



LIFE Project Number
LIFE10 ENV-UK-000182

FINAL Report
Covering the project activities from **01/09/2011** to **31/08/2015**

Reporting Date
24/11/15

SEWeb – Scotland's Environment Web

Project Data

Project location	Scotland, UK
Project start date:	01/09/2011
Project end date:	31/03/2015 Extension date: 31/08/2015
Total Project duration (in months)	48 months (including Extension of 5 months)
Total budget	€5,030,687.90
Total eligible budget	€4,932,635.80
EU contribution:	€2,346,107.25
(%) of total costs	46.63%
(%) of eligible costs	47.56%

Beneficiary Data

Name Beneficiary	Scottish Environment Protection Agency
Contact person	Mr. Martin Marsden, Head of Environmental Quality
Postal address	SEPA Corporate Office, Strathallan House, Castle Business Park, Stirling, FK9 4TZ, United Kingdom
Visit address	As above
Telephone	0044 1786 452401
Fax:	xx-xx-xxxxxxx + direct n°
E-mail	martin.marsden@sepa.org.uk
Project Website	http://www.environment.scotland.gov.uk/about-us/lifeplus-project/

1. List of Contents

1. List of Contents	2
2. Executive Summary	3
3. Introduction	10
4. Administrative part	13
4.1. Description of the management system	13
4.2. Evaluation of the management system	17
5. Technical part	19
5.1. Technical progress	19
5.1.1. Action 4: Identifying public interests in environmental data.....	21
5.1.2. Action 5: Creating Partnerships	24
5.1.3. Action 6: Identifying gaps in data availability	30
5.1.4. Action 7: Fill environmental data gaps	32
5.1.5. Action 8: Presenting data analysis, interpretation and review	34
5.1.6. Action 9: Develop a method to prioritise environmental problems across media and produce a ranked list.....	38
5.1.7. Action 10: Defining the effectiveness of environmental measures.....	40
5.1.8. Action 11: Promote public involvement in monitoring	41
5.1.9. Action 12: Initiate the public debate on environmental priorities.....	48
5.1.10. Action 13: Promote public involvement in protecting and improving the environment.....	50
5.1.11. Action 14: Establish a standard for the information architecture.....	54
5.1.12. Action 15: Develop applications to support new information.....	56
5.1.13. Action 16: Delivery of information and Best Practice	58
5.1.14. Action 17: IT Systems Development.....	61
5.2 Dissemination actions	63
5.2.1 Objectives.....	64
5.2.2 Dissemination: overview per activity.....	64
5.3 Evaluation of Project Implementation	74
5.3.1 Project Evaluation	75
5.3.2 Website evaluation	76
5.3.3 Public engagement evaluation (Action 25)	79
5.4 Analysis of long-term benefits	82
6. Technical annexes	91
6.1. List of abbreviations/acronyms:	91
6.2. Dissemination annexes	94
6.2.1. Layman's report.....	94
6.2.2. After-LIFE Communication plan	94
6.2.3. Other dissemination annexes.....	94

2. Executive Summary

This project has created a network of partners who have collaborated to produce an advanced environmental information system to deliver four key objectives. The project is a demonstration of best practice and innovation and has strong potential for replication throughout the EU. It has started a conversation with the public in the monitoring and protection of the environment and finally has established a strong brand which will be developed as the environmental data hub for Scotland. Scotland's Environment Web (SEWeb) has been a leader in the rapidly developing programme of digital innovation in the environmental information 'landscape' in Scotland.

(All acronyms used are explained in section 7.2)

The achievement of the Objectives of the project:

Objective 1: To develop an inclusive partnership programme bringing together the key data providers and data users to develop the SEWeb.

The partnership underpinning SEWeb is a key element to the success of the project. From the outset initial partners consisting of Scotland's environmental competent authorities – Scottish Government, Scottish Natural Heritage, Forestry Commission Scotland, British Geological Survey, Marine Scotland, Historic Scotland, and NHS Health Scotland ¹ - were involved in defining what the project would deliver and contributing resources, expertise, data and information to the project.

The Management Group, whose membership was extended to include The Hutton Institute, Keep Scotland Beautiful, The Conservation Volunteers and Education Scotland, achieved its role of defining products that fulfilled the commitments and deliverables in the bid and provided expertise to the specification of these products. The delivery approach adopted to allow maximum contribution of partners was to focus the Management Group on the scope and quality of products leaving the project governance (in the form of the Project Control Board) to assure delivery to time and budget

Good relationships with staff throughout the partner organisations have been productive particularly in the area of the creation of content for the State of the Environment report. The Editorial Group was successful in gathering contributions from 32 authors from 12 organisations to publish 27 topics in the 2014 report published on the website ², while ensuring a cohesiveness in format and presentation.

Scotland's Environment Web has been working with 15 data providing organisations on 311 data sets, consumed by applications within the website, to present data in a format that is accessible and understandable by data users.

Over the 3.5 years of the project, the core partnership has been extended to include:

- 15 universities and academic/research institutions including The Centre for Ecology and Hydrology, James Hutton Institute, University of Abertay who contributed expertise to various applications -Discover Research, Effectiveness of Measures, SoE and State/Trends assessments, SEWeb visioning, EcoHack, Air Quality and Health, Public Discussion
- Over 50 environmental NGO and Interest Groups, for example; SEWeb Citizen Science and Action Expert Group, SEWeb Public Engagement Expert Group. The Conservation Volunteers, British Trust for Ornithology, Butterfly Conservation, Buglife, Open Air Laboratories, Indicia, Rivers and Fisheries Trust for Scotland.

¹ <http://www.environment.scotland.gov.uk/about-us/scotlands-environment-partners/>

² <http://www.environment.scotland.gov.uk/get-informed/state-of-the-environment-summary/who-wrote-this/>

- Education Scotland, EcoSchools, John Muir Trust, young reporters for the environment, Keep Scotland Beautiful, Young Scot, nearly 300 teachers.
- EEA, EIONET, NEEPA - Citizen Science, data prioritisation, Streamlined data reporting – WISE and Emissions, GIS/Spatial data, SENSE 3.

Other key organisations have worked in partnership with SEWeb on a range of priority areas of working including data sharing, SoE, data visualisation, citizen science, including - Clackmannanshire Council/SSN, Local Authority Improvement Service, Met office, Zero Waste Scotland, GeoConservation UK, Boreas Ecology, Institute of Historic Building Conservation, RCHAMS, Scottish Water, DEFRA, SNIFFER, Environment Agency, UKEOF Citizen Science Working Group.

The Steering Group and Management Group partners have all signed up to a new Purpose, Target Audience and Benefits statement for the future of Scotland's Environment Web beyond the LIFE project, with a commitment to develop a new longer term partnership funding model to continue to enhance the core funding approved by SEPA's Agency Management Team. Scotland's Environment Web has become recognised throughout the public sector as a best practice example of partnership working within the digital strategy/open data strategic frameworks being driven by Scottish Government, and has the potential to become the digital hub for the Scottish environment sector.

Objective 2: To help promote the expansion of a European SEIS (Shared Environmental Information System) that makes available data on Europe's environment. Scotland will have implemented SEWeb, a Regional SEIS, as an example of European best practice in reporting which, in particular, will provide information required by the EEA

The creation of a **regional SEIS** has been achieved through the development of Scotland's first environmental data discovery hub on Scotland's Environment Web where users can access information and data, creating a gateway through a range of applications that help people connect with their environment and understand more about Scotland's Environment. The project has been noted in the Scottish Government Open Data Strategy³ as a best practice example of providing access to open data and it is generally considered by much of the public sector as a leading digital project. It has consistently led the delivery of open data and definition of best practise.

The ability through **Open Data** to align the Scottish and European **environmental indicators** will enable promotion of SEIS throughout Europe.

International data delivery remains a statutory obligation of SEWeb partners. SEWeb has developed and hosts the **linked data** infrastructure to enable those partners to deliver to projects such as SENSE3.

Discussions with EEA have led to the delivery of **streamlined data** for Water Quantity reporting (required by WISE – Water Information System for Europe) using new Linked Data methodology published through a new Linked Data portal - <http://data.sepa.org.uk/>

The publication of data visualisation applications using Spotfire software have shown the power of the tool in **transforming shared data** to make it more accessible and easier to understand and analyse for an audience with a broad range of interests in the environment.

Further access to data was provided with the publication of the key environmental indicators for Scotland (Scottish Environmental Statistics Online – SESO) on the website providing a direct link between the State of the Environment report topics and the data used to carry out

³ <http://www.gov.scot/Publications/2015/02/6614>

the assessment. Linked data methodology was used to enhance the user experience of searching and viewing the data while reducing data management overheads of the website as the indicator data is managed at source. Work is ongoing to establish links between Scotland's Environmental Indicators to the EEA State of Environment Indicators which will assist the EEA in the future collation of member state indicators that contribute to European SoE indicator reporting.

The range and depth of **datasets** that have links on the website continues to grow (over 300) – in the Map View, Land Information Search and Discover Data applications, and Indicators and Data. All of these applications and Scotland's Environment website as a whole, follows the general principles of SEIS⁴ of moving away from paper based reporting and single purpose data publication, to managing data at source, sharing data for multiple uses, making it accessible to all users to enable geographical scale comparisons and citizen participation.

Objective 3: To improve the effectiveness of policy development and the targeting of environmental measures by providing a better understanding of the wider impacts of environmental change. SEWeb will have developed a means of prioritising environmental problems based on environmental, economic, and social information (e.g. for climate adaptation).

The project has published (with the relaunch of the website in June 2014) an updated version of the State of the Environment which involved an extensive partnership exercise of assessing and prioritising Scotland's Key Environmental Issues. The [methodology](#)⁵, published as a result of this work, is now being used by SEPA in identifying key environmental priorities on which it will focus future work of the organisation.

The assessment process did clarify what constituted a primary and secondary pressure, but different approaches made combining the overall list of pressures difficult.

The outputs of the process have been shared with the editorial group of the European Environment Agency's SoE report, and they are particularly keen to discuss the methodology for incorporating "uncertainty" in our assessments.

As a result of providing data and information that is accessible to a wide range of interested members of the public, Scotland's Environment website:

- provides useful context to reports on the state and quality of the environment;
- improves our understanding of the challenges we need to tackle and the wide range of benefits the environment has to offer all sectors of society; and
- encourages communities, school children and individuals to investigate their own local environment further, observing what is happening around them, collect their own data and take action to protect and improve their local environment.

Having the tools available to see what is in your local area is an enabler for the effectiveness of policy that provides more community empowerment and the use of the environment sustainably. The policy landscape is different now to when it was at the start of SEWeb and SEWeb has been developed in alignment with developing policy and ambition of Government. SEWeb is a major digital enabler for making connection between policy and community.

The partnership fully supported the work by SEWeb, with JHI and CREW, to assess the likely effectiveness of future measures and expressed an interest in applying the method in the

⁴ <http://www.eea.europa.eu/about-us/what/shared-environmental-information-system-1>

⁵ <http://www.environment.scotland.gov.uk/media/126075/key-environmental-issues-report.pdf>

future. The multi-criteria mapping approach undertaken by the Effectiveness of Measures work area (action 10) has real potential to reach beyond the scope of the LIFE project and SEPA is already considering the approach in the review of its Corporate Plan.

Objective 4: To engage the public by providing access to high quality on-line interactive resources to promote better understanding of the environment, public debate on environmental priorities, public monitoring of the environment and public activity to protect and improve the environment.

At the start of the project, a Public Engagement Evaluation Strategy was produced to inform and evaluate all activities relating to public engagement. This work directly influenced the development of some key tools and services for engaging with the public:

- A suite of ‘Get Learning’ web pages for young people (see also Actions 11,12 and13)
- The ‘Our Environment (Youth Discussion)’ Competition (see also Actions 11, 12 and13)
- The ‘What’s In My Area’ interactive map and dashboard of apps for finding out about local environmental quality, recycling facilities, things to see, monitoring and action projects to get involved in.
- ‘Project Finder,’ a searchable inventory of citizen science and actions projects.

A series of deliberative discussions were held with representative members of the public throughout Scotland, to seek their views on what they thought were the environmental priorities for the country, and to compare these with the priorities as identified by the SEWeb State of the Environment Report. These events were then followed up by an online discussion which covered the same subjects.

Not only did these discussions increase understanding between members of the public and professional environmental scientists, but also resulted in the publication of a ‘toolkit’ methodology for SEWeb partners and other organisations to use when engaging the public in future discussions.

New programmes of citizen science and action have been initiated – as noted below evaluation is ongoing:

- Air Quality Citizen Science in schools – a combination of an online teaching pack, low cost air quality sensors for use by schools, ‘Spotfire’ data visualisation tools to enable students to interpret and present their findings and conduct surveys of how they travel to school and effect on air quality
- ‘Our Environment’ Competition – an annual competition that challenges young people from schools and youth groups to describe local environmental problems and come up with ideas for solving them. Winning entries are given cash prizes to support the implementation of their ideas. This project also incorporates elements of action, for example the creation of wildlife gardens in schools and recycling initiatives.
- Invasive Non Native Species (INNS) Data Entry Portal – an online form with supporting guidance and information to enable the public to submit records of their sightings of INNS in Scotland. Records will be fed into national databases of INNS and used to inform management decisions relating to control or eradication in the case of the most harmful species.

- River Obstacles Mobile App – a new app for recording the details of both artificial and natural barriers in rivers, which can disrupt the migration of fish and pose hazards to river users such as canoeists or kayakers. Records will be used to inform decisions about whether barriers should be modified to allow fish passage or removed entirely.

As well as initiating new programmes of citizen science and action, SEWeb has provided online tools, guidance and signposts in response to feedback from the Citizen Science expert group to support the development and maintenance of projects throughout Scotland, for example:

Project Finder – an easy to search online inventory of monitoring and action projects that enables prospective volunteers to find projects that are most suited to their interests and make contact with the organisations running those projects.

Mobile Apps – an extensive list of apps that support both citizen science and action, with summary descriptions and links to locations where the apps can be downloaded.

Citizen Science Toolkit – this pulls together a number of open source (freely available) resources to help people set up their own citizen science projects. It includes data collation, identification and infrastructure development tools.

Key Deliverables:

Project Management (Action 1-3)

All of the reports have been delivered according to timetable set out in bid document Part C.

- Bid Revision (revision to the Grant Agreement, not initially envisaged)
 - Inception Report; Mid-Term Report; Progress Report and Monthly Project reports.
- All reporting deliverables will be completed with the delivery of this Final Report and the accompanying Audit Report.

Public Engagement (Actions 4, 11-13, 25)

All public engagement deliverables achieved.

- Public Engagement Evaluation Strategy
- Public Interest in the Environment Report
- Eurobarometer and Scottish Opinion Surveys
- Understanding Behavioural Change Report
- Public Discussion – priorities for Scotland’s Environment
- Conducting Public Discussions About the Environment – a toolkit
- Citizen Science Participation – effects on behaviour and attitudes
- Tools: Project Finder; Citizen Science Toolkit; Air Quality and Citizen Science in Schools Project; Mobile Apps
- Our Environment Competition

Science Coordination (Actions 5-10)

Exceeded quantifiable deliverables in many areas

- Number of organisation SEWeb has created new partnerships with – 90
- Number of data sets users can access via SEWeb - 311
- Number of data tools transforming and presenting shared data - 19
- Number of information resources users of SEWeb can search and access – over 2000
- Prioritising Key environmental issues – report and methodology
- Effectiveness of measures – report and methodology

- Daughter websites – Scotland’s Soils, Scotland’s Aquaculture, Air Quality, Atlas of Living Scotland (Biodiversity)
- Health and Air Quality – report and key messages

Information Systems (Actions 14 – 17)

All deliverables achieved.

- Website standards and guidelines for daughter websites
- Adding resources to the SEARCH
- Contact us response procedure
- Social media rules of engagement and response guidelines
- User Guidance – user help documentation included in all applications - videos

Communications (Actions 18-24)

All deliverables achieved and engagement opportunities exceeded expectations.

- Communications toolkit for partners
- Press releases - 11
- SEPA view and other articles - 12
- Digital brochures – 3
- Project Newsletters – 7
- Project Briefing Notes - 6
- Videos and podcasts - 20 (number of views – 1376 – as at end June 2014)
- ENetworking Groups – Facebook⁶ and twitter⁷ (total number of users reached – nearly 630,000 – as at end May 2015)
- Presentation at conferences and events - 120
- Project Web pages <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/>
- Noticeboards displayed at offices of SEPA and key partners - 6
- SEWeb promotional material – pop up stands and other event merchandise (include photo)
- SEWeb partnership conference – September 2011
- International conference – March 2015⁸

⁶ <https://www.facebook.com/pages/Scotlands-Environment-Web/504094719673549>

⁷ <https://twitter.com/ScotEnvironment>

⁸ <http://www.environment.scotland.gov.uk/international-event/>

The main report contains the following chapters:

- The Executive summary lists the Objectives in some detail and gives a very quick overview of the Deliverables in each of the 5 work streams which were achieved in the project to reach the objectives.
- The Introduction gives the background to the project, the problem that was to be solved and the solution with benefits
- The Administrative chapter describes the governance and project planning process used in the project together with issues that have been dealt with.
- In chapter 5 the technical progress with all of the actions has been described and demonstrates the successful achievement of the objectives.
- The dissemination activities have been heavily influenced by the development of social media in the lifetime of the project and this is reflected in activities undertaken
- Chapter 6 covers the financial statement of overall costs and any variances with the original budget. It also explains the financial procedures used in the project.
- Chapter 7 lists all Annexes
- Chapter 8 covers the detailed financial report.

3. Introduction

Issues to be addressed

The emerging idea for Scotland's Environment Web grew from a number of challenges that centred around that fact that in the majority of EU member states, a wide range of organisations are involved in the monitoring and protection of the environment but there was limited scope for close interaction on ideas and on data provision.

In Scotland, these organisations had developed their own monitoring and reporting strategies designed to deliver their respective individual functions. The results of this were:

- Fragmentation of information across many different sources and inability to compare data sets.
- Difficulty in identifying common issues across environmental problems.
- Difficulty in determining a comprehensive and timely picture of the environment.
- Un-co-ordinated public communication on key environmental issues and provision of relevant and engaging information, resulting in disengaged public attitudes, lack of awareness and involvement in action.
- Incomplete reporting to the European Environment Agency.

Through the INSPIRE Directive and the Shared Environmental Information Systems concept promoted by the EEA, there were strong drivers to opening up and sharing of data for wider accessibility, use and benefit, engaging with citizens and a shift away from paper based reporting towards digital publication of data and information.

Horizon scanning of future issues also highlighted a strong Open Data movement that would ultimately be reaching the public sector, and the recognition of the fast pace of technology shift in the way people use the web and mobile devices to search for, access and view information.

Hypothesis

In response to these challenges, the Scotland's Environment Web proposal was to present a wide view of Scotland's environment, through a website that brought together data and information as well as expertise from a number of organisations' into a single centralised "gateway to everything you want to know about Scotland's Environment"

Building on the Scotland's Environment Web pilot website, the project aimed to:

Objective 1 - Develop an inclusive partnership programme bringing together the key data providers and data users

Objective 2 - Promote the expansion of a European SEIS (Shared Environmental Information System) through the development of a regional SEIS that will provide information required by the EEA

Objective 3 - Provide a better understanding of the wider impacts of environmental change and develop a means of prioritising environmental problems

Objective 4 - Engage the public by providing access to high quality on-line interactive resources to promote better understanding of the environment, and involvement in discussion, monitoring and action

Technical Solution

In working towards these objectives, Scotland's Environment Web does much more than provide access to data and information on a website. The project has extended the partnership of data providers, improved communication across organisations, established a framework

for collaborative exploration of shared solutions, developed innovative tools and applications of mutual benefit, improved data usability and connectivity, and established a user focussed web site that:

- provides a platform for shared services, achieving efficiency savings to the data provider and data user, by developing a range of shared online applications and web tools to facilitate quicker and easier access to environmental information and data;
- delivers a single point of access to environmental data and a multi-agency view of Scotland's environment, and can streamline data reporting to Europe;
- improves sharing, analysis and presentation of environmental information through an enhanced network of partnerships between interested organisations, businesses, groups and individuals;
- improves understanding of Scotland's environment through new data presentation, visualisation and analysis tools;
- provides methods of identifying and prioritising environmental problems, and targeting measures to manage and improve Scotland's environment; and
- seeks actively to involve the public, schools and academics in developing understanding of the environment and improving the way we protect it through citizen science, action and behaviour change.

Scotland's Environment Web is not a data repository. Through a common approach to open data standards (e.g. INSPIRE for spatial data), Scotland's Environment web site provides a one-stop-shop to help users search, discover, find and access the extensive range of information and data that is currently spread across multiple organisations and many different web sites. It improves understanding of the value of gathering and interpreting data to inform decisions.

Results/Benefits

Scotland's Environment Web has delivered a shared partnership web platform to help users find data; get information from data; and use it to inform, understand, decide and behave. The project has resulted in:

- Greater transparency through wider access to that supports environmental reporting and decision making
- Increased profile of partner organisations and the data/information they publish
- Wider use of data across new audiences, extending its reach and influence
- New analysis, identification and prioritisation based on the use of trusted and authoritative centralised source of evidence;
- Informed decision making
- Shared resource to collaboratively design, develop and implement solutions
- Optimised and streamlined user experience of search and discovery
- Access to tools that can transform complex scientific data into more useable and understandable formats
- Personalised and citizen focussed view of the local environment.

In the longer term, SEWeb aims to continue partnership working and through innovation, demonstration, shared learning and collaborative working, grow the WEB of:

- Data providers
- Data users
- Shared knowledge and data
- Connected websites – SEWeb, Aquaculture, Soils, Biodiversity (AoLS), and partner websites
- Environmental Scientists and Observers

- Environmental Stewards
To ultimately benefit Scotland's Environment, Society and the Economy

4. Administrative part

4.1. Description of the management system

The project was managed in line with the Prince 2 project management methodology which is used as the standard for SEPA projects. Dedicated staff were appointed who were responsible for running the project.

Annex a describes project governance; outlining the roles of the project team and governing bodies.

The project was split into 5 separate work streams, each managed by a work stream lead with relevant expertise. The work streams were:

- 1) Project management and evaluation
- 2) Science coordination
- 3) Information systems development
- 4) Public engagement
- 5) Communications

Three governance bodies were formed to monitor and steer the project and provide representation of partner organisations:

- (i) Project Control Board (PCB); responsible for monitoring project quality, time and budget, ensuring the project is delivered in line with the LIFE contract. This group comprised of SEPA department heads and a representative from Scottish Government.
- (ii) Management Group (MG); responsible for guiding the project, providing technical advice and decision making on collaborative areas of work between the partner organisations. Comprised of managerial staff from SEPA and partner organisations.
- (iii) Partnership Steering Group (SG); Responsible for providing strategic advice, and managing the wider SEWeb vision and partnerships. Comprised of Directors from SEPA and partner organisations and chaired by the Scottish Government.

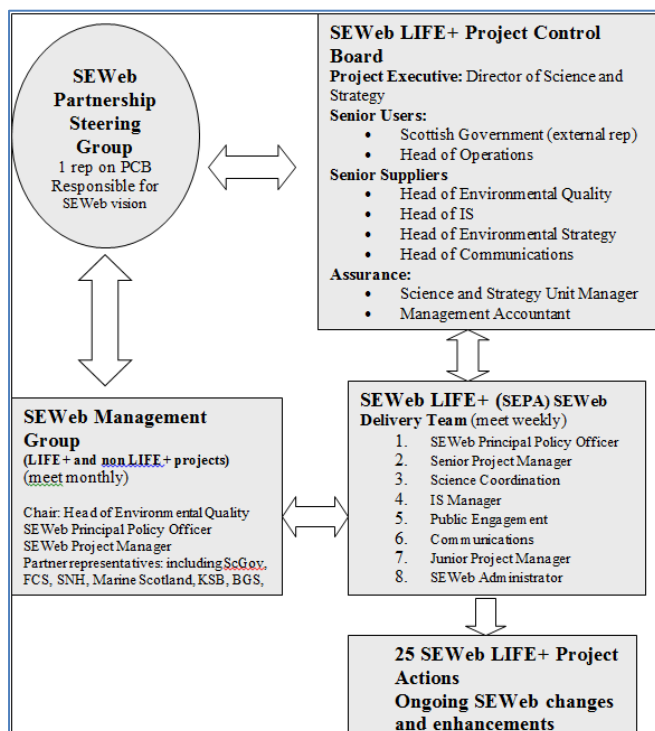


Figure 1: Governance Groups

PCB and MG met on a monthly basis and SG met on a quarterly basis. The project team co-ordinated the arrangement of meetings with Scottish Government and partners and presented papers to the meetings based on requests from the bodies involved. Finally the team recorded minutes and actions and fed that back in to the planning for the next stage of the project.

Wider stakeholder engagement was undertaken in a number of formats, such as one-to-one meetings, round table meetings, workshops and conference presentations. This engagement was a direct result of the discussions at the Management Group meeting where new areas of work were proposed and relevant stakeholders defined.

The project has been delivered with high partnership input but without the need for formal Partnership Agreements. The Governance of the group involving the Management Group which represented the partners ensured buy-in from appropriate partners when required.

Each work stream lead was responsible for four to six actions under the bid. The Senior Project Manager and SEWeb Principal Policy Officer oversaw all work streams ensuring all five areas contributed to the objectives and deliverables of the SEWeb LIFE Project.

The project delivery team, made up of the Senior Project Manager, SEWeb principal policy officer, work stream leads and project support staff, met on a weekly basis to discuss progress, share knowledge and learning, address problem solving and plan forthcoming activities. The weekly meeting provided an opportunity to address issues affecting the interactions and dependencies between multiple work streams and stakeholders, co-ordinate areas of work and ensure consistency across the project.

The 4-year project was broken down into Stages following the Prince 2 methodology and used Product-based planning to concentrate delivery on the outcomes for each piece of work. The stages were created to coincide with the UK Financial year (April to March) as this best enabled planning of resources and budgets in SEPA and with partners.

The diagram below shows how the delivery of the SEWeb LIFE+ project was approached, taking an annual iterative approach to the implementation stages of the project, identifying priority themes with SEWeb partners and scheduling regular stages of review and forward planning so that the project evolved and responded to new and emerging issues that contributed to the objectives of the project.

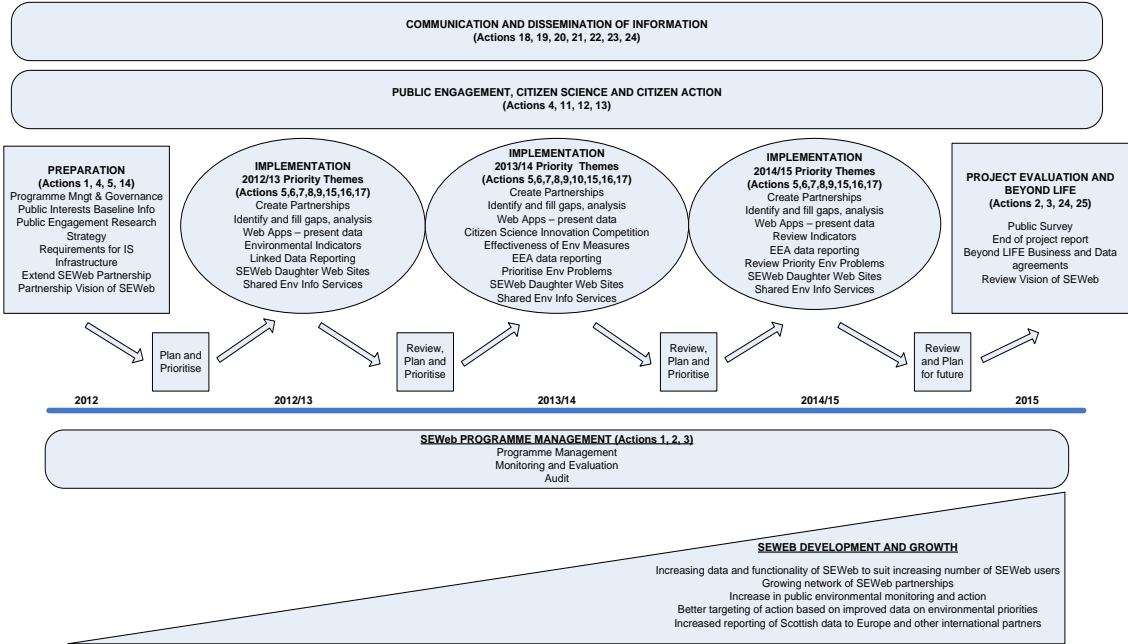


Figure 2: Annual Implementation

The 1st year was focussed on defining, planning and preparation for the subsequent years of delivery and finessing the bid to reflect improvements in the delivery of actions and changes in the team since the initial bid was written in July 2010.

Key outputs of the PRINCE2 delivery method were:

- A Product Description template (**Annex n**) was created which defined all products created throughout the project and the approval process defined which ensured buy-in to the project from SEWeb partners through the Management Group.
- A Project Initiation Document was produced and approved (**Annex a1**)
- Plans created for the project lifetime (high-level) and for the particular stage (April 2012 – March 2013) - **Annex g-k**.
- A monthly report to SEPAs Project Control Board records issues, risks, corrective action and financial statement (example **Annex ac**).
- Financial guidance (**Annex b**) was created and approved in order to comply with the Common Provisions and this guidance covered budgets, SEWeb cost centres and other codes, time management, recording of expenses, financial reporting. All of these procedures have been examined by the EU Monitoring team during the mission visits and found to be satisfactory.

Subsequent stages followed the annual timetable of:

Nov – Dec Engagement with partners on requirements for the next financial year
 Jan – Feb Definition of products
 Feb – Mar Resource Planning for the next stage; review of current stage
 Apr – Mar Delivery of the Stage plan for that stage.

Project Management actions continued during these years - Project Management and Project Monitoring & Evaluating. The Financial Procedures initiated in the first stage year were designed to ensure that all necessary information would be in place for the final Audit.

Developing a framework for sustaining the SEWeb project after LIFE was also a key part of the project management actions. This work started early in the 2014/15 stage and resulted in a series of 1-1 meetings with all partners, a workshop to explore the Future of SEWeb and finally a proposal to the SEPA Agency Management Team (AMT) for the resources and commitment for the future of SEWeb within SEPA. The feedback from the partnership meetings (**Annex c**), involving approximately 120 staff members created a powerful set of priority work areas for the future, formed the basis for a vision and plans for the future and ensured the commitment of partners to SEWeb. The Steering Group approved the way forward and roadmap at a meeting in November 2014 – **Annex x-z**.

Following the decision by SEPA AMT to ensure the future of SEWeb, recruitment for the team was progressed and completed in July 2015. The funding of SEWeb will be managed in the context of Business as Usual priorities in the future. This team of 5 full-time staff and a number of partial resources will take the website and partnership forward.

Technical activity reports delivered since the start of the project as per Article 12 in LIFE+ common provisions:

Action	Deliverable Description	Expected	Actual
1	Project Initiation Document (Annex a1)	Q2 2012	25/06/12
1	Bid Revision (revision to the Grant Agreement, not initially envisaged)	n/a	29/05/12
1	Inception Report	30/06/12	29/05/12
1	Mid-Term Report	29/11/13	07/08/13
1	Progress Report	29/05/15	27/11/14
1	Annual Product Breakdown Structure (Annex d-f)	n/a	annual
1	Product Descriptions (68) – template Annex n	Q2 2012	annual
1	Annual Project Plans Annex g-k	Q2 2012	annual
2	Monthly Project reports	Monthly	monthly
3	Audit Report (section 8)	Q3 2015	04/11/15

Summary of key changes to SEWeb LIFE Bid in the Amendment to the Grant Agreement

Since the submission of the Grant Agreement in August 2010 the base from which the project was to start had changed. In particular the Public Engagement and Technology areas had moved on considerably and the revised bid reflected changes in these domains.

1. Text Amendments

1.1 Change in approach to delivery – the delivery of the SEWeb LIFE+ bid will take an annual iterative / phased approach to the implementation stage of the project.

1.2 Change to public engagement objective – to reflect the findings of a public engagement evaluation strategy that will now be developed, with SEWeb partners.

From: To engage the public in the protection of the environment and thereby improve their understanding of the environmental issues at a Scottish and European level. SEWeb will have developed a programme which will promote the involvement of the public using the SEWeb as the focal point. This approach will foster improved public understanding of EU environmental priorities

To: To engage the public by providing access to high quality on-line interactive resources to promote better understanding of the environment, public debate on environmental priorities, public monitoring of the environment and public activity to protect and improve the environment

1.3 Change in approach to actions – Areas of improvement include better methods of collecting data, and the use of focus groups for youth engagement and incorporating SEWeb specific questions within existing surveys, rather than trying to collect this information in-house. There have also been advances in available IT tools for the management and analysis of data.

2. Budget Changes

2.1 Increase in External Assistance - This reflects the changes in the approach to this area of work as outlined in 1.2 which resulted in more contracted work.

2.2 Change in External Assistance and Durable Goods spend on IS infrastructure (Action 17) – due to the way the pilot project was implemented the profile of costs for IS infrastructure changed.

2.3 Increase in costs for new applications (Action 15) – the number and complexity of applications to be developed has increased and this is reflected in an increase in staff resources and external assistance under this Action.

2.4 Change in Personnel Profile (all Actions) – The overall costs for Personnel have reduced and this reflects changes in all actions for this category.

2.5 Overall costs held as in original bid – the changes referred to in 2.1-2.4 have been made within the financial constraints of the original bid and so the total eligible cost of the project has been maintained.

3. Schedule Changes

3.1 Prolongation of the project – The changes in this revised bid include a prolongation of around 6 months to cater for issues around recruitment and late launch of the pilot (pre-cursor to the LIFE funded project).

3.2 End Date – the new end date for the project is 31st August 2015.

4. Changes in Financial Forms.

All costs have been adjusted to reflect the changes detailed above while maintaining the overall agreed budget.

The Full report of changes to the original SEWeb LIFE Bid document can be found at **Annex I**

4.2. Evaluation of the management system

Methodology

The project management process was based on the PRINCE2 model used by the Project Management Office (PMO) in SEPA and profited from the experience of the Senior Project Manager and PMO staff in this methodology. Other non-PMO staff were also trained in the principles of PRINCE2 project management methodology. The project used the Product-based Planning method (see **Annex n**) which ensured that each product was defined in summary and approved by the Management Group before work was started. This ensured buy-in to that particular product by the stakeholder group and a clear intention for the output so that the development process could progress as efficiently as possible.

Partnership

The partnership was represented in the decision-making process by the Management Group and this group was expanded over the lifetime of the project to include new members who reflected the changing priority areas of development. Although not subject to written agreements the partnership, through the Management Group, contributed substantially to the success of the project.

Collaboration with partners was a key aspect to achieving objectives and these partnerships are described in Action 5 (5.1.2) and in 4.1. These partnerships were created out of a common recognition of the benefits of the project rather than through a formal or legislative mandate – Partners willingly contributed resources to help deliver the project though none of the partners were formal co-beneficiaries.

Workload planning and engaging partners has been very successful, however has taken longer than foreseen. Both in terms of finalising annual workload plans and receiving delivery of completed pieces of work from partners within the planned timelines. This was primarily due to heavy workloads and competing priorities. We tackled this challenge in two ways, firstly by ensuring we engaged the correct people; the Management and Steering Groups were key to ensuring we were able to engage the appropriate people within partner organisations, secondly by ensuring SEWeb work was aligned as closely as possible to partner corporate priorities and challenges that they identified, so through working with SEWeb, they were able to achieve more and use SEWeb to innovate in ways they might not otherwise be able to.

We recognised that it was impossible to engage every partner in every product/action, therefore when products were proposed to Management Group, where appropriate, the group nominated a business lead who made decisions through the development process, preventing delays. The group was engaged as a whole at key stages; at a minimum for approval of proposed product and sign off of developed product before launch.

Delayed Start

There were material delays encountered at the start of the project which were accommodated in an approved bid revision submitted in May 2012. The flexibility to manage content and budget over a multi-year meant that these delays did not materially impact the overall delivery of the project. SEPA and its partners captured the lessons learned relating to recruitment, the 2% rule, financial and administrative arrangement requirements, and the extent of workload planning, and revised plans for the following year based on this learning.

Recruitment

Recruitment was, and still is, a major challenge for public sector projects. The need to successfully find, recruit and retain temporary staff is acknowledged as a primary challenge and SEWeb is a prime example of this challenge. The effort and time involved in staffing the project was excessive but necessary to achieve the overall delivery of the project.

In some cases agency day-rate contractors had to be engaged to fill resource gaps. This extra cost to the project budget was managed by the project manager and management accountancy team.

There were some movements of budget between Actions, which are detailed against the relevant action and in section 6.5, in many cases due to the issues on recruitment above. While there have been some changes to the budget profile (between categories) these have been within the limit of €30,000 and 10% for any one category of expenditure in compliance with the Common Provisions. These are described in section 6.1.

Project Management

The workload in the area of project planning, tracking and monitoring was underestimated. In the process of rewriting the bid the extra administration created by having 20 full-time staff and 50 part-time staff working on up to 70 different products was not appreciated. Additional project management resource was recruited and this additional resource was key in ensuring the delivery of the full set of products, the tracking of progress and efficient management of resources.

Where the project team were uncertain on aspects of the Common Provisions we engaged in valuable communication with the EU Monitoring team, Astrale (later renamed 'nemo') and where necessary referral to the Commission itself. Matters discussed with the Financial Desk Officers covered the 2% rule, Partnerships and Costs associated with the purchase of Spotfire software. More detail in section 8.

SEWeb led the way in innovative tools and technologies for data display and interpretation. As the project approached data publication products we found that there were not always clearly defined national standards for data exchange, and where standards were in development (for example for web feature services) timescales were beyond the LIFE project's duration. This led to SEWeb being engaged by the Scottish Government's digital strategy project and to lead the way in terms of standards development in Scotland. The LIFE project funding allowed SEWeb to take this lead as an innovation project.

5. Technical part

5.1. Technical progress

The following table lists the Key Deliverables by Action:

(n/a indicates that this deliverable was not specifically stated or a time frame was not given in revised Grant Agreement)

Action	Deliverable Description	Expected	Actual
4	Public Engagement Evaluation Strategy	Q2 2012	08/05/12
4	Public Interest in the Environment Report	Q1 2012	16/05/12
4	Eurobarometer and Scottish Opinion Surveys	Q1 2012	June 12
4	Young People and Scotland's Environment Web	n/a	Q2 2012
4	Understanding Behavioural Change Report	n/a	May 12
5	Annual Environmental information priority lists of requirements and definition of analysis and presentation tools	Q1 2012 Q1 2013 Q1 2014	Q1 2012 and annual
5	Number of organisation SEWeb has created new partnerships with – 90	Annual	ongoing
5	Number of meetings with EEA – 2	Annual	Nov 11 /Oct 14
6/7/8	Number of data sets users can access via SEWeb - 311	Annual	ongoing
6/7/8	Number of information resources users of SEWeb can search and access – over 2000	Ongoing	ongoing
7	Documentation on Future data provision processes	Q1 2013 Q1 2014	Sep 12 annual
8	Number of data tools transforming and presenting shared data - 19	Ongoing	ongoing
8	Number of Scottish environmental research information and data sources searchable on Discover Research – 2	n/a	Q1 2015
8	Health and Air Quality – report and key messages	n/a	Q2 2015
9	Prioritising Key environmental issues – report and methodology	Q3 2013	Q3 2015
10	Effectiveness of measures – report and methodology	Q1 2014	Q3 2015
11	Citizen Science Participation – effects on behaviour and attitudes	n/a	Q3/4 2013
11	Project Finder	Q3 2013	Q3 2014
11	Citizen Science Toolkit	Q3 2013	Q2 2013
11/13	Air Quality and Citizen Science in Schools Project	Q3 2013	Q2 2015
11	Mobile Apps List	n/a	Q2 2014
11	River Obstacles Mobile App	Q3 2013	Q2 2015
11	INNS Data Entry Portal	Q3 2013	Q3 2015
11	'Science Needs You' event at Edinburgh Intl Science Festival	n/a	Apr 14
11/13	Get Learning pages	Q2 2013	Q3 2015
12	Public Discussion – priorities for Scotland's Environment	Q2 2013	Q3 2013
12	Conducting Public Discussions About the Environment – a toolkit	Q3 2013	Q4 2013
13	Our Environment Competition	Q1 2014	annual
14	Website Style guide	Q1 2012	Q1 2012

14	Website standards and guidelines for daughter websites	Q1 2012	Q1 2012
14	Data visualisation request form	Q3 2012	May 14
14	Adding resources to the SEARCH	Q1 2012	Ongoing
14	Contact us response procedure	Q3 2012	May 14
14	Social media rules of engagement and response guidelines	Q3 2012	May 14
14	Mapping standards/guidelines	Q3 2012	May 14
14	Discover data standards/guidelines	Q3 2012	May 14
14	Linked data standards /guidelines	Q3 2012	May 15
15	14 applications (9 complex, 4 standard, 1 simple)	Q4 2014	Aug 15
15	Daughter websites – Scotland’s Soils, Scotland’s Aquaculture, Atlas of Living Scotland (Biodiversity)	n/a	Sep 2013/Dec 2013/Aug 2015
15	‘What’s In My Area’ map and dashboard	n/a	Future*
16	Best practice case studies published – 2	n/a	Nov 14
16	3 data areas using Linked Data framework (Emissions, Water Resources, Indicators and Data)	Annual	Aug 15
16	SEWeb Open Data Journey presentation ⁹	n/a	Apr 15
17	Servers and hardware to support new applications, disaster recovery and Spotfire public-facing system	Q3 2012	Q1 2012
17	GIS software	Q3 2012	Q1 2012

(* work on the WIMA development was completed in the project timescale but implementation was delayed until November 2015)

⁹ http://www.environment.scotland.gov.uk/media/100357/data_journey_presentations.pdf

5.1.1. Action 4: Identifying public interests in environmental data

What has been done, and by whom?

A [Public Engagement Evaluation Strategy](#)¹⁰ was put in place in Q2 2012 to guide a programme of public engagement activities and ensure the right information was collected to enable the project's impact to be measured. This strategy has been periodically reviewed throughout the project life, by a small group of project partners experienced in this field (SEPA, SNH, TCV, JHI and Scottish Government), to ensure public engagement is maintained and findings inform the rest of the project activity.

A number of public engagement activities were undertaken in order to ensure the project delivered Action 4, including:

- (i) Analysis of existing relevant public surveys, including the [2011 Eurobarometer Survey on Attitudes Towards the Environment](#)¹¹.
- (ii) [Scottish Omnibus Survey](#)¹² (linked with relevant public survey being undertaken by SNH) gathered information on public attitudes on the environment and environmental data from approx. 2,000 respondents throughout Scotland.
- (iii) Information enquiries to public agencies in 2011, plus website usage were analysed and key trends identified.
- (iv) Review undertaken of websites currently providing information about the environment and key gaps determined.
- (v) A four-day event with young people took place in March 2012¹³, producing valuable insights and practical ideas as to how SEWeb could help and support young people to enjoy, understand and protect the environment.
- (vi) [General public focus groups](#)¹⁴ held in June 2012 obtained opinion on the pilot SE website and wider attitudes to the environment and environmental data.

All information from the public engagement activities described above was drawn together to form a [Public Interest Report](#)¹⁵, summarising the intelligence gathered on public attitudes to the environment and environmental data and drawing conclusions about the implications and suggested directions for the SEWeb project. The report contained recommendations for future developments of Scotland's Environment website in order to increase public use of the site and, as a result increase, public engagement with the environment. These recommendations were acted on as follows:

- a) Developing content specifically aimed at young people, e.g. a suite of new [Get Learning](#)¹⁶ pages, produced in partnership with Education Scotland, and launched in August 2015. These web pages are designed to support the Scottish Government's [Curriculum for Excellence](#)¹⁷ and provide a range of information, tools and resources tailored to specific age groups.

¹⁰ http://www.environment.scotland.gov.uk/pdf/Public_Engagement_Evaluation_Strategy.pdf

¹¹ <http://www.environment.scotland.gov.uk/media/16533/Analysis-of-April-2011-Eurobarometer-Survey-Data.pdf>

¹² Results of Omnibus Survey are available on SE website -

http://www.environment.scotland.gov.uk/pdf/Feb_Mar_2012_Population_Survey.pdf

¹³ A report on the four day event with young people is available on the SE website -

<http://www.environment.scotland.gov.uk/media/26615/Young-People-and-Scotlands-Environment-Web.pdf>

¹⁴ Full report from Focus Groups available on SE website -

http://www.environment.scotland.gov.uk/pdf/Scotlands_Environment_Web_General_Public_Research.pdf

¹⁵ <http://www.environment.scotland.gov.uk/media/16551/Public-Interest-in-the-Environment-Report-20-08-2012.pdf>

¹⁶ <http://www.environment.scotland.gov.uk/get-learning>

¹⁷ <http://www.educationscotland.gov.uk/learningandteaching/thecurriculum>

- b) Developing resources and content specifically for the public audience, particularly tools which allow them to view information about their local area, encourage people to make use of their environment for enjoyment, health and well-being, and to get involved with citizen science and action projects. This includes an extension of the ‘What’s in my area’ map tool, allowing people to identify points of interest or the environmental status of their neighbourhood (see below for more info – new tool launched in September 2015), and online tools and resources as described under Actions 11-13.
- c) Developing the structure of the website to improve connectivity between issues, science and action (re-designed user focused website launched in June 2014).

Young people are a key audience for SEWeb partners. The engagement and working with young people has produced valuable results both in terms of prototypes and information for



Figure 3: High School students and University mentors

SEWeb plus skills and experience for the young people involved. A storyboard and video diary of the young people’s experiences are available on [Scotland’s Environment website](http://www.environment.scotland.gov.uk)¹⁸. At the end of the four day event in 2012, young people presented ‘5 big ideas’ to the SEWeb team: (i) a youth section on SEWeb, (ii) a quiz, (iii) an online eco game, (iv) a mobile phone app, and (v) a Facebook page. Enthusiasm from partners stimulated a second phase of work; Stirling High School, SEWeb and the University of Abertay joined together to run

4 additional one-day workshops in November 2012 to enable the young people, supported by staff and post-graduates at the university (who provided their time free of charge) and an experienced facilitator, to develop prototypes of the ‘5 big ideas’ through a rapid application development process to demonstrate that their ideas could actually work. A Facebook page was created¹⁹ and at the time managed by the pupils; this led to the development of the current Facebook page²⁰. Prototypes of the remaining 4 products are available for possible future development. The positive outcomes and experience have led partners to identify and develop other areas where young people can be engaged, for example the youth discussion and ‘Our Environment’ competition as described under Actions 11, 12 and 13.

The development of the public engagement evaluation strategy identified a need to consider behavioural change more closely; one of the premises of the LIFE+ project is that good on-line tools and information can bring about a greater understanding of the environment and encourage public environmental monitoring and action. The partnership, led by the James Hutton Institute has produced a [report on the theory of behavioural change](#)²¹ and implications for the project. Behavioural change is an emerging area of interest for partners and the report underpinned a workshop for partners in June 2012 to consider how a greater understanding of the theory of behavioural change could influence policy development and implementation, including areas on which SEWeb could focus. As well as being of interest to individual partners, this work has specifically informed products developed under Actions 11 and 13 (encouraging citizen monitoring and action).

¹⁸ <http://www.environment.scotland.gov.uk/media/16595/Young-People-Presentation.pdf>

¹⁹ <https://www.facebook.com/#!/TheGreenPeople/?fref=ts>

²⁰ <https://www.facebook.com/pages/Scotlands-Environment-Web/504094719673549>

²¹ Report is available on SE Website -

http://www.environment.scotland.gov.uk/life_project/progress_update.aspx

Since completion of Action 4 in 2012, business requirements for an enhanced ‘What’s In My Area’ (WIMA) tool were scoped out. The enhanced WIMA incorporates both map services and a dashboard of applications providing a more localised view of environment data and activities to get involved in. The enhanced WIMA was launched on SEWeb in November 2015.

As part of the evaluation of public engagement activities (see Action 25 for more detail), an analysis of the 2014 Eurobarometer survey on public attitudes to the environment has been carried out²², including a comparison with results from the 2011 survey. This analysis has been conducted at EU, UK and Scottish levels, and provides the background context against which the effectiveness of SEWeb public engagement activities will be assessed in the period up to 31 March 2016 (again see Action 25 in 5.3.3 for more detail).

Progress against plan

The Public Interest Report satisfied the deliverables in this action.

Achievement of objectives

Objectives achieved.

Future Work beyond LIFE Project

Ongoing enhancements to the WIMA tool and the Get Learning pages. In the period up to 31st March 2016, options will be evaluated for progressing work in 2016-17 to identify and respond to public interests in environmental data, including possible development of the prototypes created by the pupils from Stirling High School.

Problems / Timing / Impacts

None.

²² <http://www.environment.scotland.gov.uk/media/125776/analysis-of-the-2014-and-2011-eurobarometer-surveys.pdf>

5.1.2. Action 5: Creating Partnerships

What has been done?

The partnership underpinning Scotland's Environment Web (SEWeb) is a key element to the success of the project. Representatives from a wide range of partner organisations have contributed expertise, advice, guidance, data and information to the scoping and development of new products and State of Environment reporting. Throughout the project, there has been an iterative process of holding workshops, discussions and presentations with partners to reinforce existing partnerships and build new partnerships beyond the core group, exploring where the SEWeb (LIFE) Project could add further value to their own corporate priorities and identify where opportunities to share resources and data could meet the LIFE Project objectives. This has been replicated each year as part of workload planning, allowing representatives from partner organisations to contribute to SEWeb discussions, in addition to those individuals on the management group and steering group, allowing the extent of the SEWeb partnership to evolve as new priorities for work were defined each year.



Figure 4: SEWeb LIFE Partnership Launch Event, September 2011

Once information themes were identified within the Management Group small expert subgroups were established to manage development of individual products. These groups' ensured partners were able to contribute to products where they can add value and achieve benefits for their organisation. It allowed dynamic product development by those with a stake in the product. These sub-groups reported to the Management Group via the lead

SEWeb delivery team member to ensure a co-ordinated approach across the project (examples of subgroup membership and working arrangements are given in **Annex p** - LIS minutes)

The themes covered were:

2012/13 – State of the Environment Report Update; Soils Database and Website; Ecosystems Services accounting; Planning and Strategic Environmental Assessments; Environmental Indicators.

2013/14 – Development of bespoke Spotfire applications; Development of Methodology to Prioritise Environmental Problems; Academic search tool; Public Engagement - Whats In My Back Yard; Citizen Science - communicating the value, project register

2014/15 – Air Quality in Education, Health & Wellbeing and Environment; Environment in Education; Biodiversity Website; Climate Change

All of the work defined by the partnership (**Annex g – k**) around these themes has been taken forward in the Actions following.

It has been estimated that SEWeb partnerships, over the course of the LIFE Project, have resulted in an additional 3000 working days of staff time and over £100,000 of additional match funding (Education, Discover Research, Air Quality and Health) to extend the scope, added value and delivery of SEWeb LIFE Project funding.

The core areas of SEWeb partnership working, as defined by the LIFE Bid, are summarised as follows:

- **THE MAIN SCOTTISH ENVIRONMENTAL COMPETENT AUTHORITIES**

From the outset key partners on the Scotland's Environment Web LIFE Project have been **Scottish Government, Scottish Natural Heritage, Forestry Commission Scotland, British Geological Survey, Marine Scotland, Historic Scotland, NHS Health Scotland, and Health Protection Scotland** (this group were also joined by The Hutton Institute, The Conservation Volunteers, Education Scotland and Keep Scotland Beautiful on the Management Group). Their role on the Partnership Steering Group and Management Group has been to define what the project would deliver and contributing resources to the project (See section 4.1 (ii)) as well as forming part of the core group of the 15 different data providing organisations that publish open data that SEWeb transforms into mapping and data visualisation products (see **Annex q** for the list of SEWeb data sets and data providing partners). Members of these organisations have been involved in more focussed areas of product delivery work, including: FCS and SNH – Land Information Search (a best practice partnership model – cited by Ordnance Survey²³ and ESRI²⁴), NHS Scotland and HPS – Air Quality and Health Key Messages, SNH, FCS and BGS – Citizen Science Expert Group, SoE Editorial Group and SoE topic Authors, and SoE state and trend assessments/prioritising key environmental issues

- **SEVEN OR MORE OF THE 13 MAIN SCOTTISH ACADEMIC INSTITUTIONS**

University of Aberdeen (Dot Rural programme) to scope out and develop a new prototype SEARCH tool on Scotland's Environment website for non-academics to search and access academic environmental research and data – Discover Research. The key goal of this partnership was to make accessible the significant amount of Scottish environmental research information and data to the widest range of users, including public bodies, academics, wider public and European data users, as well as a tool to help Universities deliver on their Research For Excellence funding requirements of extending the scope, reach and impact of their research to non-academics. The prototype has been built to search University of Aberdeen research publications and NERC (**National Environment Research Council**) research data. (Action 15)

Scotland's Centre of Expertise for Waters (CREW), a partnership between the **James Hutton Institute and all Scottish Higher Education Institutes** and funded by the Scottish Government has supported the project by developing a method to assess the effectiveness of measures (ref action 10)

SoE topic authors (ref action 8), and state and trend assessors (ref action 9) – **SRUC, JHI, CEH, Climate X Change, University of Highlands and Islands, University of Aberdeen, University of Dundee, University of Glasgow**

SEWeb worked **with Abertay university** on the 2013 Visioning report, holding user engagement workshops and producing a report to set the future purpose and design of the website (ref action 25), and worked with young people from Stirling High School in 2012 to prototype their ideas for Scotland's Environment Web (ref action 4)

²³ <https://www.ordnancesurvey.co.uk/business-and-government/case-studies/forestry-commission-scotland-land-information-search.html>

²⁴ <http://www.esriuk.com/Resources/case-studies/the-forestry-commission-scotland>

Robert Gordon University and **University of Edinburgh** were part of a partnership SEWeb created to scope out, plan organise and run Scotland's Environment EcoHack, attended by students from both universities to develop fresh new innovative ideas to make better use of available data, and to collect new local environmental data that can help further our understanding, and encourage people to get interested and get involved in Scotland's Environment (ref action 7)

University of Aberdeen and **CEH** collaborated with SEWeb in a partnership project (along with Institute of Occupational Medicine and The Conservation Volunteers) to design a local air quality pilot. The overall aim of the work was to help build further capabilities in the area of Citizen Science, building on identified data needs and existing projects by Scotland's Environment Web, CAMERAS and Scotland Counts, to develop an air quality CS approach to collect data, use data and engage with volunteers. (ref actions 11 and 13).

- SEVEN OR MORE NGO OR INTEREST GROUPS;

TCV – member of the management group, and the public engagement expert group, and have worked in partnership with SEWeb to carry out research

NBN, SBIF, RSPB – core group members of the Daughter Website Atlas of Living Scotland (Biodiversity data portal) that has also engaged with an extended range of biodiversity data collection NGO's and interest groups in scoping out and defining the data presentation needs and functionality of the daughter website, including **BTO, Butterfly Conservation, British Lichen Society, Outer Hebrides Biological Recording, Scottish Wildlife Trust, TWIC (The Wildlife Information Centre), and representatives from a number of Scottish Local Environmental Record Centres (BRISC – Biological Recording in Scotland)** (ref action 15)

Over 60 Citizen Science and Citizen Action NGO's and Interest groups are registered on Project Finder, promoting over 80 projects. SEWeb has built capacity within Scotland's Citizen Science community and worked with The Conservation Volunteers and the Scotland Counts project (ref action 11).

TCV, and (representing the wider **Scottish Environment Link** membership) **Butterfly Conservation, BTO, Buglife and the Open Air Laboratories Network** worked with SEWeb to define and scope out Project Finder and the SEWeb CS toolkit, some as members of the SEWeb Citizen Science expert group (ref action 11).

- REPRESENTATIVES OF THE SCHOOL EDUCATIONAL SECTOR

The wider education sector including teachers and education specialists have also been working with Scotland's environment Web project. Young people were identified as an important sector of Scotland's public for SEWeb as they may be less engaged with the environment yet they also have the best grasp of digital media and work was carried out with Stirling High School (Action 4). Recognising young people as a key audience for SEWeb, a workshop was held in February 2013 with **40 teachers** (from nursery, primary and secondary schools) and **education specialists such as John Muir Trust, EcoSchools and Education Scotland** to identify where SEWeb can add value to Scotland's Curriculum for Excellence and the Scottish Government Learning for Sustainability initiative. The ideas raised by these partners have been taken forward in a partnership between SEWeb and Education Scotland with the development of new **Get Learning** web pages, development of new Citizen Science resources for schools, and widespread engagement with well over 200 teachers and education specialists to promote Scotland's Environment Web and the range of data and information tools that can be used for education purposes (Action 11).

SEWeb is also in the third year of a partnership to engage school children in exploring local environmental issues and taking action/collecting data as part of the Our Environment competition – partnership consisting of **SEPA, KSB, Climate 2020 Group, Young Reporters for Environment, EcoSchools, and Young Scot.** (Action 11)

- EEA AND AT LEAST ONE OTHER EUROPEAN OR INTERNATIONAL DATA USER;

Meetings were held with colleagues from the European Environment Agency both in Copenhagen and by teleconference. An EIONET workshop in June 2015 was also attended by SEWeb – this offered the opportunity to network. SEWeb has presented to the NEEPA – European Network of the Heads of Environment Protection Agencies - see Action 11.

A key aim of this project is to provide better reporting to Europe on a range of data including water quantity, indicators and more streamlined reporting of emissions. SEWeb workstream lead for science co-ordination met with representatives of EEA in November 2011 to discuss Water Information System for Europe (WISE) and emissions reporting requirements and other areas of interest. As a result, a change in approach was agreed; rather than providing specific datasets, it emerged that a wider range of deliverables would be more useful to both EEA and SEWeb partners, including a trial of ecosystem services reporting, alignment of EEA and Scottish indicators and trial of Linked data reporting (these are described in detail at section 5.1.13, Action 16)

However it was not possible to progress the EEA methodology trial for Ecosystems Services as colleagues in EEA were unable to provide consolidated templates that would enable the trial (See **Annex m** - EEA ecosystem accounting method.)

Other key organisations that SEWeb has worked in partnership with on over the course of the project, on areas such as SoE, State and Trend Assessments, data sharing, data visualisation applications, citizen science include : **Clackmannanshire Council/SSN, Local Authority Improvement Service, Met office, Zero Waste Scotland, GeoConservation UK, Boreas Ecology, Institute of Historic Building Conservation, RCHAMS, Scottish Water, DEFRA, SNIFFER, Environment Agency, UKEOF Citizen Science Working Group**

Progress against plan



The establishment and maintenance of partnerships has been critical in the delivery of the LIFE bid – it continued throughout the project. The range of partners engaged in the project and the impact of SEWeb in attracting interest from the environmental sector is greater than had been envisaged.

The requirements definition by partners was achieved as planned through the Management Group – starting in January 2012 (**Annex af**). Every product development process was led by a nominated business lead from partner organisation – this ensured the most appropriate tools were developed to support data presentation and analysis.

Target	Achieved
Agreed a priority list of deliverables with the EEA and at least one other European/International body.	EEA 1. Agreed trial of ecosystem services reporting (Nov 11) 2. Linked data trial agreed. Indicators and data work (Oct 14) EIONET workshop in June 2015 NEEPA
Partnership with at least seven of the 13 main academic institutions in Scotland who are committed to delivering the project with SEPA.	Various projects: University of Aberdeen; Abertay University; Robert Gordon University; University of Edinburgh; University of Highlands and Islands; University of Dundee, University of Glasgow and other non-academic
Proposals to deliver information requirements for schools.	Work with Education Scotland delivered ‘Get Learning’ Also John Muir Trust, EcoSchools
Network of at least seven partner NGOs and Interest Groups who are committed to contributing to the project.	TCV ; NBN; SBIF; RSPB; Scottish Environment Link; Butterfly Conservation; BTO; Buglife; OPAL (See 7.2 for acronyms)

The engagement with the EEA enabled refinement of deliverables although delivery was delayed as a result (**Annex ah**).

Achievement of objectives

The SEWeb LIFE Project had an objective of “developing an inclusive partnership programme bringing together the key data providers and data users”. Partnerships are fundamental to the success of Scotland’s Environment Web as the information, tools and applications presented on the website for users are only as good as the data, information and expertise that our partners bring to the project. The range of organisations that SEWeb has worked with is extensive and will continue beyond the life of the LIFE project. Key partnerships have been formed and organisations are working well together to identify priority areas of work. The partnership is expanding beyond public bodies to include academia, schools and NGOs who are interested in a number of the SEWeb tools which can help them to develop environmental information and encourage public engagement.

Academic Data provision was progressed with the work with Dot.Rural/University of Aberdeen.

Future Work beyond LIFE Project

Over 100 staff from across the core partner organisations (Steering Group and Management Group) contributed to discussions on the future of Scotland’s Environment Web during the summer of 2014. This resulted in an extensive list of recommended enhancements, new data and products that SEWeb could develop beyond the LIFE project, and most importantly, set out a new Purpose, Target Audience and Benefits for the future of Scotland’s Environment Web. This has been approved by the partners along with a high level 3 year roadmap and a commitment to develop a new longer term partnership funding model to continue enhance the core funding approved by SEPA’s Agency Management Team that will continue to support SEWeb into the future.

(see **Annex c** – Future of SEWeb paper, purpose paper **Annex r** and 3 year roadmap **Annex s**)

Scotland's Environment Web has become recognised throughout the public sector as a best practice example of partnership working within the digital strategy/open data strategic frameworks being driven by Scottish Government, and has the potential to become the digital hub for the Scottish environment sector.

The current provision of resources in the Academic Research Tool is limited to Aberdeen University and NERC – however the Research for Excellence framework mandates the publication of research data as Open Data which will be followed up by SEWeb.

Problems / Timing / Impacts

In general, interest in the creation of partnerships has been extremely positive, and has resulted in real benefits to the delivery of the project. Partners across the sectors have faced significant resourcing challenges throughout the SEWeb LIFE Project term, Even in the face of these challenges, partners have been very engaged in Scotland's Environment Web and in the latter period of the project are really starting to see the benefits and ongoing potential of Scotland's Environment Web and the model of working collaboratively in developing solutions of mutual benefit.

5.1.3. Action 6: Identifying gaps in data availability

What has been done, and by whom?

A dataset list was created to track the identification and provision of the data required. This list contains datasets in 3 categories (1) data readily available from partners, (2) data which is available but requires significant resource to collate, (3) data which is not available and requires to be collated. Processes have been put in place to make this data in the first 2 categories available to SEWeb (the third category is discussed at 5.1.4 below). As part of the process, data owners have been identified and meetings held in order to identify and assign work required to make datasets available to SEWeb.

- This action has significant synergies with action 7, so should be read in conjunction. In fact Actions 6, 7, 8 were carried out as a combination. It is difficult to disaggregate the work here into separate actions.
- Datasets were prioritised according to project need; with those required to deliver project products were given priority (for example those required for the Land Information Search tool and Spotfire applications). Datasets providing the greatest benefit across multiple stakeholders were also prioritised.
- A process was put in place, which provides that if data is identified as a priority for SEWeb, but the owner organisation is unable to make it available as a web map service/web service, for example a small NGO who cannot provide web services, the most appropriate partner will act as a data custodian for the data. For example, SEPA are acting as data custodian for the Climate Change data supplied by the Met office for the Climate Change projections application and a process has been put in place to ensure the data are updated as necessary.
- Climate Change – Review to map out the existing science evidence available for Scotland completed.
- Through the CAMERAS partnership, monitoring action plan groups identified gaps in data availability, and implementation plans were developed to fill them. Forty-six people attended a conference on 17th November, and a framework for filling the data gaps was taken to the CAMERAS board meeting.
- Gaps in data were identified through complimentary work with the CAMERAS partnership, especially for gaps in air monitoring. As a result, we developed work to collect data on air quality from schools, as part of a wider “teaching package” (Action 11(i)).
- Data gaps were also identified through the “state and trend” assessments developed as part of the state of the environment report, and through the work on “data and indicators”.

Progress against plan

This has been an on-going task and this mirrors the organisation of a staged delivery with a review of deliverables and hence data requirements on an annual basis

Achievement of objectives

As the themes for each stage year (ref Action 5) were progressed the corresponding data needed to support the products were identified and discussions took place with data providers to enable provision and publication of the data required to deliver the products. The prioritised list was presented at Management Group meetings for co-ordinated agreement. (**Annex t**) The involvement of project team members in the Scottish Open Data Strategy informed the discussions with partners on the preferred method of publication and delivery of data.

Future Work beyond LIFE Project

The CAMERAS work to identify and fill monitoring gaps will continue, under the aegis of the Chief Scientist for Scotland. Workgroups have been set up, and will continue to improve monitoring, and work to align monitoring effort to evidence needs (as identified in a separate stream of work by Scottish Government and partners).

The SEWeb project will continue to identify data gaps, and work to fill them while working closely with Scottish Government and partners on the Open Data Strategy.

Problems / Timing / Impacts

None

5.1.4. Action 7: Fill environmental data gaps

What has been done?

Providing access to data has been a fundamental requirement of the LIFE+ bid. Working with a wide range of partners with varied remits and resource, the focus for prioritising datasets at the start of the project was largely based on making data available rather than targeting specific items. The project's focus then moved to building a more strategic approach to data sourcing and prioritising datasets in terms of valuable applications and assessment tools. A considerable amount of work has been undertaken over the life of the project in terms of prioritising data and liaising with project partners to source and harvest data.

This success in delivering data has largely been the result of strong partner relationships and their 'buy-in' to the project:

- Scotland's environment web provides a nationwide platform to showcase partner data, giving those interested in the environment a 'one stop shop' for data discovery.
- Scotland's Environment web does not publish or hold data, and this dynamic approach to making data available by harvesting it from source provides partners with full control and responsibility for data integrity.
- The INSPIRE Data standard has been integral to delivering a consistent approach to data sharing and data compatibility in terms of application development and visualising spatial data.
- The provision of a range of applications opens data to a wider audience and data can be queried and compared in different ways, so that visitors to the site no longer see environmental themes or ideas as separate entities and develop an understanding and perception of the environment holistically.
- The Scottish Government has cited Scotland's Environment Web as a best practice example of a portal to environmental open data.

Achievement of objectives

Yes. Work has been done to provide a wide and varied dataset resource. Targets have been exceeded and datasets are available to view and explore over a number of generic and more specialised applications.

The partnership work in identifying themes for the work on a yearly basis provided the basis for agreement on the provision of data (**Annex ag**) – this was a successful way in getting the partner buy-in to the work of providing data - which was a dependency for the delivery of products that they approved.

Progress against plan

The involvement of the partners in the provision of data developed during the lifetime of the project with the understanding of the power of provision of that data. The requirements for the provision of data was established as planned on a yearly basis. Workload planning established drivers for Data Provision for the following year. Illustrations of the benefits of Data Provision and Publication are valuable drivers for the buy-in of Data Providers.

Future work beyond LIFE Project

SEWeb has worked to identify gaps in Scottish data which might be filled using citizen science and the development of online assessment tools; a number of areas have been identified and projects are being developed to fill these gaps for local air quality, Ecosystem services, Invasive Non Native Species (INNS) and the Biodiversity website. The register/list of data sets used in the SEWeb project has become a valuable asset for all SEWeb partners. In order to best exploit this asset a dynamic data management system will be developed by the

SEWeb 'BAU' (business as usual) using Linked Data to publish the metadata for all available data on the environment in Scotland. This will be a baseline for the move towards Open Data Publication in Scotland in which all partners are involved.

Problems / Timing / Impacts

The importance of partner 'buy-in' cannot be overstated and the availability of external organisation resource to deliver datasets has at times been a particular concern. At project conception, it was recognised that obtaining data from partners in a format suitable for publication on Scotland's Environment web would be a challenge

Allied to this are issues concerning licensing terms and conditions and metadata requirements which can restrict the publication of additional datasets on Scotland's Environment web.

There is work to be done in terms of making relevant legal departments aware of the INSPIRE directive and the provision the standards make for making spatial data available without the obligation to provide individual license conditions for sharing and accessing data.

The lack of maturity in open data publication by partners during the lifetime of the project has restricted the ability of the project to completely fill data gaps. However the future direction of the Open Data strategy and INSPIRE will open up many more resources in the future.

5.1.5. Action 8: Presenting data analysis, interpretation and review

What has been done, and by whom?

This action assimilates the data gathered in actions 5, 6 and 7 and presents it in an appropriate format, alongside text interpreting and contextualising the data to provide a comprehensive picture of Scotland's environment.

- State of the Environment Report updated and re-launched (despite earlier issues in getting updates from authors). State of the Environment partnership was very successful in producing, editing and publishing 27 topics written by 30+ experts from 12 key environmental organisations from throughout Scotland for the updated State of the Environment report in June 2014²⁵.

The SoE report has been designed to present three levels of information; (i) a high level overview of the state of Scotland's environment, (ii) a chapter summary, providing an introduction and describing trends, (iii) detailed topic-level information describing state, pressures and consequences; this structure makes information available to all levels of knowledge/interest, allowing users to drill down into the desired level of detail.

This report is listed on the SERIS website²⁶. SERIS is an inventory of national state of the environment reports.

- Putting in place more robust procedures for SoE to ensure ongoing updates and management in the future
- Creation of ISBN reference for SoE and publishing of SoE summaries as hard copies
- The identification and publication of 60 + key datasets (indicators) for topics of the SoE (see Action 15)
- The following Spotfire applications have been published:
 - Water Classification
 - Household Waste
 - Climate Change Projections
 - Bathing Waters
 - Climate Trends Handbook (with embedded Spotfire widgets and a separate full Spotfire application)
 - Native Woodland Survey of Scotland (NWSS)
 - Air Quality (for Primary and Secondary School pupils) x4
 - Scottish Pollutant Release Inventory (SPRI)
 - Groundwater
 - Waste from all sources
 - Aquaculture Fish Farms
- During the project the following applications were updated – Water Classification, Waste (Household and from all sources), Bathing Waters, SPRI.
- A new process to ensure approval by Legal, Security and Data Management teams in SEPA to the publication of Spotfire and other applications was established. This was required to make sure any licensing or Data Terms and Conditions were identified and complied with and to make sure that the publication of the data through these new tools did not compromise the Data Providers.
- Further requests (13) for development of Spotfire data visualisation applications have been received and will be addressed by the SEPA SEWeb work for the future. Also annual updates to existing applications will also be implemented.

²⁵ <http://www.environment.scotland.gov.uk/get-informed/>

²⁶ <http://forum.eionet.europa.eu/nrc-state-environment/seris/reports/696/?country=United>

- Map View now has over 211 open source data layers that can be presented on 4 new base layer maps, including aerial photography. This is the only place users can view different combinations of data from multiple sources in the one place.
- The Land Information Search has been extended to present existing and new data for onshore wind farm developers and industry having to undertaken Control of Major Accident Hazard (COMAH) environmental risk assessments.
- The Public Engagement Work stream lead presented finding of the public interest work to the SoE editorial group in July 2012 and discussed with the group how to make the SoE section more appealing to the public.
- An immersive media experience has been developed. This re-presented key information from the SoE report, with compelling graphics and audio and contains audio narrative from some of the SoE expert authors.
- 12 Infographics were developed which convey a large amount of explanatory text in an attractive visual format.
- The Air Quality and Health sub-group commissioned 2 literature reviews²⁷:
 - A Review of the evidence base on “Health and well-being in relation to air quality”
 - A Review of the evidence base on “Influencing and modifying behaviour linked to reducing air pollution associated with transport use, improving air quality and reducing adverse impacts of air pollution on health and well-being”
 And subsequently carried out:
 - Development of a modified DPSEEA model to identify links between air pollution and health
 - Testing of the initial mapping using collation of opinion from key stakeholder and practitioner perspectives on the issues, using a combination of workshops, focus groups and selected interviews with opinion leaders.
 - Refinement of the mapping model to clarify the key linkages between health and air pollution.
 - Distillation of key messages for use by key stakeholders and the public in relation to action to improve air quality and health²⁸

Progress against plan

The project’s success in the delivery of targets has been consistently achieved and as a result more ambitious data targets were set early in 2012, with this ambitious target met, and approximately **311** datasets delivered via a number of applications.

Type of data set	Target	Achieved
Spatial data set (GIS layers)	60 web map services	211
Advanced analysis and presentation of multiple data sets (empowering the analysis and challenging of data through intuitive and powerful data-analysis tools)	30 new applications	18
Summarised key statistics (compiled data, giving a simple indicator of environmental quality and societal benefits)	30	26

²⁷ <http://www.environment.scotland.gov.uk/media/126007/iom-seweb-aq-health-behaviour-review.pdf>

²⁸ <http://www.environment.scotland.gov.uk/air-quality/air-quality-and-health/>

Access to reports (reports from a variety of partners, which give context and depth to the analysis of data)	1,200	>2000
Authoritative interpretation of the state of the environment (reports produced which summarise the condition of the environment, why it's in that condition and what can be done to improve it)	30	27
Technical input to public-facing communication and promotion of new SEWeb data sets and presentation/analysis applications (providing interpretive text and analysis for dissemination; attending and running conferences and workshops; providing media-interviews and press releases)	120	150

The project has published 14 Spotfire applications. Mid-way through the project the Management Group made a decision that they would urge the emphasis on the provision of good quality useful applications rather than increasing the number of applications per se (explained to Commission in **Annex ae**). This was also echoed by the Commission in response to the mid-term report.

In addition 2 applications have been developed – [AGRI-Environment and Forestry](#) and [COMAH Environment Risk Assessment](#) – from the Land Information Search tool. The Indicators and Data section has been developed to enable download of the key indicators, both Scottish and European.²⁹

The work on Air Quality in Education led to the development of a Teaching package of materials for use in Primary and Secondary schools³⁰. In all 18 applications have been developed.

14 indicators for Scottish key statistics have been listed on SEWeb so far and these have been presented with 12 EU indicators for the appropriate topic.

27 topics have been published through the SoE representing authoritative interpretations of the state of the environment.

The SEWeb homepage SEARCH provides access to over 2000 reports and resources. Daily social media postings (via Facebook and twitter) are promoting new SEWeb data sets and data presentation applications.

The project has provided technical expertise in all work with partners and has showcased this expertise in various conferences and workshops – the SEWeb project has been recognised as providing trusted information on the environment in Scotland. SEWeb staff have been involved in over 150 presentations and press communications – see 5.2.2 for details.

All of this work was achieved through the contacts made and referred to in Action 5 (5.1.2). The sub-groups described in that section were instrumental in deciding how the various tools would be used to present the relevant datasets.

Achievement of objectives

The revised State of the Environment report was published with 27 topics and so reached and surpassed its critical number of topics needed. Agreements have been put in place with the Management Group on the future publication schedule for updates and complete revisions of the State of the Environment report including any new topics identified in this period.

²⁹ <http://www.environment.scotland.gov.uk/get-informed/indicators-and-data/>

³⁰ <http://www.learnaboutair.com/>

A wide range of data sets are now presented on the website for analysis and interpretation by a range of different users, providing a more coherent data story that underpins the State of Scotland's Environment report.

The project has not met the target of 30 Spotfire applications before the close of the project however the change of emphasis from quantity to quality (approved SEWeb Management Group paper SEWeb MG 14 019) has ensured continued buy-in of the partnership in this work as is evidenced by the continued request for more applications.

SEWeb has been successful in the transformation and presentation of data in an easily understandable format. This adds value to the data in terms of reach and influence in terms of public use and understanding.

Future Work beyond LIFE Project

The Editorial Group functioned exceptionally well, and will continue to produce factsheets on topics of particular interest to the public.

The SoE report will continue to be updated, and a major revision is planned. The timing of this is yet to be finalised, but is likely to be co-ordinated with the EEA SoE report – good working relationships were established at the SEWeb launch of the EEA report in Edinburgh.

Work on Indicators and Data is ongoing with a more targeted mapping exercise for Scottish and EU indicators and will soon present around 100 Scottish Environmental Statistics data sets on SEWeb – surpassing the project target of 30 key statistic data sets. The development work for this new application was complete by end of project but testing and implementation will finish in October 2015.

The publication of Spotfire applications will continue – 13 planned for 2015/16. The first of these, following development work completed under the aegis of the project will be:

- SNH Site Condition Monitoring/Protected Sites
- FCS Forest Inventory
- FCS Forestry Estate
- Aquaculture Food Standards

Problems / Timing / Impacts

There have been challenges with partner organisations providing business leads to steer and drive forward Spotfire specifications and limitations in available resources in partners to provide data in the required format.

There have been challenges around IPR and legal issues relating to the use of the underlying data – the process of legal and security review and sign-off has been streamlined to make the process more efficient.

5.1.6. Action 9: Develop a method to prioritise environmental problems across media and produce a ranked list

What has been done, and by whom?

An initial assessment was undertaken of prioritisation exercises previously undertaken by other organisations and initiatives and a proposal submitted to the Management Group in Q4 2012 outlining the proposed method for SEWeb. This was revised and approved in Q1 2013.

The SoE editorial group were nominated as owners of the exercise on behalf of the partnership. It was agreed that the existing 26 topics on the Our Environment Section of SE Website would be the subject of the prioritisation exercise.

The review process was completed in July, 2013, and the outputs summarised and integrated within the new SoE report on the website.

A high-level summary was produced for each relevant topic; the objective was to provide website users with a simple, clear assessment of the state and trend of each topic, whilst providing them with the option to access to further information if required.

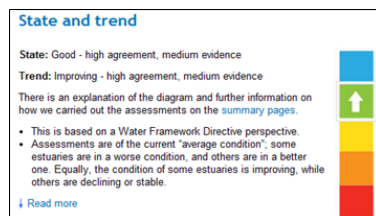


Figure 5: State and Trend summary

These high-level summaries allow a degree of comparison between topics, and encourage users to consider the relative state of each topic.

Approximately 110 experts from across Scotland took part in the prioritisation exercise.

The assessment process followed produced a list of key drivers and pressures, and enables a comparison between them, and a ranking of them. This has not been published in SEWeb, as the output is not easily interpreted without background material (**Annex u**).

The list of pressures and drivers used was discussed and approved by the editorial group, and no concerns were raised by the participants in the process. However, when reviewing the outputs, the group concluded that there was a bias towards “water” pressures and drivers, which would influence the final results.

Furthermore, although the specialists involved with given a definition of a “primary” and “secondary” pressure, there were different degrees of interpretation of what that meant. Consequently some topics have one or two primary pressures, whereas others have a far greater number. In hindsight, the group felt that they should have been more rigorous in the meetings on enforcing a shared definition.

The outputs from the assessments were used by authors to draft and refine their text, but as a result of the issues with the pressures and drivers, the group has concluded that they would be likely to mislead users of the website, and have excluded it from display.

Although the outputs are not directly comparable, they are still a useful resource, and are available to the partners. SEPA is currently using the outputs to shape the corporate plan for SEPA.

Annex v - Discussion of KEI by Editorial group

The state and trend assessments are clearly displayed on SEWeb, as an integral part of the SoE report. The key high-level messages for the public and policy makers draw directly on these assessments. Furthermore, we know that the high-level assessments are used by some local authorities in making environmental impact assessments. The assessments and analysis of pressures and drivers are also being used by SEPA. SEPA’s quinquennial corporate plan is

being revised, and as part of that, a project reporting directly to the Executive Director is assessing the key environmental challenges facing Scotland. This work is drawing heavily on both the key environmental issues work, and on the work to assess effectiveness of measures.

Progress against plan

Delivered.

Achievement of objectives

Methodology produced and ranking discussed by SG and MG to find a constructive way of reporting.

Report on Key environmental issues facing Scotland; final report ³¹ published on SEWeb.

Future Work beyond LIFE Project

SEPA is looking to develop a process to continually update and refine Scotland's environmental priorities, drawing on both this work, and on the methodology developed under action 10.

Problems / Timing / Impacts

The problem encountered was an initial risk of a lack of engagement. Due to significant effort from the editorial group, the process generally had a high level of participation. In the end 110 experts from across Scotland contributed to the assessments. Actual delays encountered were due to difficulties in scheduling available time across so many contributors, all experts in their field and so having busy work schedules and competing priorities.

³¹ <http://www.environment.scotland.gov.uk/media/126075/key-environmental-issues-report.pdf>

5.1.7. Action 10: Defining the effectiveness of environmental measures

What has been done?

This work area identified five key strands:

1. A case-study exploring the effectiveness of regulatory action
2. Developing a method to assess the effectiveness of measures which have already been implemented
3. Applying this method to determine the effectiveness of measures taken by SEPA
4. Applying the method more widely in Scotland, with other partners
5. Developing a decision making framework, which will assist policy-makers in assessing the likely benefit from proposed measures

Below is a list of the key delivery points under action 10 in the original LIFE Bid with a note on how the work done meets these:

- Develop an understanding of the costs and effectiveness of measures to protect and improve the environment (**covered in report 1**)
- Measures can include regulation/enforcement and engagement with customers (**report 1 – four enforcement actions for waste crime**)
- Report on method development (**report 2**)
- Assessment report of measures (applying the methodology) (**report 3 & 4**)
- Involving a multi-disciplinary team (**report 5 – workshop participants, reaching out to academia, local government and professional representatives**)
- How has/is the information being used by the agencies/partners (policy development and action) and information on effectiveness is important for policy and regulatory development – (**report 5, and indications from SEPA**)

Strand 1. The report³² delivered by the University of Stirling, offered case studies on regulatory actions taken to address waste crime, and provided an analysis of the economic benefits delivered by different regulatory approaches. This report was funded jointly by the University of Stirling and SEPA, with SEPA's share forming part of its contribution to LIFE. The project worked in collaboration with SEPA's waste crime specialists and the report has been very well received by the specialists concerned. Furthermore the outputs were publicised at the [ECTF conference](#).

Strands 2–5 have been developed via a £40,000 project, funded through [CREW](#) and delivered by a team at the James Hutton Institute. A literature review of existing decision aiding tools was carried out and led to the selection of Multicriteria Mapping (MCM) as the most favourable option³³. This uses relatively simple software to compare and rank different options for achieving a goal (i.e. how to choose between different environmental measures based on their effectiveness). One advantage of MCM is that is suitable as an off the shelf product and no further development is required before trialling takes place in SEPA.

Another benefit of MCM is that it is flexible enough to be used both to assess the effectiveness of existing measures and as a decision making framework for future measures. In this respect it addresses strands 2–5 and satisfies the requirement outwith the original LIFE bid, for a means of assessing proposed measures. The software is used on licence from the University of Sussex for the required timescale and outputs can be archived for re-use if appropriate at a later date.

³² <http://www.environment.scotland.gov.uk/media/100365/waste-crime-in-scotland.pdf>

³³ <http://www.environment.scotland.gov.uk/media/189050/crew-environment-improvement-measures.pdf>

The MCM software has been trialled in SEPA in collaboration with the LIFE SMART waste project and the outputs were delivered at the end of July 2015³⁴. The trial involved SEPA staff, and participants from industry and academia were also invited. It is hoped that the experience and feedback from the trial can be used to encourage participation and take-up of the method by other partners.

Progress against plan

The MCM approach has potential that reaches beyond the scope of the LIFE bid and work has been delayed in order to consider fully how the methodology could be applied in the longer term and across a broader scale. The methodology and outcomes from the SEPA workshops were delivered at the end of July, 2015.

Achievement of Objectives

The partnership was initially reluctant to develop this area of work, but the management group are now fully supportive, and see the value in using this technique to assess the likely effectiveness of future measures.

SEPA is developing expertise in the technique, and will be offering these skills to partners. The visibility of the technique across the partnership will be raised by its use in developing SEPA's corporate plan.

Future work beyond LIFE Project

Currently there are discussions on how to incorporate the MCM approach in a review of SEPA's corporate plan (2017-2022). SEPA may use the MCM tool to prioritise the actions incorporated in SEPA's plan. Also SEWeb staff are taking a method to prioritise environmental issues to SEWeb partners on 27th October to discuss where this methodology could be applied within their own organisations – SEPA staff will be available to support them in this process.

Problems / Timing / Impacts

There was an initial reluctance to get involved with this work across the partnership which was resolved by effective communication of the benefits and further discussion on the relevance and use of the outputs by partner organisations.

We recognise that we have not assessed the effectiveness of all environmental measures in Scotland as originally proposed in the SEWeb (LIFE) Project Bid. This was in part due to the scale of the exercise and partly because of difficulties getting engagement with all partners needed to carry it out. This reduced scope of carrying out the pilot assessment based on the SEPA waste crime project was agreed by the Management Group on 26th June 2015 (MG 14 027)

However we have made important progress by carrying out a detailed evaluation of MCM, an innovative process that could be used widely to assess the effectiveness of environmental measures. MCM is novel in its approach to collecting and evaluating qualitative data and we believe that it has the potential to be widely used in SEPA and beyond. Thus we have invested time in a careful examination of this process by running a trial on assessing the effectiveness of waste crime interventions. This was mostly carried out in SEPA and involved academia, local government and professional reps. SEWeb collaborated with colleagues in the LIFE SMART WASTE project to run the trial and the results have been very positive.

5.1.8. Action 11: Promote public involvement in monitoring

³⁴ <http://www.environment.scotland.gov.uk/media/189053/trial-of-multicriteria-mapping-full-report.pdf>

What has been done?

Previous research has clearly shown that Citizen Science and public monitoring activities can not only help to further our understanding of environmental change but can also provide a useful and effective tool with for engaging participants with nature. In relation to behaviour and attitude it is clear that knowledge alone is not enough affect a sustainable change, however the experiential learning afforded to participants in Citizen Science and public monitoring activities provides more than simply knowledge and can have a prominent effect upon the subsequent behaviours and attitudes of participants.

In August 2012, a Citizen Science (CS) Expert Group consisting of members from SEPA, SNH, TCV, BTO, BGS and Butterfly Conservation produced a report on the status of public monitoring in Scotland, and recommended activities to be carried out by SEWeb in order to achieve the objectives for this action³⁵.

The work carried out since 2012 can be split into three main areas, (i) initiation of new projects, (ii) provision of tools and resources, and (iii) reporting and communications.

(i) Projects

Work on the **Air Quality Citizen Science** in schools project has progressed significantly since completion of the pilot phase in April 2014 (see the [project overview report](#)³⁶), which was set up in 2013 to review existing methods and projects, and then propose a new programme of projects that became the subject of pilot studies.

An enhanced online [teaching package](#)³⁷, covering both primary and secondary school age groups, as well as science and geography elements of the Scottish Curriculum, has been developed by North Lanarkshire Council's Learning Centre. Additionally SEWeb project funds have been used to innovate and develop new low cost sensors for monitoring air quality in and around schools. These sensors have been built by the University of Edinburgh and the Centre for Ecology and Hydrology, bringing the typical costs of deploying a sensor to measure primary pollutants such as particulates and nitrogen oxides down from several thousand to just several hundred pounds, thus making it possible for school pupils to conduct their own monitoring programmes in places of their own choosing. Finally, 4 new [Spotfire applications](#)³⁸ for visualising the data collected by citizen science projects have been developed by SEWeb, in conjunction with a suite of web pages dedicated to the subject of air quality³⁹. One of these allows data from travel surveys to be input and the results subsequently visualised.

The teaching pack, sensors (2) and Spotfire tools were trialled by two secondary schools and one primary school in the Glasgow area during the period May – July 2015. The low-cost sensors were set up for two week periods on lamp posts near to the drop-off/pick-up points at the schools. They fed back data through GPRS, which were visualised and interpreted by the pupils using the Spotfire tools. Between the schools all elements of the website were covered, such as the primary school section and secondary school geography and science sections. Overall feedback from the trial was positive and some very useful suggestions were received, such as more interdisciplinary ties between the geography and science sections. As a result of the air monitoring a pupil at St Ninians Primary school wrote a letter to parents' that

³⁵ <http://www.environment.scotland.gov.uk/media/16554/Public-Monitoring-Report-20-08-2012.pdf>

³⁶ <http://www.environment.scotland.gov.uk/media/68224/Urban-air-quality-citizen-science-Project-Report.pdf>

³⁷ <http://www.learnaboutair.com/index.html>

³⁸ <http://www.environment.scotland.gov.uk/get-interactive/discover-data>

³⁹ <http://www.environment.scotland.gov.uk/air-quality/>

was published in the school newsletter, asking them to consider other modes of transport when bringing their children to school to help improve air quality.

Learning points from the trial were incorporated in the package prior to the national launch at the Scottish Learning Festival on 24 September 2015⁴⁰. Teachers and pupils from the schools involved in the trials gave presentations at the launch event, highlighting their experiences of the package and how it can be used to promote learning, monitoring and action in relation to air quality. The trial will be widened with the purchase of additional sensors and involvement of more schools in the future.

An online data entry portal has been developed to capture details of sightings of **Invasive Non Native Species (INNS)**⁴¹. This portal utilises technology developed by Indicia⁴², and enables records to be transmitted directly to the National Biodiversity Network (NBN) Gateway⁴³ where they can be viewed alongside all other species records as open data. It also includes pages containing images, links to further images in the website of The Non-native Species Secretariat⁴⁴ and explanatory information on the species of particular interest. The portal was launched in November 2015, and will contribute to improving the information on where non-native species occur in Scotland (in particular new arrivals), thus supporting management decisions on control and, in some cases, eradication.

A mobile app to record **Obstacles to Fish Migration** in UK rivers has been developed in partnership with SEPA, The Rivers and Fisheries Trust for Scotland, The Environment Agency in England and Wales, and Natural Apptitude. The app (for both iPhone and android devices) and associated website⁴⁵ were launched in August 2015. Data that can be captured include geo-referenced photographs, whether the obstacle is man-made or natural, and subsidiary information about structure, height, and passability to different species of migratory fish. It is hoped that the data submitted will improve understanding of known obstacles, and provide new information on obstacles that weren't previously known about. To that end, data already held by the Environment Protection Agencies will be displayed on the website alongside new information submitted by the app users. This should enhance the planning process for removing or improving obstacles to fish migration.

(ii) Tools

The SEWeb CS Expert Group considered that the greatest value that SEWeb could make to CS in Scotland was to promote, enable and support what is already a strong sector with many small and large well-established projects throughout Scotland. The following tools have been developed to help meet the needs identified by this sector.

In July 2014, SEWeb launched [Project Finder](#)⁴⁶, an attractively presented and easy to use online inventory of citizen science and action projects that enables prospective volunteers to browse projects according to such criteria as where they take place, how technical they are, how much time is required to participate, what topics are covered, and whether the project is suited to participation by families or community groups.

Since launch, the number of projects advertised has grown steadily from around 30 to over 80 from 64 organisations. The service typically attracts 500-1000 visits per month, but due to its

⁴⁰ <http://media.sepa.org.uk/media-releases/2015/changing-our-children-s-choices-to-tackle-air-pollution/>

⁴¹ <http://www.environment.scotland.gov.uk/inns/>

⁴² <http://www.indicia.org.uk/>

⁴³ <https://data.nbn.org.uk/>

⁴⁴ <http://www.nonnativespecies.org/factsheet/index.cfm>

⁴⁵ <http://www.river-obstacles.org.uk/home>

⁴⁶ <http://apps.environment.scotland.gov.uk/project-finder/>

relatively simple functionality (there is no requirement for volunteers to register and set up user accounts, for example) it is difficult to track how many people are going on to contact the organisations running the projects with a view to taking part. The system facilitates initial email contact (this is happening about 20-30 times per month at present) but it is not known how often prospective volunteers are going on to contact organisations via other means out-with Project Finder. Initial evidence suggests that Project Finder is of more use to small organisations running just one or two local projects, as larger organisations often already have well established means of engaging with volunteers, and see Project Finder as just another one of a range of tools that they can use.

A [Citizen Science Toolkit](#)⁴⁷ consisting of online information on openly available project planning, data management and visualisation systems was placed on SEWeb in 2013. This toolkit helps users to set up and maintain their own Citizen Science projects. Options for updating it and keeping the tools refreshed are now being explored.

Mobile apps are a big part of today's society and can provide simple and attractive means to engage with many, but not all members of the public. SEWeb therefore provides a signposting service to recommended environmental [mobile apps](#)⁴⁸ which now contains details of over 40



Figure 6: Get Learning Transport page

apps that support actions to monitor and improve the environment. The list is being added to all the time, so it will be split into categories over the coming year in order to make browsing easier. It is currently viewed about 70 times per month.

In response to needs identified under Action 4 (see above) a suite of *Get Learning* web pages⁴⁹ has been developed in partnership with Education Scotland, providing information and resources for both teachers and pupils organised according to age groups

and referencing curriculum outcomes in order to promote the uptake of citizen science in schools and their surrounding communities, and further the aims of the Curriculum for Excellence (a new curriculum for Scottish schools launched in 2010-11). The pages that went live at the end of August 2015 include 9 Citizen Science Data Collection videos giving guidance for teachers and students. It is hoped that they will prove to be highly successful in engaging with this key part of the public.

A critical part of this project was the recruitment of a Development Officer for citizen science within Education Scotland. With a background in teaching and science, he was based within the Sciences team (7 development and education officers) at Education Scotland and was able to draw on their expertise and advice when creating the Get Learning content and promoting the Get Learning pages through the team's contact within education. A crucial part of this role has been the promotion of citizen science as a context for learning in schools. This model of a teaching secondee, jointly funded by two organisations but working from within Education Scotland, has allowed access to teachers and Education Scotland events that SEWeb wouldn't otherwise have had.

⁴⁷ <http://www.environment.scotland.gov.uk/get-involved/toolkit>

⁴⁸ <http://www.environment.scotland.gov.uk/get-involved/mobile-apps>

⁴⁹ <http://www.environment.scotland.gov.uk/get-learning>

It has led to 15 professional learning sessions in local authorities across Scotland, promoting citizen science resources and methods and Get Learning within schools – with engagements with over 400 teaching staff at these events.

The Development Officer has also participated in other Education Scotland events, such as Outdoor Learning conferences, Primary Science Network events and Secondary Science Sharing Good Practice events. At these events he has been promoting Scotland's Environment, handing out learning journeys and promotional material about the site and demonstrating to teachers how to use the site.

Finally he has been writing weekly blogs on the Education Scotland public facing sites such as STEM (Science, Technology, Engineering and Maths) Central (<http://www.educationscotland.gov.uk/stemcentral/>) and also on the Education Scotland Learning blog (<https://blogs.glowscotland.org.uk/glowblogs/eslb/>). As well as this, there have been regularly weekly posts in the newsfeeds of world-leading GLOW network (Scotland's national intranet for schools). This is accessed by 75% of secondary science teachers weekly. The @EdScotSciences newsfeed has been highly popular with over 20,000 tweet views in the past month – tweets are scheduled daily to promote various aspects of the Get Learning site.

Other projects benefiting from this partnership approach include the Panda Reporter project, whereby children in selected schools are encouraged to teach their very own cuddly panda about environmental issues and conservation in their local area and blog about it – this is a great way of sharing the learning with parents and their communities.

(iii) Communications, reporting and events to promote citizen science

A SEWeb citizen science event – ‘[Science Needs You](#)’,⁵⁰ – was presented at the Edinburgh International Science Festival in April 2014. This event included presentations and practical demonstrations of citizen science projects and was attended by around 40 members of the public.

The Conservation Volunteers (TCV) have analysed the impact of citizen science on the attitudes and behaviours of participants, and reports have been published on SEWeb (see both the [literature review](#)⁵¹ and the [project report](#)⁵²). These reports present evidence that participation in citizen science does lead to changes in attitudes and behaviours towards the environment. A third TCV report on promoting [citizen science in woodlands](#)⁵³, on which SEWeb was consulted, has also been published on the website. These reports could contribute to the creation of an online manual for citizen science, which could in itself form part of an enhanced toolkit (see above).



Figure 8: Presentation - Science Needs You

⁵⁰ <http://www.sepaview.com/2014/04/science-needs-you/>

⁵¹ <http://www.environment.scotland.gov.uk/media/80417/phase-1-report-the-impact-of-citizen-science-on-participant-behaviour-and-attitude-literature-review-14c>

⁵² <http://www.environment.scotland.gov.uk/media/80417/phase-1-report-the-impact-of-citizen-science-on-participant-behaviour-and-attitude-literature-review-14c>

⁵³ <http://www.environment.scotland.gov.uk/media/100366/citizen-science-in-woodlands-report-nov14-tcv-fcs.pdf>

The European Network of the Heads of Environment Protection Agencies held a workshop on citizen science in Copenhagen on 12-13 March 2014,⁵⁴ at which SEPA gave a presentation illustrating the work being done by SEWeb to promote citizen science. This presented the opportunity to share details of projects and learning experiences with fellow European member states which has prompted the adoption of a Citizen Science program by this body.

SEWeb is represented on the [UKEOF Citizen Science Working Group](#)⁵⁵, a very useful forum for sharing best practice on citizen science and promoting and evaluating SEWeb products such as Project Finder, mobile apps and sensor technology. In the summer of 2015, the CSWG commissioned two research projects, one examining the motivations of volunteers, project managers, data users and policy makers in participating in citizen science, and the other working out a methodology for assessing the costs and benefits for public bodies in running projects. SEWeb will participate in the steering group for the first of these projects, but the outputs of both (due in March 2016) should include some very useful online resources for use by SEWeb partners and the wider public.

In March 2015, SEWeb hosted an [International Event on Understanding the State of the Environment](#), which included a practical workshop [demonstrating the use of citizen science techniques in education](#)⁵⁶.

SEWeb worked in partnership with SNH, TCV and OPAL community scientists to organise a 'Sharing Good Practice' event on [Citizen Science in the Community](#)⁵⁷ which took place in May 2015. This provided SEWeb with an opportunity to showcase the newly developed air quality citizen science in schools project, to promote tools such as Project Finder to the citizen science practitioners attending the event, and to promote the website in general.

Progress against plan

SEWeb has effectively contributed to the creation of 3 new programmes for public monitoring (air quality citizen science in schools, the INNS data entry portal and the River Obstacles app). However, in order to assess the effectiveness of these programmes, a period of activity post implementation needs to be evaluated. The programmes were not sufficiently advanced to allow a full and comprehensive assessment to take place within the project period. Any assessment that does take place out-with the LIFE+ project period will be published at a later date.

Provision of tools and resources, and activities to promote and communicate the value of public monitoring; have been progressed according to plan.

Achievement of Objectives

Objectives will be achieved to an extent more than anticipated, but new projects and tools will not be fully evaluated (as per Action 25).

Future work beyond LIFE project

The air quality Citizen Science in schools project will be rolled out across Scotland from September 2015 onwards. A key constraint to the uptake of this project, however, may be the availability of low cost sensors, so options for providing more sensors at lower cost will be assessed.

⁵⁴ <http://epanet.pbe.eea.europa.eu/ad-hoc-meetings/epa-network-workshop-citizen-science-12-13-march-2013>

⁵⁵ <http://www.ukeof.org.uk/our-work/citizen-science>

⁵⁶ http://www.environment.scotland.gov.uk/media/100356/education_and_cs_presentation.pdf

⁵⁷ <http://www.snh.gov.uk/docs/A1559567.pdf>

A brand new online portal for citizen science projects will be developed by SEPA, providing generic, modular infrastructure including web pages describing each project, new data input, repository, administration and export systems, and provision of data visualisation and online discussion facilities as required. Initially, development of infrastructure will focus on 3 SEPA related citizen science projects (Rainfall Observers, Lamprey Watch, and a new project on monitoring soil erosion), but it is envisaged that the modular nature of the portal will allow other SEWeb partners to add their own projects in the future. A contract for development was awarded to Natural Aptitude (developers of the River Obstacles mobile app) in October 2015, and development work has now begun, with completion of the portal scheduled for April 2016.

Partnership work with Volunteer Scotland and Zero Waste Scotland has just begun in order to develop the most effective means of engaging with environmental volunteers in general, including a thorough review of the options for developing Project Finder in the future.

Education Scotland and SEWeb will heavily promote the uptake of the Get Learning pages, at the same time evaluating their effectiveness and examining options for making enhancements.

Options for updating and enhancing the Citizen Science toolkit will be identified, with any planned improvements taking place by April 2016.

SEWeb will continue to provide input to the UKEOF research contracts on motivations and the value of citizen science to public agencies, aiming to maximise the online resources for future use by SEWeb partners.

Problems / Timing / Impacts

Progress in initiating two of the citizen science projects has been slower than anticipated (the INNS data entry portal and air quality citizen science in schools), however these are both very important areas of work currently.

5.1.9. Action 12: Initiate the public debate on environmental priorities

What has been done, and by whom

Towards the end of 2013, SEWeb worked with Ipsos MORI to host 3 half day public discussions in Dumfries, Inverness and Edinburgh, where representative members of the general public (about 25 at each event) were invited to share their own unprompted views on what they considered were environmental priorities, and were then asked to give their reaction to what SEWeb had identified as the priority environmental issues for Scotland. These 'deliberative' style discussions were followed up by an online discussion forum that was run based on similar themes, and attracted 13 participants. The findings of both the face to face discussions and the online forum were used to develop a toolkit which can be used by SEWeb partners and others to plan future public discussions on the environment:

[Conducting public discussions about the environment - a toolkit](#)⁵⁸

[Public Priorities for Scotland's Environment](#)⁵⁹

The use of deliberative workshops:

- Allowed a much greater degree of control over the number and diversity of participants.
- Enabled the comparison of different discussion techniques (i.e. deliberative workshops versus the online discussion).
- Made up for the difficulties of conducting an online discussion on a complex subject area (e.g. ensuring adequate participation by representative members of the public, presentation of complex information, moderation of discussion to ensure all those involved could get their views across, keeping the discussion moving).
- Enabled a more in-depth discussion of a wider range of topics than the online discussion.
- Was relatively new in Scotland. It allowed people to air their unprompted views on environmental issues without being 'steered' by the experts, then to consider the views of the experts on environmental priorities for Scotland, deliberate on what they had been presented with and discuss it collectively, and finally to consider whether their views had been changed by what they had heard.

The toolkit has recently been used by SEPA to assist with the planning of another series of 6 public discussions throughout Scotland to find out what the environment means to people, how it affects their lives and whether they feel involved in the decisions made about it by SEPA and other organisations⁶⁰.

The first version of the [Our Environment](#)⁶¹ competition, which was run in 2013-14 (see Action 11 above), challenged young people to discuss what needed to change in their local environments, and the role they could play in making those changes. Over 150 entries were received, and prizes were awarded at an event attended by the Minister for Environment and Climate Change, Paul Wheelhouse MSP.

⁵⁸ <http://www.environment.scotland.gov.uk/media/80425/ipsos-mori-conducting-public-discussions-about-the-environment-a-toolkit.pdf>

⁵⁹ <http://www.environment.scotland.gov.uk/media/80432/ipsos-mori-public-priorities-for-scotlands-environment.pdf>

⁶⁰ <http://www.sepaview.com/2015/06/scotlands-environment-needs-you/>

⁶¹ <https://ourevironment.scot/>



Figure 9: L-R: James Current then CEO SEPA, Holly Turner 11-14 years' winner, Louise Macdonald CEO Young Scot, Paul Wheelhouse, Minister for the Environment

The competition was run for a further 2 years with more emphasis on Citizen Action – see Action 13 for further information. The celebration event for the competition in 2014/15 was held in the Scottish Parliament where winners had lunch with Members of the Scottish Parliament. The competition for 2015/16 is currently underway.

As part of the new suite of 'Get Learning' pages, SEWeb is exploring more innovative ways for young people to share their experiences of the environment, for example by posting pictures of their local environment on Instagram and tagging them with #getLearningScot.⁶²

Progress against plan

Completed with some delays to the publication of the reports on the deliberative discussion events due to SEWeb staff turnover.

Achievement of Objectives

Objectives achieved.

Future Work beyond LIFE Project

Research will be carried out to find out the extent to which SEWeb partners have already used, or are considering use of, the public discussion toolkit, and prior to considering how its use should be promoted in the future.

Problems / Timing / Impacts

Low participation in the online forum was balanced by the success of the deliberative workshops and reflected the immaturity at the time of the social media engagement with the on-line user community. This has significantly improved with the development of social media channels.

Commitments by Ipsos MORI not to reuse personal data also made it impossible to conduct follow up surveys with those members of the public who took part in the deliberative events in 2013 so re-use of data gathered must be considered in the future.

⁶² <http://www.environment.scotland.gov.uk/get-learning/>

5.1.10. Action 13: Promote public involvement in protecting and improving the environment

What has been done?

(i) Projects

It is difficult to decouple work between Citizen Science and Citizen Action and often one will lead to the other, and is designed to do so. This is reflected in the reporting where these actions (11 and 13) overlap.

The scope of the **Air Quality Citizen Science** in schools project (see Action 11) was expanded to enable school pupils to plan more active forms of travel to and from school (e.g. walking and cycling), record changes in behaviour and use a [Spotfire tool](#)⁶³ to estimate the impact on local air quality of those changes in behaviour.



Figure 10: Air Quality Citizen Science projects flow

The scope of the Our Environment⁶⁴ competition for 2014-15 (see Action 11) included a challenge to young people to plan solutions to local environmental problems. Winning entries⁶⁵ included proposals and actions to create new wildlife conservation gardens (including in one case the building of an outdoor classroom using recycled and reclaimed materials), a battery recycling scheme and a beach clean-up. The £1,000 prize for the overall winner (Lochdonhead Primary School) will be used to help the school create an educational conservation garden.

The ‘Our Environment’ competition is being run for a third time in 2015-16, with an emphasis on attracting high quality entries and awarding prizes that include legacy support to help winners develop and implement their ideas.

(ii) Tools and resources

The scope of [Project Finder](#) (see Action 11) was extended to include projects involving practical actions to improve the environment. Out of a total of 81 projects registered in

⁶³ <http://www.environment.scotland.gov.uk/get-interactive/data/air-quality-secondary-school-travel-survey>

⁶⁴ <https://ourevironment.scot/>

⁶⁵ <https://ourevironment.scot/#/winners>

September 2015, approximately 30 included elements of action to improve the environment, e.g. wetlands creation and conservation, woodland management, and waste minimisation. Promoting, and facilitating public access to, these opportunities will have a positive impact on environmental actions.

The list of over 40 [mobile apps](#) on SEWeb (again, see Action 11) includes about 10 apps which facilitate actions to improve the environment. For example, there are 4 different journey planning apps that help users plan more active and environmentally benign forms of travel such as walking, cycling or using public transport, there is a soil carbon app that helps land users manage their soils more effectively, an app to promote more fuel efficient driving, an app to improve food buying choices and thereby minimise food waste, and several air quality apps that help users modify their travel plans to avoid travelling through areas suffering from high levels of air pollution.

The new suite of Get Learning pages on SEWeb (again, see Action 11) includes a range of [useful links](#) to information and resources for enabling more sustainable behaviours, for example links to journey planners for cycling.

The SEWeb [Get Involved](#) page includes prominent links to the [Greener Scotland](#) and [Adaptation Scotland](#) web pages. Greener Scotland is funded by the Scottish Government, and provides advice and resources to help individuals save energy, reduce waste, reduce the impacts of travel and eat in a healthier and more sustainable way. The Adaptation Scotland programme is managed by [Sniffer](#) and funded by the Scottish Government. It provides advice and support to help organisations, businesses and communities in Scotland prepare for, and build resilience to, the impacts of climate change.

The '[Our Environment](#)'⁶⁶ competition, which ran from Sep 2014 to March 2015, challenged young people to use citizen science approaches to describe environmental problems in their areas and come up with ideas for fixing them. Devised by a steering group consisting of members from SEPA, Young Scot, KSB and Education Scotland, the competition also provided a suite of learning resources including 'Learning Journeys,' to promote educational outcomes under Scotland's Curriculum for Excellence⁶⁷.

In total, [55 competition entries](#)⁶⁸ were received from a variety of age groups and locations across Scotland. Winners of individual and group prizes in different categories have been identified and videos of the winning entries have been posted on SEWeb's YouTube channel⁶⁹. The overall winners of the competition were Lochdonhead Primary School on the Isle of Mull,⁷⁰ who received their prize at a Scottish Parliament Event held on 24 September 2015.

Entries covered a wide variety of topics, including air quality citizen science, waste reduction and recycling, wildlife gardens, litter prevention and cycling. They also covered elements of both monitoring and practical action (see Action 13 below for further information).

When this competition was first run in 2013-14, it attracted a higher number of entrants (135), but many of these entries consisted of paintings by primary school children, which

⁶⁶ <https://ourevironment.scot/>

⁶⁷ <http://www.environment.scotland.gov.uk/get-involved/the-big-discussion/youth-discussion-what-are-you-talking-about>

⁶⁸ <https://ourevironment.scot/#/map>

⁶⁹ <https://www.youtube.com/channel/UCiZ305I-CzNGXAswk9rnamA>

⁷⁰ <https://ourevironment.scot/#/showentry/386>

would typically have been produced during the course of one lesson to illustrate an issue. The intention with future competitions is to encourage higher quality, more considered entries which is likely to result in a smaller number of submissions to the competition. Initial online survey feedback on the competition has been positive, with 100% of survey respondents saying it was either very or fairly easy to understand what the competition was about, and over 90% saying that they would enter a similar competition in the future.

Progress against plan

One programme of action has been initiated by the air quality citizen science in schools project, but actual actions only commenced in September 2015 with the national rollout of the project to all schools in Scotland. The programme was therefore not sufficiently advanced to allow an evaluation to take place within the project period (as per Action 25). Any assessment that takes place out-with the LIFE+ project period will be published at a later date on the website.

The 'Our Environment' competition has delivered both ideas and plans for action. However, given that the winner of the latest competition was only identified in September 2015, there has been no time within the SEWeb project period to conduct a full evaluation of the competition, in particular to establish which programmes of action were genuinely new as opposed to existing actions which met the competition criteria with some modification and were therefore submitted as entries. As with the air quality citizen science project, any assessment that takes place outwith the LIFE+ project period will be published on the website at a later date.

The previously reported proposal to develop a mobile app or social media challenge that would engage young people in peer to peer actions to improve the environment has not been progressed due to other workload commitments. Partners at Education Scotland have indicated that ideally, a one year notice period should also be given to schools to enable the effective participation of pupils and teachers in the design of such a project.

Other work to provide improved tools, resources and signposting on SEWeb has proceeded according to plan.

Achievement of Objectives

Objectives have been achieved, but the initiated programmes of action are not sufficiently advanced to enable a full evaluation (as per Action 25).

Future Work beyond LIFE Project

The Air Quality Citizen Science in schools project will be rolled out to all schools in Scotland and actively promoted from September 2015 onwards.

The 'Our Environment' competition is being run for a third time in 2015-16, with an emphasis on attracting high quality, entries, and awarding prizes that include legacy support to help winners develop and implement their plans for action.

Project Finder and the list of mobile apps will continue to be developed and promoted, and options for adding action related tools and resources to the Citizen Science toolkit (see Action 11) will be evaluated.

Partnership work with Volunteer Scotland and Zero Waste Scotland has just started in order to develop the most effective means of engaging with environmental volunteers, including a thorough review of the options for developing Project Finder in the future.

Education Scotland and SEWeb will heavily promote the uptake of the Get Learning pages, at the same time evaluating their effectiveness and examining options for making enhancements.

Problems / Timing / Impacts

The strong feedback from partners was that SEWeb should do more to support and enable existing initiatives and organisations that are already very active in this area and well established (e.g. Greener Scotland, Adaptation Scotland, [The Conservation Volunteers](#) and [Keep Scotland Beautiful](#)). This has been done by starting to provide more tools, resources and signposting on SEWeb as indicated above.

5.1.11. Action 14: Establish a standard for the information architecture

What has been done?

- Initial Focus on utilising INSPIRE⁷¹ and GEMINI2⁷² standards for spatial data – results evident through Map View⁷³.
- Standards allowed smooth transition between generations of map viewer applications. Web Map Standards (WMS) used on SEWeb conformed to the OpenGIS Web Map Service standard - <http://www.opengeospatial.org/standards/wms/>
- To optimise metadata searches WMS metadata used Gemini2/INSPIRE standard - <http://www.agi.org.uk/uk-gemini/>
- Guidelines provided for Discover Data (Spotfire) applications⁷⁴, Social Media engagement⁷⁵ and Contact Us response procedure⁷⁶.
- Focus now shifting to SEWeb Linked Data Repository (<http://data.sepa.org.uk/>) supporting applications such as ‘Data and Indicators’, Emissions and Water Resources reporting and Scottish standards around URI conventions for ‘5 star’ data.
- Promotion of the SEWeb open data journey⁷⁷ well received at Scottish Government Open data conference in December 2013
- Original SEWeb style (2011) now superseded by June 2014 website launch⁷⁸ – associated style guides have been updated for Daughter Websites, and have been applied to Soils and Aquaculture⁷⁹.
- New website templates now provide flexible basis for future content (e.g. expanded Data and Indicators). Exalead search technology (software purchased to enable website search) became no longer commercially viable, so a new solution was developed, shifting to a locally developed SEARCH facility that continues to exploit the data sources designed originally for the Exalead search.
- Updated SEARCH technical guidelines have been published on the website⁸⁰.
- Land Information Search application architecture has been used for the development of a new interactive map search tools for COMAH environmental risk assessments⁸¹.

Progress against plan

Guides and Standards published on the new version of the website under ‘How to Use this website’.

Achievement of Objectives

Yes

Future work beyond LIFE Project

⁷¹ <http://inspire.ec.europa.eu/index.cfm/pageid/2>

⁷² <http://www.agi.org.uk/about/resources/category/81-gemini?download=18:gemini-2-2>

⁷³ <http://map.environment.scotland.gov.uk/seweb/map.htm?menutype=1>

⁷⁴ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/> - section Using the data tools

⁷⁵ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/> - section Scotland's Environment Web - social media policy

⁷⁶ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/> - section Scotland's Environment Web - contact process

⁷⁷ http://www.environment.scotland.gov.uk/media/100357/data_journey_presentations.pdf

⁷⁸ <http://www.environment.scotland.gov.uk/media/86747/scotlands-environment-web-style-guide.pdf>

⁷⁹ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/> - section Website standards and guidelines for daughter websites

⁸⁰ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/> - section Scotland's Environment Web – adding resources to the search

⁸¹ <http://www.sepa.org.uk/regulations/control-of-major-accident-hazards-comah/>

SEWeb Linked Data deployment viewed by Scottish Government and SEPA as case study for Scottish Open Data portals.

SEWeb infrastructure remains available for usage by Partners for Open data publication. In addition the technology stack has been mirrored by SEPA and expanded to cope with increased dataset publication. This infrastructure provides a solid foundation on which to build the future of SEWeb with partners.

Integrating search technology with semantic web in Linked Data Environment

Problems / Timing / Impacts

The lack of INSPIRE standards for Web Feature Services (WFS) and non-spatial data necessitated use of proprietary standards for LIS.

There was a dependency on resources being available in partner organisations to make more data sources available. Scottish Government Open Data strategy published in February 2015 is now directing public sector toward standards that were lacking to SEWeb in previous years – SEWeb ambition was ahead of the ability and strategic direction available at the time.

5.1.12. Action 15: Develop applications to support new information

What has been done?

- (i) Complex applications (9) – these are applications that were innovative at the time and which required an in-depth process of complete development lifecycle.
- Standard interface template pages used for rolling program of ‘Spotfire apps’
 - 14 applications (Action 8) using **Spotfire** processes and infrastructure to present and visualise complex scientific data published on Discover Data.
 - **Land Information Search** tool used as model of how to host externally developed applications.
 - **Map View** technology expanded to incorporate latest best practice. Not a requirement for original bid.
 - **Project Finder** released on 2 July 2014
 - 3 **Daughter web sites** developed - ‘Scottish Soils’⁸² and ‘Aquaculture’⁸³ live and new Daughter Website – **Atlas for Living Scotland**⁸⁴
 - Prototype for **Discover Research**⁸⁵ developed, using Aberdeen University and NERC data catalogue as Search sources. The knowledge exchange for the development source code was made available through GitHub⁸⁶
 - Development of **Linked Data** to display Indicators and Data related to SoE topics and European Environment Agency Environmental Indicators was launched
 - A new **Search Tool** was developed in-house following the failure of the contract with Exalead (original Search Tool providers)
 - **What’s In My Area** dashboard of existing SEWeb app widgets developed.
- (ii) Standard (4)
- **INNS Data Entry portal** tool was developed with the Biological Records Centre (BRC)
 - **Online Public Discussion** web platform was developed for public discussion in 2013.
 - **Our Environment Competition** platform⁸⁷
 - **Air Quality Learning Resource** pack⁸⁸
- (iii) Simple (1)
- New Get Communicating **RSS feed**⁸⁹ application developed to share environmental news from SEWeb launched.

Progress against plan

Applications were delivered as follows – comparison with Target:

Target Applications	Achieved
6 Complex	9
6 Standard	4
2 simple	1

Achievement of Objectives

14 major applications, supporting an extensive range of data and information have been delivered (Map View, Land Information Search, Project Finder, Search, Online Public

⁸² <http://www.soils-scotland.gov.uk/>

⁸³ <http://aquaculture.scotland.gov.uk/>

⁸⁴ <http://www.als.scot/>

⁸⁵ <http://searchtool1.appspot.com/>

⁸⁶ <https://github.com/mr-niels-christensen/environment-scotland-dot-rural/blob/master/docs/md/intro.md>

⁸⁷ <https://ourevironment.scot/>

⁸⁸ <http://www.learnaboutair.com/>

⁸⁹ <http://www.environment.scotland.gov.uk/rss>

Discussion, Spotfire and Get Communicating) – the applications developed were more complex in nature than initially planned.

Future work beyond LIFE project

SEWeb Daughter site model being reviewed as options to deploy other special interest sites in Scotland

The SEWeb project has established a foundation for development including templates and practices for application production. These will be used in the SEWeb After-LIFE team made available by SEPA providing a streamlined route to application development and publication. The usage of the applications delivered will be tracked to ensure further development is aligned with user's needs. This will lead to an ongoing program of enhancements and refinements across all applications developed for the LIFE program.

Problems / Timing / Impacts

The testing of 2 of the above applications was outstanding at the end of August (WIMA, Indicators and Data) but this work has been completed by the post-LIFE SEPA team.

Application development was driven by the annual stage plan for delivery of products approved by the Management Group. This allowed a flexible approach which delivered products that were specified in a timely fashion according to the most-up-to-date information and evolving technology available at the time.

For example delays in INSPIRE standards for Web Feature Services were overcome by using ESRI REST services for the Land Information Tool.

5.1.13. Action 16: Delivery of information and Best Practice

What has been done?

- As per Action 14 focus shifting from INSPIRE and GEMINI spatial standards to Data Linkages
- Water Quantity datasets for streamlined SoE reporting for INFONet and WISE (Water Information Systems Europe) have identified, built and under test.
- Emissions data – definition phase for streamlined reporting - we have loaded trial datasets of OSPAR2013 and E-PRTR loadings data into our Beta linked data environment. These datasets have been:
 - Mapped to DCAT and EIONET vocabularies where possible.
 - Linked to SEPA water based linked data attributes.

An ELDA software interface is available for data interrogation.

- The SEWeb Data and Indicators work stream has developed a Linked Data framework that enables users to associate datasets with environmental topics, defined in the context of national State of Environment reporting. A summary version of the 60+ data sets Scottish Environmental Statistics is presented in the indicators section of the website, some data sets can be viewed via SEWeb as graphs, and data can either be downloaded from SEWeb or the user is signposted directly to the data owner for download and further information.
- SENSE 3⁹⁰ is working towards a model where European level indicators can be related to one or more national indicators, as defined by each member state. The SoE environmental topics on Scotland's Environment Web are equivalent to national indicators and the Data and Indicators framework on the website allows users to link Scottish SoE indicators to EU Indicators.
- The creation of a regional SEIS has been achieved through the development of Scotland's first environmental data discovery hub where users can access information and data, creating a gateway through a range of applications that help people connect with their environment and understand more about Scotland's Environment.
- A linked data portal⁹¹ was established following the lead of the Open Data agenda in Scotland – this has been created for the dissemination of SEPA linked data sets and also contains data provided by SNH as an integral by-product of work done in the project on a Spotfire visualisation application based on SNH data. This portal is a leading innovation for environmental data management in the public sector.
- Scotland's Environment Web Land Information Search mapping tool for the Agri-Environment – Forestry and its use of over 40 openly published data to run map based queries and run reports.
- The Open Data Journey presentation⁹² was a useful tool in helping partners and other audiences how SEWeb navigated the changing landscape of digital maturity over the lifetime of the project.

Progress against plan

- SEWeb now brings together 200+ data sources accessed via 20+ different tools far exceeding the original planned intent of '3 information sources added every quarter'.
- 60+ national indicator data sets, aligned to the Scottish SoE report have been linked to European Indicators (SENSE3).
- International data delivery remains a statutory obligation of SEWeb partners. However, SEWeb has developed and hosts the linked data infrastructure to enable those partners to

⁹⁰ <https://taskman.eionet.europa.eu/projects/linkedata/wiki/SENSE3>

⁹¹ <http://data.sepa.org.uk/>

⁹² http://www.environment.scotland.gov.uk/media/100357/data_journey_presentations.pdf

deliver to projects such as SENSE3, technically superseding the need for web services outlined in the original bid

Achievement of Objectives

The project has:

Developed information architecture and range of delivery mechanisms to make data publicly available and provide data publication routes to Europe.

In doing so it has followed the SEIS principles of keeping data as close to source as possible.

SEWeb initiatives in this area have attracted national recognition e.g. Land Information Search case studies by both Ordnance Survey⁹³ and ESRI⁹⁴.

The SEWeb Linked Data application is built in such a way that it can be configured to map Scottish National Indicators to European Indicators.

The project has been cited in the Scottish Government Open Data Strategy as a best practice example of providing access to open data and it is generally considered by much of the public sector as a leading digital project. The LIFE project has provided funding to develop the expertise in the leading edge development area of Linked Data.

Future work beyond LIFE Project

- As per Action 14 SEWeb Linked Data deployment seen as potential model for other Open data publication in Scotland
- As per Action 14 SEWeb infrastructure remains available for usage by Partners for Open data publication. In addition the technology stack has been mirrored by SEPA and expanded to cope with increased dataset publication.
- The usage of SEWeb streamlined data reporting will be tested in February 2016 when the EEA require member state data to be reported for WISE – this will draw on both the water quantity and emissions data work developed under the LIFE project. EIONET are also in discussions about European Pollutant Release and Transfer Register (E-PRTR) reporting by member status (under the Industrial Emissions Directive), that will draw on the emissions streamlined data reporting infrastructure developed as part of the SEWeb LIFE project. Date for data reporting has yet to be confirmed.
- It is anticipated that the Scotland's Environment Web streamlined data and open data work will be featured in the forthcoming European Commission "Making it Work" event – focussing on making member state environmental monitoring and reporting easier. Scotland's Environment Web will be promoted as regional best practice, knowledge and experience gained will be shared with the project and other member states.

Problems / Timing / Impacts.

Timings around data supply have been one of the continual challenges to SEWeb as much of the data harvested has been sourced from partner resources where SEWeb could only influence and not control production timescales. To counter this SEWeb has made good use of data where there have been other mandatory drivers (statutory, EU) drivers to produce datasets.

To enable analysis functionality, the Land Information Search has had to utilise data in REST service format – whilst this is not INSPIRE compliant, no data providers publish open data in

⁹³ <https://www.ordnancesurvey.co.uk/business-and-government/case-studies/forestry-commission-scotland-land-information-search.html>

⁹⁴ <http://www.esriuk.com/Resources/case-studies/the-forestry-commission-scotland>

Web Feature Service format. SEWeb has been ahead of its time in terms of data usage and the availability of data in a suitable format. It is anticipated that the Scottish Government's Open Data Strategy and the drive on 5* data publication will mean that SEWeb can offer more sophisticated data functionality and download services, which are currently restricted.

Delays to SEWeb developments that have involved linked data (I&D, Streamlined Emissions) have been a result of a number of issues:

- A constantly evolving scope of complexity in delivery of LIFE Bid aspirations as developers became aware of the potential of the innovative linked data approach.
- EEA also developing this new area of data management and reporting and a lack of case studies and strategic guidance on best approaches to take within the cutting edge technology and approach to data reporting.
- Lack of awareness of linked data IS requirements by Scientific Data Managers requiring new ways of working and a high level of translation between two very different perspectives and skill sets in order to define and deliver business requirements
- Availability of data in the right format
- Reliance on the very specialist skills of one or two members of SEPA staff who had competing project and business priorities – no other SEWeb partners had these skills to bring to the project and it was not possible to recruit these skills.
- Whilst the LIFE funding has allowed for innovation and trial of new developments where definitive standards and guidance are not yet fully developed, this is culturally a very different approach taken by what is normally a very risk averse public sector which has required a significant amount of discussion, influence and negotiation which has all added to the time required to develop systems

5.1.14. Action 17: IT Systems Development

What has been done?

- The SEWeb infrastructure procured for the pilot project was done with a view to flexible reconfiguration and this has proved to be the case. New infrastructure build was not required – however some elements were added/upgraded according to needs of application development.
- ‘UMBRECO’ content management system introduced Spring to support new web templates and ensure longevity of SEWeb (previous Alterian CMS out of support)
- No additional infrastructure was required to support June 2014 re-launch, just greater exploitation of existing resources.
- Search software redeveloped in-house following ending of Exalead contract
- The development of the Linked Data applications required new servers and resources to configure and test the new software – this was pioneering work and led to SEWeb being identified as a leading contributor to expertise in this area.
- Provision for user feedback through the ‘Contact Us’ page⁹⁵ was extended to all parts of the website and the SEWeb Administrator set up procedures under the SEPA helpdesk support software, Supportworks.
- The tools developed for the debate on the environment (see Action 15 and Action 12) – Our Environment Competition and On-line forum – allowed users to feedback to specific questions. For the 2013 public discussion, the online forum was designed and managed by Ipsos MORI.
- Disaster Recovery infrastructure was established in Scolocate (provider under Scottish Government framework).
- ArcGIS software from ESRI was implemented to facilitate the Map View and LIS functionality.
- RSS feeds were established to inform users of changes in the system
- A newsletter ‘mailchimp’ was used to create and distribute the newsletter to list of subscribers.
- The software developed for Land Information Search is available as Open Source.
- SEWeb supported development of an Open Source software approach through the Atlas of Living Scotland project – expanding the skill base in Scotland around this software developed in Australia and now used in France, Spain and South America.

Progress against plan

As anticipated

Achievement of Objectives

Yes

A stable, expandable and robust infrastructure has been established and has proven more than capable of realising performance demands for access and new functionality.

Future work beyond LIFE Project

SEWeb Linked Data deployment viewed by Scottish Government and SEPA as case study for Scottish Open Data portals

SEWeb infrastructure remains available for usage by Partners for Open data publication. In addition the technology stack has been mirrored by SEPA and expanded to cope with increased dataset publication.

User personalisation will be investigated along with open source solutions already existing elsewhere.

⁹⁵ <http://www.environment.scotland.gov.uk/get-communicating/contact-us/>

Problems / Timing / Impacts

Abrupt end to Exalead search engine contract was resolved by in-house software development of new search engine.

User account access has been achieved for Project Finder in order for project information to be uploaded. This work highlighted a host of personal data and access issues that are now subject to Scottish Govt. Digital Strategy guidance.

More complex user personalisation was not taken forward due to high level of resilience required for handling and storing personal data which would have delayed the development cycle. At the same time discussion had started about generic logons for mygov.scot and to be used by all public sector websites – this discussion is ongoing.

Significant user engagement was carried out under Action 15 ‘Develop Applications’.

5.2 Dissemination actions

The following table lists the specific dissemination deliverables:

Action	Deliverable Description	Expected	Actual
18	User Guidance – user help documentation included in all applications	Q1 2015	Q3 2015
18	User Guidance videos	n/a	Q3 2015
18	Communications toolkit for partners	n/a	Q3 2015
19	Press releases - 11	Q1 2015	2013 Onwards
19	SEPA view and other articles - 12	Q1 2015	2013 Onwards
19	Presentation at conferences and events - 120	n/a	2011 onwards
19	International conference – March 2015 ⁹⁶	Q1 2015	Q1 2015
20	Noticeboards displayed at offices of SEPA and key partners - 6	Q1 2012	Q1 2012
21	Project Web pages ⁹⁷	Q2 2012	Q2 2012
22	Layman’s report	Q1 2015	Q3 2015
23	Digital brochures – 3 (also described as Briefing papers)	Q2 2012 Q4 2013 Q1 2015	Q2 2012 Q2 2014 Q3 2015
23	Project Newsletters – 7	From Q2 2012	From Q2 2012
23	Project Briefing Notes – 6	n/a	From Q1 2013
23	Videos and podcasts - 20 (number of views – 1376 – as at end June 2014)	Q4 2011 Q1 2015	From Q4 2011
23	ENetworking Groups – Facebook ⁹⁸ and twitter ⁹⁹ (total number of users reached – nearly 630,000 – as at end May 2015)	Q3 2012	Q3 2012
23	SEWeb promotional material – pop up stands and other event merchandise (include photo)	n/a	Annual
23	SEWeb partnership conference – September 2011	By Q1 2015	Q3 2011
24	After-LIFE Communication Plan	Q1 2015	Q3 2015
25	SEWeb Vision and Blueprint	Q3 2012	Q2 2013

⁹⁶ <http://www.environment.scotland.gov.uk/international-event/>

⁹⁷ <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/>

⁹⁸ <https://www.facebook.com/pages/Scotlands-Environment-Web/504094719673549>

⁹⁹ <https://twitter.com/ScotEnvironment>

5.2.1 Objectives

The SEWeb project has delivered a wide range of communications material, all of which can be viewed on the [LIFE+ publications page on SEWeb](#)¹⁰⁰. The delivery of the dissemination actions was the responsibility of the SEWeb Communications Officers and acted as the key liaison contact with partners where appropriate.

The original dissemination objectives are defined within LIFE+ Environment Policy and Governance 2010-B5 Communication and Dissemination Actions (Actions 18 to 24) Part B – objectives and expected results. We agreed to meet the following:

SEWeb will take a strong and proactive approach to promoting the site and the lessons learned by the process of its development.

- SEPA will develop a communications plan.
- There will be a range of publicity material, events and campaigns to promote SEWeb.
- All communications and the SEWeb itself will prominently include the LIFE+ logo.

5.2.2 Dissemination: overview per activity

Action 18: Addressing user's guidance needs.

What has been done?

Webpage dedicated to [‘How to use this website’](#)¹⁰¹ including info on:

- How to access information using our search
- Using data tools - Postcode search, map view, LIS & discover data guiding users through data using visual representations
- Instructions on how users can make information available using datasets
- Instructions on how our partners can add resources to the website search
- Brand guidelines and instructions for partners or others looking to promote information about Scotland's Environment
- Information on the contact process we use to communicate with the public – receiving, responding & tracking information to completion.
- Download facility for many of the SEWeb brand logos
- Details of our social media policy – rules of engagement
- Several documents are available giving guidance to Scotland's Environment SoE Editorial Group including Author guidance, remit role, sign off procedure, writing for the web & style guide
- Web map service standards are available
- Website standards and guidelines for daughter websites

SEWeb has also produced user guidance videos to help users navigate the site and explain how to use the website.

- [Introduction to SEWeb – finding your way around](#)
- [Map View and advanced search](#)
- [Project Finder](#)

¹⁰⁰ <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/lifeplus-publications/>

¹⁰¹ <http://www.environment.scotland.gov.uk/about-us/how-to-use-this-website/>

NB These above items also contain many additional supporting links & PDF's.

1. Page dedicated to [FAQ's](#) answering simple questions.
2. [User Journey Infographics](#) taking users through each 'Get' section and describing the main elements in each.
3. Handy strapline on each landing page suggesting ways they can 'Get Involved / Communicating
4. Infographics and animations are a visual representation of information and help guide users to a better understanding of topics. [SoE section has a range of infographics](#) . SoE topics have also been represented visually with many infographics – ecosystem services, map images to help users to a better understanding of topics.
5. Social media section – [Get Communicating](#) opens up many channels of communication through news, videos, fb, twitter etc. to guide and inform users.
6. [Communication Toolkit for partners](#)
7. [Life+ publications](#)
8. [Life+ news and updates](#)

Over 90 website presentations/training sessions were carried out throughout the lifetime of the project with both partners and other external stakeholders.

Progress against plan

Guidance was adapted where necessary to the up-to-date best practise in the fast-changing area of work.

Achievement of Objectives

The website vision informed the provision of guidance as did feedback from the users during the Future of SEWeb discussions (**Annex x-z**).

Future work beyond LIFE Project

SEWeb will be now concentrating on a user-focussed approach to application development with emphasis on user needs – a well-structured and designed website should be intuitive negating the need for substantial additional supporting user guidance.

Problems / Timing / Impacts

The guidance provision was delivered towards the end of the project as it was dictated by the delivery and bedding-in of the applications – also new software for flip-books and videos was evolving all the time – a consideration of available options was optimally done at this time.

Action 19: Networking with other projects

What has been done?

- SEWeb Project briefing has been sent to other LIFE+ projects, offering opportunity to discuss shared learning common areas of work etc. Also providing detail on how to subscribe to project newsletters and view past issues along with LIFE+ publications page.
- 7 project newsletters have been issued.
- 6 core briefings have been issued to other LIFE+ projects as have project briefing notes.
- A SEWeb LIFE project email box was created and monitored.
- Presentation at EU LLP GADGET project in Brussels.

- Contact made with CLEAR Info project to discuss EnvHack 2 and how such an event might be possible for SEWeb.
- 16 Press releases listed on the SEWeb LIFE+ project page
- Invitations to International event
- Knowledge and data sharing with the Glasgow Open Data Portal – smart cities project.
- 21 SEPAView articles listed on the SEWeb LIFE+ project page
- Item published in LIFEnews – Hackathon¹⁰²
- Entry on the ECOWEB site¹⁰³

Understanding the state of the environment international conference – A conference was held in Edinburgh on Friday 13 March to hear about how we can better understand the state of the environment - in Europe and Scotland. Delegates in Edinburgh along with viewers of the live webcast heard from our guest expert speakers:

Scottish Environment Protection Agency (SEPA) Chief Executive, James Curran opened the conference announcing ongoing support for Scotland's Environment Web beyond the current project that is supported by the European LIFE funding programme.

From the **European Environment Agency**, Dr Paul McAleavey and Cathy Maguire shared some of the headline findings from the agency's recently published **European State and Outlook 2015** report.

Looking closer to home, SEPA's Nathan Critchlow-Watton spoke about the collaborative process of producing the **2014 State of Scotland's Environment report**, and Jo Muse about how **Scotland's Environment Web** is helping to raising awareness, educate and inform Scotland's citizens about the environment.

The afternoon workshops then gave delegates the opportunity to find out more about some of the key features of the **Scotland's Environment Web (LIFE) Project**.

Videos and presentations from the conference can be [viewed on Scotland's Environment Web](#)¹⁰⁴.

Delegates were invited from EU Commission contacts, EIONET, Scotland Europa, EPA Network, SEWeb Steering Group, all Scottish contributors to SEWeb and other LIFE projects – over 90 delegates attended and a live on-line webcast was provided for any European colleagues unable to attend. The outputs from the conference on YouTube have been viewed a total of 560 times.

Achievement of Objectives

We have tried to network with other projects through issue of newsletters and project briefing document.

The fact that we have not received reciprocal communications from other LIFE+ projects means that this action can be viewed as not being fully met, however the diverse range of communications tools that have been developed and issued (Action 23) should encourage increased engagement, particularly as new products are launched on SEWeb. As noted above we have engaged with wider EU projects.

Problems / Timing / Impacts

Feedback and engagement with other projects has not been easy to achieve – see above.

¹⁰² <http://ec.europa.eu/environment/life/news/newsarchive2015/august/index.htm#seweb>

¹⁰³ http://www.ecoweb.info/1381_2267_scotlands-environment-web

¹⁰⁴ <http://www.environment.scotland.gov.uk/international-event/>

Action 20: Notice Boards

What has been done?

This action is complete; notice boards are displayed in the SEPA corporate office in accordance with the schedule. 4 other notice boards are also being displayed at the Scottish Government office in Edinburgh, Marine Scotland, Forestry Commission Scotland and Scottish Natural Heritage.

Achievement of Objectives

Yes. The notice boards bring the LIFE+ project to the attention of people visiting the SEPA and partner offices.

Problems / Timing / Impacts

None. This action was completed within the deadline of Q1 2012.

Action 21: SEWeb Project Website

What has been done?

A dedicated section was created on 8 June 2012 by the SEWeb Web development team with input from the Delivery team. This provides information about the [SEWeb LIFE+ project](#); it is continually updated with project progress updates.

The SEWeb LIFE web pages include:

- Information on Objectives, Actions and Project work streams
- News and Updates from the project
- A complete list of all project publications

Originally a stand-alone project website was envisaged, however the approach was changed to maximise prominence and accessibility for website users. This section also serves to promote technical and publishing standards used by SEWeb daughter sites and data providers.

[Scotland's Environment Web](#) is the main access point for the project and hosts the variety of tools and content described throughout this document. Action 25 describes work undertaken to assess the suitability and usability of website and work to improve the user's experience.

Progress against plan

As expected

Achievement of Objectives

Yes, the website clearly explains the project background, objectives, deliverables and LIFE+ funding. This part of the website (LIFE+ Project) gets about 150 visitors per month – these are likely to be new visitors in the majority of cases.

Problems / Timing / Impacts

None

Action 22: Layman's Report

What has been done?

The Layman's report has been written, designed and published¹⁰⁵. It introduces SEWeb, project objectives, actions and results to the general public.

Achievement of Objectives

It is anticipated that the layman's report will meet the action objectives and provide the public with a plain English guide to the SEWeb LIFE+ project. The report is available electronically and can be downloaded and printed.

Printed copies will be produced for further communication purposes.

Problems / Timing / Impacts

This action is complete.

Action 23: Dissemination of information about SEWeb

What has been done?

All published communications material is listed on the [SEWeb LIFE+ publications page](#)¹⁰⁶

- **Digital brochure** - 3 brochures have been issued. [The first one was released in 2012](#) introduced the project and highlighted what it hoped to achieve. [The second brochure was launch in the summer of 2014](#); this was focused on the relaunch of the website and the three themes of 'get informed', 'get interactive' and 'get involved'. The third brochure was produced with the addition of the 'Get Learning' section.
- **Digital newsletters** – 7 newsletters have been delivered using an online mailing platform. The first was issued in September 2012 and the final one was issued in August 2015.
 - [Issue 1 September 2012](#)
 - [Issue 2 December 2012](#)
 - [Issue 3 May 2013](#)
 - [Issue 4 October 2013](#)
 - [Issue 5 June 2014](#)
 - [Issue 6 May 2015](#)
 - [Issue 7 August 2015](#)

Recipients include; staff within SEPA and partner organisations, a selection of EU LIFE+ projects and other related organisations. The subscriber list currently sits at just under 350 and results show a higher than industry average Open Rate at 41.5%. The click rate is also well above the industry average.

- **Podcasts/videos** - Scotland's Environment website was launched in November 2011, supported by an [introductory podcast](#) from Stewart Stevenson, (then) Scotland's Minister for Environment and Climate Change. A State of the Environment podcast on the topic of Rivers and Canals was launched in July 2013¹⁰⁷. A new approach was taken in 2015 with the

¹⁰⁵ http://www.environment.scotland.gov.uk/media/126006/layman_report_august_2015.pdf

¹⁰⁶ <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/lifeplus-publications/>

¹⁰⁷ <https://www.youtube.com/watch?v=snBv0stxDkk>

publication of an interactive State of the Environment report¹⁰⁸ which compliments the text-based content. This combines audio, video and images.

The ‘Understanding the state of the environment conference’ gave us an opportunity to produce a number of videos on SEWeb, its evolution and findings. Further details on this can be found in the conference overview. The videos can be viewed on the [conference web page](#) or [Scotland’s Environment Web YouTube channel](#)¹⁰⁹.

In total 18 videos were published through the YouTube channel.

- **E-networking** – A social media strategy was approved by the Management Group in June 2013 and underpins the use of social media in the future. The strategy states that Scotland’s Environment Web will use social media to promote specific tools and products, encourage online debate and communicate topical information to a variety of audiences.

Facebook, Twitter, You Tube and Instagram accounts for SEWeb have been set up. Also partners were encouraged to share SEWeb social media postings, and vice versa, to reach an extended audience. ScotEnvironment has loaded 18 videos to YouTube – a mixture of presentations from events, how-to citizen science guides and information on the environment.

Twitter	
Tweets	487
Followers	726
"@scotenvironment" Mentions	205
"@scotenvironment" Mention Reach	332,475
ReTweets	479
ReTweet Reach	713,844
#ScotEnvironment Tweet Reach	19,364
#ScotEcoHack tweets	86
#ScotEcoHack Tweets Reach	9,497
Facebook	
Page Likes (cumulative)	356
Page Likes	160
Post Likes (monthly)	647
Posts	301
No. of people that posts reached	29,907

A process has been put in place to make the most of the social media and e-networking capabilities of partner organisations to publicise SEWeb. With partners using Twitter and Facebook accounts and blogs this was particularly successful when promoting the new ‘Get Involved’ section of the website and resulted in a number of audience interactions including retweets and questions submitted to SEPA and BGS via Twitter. A promotion on Twitter of new map layers for Core Paths and Deer Collisions resulted in spike in page views on these map in following weeks.

¹⁰⁸ <http://www.stateofenvironment.scot/>

¹⁰⁹ <https://www.youtube.com/user/ScottishEnvironment>

- **Roadshows** – SEWeb has been featured at 95 events and exhibitions e.g. EISF event, Royal Highland Show, Digital Service Leaders Conference, MASTS annual conference.

The SEWeb team have carried out a number of presentations and round-table discussions with public and voluntary sector organisations to introduce SEWeb, demonstrate what can be achieved through the website and explore the possibility of partnership. Good partnership links and contacts have been made through these meetings and any possible synergies highlighted. The SEWeb team have also attended a number of national and international conferences to promote SEWeb and network with other projects. The indicators table in (section 7.4) lists road show and awareness raising activities

- **Press/news articles** – A range of media coverage has featured different aspects of SEWeb (press articles and interviews, 13 in all). The source of can be seen on the Publications page under Communications/Press Releases¹¹⁰
- **National conference:** A conference was held in September 2011 to launch the SEWeb project¹¹¹ (as described in the Interim Report). 60 delegates from 32 public and voluntary sector organisations involved in environmental monitoring, protection and improvement attended the one-day event. Although no other LIFE+ projects were represented at this event, SEWeb’s Senior Project Manager and Principal Policy Officer had the opportunity to network with other LIFE+ projects in November at the LIFE+ kick-off event hosted by Astrale.
- **SEWeb PR Strategy** – developed with BIG Partnership (PR Agency) and delivered by SEPA and SEWeb with the overall aim of promoting the website and growing visitor numbers:
 - Stakeholder/audience mapping workshop
 - Audit of the different communications channels managed by partners
 - Web site survey and product/page feedback questions
 - SoE and Web Site relaunch – press release/social media content
 - Review of SoE for interesting facts/figures
 - SEWeb leaflet
 - Communications planner for a series of mini-campaigns targeted at specific environmental topics and SEWeb products/tools e.g. A week to launch the bathing water Spotfire app, and promote other information on SEWeb relating to bathing waters (SoE topics, Map View data layers, Citizen Science Projects, Mobile Apps) and related activities by our partners (e.g. the Keep Scotland Beautiful Blue Flag awards for Scotland’s Beaches). Campaigns for Project Finder/Get Involved, Bathing Waters, People and the Environment delivered.
 - Project Finder postcard, poster and press release
 - Infographics for air, land, water, ecosystems services and website user journey
 - SEWeb social media guidelines for partners
 - Search Engine Optimisation and Google analytics
 - SEWeb communications toolkit for partners, providing guidance and tools for partners to promote SEWeb through their own communications channels.
 - PR campaign evaluation report by BIG Partnership – measuring the effectiveness and impact of the above PR Strategy Actions¹¹². This can be viewed on the [LIFE+ publications](#) web page.

¹¹⁰ <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/lifeplus-publications/>

¹¹¹ Report for event can be found on SE website:

http://www.environment.scotland.gov.uk/pdf/Scotlands_Environment_Web_Life_Workshop_Report_September_2011.pdf

¹¹² http://www.environment.scotland.gov.uk/media/189065/big_final_evaluation_report.pdf

This strategy has been successful in increasing visits to the website as can be seen from the following graph of session numbers.

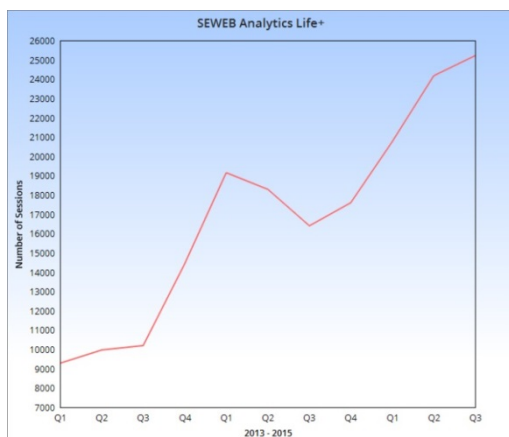


Figure 11: SEWeb Sessions 2013 - 2015

Other: In addition to the communications tools outlined in the bid; SEWeb has produced **six core briefing notes**. These were developed at the request of the Management Group to provide them with a tool to communicate project progress internally. Each core briefing note has a theme, such as the state of the environment group or citizen science. Briefing notes are also available to the wider public on the SE website.

An internal communications plan was developed to assist in raising awareness of SEWeb within SEPA and partner organisations.

SEWeb implemented a **website linkage strategy** to SEWeb website and products, from different pages in SEPA intranet and website, and shared guidance on how to implement with partners for their own websites.

EcoHack – Scotland’s Environment Web wants to help people discover and understand more about the environment. Environmental data plays a big part in achieving this goal. A hackathon event was organised over the weekend of 30th and 31st May 2015 at the Edinburgh Centre for Carbon Innovation. During the weekend event, teams of students and mentors from a wide range of disciplines were challenged to explore data and develop ideas that could make a real difference in helping people observe, monitor, educate and take action in the environment. Ideas were encouraged around exploring new data relationships to help analyse the state of our environment and the impact it has on us, develop apps that use and visualise data to help explain and view the environment, and provide new ways of collecting and viewing data.



For more information about the event, the winning ideas with videos and photos from the event go to <http://www.environment.scotland.gov.uk/ecohack-update/>

A SEPAView article about the event was published in June 2015¹¹³.

Achievement of Objectives

¹¹³ <http://www.sepaview.com/2015/06/ecohack-2015-a-new-way-to-look-at-environmental-data/>

Yes. The objective of this action is to raise awareness of SE website and the LIFE+ project. Success will be judged on both partner participation and the public attitude changes assessed under action 25; project evaluation.

Communications tools used include:

Type of Communication	Target	Achieved
digital brochures and newsletters;	3 + 6	3 + 7
Core Briefing Notes	n/a	6
videos and podcasts;	2	18
e-networking;	n/a	Facebook Twitter YouTube Instagram
road shows and presentations;	20	95
press articles;	n/a	13
a national conference (in Scotland);	1	1
an international conference.	1	1

Problems / Timing / Impacts

The communications activity in 12/13 was low as in this planning stage there was little new content to publicise. There followed an upward trend as more content and functionality was added to the site. This highlighted an important principle - Communications must be driven by content if new users are to be attracted and retained.

The communications effort required to launch and publicise the 70 different SEWeb products was substantially more than forecast. This resource is allocated both to the Action code for the specific product and Action 23.

Whilst there have been a few delays to some of the activity, all of the expected actions were delivered as expected along with additional products outwith the original list of actions.

Action 24: After- LIFE+ Communication Plan

What has been done?

The After-LIFE+ communication plan was completed in Q4 2015 and published electronically on the website¹¹⁴. The plan sets out how the dissemination and communication of results will continue after the end of the project.

Achievement of Objectives

This plan is in two parts, providing an overview of the project's objective successes, and a strategy as to how project results will be continued to be disseminated to specific target groups and stakeholders. This includes budgetary and evaluation information for SEWeb after the LIFE+ project is completed (included in **Annex ab** version).

Problems / Timing / Impacts

This action wasn't completed within Q1 2015 as outlined in the bid partly as a result of reduced communications resource to deliver this action. It was also considered important to involve partner organisations in developing the plan, and seek their views about

¹¹⁴ http://www.environment.scotland.gov.uk/media/190886/seweb_after_life_comms_plan_oct_2015.pdf

communications beyond the life of the project. This took longer than anticipated. The After-LIFE+ communications plan forms part of the longer-term work and communications resource has been secured to deliver this.

5.3 Evaluation of Project Implementation

The results achieved against objectives are as follows:

Objective 1 - Develop an inclusive partnership programme bringing together the key data providers and data users.

Scotland's Environment Web has been working with 15 data providing organisations on 311 data sets, consumed by 18 applications. The detail of partnerships has been described in previous sections of this document (section 2 and 5.1.2, Action 5). The number of relationships established and influence exerted by the project on the Digital program of Scottish Government far exceeded ambitions set out in the Grant Agreement.

The power of establishing a forum where environmental partners could bring proposals for collaborative working was a consequence that again had not been envisaged and the successes of SEWeb set an example for this type of relationship in the environmental arena.

In the future the recently established RAFE partnership takes over the role of the SEWeb Steering Group as the RAFE Digital Strategy, approved 2015, provides the ongoing mandate for SEWeb and aligns with Scottish Government Digital Strategy.

Objective 2 - Promote the expansion of a European SEIS (Shared Environmental Information System) through the development of a regional SEIS that will provide information required by the EEA

The achievements in this objective range across a number of initiatives that delivered on Open Data:

- Linked Data repository (setting a standard for environmental data collection and dissemination)
- First use of map layers mandated by INSPIRE directive, showing benefits of Open Data
- Transformation of shared data using visualisation software to allow understanding and analysis
- Use of linked data (working towards 5* open data) to expose indicators of environmental quality
- Demonstration of the ability to gather data from all data suppliers in a certain thematic area (the environment) and the benefits accruing from making this happen

In the future the success of streamlined Emission and Water Resources will be evaluated when reporting to the EEA is carried out as per requirements in 2016. The extension of the indicators and data work to cover indicator reporting on other key policy areas e.g. Scottish Biodiversity strategy. Extension of the scope of shared environmental data to more localised geographical areas to support local SoE reporting.

Objective 3 - Provide a better understanding of the wider impacts of environmental change and develop a means of prioritising environmental problems

The State of the Environment and an extensive partnership exercise of assessing and prioritising Scotland's Key Environmental Issues contribute to a better understanding of the environment in Scotland. The methodology is now a tool available to all partners to help in identifying key environmental priorities.

SEWeb has given the public a unique opportunity with the supply of the tools to see what is in their local area. The information and tools made available provides more community empowerment and the use of the environment sustainably. SEWeb has been developed in alignment with developing policy and ambition of Government and is a major digital enabler for making connection between policy and community.

In the future the editorial group that managed the writing of the State of the Environment report are undertaking a new exercise to identify environmental priorities in Scotland using the MCM methodology with a view to a more strategic consensus for allocating resources across the partnership.

Objective 4 - Engage the public by providing access to high quality on-line interactive resources to promote better understanding of the environment, and involvement in discussion, monitoring and action

The following tools provide opportunities for the public to engage in activities and improve understanding of the environment:

- Project Finder (with over 80 projects accessed between 500 and 1000 times a month)
- Mobile apps to allow people to get involved while on the move
- Air Quality information and tools to inform in an key environmental area
- Annual Competitions and educational material for a youth audience
- Toolkit to enable citizens to establish their own Citizen Science projects.

In the future this work will be taken forward with the development of a new Citizen Science data entry portal; new OEC competition; new partnership work with Volunteer Scotland ensuring Project Finder meets the needs of volunteers will result in improvements to this tool. The purpose will be to create a more citizen-centred view of the environment by providing citizens with access to information tailored to their immediate locality.

The following sections describe in detail the project itself, the website and how the visioning exercise enabled a user-centric design and evaluation of the public engagement objective of the project.

All other actions are evaluated in the specific sections in 5.1.

5.3.1 Project Evaluation

An annual review of the project with project and partner staff groups, termed 'Stage' review, took place in January 2013 (reviewing the year 2012) and July 2014, reviewing the project progress in the year 2013. This allowed an on-going evaluation by all stakeholders of how the project was performing.

SEPA issues in 2013 concerned recruitment (ref. 4.2), project planning at the early stage in the project where work was relatively undefined, and time commitments to the management of the Governance structure, data provision and communications. In all cases corrective action was identified and carried in to the following stage.

In the partnership meetings communication and managing expectations were identified as the two critical areas to work on going forward. Communications and lack of new content are critical to ensure people/business form a relationship with SEWeb and encouraging regular revisits. At that stage the website appeared stagnant as not much new content had been developed. This problem was overcome in the following year by increased delivery.

The following year the internal review identified the need to ensure that project management efforts were targeted and that project documentation was extensive leading to a heavy project management workload. However it was recognised that this level of workload was needed at that stage.

Common themes picked up from the discussion

- Important to have clarity of what want to do
- Drivers to do it must be in place and be managed
- We have the understanding
- Importance of personalities/champions
- Shallow pool of resources to draw on

- Benefit of tightly run groups of staff full time on the project

The Management Group acknowledged the complexity of the SEWeb project and the corresponding project management workload, also that they as a group needed to think strategically as the project evolved. It was felt that at that stage the value of SEWeb as a collaborative platform was becoming evident.

In the final review of the project in August 2014 in detailed discussion with partners and staff of all organisations it was evident that SEWeb had succeeded in delivering an extensive quantity of content and that the interest in the work of SEWeb was very high – evidenced by the volume of proposals for further work (**Annex c**).

The methodology used in the project was successful in particular the following activities:

- revision of bid with newly recruited project team – this ensured ownership by this new team of the project and the Grant Agreement even though they had not written it and ensured Objectives were still valid – it also ensured that as much as possible the project was able to use recent experience and latest developments to inform the work for the following years. Important it allowed realignment of the requirements in Public engagement stream for engagement and consultation.
- using stages for the project planning and delivery ensured that on a yearly basis (and sometimes more often) new developments in the environmental information arena were incorporated in to the project product.
- co-design with partners ensured buy-in from the partnership group in the products and meant that time and resources from partners were agreed. It also involved partners in informed decision-making and planning.

5.3.2 Website evaluation

It was evident early in the project that the pilot website on which the SEWeb project was going to build would have to be reviewed from a ‘fit for purpose’ perspective in light of all the changes that were going to happen in the following years. This is why a Visioning exercise was proposed and carried out by Abertay University which brought

- Experience in website development using latest web technologies.
- Unique expertise in harnessing new technologies for wider stakeholder participation and engagement.
- Experience in focus group facilitation and analysis

This led to a redesign of the website and fulfilment of the following success criteria as defined by Visioning Report (delivered by Abertay)¹¹⁵:

- To use more interactive web features to present environmental data and information in a format that is relevant to a wider range of web users and environmental stakeholders
- To provide a website that embraces new creative digital technologies and creative web design to optimise the SEWeb user experience so that the success of the project will continue long after the LIFE funding concludes
- To use new digital/social media technologies, that can help to effectively communicate environmental information, increase understanding and awareness and contribute to changing behaviours

Of the 18 recommendations made in the Abertay report:

- 8 are completed
- 7 were partly delivered
- 10 have further actions planned for After LIFE

¹¹⁵ <http://www.environment.scotland.gov.uk/media/26612/Scotlands-Environment-Abertay-Visioning-Report.pdf>

Subsequently a Communications campaign was set up with the BIG partnership in March 2014 with the aim to:

Brand

1. Reinforce “Scotland’s Environment” online brand
2. Increase recognition of its value/benefits as a key central source of information

Site specific

3. Increase website traffic to 10k to 12k k visits a month. Additional visits (approx. 8.5k) may be created by the redirection of Land Information Search (LIS) at certain times of the year.
4. Increase time on site from 1.5 to 3 mins per visit (monthly average)
5. Increase number of pages viewed per visit from 3 to 5 (monthly average)
6. Increase referral traffic – e.g. from social media, digital newsletter, and from partner web sites.

The BIG partnership delivered a strategy document to demonstrate how these objectives would be met¹¹⁶ following the launch of the redesigned website in June 2014. The conclusions were presented in the evaluation document¹¹⁷ which resulted in:

- A gradual increase in traffic i.e. 62% increase in traffic based on a comparison with the same period in 2013 which has now (August 2015) risen to close to 10,000 per month (with seasonal variations) which is increasing month by month.
- Significant effort was directed at generating interesting content (web and social media channels) to support promotion of Scotland’s Environment and user rates did spike when activity is undertaken – e.g. promotion of Deer Collisions map layer on social media resulted in this map layer having the highest number of views in following months.
- Facebook and Twitter channels were prioritised and have grown.
- The 3 minutes time session duration target has been met every month since launch of the new version of the website.
- Increased referral traffic is being sourced by social media – see Action 22 in 5.2.2

The usage of the Project finder application which matches users with volunteering opportunities in volunteer organisations has grown since the launch of this tool in July 2014. In particular the figures for this Spring/Summer (optimal project involvement) show the growth envisaged. This growth will be built on in the future.

Project Finder Statistics - 2015	Mar	Apr	May	Jun	Jul	Aug
Number of Organisation	50	52	49	54	64	64
Number of Projects	48	52	52	53	81	81
Number of Volunteers	20	22	22	24	28	28

Google Analytics is used to record information on the website usage. This tool provides extremely valuable information on where and when our visitors are coming from, what they are looking at, how they got to SEWeb.

The simple visitor numbers show a gradual increase which is aligned to maturity of the site itself but also to the communication opportunities used in the period – both in terms of social media and face-to-face presentations:

Scotland's Environment	Aug-14	Sep	Oct	Nov	Dec			

¹¹⁶ http://www.environment.scotland.gov.uk/media/189066/big_communication_strategy.pdf

¹¹⁷ http://www.environment.scotland.gov.uk/media/189065/big_final_evaluation_report.pdf

Number of visits (2014)	3,305	5,732	5,409	5,095	4,375			
	Jan-15	Feb	Mar	Apr	May	Jun	Jul	Aug
Number of visits (2015)	5654	6,876	8,333	9,179	8,683	7,679	6,888	7,704

(We have been accustomed to see reduction in numbers in the holiday periods – July, August, and December which tells us that most users are in a working environment)

An on-going website survey has had 173 responses so far which have given a useful insight into what our users are looking for.

Responses to some key questions:

Q1 What best describes you?

Member of the public	13.87% 24
Government	13.87% 24
Public Sector Agency	28.32% 49
Local Authority	6.36% 11
School (student)	2.89% 5
School (teacher)	2.31% 4
Academia/University (researcher)	6.94% 12
Academia/University (student)	4.62% 8
Academia/University (lecturer)	1.73% 3
Business/Industry	10.40% 18
Not for Profit Organisation/Third Sector	4.05% 7
Media	1.16% 2
Other (provide detail)	3.47% 6

Q4 Why are you interested in the environment? (please tick all options that are applicable to you)

Enjoy (e.g. recreation)	67.74% 105
Understand (e.g. data / monitoring / research)	59.35% 92
Protect and Improve (e.g. action / enforcement / policy)	67.74% 105
Livelihood (e.g. your place of work/business)	48.39% 75
Other (provide detail)	8.39% 13

Q5 How did you hear about Scotland's Environment website? (tick all that are applicable to you)

Internet Search Engine (e.g. Google)	18.83% 29
Leaflet	4.55% 7
Article	9.09% 14
Event	3.90% 6
Meeting / Presentation	18.83% 29
Word of mouth / recommendation	34.42% 53
Referral from another web site	17.53% 27
Social Media	3.25% 5
Other (provide detail)	16.88% 26

Q7 Why did you come to Scotland's Environment website? (tick all that apply to you)

General interest	43.71% 66
Research	27.81% 42
Education/Study	10.60% 16
For my job	62.91% 95

Comments are encouraged on all web pages to track responses to particular parts of the website.

5.3.3 Public engagement evaluation (Action 25)

At the start of the project, SEWeb produced a Public Engagement Evaluation Strategy,¹¹⁸ which was used to guide the project's public engagement activities. The strategy posed a 'theory of change:'

“High quality on-line information about the environment (both in terms of what kind of information people need and how they need it presented) can act as an effective gateway to better understanding, and better engagement in debating environmental priorities, monitoring the environment and taking action to protect it”

All subsequent activities in relation to public engagement were intended to test this theory. However, in the original LIFE+ project bid (Part C) it was acknowledged that the three year term of the project was too short to detect changes in behaviour as a result of project activity and any consequent improvements in the environment. Any evaluation of public engagement activities could therefore only focus on the effectiveness of those activities in enabling and encouraging change.

A comparison of the 2011 and 2014 Eurobarometer Surveys on public attitudes and behaviours towards the environment did indeed confirm that there had been little shift in those attitudes and behaviours at either the European, UK or Scottish level over the time period in question.¹¹⁹ It was therefore concluded by SEWeb's public engagement expert group that there was little merit in conducting further general surveys of Scottish attitudes.

In terms of promoting public monitoring of the environment and public action to improve the environment (see Actions 11 and 13 above for further details) there is early evidence of the effectiveness of SEWeb activities, but as previously stated, most of the initiated programmes of activity are insufficiently advanced to enable detailed evaluation to be carried out.

For example, the air quality citizen science in schools project went through a successful trial phase involving three schools in the summer of 2015. New data on local air quality were generated, awareness of the causes of poor air quality was raised, and the effects on air quality of changing modes of transport to and from school were examined. Use of the teaching pack, air quality sensors and online data visualisation tools all generated good feedback. However, it is only over the school year following the national launch of this project in September 2015 that sufficient data are likely to be generated to enable a full evaluation of the project's effectiveness.

The 'Our Environment' and 'Youth Discussion' competitions have between them attracted over 200 entries over the period September 2013 – April 2015. There is some evidence of both monitoring and action programmes being initiated (for example air quality monitoring, creation of wildlife conservation gardens, recycling initiatives) but again, it is too early to assess the extent to which these activities will be sustained. Initial online survey responses to the competition have been encouraging, with over 80% of respondents stating that they have

¹¹⁸ <http://www.environment.scotland.gov.uk/media/16524/Public-Engagement-Evaluation-Strategy.pdf>

¹¹⁹ <http://www.environment.scotland.gov.uk/media/125776/analysis-of-the-2014-and-2011-eurobarometer-surveys.pdf>

continued the actions they initiated in the competition, and over 90% stating that they would enter a similar competition in the future. The competition is being run again in 2015-16, with an increased emphasis on providing legacy support to entrants to enable them to implement their ideas and sustain actions in the longer term.

In the meantime, SEWeb has received some excellent qualitative feedback from the winners of the 2015-16 competition (Lochdonhead Primary School, Island of Mull), following the awards event in September 2015. This feedback demonstrates the wider social benefits that can be derived from this project:

“Thank you very much for the lovely email sent to the Principal Teacher, Claire, regarding the Our Environment Competition. Words cannot express the lasting impression you have given to two young girls and their parents. They had a fantastic day and were made to feel very special indeed. Being an isolated and very small, rural school, it is often challenging providing exciting opportunities where our pupils can experience situations which, to some city schools, seem fairly mundane. This amazing day, including a tour around the Parliament building was momentous. The pupils have shared and celebrated their win at our monthly community café, where senior citizens come to the school and share in the work we do, over a lovely cup of tea and cakes. The applause was deafening when the enormous cheque came through! Thank you and your team for making the day so, so special.”

The INNS data entry portal has only just been placed online and has therefore not yet generated any new records of Invasive Non Native Species. The River Obstacles mobile app has been available since August 2015, and has thus far generated 45 new records of river obstacles by 14 recorders, but this is prior to publicity campaigns to promote its use.

In terms of tools and resources to promote public monitoring and action, Project Finder is one of the more established products, having been online since July 2014 (again see Actions 11 and 13 for more details). At the time of launch, the service was advertising around 30 monitoring and action projects. This has now grown to over 80 projects being run by around 65 different organisations. The number of prospective volunteers making contact with organisations running projects has also grown from an initial 4 referrals per month to around 30 per month.

An initial online survey of organisations using the service generated only a limited number of responses (8), but most feedback was positive. Over 80% of respondents said they would recommend Project Finder to other users, over 80% were either very likely or fairly likely to add further projects in future, and 50% rated the service as either excellent or good. However, a clear majority of respondents would like to see more projects being advertised, more volunteers browsing the site and more volunteer referrals as a result (it should be noted, however, that this online survey was carried out just before a promotion exercise that resulted in a near doubling of the projects being advertised). Initial evidence suggests that Project Finder will be of more use to smaller organisations, typically running single projects, and that larger organisations see it as one of many ways in which they can promote their activities. It has significant potential in that it is possibly the only service of its type that is dedicated to promoting environmental projects, but its longer term success will depend on generating greater numbers of visits by prospective volunteers.

The ‘Get Involved’ pages on SEWeb, from where most of the public engagement tools and resources can be accessed, have typically been receiving around 1750 page views per month over the last year of the LIFE+ project, but this number can fluctuate between less than 1,000 to over 2,000 depending on the timing of promotional activities (e.g. the launch of the Our

Environment competition). This typically accounts for about 10% of the total traffic through SEWeb.

In comparison, the new 'Get Learning' pages have been attracting almost 4,000 page views per month since their launch in August 2015, a clear indication of the significance of the education sector in terms of public engagement. It is anticipated that more traffic will be generated via Get Learning to public engagement tools and resources in other parts of SEWeb.

5.4 Analysis of long-term benefits

1. Environmental Benefits

In no other place can people with an interest in the environment find a multi-agency expert view on the State of Scotland's Environment or access, in a single web platform, a wide range of environmental data and information published by multiple sources. SEWeb provides a coherent story of Scotland's Environment and establishes links between this story and the underlying data and information that influences the assessment. Through streamlined data reporting and linked data it also provides Scotland's State of Environment information and data within the context of European environmental data and indicators. With recognised experts and Scotland's leading environmental organisations contributing to content and data on the website, users have confidence that this is a trusted and authoritative source of information. The process of writing and editing the SoE report has benefited partners who sat on the Editorial Group, providing a shared and in some cases new understanding of cross cutting environmental issues (e.g. climate change) and establishment of new relationships for future partnership working. Involving partners in the collaborative design, development and implementation of data products, and sharing the extensive knowledge and expertise spread across different organisations has meant that SEWeb has been able to develop products that have wider reaching benefits than could have been achieved if partners had continued to focus on their own individual policy and operational areas. Drawing in environmental data from a range of different sources, provides users with a unique view of the different aspects of the environment, supporting a more holistic analysis of environmental relationships and interactions. The shared platform established by SEWeb LIFE Project, opens up data and information to much wider audiences than individual organisations could have reached by themselves, from local community groups and school classrooms who are now better connected to their local environment, to Scottish and UK Governments and European data users who have an interest in Scotland's overall national environmental picture.

A key benefit of SEWeb is the provision of data to support the delivery of policy that seeks to address significant issues, for example:

- INSPIRE Directive – all SEWeb mapping tools enable the sharing of environmental spatial information among public sector organisations and better facilitate public access to spatial information across Europe.
- Access to environmental data from multiple sources in accessible mapping and visualisation tools to support Scottish Environmental Assessment legislation - designed to gauge the likely impact and the pressures on the environment from any plans, programmes or projects which are likely to affect it, includes:
 - The Environmental Assessment (Scotland) Act 2005,
 - The Environmental Impact Assessment (Scotland) Regulations 2010, and
 - The Conservation (Natural Habitats, & c.) Regulations 1994
(Linked European Directives - EIA Directive (85/337/EEC), SEA Directive 2001/42/EC and Habitats Directive¹²⁰)
- Community Empowerment (Scotland) Act 2015 – public engagement, discussion, action, project finder, citizen science and action toolkit
- Land Use Strategy for Scotland and EUNIS (EUropean Nature Information System) – EUNIS land cover maps on Map View

¹²⁰ Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora

- Water Framework Directive¹²¹ – access to and presentation of Water Classification results (Map View and Discover Data), streamlined water quantity reporting to EEA.
- Bathing Waters Directive¹²² – Bathing Water Classification data within Map View and Discover Data
- Habitats Directive, Natura 2000 - Protected Nature Sites (Discover Data) and Atlas of Living Scotland daughter website
- Biodiversity Strategy 2020 – Atlas of Living Scotland daughter website
- Waste Statistics Regulations (EC 2150/2002) – Household Waste and Waste from all Sources (Discover Data)
- European Pollutant Release and Transfer Register (E-PRTR) - SPRI (Discover Data) and streamlined emissions reporting to EEA
- Regulation 1143/2014 on invasive alien species - INNS data entry portal
- Control of Major Accident Hazards (COMAH) (1999 – Land Information Search : COMAH Environmental Risk Assessment
- Climate Change (Scotland) Act 2009 – Scottish Climate Projections (Discover Data), Climate Trends Handbook and Climate Trends (Discover Data)
- Soil Thematic Strategy (COM(2006) 231 and 7th Environment Action Programme (2014), which recognises that soil degradation is a serious challenge - Scotland's Soils daughter website, the State of Scotland's Soils report and provision of soils data.
- Environment Act (1995) – Scotland's State of Environment Report

2. Long term benefits and Sustainability

Environmental Benefits

The presentation of a single, multi-agency view of Scotland's Environment will inform the way in which the environment in Scotland is monitored and allowing monitoring activities by public bodies and society to focus on the most important threats. SEWeb will continue to support the work of CAMERAS in identifying and filling environmental monitoring gaps, improving monitoring programmes and aligning monitoring effort to evidence needs under the aegis of the Chief Scientist for Scotland.

The website provides tools to access, view, and analyse environmental data, that will in turn provide high quality information to support evidence-based policy development and provide a framework for public bodies and civil society to make decisions and take action. The result is a more coordinated and, therefore, more cost-effective mechanism for protecting the environment. Scotland's environmental footprint can be reduced as a result of influencing the actions of society through the provision of high quality online information and resources, and promoting inclusive public engagement, monitoring, and discussion.

SEWeb is of benefit to business, research and development activities that require an understanding of key environmental issues and the quality of the local and Scottish environment. For example, when undertaking environmental impact assessments, the use of tools on SEWeb such as the Land Information Search and data visualisation (Spotfire) to analyse and interpret data, users can quickly to understand environmental impacts, pressures and constraints and where there are environmental resources available to support development.

¹²¹ Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy

¹²² Directive 2006/7/EC of the European Parliament and the Council concerning the management of bathing water quality and repealing Directive 76/160/EEC

Economic benefits

Evidence to support decision making: tools such as the Land Information Search are benefitting decision making by developers, industry, communities, regulators and grant funding bodies alike. Users have access to the most up-to-date published data whenever they access tools on SEWeb and all users view the same open source data that is managed and published at source - 1 version of the truth. More informed proposals and assessments are carried out that take full account of the relevant environmental quality information, designations and sites of interest, with more informed decision made and better quality applications/proposals submitted. This in turn can save time on pre-application/assessment discussions, reviewing and checking data and quicker decisions made with a more positive outcome.

Sharing Data & Information: Citizens, businesses and research organisations want to be able quickly and easily access the data. In an increasingly cluttered landscape of online resources, SEWeb provides a one-stop-shop to data and information published by a wide range of organisations. Harvesting open data published by partners and transforming it into formats that make it informative, engaging and usable, environmental data becomes more widely accessible as it reaches and influences new audiences. Users can also quickly get to the information they are interested in saving time on searching across multiple websites and trying to identify most appropriate sources of trusted information.

Sharing Systems and Services: SEWeb is underpinned by a strong partnership; SEWeb provides a shared platform for collaboration and innovation, developing products that meet the needs of users and partners, delivering truly joined up services which deliver best value for money.

Developing Skills and Knowledge: The SEWeb draws on the skills and knowledge of a wide range of partners to ensure products and applications are responsive to operational, policy and user needs. The initiative will continue to allow staff from SEPA and partner organisations to share skills and knowledge to exploit web-based digital opportunities to make information and data on Scotland's Environment easily available. These technologies provide a means of accessing trusted and authoritative information.

Social benefits

Citizen/ Customer Focus: One of the most widely used functions on Scotland's Environment is the postcode search – people want to know what is going on around them, in their community and their local environment – their Place. SEPA and partners cannot achieve all that they aspire to in terms of environmental protection and improvement through just regulation and policy. Improved understanding of the local environment can empower communities to observe and monitor their local environment to help further our understanding of environmental changes, take action to protect and improve the quality of their environment and to get involved in decision making about their area – creating an invaluable network of environmental stewards and custodians. SEWeb has been working with partners to make information from many different sources more accessible, easy to use and presented in a format that is relevant to communities, members of the public and school children. The website is a one stop shop portal providing information and data about the local environment. Going beyond just a website, the SEWeb partnership will continue to engage directly with school children and members on the public in discussion about key environmental issues for Scotland, and rewarding excellent ideas for local environmental improvements.

Community empowerment in environmental decision making and action: the Community Empowerment (Scotland) Act 2015 requires public sector bodies to increase the public's involvement in discussion about local environmental issues, in the design of public services, and encouraging more volunteering in local action – there are a number of SEWeb products that can help partners to meet these new obligations including: SEWeb public discussion findings and methodology; TCV research on attitudes and behaviours from involvement in Citizen Science; Project Finder, SEWeb Citizen Science Projects and Toolkit, and the youth competition to help volunteers at any age to get involved.

Continuation of the project actions by beneficiary and other stakeholders

Recognising the value in SEWeb beyond LIFE project, SEPA's Agency Management Team approved resources to continue the maintenance and enhancement of the website and all of its associated products/applications. In November 2014 the SEWeb partnership signed up to continued support of SEWeb beyond LIFE project, setting out its future purpose:

SEWeb will support the work of its partners to make information and data on Scotland's environment easily available. It will tell the story of Scotland's environment and signpost to more detailed/specialist information.

SEWebsite will be a means of accessing trusted and authoritative environmental information from multiple sources, extending the reach of environmental information and news to wider and new audiences than that of partners own web presences. The website will allow users to:

- Find information of interest quickly
- Search, discover, view, analyse, and interpret data for improved understanding.
- Interact and collaborate in dynamic and creative ways
- Innovate and extend knowledge and insight.

SEWeb partnership will share data and skills to exploit web-based digital opportunities and enrich content to enhance business performance, operational utility and policy relevance – and thereby benefit the environment, society and the economy.

The partnership have approved a 3 year roadmap (**Annex s**) beyond the LIFE project that will continue to grow the current website and enhance functionality and usability, and scope out new development ideas and new funding sources.

SEWeb is now firmly embedded as a key delivery tool for SEPA's Digital Strategy and the Scottish Government RAFF Partnership¹²³ Digital Strategy. SEPA and SNH committed funding to deliver phase 2 of a fully functioning Atlas of Living Scotland daughter website, and Scottish Government is looking at new SEWeb Daughter websites for noise and air.

Partners are also looking at where SEWeb data presentation tools might replace some of their own website data publication features, whilst continuing to curate and publish data – moving SEWeb towards becoming the Digital Environmental Hub in Scotland.

3. Replicability, demonstration, transferability, co-operation:

¹²³ **RAFF Partnership** consists of : Cairngorm National Park Authority, Crofting Commission, Forestry Commission Scotland, Forest Enterprise Scotland, Loch Lomond and the Trossachs National Park Authority, Scottish Environment Protection Agency, Scottish Government Directorate for Agriculture Food and Rural Communities, Scottish Government Directorate for Environment and Forestry, Scottish Natural Heritage

Smart Cities: with the growth of Smart Cities initiatives throughout Scotland e.g. Glasgow, Edinburgh, Aberdeen, Stirling – there is an opportunity to maximise the sharing of information between the various portals, and for new portals to learn from the experiences of more established projects such as SEWeb.

Shared products: SEWeb has developed applications in shareable formats (e.g. Land Information Search, Indicators and Data) that can be tailored for locally sourced data and information portals to provide quicker and easier access to local data – improving transparency and availability of data to inform local community decision making. The Atlas of Living Scotland Daughter Website took the approach of re-use – using Open Source infrastructure developed by the Atlas of Living Australia which the government has funded to the tune of £25mill, the Atlas of Living Scotland has been built much at a much quicker pace and at a fraction of the cost of developing a website from scratch. Using open source software also means that Scotland has access to a global developer network to share knowledge, exchange information and optimise development capacity. Other regions of the UK (Wales and Ireland) have recently secured funding to develop their own regional version of the Atlas of Living, building on the work carried out on the Scottish daughter website, with NBN and SNH in discussion with agencies in England with a view to developing an extended UK biodiversity portal.

Smart Cities: Projects such as the Glasgow Open Data Portal have been in discussion with SEWeb to source more Glasgow City area environmental data, and SEWeb are interested in the work by Glasgow Open Data Portal on Use Case Frameworks and Data stories to encourage more data publication by partners and other data providers.

Applying SEWeb Methodologies: SEPA is applying of the SEWeb methodology to identify key environmental priorities to help prioritise and focus future work. Partner organisations have noted an interest in using the SEWeb methodology to assess the effectiveness of intervention measures to deal with key environmental issues. The SEWeb public discussion methodology is also being considered by partners who all have responsibilities to engage communities in discussion under the Community Empowerment (Scotland) Act 2015.

Streamlined data reporting to Europe: It is anticipated that the SEWeb streamlined data and open data work will be featured in the forthcoming European Commission “Making it Work”¹²⁴ event – focussing on making member state environmental monitoring and reporting easier. SEWeb will be promoted as regional best practice, knowledge and experience gained will be shared with the project and other member states.

The extension of daughter websites for specialist audiences: Whilst technical and specialist information is an integral part of managing Scotland’s environment, it is increasingly difficult to deliver targeted, crafted content to both generalist and specialist audiences through the same website. As such, specialist functionality and content is better served on a dedicated Daughter Website platform that does not try to generalise data and information to a point where its usefulness is inappropriate and uninformative for the specialist user. Daughter websites differ from the parent SEWebsite in that they hold and publish data on their specific environmental topic/theme. Providing a data publishing platform where there is no-one single

¹²⁴ <http://www.ieep.eu/work-areas/environmental-governance/better-regulation/make-it-work/home/> The **Make it Work project** aims at delivering environmental outcomes more efficiently and effectively, without lowering existing protection standards. Principles drawn up will ensure the protection of the environment. Make it Work has also started exploring ways to make monitoring and reporting smarter. The shared ambition is to make sure that in the future reporting obligations are fit for purpose: that information is provided by the sender and used by the receiver in a timely manner and in the most efficient way, avoiding disproportionate burdens.

organisation that has responsibility for publishing all related data on that topic. By extending the network of daughter websites, the more specialised products, services and functions developed by the SEWeb LIFE project can, over time, be transferred and maintained on daughter websites, allowing more targeted collaboration between the partners. Much of the specialist functionality and data will ultimately reside on daughter or partner websites, but the signposting for specialists will be supported by integrated links throughout SEWebsite. Daughter websites benefit from applying established template infrastructure, design, systems and business processes created by SEWeb.

4. Best Practice lessons

SEWeb is a Best Practice Case Study for shared learning and knowledge exchange – Case studies have already been produced by for ESRI and Ordnance Survey users on the development, use and benefits of the land information search. The Scottish Digital Public Services strategy has cited SEWeb as “vanguard/leading project” (Jane Morgan, Deputy Director Digital Public Services, Scottish Government – Feb 2014), and the Open Data Strategy that was published by the Scottish Government in December 2014 included SEWeb case studies to demonstrate best practice and share knowledge to a wider audience.

The promotion of Open Data to a wider public service will use SEWeb as a best practise example of adding value to data published in an Open format.

Engaging with new creative minds – SEWeb has been inspired by the increasing number of “Hackathon” events to engage with new and creative minds from the digital, computing and design sectors to come up with innovative ideas and prototypes to use and present data in new and exciting ways. Abertay University have expressed interest in being involved in a hackathon event for 3rd year Honours Degree students, using SEWeb data and information, to identify new ways to access, present and collect data, and to explain complex data to a wider non-technical/scientific audience.

5. Innovation and demonstration value:

SEWeb has implemented innovative products, demonstrating application across different business and policy areas, and has been recognised as best practice within the Scottish Public Sector.

SEWeb has been noted as extremely valuable in transforming complex, open source data into easily accessible and understandable tools that can be used by a wider audience base. For example, SEWeb adds value to INSPIRE Directive published data on SSDI through the transformation of spatial open data into a shared visual mapping tool Map View. The Public Sector Services Reform (Christie Commission) requires public sector agencies achieve efficiency savings through collaboration.

The LIFE Project has supported the development of a range of innovative products and services that partners can now use to help deliver their own business and environmental policy needs, as well as benefitting from more widespread use and access to the data and information that they publish that can in turn inform decisions and influence behaviours. The Scottish Government Open Data Strategy (published in February 2015), requires Scotland’s Public Sector to publish all data as open data and make it freely available for use. SEWeb provides a platform of products and services that can consume this open data and turn it into valuable and interesting information for widespread use.

The demonstration of the benefits and uses of Open Data is a key tool in making the case for organisations to achieve a collaborative solution using a shared platform and providing shared services whilst preserving the specialisms of individual organisations. The implementation of the Scottish Digital Public Services strategy to achieve a world class digital nation by 2020 fundamentally relies on such a case study to show what a collaborative shared service, shared data platform looks like and how it can be used. Instead of a model of stovepipes based on sector producing replication and duplication of solutions the digital ecosystem is comprised of reused components. SEWeb has developed an approach to the sharing of data and open data that makes the Digital Ecosystem of the future believable and achievable.

SEWeb is a major contributor to SEPA and is considered to be central to the delivery of the RAFE digital strategy implementation by providing a platform for open data sharing and making better use of environmental data

6. Long term indicators of the project success.

The following measures will be monitored and reported.

Indicator	Method	Benefits	Limitations
Number of data contributors	Number of partners	Capture the data outputs of all of the main data publishers in Scotland to ensure a comprehensive view of all aspects of Scotland's Environment	Might not capture all relevant data organisations.
Page Visits	Site Analytics	Clear indications of which pages are being used by the visitors	Only counts visits, not reason for visit or whether the visitor meant to visit that page.
Environmental Data and information sources accessible via SEWeb	Data counts	If SEWeb is to become the "go-to" place for information and data, users need to be confident that that gateway will provide access to all relevant data and information they are looking for.	Quantity doesn't always mean quality. Data needs to meet user needs and help to answer users questions about the environment
Information Access	Download counts from data applications and pages	Gives an indication of what type of data people like and are using.	No real indication of how or why the data has been used. Although downloads could be linked to use. E.g. lots of access to recycling centre info could be correlated to higher use of recycling centres in same

Indicator	Method	Benefits	Limitations
			period.
SEWeb Information Searches	Search term counting and page access	This will give an indication of what data, information the visitors find important and also what info is being found easily.	Easily found documents and popular documents may already be linked to from the home page and other sources, so will be found easily. There is no real indication here of whether they found and accessed pages are what has actually been searched for.
Site Referrals	Analytics	Site referrals should be measured both outward and inward. This will give an indication of how visitors are finding the site, i.e. from partners, searches or social media. Outgoing referrals will show if the site is doing a good job of advertising the partners.	There is no way of knowing the context of the referral either in or out and no way of knowing if the user was happy with this referral.
Citizen Science Access	Analytics	Higher use of citizen science pages and support information can be directly correlated against engagement and response to specific initiatives. If high use of citizen science pages can be linked to a greater submission of data this shows that the pages are engaging the users.	Pages visits must be correlated with other, longer term measures of citizen engagement to show any change of behaviour or engagement.
Social Media engagement.	Social Media stats	The number of Posts by SEWeb can be compared to the number of followers, page likes, watches, views, mentions, comments and other	Again the quality of the posts and comments need to be taken into account. If the comments are negative this may not reflect on the success of the site. A good measure would be to look

Indicator	Method	Benefits	Limitations
		<p>posts can all be easily counted to show how far the web presence has spread.</p> <p>Engagement can be determined by the number of users actively commenting on posts and status's posted by SEWeb.</p>	<p>more at the reposts and mentions, this requires a higher level of interaction and a user is unlikely to do this unless they actually like the site and want their own contacts to look at it.</p>
<p>Publications, reports, presentations that reference data/information sourced from SEWebsite</p>	<p>Number of requests to SEWeb Admin to use SEWeb info.</p>	<p>Will provide an indication on the influence and reach of SEWeb data</p>	<p>As SEWeb is public information open for re-use, some users might just use SEWeb information without submitting requests.</p>
<p>Reasons for viewing/accessing data</p>	<p>Website survey, user questionnaires</p>	<p>Provide an understanding of why environmental data is important, to whom and for what purposes.</p>	<p>Website surveys reliant on users providing responses – won't capture everything.</p>
<p>Number of ideas and comments submitted to "contact us" and SEWeb administrator</p>	<p>Queries logged by SEWeb Administrator</p>	<p>New ideas means that users are interested in and using the website and want to see further improvements. New ideas submitted ensure the website remains responsive to user needs.</p>	<p>Identifying user needs to be supported to more intensive user engagement sessions/workshops (see Abertay University visioning report)</p>

6. Technical annexes

6.1. List of abbreviations/acronyms:

BGS	British Geological Survey
BRC	Biological Records Centre BRC
BRISC	Biological Recording in Scotland
BTO	British Trust for Ornithology
CAMERAS	Coordinated Agenda for Marine, Environment and Rural Affairs Science
CEH	Centre for Ecology and Hydrology
CS/Citizen Science	Environmental monitoring and data gathering by members of the public
COMAH	Control of Major Accident Hazard
COSLA	Convention of Scottish Local Authorities
CREW	Centre of Expertise for Waters
CSWG	UKEOF Citizen Science Working Group
Dot.rural	Research Councils UK Digital Economy Hub
DEFRA	Department for Environment, Food and Rural Affairs (UK)
DCAT	an RDF vocabulary designed to facilitate interoperability between data catalogues published on the Web
ECTF	Environmental Crime Taskforce
EEA	European Environment Agency
EIONET	A partnership network of the European Environment Agency (EEA) and its member and cooperating countries
ELDA	
E-PRTR	European Pollutant Release and Transfer Register
ESRI	Environmental Systems Research Institute - supplier of Geographic Information System (GIS) software
FCS	Forestry Commission, Scotland
GEMINI2	GEo-spatial Metadatea INteroperability Initiative – 2 nd revision
GIS	Geographic Information System
GitHub	Web-based Git repository hosting service
GLOW	Scotland's national intranet for schools
GPRS	General packet radio service
HES	Historic Environment Scotland
HPS	Health Protection Scotland
INFONet	
INNS	Invasive Non-Native Species
INSPIRE	European Parliament Directive from May 2007, establishing an infrastructure for spatial information in Europe
IS	Information Systems (SEPA's technology department)
ISBN	International Standard Book Number
Ipsos MORI	A leading market research company in the UK and Ireland
JHI	The James Hutton Institute
KEI	Key Environmental Indicators
KSB	Keep Scotland Beautiful
LIS	Land Information Search
MCM	Multicriteria Mapping

MG	SEWeb Management Group
MSP	Member of the Scottish Parliament
NBN	National Biodiversity Network
NEEPA	European Network of the Heads of Environment Protection Agencies
NERC	National Environment Research Council
NGOs	Non-Governmental Organisations
NHS	National Health Service
NWSS	Native Woodland Survey of Scotland
OPAL	Open Air Laboratories Network
OSPAR	Oslo and Paris Conventions (to protect the marine environment of the North-East Atlantic)
PCB	SEWeb Project Control Board
PMO	Project Management Office
PRINCE2	Projects IN Controlled Environments – a process-based method for effective project management
RCHAMS	Royal Commission on the Ancient and Historical Monuments of Scotland – now HES
RDF	Resource Description Framework
REST	Representational State Transfer (technologies for Web applications)
RSPB	Royal Society for the Protection of Birds
RSS	Rich Site Summary (a format for delivering regularly changing web content)
SBIF	Scottish Biodiversity Information Forum
SEIS	Shared Environmental Information Services
SENSE3	Shared European National State of the Environmental system – 3rd iteration
SEPA	Scottish Environment Protection Agency
SERIS	Inventory of National SoE reports
SESO	Scottish Environmental Statistics Online
SEWeb	Scotland’s Environment Web (refers to partnership)
SE website	Scotland’s Environment website
SG	SEWeb Partnership Steering Group
SMART WASTE	SEPA LIFE project (an innovative pan-European partnership between key bodies involved with addressing waste crime)
SNH	Scottish Natural Heritage
SNIFFER	Sniffer is a registered charity that delivers knowledge-based solutions to resilience and sustainability issues
SoE	State of Environment
SPRI	Scottish Pollutant Release Inventory
SRUC	Scotland’s Rural College
SSN	Sustainable Scotland Network
STEM	Sciences, Technology, Engineering and Maths
TCV	The Conservation Volunteers
TWIC	The Wildlife Information Centre
UK-EOF	UK-Environmental Observation Framework
URI	Uniform Resource Identifier (a string of characters used to identify the name of a resource)
WIMA	What’s in my Area? – Web based mapping tool allowing search for data about a specified location
WISE	Water Information System for Europe

WMS	Web Map Services
ZWS	Zero Waste Scotland

6.2. Dissemination annexes

6.2.1. Layman's report

Layman's report – Scotland's Environment Web Layman Report is also available on the project website¹²⁵.

6.2.2. After-LIFE Communication plan

After-LIFE Communications plan - 'SEWeb After-LIFE Communications Plan' is available created as a designed version on website¹²⁶.

6.2.3. Other dissemination annexes

All dissemination materials (apart from complete set of photographs) are available on the Publications page of the website¹²⁷.

Photographs are included in a separate document.

The following are included on the electronic media:

- 7 Newsletters
- 6 Core Briefings
- 4 presentations
- File of Photos
- 2 Flyers – Get Learning and Our Environment Competition
- 1 Factsheet
- 2 leaflets
- 1 press cutting (Montrose)
- 2 stand-up banners – SEPA_SEWeb_01/02
- Communications Toolkit for partners
- Photos from
 - International Conference
 - Workshops
 - Display of merchandise

¹²⁵ http://www.environment.scotland.gov.uk/media/126006/layman_report_august_2015.pdf

¹²⁶ http://www.environment.scotland.gov.uk/media/190886/seweb_after_life_comms_plan_oct_2015.pdf

¹²⁷ <http://www.environment.scotland.gov.uk/about-us/lifeplus-project/lifeplus-publications/>