations can continue with minimum disruption	NPRV_BEN_10	The continuous, safe occupation of Antarctica by UK nationals				N/A	N/A	Minutes of the BAS review Group Meeting		N/A	
				NPRV_BEN_11	Production of Rothera Science and Operations Impact Plan				N/A	N/A	Minutes of the BAS review Group Meeting		N/A	
			Upgrade of marine facilities at Rothera	NPRV_BEN_12	New ship is able to tie up and discharge cargo at Rothera and KEP and via the cargo tender at Signy and Bird Island				Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	
			Upgrade of marine facilities at King Edward Point						Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	
			Upgrade of facilities at Signy						Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	
			Upgrade of facilities at Bird Island						Ship visits Rothera in 2022 and ongoing	BAS operational Programme Other ALI Work streams	NERC Ships Cruise Plan		NERC BAU	
			Improved search and rescue capability through the inclusion of helicopter facilities	NPRV_BEN_13	New ship is rated helicopter capable by Lloyds Register				Ship accepted by NERC	None	Building Contract		Ship Project Management Budget	
			The vessel should have the capability to remain in the Southern Atlantic over the Antarctic winter.	NPRV_BEN_14	New ship is rated Polar Class 5 (PC5) by Lloyds Register Cargo volume 2,400m3 Aviation fuel 550m3				Ship accepted by NERC	None	Building Contract		Ship Project Management Budget	
NERC Council	Spend-to-Save benefits	The cost of Antarctic logistics must be contained within the Antarctic and Logistics partition of the UK Science Budget:  - Total ship operating costs will be reduced by 20% - Drummed fuel use will be partly replaced by cheaper bulk fuel  And  Minimise environmental impact	Replace two ships with one	NPRV_BEN_15	Crew efficiency: Number reduced from 90 to 58 by 2022/23					The plan to dispose of the two ships happens according to the ship in service plan	BAS HR		BAS BAU	Reduced to 60.
				NPRV_BEN_16	Fuel efficiency: Fuel reduced from 6,300 to 6,000 metric tonnes				N/A	N/A	N/A	SDA Master	BAS BAU	Awaiting Sea trials in 2019
				NPRV_BEN_17	Cost efficiency: RRS Shackleton lease cost reduced from £1.5M to £0M.				Shackleton is disposed of as in the SIS plan	BAS operational Programme Other ALI Work streams	BAS Financial report - CARP		ES Shackleton Disposal WS.	ES Lease ends July 31st 2019.
				NPRV_BEN_18	Cost avoided: Maintenance cost reduced from an annual forecast of £6M to £4M				N/A	N/A	BAS Financial report - CARP		BAS BAU	Will be a step reduction after ES lease expires and then when JCR is sold in summer 2020.
			Purchase of bulk fuel store for Halley enabling a reduction in drummed fuel	NPRV_BEN_19	Cost Saving: Annual cost of Halley VI fuel reduced from £640 to £200k  Reduction in mob/demob time at Halley by an annual average of 3 days from 2021									On hold pending Halley decision This workstream has changed significantly so this benefit needs to be redefined.
			The ship will use light marine gas oil	NPRV_BEN_20	Ship acceptance				N/A	N/A	N/A	N/A	N/A	Ship is designed for light marine gas oil.



AMPB: June 2019

Item 5: NPRV Board Check Point

Author:

**PAPER 19/09**

## NPRV Board Check Point

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### Purpose

1. This paper provides an update on our assurance activities connected to the New Polar Research Vessel (NPRV) programme.

### Summary

2. Following our last Infrastructure Project Authority (IPA) review in August 2018 we agreed to implement 22 actions in response to their four recommendations. In our opinion, the four recommendations have been addressed. Internal Audit have been asked to provide independent verification and a verbal update will be provided to the board, ahead of their formal report due later in June.
3. One of the recommended actions was to 'Update NPRV Business Case to reflect current position'. The paper sets out the material changes for the board.
4. The business case sets out 20 benefits, the project is on track to deliver its intended benefits. During Mays' NPRV workshop attendees were asked to review the benefits and consider what additional benefits were missing.
5. The programme director has suggested the next IPA assurance review is held in May 2020.

### Recommendations

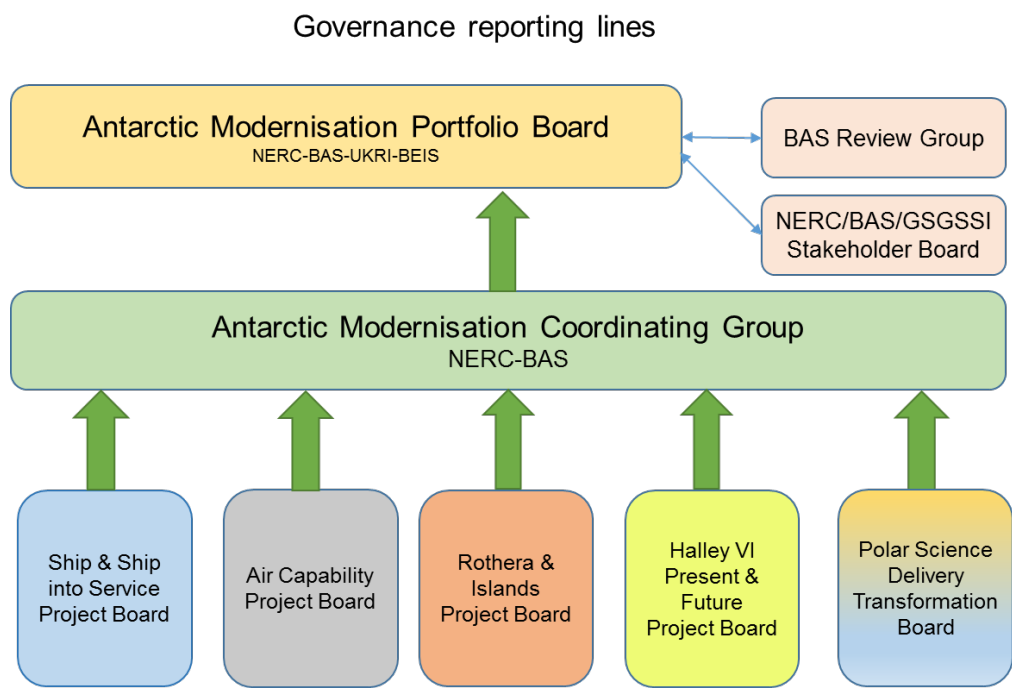
6. The board are asked to:
  - a. **NOTE** performance against the IPA recommendations and GIAA report outcomes;
  - b. **APPROVE** the NPRV Business Case updates;
  - c. **APPROVE** the additions and amendments to the Benefits;
  - d. **DECIDE** the date of the next IPA assurance review.

### IPA Recommendations

7. We developed 22 actions in response to the four IPA recommendations. 21 actions have been fully or partially completed. Where an action is partially completed, it is because the project team have determined an alternative solution or reduced frequency is more appropriate. One action has a due date of September 2019. In our opinion, the four recommendations have been addressed.

Business Case Update

8. Appendix A details the full list of changes made to the business case. Most of the changes update names, the creation of UKRI and revised project management and risk processes. There are two material changes, which I have pulled out into the body of this paper:
- The amended portfolio governance structure implemented in autumn 2018, para 9 refers; and
  - Additions and amendment to the benefits, paras 10 refers.
9. Figure 1 details the governance structure agreed in September 2018.



10. Table 1 document the benefits. The eleven original benefits remain valid. Two have been completed and the remaining nine are highly likely to be delivered.
11. We are recommending the addition of two new benefits:

Spend to save	Structured approach to operational resilience
Public engagement	Enable greater public engagement

12. Three of the Achievement Indicators require updating,
- a) the board is asked for help in reframing the first indicator (marked in red) to reflect quality rather than quantity of science days;
  - b) the Arctic Science indicator (in green) has been amended to reflect that it is the projects responsibility to make the ship available for Arctic research, but it is a NERC Science decision on whether it wishes to conduct an arctic research cruise in this period; and
  - c) The ship technical data has been amended (in blue) to reflect changes made in the design spiral since 2015.

13. The benefits are listed in table 1 below.

TABLE 1

Benefits Management Plan				
Category	Benefit 2019 V5.0	Achievement Indicator	Owner	Status (RAG)
Scientific	Satisfying the demand of research communities in the UK for a world-class marine research platform	Ship to provide -450 science days in first three full years of operation - be awarded 15 barter point on the international scale	Jane Francis	●
Scientific	Providing a platform for leading-edge, multi-discipline marine science  Strengthening UK training, skills, opportunities and capabilities  Attraction and retention of talent at BAS	Ship to provide: • Low Noise signature • Seismic survey capable using containerised systems • Multi-beam and sub-bottom profiling. • Oceanographic winch suite. • Large CTD handling. • Subsea coring. • 4m x 4m scientific moonpool and enclosed science hangar. • Over- the-side handling of scientific equipment. • Deployment and recovery of large remotely-operated and autonomous marine vehicles (e.g. Autosub and ISIS). • Permanent and flexible laboratory spaces. • Space and docking stations for portable/containerized laboratories.		●
Scientific	Capability to provide a platform for Arctic science	Ship to provide two 15 day cruises in the Arctic within first two years of operation To develop a five year plan for the vessel which clearly demonstrates that the ship is available for two 15 days cruises in the Arctic		●
Antarctic presence	Maintaining the UK regional presence in the Southern Atlantic	Ship to visit all five stations within first two years of operation Ship to provide: • Heli-deck and hangar to support two Eurocopter EC365 N3 Helicopters		●
Antarctic presence	Technical performance of the ship in relation to the science demand;	Ship to provide: • <del>80 days endurance</del> including 60 days in Polar Regions. • 60 days endurance • Range <del>24,000</del> 19,000 nautical miles. • 13 knot economic cruising speed. • Ability to support complex multi-disciplinary scientific missions in the Polar Regions. • Ice breaking capability – 3 knots through 1m ice. • Accommodation for <del>28</del> 30 officers and crew. • Accommodation for an additional <del>62</del> 60 personnel. • Cargo volume - <del>2400m3</del> 2150m3. • Cargo handling - 50 tonnes @ 18m reach and 20t @ 33m, self-sustaining for logistics and science mobilisation. • Aviation fuel cargo tank volume (cargo) <del>550 m3</del> (AVTUR with flash point 38°C) 660m3. • Aviation fuel cargo in drums (up to 2000 in number).		●
Antarctic presence	Ensure effective UK engagement in COMNAP (Council of Managers of National Antarctic Programmes)	Active attendance at CONMAP seminars in 2015, 2016, 2017, 2018		Complete
Spend to save	Providing a research capability which is matched to current and future UK priorities, with corresponding economic impact	Science Case approved by the NERC Science and Innovation Strategy Board as fit for purposed before Statement of requirement is complete in March 2015		Complete
Spend to save	Minimise long-term maintenance cost	Whole life maintenance cost to be less than £225m		●
Spend to save	Operational efficiency of the ship	Cost of Ship Operations to be less than 80% of 2014/15 baseline equivalent cost of the current two vessels.		●
Spend to save	The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	There are three headline infrastructure efficiencies planned: - Implement cargo containerisation - Improve heating efficiency at Rothera - Improve MGO storage		●
Spend to save	Minimise environmental impact	Ship to use only light marine gas oil		●
Spend to save	Structured approach to operational resilience	Implementation of the predictive and planned maintenance system Maximo		●
Public engagement	Enable greater public engagement	- Stimulate science-industry engagement - Increased public awareness of BAS and NERC - Add to UK Government and regional campaigns, like: - Polar explorer - Year of engineering - GREAT - Apprentices - Northern Powerhouse - Liverpool's Year of Environment Campaign - Wirral Borough of Culture 2019 - Hull launch event (Reach over 1 bn) 679 online articles, 289 broadcast pieces & 23 print – 26% of total coverage		●

**Table 13** details the benefits plan. Benefits are monitored by the Programme board.

Table 13: Benefits Management Plan				
Category	Benefit 2019 V5.0	Achievement Indicator	Owner	Status (RAG)
Scientific	Satisfying the demand of research communities in the UK for a world-class marine research platform	Ship to provide -450 science days in first three full years of operation - be awarded 15 barter point on the international scale	Jane Francis	●
Scientific	Providing a platform for leading-edge, multi-discipline marine science  Strengthening UK training, skills, opportunities and capabilities  Attraction and retention of talent at BAS	Ship to provide: • Low Noise signature • Seismic survey capable using containerised systems • Multi-beam and sub-bottom profiling. • Oceanographic winch suite. • Large CTD handling. • Subsea coring. • 4m x 4m scientific moonpool and enclosed science hangar. • Over- the-side handling of scientific equipment. • Deployment and recovery of large remotely-operated and autonomous marine vehicles (e.g. Autosub and ISIS). • Permanent and flexible laboratory spaces. • Space and docking stations for portable/containerized laboratories.		●
Scientific	Capability to provide a platform for Arctic science	To develop a five year plan for the vessel which clearly demonstrates that the ship is available for two 15 days cruises in the Arctic		●
Antarctic presence	Maintaining the UK regional presence in the Southern Atlantic	Ship to visit all five stations within first two years of operation Ship to provide: • Heli-deck and hangar to support two Eurocopter EC365 N3 Helicopters		●
Antarctic presence	Technical performance of the ship in relation to the science demand;	Ship to provide: • 60 days endurance • Range 19,000 nautical miles. • 13 knot economic cruising speed. • Ability to support complex multi-disciplinary scientific missions in the Polar Regions. • Ice breaking capability – 3 knots through 1m ice. • Accommodation for 30 officers and crew. • Accommodation for an additional 60 personnel. • Cargo volume - 2150m3. • Cargo handling - 50 tonnes @ 18m reach and 20t @ 33m, self-sustaining for logistics and science mobilisation. • Aviation fuel cargo tank volume (cargo) 660m3. • Aviation fuel cargo in drums (up to 2000 in number).		●
Antarctic presence	Ensure effective UK engagement in COMNAP (Council of Managers of National Antarctic Programmes)	Active attendance at CONMAP seminars in 2015, 2016, 2017, 2018		Complete
Spend to save	Providing a research capability which is matched to current and future UK priorities, with corresponding economic impact	Science Case approved by the NERC Science and Innovation Strategy Board as fit for purposed before Statement of requirement is complete in March 2015		Complete
Spend to save	Minimise long-term maintenance cost	Whole life maintenance cost to be less than £225m		●
Spend to save	Operational efficiency of the ship	Cost of Ship Operations to be less than 80% of 2014/15 baseline equivalent cost of the current two vessels.		●
Spend to save	The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	There are three headline infrastructure efficiencies planned: - Implement cargo containerisation - Improve heating efficiency at Rothera - Improve MGO storage		●
Spend to save	Minimise environmental impact	Ship to use only light marine gas oil		●
Spend to save	Structured approach to operational resilience	Implementation of the predictive and planned maintenance system Maximo		●
Public engagement	Enable greater public engagement	- Stimulate science-industry engagement - Increased public awareness of BAS and NERC - Add to UK Government and regional campaigns, like: - Polar explorer - Year of engineering - GREAT - Apprentices - Northern Powerhouse - Liverpool s Year of Environment Campaign - Wirral Borough of Culture 2019  - Hull launch event (Reach over 1 bn) 679 online articles, 289 broadcast pieces & 23 print – 26% of total coverage		●



## NPRV Benefits Report

### Purpose

1. This paper provides an update on the status of the benefits contained within the New Polar Research Vessel (NPRV) business case and makes two recommendations designed to increase the likelihood of successful benefit delivery.

### Summary

2. The business case sets out 13 benefits, whose status is detailed in **Annex A**.

Delivered	
On track to be delivered	
Can be delivered	
Items will be delivered to 95%	
Total	

TABLE 1

3. The project is on track to deliver its intended benefits. Full details are included in the attached Benefit Report in **Annex A** for New Polar Research Vessel.

### Discussion and Recommendations

4. As the programme begins to move to the operational phase (see image 1) and benefits for NPRV are beginning to be realised, the programme has been working with benefits owners to:
  - a. Measure Track and Report on Benefits to date
  - b. Formally sign-off benefits responsibilities to Benefits Owners
  - c. Agree and Implement mitigating action for delayed benefits
  - d. Ensure benefits that can be are transitioned into BAU
  - e. Identify and monitor emerging benefits

### Review Performance

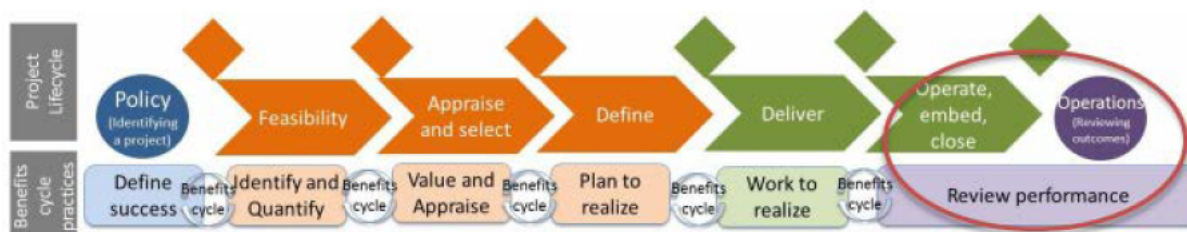


IMAGE 1

5. **Annex A and B** details the benefits reporting and realisation timeline. It is recommended to the board:
  - a. To **APPROVE** the status of the benefits set out in **Annex A**.
  - b. To **NOTE** that open benefit will be tracked by the benefit owner and reported on in the set timeline detailed for each benefit, **see Annex B**. This information will feed into the Post Implementation Review after project closure. Once the vessel is science commissioned by NERC, then the reporting of the benefits will endeavour to align with the annual reporting for the NERC National Capability's Benefits Realisation Plan.
6. IF the ship science commissioning is further delayed THEN there will be a consequential delay in the realisation of the many of the research related benefits.














## Annex A Benefits Reporting

Category	Outcome	Achievement Indicator (baseline?)	Owner	Status (RAG)	Current performance status (Target)	Current Status
Scientific	Satisfying the demand of research communities in the UK for a world-class marine research platform	World Class Science of high impact using frontier science capabilities of the new ship subject to science funding.	Jane Francis		Announcement of Opportunities under development.	A science user engagement group has been established along with a robust engagement strategy which will facilitate continued dialogue with the science community to ensure their demands are satisfied
	Providing a platform for leading-edge, multi-discipline marine science  Strengthening UK training, skills, opportunities and capabilities  Attraction and retention of talent at BAS	Ship to provide:				The ship as currently planned and constructed will provide the platform for this benefit. The extent to which the outcomes will be realised will be tested during the Trials phase.
		• Low Noise signature			Passed sea trial Nov 2020	
		• Seismic survey capable using containerised systems			To be tested 2022	
		• Multi-beam and sub-bottom profiling.			To be tested summer 2021	
		• Oceanographic winch suite.			To be tested summer 2021	
		• Large CTD handling.			To be tested 2022	
		• Subsea coring.			To be tested 2022	
		• 4m x 4m scientific moonpool and enclosed science hangar.			To be tested summer 2021	
		• Over- the-side handling of scientific equipment.			To be tested summer 2021	
		• Deployment and recovery of large remotely operated and autonomous marine vehicles (e.g. Autosub and ISIS).			To be tested 2022	
		• Permanent and flexible laboratory spaces.			To be tested 2022	

		<ul style="list-style-type: none"> <li>• Space and docking stations for portable/containerized laboratories.</li> </ul>			Passed sea trial Nov 2020	
	Capability to provide a platform for Arctic science	To develop a five-year plan for the vessel which clearly demonstrates that the ship is available for world class science in the Arctic when science funding is available. World Class Science of high impact using frontier science capabilities of the new ship subject to science funding.			5-year plan developing between logistics and NERC Marine science planning	BAS have now established a 5 year look ahead for large scale logistic requirements (including major project logistics integration where appropriate). NERC and BAS are establishing a working group to develop a new mechanism to assist long term planning which will support BAS' overall long-term Ship scheduling by balancing and prioritising all commitments required to be supported.
Antarctic presence	Maintaining the UK regional presence in the Southern Atlantic	Ship to visit all five stations within first two years of operation			Current ship schedule incorporates visits to all Antarctic Stations in Season 21/22	The ship as currently planned and constructed will provide the platform for these outcomes.
	Technical performance of the ship in relation to the science demand;	Ship to provide:				The ship as currently planned and constructed will provide the platform for this benefit. The extent to which the outcomes will be realised will be tested during the Trials phase, commencing in July 2020 April 2021. Initial indications are that Ship will be less fuel efficient than originally expected. Ship needs to be tested in all conditions to be able to give an accurate picture of performance.
		<ul style="list-style-type: none"> <li>• Heli-deck and hangar to support two Eurocopter EC365 N3 Helicopters</li> </ul>			Helicopter trials to be completed prior to South deployment	
		<ul style="list-style-type: none"> <li>• 60 days endurance</li> </ul>			Passed sea trial Nov 2020	
		<ul style="list-style-type: none"> <li>• Range 19,000 nautical miles.</li> </ul>			Passed sea trial Nov 2020	
		<ul style="list-style-type: none"> <li>• 13 knot economic cruising speed.</li> </ul>			Passed sea trial Nov 2020	
		<ul style="list-style-type: none"> <li>• Ability to support complex multi-disciplinary scientific missions in the Polar Regions.</li> </ul>			To be tested 2022	
		<ul style="list-style-type: none"> <li>• Ice breaking capability – 3 knots through 1m ice (ice permitting).</li> </ul>			To be tested 2022	

		<ul style="list-style-type: none"> <li>• Accommodation for 30 officers and crew.</li> <li>• Accommodation for an additional 60 personnel.</li> <li>• Cargo volume - 2150m3.</li> <li>• Cargo handling - 50 tonnes @ 18m reach and 20t @ 33m, self-sustaining for logistics and science mobilisation.</li> <li>• Aviation fuel cargo tank volume (cargo) 660m3.</li> <li>• Aviation fuel cargo in drums (up to 2000 in number).</li> </ul>			Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
					Passed sea trial Nov 2020	
	Ensure effective UK engagement in COMNAP (Council of Managers of National Antarctic Programmes)	Active attendance at CONMAP seminars in 2015, 2016, 2017, 2018, 2019, 2020			Complete	Continued engagement with CONMAP in 2019, 2020, 2021
Spend to save	Providing a research capability which is matched to current and future UK priorities, with corresponding economic impact	Science Case approved by the NERC Science and Innovation Strategy Board as fit for purposed before Statement of requirement is complete in March 2015			Completed	Engagement with UK science community continues to ensure SDA remains state of the art and relevant to the needs of science.
	Minimise long-term maintenance cost	Whole life maintenance cost to be less than £225m			£225m over 25-year life = £9m baseline.  Maintenance forecast £5-6m on average a year, well within baseline figure.	Ship's maintenance costs will be monitored by BAS as a discrete line item in the financial report. may want to comment here

	Operational efficiency of the ship	Cost of Ship Operations to be less than 80% of 2014/15 baseline equivalent cost of the current two vessels.			Current forecast show that operating costs will be 70% of the full baseline figure. There are large savings on the lease cost of the RRS Ernest Shackleton and through the reduced crew compliment needed to support a single ship. There are some cost increases through investment decisions into enable 24 working and a broader technician service.	Accurate operating costs to be generated during the Trials period. Indications are that savings will relate to reduced head count, rather than ship running costs.
	The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	There are three headline infrastructure efficiencies planned: - Implement cargo containerisation - Improve heating efficiency at Rothera - Improve MGO storage			Interim conclusion met.	Expect to see an increase in the first 3 years of operation due to rectification of defects, snagging and trialling of all systems which may result in the ALI budget being in deficit. Anticipate overall cost of operations will reduce by 2024 to bring the ALI budget back into balance.
	Minimise environmental impact	Ship to use only light marine gas oil			Ship bunkered with Light MGO.	The ship is designed to use Marine Gas Oil with an ultra-low sulphur content of less than 0.1%.
	Structured approach to operational resilience	Implementation of the predictive and planned maintenance system Maximo			MAXIMO implemented and live.	Lloyds & MCA have approved the ISM system. Planned maintenance module completed but not yet turned on due to backlog of maintenance requirements.
Public engagement	Enable greater public engagement	- Stimulate science-industry engagement - Increased public awareness of BAS and NERC		 		Continued engagement associated with SDA; new Communications and Public Engagement Manager hired and will focus on next stage of SDA

		<ul style="list-style-type: none"> <li>- Add to UK Government and regional campaigns, like:</li> </ul>		commissioning. Maiden voyage event being planned to highlight departure on SDAs first operational tasking in November 2021.
		- Polar explorer		
		- Year of engineering		
		- GREAT		
		- Apprentices		
		- Northern Powerhouse		
		- Liverpool's Year of Environment Campaign		
		- Wirral Borough of Culture 2019		
		- Hull launch event (Reach over 1 bn)		
		- Local and staff engagement		
		679 online articles, 289 broadcast pieces & 23 print – 26% of total coverage		

## ANNEX B Benefits Plan

2022				2023				2024				2025				Future	
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2026	2027
	<b>Antarctic presence</b> Technical performance of the ship in relation to the science demand				<b>Scientific</b> Satisfying the demand of research communities in the UK for a world-class marine research platform		<b>Public engagement</b> Enable greater public engagement										<b>Spend to save</b> Minimise long-term maintenance cost
					<b>Scientific</b> 1. Providing a platform for leading-edge, multi-discipline marine science 2. Strengthening UK training, skills, opportunities and capabilities 3. Attraction and retention of talent at BAS					<b>Spend to save</b> Structured approach to operational resilience						<b>Spend to save</b> The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	
					<b>Scientific</b> Capability to provide a platform for Arctic science												
					<b>Antarctic presence</b> Maintaining the UK regional presence in the Southern Atlantic											<b>Spend to save</b> Operational efficiency of the ship	

Benefits Management Plan												
Category	Outcome	Achievement Indicator (baseline?)	Owner	Status (RAG)	Current performance status (Target)	Current Status	Actions required	Responsibility for actions	Dependencies	Risk/Cost/Other (what is stopping this benefit being realised?)	Planned Realisation Date	Emerging Benefits
Scientific	Satisfying the demand of research communities in the UK for a world-class marine research platform	World Class Science of high impact using frontier science capabilities of the new ship subject to science funding.	Jane Francis		Announcement of Opportunities under development.	A science user engagement group has been established along with a robust engagement strategy which will facilitate continued dialogue with the science community to ensure their demands are satisfied.	<ul style="list-style-type: none"> <li>Develop and implement engagement strategy with wider scientific community to ensure needs of UK science are supported once operational.</li> <li>Independent evaluation by the NERC Marine facilities Advisory Board</li> </ul>		Need to understand what the needs of the science community are – relies on continuous engagement.	SDA has been designed around the needs of the science community in 2014. There is a likelihood their needs will change over time and SDA may not be in a position to support that the right time. BAS are developing plans to ensure future capability is being constantly reviewed for the SDA but capability enhancements will come at a cost that BAS may not be able to support.	Jul-23	1. Improved living and working conditions for all on board (KPI Surveys of crew and passengers) –
	Providing a platform for leading-edge, multi-discipline marine science	Ship to provide:				The ship as currently planned and constructed will provide the platform for this benefit. The extent to which the outcomes will be realised will be tested during the Trials phase.	<ul style="list-style-type: none"> <li>Complete all necessary trials to prove capabilities above are achieved.</li> <li>Ship accepted as meeting SOR.</li> <li>Independent evaluation by the NERC Marine facilities Advisory Board.</li> </ul>		Availability of OEMs for testing.	Some of the requirements are binary – they will either have been achieved or not depending on the construction. Until we have tested everything fully and used it to carry out science it will not be 100% clear as to whether or not this has been achieved.	Jul-23	
		• Low Noise signature			Passed sea trial Nov 2020							
		• Seismic survey capable using containerised systems			To be tested 2022							
		• Multi-beam and sub-bottom profiling.			To be tested summer 2021							
		• Oceanographic winch suite.			To be tested summer 2021							
		• Large CTD handling.			To be tested 2022							
		• Subsea coring.			To be tested 2022							
		• 4m x 4m scientific moonpool and enclosed science hangar.			To be tested summer 2021							
		• Over-the-side handling of scientific equipment.			To be tested summer 2021							
		• Deployment and recovery of large remotely-operated and autonomous marine vehicles (e.g. Autosub and ISIS).			To be tested 2022							
	Attraction and retention of talent at BAS	• Permanent and flexible laboratory spaces.			To be tested 2022							
		• Space and docking stations for portable/containerized laboratories.			Passed sea trial Nov 2020							
	Capability to provide a platform for Arctic science	To develop a five-year plan for the vessel which clearly demonstrates that the ship is available for world class science in the Arctic when science funding is available. World Class Science of high impact using frontier science capabilities of the new ship subject to science funding.			5 year plan developing between logistics and NERC Marine science planning	BAS have now established a 5 year look ahead for large scale logistic requirements (including major project logistics integration where appropriate). NERC and BAS are establishing a working group to develop a new mechanism to assist long term planning which will support BAS' overall long term Ship scheduling by balancing and prioritising all commitments required to be supported.	<ul style="list-style-type: none"> <li>PROB to support BAS planning by providing prioritisation of activities across science, logistics &amp; major projects to allow time for Arctic science.</li> <li>Independent evaluation by the NERC Marine facilities Advisory Board</li> </ul>		Other BAS commitments / NERC priorities may mean that 2 Arctic cruises are not always priority. Also dependent on grant funding / NC science projects	NERC overall priorities for BAS may not permit 2 Arctic cruises every year. The platform will be capable of supporting Arctic science but the itinerary and funding may not allow it.	Jul-23	1. Extended planning horizon for SDA will support greater integration of planning and prioritisation of activities across the BAS operation (KPI - PROB governance group created - reduced conflict of activities) 2. Increased contingency planning to allow for single ship limitations (KPI - reduced costs due to last minute changes) -



	Maintaining the UK regional presence in the Southern Atlantic	Ship to visit all five stations within first two years of operation			Current ship schedule incorporates visits to all Antarctic Stations in Season 21/22	The ship as currently planned and constructed will provide the platform for these outcomes.	•BROB to ensure programme priorities allow for time in the itinerary to visit all 5 Stations. •Evaluation by the BAS Review Group		Overall season priorities will determine if SDA will service South Georgia Stations in the first few years depending on requirements. Helicopter trials will need to be scheduled based on helicopter availability and time in the trials schedule.	The capability to provide support to all BAS Stations will be tested and proved (i.e. Cargo tender etc.) but the Ship may not necessarily visit the Stations in that time frame.	Jul-23	
Antarctic presence	Technical performance of the ship in relation to the science demand;	Ship to provide:										
		• Hel-deck and hangar to support two Eurocopter EC365 N3 Helicopters			Helicopter trials to be completed prior to South deployment	The ship as currently planned and constructed will provide the platform for this benefit.	Carry out ice trials to prove ice breaking capability when South. Remainder of requirements are in accordance with SRO. Monitor fuel efficiency of the vessel over time.		Time spend operating the vessel at sea will give an indication of fuel efficiency and therefore endurance etc.	Need to carry out ice trials South – dependent on specialist availability & right ice conditions.	Jul-22	
		• 60 days endurance			Passed sea trial Nov 2020	The extent to which the outcomes will be realised will be tested during the Trials phase, commencing in July 2020 April 2021. Initial indications are that Ship will be less fuel efficient than originally expected. Ship needs to be tested in all conditions to be able to give an accurate picture of performance.						
		• Range 19,000 nautical miles.			Passed sea trial Nov 2020							
		• 13 knot economic cruising speed.			Passed sea trial Nov 2020							
		• Ability to support complex multi-disciplinary scientific missions in the Polar Regions.			To be tested 2022							
		• Ice breaking capability – 3 knots through 1m ice (ice permitting).			To be tested 2022							
		• Accommodation for 30 officers and crew.			Passed sea trial Nov 2020							
		• Accommodation for an additional 60 personnel.			Passed sea trial Nov 2020							
		• Cargo volume - 2150m3.			Passed sea trial Nov 2020							
	Ensure effective UK engagement in COMNAP (Council of Managers of National Antarctic Programmes)	Active attendance at COMNAP seminars in 2015, 2016, 2017, 2018, 2019, 2020			Complete	SDA presentation delivered to COMNAP in 2021 sessions.	Ongoing attendance & engagement at COMNAP in place.		Availability of resource	NA	Complete	1. Increased collaboration with other National programmes (KPI - Compare number of days collaboration against baseline (2015)) -
	Providing a research capability which is matched to current and future UK priorities, with corresponding economic impact	Science Case approved by the NERC Science and Innovation Strategy Board as fit for purpose before Statement of requirement is complete in March 2015		Complete		Engagement with UK science community continues to ensure SDA remains state of the art and relevant to the needs of science.	Agreement needed around where future funding will come from to purchase equipment and ensure appropriate resource is available	Jane Francis	Availability of resource to support future equipment	Risk that vessel will not remain state of the art for long without ongoing capital AND resource to secure new capability. NERC must indicate what science equipment we stop supporting if increased resource is unavailable.	Complete	
	Minimise long-term maintenance cost	Whole life maintenance cost to be less than £225m		Complete	£225m over 25 year life = £9m baseline.  Maintenance forecast £5-6m on average a year, well within baseline figure.	Ship's maintenance costs will be monitored by BAS as a discrete line item in the financial report. ( ) may want to comment here).	Capture all SDA maintenance costs annually. Anticipated that first 3 years will not be an accurate reflection of ongoing annual costs therefore need at least 6 years from interim acceptance to assess. MAXIMO will be used to track cost of maintenance.		Maintenance requirements will depend on how (and how much) the vessel is used and the quality of construction provided.	Risk that if the vessel demand is greater than initially expected, there may be increased maintenance implications. Future global economic conditions may affect the ability to keep whole life to under a set figure. Due to the bell-curve of reliability and maintenance, the maintenance cost will be expensive to begin with, then decrease and increase towards the end. To track this we need to predict what this looks like over the whole life period, as it is not linear. We won't be able to fully work it out for a few years, until the SDA reaches a steady state, & there is likely to be a spike in costs to begin with.	2027	

Spend to save	Operational efficiency of the ship	Cost of Ship Operations to be less than 80% of 2014/15 baseline equivalent cost of the current two vessels.			Current forecast show that operating costs will be 70% of the full baseline figure. There are large savings on the lease cost of the RRS Ernest Shackleton and through the reduced crew compliment needed to support single ship. There are some cost increases through investment decisions into enable 24 working and a broader technician service.	Accurate operating costs to be generated during the Trials period. Indications are that savings will relate to reduced head count, rather than ship running costs.	Monitor cost of Operations & science support. Annual review required to compare baseline figures and level of activity against: •Brew efficiency (reduce from 4 crews to 2 crews) •Fuel efficiency (single, more efficient vessel to use less than 2 aging vessels) •Maintenance efficiency (Annual maintenance costs to reduce for 1 Ship) •Bargo efficiency - Implement cargo containerisation (faster speed of delivery and greater bio-security options, although comes at an increased cost) <b>NOTE - increased costs must also be reflected</b>		Cost of operating SDA will be dependent on the scale and type of activity conducted. The SDA does not provide an equivalent capability of the ES and JCR combined - it is far enhanced, therefore the cost of operating a vessel of this standard is unlikely to cost less than the 2 combined.	Risk that we are not comparing like for like and therefore are unable to realise the benefits. The 2014/15 cost of operating the 2 older vessels was a snap shot in time based on the activity required that particular season.  (Confirm - what are we using as that baseline cost? According to the business case it was agreed at a CAB meeting (When?) Do we use the activity that ES & JCR carried out in that year to use as a comparison?	2026 (5y of operations needed)	1. Reduce Mariner salary costs (KPI - Salary costs reduced compared with 2 ship model) -  <b>Operational safety</b>  1. New tender davit allows safer deployment for Island Station relief (KPI - number of AINMEs linked to Station relief) -
	The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	There are three headline infrastructure efficiencies planned:			Interim conclusion - met	Expect to see an increase in the first 3 years of operation due to rectification of defects, snagging and trialling of all systems which may result in the AUJ budget being in deficit. Anticipate overall cost of operations will reduce by 2024 to bring the AUJ budget back into balance.	Report through the CARP process annually. Identify fluctuations in the SDA costs that may impact the AUJ budget.		Ship based activity must be balanced against all other activity carried out by BAS under the AUJ partition. If Ship costs increase there will need to be a reduction elsewhere (and vice versa).	Cost of bringing the SDA in to service within the AUJ budget may impact BAS' ability to support other operations across Antarctica if SDA is prioritised.	2026 (need to monitor 5 years of operation)	
		- Implement cargo containerisation										
		- Improve heating efficiency at Rothera - Improve MGO storage										
	Minimise environmental impact	Ship to use only light marine gas oil			Ship bunkered with Light MGO.	The ship is designed to use Marine Gas Oil with an ultra-low sulphur content of less than 0.1%.	Report on fuel use annually		Availability of light MGO in all areas of operation. Availability of Urea to operate Ships environmental systems.	If environmental legislation changes in future THEN SDA may not be able to meet requirements immediately.	Achieved	1. Reduce CO2 emissions (KPI - SDA measurements against baseline measurements) - 2. Impact of not using Urea system - to be tracked over first few seasons -
	Structured approach to operational resilience	Implementation of the predictive and planned maintenance system Maximo			MAXIMO implemented and live.	Lloyds & MCA have approved the ISM system. Planned maintenance module completed but not yet turned on due to backlog of maintenance requirements.	Ensure Maximo is kept up to date on board. Ensure appropriate maintenance and upkeep resource is provided to keep the system operational.		Data entered into the system must be accurate and kept up to date. Any changes that are made to the Vessels structure or systems must be amended in Maximo to ensure it remains accurate.	Enduring resource has been agreed at BAS to provide maintenance support to Maximo. Need to ensure there is sufficient resource on board (particularly in early years) to ensure routine maintenance can be kept up to date as well as emerging defects.	2024	1. More efficient use of spares through MAXIMO inventory (KPI - reduced spend on spares) -

Public engagement	Enable greater public engagement	- Stimulate science-industry engagement	<div></div>			Continued engagement associated with SDA; new Communications and Public Engagement Manager hired and will focus on next stage of SDA commissioning. Maiden voyage event being planned to highlight departure on SDAs first operational tasking in November 2021.	Carry out public engagement in accordance with strategic plan.	<div></div>	Engagement team must have the most up to date information and agreed party lines to share with the Science community and other external stakeholders.	Changes to the trials schedule could have a negative impact on public image of SDA if we are required to change planned dates and events.	2023 (first funded science due)	
		- Increased public awareness of BAS and NERC										
		- Add to UK Government and regional campaigns, like:										
		- Polar explorer										
		- Year of engineering										
		- GREAT										
		- Apprentices										
		- Northern Powerhouse										
		- Liverpool's Year of Environment Campaign										
		- Wirral Borough of Culture 2019										
		- Hull launch event (Reach over 1 bn)										
		- Local and staff engagement										
		679 online articles, 289 broadcast pieces & 23 print – 26% of total coverage										

2022				2023				2024				2025				Future	
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2026	2027
	Antarctic presence Technical performance of the ship in relation to the science demand				Scientific Satisfying the demand of research communities in the UK for a world-class marine research platform		Public engagement Enable greater public engagement										Spend to save Minimise long-term maintenance cost
					Scientific 1. Providing a platform for leading-edge, multi-discipline marine science 2. Strengthening UK training, skills, opportunities and capabilities 3. Attraction and retention of talent at BAS					Spend to save Structured approach to operational resilience						Spend to save The cost of BAS Antarctic logistics must be contained within the Antarctic partition of the UK Science Budget	
					Scientific Capability to provide a platform for Arctic science												
					Antarctic presence Maintaining the UK regional presence in the Southern Atlantic											Spend to save Operational efficiency of the ship	



March 2022

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## Executive Summary to Ship Procurement

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### Purpose

1. This document brings together the top lessons learned for procuring a new research ship.

### Introduction

2. NERC has over 25 years of ship building experience and knowledge, gained from designing, building and commissioning the Royal Research Ships: James Cook, Discovery and Sir David Attenborough. This summary has drawn together the top lessons which have been learned during these three programmes.
3. Individual project lesson learned documents can be found for each of the projects see the links in 'Used for Reference' section.

### Lessons Learned Process

4. The top lessons to ship building have been compiled based on:
  1. Common themes across the three projects; and
  2. Discussions with those involved in the previous projects asking the question '*what would you tell the next SRO/Project Director of any future ship procurement projects?*'.

5. **Our ten most important lessons are recorded on a single page overleaf.**

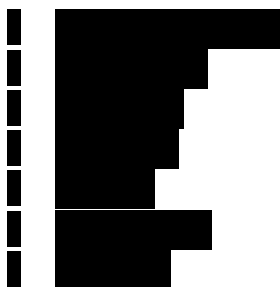
6. **Used for Reference**

NPRV Commercial Lessons Learned.

James Cook.

Discovery.

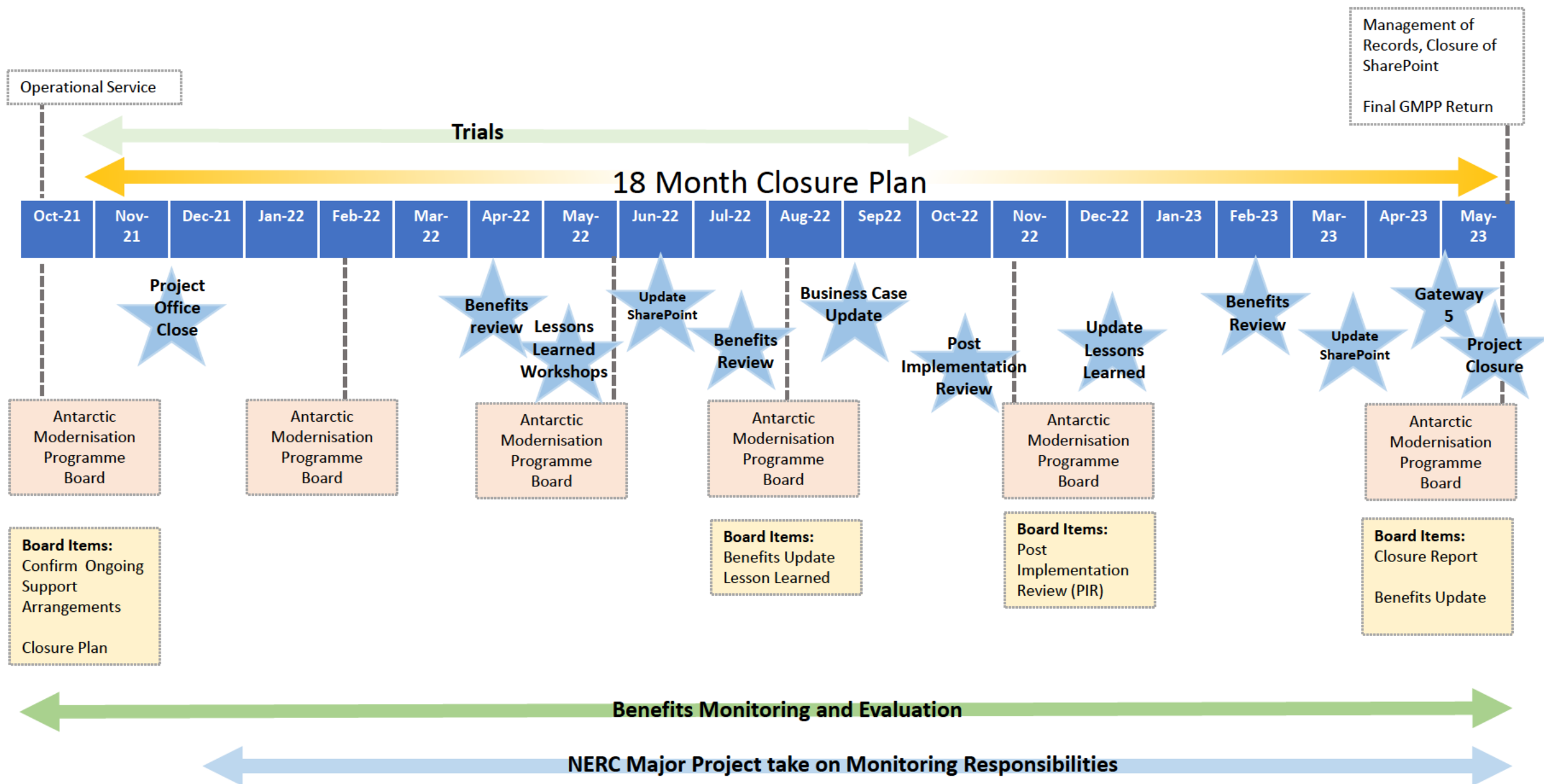
7. **Complied by:**



## **Lessons Identified**

1. Start now. Each ship has taken longer than expected. We suggest twenty-four months' time contingency. It will take eight or nine years.
2. Project Team. Have a core team of six. Do everything together [business case, procurement, negotiation, contract management, stakeholder engagement and commissioning]. You will need finance, commercial, procurement, project management, technical and commissioning skills. It is equally important to be friends. You will travel, eat and work together for years, move on the people who don't fit. BUT: expect the team to fizzle out towards the end. It is exhausting. Be prepared to bring in a 'finishing squad'.
3. People. Look after your people. When do they need challenge, rest or replacing? Always know what their next roles is and how you will help them get there. There will be retirement, maternity leave, ill health. Absence at the wrong time will cost you £M's.
4. Governance. Get the users (BAS, NOC and ship master), supplier and independent challenge into the project board. Always be honest in the papers, minutes and outwards communication. This has been proven to be effective at capitalising on the 'championing' of the projects and having people with the necessary authority to make decisions as these are often needed quickly.
5. Place communication at the heart of the project and get out in front of the activity. The public love research ships use this to drive a positive environment. During the build there is a constant need for user engagement and resources dedicated to delivering this, factor this into plans.
6. Adopt a hybrid approach to the Statement of Requirement (SoR) – ensure some elements are within the SoR and other elements are kept separate to be defined later down the line. As a project of this size can span many years and the SoR is developed early on this would ensure equipment/requirements are as up-to-date and future proofed as much as possible. Engage the scientists and take the time to explain why x not y.
7. Go beyond contract management. As well as managing the contract you will need to manage the shipyard. Make sure you meet the shipyard parent company, its other customers and understand their finance model and position. All three shipyards had some form of business interruption similar to bankruptcy. Expect it.
8. Meet all the suppliers. Expect the shipyard to 'fall out' with its supply chain. They will withhold information and lie to each other. Learn who you can trust and build sideways relationships. Robust due diligence required for Tier 1 suppliers including site visits, reviewing their contracts with the shipyard, and regular review, both business and financial. Build this into the contract management.
9. No boundaries. There cannot be any function, task or process internal or external you will not be prepared to break/circumvent or undertake yourself. As SRO you will need to care more about this ship than your career.
10. Keep your boss informed. Regularly. Know when to ask for help and learn to value their view from outside the project.

# NPRV Closure Plan





# NPRV Closure Plan

The main activities at programme closure will be detailed in the closure plan going to AIMP Board in October are:

1. Notify stakeholders that the programme is about to close
2. Ensure all projects have completed satisfactorily
3. Review the performance of the programme
4. Identify lessons that may benefit other programmes
5. Update the Business Case and confirm it has been satisfied
6. Assess realisation of benefits to date
7. Allocate responsibility for post-programme reviews of benefits
8. Ensure ongoing ownership of any outstanding risks and issues
9. Confirm that ongoing operational support arrangements are in place
10. Finalise the programme documentation and archive it in accordance with corporate policy
11. Disband the programme organisation and hand back resources and support functions