SEPA
Scottish Environment Protection Agency

Framework for the use of Research and Development

2014 – 2019

Executive Summary

This Framework for SEPA's use of Research and Development replaces the agency's Research Strategy 2008-2012 and places our work in this area in the context of a new general purpose and new responsibilities for SEPA. We regard research and development as an important part of maintaining and developing the sound science, knowledge and evidence base that is essential to deliver these roles effectively and efficiently. The Framework identifies three priority themes for SEPA's research and development. These themes are:

- Understanding people and the environment
- Tools, techniques and technologies
- Data, information and knowledge

The Framework also recognises that it is impractical and inappropriate for SEPA to fund or undertake alone all of the research and development that we require. Indeed, much of our research and development builds on previous work by others, and many of the projects we fund are collaborative projects with other agencies or research institutions. SEPA plans to take a more structured approach to research engagement and liaison, identifying key research funders and programmes that have synergies with SEPA's research and development priorities. This will be detailed in our influencing plan which will complement this framework. In clearly identifying key partners and programmes, we plan to be more proactive in our engagement with the development of programmes and their review cycles. This external focus will also help us to more clearly understand how SEPA's research and development requirements fit into the wider research landscape.

The Framework also encourages the continuing development of our staff and seeks to promote higher levels of engagement with the research and development process. SEPA will also seek to encourage staff to provide their expertise to research partners and identify mechanisms to pursue these opportunities.

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Foreword

Our role and approach to understanding and protecting the environment is going through a period of rapid change. The new Regulatory Reform (Scotland) Act 2014 strongly supports SEPA's transformation into a more progressive and ambitious Agency with a real desire to engender a greater understanding and valuation of the multiple benefits of a healthy environment to society. The use of research and development is a key tool at this critical time as SEPA is, by definition, an investigative and scientific organisation and we must fully evaluate the ways we can deliver on the new statutory purpose given to us by the Act. In future, in addition to our traditional role of protecting and improving the environment, we must support the sustainable management of natural resources and contribute to community health and wellbeing and to sustainable economic growth.

However, we also see research and development as part of a wider innovation spectrum which supports our business improvement process and, more significantly, our duties and ambitions to promote and support innovative technologies and drive energy and carbon reductions alongside our regulatory activities.

To be an effective regulator and to maintain our understanding of the environment it is essential that SEPA ensures that it is knowledgeable about the most recent science and technology, an essential component of which is having an effective relationship with the research and academic communities.

The combination of increasingly complex environmental problems and business efficiency requirements means that we are continuously seeking to maximise the performance of our research and development programme and to work in partnership with other funders and researchers. This partnership working also enables us to look at issues in a wider and more holistic way by engaging with partners with expertise in disciplines for which we have limited or no knowledge. As we progress towards what I term "a sustainability science model", this will become increasingly essential. To me, this means engaging with experts in the most appropriate scientific disciplines, whether in the physical, life, social or economic sciences, and in a creative way that secures multiple benefits for the environment, society and economy.

This framework aims to focus our use of research and development on our key problems, and similarly to focus our partnerships and knowledge exchange activities to drive forward a better understanding of 'sustainability science'.

James Curran
Chief Executive

1 Introduction

The Scottish Environment Protection Agency's (SEPA) main role is to protect and improve the environment. We do this by being an excellent environmental regulator, helping business and industry to understand their responsibilities, enabling customers to meet legislative requirements and realise the many economic benefits of implementing good environmental practices. We protect communities by regulating activities that can cause harmful pollution and by monitoring the quality of Scotland's air, land and water. We develop strategic plans to help inform the most sustainable actions to manage flood risk and our water environment, also providing key advice to other planning processes such as strategic development plans and planning applications. We regard research and development as an important part of maintaining and developing the sound science, knowledge and evidence base that is essential to deliver these roles effectively and efficiently. We work in partnership with others to achieve common goals.

It has become increasingly clear that many of our current challenges are large-scale, multi-faceted and intertwined with socio-economic factors such as rapid climate change, flooding, resource depletion, biodiversity loss and the disruption of natural chemical cycles. Public agencies such as SEPA must seek solutions that go beyond the main tools available to them.

Our future focus will be to achieve real and measurable improvements in our environment and, in doing so, to protect and promote human health and wellbeing and contribute to the Scottish Government's single purpose: "...creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth".

The general purpose for SEPA in the Regulatory Reform (Scotland) Act 2014 formalises a more proactive role for the agency, in terms of society and the economy:

i. SEPA is to carry out the functions conferred on it by or under this Act or any other enactment for the purpose of protecting and improving the environment (including managing natural resources in a sustainable way).

ii. In carrying out its functions for that purpose SEPA must, except to the extent that it would be inconsistent with subsection (1) to do so, contribute to –

   a. improving the health and wellbeing of people in Scotland, and

   b. achieving sustainable economic growth.

We have been working to develop the organisation so that we can achieve multiple benefits by delivering better for the environment, economy and communities, while continuing to live within environmental limits.

This framework will aim to help SEPA identify its research priorities over the next five years and beyond. It will also clarify how we work with many different partners to deliver these priorities and facilitate this through a clear and efficient process. In the current financial climate for research, SEPA also needs to ensure that, when research is undertaken by us alone or with one or more partners, the project is shaped to deliver multiple benefits and understanding. This framework also commits us to an approach that identifies opportunities for increased cooperation with other organisations through joint working.

1.1 Research and development in SEPA

'Research' can be defined as the discovery of fundamental new knowledge and understanding, and 'development' as the process by which that new knowledge and understanding is applied. 'Evidence' is defined in the CAMERAS[1] Rural Affairs and Environment Evidence Strategy[2] as reliable and robust information that can be used to inform sound decisions in developing and implementing policy. This framework focuses on research and development, but SEPA will take cognisance of other relevant evidence in delivering its outcomes.

Engaging in research and development provides SEPA with many benefits, including:

- developing innovative and sustainable options for environmental protection and improvement, including models, methods, tools and techniques that will lead to better regulation;
- driving improvements in our monitoring, modelling, analysis and assessment of environmental processes, existing and future pressures on and risks to the environment and human health, and planning of responses to these through, for example, river basin and flood risk management planning;
- improving understanding and helping to influence attitudes, behaviours and decision-making processes that affect the environment and human health;
- helping us to address gaps in, and new challenges to, our scientific and regulatory capabilities and our evidence base;
- assisting with the upkeep of knowledge and enhancing SEPA's scientific credibility;
- encouraging and supporting a culture that recognises the importance of innovation and new ideas;
- developing new partnerships and collaboration, including with academia; providing a more rewarding work environment that encourages the continuing development of the skills, expertise and capacity of our staff, and helping to develop our staff of the future;
- providing background evidence and tools to inform and support the prioritisation of investment in scientific and regulatory effort.

This framework outlines SEPA's strategic priority themes for research and development. It strengthens our commitment to managing, through a single process, the work that we do under the banner of research and development. It also affirms our intention to increase our external engagement and to ensure that successful research and development outputs are implemented by SEPA and shared with and available to others.

[1] CAMERAS – A Coordinated Agenda for Marine, Environment and Rural Affairs Science (scotland.gov.uk/Topics/Research/About/EBAR/CAMERASsite)

[2] www.snh.gov.uk/docs/A962549.pdf

2 A statement of intent for SEPA's research and development

SEPA's intention is to use research and development to support our understanding of the environment in order to improve and protect the environment, supporting the sustainable management of natural resources and, in doing so, contributing to improving health, wellbeing and sustainable economic growth. This will be achieved both by commissioning research but also by interacting with other providers and funders of research. SEPA requires research and development to be fit-for-purpose for the second decade of the 21st century and beyond, and to be based, where appropriate, on sustainability science, an emerging field of research dealing with the interactions between natural and social systems, and with how those interactions affect the challenge of sustainability. Our research and development process needs to identify and prioritise the gaps in our knowledge and evidence, and deliver real, practical benefits for SEPA, the environment, human health and wellbeing.

The research and development we undertake should produce outputs that support the delivery of the wide range of SEPA functions, and encourage and foster innovative thinking. Our research and development programme should be responsive to the local and shorter-term needs of our business, as well as providing a framework that allows us to plan strategically to address longer-term and larger-scale issues (see Annex 1 for the origins of SEPA research and development needs). It should encourage wide engagement with research and development across the whole business and the development of partnerships with other organisations to address high priority, strategic and long-term research needs. Research and development should be seen in SEPA as an enabling activity which is clearly linked to organisational priorities and outcomes.

SEPA will encourage staff from a wider range of functions to participate in the research and development process. We believe that involvement in research and development should be an engaging and rewarding experience for staff and one that contributes to increased job satisfaction. We are also keen to engage with postgraduate training programmes to ensure that we support the development of the next generation of specialists.

3 SEPA's strategic framework for research and development

3.1 Providing SEPA research and development with an overall purpose

Consistent with SEPA's aims for this framework, and in response to the new demands and opportunities arising from a new regulatory framework and our statutory purpose, the overall purpose of our research and development programme will be to:

(a) understand Scotland's environment;

(b) support environmental protection and improvement, and sustainable use of natural resources;

(c) contribute to the Scottish Government's single purpose of "creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth"; and

(d) support the delivery of sustainability science, including to improve communication and engagement.

We are continually seeking to improve the ways in which we make use of research and other evidence to inform SEPA activities and decisions. This includes, for example, the use of appropriate scientific evidence in problem-solving projects to tackle environmental impacts that are not amenable to routine regulatory approaches. This broadening of our approach is already underway through the better regulation agenda, flood risk management planning, the ecosystem services approach and other initiatives.

The priority themes for research and development (see section 3.2) are all directly relevant to our general purpose, our long-term outcomes, and all our activities including chargeable activities such as regulation. Collectively these themes will to enable us to prioritise and take action on the most important environmental issues, to improve health and wellbeing, and to support the achievement of sustainable economic growth.

In practice, this means working with partners and communities to deliver multiple benefits. In order to make development sustainable, it is necessary to understand the physical environment and its ecology (which includes humans), as well as the systems and structures of society. This cannot be done through the perspective provided by any single scientific discipline. SEPA is committed to answering our priority questions in a fully rounded way using a sustainability science approach. This means engaging with experts in the most appropriate scientific disciplines, whether from a physical, life, social or economic science perspective. It also requires us to work, when required, in a multidisciplinary way that delivers answers and understanding and the securing of multiple benefits in environmental, social and economic terms.

3.2 SEPA's research and development priority themes

Undertaking research is not a primary purpose of SEPA. We undertake, commission and fund research and development to improve our ability to deliver our strategic outcomes for the environment and people of Scotland. Our research interests lie at the interface between ecosystems, natural resources and natural processes (the natural world) and human society and economic activities. We primarily use research from the applied end of the research spectrum, and we are more likely to commission and engage with research related to disturbed environments affected by human use or activities, or where there is a direct human interface. Building on the experience gained through our research and development strategy for 2008–2012, and in order to address the overall purpose of SEPA's research and development framework, we recognise three strategic themes describing the research and development that we require:

These themes are:

- Understanding people and the environment
- Tools, techniques technologies
- Data, information and knowledge

An overview of each theme is provided below, highlighting the strategic priority areas that we expect to be addressed by our research and development. There are not necessarily clear divisions between these three themes and many research proposals can be expected to deliver on more than one.

3.2.1 Understanding people and the environment

This theme covers what may be regarded as SEPA's traditional research and development interests, such as the environmental impacts of human activities, for which there will be an on-going research and development requirement. But new challenges from innovation in existing sectors such as new renewable and unconventional energy sources, and environmental effects of environmental clean technologies will also continue to challenge our scientific capacity to support the necessary knowledge requirements and evidence base for effective environmental regulation. Shifting societal and government priorities will also require us to respond through research and development. An example of such a change is the increasing emphasis on the relationship between environment and human health and wellbeing, including the effects of environmental injustice leading to health inequalities.

In order to address the problems resulting from human activity, we recognise that it is also necessary to understand better how to influence and inform human behaviour. Without an understanding of human attributes, behaviour, functioning and systems, this is not possible, so we are keen to build partnership and relationships with relevant research bodies to improve our knowledge and understanding in this area.

There is also an increasing need for a better understanding of ecosystem services, the ecological structure and functioning that provides these services, and the interaction of these with human activities. The role of the environment in helping society and the economy to cope with extreme weather events (resilience), especially any resultant flood risk, is a priority issue, leading to a better understanding of how we can manage the environment better to protect people, communities and our assets (adaptation). The science of ecosystem, ecological and wider environmental restoration is also becoming increasingly important in helping us to address the legacy of environmental degradation and damage from historical activities.

3.2.2 Tools, techniques and technologies

Across a wide range of scientific disciplines, in freshwater, wetlands, ground waters and tidal waters, in soils, on land and in the atmosphere, SEPA monitors, assesses and reports on the state of Scotland's environment, for both rural and urban areas. Our measurements of the chemical, ecological, radiological and hydrological state of the environment allow us to provide analytical expertise and balanced assessments suitable for providing a flood forecasting service, recording environmental change, managing the environment, advocating improvements, and informing effective regulation.

Maintaining our capacity to deliver these services has always required, and will continue to require, the investigation, development and implementation of new and improved field and laboratory techniques. Indeed, in SEPA's founding legislation (Environment Act 1995, section 33(4)), is the requirement that we "shall follow developments in technology and techniques for preventing or minimising, or remedying or mitigating the effects of, pollution of the environment".

We also need to understand where to invest in new monitoring technologies that offer significant efficiencies compared to current approaches (potentially allowing us to maintain or extend our monitoring and analytical effort in the face of declining resources). In addition, we will require the assessment and incorporation of novel monitoring methods and technologies, and the continuation of the progressive (evolutionary) improvements in existing approaches (the subject of much of our existing, in-house development work), for example, improving detection limits and analytical precision, inter-calibration, etc. This theme in particular recognises the important role that internal development plays in improving the quality and reliability of our science and evidence base. Its inclusion reflects our desire to incorporate into this framework, the management of the significant resources we deploy into development work.

Under this theme, it is also a priority to develop further SEPA's capacity to detect, assess and monitor new environmental threats identified by our regulatory, planning, problem-solving, emerging issues and horizon scanning processes. In addition, the Agency will continue to develop and improve its scientific capabilities in advance of new regulatory requirements arising from the Better Regulation agenda and from new European and domestic legislation. To meet these demands, we will have to develop tools and techniques to help assess and predict environmental change, risks and impacts. This theme also covers the applicability of a wide range of new environmental monitoring and assessment technologies, including remote sensing, genomics and the use of environmental DNA, dispersed low-cost sensor networks and the use of mobile monitoring on 'vehicles of opportunity' (e.g. ships, aircraft trains, cars).

As part of the consideration of new tools, techniques and technologies, there may be research questions related to the applicability of citizen science-based approaches, including the use, by citizen scientists and communities of interest, of smartphone apps, personal environmental monitors and related technologies.

3.2.3 Data, information and knowledge

We must continue to develop the many ways that we collect, analyse and use environmental data and turn this data into information, knowledge and evidence. Ultimately, these should lead to risk-based action to protect and improve the environment, safeguard communities and their people and to help us to improve understanding of the contribution that SEPA can make to the Scottish Government's single purpose[3].

SEPA's regulatory and scientific functions are supported by the essential provision of expert environmental and flood modelling and data assessment services. SEPA wishes to increase its use of effective data analysis and modelling to make fullest possible use of the data it collects, in order to obtain maximum information from it. Our current data analysis and modelling capability extends to all environmental media. It also extends to many aspects of our business, ranging from licence applications to environmental quality characterisation, providing a flood forecasting service and trend analysis. Data assessment currently supports, for example, EC Directive reporting, environmental quality classification, environmental risk assessment and tasks involving development of digital data sets, extending the use of Geographic Information Systems and data visualisation and exploration tools. There is an element of ongoing, necessary development work required under this theme, involving, for example, the refining of existing models and environmental standards, and approaches to data calibration.

[3] The Scottish Government's purpose: To focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.

A key aim of this theme is to help SEPA to reduce the risk of being a 'data-rich, information-poor' organisation, towards making full and best use of its environmental datasets through the application of appropriate assessment, modelling and analysis techniques. SEPA also desires to be an exemplar in data and knowledge terms, making its environmental data and information discoverable, accessible and usable by others and using agreed data standards, where appropriate. This, along with improving understanding of the use of SEPA's data in conjunction with that of others, the use of Open Data, and issues around the challenge of engaging with others' 'Big Data', is one of the key drivers for research and development related to data, information and knowledge exchange under this theme.

As well as issues related to new data sources, there is also a priority for research and development aimed at improving the use of existing data: both SEPA's data, and data collected and held by others in the public, private and NGO sectors. Analysing historic data for long-term trends, for example, can help to understand existing problems better and the consequences of previous interventions, especially where data from partners will add value to the analysis undertaken and conclusions reached. This can help support SEPA's focus on identifying priorities for action to solve difficult environmental problems.

Citizen science is an additional source of environmental data but is also about engaging the public with their environment, fostering an interest and stewardship. SEPA has begun to explore the use of citizen science and this will also be a priority for research and development under this theme.

4 Our behaviours

4.1 Training our people

This framework document recognises that one of the benefits provided to SEPA by research and development is the provision of a more rewarding work environment that encourages the continuing development of our staff, and supports development of our "staff of the future". This is consistent with our People Strategy[4], which aims to ensure that we have "the right people, in the right places, at the right time, with the right skills and approach to continue to deliver for SEPA into the future and fulfil our corporate strategy".

The People Strategy also identifies that SEPA wishes to have an empowered and engaged workforce, with the right skills and approach to deliver excellent services, and who receive satisfaction from doing a job well and contributing to the Agency's success. The development and management of research projects and the implementation of their outputs is both useful to SEPA and highly stimulating and rewarding for the staff involved. Similarly, the ongoing process of internal development work in SEPA's scientific and technical functions helps to provide many opportunities for staff to develop their own technical expertise and interests through investigating and delivering innovative advances and approaches that improve our services. Providing staff with as much involvement as possible over the identification and delivery of improvements of their own, and their colleagues', working practices can provide a strong feeling of empowerment and encourage higher levels of engagement with the research and development process.

By engaging with the academic community through the research and development process, we are also seeking to encourage and to help prepare and attract the next generation of scientists and specialists. We have already had positive experience of developing a targeted studentship programme, working with two universities to run a Masters programme for flood hydrology. This not only provided valuable support during the implementation of the EU Flooding Directive but also increased the availability of qualified flood hydrologists to the benefit of SEPA and other organisations involved in flood risk management planning. This remains a potentially useful model for those areas where we know we will be looking for staff but we are aware of a likely skills shortage.

For young scientists and students, working with SEPA, whether through an internship or on a project, provides invaluable experience and insight into the working of an environmental organisation. It is in the interests of both SEPA and the environment to encourage and enthuse the next generation of high quality specialists to view the environmental sector and potentially SEPA as a desirable and rewarding career.

[4] www.sepa.org.uk/about_us/publications/people_strategy.aspx

4.2 Looking outward – research liaison and knowledge exchange

SEPA recognises that it is impractical and inappropriate for us to fund or undertake alone all of the research and development that we require. Indeed, much of our research and development builds on previous work by universities and institutes. Many of the projects we fund are collaborative projects with other public sector agencies and/or research institutions where we are contributing to a broader outcome. We will produce an influencing plan which complements this framework, we plan to take a more structured approach to research engagement and liaison, identifying key research funders and programmes that fit with SEPA's research and development priorities. We aim to be more proactive in working with partners on their research programmes and review cycles while also sharing knowledge and expertise that will help us collectively deliver the environmental research required. Our staff will also be encouraged to seek opportunities for joint projects.

This external focus will also help us to understand more clearly how SEPA's research and development requirements fit into the wider research landscape (e.g. the Scottish Government's Rural Affairs and Environment Research Strategy), to understand who is doing what in the research community, and to progress cost-effective liaison with them to deliver outputs of value that help to inform and drive forward our business development. This is an approach we already adopt through collaborations with, for example, other environmental regulators, the Living with Environmental Change (LWEC) initiative, the Marine Alliance for Science and Technology for Scotland (MASTS) and the Scotland's Environment website[5] and CAMERAS partnerships, amongst others. Above all, we hope that, through dialogue with partners, we may secure added value and multiple benefits for spend on research, which contributes to delivering SEPA's priorities as well as wider benefits for the research and policy communities.

We will also take a more proactive approach to liaison with the academic community, not least through opportunities to influence or direct post-graduate research effort towards appropriate elements of our research agenda. The Natural Environment Research Council's Doctoral Training Partnerships (DTP), the Research Councils' CASE Studentships[6] and the Making the Most of Masters (MMM) programme[7] being developed by the Scottish Funding Council are good examples of where such opportunities already exist.

For SEPA's research and development process, knowledge exchange can be regarded as both an internal and an external priority: it is essential to ensure the implementation of the research into SEPA's business. We will therefore develop a knowledge exchange plan to support this framework, identifying how our research and development requirements and outputs will be shared with research organisations, our partners and internally. For each individual project that we fund under this framework, we will expect the internal implementation and knowledge exchange of the outputs to be considered as part of the proposal. We will continue to publish all our research and development outputs on our website, and ensure that they can be found and accessed through Scotland's Environment website so that they reach a wider audience.

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[5] Scotland's Environment website brings together information on Scotland's environment from a broad partnership of organisations. (www.environment.scotland.gov.uk)

[6] CASE Studentship: a 'Collaborative Award in Science and Engineering'. The idea of a CASE Studentship is to research further an area of interest to an industrial sponsor.

[7] Making the Most of Masters (www.mastersprojects.ac.uk)

5 Annual delivery of the research and development framework

5.1 SEPA's framework for research and development

The model below (Figure 1) brings together our strategic intentions for research and development in SEPA and our practical delivery of this, along with supporting elements, into a coherent framework.

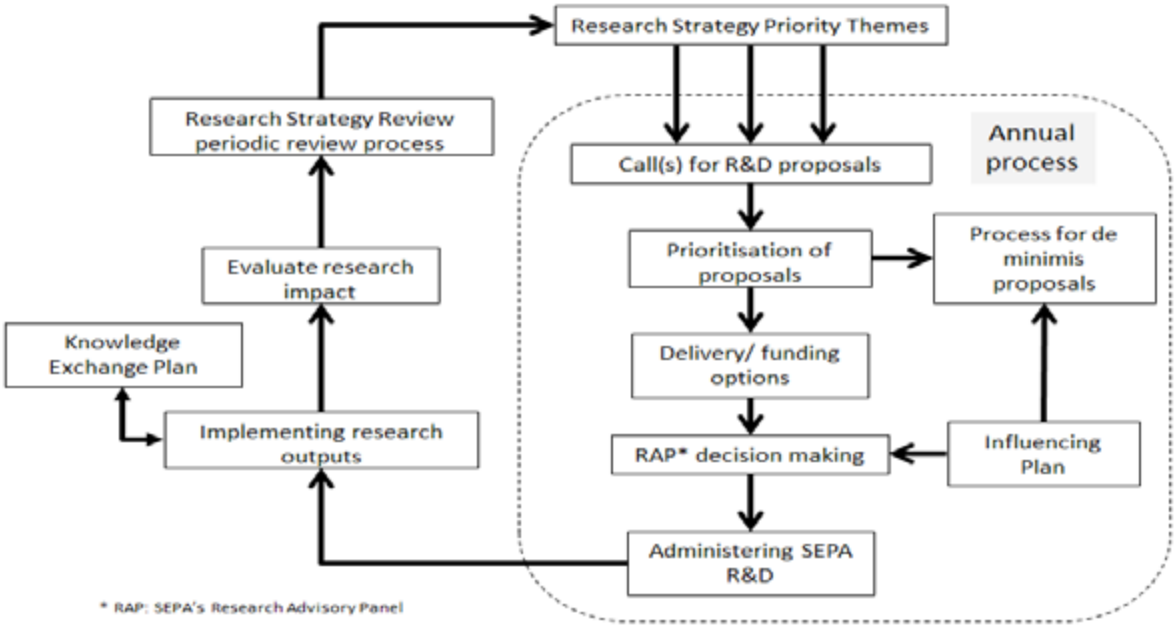


Figure 1: SEPA's Framework for Research & Development

5.2 Annual research and development planning and delivery process

We will support the implementation of this framework through an annual delivery process (defined by the dotted box in Figure 1), to be overseen by our Research Advisory Panel (RAP). As a key part of the annual process, RAP will identify annual priorities for each of the three themes which will be used to assess the submitted proposals. These annual priorities will take account of both short-term and longer-term needs. Although there will be an annual deadline for submission of research and development proposals, inviting proposals for both research questions and development needs, applications are welcome to be discussed or submitted at any time.

It is our intention that our research and development process should be strategic in nature, with RAP dealing principally with strategic and significant proposals. We will implement a 'triage' approach to prioritising these proposals and to identifying those proposals that are de minimis in terms of resource requirements. Such proposals will be dealt with through a separate process and supported departmentally. We will establish a network of topic specialists to advise on the resourcing of de minimis proposals. The significant research and development projects that we plan to undertake each year will be included in SEPA's Annual Operating Plan (AOP). The organisational priorities in the AOP may also influence the annual research and development priorities identified for each of the three priority themes, should there be any significant, identified needs.

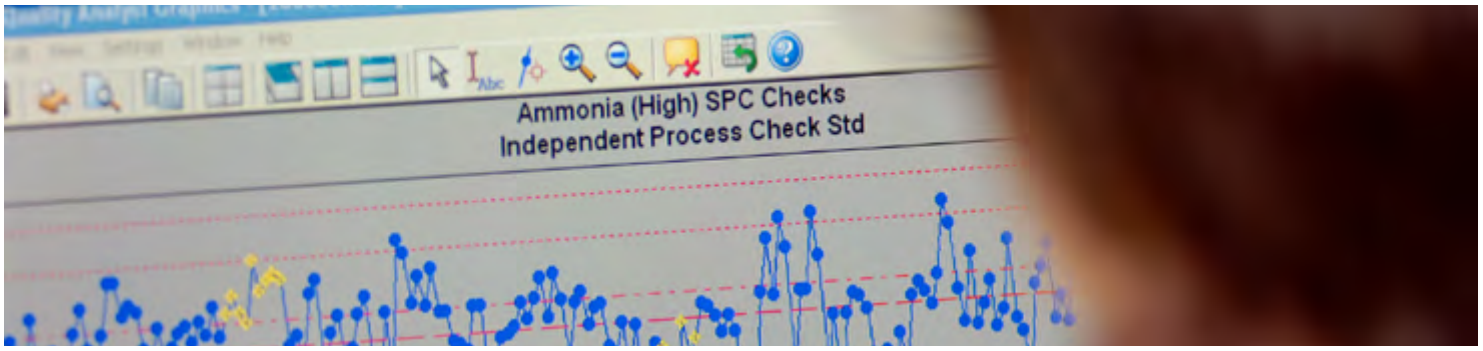
5.3 Delivery and funding options

We recognise that we have access to a wide range of possible approaches to delivering our priority research and development needs. These range in nature: from in-house development work to funded contracts with academics or consultancies, the use of the Scottish Government's Centres of Expertise CREW[8] and ClimateXChange[9]; and in scale: from European Life+ (and similar funders), to small amounts of money and staff time to support postgraduate students in PhD and Masters research. We will develop guidance for staff to assist them to identify the most appropriate way to resource their proposal, which will also assist with the annual process of 'triaging' proposals. If used proactively by staff wishing to progress ideas likely to require only de minimis resourcing, this may allow them to progress with their project without waiting for the annual call and assessment of proposals.

We will also seek to identify where research that we deem important and necessary could (and probably more effectively) be undertaken through the research programmes of others and we will actively seek these synergies. This proactive engagement is in line with the current requirement for publically funded research organisations to actively engage with 'end users', such as SEPA, to ensure that their research translates into practice.

[8] CREW: Centre of Expertise for Waters (www.crew.ac.uk)

[9] CXC: Centre of Expertise on Climate Change (www.climatexchange.org.uk)



6 Research impact evaluation and periodic review

We will develop an internal process to evaluate the impact of our research, including both the suitability of the research outputs to SEPA's needs and, where possible, any environmental, social and economic consequences of the research, accepting that this will not be possible or appropriate for all of the research and development that we undertake or commission. Assessing the effectiveness of our knowledge exchange will also be an element of our evaluation process.

We also commit to reviewing both the research and development process outlined in this framework and the overall purpose and priority themes that it has established at least once during the period of the framework and again at the end of the framework's five year life, and to taking appropriate actions based on the outcomes of these reviews.

Annex 1: Where do SEPA's research and development priorities come from?

SEPA's priorities for research and development are identified through a range of internal organisational processes, across the short, medium and long-terms (Fig.2).

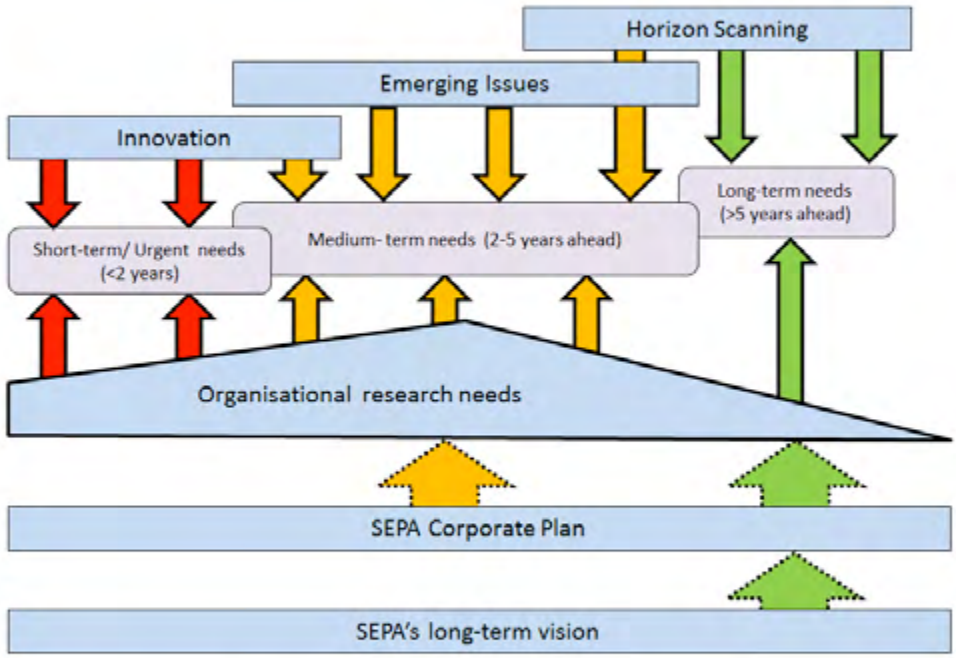


Figure 2: Where do SEPA Research & Development Priorities come from?

SEPA's processes for capturing innovative ideas and emerging issues, and new threats and opportunities identified by our horizon scanning, all generate questions requiring research and development effort, often with slightly longer term deadlines. The operational, policy, strategic development, regulatory and scientific activities of SEPA also provide a significant part of the requirement for research and development, much of it required over relatively short timescales. Longer term objectives in SEPA's corporate plan and our longer term visioning work may also provide strategic directions on longer term priorities for our research and development process.